

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



Analysis and Findings Review Guide
Horse Canyon Mine
Lila Canyon
ACT/007/013-98-1
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ADMINISTRATIVE FINDINGS

R645-301-112.310, The application is required to show the ownership or control relationship of the persons that own or control the operator, including percentage of ownership and location in organizational structure. The information in the application is very unclear. Additional information about officers and directors and coal mining and reclamation operations may be needed.

R645-301-112.500 and -112.600, Land ownership information in Table 1-1 and Plates 4-1, 5-3, and 5-4 needs to be consistent and accurate. Also, these plates need to be labeled to identify what they are showing. It is strongly suggested that one plate be used for all surface ownership and one for all subsurface ownership rather than mixing these categories as the operator has done. Minimally, Plate 5-4 needs to clearly show the boundaries of areas where IPA owns the surface and where they own both the surface and mineral rights. Also, the Utah School and Institutional Trust Lands Administration commented that they administer certain parcels of land in the current permit area, and the application does not show this.

R645-301-112.500, The application incorrectly lists the Department of Natural Resources, Division of Sovereign Lands and Forestry as a landowner. The Utah School and Institutional Trust Lands Administration commented that they administer the land.

R645-301-112.700, The MSHA number shown in the application is for the Horse Canyon Mine. The operator needs to make this clear, and new numbers for the mine, refuse pile, and other structures requiring MSHA approval will need to be included in the application when they become available.

R645-301-114, The operator needs to show the Bureau of Land Management has approved the subleases from IPA to UtahAmerican Energy.

R645-301-114, To be consistent, the operator needs to supply right of entry information in this application for fee coal within the existing permit area. Also, Table 1-1 lists federal coal leases and gives legal descriptions of these leases, but it does not include legal descriptions for Sections 33 and 34, Township 15 South, Range 14 East.

R645-301-114, Acreage figures in the application need to correspond. The application gives at least three different figures for the number of acres of federal land and various figures for the total acreage of the proposed permit area.

R645-301-114, The application needs to include right of entry information for the portions of the proposed revised permit area in the E $\frac{1}{2}$ SE $\frac{1}{4}$ and SW $\frac{1}{4}$ of Section 15 of Township 16 South, Range 14 East, the proposed facilities area.

R645-301-114, Plate 5-4 indicates the mineral estate in the NW¼ SE ¼, Section 12, Township 16 South, Range 14 East, belongs to the State of Utah. According to the Bureau of Land Management and Table 1-1, this is incorrect.

R645-301-114, The operator needs to provide complete right of entry information for the entire existing and proposed addition to the permit area.

R645-301-115, The application needs to contain approval from the public road authority authorizing mining and reclamation operations within 100 feet of a public road.

R645-301-117.100, The certificate of insurance needs to be changed to be in compliance with Division requirements.

R645-301-117.200, When it becomes available, the newspaper advertisement for this significant revision will need to be included in the application.

TECHNICAL ANALYSIS

R645-301-131, All technical data submitted in the permit application must be accompanied by the names of persons or organizations that collected and analyzed the data, dates of the collection and analysis of the data, and descriptions of the methodology used to collect and analyze the data. This information is not complete for some studies in Appendices 3-1 and 3-2.

R645-301-321, The operator needs to provide vegetation information adequate to statistically compare the area that would be disturbed with a reference area or range site or adequate to use as a baseline success standard. This includes an adequate number of samples to compare proposed disturbed and reference areas statistically. The entire proposed disturbed area needs to be included in the sample. There are also some problems with the regression analyses that need to be corrected. In addition, the operator should provide a discussion of other aspects important in comparing the proposed disturbed and reference areas, such as slope, aspect, and soils.

R645-301-223, the permittee must revise the soil map units delineated on Map 12, Soils Survey Map. Areas covered by coal mine waste where coal mine waste is covered by topsoil cannot be classified within the map units presented on the drawing or as described in the text of the plan. The map and plan information must meet the requirements of the USDA/SCS National Cooperative Soil Survey as incorporated by reference in this section and as referenced by R645-302-314.

R645-301-232, the permittee must quantify the amount topsoil material and show the location of topsoil materials to be stockpiled within the permit area. Adequate drawings and design information must be provided in the plan to demonstrate that these areas adequately protect the

topsoil from erosion.

ENVIRONMENTAL RESOURCE INFORMATION

R645-301-122, References used in the MRP will either be provided to the Division by the operator or be readily available to the Division. If provided, relevant portions of the published referenced materials will be presented briefly and concisely in the MRP by photocopying or abstracting and with explicit citations.

R645-301-121.200 The operator must have different names for Plates 5-3 and Plate 5-4. Also, the information on the plates must be consistent.

R645-301-521.190 The operator must provide the Division with a legal description of the permit area. The legal description should describe all lands in the permit to the nearest quarter-quarter section. The Permittee must also state how many acres in the permit area are Federal, State or private.

R645-301-121.200, The operator must modify the statement towards the end of Section 411.140 indicating a cultural resource survey was to be done in the spring of 1998 and the results included when available. The survey has been completed and the results are included in the MRP.

R645-301-121.200, Any information that would enable a person to locate any of the cultural resource sites must be made confidential.

R645-301-521.190 The operator must submit the complete locations of the WSA's on the Plate 5-3 and Plate 5-4 and on other permit area maps.

R645-301-131, All technical data submitted in the permit application must be accompanied by the names of persons or organizations that collected and analyzed the data, dates of the collection and analysis of the data, and descriptions of the methodology used to collect and analyze the data. This information is not complete for some studies in Appendices 3-1 and 3-2.

R645-301-321, The operator needs to provide vegetation information adequate to statistically compare the area that would be disturbed with a reference area or range site or adequate to use as a baseline success standard. This includes an adequate number of samples to compare proposed disturbed and reference areas statistically. The entire proposed disturbed area needs to be included in the sample. There are also some problems with the regression analyses that need to be corrected. In addition, the operator should provide a discussion of other aspects important in comparing the proposed disturbed and reference areas, such as slope, aspect, and soils.

R645-301-321, The operator needs to check plants identified as *Ferocactus* sp. and Engelmann spruce. If the identifications are correct, the plants would be state records for elevation and range.

R645-301-321.200, The application needs to contain vegetation productivity information for the areas that would be disturbed. Appendix 3-7 contains productivity information, but it is unclear whether the information is for the proposed mine site. The operator Most of the proposed disturbed area has a pinyon/juniper community, and there is no productivity information for a pinyon/juniper area.

R645-301-322, Table 3-1 purports to show federally listed threatened or endangered species that may occur in Utah, but it only show a portion of the listed species. needs to either delete this table or list all species potentially occurring in Utah.

R645-301-322, The operator needs to confirm whether habitats for the southwestern willow flycatcher exist in the proposed addition to the permit area.

R645-301-322, Plate 3-1 shows big game habitats in the area, but it needs to distinguish between different types of habitats, such as critical deer winter range, critical deer summer range, etc.

R645-301-322, The maps showing wildlife habitats need to contain the information provided on USGS 1:24,000 scale maps, including contours. At least one of the maps showing raptor nests should show the area of the proposed facilities, and information on nest locations should be consolidated onto one map. Also, a map needs to include an overlay of the mine workings to better show which nests could be affected by subsidence.

R645-301-322, The application needs to discuss the raptor nests near the proposed facilities area and show whether they are visible from the mine or if they are shielded by vegetation or the topography. It also needs to discuss potential effects from the proposed mine.

R645-301-322, The operator needs to affirm whether all potential raptor nesting habitats in the proposed addition to the permit area have been surveyed for nests.

R645-301-322, The statement that there is no current raptor survey should be modified. There is a survey from 1998

R645-301-322, The operator needs to include a plan for continued monitoring of raptor nesting habitats that could be affected by the mining operations.

R645-301-322, The application indicates the lack of riparian areas precludes the presence of flycatchers. There are flycatcher species, and several other birds, that inhabit

pinyon/juniper and shrub/grass habitats, so this statement should be modified.

R645-301-322, It appears the operator's consultant searched for and did not find Despain footcactus (*Pediocactus despainii*) and the Wright fishhook cactus (*Sclerocactus wrightiae*) in the proposed disturbed area. This needs to be documented in the application.

R645-301-323, The application needs to contain maps showing the reference areas and vegetation communities in relation to the proposed surface facilities. The maps need to contain information as required in R645-301-140.

R645-301-323, Section 323.400 contains a statement that Plate 3-2 identifies each vegetation reference area, but this plate does not show the reference areas. Either the text or the plate needs to be corrected.

R645-301-222 through R645-301-222.300, Additional soil map units are shown on the general Order 3 soil map 2-1 as located within the Permit Area "B" for Lila Canyon boundary. These include DHG2, DSG2, HUG, KXH, MHE, MRG, MSC, MUE, NVF2, RWG, UMF2, VMF2, and VOH. For each map symbol provide soil name, soil description, and soil pedon description.

R645-301-141, The Order 1 soil survey map, both in Appendix 2-3 and on Plate 2-2, and the Salvageable Soils Map, Appendix A2 of Appendix 2-3, have discontinuous contour lines, for both 25 and 5 feet contour intervals. Present this map with continuous contour lines.

R645-301-222, Provide site specific information for soils located at the fan portal site. The Order 1 soil survey needs a soil pit, soil characterization and description.

R645-301-411, The application says there are no agricultural activities within the proposed addition to the permit area, but grazing is considered an agricultural activity. This needs to be corrected.

R645-301-411, The Bureau of Land management's 1999 Utah Wilderness Inventory indicates part of the proposed addition to the permit area has wilderness characteristics, including land immediately adjacent to and possibly overlapping the proposed disturbed area. The application needs to identify this and discuss the Bureau of Land Management's management plans for the area.

R645-301-623.200 - Geologic information is not sufficient to assist in preparing the subsidence control plan. Elevation contours on Plate 6-4 do not go higher 6,000 feet, at least in the permit area. The coal may be shallower, under less cover, and dip more steeply than indicated, factors that can affect the subsidence control plan.

R645-302.122, -624.130 - Outside sources are referenced many times but the outside sources are not adequately described or listed in a "reference" section.

R645-302.122, -624.130 - Some of the references cited in the MRP, such as, but not necessarily limited to:

- Surface geology of Kaiser's south lease Carl property, Emery County, Utah, by V. W. McMath,
- Exploration 1974-75 of Kaiser Steel's south Lease Coal Property, Emery County, Utah, and
- Bureau of Land Management, Environmental Analysis Record, dated 6/9/76, related to Kaiser Steel's Federal lease No. U-32083

are not readily available to the Division, other agencies, and potentially interested parties such as the public, and are probably not available in most libraries, so the operator needs to provide copies as part of the MRP.

R645-301-302.122, -624.130, -624.320 - The operator asserts that over 100-years of mining experience at the adjacent Sunnyside Mines indicates that none of the horizons contain acid- or toxic-forming materials in quantities sufficient to be considered a problem: reference is made to a BLM report (see previous deficiency) but there are no data presented to substantiate this claim.

R645-301-624, -624.210 - The MRP contains no logs or other geologic data from A-26, A-31, and the two wells bored in Horse Canyon to monitor alluvial ground water.

R645-301-624, -624.210 - There are no logs or other geologic data from S-32 in the MRP.

R645-301-624.320 - There are no reported results of chemical analyses for acid- or toxic-forming or alkalinity-producing materials and their content in the strata immediately above and below the coal seam to be mined, including the rock through which the tunnels will be built.

R645-301-624.320 - The underground development waste from the slope-rock tunnels will be left in place for final reclamation. In Section 537.210 the operator commits to test the slope-rock underground development waste to assure that the material is composed of nonacid- or nontoxic-forming waste; however, the frequency of testing is not described in the MRP. Testing should be frequent enough to assure that all material to be left at the surface is suitable.

R645-301-121.200 The operator should summarize all baseline water quality and quantity data in tables and graphs.

R645-301-724.100 - There are no hydrologic data from A-26 and A-31, located south of the Williams Draw fault, in the MRP.

R645-301-724.100 - Two wells were located in the alluvium in lower Horse Canyon Creek. These wells have been plugged abandoned according to the MRP. These wells apparently monitored water in the alluvium. There are no hydrologic data from these two wells in the MRP.

R645-301-724.100 - S-32 was drilled in 1981 and completed as a piezometer in the Grassy Member of the Blackhawk Formation. The MRP contains no baseline data on groundwater elevation or quality for S-32.

R645-301-724.100 - In 1993 and 1994 IPA-1, IPA-2, and IPA-3 were drilled. There are seasonal water-level measurements in the MRP for IPA-1, IPA-2, and IPA-3 for 1994, 1995, and 1996 but no baseline for 1997 or 1998.

R645-301-724.100 - A-26 and A-31 were bored as offsets to S-26 and S-31 to observe groundwater levels in the alluvium south of the Williams Draw Fault. Table VI-3 does not indicate that these wells have been plugged and abandoned, so it is not clear whether or not these wells are currently available for monitoring.

R645-301-724.100 - The MRP states that the locations of the two shallow wells bored in Horse Canyon to observe alluvial ground water are on Plate 7-1, but if they are shown on that, or another, maps they are not clearly identified. Likewise the locations of A-26 and A-31 are not clearly identified on any map.

R645-301-724.100 - H-1, H-6, H-18, and H-21 from the JBR survey in 1985 were sampled, possibly for further water-quality analysis, but there are no analysis results in the MRP for these four springs.

R645-301-724.100 - H-21A, H-21B, H18A, and H-18B from the JBR survey in 1985 are shown on Plate 7-1 but not listed or discussed in the MRP.

R645-301-724.100 - HC-1, HC-1A, and an unidentified spring or seep 1,000 feet southeast of HCSW-2, all apparently from the EarthFax survey in 1993, 1994, and 1995, are shown on Plate 7-1 but not listed or discussed any other place in the MRP.

R645-301-724.100 - The operator asserts there are no water supply wells in the permit and adjacent areas (Chapter 7, p. 7) even though a well is listed in Table 7-2.

R645-301-724.100 - The MRP contains no data on groundwater elevation or quality for S-32 and its location is not shown on maps.

R645-301-724.100 - The quarterly samples from Redden Spring were analyzed for all required parameters except total manganese.

R645-301-724.100 - RS-1 and RS-2 were sampled once a year during 1978, 1979, and 1980 and analyzed for most major chemical constituents. In addition, springs H-6, H-18, and H-21 were sampled once and analyzed for the major constituents in 1985. Third quarter data for 1989 were collected for HC-1 and RF-1 and sampled for most of the parameters in DOGM's guidelines. This is briefly mentioned in Appendix 7-3 but these data are not in the MRP and the results of the analyses are not discussed with the baseline information.

R645-301-724.100, -724.200 - Between January 1981 and April 1983, baseline water quality data was collected for surface water and spring sites B-1, HC-1, RF-1 and RS-2 on the Horse Canyon permit area. Between 14 and 19 samples were taken and analyzed during the monitoring period depending on the site. These data are briefly mentioned in Appendix 7-3 but are not in the MRP and the results of the analyses are not discussed with the baseline information.

R645-301-724.200 - The U.S. Geological Survey conducted a water quality study in Horse Canyon from August 1978 until September 1979. Samples were taken monthly from the Horse Canyon Creek and analyzed for most major ions and cations and field parameters. Metals, eight nitrogen species and other minor chemical constituents were taken on a quarterly basis or less. **This is briefly mentioned in Appendix 7-3 but these data are not in the MRP and the results of the analyses are not discussed with the baseline information.**

R645-301-724.200 - The main drainage through the permit area, Little Park Wash, is mentioned on page 10 and in Tables 7-2 and 7-3 but is not further described or discussed.

R645-301-724.200 - Range Creek drainage is mentioned on page 10 and in Table 7-2 but is not further described or discussed.

R645-301-724.200 - There are no baseline data for the two streams in Lila Canyon and the stream in Little Park Wash.

R645-301-724.200 - The only flow data for Horse Canyon Creek in the MRP are in the Horse Canyon Mine 1997 Annual Report in Appendix 7-2. Additional data for Horse Canyon Creek are available from other annual reports of the Horse Canyon Mine and these data should be included and evaluated in the MRP.

R645-301-121.200, -724.200 - Data in Appendix 7-2 do not clearly support the statement on page 15 that "Flows in Horse Canyon, generally, are limited to the early spring period (Lines and Plantz, 1981). By late spring to early summer, usually no flow is evident in Horse Canyon Creek . . ." Although flows decrease, the data show there is still flow in

late summer and early fall, which indicates possible perennial flow in Horse Canyon Creek above the Horse Canyon Mine.

R645-301-121.200, -724.200 - The MRP states on page 15 that Lila Canyon Creek is an ephemeral drainage, but on page 33 and again in Table 7-3 Lila Canyon is described as intermittent. The main or left fork of Lila Canyon drains an area of several square-miles, so, assuming it is not a perennial drainage, it fits the definition of an intermittent drainage in the Coal Mining Rules. The Right Fork of Lila Canyon is described as ephemeral above the mine on page 33 but as intermittent in Table 7-3. Lila Canyon (Right Fork?) is described as intermittent "below mine" on page 33, but Table 7-3 states it is intermittent "below stream" rather than below the mine site. These inconsistencies and potentially confusing descriptions need to be clarified.

R645-301-121.200, -724.200, -729 - On page 15 of Chapter 7, the MRP states that both Horse Canyon and Lila Canyon Creek flow to Icelander Wash, which in turn flows to Grassy Trail Creek and the Price River; however, topographic maps show that after the two streams emerge from the Book Cliffs their flows diverge. Water from Horse Canyon flows west to Icelander Creek, to Grassy Trail Creek, and then to the Price River. Water from both forks of Lila Canyon flows southwest then south to the Price River by way of Grassy and Marsh Flat Washes. Little Park Wash flows south, where its waters pass through a short stretch of Trail Canyon before reaching the Price River. Inconsistent and potentially confusing descriptions need to be clarified.

R645-301-724.200, -728 - In the PHC the operator finds that to date there is no known depletion of flow and quality of surveyed springs in the Horse Canyon permit area. The basis for this determination is not clear: on page 13 of the MRP the operator states that it is impossible to precisely describe the area's premining hydrology.

R645-301-724.200, -728 - In the PHC the operator finds that, due to the close proximity and similarities of mining and drainage conditions, water quality and impacts to the channels from pumping the Lila Canyon Mine would be very similar to those experienced in the adjacent Horse Canyon Mine. However, the water-quality and downstream impacts that resulted from pumping the Horse Canyon Mine are not described or discussed adequately enough in the MRP for this comparison to be meaningful.

R645-301-731.210 - The three IPA wells are not listed as groundwater monitoring sites. Water depths in these wells should be monitored during coal mine operation and reclamation, unless subsidence or other effects of mining render them unusable.

R645-301-731.210 - The possibility of using S-32, A-26, and A-31 as groundwater monitoring wells cannot be determined because their current status is not discussed in the MRP.

R645-301-731 - Baseline data collected at the proposed operational spring-monitoring sites are

not sufficient to demonstrate seasonal quality and quantity.

R645-301-731 - In lieu of the letter of concern the Division received from Mr. Eardly, the operator should explain the listing of Blackburn's holding the water rights while Eardly owns the property.

R645-301-323, The application needs to contain maps showing the reference areas and vegetation communities in relation to the proposed surface facilities. The maps need to contain information as required in R645-301-140.

R645-301-323, Section 323.400 contains a statement that Plate 3-2 identifies each vegetation reference area, but this plate does not show the reference areas. Either the text or the plate needs to be corrected.

R645-301-622.200 - Coal-seam elevations determined from bore holes are not on Plate 6-4, the cover and structure map, even though the elevations are on Plate 6-2, which does not show structure.

R645-301-121.200, -622.200 - The coal seam crops out at approximately 6,500 feet in the vicinity of the rock-slope tunnels. The MRP indicates the tunnels will intercept the coal seam at approximately 6,300 feet. Structural elevation contours on Plate 6-4 stop at 6,000 feet, at least in the permit area, so do not accurately indicate the elevation of the coal seam where the tunnels will intercept it. The coal may be shallower, under less cover, and dip more steeply than indicated on Plates 6-4 and 7-1 and other maps that show structure contours.

R645-301-121.200 The Permittee must clarify the statements made in Section 521.120 and Section 526.110 about the existing culvert at the Lila Canyon site. Specifically the Permittee must clarify the statement in Section 526.110 that a 36" culvert exists in the proposed disturbed area and the statement in Section 521.120 that states that no surface facilities exist at the Lila Canyon site.

R645-301-121.200, -622.200 - Coal-seam elevations determined from bore holes are on Plate 6-2, which does not show structure elevation contours, but are not on Plate 6-4, the cover and structure map.

R645-301-121.200, -622.200 - Lease information is included on Plates 6-3 and 6-4. This makes it more difficult to read the thickness, depth, and structure information on these maps, and there is no evident reason for the lease information to be on these maps.

R645-301-622.100, -722.300 - The location of S-32 is not shown on any map.

R645-301-624.100, -624.110 - Reference is made in several places in the text to the Sunnyside

fault, especially as a feature that possibly controls groundwater flow, but this fault is not shown, or at least not clearly identified, on the maps.

R645-301-512.110, -521.111 - Location and extent of the Horse Canyon Mine permit area is shown on numerous plates in the MRP, including Plate 5-1 and maps in Chapters 6 and 7, but it is not clear where mining was done and not done within this permit area.

R645-301-512.110, -521.111 - Plate 5-1 shows old or abandoned mine workings outside the Horse Canyon permit area, except the 6,080-foot exploration entry from the Horse Canyon Mine is not shown.

R645-301-512.110, -521.111 - Locations of sealed openings to the Horse Canyon Mine and other mines are not identified on a map.

R645-301-512.110, -521.111 - Plate 5-1 shows an area west of the Horse Canyon Mine, outside the line marking the limits of old works, labeled "Book Cliffs Coal Company", and hatched in red: what this represents is not clear.

R645-301-512.110, -521.111 - The active coal fire area in the old workings north of Horse Canyon is not shown on any map or discussed in the text.

R645-301-623, -722, -731.521 - There is no cross section showing location and extent of ground water and its relation to geologic structure and stratigraphy. There is no cross section showing the relationship of the rock tunnels to the structure, stratigraphy, and ground water.

R645-301-624.100, -722.100 - There are no cross sections showing location and extent of ground water and its relation to geologic structure and stratigraphy.

R645-301-722 - Surface-elevation contours are displayed on several maps. On Plate 7-1 the 250-foot index contours were not printed, adding to the confusing appearance of the map.

R645-301-722.100 - The operator asserts there are no water supply wells in the permit and adjacent areas (Chapter 7, p. 7) even though a well is listed in Table 7-2. That well is not shown, or at least not clearly identified, on a map.

R645-301-722.100 - There is no portrayal of seasonal differences of head on cross sections and contour maps.

R645-301-722.100 - The groundwater elevation in the Horse Canyon Mine, at the rotary car dump at the intersection of the Main slope and 3rd level, is described on page 14 in Chapter 7 of the MRP; it was approximately 5,800 feet in 1986 and the operator states that it probably has remained at this level since operations ceased in the Horse Canyon

Mine. This projected groundwater elevation does not appear to have been used in projecting the piezometric surface mapped on Plate 7-1.

R645-301-722.100 - Text on page 7 refers to Plate 7-1 for the location of Horse Canyon and Lila Canyon Creeks, but none of the drainages are labeled on that map, or other maps in Chapters 6 and 7. Little Park Wash and Range Creek are also mentioned in the text but are not identified on any maps.

R645-301-722.200, -722.300 - Locations of all known seeps and springs are stated to be shown on Plate 7-1. Water quality and quantity data for springs or seeps 8B, 15A, 17B, 18A, 19C, HC-2, HC-4, HC-9, HC-11, HC-13, HC-14, HC-18, HCSW-1, and HCSW-3 are in Appendix 7-1 but their locations could not be found on Plate 7-1. H-7 is listed in Table 7-1 but is not shown on Plate 7-1.

R645-301-722.200 -722.300 - Locations of all known seeps and springs are stated to be shown on Plate 7-1. There are several springs listed in Table 7-2 - Water Rights - and shown on Plate 7-3 that are not shown on Plate 7-1. Water quality data for Redden Spring (RS-2) are in Appendix 7-2 but the location for this spring could not be found on Plate 7-1.

R645-301-722.300 - The MRP states that the locations of the two wells in Horse Canyon are on Plate 7-1, but if they are shown on that map or another they are not clearly identified. Likewise the locations of A-26 and A-31 are not clearly identified on any map.

R645-301-722.300 - The groundwater elevation in the Horse Canyon Mine, at the rotary car dump at the intersection of the Main slope and 3rd level, is described on page 14 in Chapter 7 of the MRP. The location is described in the text, but the location is not shown on Plate 7-1.

OPERATION PLAN

R645-301-121.200, On Page 62, Section 526.220 the reference should be Section 520 instead of Section 20.

R645-301-121.200, The permittee must be consistent about the maximum amount of coal that will be produced. In Section 523 the maximum annual production is listed at 4,000,000 tons in the Appendix 5-4 the amount is 2,000,000.

R645-301-521.190, The permittee must state the maximum amount of coal that will be stored on site. The maximum amount of coal is usually determined by the air quality permit.

R645-301-523, The permittee must give the Division a list of major equipment that will be used to conduct mining.

R645-301-528.100, The permittee must show the coal storage areas on the surface facilities maps. The storage areas must have boundaries that are shown on the surface facilities maps. The permittee must also label the coal loading and transportation areas.

R645-301-528.300, The permittee must address the requirements of this regulation in Section 528.300 of the MRP or state where that information can be found. In Section 528.300 of the MRP the permittee restated the regulation.

R645-301-526.300, The permittee must describe the water pollution control facilities in Section 526.300 of the MRP or reference the information. In Section 526.300 of the MRP the permittee list the drain fields as the only water pollution control facility and states that the designs are shown in Appendix 5-4. That appendix does not contain any designs for the drain fields or water pollution control facilities.

R645-301-121.200 The permittee must clarify the statements made in Section 521.120 and Section 526.110 about the existing culvert at the Lila Canyon site. Specifically the permittee must clarify the statement in Section 526.110 that a 36" culvert exists in the proposed disturbed area and the statement in Section 521.120 that states that no surface facilities exist at the Lila Canyon site.

R645-301-526.133 and R645-301-526.116, The permittee must show how the public will be protected from mining and reclamation activities that are constructed within 100 feet of the county road. Specifically the permittee must address how the public will be protected from the hazards associated with the sediment pond and other mine facilities.

R645-301-121.200, The permittee must either include the letter from Emery County stating that they have approved the construction of the mine facilities next to the county road or remove the reference.

R645-301-121.200, The permittee state in Section 521.170 that the transportation facility maps describe the roads, conveyors, embankments, culverts and drainage structures. There are no maps in the MRP that are entitled Transportation Facility Map. The permittee must specify what map is the Transportation Facility Map.

R645-301-420, The text of the application needs to show the permittee has submitted a Notice of Intent with the Division of Air Quality and that the Air Quality Permit will be inserted when it becomes available.

R645-301-420, The application indicates the permittee has applied for an Air Quality Approval Order that would be obsolete after two years. The permittee needs to have an Approval Order that will not be outdated before the permit expires in five years.

R645-301-526.133 and R645-301-526.116, The permittee must show how the public will be protected from mining and reclamation activities that are constructed within 100 feet of the county road. Specifically the permittee must address how the public will be protected from the hazards associated with the sediment pond and other mine facilities.

R645-301-121.200, The permittee must either include the letter from Emery County stating that they have approved the construction of the mine facilities next to the county road or remove the reference.

R645-301-121.200, The permittee state in Section 521.170 that the transportation facility maps describe the roads, conveyors, embankments, culverts and drainage structures. There are no maps in the MRP that are entitled Transportation Facility Map. The permittee must specify what map is the Transportation Facility Map.

R645-301-332, Section 525.100 indicates there are no renewable resource lands within the proposed addition to the permit area; however, according to the definition of renewable resource lands and information in the land use chapter of the application, the proposed addition to the permit area does include renewable resource lands.

R645-301-332, The permittee needs to show how the effects of underground mining on vegetation will be monitored.

R645-301-526.133 and R645-301-526.116, The permittee must show how the public will be protected from mining and reclamation activities that are constructed within 100 feet of the county road. Specifically the permittee must address how the public will be protected from the hazards associated with the sediment pond and other mine facilities.

R645-301-121.200, The permittee must either include the letter from Emery County stating that they have approved the construction of the mine facilities next to the county road or remove the reference.

R645-301-121.200, The permittee state in Section 521.170 that the transportation facility maps describe the roads, conveyors, embankments, culverts and drainage structures. There are no maps in the MRP that are entitled Transportation Facility Map. The permittee must specify what map is the Transportation Facility Map.

R645-301-333, Section 323.300 discusses possible restrictions on firearms and off road vehicle use. The permittee should commit to enforcing legal requirements of firearm and off road vehicle use by employees in the mine area.

R645-301-333, The application discusses possible benefits to wildlife of water in the sediment pond, but the converse is more likely. This discussion needs to be modified, and the permittee needs to commit to check the pond on a daily basis for signs of wildlife being

harmed by the water.

R645-301-333, There is a discrepancy between Appendix 7-3 and Section 523 in the amount of air that would be exhausted from the mine. This affects the calculations of the amount of water that would be lost through evaporation, and the discrepancy needs to be resolved.

R645-301-333, The Division of Wildlife Resources commented there are bighorn sheep that spend the entire year in Lila Canyon, and the mine will adversely affect these animals. In addition, the area is heavily used by chukars, and this use would also be negatively affected. The permittee needs to show how it will mitigate for these effects or how they will be minimized. Wildlife Resources suggests the permittee install at least one artificial watering device, such as a guzzler.

R645-301-333, There are golden eagle nests very close to the proposed surface facilities that almost certainly would not be used if the mine is built. The commitment in the plan to not disturb the area during crucial nesting periods would protect eggs or chicks from being abandoned, but it does not compensate for the loss of nests and nesting habitat. The permittee needs to propose protection or mitigation methods to be used for these nests and any others that may be in the area. It is likely the permittee will need to obtain "take" permits from the Fish and Wildlife Service.

R645-301-333, The application says a raptor inventory will be conducted to ensure that no bald or golden eagles or adversely affected by mining, but this statement needs to apply to all raptors.

R645-301-333, The permittee has committed to not subside escarpments that contain eagle nests, but this commitment is not consistent with the mine plan. The permittee needs to show how nests in the subsidence areas would be protected.

R645-301-333, The permittee needs to include a specific protection and enhancement plan for critical big game habitat in the area of the proposed surface facilities.

- Additional protection or enhancement plans may be needed once the Division receives further information about raptor nests and listed and proposed threatened or endangered species in the vicinity of the proposed surface facilities.
- While the access road and power lines will probably not be regulated by the Division, the Division of Wildlife Resources and Fish and Wildlife Service commented on these facilities. It is very important that power lines be designed and constructed in accordance with the most current technology to avoid electrocutions. The poles will be used by golden eagles, ferruginous hawks, and other raptors.
- Many big game animals are killed in collisions with vehicles used to haul coal, and it is

vital that drivers be instructed on the importance of maintaining proper speeds and watching for wildlife. Any animals killed must be taken well off the road to avoid scavengers, including eagles, being hit. They should also be reported to Wildlife Resources.

R645-301-232.100 through R645-301-232.300, Salvage and protect all identified topsoil and subsoils suitable for reclamation. Because the topsoil is less than six inches, salvage must include both the surface topsoil and suitable subsoils identified in the Order 1 soil survey. No soil may be left in place and/or used as fill. Leaving soils in-place is not a permitted practice for protecting topsoil resources. All soil resources must be protected and preserved for reclamation and may not be used as construction fills or for any other construction purpose.

R645-301-232.400 through R645-301-232.420, Show and discuss areas of minor disturbance where soil salvage will not occur. If these areas do not exist, then state that no such minor disturbance areas exist and that soil salvage will occur in every instance where surface disturbance will occur.

R645-301-232.500, Salvageable subsoils that contain a calcic horizon need to be salvaged, segregated out from topsoil and other subsoil horizons, stockpiled, and redistributed as calcic subsoil.

R645-301-232.700 and R645-301-232.710, Identify specific areas inaccessible for construction machinery where soils can not be salvaged due to adverse, unsafe or impractical conditions. All soils must be salvaged on steep slopes and/or rocky areas accessible to construction machinery for the purpose of constructing cutslopes or grading flat areas.

R645-301-120 and R645-301-140, Clearly identify, locate, and present where cut and fill slopes will occur as described in the text. Provide a cut and fill contour map correlated with discussions from both the operations and reclamation sections.

R645-301-140, Locate the exhaust fan portal site on the MRP maps. The size and extent of the engineered fan site need to be appropriately scaled to ensure that the proposed disturbance area takes into account the extent of disturbance and the resulting volume of soils that will be salvaged.

R645-301-231.100 through R645-301-232.300, and R645-301-234.100 through R645-301-234.240, The Order 1 soil survey identifies indigenous rock present on the surface of the soil and within each of the soil horizons. Indigenous "topsoil" boulders, and large stones have intrinsic value for reclamation success and soil protection during reclamation and, therefore, must be salvaged and protected. This indigenous "topsoil" rock may not be used as fill materials during operations.

- Designate a “topsoil” rock stockpile on maps where salvaged rock will be stored for reclamation use.
- Appropriately sign and protect “topsoil” rock stockpiles during life of mine.
- Or, include rock with soil salvage and store with soil in topsoil stockpile.

R645-301-120, Correct the following inconsistencies:

- Section 231.100 references Section 232.300 for further discussion. Section 232.300 does not contain any discussion and references Section 231.100 for further discussion.
- Section 231.100 references Chapter 5 for review with the comment that Chapter 5 contains an “in-depth discussion of the construction plan” and that “Chapter 5 should be reviewed and thoroughly understood prior to continuing with the review of 231.100 section.” No pertinent correlation could be identified between Section 231.100 and Chapter 5 for soil removal and stockpiling.

R645-301-120, R645-301-224, R645-301-231.200, R645-301-232.720, and R645-301-233 through R645-301-233.400, Chapter Sections 224, 231.200, 232.720, 233, and 233.100 thru 233.400 state that “Studies show” no substitute topsoil is needed. The plan needs to provide specific relevant information concerning the referenced studies.

R645-301-100 (Underground Development Waste, Coal Mine Waste, Refuse Pile), R645-301-528.200 through R645-301-528.322, and R645-301-536 through R645-301-536.900, The rock-slope waste material must be identified as Underground Development Waste. Place and properly dispose of all Underground Development Waste in a Refuse Pile. If Underground Development Waste is used as pad fill, then the pad fill must meet the permit requirements for an approved disposal area.

R645-301-553.252, The MRP states that the refuse pile will be covered with 24 inches of soil. Correct the MRP so that the refuse pile, upon final grading is covered with a minimum of four feet of the best available, nontoxic and noncombustible material.

R645-301-233, and R645-301-242.100 through R645-301-242.110, Locate additional substitute topsoil resources to meet reclamation requirements to cover the refuse pile areas with 4 feet of suitable material. The refuse pile is located in the RBL soil unit. Salvageable soils within the RBL soil unit average only 8 inches of suitable material. The following are needed:

- Identify, salvage and stockpile additional substitute topsoil resources to meet the excess requirement for 4 feet of cover on the refuse pile.

- If no additional substitute material is available to achieve the 4 feet of cover and for achieving the revegetation standards of R645-301-356 on the reclaimed refuse pile areas, then the MRP must identify and permit a suitable substitute topsoil borrow area.

R645-301-234.220 through R645-301-234.230, The application states that the stockpiled soil will be loosely piled and have an irregular, pitted surface or contour furrows. The following are needed:

- **Compaction** - soil scrapers have been emphatically shown to induce soil compaction. The application needs to show how compaction will be alleviated, not only on the surface of the stockpile, but in the interior as well. Compaction must either be avoided by using other construction methods, or be alleviated as the pile is constructed.
- **Surface roughening** - contour furrows and constructing an irregular, pitted surface are not compatible practices. The application must commit to using one or the other exclusively. If contour furrows are used, the performance standard for eliminating erosion must be met. All proposed contour furrow work must be properly engineered for furrow placement, slope, and size to control erosion. For contour furrows, the application must contain design, maps, and cross sections

R645-301-234.200 through R645-301-234.240, R645-301-521.160, R645-301-521.165, The application contains some information concerning topsoil pile size and dimensions. However, additional information is needed as follows:

- **Topsoil Stockpile** - the topsoil stockpile needs to be sized to store 140,000 CY topsoil and segregated calcareous subsoil.
- **Substitute Topsoil Stockpile** - location, placement, storage and protection of salvaged substitute topsoil for reclaiming the refuse and waste piles.
- **Stockpiles** - Engineered drawings of projected stockpiles scale, sizing and placement. Drawings need to show engineered size, exact placement, and final configuration of each stockpile. In addition, the stockpile drawings need to show cross sections. Details are needed for the following stockpiles:
 - topsoil stockpile,
 - calcareous subsoil stockpile,
 - substitute topsoil stockpile, and
 - "topsoil" rock (boulders and large stones) stockpile.

R645-301-331, The permittee needs to consider whether it would be possible to better consolidate the surface facilities and disturb a smaller area. Minimally, the application needs to discuss how the disturbance has been minimized.

R645-301-331, Different sections of the application contain conflicting acreage figures for the proposed disturbed area. This needs to be corrected and the definition of various terms used in the application, such as affected area and disturbed area, clarified.

R645-301-724.400, The application contains conflicting precipitation information, and this needs to be resolved.

R645-301-331, It appears many of the species in the interim seed mix in Table 3-5 may not be adapted to the site, so the seed mix needs to be revised.

R645-301-527.200, The permittee must give the Division the cross sections that were used in the embankment stability analysis and also state why the assumption used in the Hoek method were valid.

R645-301-527.200, The permittee must give the Division plans for each surface conveyer.

R645-301-527 and R645-301-534, The permittee must provide the Division with certified plans and drawings for the roads in the Lila Canyon area. The plans and drawings must contain the following information:

- (1) Include a map, appropriate cross sections, design drawings, and specifications for road widths, gradients, surfacing materials, cuts, fill embankments, culverts, bridges, drainage ditches, low-water crossings, and drainage structures;
- (2) Describe the plans to remove and reclaim each road that would not be retained under an approved postmining land use, and the schedule for this removal and reclamation.

R645-301-528.332, The permittee must give the Division a detailed plan for the disposal of noncoal mine waste. The permittee must state where in the permit area all noncoal waste will be disposed and how the area will be reclaimed. The Division usually allows concrete to be used as backfill material. All other noncoal mine waste must be placed in areas where the material will not contaminate ground or surface water.

R645-301-528.320, The permittee must identify all existing disposal areas where coal mine waste will be disposed. If no existing disposal areas exist then the permittee must remove the reference to existing disposal areas from the MRP.

R645-301-528.320 and R645-301-536, The permittee must place all rock material from the rock slopes into approved disposal areas. If the permittee wants to use the material from the rock tunnels as fill material for the pad then the permittee must permit the area as a refuse

pile.

R645-301-536.110, The permittee must show that the refuse pile will have a static safety factor of at least 1.5.

R645-301-553.252, The permittee must either commit to cover the refuse pile with 4 feet of material or demonstrate to the Division that a lesser amount is needed.

R645-301-521.190, The permittee must provide the Division with a copy of the letter from the State Engineer stating that the sediment pond design has been approved.

R645-301-533.700, The permittee must have cross sections for both the width and length of the sediment pond on Plate 7-6.

R645-301-533.700, The permittee must label the contour lines on Plate 7-6.

R645-301-533.100, The permittee must give the Division copies of the cross sections that were used in the slope stability analysis.

R645-301-533.210, The permittee give the Division the physical and engineering properties of the sediment pond foundations.

R645-301-533.300, The permittee must show how the pond will be protected against sudden drawdown. Specifically the permittee must show that pore pressure in the embankments will not cause the pond to fail should a sudden drawdown occur.

R645-301-731.521 - The permittee states on page 44 that the water level in the mine would need to rise approximately 20 feet to reach the contact of the rock slope with the coal seam and produce a gravity discharge through the tunnels. It is not clear what this means; the numbers provided in the MRP indicate ground-water levels would need to rise approximately 150 feet just to reach the starting elevation of the tunnels and 300 feet to reach the intersection of the tunnel with the coal seam.

R645-301-731.212 - Section 731.212 of the MRP contains a commitment from the permittee that when the analysis of any ground-water sample indicates noncompliance with the permit conditions, the operator will promptly notify the Division and immediately take the actions provided for in 145 and 731; it is not clear what "145 and 731" are.

R645-301-731.210 - It is not clear from the MRP when operational ground- and surface-water monitoring will begin.

R645-301-528.100, The permittee must show the coal storage areas on the surface facilities maps. The permittee will only be allowed to store coal in those coal storage areas

outlined on the surface facilities map. The permittee must also label the coal loading and transportation areas.

R645-301-525.490, The permittee must show on Plate 5-5 or other similar maps those areas where subsidence control methods (first mining only) will be used to protect surface structures such as escarpments, seeps and springs and eagle nests.

R645-301-525.100, The permittee must provide the Division with a map of the permit area at a scale of 1:12,000 or larger that shows the areas where subsidence could occur.

R645-301-527 and R645-301-534, The permittee must provide the Division with certified plans and drawings for the roads in the Lila Canyon area. The plans and drawings must contain the following information:

R645-301-512, Include a map, appropriate cross sections, design drawings, and specifications for road widths, gradients, surfacing materials, cuts, fill embankments, culverts, bridges, drainage ditches, low-water crossings, and drainage structures;

R645-301-512, Scales need to be checked, Map 7-2 shows a scale of 1"=200', whereas the scale is somewhat different on Map 7-6.

R645-301-730, Water shed parameters should be checked and corrected as a result of scale readings.

R645-301-730, Tables identifying characteristics of the watersheds should also reference the map they are located.

RECLAMATION PLAN

R645-301-412, Section 412.200 contains a statement that resumption of the original land use at the mine site should not need approval of the land management agency. This comment should be deleted, and in its place, the operator should reference the letter from the Bureau of Land Management in Appendix 4-2.

R645-301-342, In Section 342, the application says the sediment pond will be maintained through the life of the operation and bond liability period at which time it will be allowed to pass through normal pond succession until such time as the pond will be removed when effluent criteria are met at about year six following reclamation. This statement contradicts itself and other parts of the application and needs to be modified. The operator needs to clarify how long the pond will be allowed to remain and what maintenance will be done. To leave the pond as wildlife habitat enhancement, the operator would need to demonstrate that water in the pond would be suitable for wildlife use.

R645-301-121.200, The Permittee must clarify if he intends to seek a variance from the approximate original contour requirements.

R645-301-120, The following items are needed to help add clarity and eliminate discrepancies in the plan:

- Appendix 5-8 states that 47.9 acres will be reclaimed. Chapter 2 Soils states that 38.95 acres will be disturbed. The plan needs to be in agreement between amount of disturbance and reclamation acreage.
- It is not obvious or clear in the MRP where cut and fill slopes will occur as described. Therefore, the MRP needs a cut and fill contour map to correlate discussion concerning backfilling cut slopes from adjacent pad areas.
- Clarification is needed for illustrating where adjacent pad areas are located within the disturbed area that will be used as work platforms for backfilling cut slopes and newly exposed hillsides.
- The statement that the adjacent reclamation pad area will be reclaimed in corresponding lifts is unclear since the pad is being removed, not built up.

R645-301-242, R645-301-244, The following are needed to help clarify and describe soil redistribution, placement, and stabilization:

- Describe whether pocking will occur before or after topsoil placement. Describe the density of pock placement on the soil surface.
- Describe methods for minimizing and alleviating fill and replaced subsoil and topsoil compaction.
- Describe methods for reducing soil slippage between the fill and soil interface.
- **At best** to allow achievement of the vegetation performance standards of diversity and erosion control, segregated soil types need to be redistributed in the same area and at the same depth they were salvaged from. Soil types strongly influence the biology performance standards of vegetation diversity and erosion control. **At worst**, mixed soils should be redistributed at the same depth in those areas where they were salvaged.
- Salvaged and stockpiled "topsoil" rock (boulders and large stones) need to be reincorporated with the redistributed topsoil, and replaced on the ground surface.
- Drilling, discing or raking are not compatible with extreme rocky soils, rocky surfaces, or with surfaces that have been deep gouged or pocked. Correct the plan to indicate surface

preparation practices that are compatible with the rocky soil and surfaces, and that are consistent with other reclamation practices (e.g., pocking).

R645-301-242.300 through 242.320, Sections 242.300 through 242.320 reference Section 242.100. Section 242.100 does not address Sections 242.300 through 242.320. The plan needs to address R645-301-242.300 through R645-301-242.320.

R645-301-130, Sections 231.300 and 243 give reference to topsoil field sampling and testing. All sampling, testing and result interpretation must be done by a qualified soil scientist. The soil scientist must be shown to be qualified to sample, test and interpret data results. An amendment attesting the soil scientist qualifications must be filed with the Division to obtain approval prior to sampling and testing of the topsoil material.

R645-301-761- Appendix 7-4 contains no information on ground- or surface-water monitoring during reclamation.

R645-301-542, Plate 5-6 must show the center lines for the cross section in Plate 5-7A and Plate 5-7B.

R645-301-542, The Permittee must give the Division detailed cross section that show highwall elimination. The Division suggests that the cross sections that show highwall elimination be perpendicular to the cross section on Plate 5-7A and Plate 5-7B.

R645-301-341.100, The operator needs to clarify the reclamation timetable in Tables 3-3 in Chapter 3 and 3-2 in Chapter 5. There are terms used in these schedules that are not explained elsewhere in the application.

R645-301-341.110, R645-301-354, Tables 3-3 and 3-2 indicate seeding and mulching could begin as early as September 1. Seeding should be delayed until as late in the fall as possible, preferably until November.

R645-301-553, Appendix 5-8 indicates all areas will be returned to approximate original contour except the rock ledges. Unless the operator obtains a variance, all areas must be returned to approximate original contour.

R645-301-341, The operator needs to show how soils will be segregated and redistributed in a manner that will allow achievement of the vegetation performance standards of diversity and erosion control.

R645-301-341, Areas of coal mine waste disposal need to be covered with at least four feet of the best available nontoxic, noncombustible material to achieve revegetation in accordance with the R645-301-350 performance standards.

R645-301-341, Section 341.220 says tillage will continue until the size of the average soil clods on the surface is less than one inch. This is likely to unnecessarily compact the soil, and it reduces soil structure. It may be necessary to break up the largest clods, but continuing to till the soil until soil clods are less than one inch diameter is not necessary or desirable in this kind of site.

R645-301-341, The operator needs to resolve inconsistencies in the reclamation methods shown in Section 341.220 and Appendix 5-8. According to Section 341.220, the surface will be covered with 2000 pounds per acre of alfalfa or native grass hay which is crimp-disked into the soil, but this is not mentioned in Appendix 5-8. Appendix 5-8 discusses gouging but Section 341.220 does not.

R645-301-341, The Division considers water harvesting, such as gouging, to be an essential component of reclamation at this site. Any reclamation methods inconsistent with leaving a rough surface need to be modified or eliminated. In Appendix 5-8, the operator commits to gouging the site, and crimp discing mulch and drill seeding are likely to reduce the gouges so they will not be as effective as they need to be.

R645-301-341, Assuming gouging will be the water harvesting method used, the operator needs to describe how the gouges will be placed.

R645-301-341.210, Blue grama and galleta are important warm season grasses in the proposed disturbed area, and they need to be included in the seed mix for final reclamation.

R645-301-341.210, The seeding rate shown in Table 3-4 is excessive. The *Interagency Forage and Conservation Planting Guide for Utah* recommends a broadcast seeding rate of 50-100 seeds per square foot.

R645-301-341.230, The application does not say what mulching method or rate will be used in accessible areas. It also does not say at what rate the straw mulch would be applied. If an area is inaccessible and would have straw applied, it would also be inaccessible to equipment needed to crimp the straw. The operator needs to clarify the mulching methods and rates.

R645-301-341, The application says in Section 357.301 the Lila Canyon Mine would like to reserve the right to apply for augmentation of reclaimed areas without jeopardizing or extending the bond liability period on a site specific case scenario. Augmented seeding is not allowed without lengthening the extended liability period; therefore, the statement in 357.301 must be modified.

R645-301-341.250, The application says the reference area for the mine site disturbance was established adjacent to the existing facilities during the summer of 1985. It appears this statement is referring to the current Horse Canyon mining and reclamation plan. If the

operator intends to use the reference area at the Horse Canyon Mine, the application needs to include all pertinent data to compare the reference area with the proposed disturbed area.

R645-301-341.250, As discussed in the "Vegetation Resource Information" section of this analysis, there is inadequate information to determine whether the reference areas shown in Appendix 3-2 can be approved as success standards for vegetation cover or other vegetation parameters.

R645-301-341.250, The operator needs to propose methods for measuring diversity, seasonality, and erosion control, and success standards for these parameters.

R645-301-341.250, The operator needs to include the woody plant density success standard of 1500 per acre established in consultation between the Division and the Division of Wildlife Resources.

R645-301-342, The operator needs to investigate whether other enhancement measures could be used at this site during the reclamation phase of operations. The application should contain a discussion of potential enhancement measures.

R645-301-342, Comments in the application about optimizing the edge effect should be eliminated unless the operator provides specific means by which this will be accomplished.

- The Division recommends the operator eliminate yellow sweet clover from the seed mix or reduce the amount that would be planted. Also, the Division recommends the operator include needle and thread grass in the seed mix.
- Because precipitation figures in the application are inconsistent, the Division cannot be certain whether the species in the seed mix are adapted to the site. Some changes may be needed when the Division has reliable precipitation data.

R645-301-542, Plate 5-6 must show the center lines for the cross section in Plate 5-7A and Plate 5-7B.

R645-301-542, The Permittee must give the Division detailed cross section that show highwall elimination. The Division suggests that the cross sections that show highwall elimination be perpendicular to the cross section on Plate 5-7A and Plate 5-7B.

ADMINISTRATIVE FINDINGS

Last revised - May 27, 1999

ADMINISTRATIVE FINDINGS

INTRODUCTION

The permit area lies within the north half of the South Fork Lease. The Bureau of Land Management established the North Block Logical Mining Unit (LMU) where the mine will be established. The North Block LMU was submitted on November 23, 1993 and approved on January 1, 1994.

The Mining and Reclamation Plan (MRP) proposal for the Lila Canyon Mine was submitted as a significant revision to the Horse Canyon Mine Plan and received by the Division on September 8, 1998. The Division conducted and completed a first and second administrative complete review of the Mining and Reclamation Plan (MRP) February 11, 1999. The MRP was determined administratively complete on February 24, 1999. At the time it was known by the DOGM staff that some technical deficiencies existed which were evaluated and identified for this assessment.

The Division received a letter a landowner, Josiah Eardley, on March 30, 1999 in response to the public notice published in the Sun Advocate. He pointed out his interest in surface waters he owns adjacent to the minesite. Although all local and adjacent hydrologic resources are evaluated for mining impacts in the normal review process, we wanted to acknowledge Mr. Eardley's interest for this assessment.

COMPLETENESS

The application is not complete. Several inconsistencies and deficiencies exist that must be corrected and provided to make the MRP technically sufficient to meet the minimum requirements of the State Program. This finding is primarily made in association with the findings made in the Technical Analysis.

The operator needs to clarify many of the plans presented in this application. The application is inadequate with regard to wildlife habitat protection and enhancement, and the reclamation plan needs to be refined.

VALID EXISTING RIGHTS

In the sections of the application dealing with ownership and control and right of entry, the operator has chosen to include land ownership information for both permit area "B," the proposed addition to the permit area, and for permit area "A," the existing Horse Canyon permit area. Therefore, to be consistent, this review considers the completeness and adequacy of land ownership, legal descriptions and right of entry information for both of these areas.

The operator needs to clarify many of the plans presented in this application. The application is inadequate with regard to wildlife habitat protection and enhancement, and the reclamation plan needs to be refined. Additional vegetation baseline information is needed for some parts of the proposed disturbed area.

OWNERSHIP AND CONTROL INFORMATION

Regulatory Reference: R645-301-112

Analysis:

The operator is UtahAmerican Energy, Inc., a Utah corporation. The application gives the name, address and telephone number of the operator and its resident agent and includes the employer identification number for the operator. UtahAmerican will pay the abandoned mine reclamation fee.

Appendix 1-1 contains lists of shareholders and officers and directors for the operator and a parent company, Coal Resources, Inc., together with the dates the officers and directors assumed their positions, their addresses, and their Social Security Numbers. Coal Resources, Inc., is a shareholder of the operator, and it appears Coal Resources, Inc., is owned by Energy Resources, Inc. It is also possible Coal Resources is owned by Mill Creek Mining Co. which is owned by Energy Resources, Inc. The application needs to make these relationships clear. It appears the other companies listed in Appendix 1-1 are tied to the operator by common officers, directors, or stockholders. Because of the uncertainty about the relationships of the various companies, it is also uncertain whether the application needs to show the officers and directors of other companies.

The application must contain the names and certain identifying information for each person that owns or controls the mine operation or previously owned or controlled the operation during the past five years. Section 112.340 has a list of companies, and Appendix 1-2 contains employer identification numbers for most of these companies. However, it appears this information is incomplete since, based on the information in Appendix 1-1, UtahAmerican Energy is apparently owned by Coal Resources, Inc. No employer identification number is shown for Coal Resources, Inc.

The application is also required to include the names, addresses, permit numbers, regulatory authorities, employer identification numbers, and MSHA numbers together with dates of issuance for coal mining and reclamation operations owned or controlled by the operator or by any person that owns or controls the operator. This information is in Appendix 1-2, but no permitted operations are shown for the following entities: Coal Resources, Inc.; PennAmerican Coal, Inc.; AmCoal Holdings, Inc.; Mill Creek Mining Company; Pinski Corporation; American Coal Sales Company; West Virginia Resources, Inc.; Pennsylvania Transloading, Inc.; Sunburst Resources, Inc.; Ohio Valley Resources, Inc.; and Spring Church Coal Company. It is not known whether these companies have associated coal mining and reclamation operations, and the application needs to state whether they do or do not have permits. If any of them does, all required information needs to be included in the application.

The operator has chosen to include land ownership information for both permit area "B," the proposed addition to the permit area, and for permit area "A," the existing Horse Canyon permit area. Therefore, to be consistent, this review considers the completeness and adequacy of land ownership, legal descriptions and right of entry information for both of these areas.

Section 112.500 of the text and Plates 4-1, 5-3, and 5-4 show surface and mineral ownership in and contiguous to both the existing permit area and the proposed addition. The following items need to be corrected on the maps or in the text:

ADMINISTRATIVE FINDINGS

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1. According to Plates 4-1 and 5-3, W. Marsing Livestock and IPA both own surface land contiguous to the proposed permit area addition. This is not reflected in the text.
2. Plate 5-4 indicates IPA owns fee coal in an area contiguous to the existing permit area, but this is not identified in the text.
3. The text mentions that Plates 4-1 and 5-3 show surface ownership and that Plate 5-4 shows subsurface ownership, but the plates simply say "permit area and ownership." They do not identify whether they are showing surface or subsurface ownership, and this makes it more difficult to use the maps. The maps should be labeled to show what information they contain.
4. Plate 5-4, the subsurface ownership map, has some areas identified as "IPA Surface" and others as "IPA Surface and Mineral." The boundaries are unclear in some areas, and it makes the map very difficult to read. It would be much simpler if all surface ownership was shown on one map and all subsurface ownership was on another.
5. Plate 5-4 shows areas in the NW $\frac{1}{4}$ SE $\frac{1}{4}$, Section 12 (in the proposed addition to the permit area) and the NE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 25 (contiguous to the proposed addition to the permit area), Township 16 South, Range 14 East, where the mineral estate is owned by the State of Utah. This is consistent with the text but is inconsistent with information from the Bureau of Land Management and the School and Institutional Trust Lands Administration (SITLA).
6. SITLA commented in a letter dated April 9, 1999, that they administer lands in other parts of the existing Horse Canyon permit area. The areas identified in the letter but not properly shown on the maps or in the text are:
 - Township 16 South, Range 14 East
 - Section 2: All, surface and subsurface
 - Section 4: S $\frac{1}{2}$ SW $\frac{1}{4}$, Subsurface

The application incorrectly lists the Department of Natural Resources, Division of Sovereign Lands and Forestry as a landowner. SITLA commented that they now administer the land formerly controlled by the Department of Natural Resources Division of Sovereign Lands and Forestry.

The application shows an MSHA identification number, and it says a refuse pile identification number has yet to be issued. The MSHA number shown, 42-00100, is actually the number for the Horse Canyon Mine. A new number will need to be obtained for the new mine, and the application needs to clarify that the number shown is for the Horse Canyon Mine. The operator will also need to obtain an MSHA identification number for the refuse pile.

According to this section of the application, there are no lands, interests in lands, options, or pending bids on interests held or made by the operator for lands contiguous to the proposed addition to the permit area. Plates 4-1 and 5-3 shows federal leases to the south of the proposed addition to the permit area that are labeled "area of future mining."

ADMINISTRATIVE FINDINGS

Findings:

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

R645-301-112.310, The application is required to show the ownership or control relationship of the persons that own or control the operator, including percentage of ownership and location in organizational structure. The information in the application is very unclear. Additional information about officers and directors and coal mining and reclamation operations may be needed.

R645-301-112.500 and -112.600, Land ownership information in Table 1-1 and Plates 4-1, 5-3, and 5-4 needs to be consistent and accurate. Also, these plates need to be labeled to identify what they are showing. It is strongly suggested that one plate be used for all surface ownership and one for all subsurface ownership rather than mixing these categories as the operator has done. Minimally, Plate 5-4 needs to clearly show the boundaries of areas where IPA owns the surface and where they own both the surface and mineral rights. Also, the Utah School and Institutional Trust Lands Administration commented that they administer certain parcels of land in the current permit area, and the application does not show this.

R645-301-112.500, The application incorrectly lists the Department of Natural Resources, Division of Sovereign Lands and Forestry as a landowner. The Utah School and Institutional Trust Lands Administration commented that they administer the land.

R645-301-112.700, The MSHA number shown in the application is for the Horse Canyon Mine. The operator needs to make this clear, and new numbers for the mine, refuse pile, and other structures requiring MSHA approval will need to be included in the application when they become available.

VIOLATION INFORMATION

Regulatory Reference: R645-301-113

Analysis:

According to the application, neither UtahAmerican Energy nor any subsidiary, affiliate, or persons controlled by or under common control with them has had a federal or state permit suspended or revoked in the past five years, and these same entities have not forfeited a performance bond or similar security. Appendix 1-3 contains a list of violations received by affiliated companies for the past three years. It appears from this information there is one violation that has yet to be terminated and that administrative proceedings are ongoing.

Information in this and the ownership and control section will need to be checked in the operator violator system, but it appears the application contains the required information.

ADMINISTRATIVE FINDINGS

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Findings:

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

RIGHT OF ENTRY

Regulatory Reference: R645-301-114

Analysis:

The operator has chosen to include land ownership information for both permit area "B," the proposed addition to the permit area, and for permit area "A," the existing Horse Canyon permit area. Therefore, to be consistent, this review considers the completeness and adequacy of land ownership, legal descriptions and right of entry information for both of these areas.

According to the application, UtahAmerican Energy has subleased 5605.66 acres of federal coal from Intermountain Power Agency (IPA). This was executed on August 24, 1998, and UtahAmerican Energy bases its right to enter on language contained in the leases and quoted in the application. A sublease would also require approval from the Bureau of Land Management, and the application should indicate whether this approval has been given.

Table 1-1 shows the legal descriptions and acreage for the leases. The total acreage shown in this table is 5544.01 acres, a discrepancy of 61.65 acres compared to the information in Section 114.100. In Section 116, the application says approximately 6527 acres are included in the permit area, and Section 411.110 says the permit area is approximately 11,030 acres of which 9320 acres is federal land. The operator needs to reconcile these acreage figures. For consistency, the application should show all acreage for the entire proposed permit area, including permit areas "A" and "B."

Table 1-1 does not show lease information for any of Sections 33 and 34, Township 15 South, Range 14 East. Plate 5-4 indicates they contain federal coal.

The application needs to contain right of entry information for fee coal within the permit area, including the proposed addition.

According to Plate 5-4 and other plates, the surface facilities would be built in Section 15 of Township 16 South, Range 14 East. The land is managed by the Bureau of Land Management, but it is not in the federal coal leases. The application includes a letter from the Bureau of Land Management indicating applications for rights of way for certain facilities have been received, but the application does not include required right of entry information for these areas.

Plate 5-4 shows the mineral estate in the NW¼ SE¼ of Section 12, Township 16 South, Range 14 East, as belonging to the State of Utah. According to Table 1-1, this is part of federal coal lease U-014218, and, according to the Bureau of Land Management, the table is correct.

ADMINISTRATIVE FINDINGS

The "Ownership and Control" section of this review discusses two areas where SITLA commented that they administer lands in the current permit area. They also commented that UtahAmerican Energy presently has no applications, leases, permits, rights of way, or rights of entry with SITLA to conduct any activities on or within these lands.

The operator needs to present complete right of entry information for all parts of the current permit area and proposed addition to the permit area.

Findings:

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

R645-301-114, The operator needs to show the Bureau of Land Management has approved the subleases from IPA to UtahAmerican Energy.

R645-301-114, To be consistent, the operator needs to supply right of entry information in this application for fee coal within the existing permit area. Also, Table 1-1 lists federal coal leases and gives legal descriptions of these leases, but it does not include legal descriptions for Sections 33 and 34, Township 15 South, Range 14 East.

R645-301-114, Acreage figures in the application need to correspond. The application gives at least three different figures for the number of acres of federal land and various figures for the total acreage of the proposed permit area.

R645-301-114, The application needs to include right of entry information for the portions of the proposed revised permit area in the E $\frac{1}{2}$ SE $\frac{1}{4}$ and SW $\frac{1}{4}$ of Section 15 of Township 16 South, Range 14 East, the proposed facilities area.

R645-301-114, Plate 5-4 indicates the mineral estate in the NW $\frac{1}{4}$ SE $\frac{1}{4}$, Section 12, Township 16 South, Range 14 East, belongs to the State of Utah. According to the Bureau of Land Management and Table 1-1, this is incorrect.

R645-301-114, The operator needs to provide complete right of entry information for the entire existing and proposed addition to the permit area.

UNSUITABILITY CLAIMS

Regulatory Reference: R645-301-115

Analysis:

According to the application, the proposed addition to the permit area is not in an area designated as unsuitable for mining, and the operator is not aware of petitions to designate the area as unsuitable.

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Mining operations will not be conducted within 300 feet of an occupied dwelling, but they would be within 100 feet of an Emery County road.

The application says UtahAmerican Energy has received permission from Emery County to construct mining facilities and conduct mining operations within 100 feet of the road and refers to a letter in Appendix 1-4, but the letter in this appendix is from the operator requesting permission to mine within 100 feet of the road. There is no letter from the county.

Findings:

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

R645-301-115, The application needs to contain approval from the public road authority authorizing mining and reclamation operations within 100 feet of a public road.

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

Regulatory Reference: R645-301-116 and -117

Analysis:

The permit term for which the operator is applying is five years. The beginning of construction is planned for 1999 with mining operations ending in 2023. This assumes adjacent federal leases can be acquired.

The certificate of liability insurance is in Appendix 8-2, but the certificate in this appendix does not meet regulatory requirements. The policy needs to include coverage for blasting, and the cancellation clause needs to be modified to show 45 days notice for cancellation. In the cancellation clause, the word "endeavor" and the phrase "but failure to mail such notice shall impose no obligation or liability of any kind upon the company, its agents or representatives" need to be removed or crossed out.

The Department of Water and Power for the City of Los Angeles is named as the certificate holder. The certificate holder needs to be the State of Utah, Division of Oil, Gas and Mining.

Appendix 1-5 contains a copy of the proposed newspaper advertisement. Proof of publication will need to be included in the application when advertising is completed.

No facilities or structures would be used in common with another coal mining and reclamation operation.

ADMINISTRATIVE FINDINGS

Findings:

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

R645-301-117.100, The certificate of insurance needs to be changed to be in compliance with Division requirements.

R645-301-117.200, When it becomes available, the newspaper advertisement for this significant revision will need to be included in the application.

SEVERED SURFACE AND MINERAL OWNERSHIP

For coal mining and reclamation operations where the private mineral estate to be mined has been severed from the private surface estate, the operator has submitted to the Division the documentation required under R645-301-114.200. Analysis and findings regarding these requirements should be provided here.

ENDANGERED SPECIES ACT

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

NATIONAL REGISTER OF HISTORIC PLACES

The Division has taken into account the effect of the proposed permitting action on properties listed on and eligible for listing on the National Register of Historic Places. This finding may be supported in part by inclusion of appropriate permit conditions or changes in the operation plan protecting historic resources, or a documented decision that the Division has determined that no additional protection measures are necessary. Documentation supporting these findings should be made here, or, in the Technical Analysis as necessary.

HYDROLOGIC IMPACT

The Division has made an assessment of the probable cumulative impacts of all anticipated coal mining and reclamation operations on the hydrologic balance in the cumulative impact area and has determined that the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area. However, some data still needs to be collected and some changes have been proposed for the transfer and control of disturbed area runoff treatment. The CHIA, will be addressed in future technical reviews after all technical information is submitted

ADMINISTRATIVE FINDINGS

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RECLAIMABILITY

The Operator has not demonstrated that reclamation as required by the State Program can be accomplished according to information given in the permit application. Technical Analysis findings question statements made by the operator so show practical reclamation practices.

EXISTING STRUCTURES

The Operator has demonstrated that any existing structure will comply with the applicable performance standards of R645-301 and R645-302. Information regarding compliance with the requirements should be referenced to the analysis and findings presented in the Technical Analysis.

RECLAMATION FEES

The Operator has paid all reclamation fees from previous and existing coal mining and reclamation operations as required by 30 CFR Part 870. Information documenting compliance with these requirements should be incorporated into the permit here.

AGRICULTURAL POST-MINING LAND USE

The Operator has satisfied the requirements for approval of a long-term, intensive agricultural postmining land use, in accordance with the requirements of R645-301-353.400.

SPECIAL CATEGORIES AND AREAS OF MINING

The Operator has satisfied the applicable requirements of R645-302..

PUBLIC NOTICE AND COMMENT

The operator has posted and submitted proof of public notice, which took place in the Sun Advocate on March 4, 11, 18 and 25, 1999. A letter was received by Mr. Josiah Eardly expressing concern about impacts to water rights he holds in Section 11, on Lila Point. Documentation of the public notice and comment period required for the Permit was supplied.



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SPECIAL CONDITIONS OR STIPULATIONS TO THE PERMIT APPROVAL

The MRP for Lila Canyon is an extension to the Horse Canyon Permit and designated as Part B. The operator has applied for partial Phase II Bond Release for Part A, the Horse Canyon Mine area. Part A still contains disturbed areas, buildings, a closed portal, sedimentation pond, magazine and water.

TECHNICAL ANALYSIS

INTRODUCTION

The MRP was determined administratively complete on February 24, 1999. At the time it was known by the DOGM staff that some technical deficiencies existed which were evaluated and identified for this assessment.

A technical analysis of the Lila Canyon proposed permit revealed several inconsistencies and deficiencies related to data collection, development techniques, operating and reclamation processes. A summary of the deficiencies are listed below.

The Division received a letter a landowner, Josiah Eardley, on March 30, 1999 in response to the public notice published in the Sun Advocate. He pointed out his interest in surface waters he owns adjacent to the minesite. Although all local and adjacent hydrologic resources are evaluated for mining impacts in the normal review process, we wanted to acknowledge Mr. Eardley's interest for this assessment.

SUMMARY OF OUTSTANDING DEFICIENCIES

The Technical Analysis regarding the proposed permit changes is not complete at this time, pending submittal of additional information by the permittee and further review by the Division, to address outstanding deficiencies in the MRP proposal.

During the development of the Technical Analysis, one or more drafts may be required in order to resolve deficiencies in the application in proposed permit changes. The Draft Technical Analysis will use this section, Summary of Outstanding Deficiencies, to elaborate on changes to the plan which are prerequisites to approval.

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

Two proposed reference areas are shown on Figure 1 of the Lila Canyon Vegetation Inventory report in Appendix 3-2. This map needs to include a north arrow and a scale. It should also show the boundaries of the proposed disturbed area and of vegetation communities.

Although Plate 3-2 shows vegetation communities of the proposed permit area, it does not contain the level of detail needed for the proposed disturbed area. It is difficult to compare this plate with the surface facilities map with any confidence and know where the facilities would be. Section 323.400

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says Plate 3-2 identifies each vegetation reference area, but this map does not show reference areas. Either this statement or the plate needs to be corrected.

Findings:

A List of Technical Deficiencies is provided in the beginning of the document.

SUMMARY OF PERMIT CONDITIONS (Final TA Only)

There are no provisions for permit conditions during the technical deficiency review period.

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ENVIRONMENTAL RESOURCE INFORMATION

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

GENERAL

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

Analysis:

The premining environmental resource information is located in different sections of the PAP. Much of the environmental resource information for the Lila Canyon project was based on information for the Horse Canyon project that is currently being reclaimed.

The operator did not give the Division adequate environmental resource information. Specific deficiencies are addressed in other sections of the environmental resource information section of this TA.

The general deficiencies associated with environmental resource information are inadequate references. Some references are available to the Division through libraries but they will be difficult to locate unless explicit citations are given. A few references are listed in Appendix 7-3, but a complete reference list is needed.

Some references are not readily available to the Division or the public. The operator needs to provide copies of such reports as part of the PAP. Examples of references not generally available include but not limited to:

- Surface geology of Kaiser's south lease Carl property, Emery County, Utah, by V. W. McMath
- Exploration 1974-75 of Kaiser Steel's south Lease Coal Property, Emery County, Utah
- Bureau of Land Management, Environmental Analysis Record, dated 6/9/76, related to Kaiser Steel's Federal lease No. U-32083

Findings:

Information provided in the proposed PAP is not considered adequate to meet the requirement of this section. Prior to approval, the operator must provide the following in accordance with:

R645-301-122, References used in the PAP will either be provided to the Division by the operator or be readily available to the Division. If provided, relevant portions of the published referenced materials will be presented briefly and concisely in the PAP by photocopying or abstracting and with explicit citations.

PERMIT AREA

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

Analysis:

Plate 5-3 and Plate 5-4 both show the permit boundaries for the Horse Canyon Mine. The permit boundaries are divided into Permit Area A, which is the Horse Canyon project that is now being reclaimed and Permit Area B, which is the proposed Lila Canyon project.

Plate 5-3 and Plate 5-4 are both titled "Permit Area and Ownership" the maps are similar but contain different information. For example some landowners listed on the maps are different. The Permittee needs to clarify the landowner information. To avoid confusion, the Permittee should change the title on one of the maps.

In addition to the permit boundary map the Division needs to have a legal description of the permit boundaries to the nearest quarter quarter section. The Division also needs to have the total number of acres in the permit as well as the number of Federal, State and fee acres. The Division is entitled to information listed above by R645-301-521.190.

The proposed mine lies adjacent to two Wilderness Study Areas (WSA). The Turtle Canyon WSA is only partially identified in some of the geologic maps. At this point, a complete draft of the WSA's has not been submitted to determine how much overlap there is between the minesite and the WSA's. However, the Division needs to know the approximate location of the WSA boundaries. The boundaries of the WSA areas must be shown on Plate 5-3 and Plate 5-4 and other permit boundary area maps.

Findings:

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

R645-301-121.200 The operator must have different names for Plates 5-3 and Plate 5-4. Also, the information on the plates must be consistent.

R645-301-521.190 The operator must provide the Division with a legal description of the permit area. The legal description should describe all lands in the permit to the nearest quarter quarter section. The Permittee must also state how many acres in the permit area are Federal, State or private.

R645-301-521.190 The operator must submit the complete locations of the WSA's on the Plate 5-3 and Plate 5-4 and on other permit area maps.

HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION

TECHNICAL ANALYSIS

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

Analysis:

Appendix 4-1 of the application contains information from three cultural resource surveys, including one done specifically for the proposed facilities area. There are several cultural resource sites in the vicinity, but only an isolated artifact was found in the proposed disturbed area. One site is listed on the National Register of Historic Places. It is a tree in Horse Canyon inscribed by Sam Gilson, a prominent rancher and pervader of the uses of gilsonite.

The information in the application is considered adequate; however, the maps and any other information that would allow a person to locate any of the sites should be kept confidential. Also, there is a statement near the end of Section 411.140 indicating an Oarchaeological survey was to be conducted in the spring of 1998 and the results included later. This statement should be changed since the application includes a copy of the report for this survey.

There are no cemeteries in or within 100 feet of the proposed addition to the permit area, and it contains no units of the National System of Trails or Wild and Scenic Rivers system.

Findings:

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

R645-301-121.200, The operator must modify the statement towards the end of Section 411.140 indicating a cultural resource survey was to be done in the spring of 1998 and the results included when available. The survey has been completed and the results are included in the PAP.

R645-301-121.200, Any information that would enable a person to locate any of the cultural resource sites must be made confidential.

CLIMATOLOGICAL RESOURCE INFORMATION

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

Analysis:

The PAP contains information on the climatological factors that are representative of the proposed permit area. The information, on page 17 of Chapter 7 and Page-1 of Appendix 7-3, is minimal but includes average seasonal precipitation, average direction and velocity of prevailing winds, and seasonal temperature ranges. At this time the Division has not deemed it necessary to request additional data to ensure compliance other regulatory requirements.

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The operator presents climatological information beginning on page 17. Average precipitation is 12 inches annually. Average prevailing winds are from West to East with an average velocity of 2.74 knots. Average annual temperatures range from a high of 47 degrees F to a low of 45 degrees F.

Summer thunder showers often produce intense precipitation events that cause high discharge volumes. This information can provide valuable information in surface structure construction.

The operator should collect and provide precipitation information to establish trends and rates of rainfall to ensure that hydrologic structures are designed to meet the intense precipitation flows of the summer thunder shows common to the area.

Findings:

The operator met the minimum requirements of this section.

VEGETATION RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.19; R645-301-320.

Analysis:

Appendices 3-1 and 3-2 contain vegetation information about the Horse Canyon and "South Lease" areas. Additional information is in the existing Horse Canyon plan. These studies were done in 1981, 1982, 1983, 1985, and 1998. With the exceptions of a study by Patrick Collins in Appendix VIII-1 in the current Horse Canyon plan and a 1998 vegetation inventory in Appendix 3-2 of the application, the application does not state who conducted the studies as required in R645-301-120.

The 1998 vegetation inventory was site-specific to the proposed disturbed area and nearby proposed reference areas. Figure 1 in this study shows sampling locations in two vegetation communities, pinyon/juniper and shrub/grass. Sampling in the proposed disturbed area was confined to the lower part of the area that would be disturbed. There are no samples in over half the proposed disturbed area, and while this is possible in random sampling, it is unlikely.

The report says 1,000 samples were taken in each vegetation type. Each transect is considered a sample, not each point; therefore, only ten samples with 100 points in each were taken for the four different areas sampled.

Appendix A of the Division's Vegetation Information Guidelines gives sampling methods that should be used for baseline vegetation inventories. The minimum sample size to be used with the point method is the highest of either 15 or the number obtained from a formula in the guidelines. This sample size is required for bond release sampling and recommended for baseline sampling. There need to be enough samples for baseline sampling that statistical analyses can be done.

As discussed above, only ten samples were taken in each area in the study described in Appendix 3-2, and not all of the proposed disturbed area appears to have been included in the sample.

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Therefore, the operator needs to take samples in the areas not included in the previous sample and supply this information in the application. It appears from Plate 3-2 that the shrub/grass community comprises a much smaller proportion of the proposed disturbed area than the pinyon/juniper community, and it is possible this community was adequately sampled. Adequate samples may also have been taken in the pinyon/juniper reference area. However, it is impossible for the Division to make this determination without any statistical information or raw data.

The report says two-tailed t-tests with a two-sample equal variance were performed on each data set to determine similarity between the disturbed areas and the reference areas. The report goes on to say there was a 95% similarity in species composition between the proposed disturbed and reference areas for the shrub/grass vegetation type and 96% similarity for the pinyon/juniper areas.

The Division requires that certain aspects of the reference area and proposed disturbed area be similar, including soils, vegetation cover, aspect, slope, species composition, and productivity. There is inadequate information in the application for the Division to be able to determine whether the reference areas can be accepted.

While cover values for the proposed disturbed and reference areas appear to be similar, there is not enough information to calculate whether they are statistically equal. The report in Appendix 3-2 says the species compositions are similar in the proposed reference and disturbed areas, but there is no indication cover values were compared statistically.

It is not clear how the t-test was applied to determine similarity of species composition. To show similarity through a regression analysis, the regression line would need to be compared to a line with a slope of one and x- and y-intercept at the origin. The information in the application shows slopes and y-intercepts, but the application does not statistically compare them to a slope of one and x- and y-intercepts of zero. Nevertheless, it appears the proposed reference and disturbed areas are very similar, and there is no reason to suspect that complete data and analyses will show otherwise.

In the regression analyses, the species not encountered in either the proposed reference area or the proposed disturbed area should not be used. These numbers skew the data and are not meaningful: numerous species, orange trees, for example, are found in neither area and could, theoretically, be used in the analysis.

The comments in this review about the analyses for species composition also apply to the comparisons of woody species. However, woody species densities appear to be more different between the proposed disturbed and reference areas than the cover values. The Division needs more information before it will be able to decide whether these differences can be accepted.

Vegetative cover in the proposed disturbed pinyon/juniper community was 19.7%, and it was 24.3% in the proposed reference area. Predominant species were Utah juniper, Salina wild rye, pinyon, and green rabbitbrush. No cheatgrass was encountered.

Cover values were 43.0% and 42.7% for the proposed disturbed and proposed reference areas in the shrub/grass community. Species composition consisted primarily of cheatgrass, green rabbitbrush, and Salina wild rye. Cheatgrass or downy brome, an exotic annual, provided about 41%

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and 38% relative cover for the proposed disturbed and reference areas, respectively. The amount of cheatgrass indicates there has been previous disturbance, possibly from fire.

The 1998 vegetation study indicates cover from lichens was 7.2% in the shrub/grass community and 7.9% in the pinyon/juniper community of the proposed disturbed area. While lichens are not classified as vegetation, they can be an important part of the ecosystem and can contribute to vegetation productivity and erosion control. The proposed grass/shrub and pinyon/juniper reference areas had 5.8% and 2.7% cover from lichens, respectively.

The 1998 vegetation study in Appendix 3-2 indicates a *Ferocactus* sp. was found in the shrub/grass proposed disturbed and reference areas. The only species of *Ferocactus* listed in A Utah Flora grows in limestone and dolomite outcrops and gravels in Washington County. It would be very unusual to find this species in Emery County.

Another anomaly identified in the area is Engelmann spruce. A Utah Flora indicates this species has been collected from elevations as low as 7500 feet, but the mine site is at about 6000 feet. When additional vegetation data is collected, the operator or its representative should check the identification of the plants classified as Engelmann spruce.

The information in the other vegetation studies in Appendix 3-2 is useful for its description of vegetation resources in the general area. The vegetation communities described in this appendix correspond generally to the communities shown on Plate 3-2 but do not match exactly. Major vegetation communities in the proposed addition to the permit area are pinyon/juniper, sagebrush, and saltbush/wild rye. Plate 3-2 also shows a fairly significant escarpment area, and it is assumed this area has little vegetation.

The application is required to contain productivity estimates for the area proposed to be disturbed and the associated reference areas (if that is the method to be used to determine revegetation success). Appendix 3-7 contains a letter from George Cook of the Natural Resources Conservation Service with productivity estimates for two shadscale/grass and for two grass/shrub communities. It is unclear from the letter where these estimates were done. Most of the proposed facilities area has a pinyon/juniper community, but there is no productivity estimate for a pinyon/juniper community.

Findings:

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

R645-301-131, All technical data submitted in the permit application must be accompanied by the names of persons or organizations that collected and analyzed the data, dates of the collection and analysis of the data, and descriptions of the methodology used to collect and analyze the data. This information is not complete for some studies in Appendices 3-1 and 3-2.

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R645-301-321, The operator needs to provide vegetation information adequate to statistically compare the area that would be disturbed with a reference area or range site or adequate to use as a baseline success standard. This includes an adequate number of samples to compare proposed disturbed and reference areas statistically. The entire proposed disturbed area needs to be included in the sample. There are also some problems with the regression analyses that need to be corrected. In addition, the operator should provide a discussion of other aspects important in comparing the proposed disturbed and reference areas, such as slope, aspect, and soils.

R645-301-321, The operator needs to check plants identified as Ferocactus sp. and Engelmann spruce. If the identifications are correct, the plants would be state records for elevation and range.

R645-301-321.200, The application needs to contain vegetation productivity information for the areas that would be disturbed. Appendix 3-7 contains productivity information, but it is unclear whether the information is for the proposed mine site. Most of the proposed disturbed area has a pinyon/juniper community, and there is no productivity information for a pinyon/juniper area.

R645-301-323, The application needs to contain maps showing the reference areas and vegetation communities in relation to the proposed surface facilities. The maps need to contain information as required in R645-301-140.

R645-301-323, Section 323.400 contains a statement that Plate 3-2 identifies each vegetation reference area, but this plate does not show the reference areas. Either the text or the plate needs to be corrected.

FISH AND WILDLIFE RESOURCE INFORMATION

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

Analysis:

Wildlife Information

Section 322.220 and Plate 3-1 contain wildlife information. The proposed disturbed area contains year-long habitat for mule deer and Rocky Mountain bighorn sheep. Other parts of the proposed addition to the permit area contain critical deer range and winter habitat for elk, and nearby areas are inhabited by pronghorns. The text discusses the types of habitats where these species occur and certain aspects of their life histories.

The text indicates the proposed disturbed area is critical deer and elk winter range and habitat for Rocky Mountain bighorn sheep. This is not clear from Plate 3-1. The map needs to show the boundaries for the different categories of habitats for each species. For example, it should show critical deer winter range, high priority deer winter range, critical deer summer range, and so forth.

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Raptor surveys were conducted in the area in 1990 and 1998. Plate 3-2 shows locations of three nests in or near Lila Canyon, and Appendix 3-5 contains further information, including two maps showing nest locations. Wildlife Resources commented that the 1998 raptor survey documented three nests at the mouth of Lila Canyon. It is assumed that other nests previously found in this area could not be found in 1998.

It is impossible to tell how the nest locations shown on the three maps in the application correlate. Only one of the nests shown on Plate 3-1 appears to be in the same location as a nest shown on the 1998 survey map included in Appendix 3-5. The other two nests appear to be in different locations. However, this is unclear because Plate 3-1 does not give enough detail of the topography.

The operator needs to include all available information about raptor use of the area, including locations of nest sites and whether they were used in the year surveyed. It is preferred that nest locations be shown on a single map because of the difficulty using the current maps. Maps are required to include all the types of information that are set forth on U.S. Geological Survey maps of the 1:24,000 scale series. This includes contours, and contours are not shown on Plate 3-1. The maps should also show the location of the proposed surface facilities. The Division needs this information to know the topography of the area in relation to both the surface facilities and the nests.

Additionally, the maps showing raptor nest locations need to include an overlay of the mine workings. With this information, the Division and operator can tell which nests are likely to be affected by subsidence. This requirement is supported by R645-301-322.100.

It is unknown whether all potential habitats in the proposed permit area were surveyed. The operator needs to show those areas that have been checked for raptor nests.

The application says on page 8 of Chapter 3 that there is no current raptor survey. This statement should be eliminated or modified. A raptor survey was done in 1998.

It will be necessary for the operator to continue to conduct raptor surveys in the future, at least for areas that could be affected by mining operations, including subsidence and disturbance from the surface facilities. The application needs to include a plan to monitor nesting habitats that could be affected by the mining operations.

Portions of the facilities area are within the one-half-mile buffer zone for at least two and possibly as many as seven raptor nests (it is impossible to tell because of the difficulties discussed above). From the maps, it is clear that the mine would be visible from at least two of these nests, but the application needs to discuss the disposition of all of these nests and indicate whether the facilities area would be visible from them. The operator will need to coordinate its monitoring of these nests with the Division, the Fish and Wildlife Service, and the Division of Wildlife Resources.

The application says the intermittent stream channels lack riparian vegetation, so many birds of high federal interest would not inhabit the area. It says the lack of trees and large shrubs precludes use by woodpeckers and flycatchers, and the stream channel does not contain invertebrates or fish.

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While the number of bird species in the area is almost certainly limited by the lack of riparian areas, there are flycatchers and numerous other birds that inhabit pinyon/juniper and shrub/grass areas. The statements in the plan indicating flycatchers are precluded from the permit area should be modified.

In addition to this information, the application references a Division of Wildlife Resources publication entitled "Fauna of Southeastern Utah and Life Requisites Regrading their Ecosystems." This publication is available to the Division, and it contains general information about species that inhabit the area.

Threatened and Endangered Species

Table 3-1 lists eleven listed threatened or endangered species that may occur in Utah, but the list is incomplete. The species of concern are only those that have potential of being affected by the proposed mine, so it is not necessary to have a list of all species in the state. Either the table needs to be deleted or it needs to show, as it purports, all listed species in Utah.

The application contains a letter from the Fish and Wildlife Service listing threatened and endangered species that occur in Emery County. The Division received comments from the Fish and Wildlife Service dated April 14, 1999, indicating the listed endangered southwestern willow flycatcher is now included as a species potentially in Emery County.

The Fish and Wildlife Service commented that the operator needs to assess vegetation in the proposed addition to the permit area to determine whether southwestern willow flycatcher habitats exist. According to their letter, breeding habitats are typified by areas of dense willow or willow mixed with a variety of riparian shrubs and small trees. While the application documents there are no perennial water sources or riparian areas, willows and other vegetation normally associated with riparian areas often occur near seeps and other sources of enhanced soil water. Therefore, the operator needs to confirm whether these types of vegetation exist in the area.

Bald eagles are fairly common winter residents of Utah, and they could visit the area. However, they generally like to roost in large trees that do not exist in the proposed disturbed area. Therefore, it is unlikely they will be adversely affected.

Peregrine falcons have recently been found nesting in a few places in the Book Cliffs and Wasatch Plateau although raptor surveys have failed to locate them in the proposed addition to the permit area. The operator will need to continue to look for them in future raptor surveys.

Four fish species of the Upper Colorado River drainage have been listed as threatened or endangered, and although the mine would not affect them directly, water usage has been determined to adversely affect these species. This issue is discussed in the section of this review discussing the fish and wildlife protection plan.

Black-footed ferrets have historically been found in eastern Utah, but there have been no confirmed sightings in recent years. If any were in the area, it is most likely they would be affected by road construction.

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(Information in the following discussion on the distribution of plants is from A Utah Flora or is verbal information from Bob Thompson, a botanist with the Forest Service.)

Barneby reed-mustard (*Schoenocrambe barnebyi*) grows at elevations of about 5,600 to 5,700 feet on the Chinle formation. The proposed disturbed area is at a higher elevation, and it does not contain the Chinle formation. Therefore, the area is not considered a habitat for this species.

The reported elevation range for Jones cycladenia (*Cycladenia humilis* Var. *jonesii*) overlaps the proposed disturbed area, but it grows in sandy gypsiferous soils derived from the Cutler, Summerville, and Chinle formations, and these are not found in the proposed addition to the permit area.

Last chance *Townsendia* (*Townsendia aprica*) grows in salt desert shrub and pinyon-juniper communities on clay or clay-silt exposures of the Mancos Shale. It has been found mainly in the Fremont Junction area and not on the east side of the San Rafael Swell.

The Maguire daisy (*Erigeron maguirei*) has only been found in a few places in the San Rafael Swell and in Capitol Reef National Park in canyon bottoms in the Wingate and Navajo Sandstone formations. There is essentially no possibility this species could occur in the proposed addition to the permit area.

Three cactus species are included on the Fish and Wildlife Service list. The San Rafael cactus or Despain footcactus (*Pediocactus despainii*) are very difficult to find and grows in open pinyon/juniper communities in and on the edges of the San Rafael Swell. This is the type of habitat in the proposed disturbed area, and, according to Bob Thompson of the Forest Service, there is potential this species could occur in the area.

According to Mr. Thompson, the Wright fishhook cactus (*Sclerocactus wrightiae*) also has potential of occurring in the area. It grows in salt desert shrub and shrub/grass to juniper communities in soil derived from Mancos Shale and other formations.

One of the operator's consultants indicated verbally personnel from his company searched for these plants and did not find them. The information was apparently included in the Environmental Analysis. The application needs to document that this search was performed and give results.

The Winkler cactus (*Pediocactus winkleri*) is a tiny plant that grows in salt desert shrub communities at lower elevations than those in the proposed disturbed area. Its distribution is more to the west, and it is unlikely it occurs in the proposed addition to the permit area.

Findings:

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

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R645-301-322, Table 3-1 purports to show federally listed threatened or endangered species that may occur in Utah, but it only show a portion of the listed species. The operator needs to either delete this table or list all species potentially occurring in Utah.

R645-301-322, The operator needs to confirm whether habitats for the southwestern willow flycatcher exist in the proposed addition to the permit area.

R645-301-322, Plate 3-1 shows big game habitats in the area, but it needs to distinguish between different types of habitats, such as critical deer winter range, critical deer summer range, etc.

R645-301-322, The maps showing wildlife habitats need to contain the information provided on USGS 1:24,000 scale maps, including contours. At least one of the maps showing raptor nests should show the area of the proposed facilities, and information on nest locations should be consolidated onto one map. Also, a map needs to include an overlay of the mine workings to better show which nests could be affected by subsidence.

R645-301-322, The application needs to discuss the raptor nests near the proposed facilities area and show whether they are visible from the mine or if they are shielded by vegetation or the topography. It also needs to discuss potential effects from the proposed mine.

R645-301-322, The operator needs to affirm whether all potential raptor nesting habitats in the proposed addition to the permit area have been surveyed for nests.

R645-301-322, The statement that there is no current raptor survey should be modified. There is a survey from 1998

R645-301-322, The operator needs to include a plan for continued monitoring of raptor nesting habitats that could be affected by the mining operations.

R645-301-322, The application indicates the lack of riparian areas precludes the presence of flycatchers. There are flycatcher species, and several other birds, that inhabit pinyon/juniper and shrub/grass habitats, so this statement should be modified.

R645-301-322, It appears the operator's consultant searched for and did not find Despain footcactus (*Pediocactus despainii*) and the Wright fishhook cactus (*Sclerocactus wrightiae*) in the proposed disturbed area. This needs to be documented in the application.

SOILS RESOURCE INFORMATION

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

Analysis:

Chapter 2, Soils, Sections 210 through 224, discusses the soil resources within the proposed Lila Canyon Mine. Relevant soils information includes prime farmland investigation, current and published soil surveys, soil characterizations, and substitute topsoil identification. The Analysis section discusses resource information as follows:

- Prime Farmland Investigation
- Soil Survey Information
- Soil Characterization
- Substitute Topsoil

Prime Farmland Investigation

A Prime Farmland site investigation was performed by the Natural Resources Conservation Service (NRCS). A determination was made that no Prime Farmland or farmlands of statewide importance were found within the proposed Lila Canyon coal lease area and support facilities area because there is no developed irrigation system on arid soils. The determination letter from the NRCS dated June 8, 1998, was sent to Environmental Industrial Services and is included in Appendix 2-1.

Soil Survey Information

The soil survey information contains both general and site specific surveys as follows:

(1) General, Third Order Soil Survey

Appendix 2-2 and Soils Map 2-1 make up the general Order 3 soil survey. The unpublished Order 3 soil survey for Emery County is currently in progress by the U. S. Department of Agriculture, Natural Resource Conservation Service (NRCS). Portions of the Order 3 soil survey relevant to the Lila Canyon Mine project has been provided by the NRCS. The soil map (Plate 2-1) is scaled at 1:24,000 and includes map unit descriptions.

The Order 3 soil survey information provided by the NRCS identifies four soil map units at the mine surface facilities area as:

- BNE2 Strych very bouldery, fine sandy loam, 3 to 20% slopes
- BMD Strych very stony fine sandy loam, 3 to 30% slopes
- NGG2 Gerst-Strych-Badland complex, 30 to 70% slopes
- R2H Travessilla family-rock outcrop family

In addition to the above soils, the Order 3 soil survey (Appendix 2-2) and a soil map (Plate 2-1) provides identities and information on the following soils as located within the transportation and utility corridors:

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- BL2 Badland
- NXC Travessilla sandy loam, 1 to 8% slopes
- RR Senchert loam, 3 to 15% slopes

Appendix 2-2 also provides typical soil pedon and soil descriptions for:

- Soil series - Strych, Gerst, Travessilla and Senchert
- Soil families - Travessilla and Senchert.

Additional soil map units are shown on the general Order 3 soil map 2-1 as located within the Permit Area "B" for Lila Canyon boundary. These include DHG2, DSG2, HUG, KXH, MHE, MRG, MSC, MUE, NVF2, RWG, UMF2, VMF2, and VOH. Soil names, soil descriptions, and soil pedon descriptions are not provide for these soil units, either on map 2-1 or in Appendix 2-2.

(2) Site specific, First Order Soil Surveys

In August 1998, a site specific Order 1 soil survey for the surface facilities area was performed and prepared by Mr. Daniel Larsen, Soil Scientist, Environmental Industrial Services (Appendix 2-3). The survey contains soil descriptions, soil pedon descriptions, soil salvage suitability analysis, laboratory soil testing data, field soil profile descriptions, soil and landscape photographs, soils map, and salvageable soils map. The detailed soil survey of the surface facilities site identifies six soil map units as follows:

- SBG Strych boulder fine sandy loam, 5 to 15% slopes
- VBJ Strych very bouldery fine sandy loam, 5 to 15% slopes
- XBS Strych extremely bouldery sandy loam, 10 to 45% slopes
- RBL Rubbleland-Strych-Gerst complex, 20 to 70% slopes
- DSH Strych fine sandy loam variant, 3 to 8% slopes
- RBT Rocks outcrop - Travessilla family complex

All mapping and soil survey work were performed according to the standards of the National Cooperative Soil Survey. However, the Order 1 soil survey map has discontinuous contour lines, for both 25 and 5 feet contour intervals. Based on the site-specific soil descriptions, and laboratory data, each of the soils was classified according to current, unpublished NRCS soil taxonomy, and correlated to specific soil series names, as best could be determined since the NRCS Order 3 survey is unpublished and unfinished.

Soil productivity of existing soils was determined by Mr. George Cook from the Natural Resources Conservation Services and results are shown in Appendix 3-7.

Soil Characterization

Soil pedons were characterized by the soil horizons at each sampling location. All profile descriptions were recorded on standard NRCS forms and are provided in Appendix D within Appendix 2-3. The soil horizons at each sampling location were sampled and characterized according to the State of Utah Division of Oil, Gas and Mining (DOG M) guidelines for topsoil and

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overburden¹. Sampled parameters included: soil texture; pH; organic matter percent; saturation percent; electrical conductivity; CaCO₃; soluble potassium, magnesium, calcium and sodium; sodium absorption ratio, and extractable selenium and boron. Available water capacity, alkalinity, total nitrogen and available phosphorus were not analyzed at this time; these parameters can be tested at reclamation time. Organic matter percent was substituted for organic carbon. Soil texture by hand-texture method, rock fragment content (% by volume), and Munsell colors were determined in the field by Mr. Larsen. Generalized soil properties are summarized as follows, which includes percent surface stones and boulders for the Lila Canyon facilities site is for each soil type:

Map Unit	%Surface Stones & boulders	Soil Depth	% Slope	Permeability	Water Erosion Potential
SBG	3-8	Very Deep > 60"	5-15	Moderate to Moderately rapid	Moderate low
VBJ	8-20	Very Deep > 60"	5-15	Moderately rapid	Moderate low
XBS	20-40	Very Deep > 60"	10-45	Moderately rapid	Low to moderate
DSH	< 2	Very Deep > 60"	3-8	Moderately rapid	Moderate
RBL	> 50	Shallow to Deep	20-70	Slow to moderately rapid	Severe on shale, Low on rock
RBT	> 50	Shallow	30-100	Slow to moderately rapid	Severe to Low

Soil samples were sent to Inter-Mountain Laboratories, Inc. for analysis. Appendix C of Appendix 2-3 contains the laboratory data sheets for all analysis on the 22 samples and duplicate analysis. Overall, soil laboratory test results show a good rating for soil materials, except as noted below:

- pH was high (rated poor) in only one sample - LC3, 24-48" with pH 8.6. Sample LC4, 40-58" had a pH of 8.2, which is rated fair to good. All other samples tested from pH 7.1 to 8.0 for a good rating.
- Electrical Conductivity and SAR were high in samples LC3 48-55" and LC5 40-58". For sample LC3 48-55", the SAR was 18 with an EC of 2.48. Since the SAR is greater than 15,

¹Leatherwood, J., and Duce, D., 1988. Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining. State of Utah Department of Natural Resources, Division of Oil, Gas and Mining.

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soil materials below 48 inches are considered unacceptable. For sample LC5 40-58", the SAR measured 15 with an EC value of 8.89 mmhos/cm. The SAR is rated unacceptable for coarse textured soils and the EC is rated poor; therefore, soil materials below 40 inches are considered marginal at best.

Sample LC10 0-4" had an EC of 2.58 mmhos/cm which has a rating of fair. All other samples had EC values ranging from 0.29 to 4.0 mmhos/cm, which is rated as good.

- **Soil textures** classified as sandy loam, except for samples LC1 3-10" and LC10 0-4" which were sandy clay loam and silt loam respectively. Based on soil texture, all soils tested are rated as good for reclamation material.
- **Available water holding capacity** values ranged from good to poor. The majority of samples were rated as fair; with LC1 0-3" rated poor; and LC1 10-23", LC5 29-40", LC5 40-58", and LC6 5-18" rated good.
- **Soluble boron** tested at less than 5.0 mg/kg on all samples, resulting in a good rating.
- **Extractable selenium** content tested at 0.2 mg/kg or less, which is considered good since all readings are less than 0.10 mg/kg.
- **Organic matter** content is relatively low in these soils. Generally, the surface soils ranged between 1.0 to 1.5 percent organic matter and the subsoils were about 0.5 percent.
- A **calcic horizon** was verified in soil pedons LC1, LC5 and LC6 with CaCO₃ ranging between 20 to 21 percent. Pedons LC3 and LC4 have some CaCO₃ accumulation in the subsoil but are less than the 15 percent needed to be classified as a calcic horizon.
- **Soluble magnesium** exceeded soluble calcium below depths of 30 inches. In general for these samples, the soluble calcium decreases and magnesium increases with depth.

Normally, higher ratios of calcium to magnesium are desirable for plant growth. Magnesium usually tends to be leached from soil less readily than calcium, which often results with the total amount of calcium in soils exceeding that of magnesium. However, this is not the general rule, particularly for soils of humid regions. The magnesium content varies from negligible amounts in highly leached, sandy soils to as much as several percent in calcareous soils. Magnesium is supplied to plants primarily from exchangeable and soluble forms. Too high a proportion of exchangeable magnesium has an adverse effect on other exchangeable nutrient cations, thus, soils containing excess exchangeable magnesium tend to result in nutrient deficiencies for other cations.

- The **percent rock content** within the mine site disturbance or proposed facilities area is the main obvious deterrent for soil suitability based on the current DOGM guidelines. Although DOGM suitability criterion considers >30% (by volume) rock fragments (for both gravels <3" in size and cobbles 3 to 10" in size) to be unacceptable, and >10% stones and boulders >10" in size to also be unacceptable, the recent trend by DOGM is to salvage "native soils"

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with "intrinsic or indigenous rock content." Appendix 2-3 reports that native soils can be salvaged containing a higher rock content than the DOGM guidelines deem acceptable. Ultimate site reclaimability using these rocky soils enhances reclamation success by providing an environment similar to native conditions. Higher rock content soils provide for a more stable reclaimed surface, aid in water harvesting and ultimate water holding capacity of interstitial soils, and create wildlife habitats and niches on the surface were surface boulders and larger cobble sized rocks are placed.

Substitute Topsoil

The PAP does not propose any borrow as a source for substitute topsoil.

Findings:

Information provided in the application is not considered adequate to meet the requirements of this section of the regulations. The operator must provide the following in accordance with:

R645-301-222 through R645-301-222.300, Additional soil map units are shown on the general Order 3 soil map 2-1 as located within the Permit Area "B" for Lila Canyon boundary. These include DHG2, DSG2, HUG, KXH, MHE, MRG, MSC, MUE, NVF2, RWG, UMF2, VMF2, and VOH. For each map symbol provide soil name, soil description, and soil pedon description.

R645-301-141, The Order 1 soil survey map, both in Appendix 2-3 and on Plate 2-2, and the Salvageable Soils Map, Appendix A2 of Appendix 2-3, have discontinuous contour lines, for both 25 and 5 feet contour intervals. Present this map with continuous contour lines.

R645-301-222, Provide site specific information for soils located at the fan portal site. The Order 1 soil survey needs a soil pit, soil characterization and description.

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

R645-301-223, the permittee must revise the soil map units delineated on Map 12, Soils Survey Map. Areas covered by coal mine waste where coal mine waste is covered by topsoil cannot be classified within the map units presented on the drawing or as described in the text of the plan. The map and plan information must meet the requirements of the USDA/SCS National Cooperative Soil Survey as incorporated by reference in this section and as referenced by R645-302-314.

R645-301-232, the permittee must quantify the amount topsoil material and show the location of topsoil materials to be stockpiled within the permit area. Adequate

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drawings and design information must be provided in the plan to demonstrate that these areas adequately protect the topsoil from erosion.

LAND-USE RESOURCE INFORMATION

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

Analysis:

Premining land uses of the proposed addition to the permit area include grazing, wildlife habitat, coal mining, and limited recreation. The application says no agricultural activities have been or are currently being performed in the permit area; however, grazing is considered an agricultural activity. Grazing allotment boundaries are shown on Plate 4-2, and wildlife habitats are shown on Plate 3-1. Production in the grazing allotments in terms of animal unit months is shown in Table 4-3.

According to the application, Lila Canyon is within an area identified by the Bureau of Land Management as the Range Valley Mountain Habitat Management Plan Area. A habitat management plan was adopted in 1991 to provide management for various wildlife and for access management.

The proposed addition to the permit area does not support a wide variety of land uses because of the limited access and remote location, rugged topography, limited soils, and lack of rainfall and surface water. Water rights are discussed in Chapter 7, and water uses include stock watering and various uses for coal mining.

The land is zoned by Emery County for mining and grazing. A small portion of the proposed permit area addition overlaps with the Turtle Canyon Wilderness Study Area.

The Bureau of Land Management's 1999 Utah Wilderness Inventory identifies areas with wilderness character in addition to the previously-identified wilderness study areas. One of these areas overlaps the proposed addition to the permit area and is very close to, and may even overlap, the proposed disturbed area. The application needs to discuss the results of this inventory and indicate the management plans the Bureau of Land Management has for the designated area and surrounding areas.

There has been some previous mining activity in Lila Canyon, but it is unknown how much coal was mined. The road was built in the 1950's to provide access for coal exploration. There is a sealed portal in the left fork of the canyon where the Sunnyside Seam was exposed and coal mined, and the coal was probably transported back through the Horse Canyon Mine. It is believed mining occurred during the 1970's or early 1980's. If mining occurred during this time period, it should have been regulated under Title V of SMCRA.

Findings:

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

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R645-301-411, The application says there are no agricultural activities within the proposed addition to the permit area, but grazing is considered an agricultural activity. This needs to be corrected.

R645-301-411, The Bureau of Land management's 1999 Utah Wilderness Inventory indicates part of the proposed addition to the permit area has wilderness characteristics, including land immediately adjacent to and possibly overlapping the proposed disturbed area. The application needs to identify this and discuss the Bureau of Land Management's management plans for the area.

ALLUVIAL VALLEY FLOORS

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

This section applies to surface coal mining and reclamation operations on areas or adjacent to areas including alluvial valley floors in the arid and semiarid areas west of the 100th meridian.

Analysis:

The Division makes the determination if alluvial valley floor exist in the permit area. The Division's findings are given in the operation section of this TA.

Findings:

The operator met the minimum requirements of this section.

PRIME FARMLAND

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

Analysis:

A Prime Farmland site investigation was performed by the Natural Resources Conservation Service (NRCS). A determination was made that no Prime Farmland or farmland of statewide importance was found within the proposed Lila Canyon coal lease area and support facilities area because there is no developed irrigation system on arid soils. The determination letter from the NRCS dated June 8, 1998, was sent to Environmental Industrial Services and is included in Appendix 2-1.

Findings:

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The operator met the minimum requirements of this section.

GEOLOGIC RESOURCE INFORMATION

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

Analysis:

Geologic information includes a description of the geology of the proposed permit and adjacent areas down to and including the stratum immediately below the lowest coal seam to be mined. The coal seams and adjacent strata comprise an aquifer that may be adversely impacted by mining. The geologic description includes areal and structural geology of the permit and adjacent areas and other parameters that may influence reclamation. It **does not adequately describe** how the areal and structural geology may affect the occurrence, availability, movement, quantity, and quality of potentially impacted surface and ground water.

The application **does not include** geologic information in sufficient detail to assist in determining the probable hydrologic consequences of the operation upon the quality and quantity of surface and ground water in the permit and adjacent areas, including the extent to which surface- and groundwater monitoring is necessary, and whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area. The information is not sufficient to assist in determining all potentially acid- or toxic-forming strata down to and including the stratum immediately below the coal seam to be mined and determining whether reclamation can be accomplished. Geologic information is not sufficient to assist in preparing the subsidence control plan.

Required resource maps and plans and detailed site specific information are based on published geologic information, permit applications of the adjacent Sunnyside and South Lease areas, and drilling records of U. S. Steel Corporation and the Los Angeles Department of Power and Water. Some of these are included in the PAP, others are readily available, but some of the information is proprietary or otherwise not readily available to the Division and public.

On lands within the permit and adjacent areas, strata above the coal seam to be mined will not be removed, so samples have been collected and analyzed from test borings or drill cores. Bore holes S-1 through S-23 were drilled between 1948 and 1975. S-24 through S-31 were drilled in 1980 and 1981, and an unsuccessful attempt was made to convert S-26, S-28, and S-31 to groundwater observation wells.

S-26 and S-31, located south of the Williams Draw Fault, were offset with shallow piezometers A-26 and A-31 to observe ground water in the alluvium (Table 6-3). Table VI-3 does not indicate that these wells have been plugged and abandoned. Two other wells were bored in Horse Canyon to monitor water in the alluvium there, but these two wells have since been sealed according to the PAP (Chapter 7, pp. 7, 10). There are no logs or other geologic data from these four wells in the PAP.

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S-32 was drilled in 1981 and completed as a piezometer in the Grassy Member of the Blackhawk Formation. The location of S-32 is not shown on any map. There are no logs or other geologic data from S-32 in the PAP.

In 1993 and 1994 IPA-1, IPA-2, and IPA-3 were drilled. Results of proximate and ash analyses of "floor" and "roof" from IPA-1, IPA-2 (roof only), and IPA-3 are in Appendix 6-2; however, the proximate analyses show these are coal samples, not samples from strata overlying and underlying the coal seam. There are also proximate, ultimate, sulfur, ash, and several other analyses for "middle" coal samples from the three bore holes. Sulfur analyses include total and pyritic sulfur.

Logs of bore holes IPA-1, IPA-2, IPA-3, S-14, S-27, and S-32 are in Appendix 6-1, and ground water was noted on the logs for IPA -1, IPA-2, S-27, and S-32. These logs show lithologic characteristics, including physical properties and thickness of each stratum that may be impacted. In addition to the bore holes, coal seams and adjacent strata were measured at seventeen outcrop locations in 1974 and 1975. Lithology and thickness of the coal seams and adjacent strata, based on the bore holes and measured outcrop sections, are shown on Plate 6-5.

Engineering properties of the strata immediately above and below the coal seam to be mined are listed in Table 6-6. Data are based on core samples from bore holes S-18 and S-22.

Access to the underground workings of the Lila Canyon Mine will be provided by two rock slopes driven up-dip from the top of the Mancos Shale to the coal seam. Rock that will be removed from the tunnels will be called "slope rock", and it fits most closely into the classification of underground development waste. The slope-rock underground development waste will contain mostly shale, sandstone, and mudstone. Traces of coal may be found, but the operator feels the amount will be insignificant. Slope-rock will be used to fill in areas to be used as pads in the coal pile storage areas, with any additional being placed in the refuse pile, or it may be crushed and used for gravel (Section 528.320), although the use for the gravel is not described.

Coal processing waste from the crusher will be placed in disposal areas within the permit area. The refuse pile has been designed as a location for the storage of underground development waste that is brought to the surface, including any excess slope-rock not used as fill: it is not anticipated that any underground waste other than the slope-rock will be brought to the surface. The capacity of the pile is designed for 150,000 tons which is in excess of projected needs. Material not transported to the surface, such as overcast material, rock falls, and slope material may be disposed of underground according to the appropriate MSHA regulations. Because this will be an underground mine there will be no spoil

The slope-rock underground development waste will be left in place for final reclamation. The area will be covered and reseeded as per Chapters 2 and 7 and Section 540. The operator commits to test the slope-rock underground development waste to assure that the material is composed of nonacid- or nontoxic-forming waste (537.210). However, the frequency of testing is not described in the PAP. Testing should be frequent enough and representative enough to assure that all material to be left at the surface is suitable.

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The PAP contains no reports of analyses for acid- or toxic-forming or alkalinity-producing materials and their content in the strata immediately above and below the coal seam to be mined, including the rock through which the tunnels will be built, and it is not established that this material can be properly disposed of at the waste rock disposal area and that reclamation of the waste rock disposal site can be accomplished.

The operator contends that over 100-years of mining experience at the adjacent Sunnyside Mines indicates that none of the horizons contain acid- or toxic-forming materials in quantities sufficient to be considered a problem: no data are presented to substantiate this claim, but reference is made to a BLM report (Bureau of Land Management, Environmental Analysis Record, dated 6/9/76. Related to Kaiser Steel's Federal Lease No. U-32083).

The coal seam crops out at approximately 6,500 feet in the vicinity of the rock-slope tunnels. The PAP indicates the tunnels will intercept the coal seam at approximately 6,300 feet.

Underground mining always has a potential for impacting surface-water, groundwater, and other surface resources. The operator states on page 6 (Chapter 7) that subsidence effects are expected to be minimal due to the amount of cover and massive rock stratas between the mining and the surface. Structural elevation contours on Plate 6-4 do not go higher than 6,000 feet, at least in the permit area. The coal may be shallower, under less cover, and dip more steeply than indicated on Plate 6-4 and other maps: these are factors that can affect the subsidence control plan. Coal-seam elevations determined from bore holes are not on Plate 6-4, the Cover and Structure map, even though they are on Plate 6-2, which does not show structure.

The operator has made no request to the Division to waive in whole or in part the requirements of the borehole information or analysis required of this section.

Findings:

R645-301-623.200 - Geologic information is not sufficient to assist in preparing the subsidence control plan. Elevation contours on Plate 6-4 do not go higher 6,000 feet, at least in the permit area. The coal may be shallower, under less cover, and dip more steeply than indicated, factors that can affect the subsidence control plan.

R645-302.122, -624.130 - Outside sources are referenced many times but the outside sources are not adequately described or listed in a "reference" section.

R645-302.122, -624.130 - Some cited reports, such as but not necessarily limited to:

- Surface geology of Kaiser's south lease Carl property, Emery County, Utah, by V. W. McMath,
- Exploration 1974-75 of Kaiser Steel's south Lease Coal Property, Emery County, Utah, and
- Bureau of Land Management, Environmental Analysis Record, dated 6/9/76, related to Kaiser Steel's Federal lease No. U-32083 are not readily available to the Division, other agencies, and potentially interested parties such as the public and are probably not available in most libraries, so the operator needs to provide copies as part of the PAP.

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R645-301-302.122, -624.130, -624.320 - The operator asserts that over 100-years of mining experience at the adjacent Sunnyside Mines indicates that none of the horizons contain acid- or toxic-forming materials in quantities sufficient to be considered a problem: reference is made to a BLM report (see previous deficiency) but there are no data presented to substantiate this claim.

R645-301-624, -624.210 - The PAP contains no logs or other geologic data from A-26, A-31, and the two wells bored in Horse Canyon to monitor alluvial ground water.

R645-301-624, -624.210 - There are no logs or other geologic data from S-32 in the PAP.

R645-301-624.320 - There are no reported results of chemical analyses for acid- or toxic-forming or alkalinity-producing materials and their content in the strata immediately above and below the coal seam to be mined, including the rock through which the tunnels will be built.

R645-301-624.320 - The underground development waste from the slope-rock tunnels will be left in place for final reclamation. In Section 537.210 the operator commits to test the slope-rock underground development waste to assure that the material is composed of nonacid- or nontoxic-forming waste; however, the frequency of testing is not described in the PAP. Testing should be frequent enough to assure that all material to be left at the surface is suitable.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-724.

Analysis:

Sampling and analysis.

All water-quality analyses performed to meet the requirements of R645-301-723 through -724.300, -724.500, -725 through -731, and -731.210 through -731.223 will be conducted according to the methodology in the current edition of "Standard Methods for the Examination of Water and Wastewater" or the methodology in 40 CFR Parts 136 and 434. Water-quality sampling will be conducted according to either methodology listed above when feasible (Chapter 7, p. 8).

Baseline information.

The U.S. Geological Survey conducted a water quality study in Horse Canyon from August 1978 until September 1979 during the time that U.S. Steel operated the mine. Samples were taken monthly from the Horse Canyon Creek and analyzed for most major ions and cations and field parameters. Metals, eight nitrogen species and other minor chemical constituents were taken on a quarterly basis or less. This is briefly mentioned in Appendix 7-3 but these data are not in the PAP and the results of the analyses are not discussed with the baseline information.

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Between January 1981 and April 1983, baseline water quality data was collected for surface water and spring sites B-1, HC-1, RF-1 and RS-2, on the Horse Canyon permit area. Between 14 and 19 samples were taken and analyzed during the monitoring period depending on the site. The parameters that were analyzed were derived from Section 783.16 in the old Coal Mining Regulations. This is briefly mentioned in Appendix 7-3 but these data are not in the PAP and the results of the analyses are not discussed with the baseline information.

Two other sites, RS-1, and RS-2, were sampled once a year during 1978, 1979, and 1980 and analyzed for most major chemical constituents. In addition, springs H-6, H-18, and H-21 were sampled once and analyzed for the major constituents in 1985. Third quarter data for 1989 were collected for HC-1 and RF-1 and sampled for most of the parameters in DOGM's guidelines. This is briefly mentioned in Appendix 7-3 but these data are not in the PAP and the results of the analyses are not discussed with the baseline information.

Groundwater information.

Groundwater baseline information is found on pages 700-35 through 700-41. Water rights and water quality begins on pages 700-35 and 700-38, respectively.

An unsuccessful attempt was made to convert boreholes S-26, S-28, and S-31 to groundwater observation wells. S-26 and S-31, located south of the Williams Draw Fault, were offset with shallow piezometers A-26 and A-31 to observe ground water in the alluvium (Table 6-3): it is not clear from Table VI-3 whether or not these wells have been plugged and abandoned or if they are available for groundwater monitoring. Two other wells were bored in Horse Canyon to monitor water in the alluvium there, but these two wells have since been sealed (Chapter 7, pp. 7, 10). The PAP states that the locations of the two wells in Horse Canyon are on Plate 7-1, but if they are shown on that map or another, they are not clearly identified. Likewise the locations of A-26 and A-31 are not clearly identified on any map. There are no hydrologic data from any of these wells in the PAP.

S-32 was drilled in 1981 and completed as a piezometer in the Grassy Member of the Blackhawk Formation. The PAP contains no data on groundwater elevation or quality for S-32 and its location is not shown on maps.

In 1993 and 1994 IPA-1, IPA-2, and IPA-3 were drilled. There are seasonal water-level measurements in the PAP for IPA-1, IPA-2, and IPA-3 for 1994, 1995, and 1996 but not for 1997 or 1998.

Locations of all known seeps and springs are stated to be shown on Plate 7-1.

JBR Consultants Group conducted a seep and spring survey of the Horse Canyon area in 1985. Table 7-1 in the PAP contains information, including flow, pH, conductivity, and temperature, for the nineteen seeps and springs located: H-1 through H-11, H-13, H-14, H-18 through H-22, and H-92. H-1, H-6, H-18, and H-21 were sampled, possibly for further water-quality analysis, but there are no analysis results in the PAP for these four springs. H-7 could not be found on Plate 7-1, and H-21A, H-21B, H18A, and H-18B are shown on Plate 7-1 but not listed or discussed in the PAP.

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Appendix 7-1 contains seasonal information on groundwater quality and flow for seeps and springs 1, 9, 10, 14, 16(16Z), HC-2, HC-4, HC-9, HC-11, HC-13, HC-14, HC-18, HCSW-1. Data are from work done in 1993, 1994, and 1995 by EarthFax Engineering for the Los Angeles Department of Water and Power. Water-quality descriptions include total dissolved solids or specific conductance corrected to 25°C, pH, total iron, and total manganese at springs. Most parameters listed in UDOGM directive Tech 004 were determined in these samples; however, total hardness, total alkalinity, and acidity were not reported (bicarbonate and carbonate were reported). Total rather than dissolved concentrations were determined for all metals. HC-2, HC-4, HC-9, HC-11, HC-13, HC-14, HC-18, and HCSW-1 could not be found on Plate 7-1. HC-1, HC-1A, and an unidentified spring or seep 1,000 feet southeast of HCSW-2 are shown on Plate 7-1 but not listed or discussed any other place in the PAP.

EarthFax also identified springs and seeps 1A,1B, 2, 3, 3A, 3B, 3C, 3D, 4, 5, 6, 7, 8, 8A, 8B, 9R, 10A, 11, 12, 12A, 12B, 12C, 12D, 12E, 13, 13A, 13B, 13Z, 14A, 15, 15A, 15B, 15C, 16A, 16B, 16C, 17, 17A, 17B, 18, 19A, 19B, 19C, 20, 22, HCSW-2, and HCSW-3. These were dry or had low flows at the time of the quarterly visits and no water-quality analyses were done. 8B, 15A, 17B, 18A, 19C, 22, and HCSW-3 could not be found on Plate 7-1.

Appendix 7-2 contains the 1997 Annual Hydrologic Monitoring Report for the Horse Canyon Mine with data for RS-2 (Redden Spring). Redden Spring is not identified on Plate 7-1. The quarterly samples from this spring were analyzed for all Tech 004 parameters except total manganese and acidity.

Water rights are listed in Table 7-2. The list includes Redden Spring plus springs identified as Mont, Leslie, Cottonwood, Willows, Konna, and Pine. In addition there are eleven unnamed or otherwise unidentified springs listed, plus a well. Locations of water rights are on Plate 7-3, and some of the locations on Plate 7-3 correspond roughly with springs shown on Plate 7-1.

The operator asserts there are no water supply wells in the permit and adjacent areas (Chapter 7, p. 7) even though a well is listed in Table 7-2.

Surface-water information.

On page 7 of Chapter 7 the PAP states that the locations of all known seeps and springs, as well as watering ponds or tanks are shown on Plate 7-1, and that there are no streams, lakes or ponds or irrigation ditches known to exist within the proposed permit or adjacent areas. However, on page 15 the PAP states that within the permit area the surface water resources consist of two main drainages: Horse Canyon Creek, an intermittent stream, and Lila Canyon Creek, an ephemeral drainage. The main drainage through the permit area, Little Park Wash, is mentioned on page 10 and in Tables 7-2 and 7-3 but is not further described or discussed. Likewise, Range Creek drainage is mentioned on page 10 and in Table 7-2 but is not further described or discussed.

The PAP states on page 15 that Lila Canyon Creek is an ephemeral drainage, but on page 33 and again in Table 7-3 Lila Canyon is described as intermittent. Lila Canyon drains an area of several square-miles, so, assuming it is not a perennial drainage. The main or left fork of Lila Canyon drains

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an area of several square-miles, so, assuming it is not a perennial drainage, it fits the definition of an intermittent drainage in the Coal Mining Rules. The Right Fork of Lila Canyon is described as ephemeral above the mine on page 33 but as intermittent in Table 7-3. Lila Canyon (Right Fork?) is described as intermittent "below mine" on page 33, but Table 7-3 states it is intermittent "below stream" rather than below the mine site. These inconsistencies and potentially confusing descriptions need to be clarified.

The only flow data for Horse Canyon Creek in the PAP are in the Horse Canyon Mine 1997 Annual Report in Appendix 7-2. Additional data for Horse Canyon Creek are available from other annual reports of the Horse Canyon Mine and these data should be included and evaluated in the PAP. Data in Appendix 7-2 do not clearly support the statement on page 15 that "Flows in Horse Canyon, generally, are limited to the early spring period (Lines and Plantz, 1981). By late spring to early summer, usually no flow is evident in Horse Canyon Creek . . ." Although flows decrease, the data show there is still flow in late summer and early fall, which indicates possible perennial flow in Horse Canyon Creek above the Horse Canyon Mine. Flow in the valley does appear to be intermittent.

On page 15 of Chapter 7, the PAP states that both Horse Canyon and Lila Canyon Creek flow to Icelander Wash, which in turn flows to Grassy Trail Creek and the Price River, but topographic maps show that after the two streams emerge from the Book Cliffs their flows diverge. Water from Horse Canyon flows west to Icelander Creek, to Grassy Trail Creek, and then to the Price River. Water from both forks of Lila Canyon flows southwest then south to the Price River by way of Grassy and Marsh Flat Washes. Little Park Wash flows south, where its waters pass through a short stretch of Trail Canyon before reaching the Price River.

There are no baseline data for the two streams in Lila Canyon and the stream in Little Park Wash.

Baseline cumulative impact area information.

An important part of preparing the CHIA is determining the hydrologic systems or basins that can potentially be impacted. As discussed already, the PAP states that both Horse Canyon and Lila Canyon Creek flow to Icelander Wash, which is incorrect. Topographic maps show that after the two streams emerge from the Book Cliffs their flows diverge, with water from Horse Canyon flowing to the Price River by way of Icelander and Grassy Trail Creeks, while Lila Canyon Creek flows southwest then south to the Price River by way of Grassy and Marsh Flat Washes. Little Park Wash, which is a major drainage of the proposed permit area, is largely ignored in the PAP.

Much of the hydrologic and geologic information that is necessary to assess the probable cumulative hydrologic impacts of the proposed operation and all anticipated mining on surface- and groundwater systems for the cumulative impact area is probably available from federal and state agencies.

Any needed information that is not available from such agencies may be gathered and submitted by the operator as part of the permit application. As discussed already, outside sources are referenced many times in Chapters 6 and 7, but the outside sources are not adequately described nor listed in a reference section. (A few are listed in Appendix 7-3.) Many of the publications cited are

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probably available to the Division and the general public through libraries, but they will be difficult to locate unless explicit citations are provided. "Reference" sections are needed, either one for each chapter or one comprehensive reference section for the entire PAP.

Some cited reports are not readily available to the Division, other agencies, and potentially interested parties such as the public and are probably not available in most libraries. The operator needs to provide copies of such reports as part of the PAP.

The permit cannot be approved until the necessary hydrologic and geologic information is available.

Modeling.

The operator has supplied applicable information collected from an adjacent mine and studies conducted along the Book Cliffs which exhibit and contain features and resources to those of the minesite. Modeling has not been used in preparation of the PAP.

Alternative water source information.

Basic Management L.L.C. owns the rights to approximately 1.50 cfs in this area. Although the PHC (Appendix 7-3) indicates little, if any, adverse effects on water resources resulting from the operation, if such effects should become evident, lost water sources would be replaced from the rights owned by the company.

Probable hydrologic consequences determination.

Appendix 7-3 contains a determination of the probable hydrologic consequences (PHC) of the proposed operation based upon the quality and quantity of surface and ground water under seasonal flow conditions for the proposed permit and adjacent areas. The PHC determination is based on baseline hydrologic, geologic, and other information collected for the permit application, but not on data statistically representative of the site. The operator finds in the PHC determination that, based on available data and expected mining conditions, the proposed mining and reclamation activity is not expected to proximately result in contamination, diminution or interruption of an underground or surface source of water within the proposed permit or adjacent areas which are used for domestic, agricultural, industrial or other legitimate purpose.

The operator has determined that within the permit area, the general seasonal streamflow is ephemeral. The streams generally dry up by late spring with only occasional runoff during the summer resulting from rainfall events.

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The operator finds that, due to the close proximity and similarities of mining and drainage conditions, water quality and impacts to the channels from pumping the Lila Canyon Mine would be very similar to those experienced in the adjacent Horse Canyon Mine. However, the water-quality and downstream impacts that resulted from pumping the Horse Canyon Mine are not described or discussed adequately enough in the PAP for this comparison to be meaningful.

Because of the disturbed areas and the potential for large runoff events, the control of erosion is a prime factor in maintaining the hydrologic balance within the mine permit area. Sediment controls and a sediment pond will be constructed at the new mine site to minimize impacts. Surface water will be protected by use of sediment controls and all sediment from the disturbed area is to be delivered to and be deposited in the sediment pond.

Although subsidence presents a potential to alter the groundwater flow regime in the area, several factors tend to limit the effects of subsidence on the groundwater regime. Most of the local springs flow from perched systems in the North Horn Formation and are separated from the underlying regional aquifer. The North Horn contains swelling clays that tend to heal small fractures. Finally, the perched aquifers are lenticular and discontinuous so there is a great probability that fractures in one area will not drain all the different aquifers.

Springs are used by wildlife and livestock. Current conditions of springs and seeps reflect the impacts (if any) of 50 years of mining as well as premining conditions. No depletion of flow and quality of springs is expected in the Lila Canyon area. The operator has determined that to date there is no known depletion of flow and quality of surveyed springs in the Horse Canyon permit area. The basis for this determination is not clear: on page 13 of the PAP the operator states that it is impossible to precisely describe the area's premining hydrology.

The operator has determined that it is unlikely there will be any additional measurable impacts from the mining and reclamation activities at the Lila Canyon Mine. Springs are mostly located upstream of the permit areas or are in areas where subsidence resulting from post-1977 mining has not been documented and is not expected. Springs above the mine should continue to flow, showing fluctuations that are related to variations in the recharge.

The operator finds that after reclamation it is unlikely that the groundwater level in the regional aquifer will ever rise to the level of any portal of either the Horse Canyon or Lila Canyon Mines, so there should be no natural discharge of groundwater through any sealed portals. Stand pipes are to be incorporated into the sealed portals of the Lila Canyon Mine so that water levels can be checked annually.

The PHC determination includes findings on whether acid-forming or toxic-forming materials are present that could result in the contamination of surface or ground water supplies; however, information on acid-forming or toxic-forming materials in the PAP is not considered sufficient to meet the requirements of the Coal Mining Rules.

Numerous technical deficiencies have been identified in the PAP. Additional information that will be provided to meet those deficiencies may necessitate revision of the PHC determination. **Some**

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subjects, such as flooding or streamflow alteration and ground water and surface water availability, that are not clearly covered in the PHC could use further clarification.

Groundwater and Surface-water Monitoring Plans.

The operator has based the groundwater and surface-water monitoring plans on the PHC determination and the analysis of baseline hydrologic, geologic, and other information in the permit application.

Water samples from seeps, springs, and streams will be analyzed for the parameters listed in Table 7-4. The parameters in Table 7-4 closely match those in Tech 004 except that dissolved iron and total alkalinity are not listed. Measuring total alkalinity is a necessary step in determining carbonate and bicarbonate so it is usually reported routinely by laboratories and should be included by the operator in water-quality reports. Total manganese is listed with a note that analysis will be done for dissolved manganese, which has the potential for causing confusion in the future: the two parameters should be listed separately. Likewise, dissolved iron should be added to Table 7-4.

Table 7-4 indicates that oil and grease is to be analyzed for samples taken below the mine site only rather than both above and below as recommended in Tech 004; however, a note indicates that this analysis will be done for designated samples, which might mean as recommended by Tech 004. This should be clarified. Table 7-4 indicates that cation anion balance is to be determined only for surface-water samples taken below the mine site rather than at all locations: this is an important quality control measure and should be routine in all water-quality analyses.

Monitoring reports will be submitted to the Division at least every 3 months, within 30 days following the end of each quarter.

The operator's water-monitoring plan is intended to provide data to show impacts to potentially affected springs, seeps, impoundments and drainages within and adjacent to the permit area by comparison with relevant baseline data and with applicable effluent limitations. The operator has selected monitoring locations and frequencies, described in Table 7-3, so that significant springs, seeps, impoundments and drainages that could potentially be impacted by the mining and reclamation operations will be monitored on a regular basis. (p. 34).

Groundwater monitoring plan.

The operator states that the only ground water resources on or adjacent to the permit area that can be monitored at this time are springs and seeps. The three IPA wells are not listed as groundwater monitoring sites. Water depths in these wells should be monitored during coal mine operation and reclamation, unless subsidence or other effects of mining render them unusable. A-26 and A-31 were bored as offsets to S-26 and S-31 to observe groundwater levels in the alluvium south of the Williams Draw Fault. Table VI-3 does not indicate that these wells have been plugged and abandoned. S-32 was drilled in 1981 and completed as a piezometer in the Grassy Member of the Blackhawk Formation. The possibility of using S-32, A-26, and A-31 as groundwater monitoring wells cannot be determined because their current status is not discussed in the PAP.

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Seven groundwater monitoring sites, L-5-G through L-11-G, are proposed. They are listed in Table 7-3 and locations are shown on Plate 7-4. Seeps and springs will be monitored quarterly. Station L-5-G is the potential mine discharge point and will be monitored in accordance with UPDES Permit requirements.

Stations L-6-G through L-11-G are significant springs located over the area of proposed mining. The relationship of these springs to seeps and springs monitored previously by JBR Consultants, EarthFax Engineering, and others are not clear. The names do not correspond to those used in gathering earlier data, and locations on Plate 7-4 do not clearly correspond with locations on Plate 7-1.

Four of the springs proposed for operational monitoring are identified by the operator as L-8-G (Cottonwood Spring), L-9-G, L-10-G (Pine Spring), and L-11-G and correspond roughly with the springs monitored by EarthFax as 9, 10, 16Z, and 14, respectively. Springs 9, 10, 16Z, and 14 have data from 1993, 1994, and 1995 but nothing more recent. L-6-G (Mont Spring) and L-7-G (Leslie Spring) corresponds roughly with a group of springs monitored by JBR Consultants in 1985, but there are no baseline data for any of the JBR springs in the PAP.

Surface-water monitoring plan.

Intermittent drainages in the area flow in response to snow melt and precipitation events. The proposed surface-water monitoring program will monitor Lila Canyon both above and below the disturbed mine site area at L-1-S, L-2-S, and L-3-S and the sediment pond discharges at L-4-S. No monitoring is proposed for Little Park Wash, which appears to be the major drainage in the permit area.

The operator does not identify the probable hydrologic consequences for surface waters in the PHC for either surface flow or disturbed area. The operator has proposed monitoring surface and groundwater sites to determine trends and impacts. The operator has also proposed plans to continue monitoring surface sites through the operational and reclamation until bond release.

Streams will be monitored monthly; sediment pond and mine discharges will be monitored monthly or as frequently as discharges occur.

The operator commits on Page 31 that Seeps, springs and potential mine water discharge will be monitored in accordance with the Ground Water Monitoring Plan in the previous section.

On page 33 is a list of monitoring sites proposed by the operator. Locations of all monitoring sites are shown on Plate 7-4, "Water Monitoring Location Map."

Proposed monitoring methods, parameters and frequencies are described in Table 7-3, "Water Monitoring Stations", and Table 7-4, "Water Monitoring Parameters".

Monitoring reports will be submitted to the Division at least every 3 months, within 30 days following the end of each quarter.

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The proposed surface-water monitoring plan is detailed in Section 731.220. This plan is based on PHC determination and analysis of all baseline hydrologic, geologic and other information in this permit application. The plan provides for monitoring of parameters that relate to the suitability of the surface water for current and approved postmining land uses and to the objectives for protection of the hydrologic balance as set forth in 751 (see Table 7-4).

Point-source discharge monitoring will be conducted in accordance with 40 CFR Parts 122 and 123, R645-301-751 and as required by the Utah Division of Environmental Health for Utah Pollutant Discharge Elimination System (UPDES) permits. A UPDES discharge permit application has been submitted to the Division of Environmental Health for the proposed sediment pond and mine water for the Lila Canyon operation. UPDES permit applications for the Lila Canyon Mine are provided in Appendix 7-5 (p.34).

Drainage from acid- and toxic-forming materials and underground development waste into surface water and ground water will be avoided by implementation of a Spill Prevention Control and Countermeasure (SPCC) Plan and by the following

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirement of this section. Prior to approval, the operator must provide the following in accordance with:

R645-301-121.200 The operator should summarize all baseline water quality and quantity data in tables and graphs.

R645-301-724.100 - There are no hydrologic data from A-26 and A-31, located south of the Williams Draw fault, in the PAP.

R645-301-724.100 - Two wells were located in the alluvium in lower Horse Canyon Creek. These wells have been plugged abandoned according to the PAP. These wells apparently monitored water in the alluvium. There are no hydrologic data from these two wells in the PAP.

R645-301-724.100 - S-32 was drilled in 1981 and completed as a piezometer in the Grassy Member of the Blackhawk Formation. The PAP contains no baseline data on groundwater elevation or quality for S-32.

R645-301-724.100 - In 1993 and 1994 IPA-1, IPA-2, and IPA-3 were drilled. There are seasonal water-level measurements in the PAP for IPA-1, IPA-2, and IPA-3 for 1994, 1995, and 1996 but no baseline for 1997 or 1998.

R645-301-724.100 - A-26 and A-31 were bored as offsets to S-26 and S-31 to observe groundwater levels in the alluvium south of the Williams Draw Fault. Table VI-3 does not indicate that these wells have been plugged and abandoned, so it is not clear whether or not these wells are currently available for monitoring.

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- R645-301-724.100** - The PAP states that the locations of the two shallow wells bored in Horse Canyon to observe alluvial ground water are on Plate 7-1, but if they are shown on that, or another, maps they are not clearly identified. Likewise the locations of A-26 and A-31 are not clearly identified on any map.
- R645-301-724.100** - H-1, H-6, H-18, and H-21 from the JBR survey in 1985 were sampled, possibly for further water-quality analysis, but there are no analysis results in the PAP for these four springs.
- R645-301-724.100** - H-21A, H-21B, H18A, and H-18B from the JBR survey in 1985 are shown on Plate 7-1 but not listed or discussed in the PAP.
- R645-301-724.100** - HC-1, HC-1A, and an unidentified spring or seep 1,000 feet southeast of HCSW-2, all apparently from the EarthFax survey in 1993, 1994, and 1995, are shown on Plate 7-1 but not listed or discussed any other place in the PAP.
- R645-301-724.100** - The operator asserts there are no water supply wells in the permit and adjacent areas (Chapter 7, p. 7) even though a well is listed in Table 7-2.
- R645-301-724.100** - The PAP contains no data on groundwater elevation or quality for S-32 and its location is not shown on maps.
- R645-301-724.100** - The quarterly samples from Redden Spring were analyzed for all required parameters except total manganese.
- R645-301-724.100** - RS-1 and RS-2 were sampled once a year during 1978, 1979, and 1980 and analyzed for most major chemical constituents. In addition, springs H-6, H-18, and H-21 were sampled once and analyzed for the major constituents in 1985. Third quarter data for 1989 were collected for HC-1 and RF-1 and sampled for most of the parameters in DOGM's guidelines. This is briefly mentioned in Appendix 7-3 but these data are not in the PAP and the results of the analyses are not discussed with the baseline information.
- R645-301-724.100, -724.200** - Between January 1981 and April 1983, baseline water quality data was collected for surface water and spring sites B-1, HC-1, RF-1 and RS-2 on the Horse Canyon permit area. Between 14 and 19 samples were taken and analyzed during the monitoring period depending on the site. These data are briefly mentioned in Appendix 7-3 but are not in the PAP and the results of the analyses are not discussed with the baseline information.
- R645-301-724.200** - The U.S. Geological Survey conducted a water quality study in Horse Canyon from August 1978 until September 1979. Samples were taken monthly from the Horse Canyon Creek and analyzed for most major ions and cations and field parameters. Metals, eight nitrogen species and other minor chemical constituents were taken on a quarterly basis or less. This is briefly mentioned in Appendix 7-3 but these

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data are not in the PAP and the results of the analyses are not discussed with the baseline information.

- R645-301-724.200** - The main drainage through the permit area, Little Park Wash, is mentioned on page 10 and in Tables 7-2 and 7-3 but is not further described or discussed.
- R645-301-724.200** - Range Creek drainage is mentioned on page 10 and in Table 7-2 but is not further described or discussed.
- R645-301-724.200** - There are no baseline data for the two streams in Lila Canyon and the stream in Little Park Wash.
- R645-301-724.200** - The only flow data for Horse Canyon Creek in the PAP are in the Horse Canyon Mine 1997 Annual Report in Appendix 7-2. Additional data for Horse Canyon Creek are available from other annual reports of the Horse Canyon Mine and these data should be included and evaluated in the PAP.
- R645-301-121.200, -724.200** - Data in Appendix 7-2 do not clearly support the statement on page 15 that "Flows in Horse Canyon, generally, are limited to the early spring period (Lines and Plantz, 1981). By late spring to early summer, usually no flow is evident in Horse Canyon Creek . . ." Although flows decrease, the data show there is still flow in late summer and early fall, which indicates possible perennial flow in Horse Canyon Creek above the Horse Canyon Mine.
- R645-301-121.200, -724.200** - The PAP states on page 15 that Lila Canyon Creek is an ephemeral drainage, but on page 33 and again in Table 7-3 Lila Canyon is described as intermittent. The main or left fork of Lila Canyon drains an area of several square-miles, so, assuming it is not a perennial drainage, it fits the definition of an intermittent drainage in the Coal Mining Rules. The Right Fork of Lila Canyon is described as ephemeral above the mine on page 33 but as intermittent in Table 7-3. Lila Canyon (Right Fork?) is described as intermittent "below mine" on page 33, but Table 7-3 states it is intermittent "below stream" rather than below the mine site. These inconsistencies and potentially confusing descriptions need to be clarified.
- R645-301-121.200, -724.200, -729** - On page 15 of Chapter 7, the PAP states that both Horse Canyon and Lila Canyon Creek flow to Icelander Wash, which in turn flows to Grassy Trail Creek and the Price River; however, topographic maps show that after the two streams emerge from the Book Cliffs their flows diverge. Water from Horse Canyon flows west to Icelander Creek, to Grassy Trail Creek, and then to the Price River. Water from both forks of Lila Canyon flows southwest then south to the Price River by way of Grassy and Marsh Flat Washes. Little Park Wash flows south, where its waters pass through a short stretch of Trail Canyon before reaching the Price River. Inconsistent and potentially confusing descriptions need to be clarified.

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R645-301-724.200, -728 - In the PHC the operator finds that to date there is no known depletion of flow and quality of surveyed springs in the Horse Canyon permit area. The basis for this determination is not clear: on page 13 of the PAP the operator states that it is impossible to precisely describe the area's premining hydrology.

R645-301-724.200, -728 - In the PHC the operator finds that, due to the close proximity and similarities of mining and drainage conditions, water quality and impacts to the channels from pumping the Lila Canyon Mine would be very similar to those experienced in the adjacent Horse Canyon Mine. However, the water-quality and downstream impacts that resulted from pumping the Horse Canyon Mine are not described or discussed adequately enough in the PAP for this comparison to be meaningful.

R645-301-731.210 - The three IPA wells are not listed as groundwater monitoring sites. Water depths in these wells should be monitored during coal mine operation and reclamation, unless subsidence or other effects of mining render them unusable.

R645-301-731.210 - The possibility of using S-32, A-26, and A-31 as groundwater monitoring wells cannot be determined because their current status is not discussed in the PAP.

Baseline data collected at the proposed operational spring-monitoring sites are not sufficient to demonstrate seasonal quality and quantity.

In lieu of the letter of concern the Division received from Mr. Eardly, the operator should explain the listing of Blackburn's holding the water rights while Eardly owns the property.

The operator stated in the MRP that there several small springs on and adjacent to the permit area. A complete inventory of springs and seeps should be submitted for the minesite and adjacent area.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

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

Analysis:

Affected Area Boundary Maps

Plate 5-3 and Plate 5-4 show the affected area boundaries for the Horse Canyon Mine and include the Horse Canyon project and the Lila Canyon project. Plate 5-5, Mine Map, shows the boundaries for the Lila Canyon project that will be affected over the estimated life of the project and the timing and sequence of mining.

The operator has submitted mine maps identifying surface areas where disturbance will take place.

- Plate 7-1 Permit Area Hydrology
- Plate 7-2 Disturbed Area Hydrology & Water Shed Map
- Plate 7-3 Water Rights
- Plate 7-4 Water Monitoring Locations
- Plate 7-5 Proposed Sediment Control
- Plate 7-6 Proposed Sediment Pond
- Plate 7-7 Post Mining Hydrology

IPA's surface areas are shown on both the surface and subsurface map, Plate 5-4. Lease areas are shown on the Cover and Structure map and Coal Thickness Isopach Map. The map would be less cluttered and more ledgeable if just the pertinent information was presented for the particular map.

Archeological Site Maps

The locations of cultural and historic resources in the area are shown on Plate 4-3 and on maps in Appendix 4-1. This information is adequate but needs to be kept confidential.

Coal Resource and Geologic Information Maps

Depth to the Sunnyside Seam, which is the seam to be mined, is shown on the Cover and Structure Map on Plate 6-4. Thickness of the Sunnyside Seam is shown on the Coal Thickness Isopach map on Plate 6-3. Thickness and nature of the Sunnyside Seam, of coal or rider seams above the Sunnyside Seam, and of the stratum immediately below the Sunnyside Seam are shown on the Coal Sections on Plate 6-5, but these sections do not show areal and vertical distribution of aquifers or information on water levels and the relationship of ground water to geologic structure and stratigraphy. There is no cross section showing the relationship of the rock tunnels to structure, stratigraphy, and ground water.

Figures VI-1 and VI-2 show the general stratigraphy of the permit and adjacent areas. Plate 6-1 shows surface geology, including coal crop lines, and the strike and dip of the Sunnyside Seam within the proposed permit area. The major faults are shown on Plates 6-1 through 6-5, and structural elevation contours on the Sunnyside Seam are on Plate 6-4. Reference is made to the Sunnyside fault, especially as a feature that possibly controls groundwater flow, but this fault is not shown on the maps.

Lease information is included on Plates 6-3 and 6-4. This makes it difficult to read the geologic information, and there is no evident reason for the lease information to be on these maps.

The coal seam crops out at approximately 6,500 feet in the vicinity of the rock-slope tunnels. The PAP indicates the tunnels will intercept the coal seam at approximately 6,300 feet. Structural elevation contours on Plate 6-4 stop at 6,000 feet, at least in the permit area, so do not accurately indicate the elevation of the coal seam where the tunnels will intercept it. The coal may be shallower, under less cover (which could affect subsidence calculations), and dip more steeply than indicated on

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Plates 6-4 and 7-1 and any other maps that show structure contours. Coal-seam elevations determined from bore holes are on Plate 6-2, which does not show structure elevation contours, but are not on Plate 6-4, the cover and structure map.

Existing Structures and Facilities Maps

Plate 5-1A, Pre Mining Contours, shows the existing structures in the proposed Lila Canyon disturbed area. The only existing structure is a 36" culvert that is scheduled to be replaced when the mine facilities area constructed. A description of the culvert is given in Section 526.110 of the PAP. However, in Section 521.120 of the PAP, the Permittee states that no surface facilities exist at the Lila Canyon site. The Permittee must be consistent when describing the existing facilities at the Lila Canyon site.

Existing Surface Configuration Maps

The Permittee shows the existing surface contours on Plate 5-1A.

Mine Workings Maps

Location and extent of the Horse Canyon Mine permit area are shown on numerous plates in the PAP, including Plate 5-1, but it is not clear where mining was done and not done within this permit area. Plate 5-1 shows old or abandoned mine workings outside the Horse Canyon permit area, except the 6,080-foot exploration entry from the Horse Canyon Mine is not shown. Locations of sealed openings to the Horse Canyon Mine and other mines are not identified. Plate 5-1 shows an area west of the Horse Canyon Mine, outside the line marking the limits of old works, labeled "Book Cliffs Coal Company", and hatched in red: what this represents is not clear. The active coal fire area in the old workings north of Horse Canyon is not shown on any map or discussed in the text.

Plate 5-1 shows the old mine workings in and around the permit area, including the Horse Canyon project and the Lila Canyon project. The mine openings at the Horse Canyon surface facility have been sealed and are scheduled to be backfilled.

Plate 5-5 shows the mine workings for the Lila Canyon Project. The portals for the Lila Canyon Project are indicated on Plates 5-2 and Plate 5-5 but are not clearly labeled. In Section 520 the Permittee states that two rock slopes will be drive and that the fan portal will be driven from the rock slopes and breakout on a ledge. The fan portal is not labeled Plate 5-2. None of the portals are labeled on Plate 5-5.

The location and extent of known mine workings, along with anticipated mine workings, are shown on Map Plate 5-5. Mining will take place in a single seam conducting room and pillar mining during the first five years and longwall mining in future years. A mining sequence is also identified. The operator proposes and has illustrated an angle of draw of 21.5 degrees. The location and extent of known mine workings of the Horse Canyon Mine are shown on the same map. Overburden isopachs the approximate cover ranging from 500 feet to 2500 feet above the mine workings.

Maps were certified by Jay Marshall, Professional Engineer, licensed and registered in the state of Utah.

Monitoring Sampling Location Maps

Elevations and locations of test borings are on Plates 6-2, 6-3, and 6-4, except that the location of S-32 is not shown on any map. Elevations of core samples are tabulated in Tables VI-1 and VI-3.

Elevations and locations of monitoring stations used to gather data on water quality and quantity in preparation of the application are on Plate 7-1; however, springs or seeps H-7, 8B, 15A, 17B, 18A, 19C, 22, HC-2, HC-4, HC-9, HC-11, HC-13, HC-14, HC-18, HCSW-1, HCSW-3, and Redden Spring (RS-2) could not be found on Plate 7-1. HC-1, HC-1A, and an unidentified spring or seep next to HCSW-2 are shown on Plate 7-1 but not listed or discussed in the PAP.

Permit Area Boundary Maps

Several maps including Plate 5-1 show the location of the permit boundaries for the Horse Canyon mine. The permit boundary has been divided into Permit Area A (the Horse Canyon project) and Permit Area B (the Lila Canyon project).

Subsurface Water Resource Maps

Ground water was encountered in several of the bore holes as well as in the Horse Canyon Mine. Water-level elevation contours are on Plate 7-1; otherwise, areal and vertical distribution of aquifers within the proposed permit or adjacent areas is not shown on a map. Seasonal variation in water levels is tabulated in Appendix 7-1, but there is no portrayal of seasonal differences of head on cross sections and contour maps.

The groundwater elevation in the Horse Canyon Mine, at the rotary car dump at the intersection of the Main slope and 3rd level, is described on page 14 in Chapter 7 of the PAP; it was approximately 5,800 feet in 1986 and the operator states that it probably has remained at this level since operations ceased in the Horse Canyon Mine. This projected groundwater elevation does not appear to have been used in projecting the piezometric surface mapped on Plate 7-1. The location is described in the text, but the location is not shown on Plate 7-1.

There are no cross sections showing location and extent of groundwater and its relation to geologic structure and stratigraphy. There is no cross section showing the relationship of the rock tunnels to the structure, stratigraphy, and ground water and how these relate to the potential problem of gravity drainage from the mine.

Locations of all known seeps and springs are stated to be shown on Plate 7-1. Water quality and quantity data for springs or seeps 8B, 15A, 17B, 18A, 19C, HC-2, HC-4, HC-9, HC-11, HC-13, HC-14, HC-18, HCSW-1, and HCSW-3 are in Appendix 7-1 but their locations could not be found on Plate 7-1. H-7 is listed in Table 7-1 but is not shown on Plate 7-1. There are several springs listed in Table 7-2 - Water Rights - and shown on Plate 7-3 that are not shown on Plate 7-1. Water quality data for Redden Spring (RS-2) are in Appendix 7-2 but the location for this spring could not

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be found on Plate 7-1. HC-1, HC-1A, and an unidentified spring or seep next to HCSW-2 are shown on Plate 7-1 but not listed or discussed in the PAP.

Water rights are listed in Table 7-2. The list includes Redden Spring plus springs identified as Mont, Leslie, Cottonwood, Willows, Konna, and Pine. In addition there are eleven unnamed or otherwise unidentified springs listed, and a well. Locations are on Plate 7-3, and some of the spring locations on Plate 7-3 correspond roughly with springs shown on Plate 7-1. The operator presents several maps identifying the land surface configuration. No facilities exist on the proposed permit area except three water monitoring wells constructed by the operator for groundwater monitoring.

Plate 7-1 reveals the topography, whereas Plate 5-1 identifies the old mine workings. The operator identifies the abandon railroad grade and a power line west of the permit area. The proposed transportation corridor and mine pad area will involve approximately 39.81 acres (Page 26) of surface developed area.

Plates 6-3 and 6-4 are the only maps that show the topography in relationship to the minesite that gives a good idea of elevations. The method for combining map information appears unsystematic, such as combining lease areas on geologic maps and not providing elevations with water monitoring sites. It almost appears that the information on many of the maps are presented in such a manner to add confusion and inhibit review.

The location and extent of known mine workings, along with anticipated mine workings, are shown on Map Plate 5-1. However, one mine is identified by the mine name and the other is identified by the company name. Labeling should be consistent to avoid confusion.

Proposed mining will take place in a single seam conducting room and pillar mining during the first five years and longwall mining in future years. A mining sequence is also identified. The operator proposes and has illustrated an angle of draw of 21.5 degrees. The location and extent of known mine workings of the Horse Canyon Mine are shown on the same map. Overburden isopachs the approximate cover ranging from 500 feet to 2500 feet above the mine workings.

Monitoring sites identified on Plate 7-1 are depicted without elevations. Groundwater levels are shown in with elevations, However, when Plate doesn't show topographic elevations its hard to discern or evaluate depth to groundwater. None of the maps give much information on drainages on and adjacent to the minesite. If they are named, they should be labeled and if not named they should be identified by a label. They should also be identified as to the type of drainage they are, ie, perennia, intermittent or ephemeral.

Surface Water Resource Maps

Locations of all known seeps and springs as well as watering tanks or ponds are shown on Plate 7-1. According to the operator there are no known streams, lakes, or ponds within the permit and adjacent areas.

Text on page 7 refers to Plate 7-1 for the location of Horse Canyon and Lila Canyon Creeks but none of the drainages are labeled on that map, or other maps in Chapters 6 and 7. The main drainage through the permit area, Little Park Wash, is mentioned on page 10 and in Tables 7-2 and 7-3, and Range Creek drainage is mentioned on page 10 and in Table 7-2 but neither is shown on maps.

Text on page 7 refers to Plate 7-1 for the location of Horse Canyon and Lila Canyon Creeks but none of the drainages are labeled on that map, or other maps in Chapters 6 and 7. The main drainage through the permit area, Little Park Wash, is mentioned on page 10 and in Tables 7-2 and 7-3 but is not further described or discussed and is not identified on maps. Likewise, Range Creek drainage is mentioned on page 10 and in Table 7-2 but is not further described or discussed and is not identified on maps.

Water rights are listed in Table 7-2 and shown on Plate 7-3.

Vegetation Reference Area Maps

Two proposed reference areas are shown on Figure 1 of the Lila Canyon Vegetation Inventory report in Appendix 3-2. This map needs to include a north arrow and a scale. It should also show the boundaries of the proposed disturbed area and of vegetation communities.

Although Plate 3-2 shows vegetation communities of the proposed permit area, it does not contain the level of detail needed for the proposed disturbed area. It is difficult to compare this plate with the surface facilities map with any confidence and know where the facilities would be. Section 323.400 says Plate 3-2 identifies each vegetation reference area, but this map does not show reference areas. Either this statement or the plate needs to be corrected.

In addition, cultural resources maps need to be made confidential.

Well Maps

One oil exploration hole has been drilled on the property by Forest Oil Company. The location of the hole is shown on Plate 6-2. The depth and other details of this well are not known.

The operator asserts there are no water supply wells in the permit and adjacent areas (Chapter 7, p. 7) even though a well is listed in Table 7-2. That well is not shown, or at least not clearly identified, on a map.

Contour Maps

Surface-elevation contours are displayed on several maps. On Plate 7-1 the 250-foot index contours were not printed, adding to the confusing appearance of the map.

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The Permittee gave the Division premining, operational and reclamation contour maps of the Lila Canyon site.

All geologic and hydrologic resource maps have been certified by Jay Marshall, Professional Engineer or Dan Guy, Professional Engineer.

Contour mapping is based on the USGS 7.5 minute quadrangle maps. Lila Point quadrangle depicts the mine plan area and adjacent surface features. The proposed permit is in Emery County. Most of the site lies within Township 16 South, Range 14 East, approximately 320 acres extends into Township 16 South, Range 15 East.

Findings:

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

R645-301-323, The application needs to contain maps showing the reference areas and vegetation communities in relation to the proposed surface facilities. The maps need to contain information as required in R645-301-140.

R645-301-323, Section 323.400 contains a statement that Plate 3-2 identifies each vegetation reference area, but this plate does not show the reference areas. Either the text or the plate needs to be corrected.

R645-301-622.200 - Coal-seam elevations determined from bore holes are not on Plate 6-4, the cover and structure map, even though the elevations are on Plate 6-2, which does not show structure.

R645-301-121.200, -622.200 - The coal seam crops out at approximately 6,500 feet in the vicinity of the rock-slope tunnels. The PAP indicates the tunnels will intercept the coal seam at approximately 6,300 feet. Structural elevation contours on Plate 6-4 stop at 6,000 feet, at least in the permit area, so do not accurately indicate the elevation of the coal seam where the tunnels will intercept it. The coal may be shallower, under less cover, and dip more steeply than indicated on Plates 6-4 and 7-1 and other maps that show structure contours.

R645-301-121.200 The Permittee must clarify the statements made in Section 521.120 and Section 526.110 about the existing culvert at the Lila Canyon site. Specifically the Permittee must clarify the statement in Section 526.110 that a 36" culvert exists in the proposed disturbed area and the statement in Section 521.120 that states that no surface facilities exist at the Lila Canyon site.

R645-301-121.200, -622.200 - Coal-seam elevations determined from bore holes are on Plate 6-2, which does not show structure elevation contours, but are not on Plate 6-4, the cover and structure map.

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R645-301-121.200, -622.200 - Lease information is included on Plates 6-3 and 6-4. This makes it more difficult to read the thickness, depth, and structure information on these maps, and there is no evident reason for the lease information to be on these maps.

R645-301-622.100, -722.300 - The location of S-32 is not shown on any map.

R645-301-624.100, -624.110 - Reference is made in several places in the text to the Sunnyside fault, especially as a feature that possibly controls groundwater flow, but this fault is not shown, or at least not clearly identified, on the maps.

R645-301-512.110, -521.111 - Location and extent of the Horse Canyon Mine permit area is shown on numerous plates in the PAP, including Plate 5-1 and maps in Chapters 6 and 7, but it is not clear where mining was done and not done within this permit area.

R645-301-512.110, -521.111 - Plate 5-1 shows old or abandoned mine workings outside the Horse Canyon permit area, except the 6,080-foot exploration entry from the Horse Canyon Mine is not shown.

R645-301-512.110, -521.111 - Locations of sealed openings to the Horse Canyon Mine and other mines are not identified on a map.

R645-301-512.110, -521.111 - Plate 5-1 shows an area west of the Horse Canyon Mine, outside the line marking the limits of old works, labeled "Book Cliffs Coal Company", and hatched in red: what this represents is not clear.

R645-301-512.110, -521.111 - The active coal fire area in the old workings north of Horse Canyon is not shown on any map or discussed in the text.

R645-301-623, -722, -731.521 - There is no cross section showing location and extent of ground water and its relation to geologic structure and stratigraphy. There is no cross section showing the relationship of the rock tunnels to the structure, stratigraphy, and ground water.

R645-301-624.100, -722.100 - There are no cross sections showing location and extent of ground water and its relation to geologic structure and stratigraphy.

R534-301-722 - Surface-elevation contours are displayed on several maps. On Plate 7-1 the 250-foot index contours were not printed, adding to the confusing appearance of the map.

R534-301-722.100 - The operator asserts there are no water supply wells in the permit and adjacent areas (Chapter 7, p. 7) even though a well is listed in Table 7-2. That well is not shown, or at least not clearly identified, on a map.

R645-301-722.100 - There is no portrayal of seasonal differences of head on cross sections and contour maps.

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- R645-301-722.100** - The groundwater elevation in the Horse Canyon Mine, at the rotary car dump at the intersection of the Main slope and 3rd level, is described on page 14 in Chapter 7 of the PAP; it was approximately 5,800 feet in 1986 and the operator states that it probably has remained at this level since operations ceased in the Horse Canyon Mine. This projected groundwater elevation does not appear to have been used in projecting the piezometric surface mapped on Plate 7-1.
- R645-301-722.100** - Text on page 7 refers to Plate 7-1 for the location of Horse Canyon and Lila Canyon Creeks but none of the drainages are labeled on that map, or other maps in Chapters 6 and 7. Little Park Wash and Range Creek are also mentioned in the text but are not identified on any maps.
- R645-301-722.200, -722.300** - Locations of all known seeps and springs are stated to be shown on Plate 7-1. Water quality and quantity data for springs or seeps 8B, 15A, 17B, 18A, 19C, HC-2, HC-4, HC-9, HC-11, HC-13, HC-14, HC-18, HCSW-1, and HCSW-3 are in Appendix 7-1 but their locations could not be found on Plate 7-1. H-7 is listed in Table 7-1 but is not shown on Plate 7-1.
- R645-301-722.200 -722.300** - Locations of all known seeps and springs are stated to be shown on Plate 7-1. There are several springs listed in Table 7-2 - Water Rights - and shown on Plate 7-3 that are not shown on Plate 7-1. Water quality data for Redden Spring (RS-2) are in Appendix 7-2 but the location for this spring could not be found on Plate 7-1.
- R645-301-722.300** - The PAP states that the locations of the two wells in Horse Canyon are on Plate 7-1, but if they are shown on that map or another they are not clearly identified. Likewise the locations of A-26 and A-31 are not clearly identified on any map.
- R645-301-722.300** - The groundwater elevation in the Horse Canyon Mine, at the rotary car dump at the intersection of the Main slope and 3rd level, is described on page 14 in Chapter 7 of the PAP. The location is described in the text, but the location is not shown on Plate 7-1.

OPERATION PLAN

MINING OPERATIONS AND FACILITIES

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

Analysis:

General

This will be an underground mine with approximately 39.81 acres of surface disturbance for mine site facilities and roads. Runoff from the disturbed minesite area is proposed to be controlled by a system of ditches and culverts that will convey all disturbed area runoff to a sediment pond for final treatment prior to discharge.

This permit application includes a plan, with maps and descriptions, indicating how the relevant requirements of R645-301-730, R645-301-740, R645-301-750 and R645-301-760 will be met. Each of these sections are addressed in Chapter 7, along with relevant Maps and Appendices.

Surface-water quality will be protected by handling earth materials, ground-water discharges and ff in a yyy manner that minimizes the formation of acid or toxic drainage; prevents, to the extent possible using the best technology currently available, additional contributions of suspended solids to streamflow outside the permit area; and, otherwise prevent water pollution.

The permittee proposes to develop a surface facility and mine portals in Lila Canyon. The permittee wants to develop the Lila Canyon facilities because access to the coal through the Horse Canyon portals is not feasible.

Access to the coal will be through two 1,200 foot slopes that will be driven from the base of the cliff. The ventilation portal will be driven from underground to the surface. Mining will be conducted in the Sunnyside Seam. Production in the first year is estimated to be 200,000 tons, the second year 1,000,000 tons and by the third year 4,000,000 tons. Annual production after the fourth year will be 4,000,000 tons. Most of the coal will be recovered by longwall mining. Room and pillar mining will be used for development work and recover coal in areas that are not conducive to longwall mining.

Type and Method of Mining Operations

This is a new mine site has no pre-existing mine facilities. The permittee plans to construct all new facilities to process and transport all mined coal, contain and treat surface runoff and contain all mine and non-coal waste.

The permittee plans to implement room and pillar mining in the initial development of the mine. Small panels will be developed in the first phases of the mine to quickly produce coal and

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provide a funding base for expansion. Several faults are located on the property that will separate areas of mining. Eventually the permittee will conduct longwall mining in accordance with the proposed layout in the Mine Map, Plate 5-5.

Mining will begin in Section 15, T16S, R14E, in the Sunnyside seam. Development of the Sunnyside seam will be in a down dip direction towards the east. The seam will be accessed by two 1,200 foot slopes driven up at 12% from the base of the cliffs. The ventilation fan portal will be driven from underground to the surface.

Production during the first year is estimated to be 200,000 tons, the second year 1,000,000 tons and peak in the third year at 4,000,000 tons. Production should continue at 4,000,000 tons for the life-of-mine. The mine is scheduled to ccess operation in 2024, the life-of-mine will be 20 years.

In Appendix 4-3, Air Quality, the permittee stated in a letter dated December 22, 1998 to the Division of Air Quality that a maximum of 2,000,000 will be produced every year. In Section 523 the permittee states that a maximum of 4,000,000 of coal will be produced. The permittee must clarify the maximum amount of coal that will be produced annually.

Mine production will begin with the slope construction. Once the coal is encountered development will continue using continuous miners and various types of haulage equipment. Continuous miners will account for all the production during the first two years. Mining will consist of driving mains, developing room-and-pillar panels and gate entries for future longwall mining.

The majority of the full extraction mining will be done using longwall equipment. However, in isolated areas room and pillar type of mining may be used in areas not suitable for longwall mining. Longwall panels are sited approximately parallel lengthwise to the strike with a slight up dip orientation to provide drainage for the development faces. This practice will be applied to the continuous miner panels wherever possible.

Ventilation of the mine will be by an exhaust type system. The permittee estimates that 900,000 cfm will be required at full production. Intake air will be supplied by slopes and entries from the surface.

Dust suppression will be accomplished by the use of sprays on all underground equipment as required. Sprays will also be used along sections of the conveyors and a transfer points.

No major de-watering concerns are anticipated at this property. The workings are expected to produce some water with more water being produced as the depth of mining increases. Part of this water will be used for dust suppression. The remainder will be collected in sumps and pumped to mined out sections of the mine or to the surface and treated when necessary.

The permittee did not include a list of major mining equipment that will be used. That information is needed for the Division to verify the permittee claims about production and mine life.

Facilities and Structures

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In Section 526.200 and 526.221 of the MRP, the permittee states

The new support facilities are described in section 620 and in Appendix 5-4 as shown on plate 5-2 and will be operated in accordance with the mine reclamation plan. Plans and drawings for each support facility to be constructed, used or maintained within the permit area are found in Appendix 5-4, Plates 5-7A, 5-7B and 5-8.

Section 620 was improperly referenced. The correct reference is Section 520, which lists the new facilities and structures.

The new structures and facilities listed in Section 520 are as follows:

- Mine Facilities Road
- Security Shack
- Mine Substation
- Office/Bathhouse/Warehouse Parking Area
- Office/Bathhouse
- Mine Parking
- Shop Warehouse
- Non-Coal Waste Area
- Equipment & Supplies Storage Area
- Sewer Tank & Drain Field
- Water Treatment Plant
- Potable Water Tank
- Process Water Tank
- Topsoil Pile
- Refuse Pile
- Sediment Pond
- Slope Access Pond
- Rock Slopes
- Ventilation Fan
- ROM Underground Belt
- ROM Storage Pile
- Crusher
- Coal Storage Bin
- Truck Scale and Loadout

The permittee proposes to construct only one impoundment, a sediment pond shown on Plate 5-2. Because Lila Canyon is an underground mine no overburden or spoil will be removed. Topsoil storage and handling areas will be discussed by the Division's soil scientist. The permittee does not plan on cleaning or processing the coal, therefore facilities for storing coal processing waste were not included in the MRP.

In Section 528.100 the permittee describes how the coal will be handled and stored. The permittee did not show (outline) the areas where coal would be stored or state the maximum amount of coal that would be on site at any given time. The permittee did state that the coal storage pile at

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the stacking tube would have a capacity of approximately 27,000 ton. The Division needs to know the maximum amount of coal that will be stored on site. Usually the maximum amount of coal is determined by the air quality permit. The permittee must label the coal loading and transportation areas and the surface facilities map.

In Section 528.300 the permittee should have described how spoil, coal processing waste, mine development waste, and noncoal waste removal, handling, storage, transportation, and disposal areas and structures. Instead of describing the those facilities the permittee restated the regulation. The permittee must describe those facilities or reference where that information can be found.

In Section 526.300 the permittee list the drain fields as the only water pollution control facility and states that the designs are shown in Appendix 5-4. That appendix does not contain any designs for the drain fields or water pollution control facilities.

Findings:

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

R645-301-121.200, On Page 62, Section 526.220 the reference should be Section 520 instead of Section 620.

R645-301-121.200, The permittee must be consistent about the maximum amount of coal that will be produced. In Section 523 the maximum annual production is listed at 4,000,000 tons in the Appendix 5-4 the amount is 2,000,000.

R645-301-521.190, The permittee must state the maximum amount of coal that will be stored on site. The maximum amount of coal is usually determined by the air quality permit.

R645-301-523, The permittee must give the Division a list of major equipment that will be used to conduct mining.

R645-301-528.100, The permittee must show the coal storage areas on the surface facilities maps. The storage areas must have boundaries that are shown on the surface facilities maps. The permittee must also label the coal loading and transportation areas.

R645-301-528.300, The permittee must address the requirements of this regulation in Section 528.300 of the MRP or state where that information can be found. In Section 528.300 of the MRP the permittee restated the regulation.

R645-301-526.300, The permittee must describe the water pollution control facilities in Section 526.300 of the MRP or reference the information. In Section 526.300 of the MRP the permittee list the drain fields as the only water pollution control facility and states that the designs are shown in Appendix 5-4. That appendix does not contain any designs for the drain fields or water pollution control facilities.

EXISTING STRUCTURES:

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

Analysis:

One existing culvert is shown on Plate 5-1A to be in the proposed disturbed area. The permittee states in Section 526.110 of the MRP that a 36" culvert exists in the proposed disturbed area. The culvert is in poor condition and will be replaced during construction. In Section 521.120 the permittee states that no surface facilities exist at the Lila Canyon site. The permittee must be consistent when describing the existing facilities at the Lila Canyon site.

Findings:

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

R645-301-121.200 The permittee must clarify the statements made in Section 521.120 and Section 526.110 about the existing culvert at the Lila Canyon site. Specifically the permittee must clarify the statement in Section 526.110 that a 36" culvert exists in the proposed disturbed area and the statement in Section 521.120 that states that no surface facilities exist at the Lila Canyon site.

PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES

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

Analysis:

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

The Turtle Canyon Wilderness Study Area overlaps with the proposed addition to the permit area in the following locations:

Township 16 South, Range 14 East
Section 13, E $\frac{1}{2}$ NW $\frac{1}{4}$, NE $\frac{1}{4}$
Section 24, NE $\frac{1}{4}$ NW $\frac{1}{4}$, N $\frac{1}{2}$ NE $\frac{1}{4}$

Township 16 South, Range 14 East
Section 19, SE $\frac{1}{4}$ SW $\frac{1}{4}$, Lots 3 and 4
Section 30, SW $\frac{1}{4}$ NE $\frac{1}{4}$

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The policy of the Bureau of Land Management is to not allow surface occupancy in wilderness study areas any more than absolutely necessary and only in cases where there are valid existing rights. The permittee has not proposed surface-disturbing activities in these areas, and considering the topography, the Bureau of Land Management feels it is unlikely exploration, ventilation shafts, or other disturbance would be practical. If the permittee proposes surface-disturbing activities in these areas, they will be scrutinized very carefully.

The Bureau of Land Management has prepared two environmental analyses discussing the anticipated effects of subsidence in these areas. If subsidence is expressed on the surface, it is likely to consist of a lowering of the land elevation with some surface cracks, and there could be some disruption of the hydrologic balance. Overall, however, the Bureau of Land Management felt the effects of undermining these areas would be small.

The "Land Use Resource Information" section of this analysis discusses the 1999 Utah Wilderness Inventory.

Findings:

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

RELOCATION OR USE OF PUBLIC ROADS

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

In Section 526.133 of the Lila Canyon Amendment the permittee states:

Emery County has given permission to conduct coal mining or reclamation operations within 100 feet of the county road. (See Appendix 1-4)

Appendix 1-4 does not contain any correspondence from Emery County stating that mining and reclamation activities can be conducted within 100 feet of the county road.

The Division is concerned about how close the sediment pond is located to the public road (County Road 163). The Division needs to know what measures will be taken to protect the public from the hazards associated with the sediment pond and other mine facilities.

Findings:

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

R645-301-526.133 and R645-301-526.116, The permittee must show how the public will be protected from mining and reclamation activities that are constructed

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within 100 feet of the county road. Specifically the permittee must address how the public will be protected from the hazards associated with the sediment pond and other mine facilities.

R645-301-121.200, The permittee must either include the letter from Emery County stating that they have approved the construction of the mine facilities next to the county road or remove the reference.

R645-301-121.200, The permittee state in Section 521.170 that the transportation facility maps describe the roads, conveyors, embankments, culverts and drainage structures. There are no maps in the MRP that are entitled Transportation Facility Map. The permittee must specify what map is the Transportation Facility Map.

AIR POLLUTION CONTROL PLAN

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

Analysis:

The application says Appendix 4-3 contains the Air Quality Permit from the Utah Bureau of Air Quality. Appendix 4-3 has a cover letter from Utah American Energy for the Air Quality Notice of Intent. Because Appendix 4-3 does not contain a copy of the Air Quality Permit as stated in the application, the application is incorrect. Until the Air Quality Permit is received and put in the appendix, the application should indicate the permittee has applied for the permit but that it has not yet been received. Also, the regulatory authority enforcing the Clean Air Act has been changed from the Utah Bureau of Air Quality to the Utah Division of Air Quality and the application should be updated.

The letter in Appendix 4-3 from Jay Marshall to the Division of Air Quality says the permittee is requesting approval for a throughput of up to 2,000,000 tons per year. Section 523 of the application indicates the permittee intends to be producing 4,000,000 tons of coal in the third year of production. Before the Division issues a permit, the permittee needs to have an Air Quality Approval Order in place that will not be obsolete before the permit expires in five years.

Findings:

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

R645-301-420, The text of the application needs to show the permittee has submitted a Notice of Intent with the Division of Air Quality and that the Air Quality Permit will be inserted when it becomes available.

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R645-301-420, The application indicates the permittee has applied for an Air Quality Approval Order that would be obsolete after two years. The permittee needs to have an Approval Order that will not be outdated before the permit expires in five years.

COAL RECOVERY

Regulatory Reference: 30 CFR Sec. 817.59; R645-301-522.

In Section 526.133 of the Lila Canyon Amendment the permittee state:

Emery County has given permission to conduct coal mining or reclamation operations within 100 feet of the county road. (See Appendix 1-4)

Appendix 1-4 does not contain any correspondence from Emery County stating that mining and reclamation activities can be conducted within 100 feet of the county road.

The Division is concerned about how close the sediment pond is located to the public road (County Road 163). The Division needs to know what measures will be taken to protect the public from the hazards associated with the sediment pond and other mine facilities.

Findings:

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

R645-301-526.133 and R645-301-526.116, The permittee must show how the public will be protected from mining and reclamation activities that are constructed within 100 feet of the county road. Specifically the permittee must address how the public will be protected from the hazards associated with the sediment pond and other mine facilities.

R645-301-121.200, The permittee must either include the letter from Emery County stating that they have approved the construction of the mine facilities next to the county road or remove the reference.

R645-301-121.200, The permittee state in Section 521.170 that the transportation facility maps describe the roads, conveyors, embankments, culverts and drainage structures. There are no maps in the MRP that are entitled Transportation Facility Map. The permittee must specify what map is the Transportation Facility Map.

SUBSIDENCE CONTROL PLAN

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

Analysis:

According to the application, the main potential effects of subsidence would be escarpment failure and disruption of surface and ground water. It appears there are at least two and possibly four eagle nests in the area that would be subsided even though the permittee has committed to protect these nests. This is discussed in detail in the section of this analysis dealing with the fish and wildlife protection plan.

Renewable resources survey.

Section 525.100 says no renewable resource lands exist within the proposed permit area and adjacent areas. "Renewable Resource Lands" are defined in R645-100 as aquifers and areas for the recharge of aquifers and other underground waters, areas for agricultural or silvicultural production of food and fiber, and grazing lands. Grazing is identified as a land use in the proposed addition to the permit area, and there is at least some recharge to aquifers. Therefore, the area does fall within the definition of renewable resource lands.

Subsidence control plan.

According to the application, ground water will probably be intercepted in the course of mining, but it is not known whether it is perched or an active recharge aquifer. If the mine were to discharge water, it could benefit wildlife, at least through the life of the mine.

The mitigation for losses of wildlife habitat through subsidence could include habitat enhancement to increase production of selected forage species, and development of off-site water sources, such as guzzlers.

Subsidence cracks are occasionally large enough to be dangerous for wildlife, livestock, and people that might be in the area. The permittee has committed in Sections 525.160 and 525.231 to restore to the extent technologically and economically feasible material damage to the surface lands. This commitment is in accordance with regulatory requirements and is considered adequate.

Performance standards for subsidence control.

A standard stipulation on federal leases is that the lessee monitor the effects of underground mining on vegetation. The permittee needs to include a plan to do this.

Findings:

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

R645-301-332, Section 525.100 indicates there are no renewable resource lands within the proposed addition to the permit area; however, according to the definition of renewable resource lands and information in the land use chapter of the application, the proposed addition to the permit area does include renewable resource lands.

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R645-301-332, The permittee needs to show how the effects of underground mining on vegetation will be monitored.

In Section 526.133 of the Lila Canyon Amendment the permittee states:

Emery County has given permission to conduct coal mining or reclamation operations within 100 feet of the county road. (See Appendix 1-4)

Appendix 1-4 does not contain any correspondence from Emery County stating that mining and reclamation activities can be conducted within 100 feet of the county road.

The Division is concerned about how close the sediment pond is located to the public road (County Road 163). The Division needs to know what measures will be taken to protect the public from the hazards associated with the sediment pond and other mine facilities.

Findings:

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

R645-301-526.133 and R645-301-526.116, The permittee must show how the public will be protected from mining and reclamation activities that are constructed within 100 feet of the county road. Specifically the permittee must address how the public will be protected from the hazards associated with the sediment pond and other mine facilities.

R645-301-121.200, The permittee must either include the letter from Emery County stating that they have approved the construction of the mine facilities next to the county road or remove the reference.

R645-301-121.200, The permittee state in Section 521.170 that the transportation facility maps describe the roads, conveyors, embankments, culverts and drainage structures. There are no maps in the MRP that are entitled Transportation Facility Map. The permittee must specify what map is the Transportation Facility Map.

SLIDES AND OTHER DAMAGE

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

Analysis:

The permittee committed to phone the Division if a slide occurred. The Division would be informed of the remedial plan. If the Division believed the remedial plan inadequate they would tell

the permittee what additional step were needed. The permittee committed to report any potential hazards of impoundments that are found during an inspection.

Findings:

The permittee met the minimum requirements of this section.

FISH AND WILDLIFE INFORMATION

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

Analysis:

Protection and Enhancement Plan

In Section 333, the application says the major impacts to wildlife in and around the mine will be the loss of habitat during construction. It also says most wildlife will either accept the mine or adjust behavior to coexist with the operation.

The Fish and Wildlife Service commented that the mine's disturbance would kill most burrowing animals and others that are less mobile. It would also result in habitat fragmentation and dislocation of some animals to less desirable or already-occupied areas. Although wildlife can coexist with mining operations, animals may be forced to adjust their behaviors and may be otherwise stressed in ways that reduce their chances for survival

The permittee has committed to train mine employees annually on environmental awareness. This will include wildlife protection measures, such as avoidance during stress periods, caution in driving, and recognition of threatened or endangered species.

In Section 323.300, the application indicates there could be possible restrictions on firearms on the mine site as well as restrictions on off road vehicle use. The permittee should make a definitive commitment to enforce these restrictions.

All suitable water encountered during mining will be discharged in a manner that it becomes available to wildlife. The permittee will need to ensure the water rights allow for this use and that the water quality is suitable. The water rights listed in Table 7-2 indicate the uses are for "mining" and "other." Ensuring that water quality is suitable should be possible through testing required for the discharge permit.

The application discusses the possible benefits of water in the sediment pond to wildlife. Because of the various contaminants that flow into sediment ponds, it is very unlikely water in the pond will benefit wildlife. In fact, the pond should be checked daily for any signs of wildlife harmed by the water.

The application and comments from the Division of Wildlife Resources indicate there are bighorn sheep that spend all year in the Lila Canyon area, and the application says use by sheep is expected to be curtailed following construction. However, the application does not discuss how these animals will be protected and their habitat maintained as far as possible. The Division suggests the permittee cooperatively plan mitigation efforts with Wildlife Resources.

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The Division of Wildlife Resources commented that Lila Canyon, and more particularly the water sources up the canyon, are heavily used by chukars, and they feel the mining operations will affect these birds. They suggested the permittee install some watering structures of a suitable design and said these water sources would greatly benefit chukars and other area wildlife. This is a reasonable mitigation measure and is considered within the definition of "best technology currently available" to enhance wildlife habitat.

Endangered and Threatened Species and Bald and Golden Eagles

The Probable Hydrologic Consequences statement in Appendix 7-3 indicates the mine would use about 19.7 acre-feet of water annually. Appendix 7-3 indicates 500,000 cubic feet per minute (cfm) of air will be exhausted from the mine with 657,000 gallons of water lost annually through evaporation; however, Section 523 says 900,000 cfm will be exhausted at full production. If the evaporation rate remains the same with the increased exhaust rate, the amount of water lost through evaporation would be increased to 1,182,600 gallons per year and the total amount of water used would increase to 21.3 acre-feet. This discrepancy needs to be resolved.

The Fish and Wildlife Service has determined that water depletions from the Upper Colorado River Basin may affect four listed threatened or endangered fish species. Mitigation is required when the annual depletion exceeds 100 acre-feet. Because the mine is not expected to use that much water, no mitigation should be required.

The Fish and Wildlife Service commented in a letter dated April 14, 1999, that there should be an evaluation of effects on the Colorado pikeminnow (formerly the Colorado squawfish) of a water discharge line to the Price River. This discharge line was apparently proposed early in the planning process for the mine, but it is no longer being planned.

It is impossible to fully evaluate potential effects on raptors without enough information about the nests in the vicinity of the mine. However, the Division has obtained an enhanced version of the 1998 raptor survey map from the Division of Wildlife Resources, and there are about three golden eagle nests within 250 yards of the proposed disturbed area. One of the nests is only about 260 feet from the proposed disturbed area. It appears the proposed facilities are in clear view of the nests, and, because of the proximity, it is almost certain they would not be used during the life of the mine.

In Section 358.200, the permittee commits to conduct a raptor survey to ensure that no bald or golden eagles, their eyries, or their young would be adversely affected by mining -related activities. This statement needs to apply to all raptors, not simply bald and golden eagles.

The permittee commits to establish a one-half mile buffer zone of no disturbance during critical nesting periods. While this is adequate to protect eggs and chicks from abandonment, it is not adequate as a mitigation or enhancement plan. It is possible the permittee will need to obtain "take" permits from the Fish and Wildlife Service, particularly for those nests close to the proposed facilities area. The Fish and Wildlife Service recommends the permittee use the publication *The Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances* (Romin and Muck, 1999) to design protection and mitigation procedures..

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Section 358.200 also contains a commitment to safeguard any escarpment that has been identified as a nest site for raptors, and this commitment would be adequate if it was reflected in the mine plan. However, Plate 5-5 shows subsidence in areas where at least two nests are located. Also, it is not known if all potential habitat in the subsidence zone has been surveyed for nests. The permittee needs to show how nests in the subsidence zone will be protected.

The application needs information about proposed and listed threatened and endangered species, and until this information is available, it is impossible to determine what effects there might be. However, it appears there are no listed species in the proposed permit area.

Wetlands and Habitats of Unusually High Value for Fish and Wildlife

The application says the proposed disturbed area contains critical winter range for deer and elk, but it does not contain a specific protection or enhancement plan. Other operators have mitigated for similar disturbances by working with the Division of Wildlife Resources to enhance habitat on nearby lands.

According to the application, there are no wetlands or riparian areas within the proposed addition to the permit area. While there are a few springs in the area, it does not appear there are any perennial drainages.

Findings:

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

R645-301-333, Section 323.300 discusses possible restrictions on firearms and off road vehicle use. The permittee should commit to enforcing legal requirements of firearm and off road vehicle use by employees in the mine area.

R645-301-333, The application discusses possible benefits to wildlife of water in the sediment pond, but the converse is more likely. This discussion needs to be modified, and the permittee needs to commit to check the pond on a daily basis for signs of wildlife being harmed by the water.

R645-301-333, There is a discrepancy between Appendix 7-3 and Section 523 in the amount of air that would be exhausted from the mine. This affects the calculations of the amount of water that would be lost through evaporation, and the discrepancy needs to be resolved.

R645-301-333, The Division of Wildlife Resources commented there are bighorn sheep that spend the entire year in Lila Canyon, and the mine will adversely affect these animals. In addition, the area is heavily used by chukars, and this use would also be negatively affected. The permittee needs to show how it will mitigate for these effects or how they will be minimized. Wildlife Resources suggests the permittee install at least one artificial watering device, such as a guzzler.

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R645-301-333, There are golden eagle nests very close to the proposed surface facilities that almost certainly would not be used if the mine is built. The commitment in the plan to not disturb the area during crucial nesting periods would protect eggs or chicks from being abandoned, but it does not compensate for the loss of nests and nesting habitat. The permittee needs to propose protection or mitigation methods to be used for these nests and any others that may be in the area. It is likely the permittee will need to obtain "take" permits from the Fish and Wildlife Service.

R645-301-333, The application says a raptor inventory will be conducted to ensure that no bald or golden eagles or adversely affected by mining, but this statement needs to apply to all raptors.

R645-301-333, The permittee has committed to not subside escarpments that contain eagle nests, but this commitment is not consistent with the mine plan. The permittee needs to show how nests in the subsidence areas would be protected.

R645-301-333, The permittee needs to include a specific protection and enhancement plan for critical big game habitat in the area of the proposed surface facilities.

Additional protection or enhancement plans may be needed once the Division receives further information about raptor nests and listed and proposed threatened or endangered species in the vicinity of the proposed surface facilities.

While the access road and power lines will probably not be regulated by the Division, the Division of Wildlife Resources and Fish and Wildlife Service commented on these facilities. It is very important that power lines be designed and constructed in accordance with the most current technology to avoid electrocutions. The poles will be used by golden eagles, ferruginous hawks, and other raptors.

Many big game animals are killed in collisions with vehicles used to haul coal, and it is vital that drivers be instructed on the importance of maintaining proper speeds and watching for wildlife. Any animals killed must be taken well off the road to avoid scavengers, including eagles, being hit. They should also be reported to Wildlife Resources.

TOPSOIL AND SUBSOIL

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

Analysis:

Chapter 2, Soils, Sections 230 through 234, discusses the soils operation plan for the proposed Lila Canyon Mine. Topsoil protection incorporates traditional methods of salvaging/stockpiling. The Analysis section discusses operation information as follows:

- Topsoil and Subsoil Removal
- Topsoil Substitutes and Supplements
- Topsoil Storage

Topsoil and Subsoil Removal

Based on UDOGM guidelines and the Order 1 soil survey, Topsoil is suitable for reclamation has been identified and quantified as discussed and summarized in Appendix 2-3. As summarized in the MRP, topsoil salvage estimates are broken down according to soil survey map units. Although the Order 1 soil survey identified a maximum of about 157,600 cubic yards of soil for salvage from approximately 47.9 acres, the MRP estimates show that 140,789 cubic yards of soil is available for salvage from 38.95 acres. Accordingly, the following table shows salvage areas, acreage, depth of salvage and available volumes:

Topsoil Areas and Available Salvage Volumes			
Map Unit	Salvage (inches)	Acres	Volume (yd³)
SBG	48	11.08	71,501
VBJ	30	9.51	38,336
XBS	12	8.89	14,307
DSH	40	1.56	8,373
RBL	8	7.01	7,543
RBT	6	0.90	729
Total		38.95	140,789

Potential salvage depths were generated for each map unit based on evaluations of all field and laboratory data. Topsoil salvage areas are broken down by soil survey map units and are identified on the Salvageable Soils Map, Appendix A2 of Appendix 2-3, Order 1 Soil Survey. The Salvageable Soils Map shows each soil survey map unit, soil description sites, and potential salvage depths.

The MRP defines "Topsoil" as suitable soil for plant growth, generally, the upper 6 to 12 inches that consist of both the A and B horizon materials. For the Lila Canyon site, below this depth, there is generally an increase in carbonates and rock fragments. The MRP states that Topsoil will be removed from surface disturbance areas where material will be excavated in order to achieve final yard configuration. Topsoil salvage will occur under the supervision of a soil scientist.

Soil Salvage Practices

Section 232.100 of the MRP concludes that actual topsoil salvage will average 8 inches over the 38 acres of disturbed area, which would result in a total volume of about 40,900 cubic yards of soil. Plate 2-3 shows an average of 8 inches being salvaged across the site. In addition, Sections

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231.300 and 232.100 give reference to protecting soils in-place. Section 232.100 states that after topsoil removal, underlying soil materials will be used as fill or left in place.

State regulations R645-301-200 are specific in requiring that all soil be removed from the area to be disturbed. Therefore, all identified soils suitable for reclamation and available for salvage must be salvaged and protected for reclamation. Because the topsoil is less than six inches, salvage must include both the surface topsoil and suitable subsoils identified in the Order 1 soil survey. The disparity between the 140,789 cubic yards of available topsoil salvage and the projected 40,900 cubic yards of topsoil salvage, leaves a deficit of nearly 100,000 cubic yards of topsoil that will presumably be left in-place. No soil may be used as fill or left in place. Leaving soils in-place is not a permitted practice for protecting topsoil resources according to the R645-301-200 regulations. All soil resources must be protected and preserved for reclamation and may not be used as construction fills or for any other construction purpose.

Sections 232.400 through 232.420 give reference to Section 232.600. Section 232.600 simply states that topsoil will be removed from excavation areas and stockpiled prior to construction activity; vegetation and boulders that might interfere with topsoil salvage would be removed previously. The MRP needs to show and discuss areas of minor disturbance where soil salvage will not occur. If these areas don't exist, then the MRP needs to state that no such minor disturbance areas exist and that soil salvage will occur in every instance where surface disturbance will occur.

Soil Segregation

Section 232.500 states that no subsoil segregation is necessary. Section 231.100 states that the upper 6 to 12 inches of soil is suitable for salvage with carbonates increasing with depth. The Order 1 soil survey shows that a calcic horizon is verified in soil pedons LC1, LC5 and LC6 with CaCO_3 ranging between 20 to 21 percent. Pedons LC3 and LC4 have some CaCO_3 accumulation in the subsoil but is less than the 15 percent needed to be classified as a calcic horizon. Based on soil suitability, salvageable soil is identified by depth for the entire site according to the Order 1 soil survey. Salvageable subsoils that contain a calcic horizon need to be salvaged, segregated out from other subsoil horizons, stockpiled, and redistributed as calcic subsoil.

According to R645-301-232.100 and R645-301-341, the Division strongly recommends the following: (1) Each of the different soils (e.g., SBG) need to be salvaged separately, segregated, and stockpiled according to each of the seven soil types; and (2) Segregated soil types need to be redistributed in a manner that will allow achievement of the vegetation performance standards of diversity and erosion control. Soil types strongly influence the biology performance standards of vegetation diversity and erosion control. The application indicates soils would be stored in a single storage pile and redistributed to a uniform thickness of eight inches. The soils on the slopes tend to be coarser and more resistant to erosion than those in flatter areas. Mixing the finer textured soils with the coarser textured soils would lead to more erosion on the slopes. Also, the reclaimed area would not have the same diversity of soils as presently exists, so there would be less diversity of habitats for plants and a less diverse plant community.

Adverse Conditions

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Sections 232.700 and 232.710 state that topsoil can be salvaged on areas to be disturbed. Local exceptions may exist where topsoil can not be salvaged because of rockiness and steep slopes. The MRP needs to discuss specific areas and identify those non-salvageable areas on the soil salvage map where conditions exist where soil can not be salvaged due to rockiness and steep slopes. On steep slopes accessible to construction machinery for constructing cutslopes, soils are expected to be salvaged. Either steep, rocky surface slopes are safe for constructing cut slopes and likewise soil salvage, or they're not safe for either activity. If steep, rocky slopes surface materials render themselves suitable for constructing purposes using conventional construction equipment, (e.g., cutslopes, sediment pond basins, and pad fill), then these same indigenous soil and rock material from the unconsolidated steep, rocky surfaces can likewise be salvaged and stockpiled for later reclamation use.

There is no clear and obvious presentation in the MRP where cut and fill slopes will occur as described in the text. The MRP needs to provide a cut and fill contour map and correlate discussion from both operations and reclamation with the map.

Fan Portal Site

Section 232.100 gives reference to the exhaust fan site and soil salvage. The exhaust fan site could not be located on any map within the MRP. The text states that the fan site is located at the coal outcrop and that salvaged soil would be stored in a separate topsoil stockpile at the fan site. The following are needed in the MRP:

- The plan needs site specific soil resource information (Order 1 Soil Survey) for soils at the fan site.
- Locate the exhaust fan portal site on the MRP maps.
- The size and extent of the engineered fan site need to be appropriately scaled on the maps to ensure that the proposed disturbance area takes into account the extent of disturbance and the resulting volume of soils that will be salvaged.

Rocks - Boulders and Large Stones

The MRP appendix 2-3 states that surface stones and boulders in the soil that are present during salvage operations, could be removed to a rock pile on site and held there until replacement. Protection of topsoil resources include salvaging "native soils" with "intrinsic or indigenous rock content." Section 232.100 states that removal of large stones and boulders would be considered in volume estimates. However, Section 232.100 also states that boulders and large stones will be used as fill materials. The following need clarification in the MRP:

- Designate a "topsoil" rock stockpile on maps where salvaged rock will be stored for reclamation use.
- "Topsoil" rock stockpiles need to be appropriately signed and protected during life of mine.

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- Or, include rock with soil salvage and store with soil in topsoil stockpile.
- Indigenous "topsoil" boulders, and large stones have intrinsic value for reclamation success and soil protection during reclamation and, therefore, must be salvaged and protected. This indigenous rock may not be used as fill materials during operations.

MRP Inconsistencies

The MRP contains inconsistencies within Chapter Two and between other appendices and chapters. The following inconsistencies need to be corrected:

- Section 231.100 references Section 232.300 for further discussion. Section 232.300 does not contain any discussion and references Section 231.100 for further discussion.
- Section 231.100 references Chapter 5 for review with the comment that Chapter 5 contains an "in-depth discussion of the construction plan" and that "Chapter 5 should be reviewed and thoroughly understood prior to continuing with the review of 231.100 section." No pertinent correlation could be identified between Section 231.100 and Chapter 5 for soil removal and stockpiling.

Topsoil Substitutes and Supplements

Sections 224, 231.200, 232.720, 233, and 233.100 thru 233.400 state that "Studies show" no substitute topsoil is needed. The plan needs to provide specific relevant information concerning the referenced studies.

Rock Slope Material

Using R645-100, the rock slope material is by definition Underground Development Waste, which is by definition Coal Mine Waste. All Coal Mine Waste must be properly disposed of in a Refuse Pile. A Refuse Pile means a surface deposit of coal mine waste that does not impound water, slurry, or other liquid or semi-liquid material. Underground Development Waste is Defined by R645-100 as waste-rock mixtures of coal, shale, claystone, siltstone, sandstone, limestone, or related materials that are excavated, moved and disposed of from underground workings in connection with Underground Coal Mining and Reclamation Activities. Therefore, the rock slope waste material must be identified as Underground Development Waste and disposed of properly in a Refuse Pile. If used as pad fill, The Pad fill must be permitted as a Refuse Pile.

Refuse Piles

The MRP states that the refuse pile will be covered with 24 inches of soil. Because this is a new mine with a known refuse pile anticipated, there is no reason not have 48 inches of the soil cover during reclamation to meet the requirements of R645-301-533.252. Therefore, enough substitute

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topsoil and soil supplements need to be salvaged and stockpiled to meet the 4 feet cover requirement for both the rock-slope refuse pile and the main refuse pile. The MRP needs to show where these substitute soils will be salvaged from and where they will be stockpiled. R645-301-232.720 states that all available substitute material must be made available. The RBL area has only an average of 8 inches of suitable soil, therefore, additional substitute soils need to be located and utilized elsewhere in the site where subsoils are much deeper. If no available substitute material can be made suitable for achieving the revegetation standards of R645-301-356, then the MRP needs to identify suitable substitute topsoil borrow. If substitute topsoil borrow is identified, then the permit application must provide the necessary environmental resource information and meet all other applicable regulations to permit a borrow site.

Topsoil Storage

The application states that the stockpiled soil will be loosely piled and have an irregular, pitted surface or contour furrows. The following are needed:

- **Compaction** - soil scrappers have been emphatically shown to induce soil compaction. The application needs to show how compaction will be alleviated, not only on the surface of the stockpile, but in the interior as well. Compaction must either be avoided by using other construction methods, or be alleviated as the pile is constructed.
- **Surface roughening** - contour furrows and constructing an irregular, pitted surface are not compatible practices. The application must commit to using one or the other exclusively. If contour furrows are used, the performance standard for eliminating erosion must be met. All proposed contour furrow work must be properly engineered for furrow placement, slope, and size to control erosion. For contour furrows, the application must contain design, maps, and cross sections.

The application contains some information concerning topsoil pile size and dimensions. However, additional information is needed as follows:

- **Topsoil Stockpile** - the topsoil stockpile needs to be sized to store 140,000 CY topsoil and segregated calcareous subsoil.
- **Substitute Topsoil Stockpile** - location, placement, storage and protection of salvaged substitute topsoil for reclaiming the refuse and waste piles.
- **Stockpiles** - Engineered drawings of projected stockpiles scale, sizing and placement. Drawings need to show engineered size, exact placement, and final configuration of each stockpile. In addition, the stockpile drawings need to show cross sections. Details are needed for the following stockpiles:
 - topsoil stockpile,
 - calcareous subsoil stockpile,
 - substitute topsoil stockpile, and
 - "topsoil" rock (boulders and large stones) stockpile.

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Findings:

Information provided in the application is not considered adequate to meet the requirements of this section of the regulations. The permittee must provide the following in accordance with:

R645-301-232.100 through R645-301-232.300, Salvage and protect all identified topsoil and subsoils suitable for reclamation. Because the topsoil is less than six inches, salvage must include both the surface topsoil and suitable subsoils identified in the Order 1 soil survey. No soil may be left in place and/or used as fill. Leaving soils in-place is not a permitted practice for protecting topsoil resources. All soil resources must be protected and preserved for reclamation and may not be used as construction fills or for any other construction purpose.

R645-301-232.400 through R645-301-232.420, Show and discuss areas of minor disturbance where soil salvage will not occur. If these areas do not exist, then state that no such minor disturbance areas exist and that soil salvage will occur in every instance where surface disturbance will occur.

R645-301-232.500, Salvageable subsoils that contain a calcic horizon need to be salvaged, segregated out from topsoil and other subsoil horizons, stockpiled, and redistributed as calcic subsoil.

R645-301-232.700 and R645-301-232.710, Identify specific areas inaccessible for construction machinery where soils can not be salvaged due to adverse, unsafe or impractical conditions. All soils must be salvaged on steep slopes and/or rocky areas accessible to construction machinery for the purpose of constructing cutslopes or grading flat areas.

R645-301-120 and R645-301-140, Clearly identify, locate, and present where cut and fill slopes will occur as described in the text. Provide a cut and fill contour map correlated with discussions from both the operations and reclamation sections.

R645-301-140, Locate the exhaust fan portal site on the MRP maps. The size and extent of the engineered fan site need to be appropriately scaled to ensure that the proposed disturbance area takes into account the extent of disturbance and the resulting volume of soils that will be salvaged.

R645-301-231.100 through R645-301-232.300, and R645-301-234.100 through R645-301-234.240, The Order 1 soil survey identifies indigenous rock present on the surface of the soil and within each of the soil horizons. Indigenous "topsoil" boulders, and large stones have intrinsic value for reclamation success and soil protection during reclamation and, therefore, must be salvaged and protected. This indigenous "topsoil" rock may not be used as fill materials during operations.

- Designate a "topsoil" rock stockpile on maps where salvaged rock will be stored for reclamation use.

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- Appropriately sign and protect "topsoil" rock stockpiles during life of mine.
- Or, include rock with soil salvage and store with soil in topsoil stockpile.

R645-301-120, Correct the following inconsistencies:

- Section 231.100 references Section 232.300 for further discussion. Section 232.300 does not contain any discussion and references Section 231.100 for further discussion.
- Section 231.100 references Chapter 5 for review with the comment that Chapter 5 contains an "in-depth discussion of the construction plan" and that "Chapter 5 should be reviewed and thoroughly understood prior to continuing with the review of 231.100 section." No pertinent correlation could be identified between Section 231.100 and Chapter 5 for soil removal and stockpiling.

R645-301-120, R645-301-224, R645-301-231.200, R645-301-232.720, and R645-301-233 through R645-301-233.400, Chapter Sections 224, 231.200, 232.720, 233, and 233.100 thru 233.400 state that "Studies show" no substitute topsoil is needed. The plan needs to provide specific relevant information concerning the referenced studies.

R645-301-100 (Underground Development Waste, Coal Mine Waste, Refuse Pile), R645-301-528.200 through R645-301-528.322, and R645-301-536 through R645-301-536.900, The rock-slope waste material must be identified as Underground Development Waste. Place and properly dispose of all Underground Development Waste in a Refuse Pile. If Underground Development Waste is used as pad fill, then the pad fill must meet the permit requirements for an approved disposal area.

R645-301-553.252, The MRP states that the refuse pile will be covered with 24 inches of soil. Correct the MRP so that the refuse pile, upon final grading is covered with a minimum of four feet of the best available, nontoxic and noncombustible material.

R645-301-233, and R645-301-242.100 through R645-301-242.110, Locate additional substitute topsoil resources to meet reclamation requirements to cover the refuse pile areas with 4 feet of suitable material. The refuse pile is located in the RBL soil unit. Salvageable soils within the RBL soil unit average only 8 inches of suitable material. The following are needed:

- Identify, salvage and stockpile additional substitute topsoil resources to meet the excess requirement for 4 feet of cover on the refuse pile.
- If no additional substitute material is available to achieve the 4 feet of cover and for achieving the revegetation standards of R645-301-356 on the reclaimed refuse pile areas, then the MRP must identify and permit a suitable substitute topsoil borrow area.

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R645-301-234.220 through R645-301-234.230, The application states that the stockpiled soil will be loosely piled and have an irregular, pitted surface or contour furrows. The following are needed:

- **Compaction** - soil scrappers have been emphatically shown to induce soil compaction. The application needs to show how compaction will be alleviated, not only on the surface of the stockpile, but in the interior as well. Compaction must either be avoided by using other construction methods, or be alleviated as the pile is constructed.
- **Surface roughening** - contour furrows and constructing an irregular, pitted surface are not compatible practices. The application must commit to using one or the other exclusively. If contour furrows are used, the performance standard for eliminating erosion must be met. All proposed contour furrow work must be properly engineered for furrow placement, slope, and size to control erosion. For contour furrows, the application must contain design, maps, and cross sections

R645-301-234.200 through R645-301-234.240, R645-301-521.160, R645-301-521.165, The application contains some information concerning topsoil pile size and dimensions. However, additional information is needed as follows:

- **Topsoil Stockpile** - the topsoil stockpile needs to be sized to store 140,000 CY topsoil and segregated calcareous subsoil.
- **Substitute Topsoil Stockpile** - location, placement, storage and protection of salvaged substitute topsoil for reclaiming the refuse and waste piles.
- **Stockpiles** - Engineered drawings of projected stockpiles scale, sizing and placement. Drawings need to show engineered size, exact placement, and final configuration of each stockpile. In addition, the stockpile drawings need to show cross sections. Details are needed for the following stockpiles:
 - topsoil stockpile,
 - calcareous subsoil stockpile,
 - substitute topsoil stockpile, and
 - "topsoil" rock (boulders and large stones) stockpile.

VEGETATION

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

Analysis:

This regulation requires the application to include a description of the measures taken to disturb the smallest practicable area at any one time. Different parts of the application have different acreage figures, but it appears the disturbed area would be between about 39 and 48 acres. The

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permittee needs to justify whether this entire area is needed or if it would be possible to better consolidate the surface facilities.

Section 331 says, "The permit effected [sic] area is approximately 40.77 acres of which only 39.86 acres will be disturbed." The definition of affected area in R645-100 includes all areas above underground workings, so it does not appear the permittee has used the correct term in Section 331. The permittee needs to explain this statement and reconcile the acreage figures with those shown in Sections 542.200, 333, Appendix 5-8, and elsewhere.

All incidental disturbances that will not be used as part of the operations will be revegetated with an interim seed mix. Table 3-5 is an interim seed mix that includes three introduced and four native species.

According to Section 357.220, the lowest parts of the mine plan area, described as the areas with the greatest disturbance and assumed to be the proposed disturbed area, receive nine inches of annual precipitation while the upper elevations receive 14 to 16 inches. According to Section 724.411, the proposed mine site is in an area with annual precipitation of about 12 inches.

It is impossible to determine whether the revegetation plan is adequate when the application contains conflicting information such as this. However, using the more conservative value of nine inches, most of the species in the interim seed mix are not adapted to the site according to the *Interagency Forage and Conservation Planting Guide for Utah*. Intermediate wheatgrass needs at least 14 inches of precipitation, western wheatgrass needs 12 inches, bluebunch wheatgrass does best with 10-14 inches, basin wild rye needs 14 inches, and yellow sweet clover needs at least 15 inches. The planting guide does not give precipitation figures for the other two species in the interim seed mix, but it says slender wheatgrass does best in mountain brush and higher ranges.

The *Interagency Forage and Conservation Planting Guide for Utah* recommends the following grasses for planting in Wyoming big sage/grass communities receiving eight to twelve inches of precipitation: crested wheatgrass, Russian wild rye, thickspike wheatgrass, bluebunch wheatgrass (already in the mix but should have at least ten inches of precipitation), Indian ricegrass, needle and thread grass, green needlegrass, Indian ricegrass, bottlebrush squirreltail, and galleta.

Section 331 refers to the revegetation plan in Section 340 for further information about revegetation methods. The details of this plan are discussed under "Revegetation" below.

Findings:

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

R645-301-331, The permittee needs to consider whether it would be possible to better consolidate the surface facilities and disturb a smaller area. Minimally, the application needs to discuss how the disturbance has been minimized.

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R645-301-331, Different sections of the application contain conflicting acreage figures for the proposed disturbed area. This needs to be corrected and the definition of various terms used in the application, such as affected area and disturbed area, clarified.

R645-301-724.400, The application contains conflicting precipitation information, and this needs to be resolved.

R645-301-331, It appears many of the species in the interim seed mix in Table 3-5 may not be adapted to the site, so the seed mix needs to be revised.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

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

Analysis:

Road Systems

Road Classification System

The permittee states in Section 527.200 that all roads for the Lila Canyon project are shown on Plate 5-2. All of the mine roads shown on Plate 5-2 are classified as primary roads. No ancillary roads are associated with the Lila Canyon project. The information about road classification systems meets the minimum requirements of this subsection.

Plans and Drawings

- (1) In Section 527.200 of the amendment the permittee states that detailed designs and descriptions for each road within the permit area are included in Appendix 5-4 and all roads are shown on Plate 5-2. Appendix 5-4 does not contain information about the road embankment safety factor. The road embankment stability analysis is in Appendix 5-5.

Appendix 5-5 has information about slope stability for the roads. The permittee states that a slope stability analysis was done for the road embankment and road cut slope. The permittee did not state where the cross section that was used for the stability analysis was located, nor did the permittee give the Division a copy of that cross section.

The permittee used the Hoek method for calculating slope stability factors. The stability analysis shows that the road embankment and cut slope are stable. The Hoek method is valid only for slopes with homogeneous soils. The permittee must show that the Hoek method is valid because the site conditions meet the assumptions of the Hoek method.

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Appendix 5-4 has a drawing labeled "Typical road section". The drawing is an enlargement of part of the area identified as 12+00 to 20+00 on Plate 5-2. There is no scale on the drawing nor does the drawing have any design.

- (2) The permittee does not propose to locate a road in the channel of an intermittent or perennial stream. The permittee met the minimum requirements of this section.
- (3) The permittee does not propose to locate a temporary ford in the channel of an intermittent or perennial stream. The permittee met the minimum requirements of this section.
- (4) The permittee does not propose to alter or relocate a natural stream channel.
- (5) The permittee does not propose a low-water crossing of a perennial or intermittent stream channel.
- (6) The permittee states in Section 542.600 that there will be no roads within the mine facilities permitted area. All roads will be reclaimed upon cessation of mining.

Performance Standards

Without plans and drawings for the roads the Division is unable to determine if the proposed roads will meet the performance standards.

Primary Road Certification

The road plans and cross sections in Appendix 5-4 were not certified by a registered professional engineer. The only map that shows road information that was certified was Plate 5-2, which shows general road information.

Other Transportation Facilities

The permittee states in Section 527.200 that the detailed design for conveyor is included in Appendix 5-4. There is no information about conveyors in Appendix 5-4.

Findings:

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

R645-301-527.200, The permittee must give the Division the cross sections that were used in the embankment stability analysis and also state why the assumption used in the Hoek method were valid.

R645-301-527.200, The permittee must give the Division plans for each surface conveyor.

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R645-301-527 and R645-301-534, The permittee must provide the Division with certified plans and drawings for the roads in the Lila Canyon area. The plans and drawings must contain the following information:

- (1) Include a map, appropriate cross sections, design drawings, and specifications for road widths, gradients, surfacing materials, cuts, fill embankments, culverts, bridges, drainage ditches, low-water crossings, and drainage structures;
- (2) Describe the plans to remove and reclaim each road that would not be retained under an approved postmining land use, and the schedule for this removal and reclamation.

SPOIL AND WASTE MATERIALS

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

Analysis:

Disposal of noncoal waste.

The permittee showed the general location where noncoal waste would be stored on Plate 5-2. The Division needs the permittee to be more specific about the location. The exact location of non coal storage waste must be shown on Plate 5-2.

In Section 528.332 the permittee states that final disposal of noncoal mine wastes except for concrete will be disposed in an area designed and constructed to ensure that leachate and drainage does not degrade surface or underground water. The permittee also states that all noncoal mine waste except for concrete will be shipped to ECDC for final disposal.

The Division usually allows an operator to dispose of concrete on site. The on site disposal of concrete is usually done by placing the concrete in areas that will be backfilled and graded. The Division usually requires that at least 4 feet of material is place over the concrete to allow for proper vegetation growth. The permittee must show where the concrete will be disposed and how the area will be reclaimed.

If the permittee wants to dispose of non coal waste on site other than concrete the permittee must specify where the material will be placed during final reclamation and show that the requirements of R645-301-528.332 are meet.

Coal mine waste.

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The permittee states in Section 528.320 that coal mine waste will be placed in new or existing disposal areas within the permit area. The Division is not aware of any existing disposal areas within the permit area where coal mine waste could be placed. The permittee must clarify this statement.

The permittee did not show that the refuse pile will have a static safety factor of 1.5 as required by R645-301-536.110.

The permittee states in Section 520 that the rock material removed from the rock slopes will be used as fill material. The rock material is coal mine waste and must be placed in an approved facility (R645-301-528.320). If the permittee wants to use the rock material for fill then the fill areas must be approved disposal sites (refuse piles) and meet the design requirements of R645-301-536.

Refuse piles.

The plan for the refuse pile is in Appendix 5-7. The permittee states that 24" of subsoil and topsoil will be placed over the refuse pile during final reclamation. The permittee did not state the thickness of the topsoil. R645-301-553.252 requires that 4 feet of material be placed on a refuse pile unless the Division approve a lesser amount.

Impounding structures.

The permittee does not propose to construct any impoundments from coal mine waste.

Burning and burned waste utilization.

The plan to extinguish coal mine fires is in Appendix 5-3. The plan is adequate.

Return of coal processing waste to abandoned underground workings.

The permittee does not propose to dispose of coal mine waste underground.

Excess spoil.

The permittee does not anticipate that any excess spoil will be generated.

Findings:

R645-301-528.332, The permittee must give the Division a detailed plan for the disposal of noncoal mine waste. The permittee must state where in the permit area all noncoal waste will be disposed and how the area will be reclaimed. The Division usually allows concrete to be used as backfill material. All other noncoal mine waste must be placed in areas where the material will not contaminate ground or surface water.

R645-301-528.320, The permittee must identify all existing disposal areas where coal mine waste will be disposed. If no existing disposal areas exist then the permittee must remove the reference to existing disposal areas from the MRP.

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R645-301-528.320 and R645-301-536, The permittee must place all rock material from the rock slopes into approved disposal areas. If the permittee wants to use the material from the rock tunnels as fill material for the pad then the permittee must permit the area as a refuse pile.

R645-301-536.110, The permittee must show that the refuse pile will have a static safety factor of at least 1.5.

R645-301-553.252, The permittee must either commit to cover the refuse pile with 4 feet of material or demonstrate to the Division that a lesser amount is needed.

HYDROLOGIC INFORMATION

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

Analysis:

Ground-water monitoring.

Ground-water monitoring will be conducted according to the ground-water monitoring plan in Section 731.210 of the MRP; the Technical Analysis of that plan, including deficiencies, is in the Hydrologic Resource Information section of this TA and is not repeated here.

The proposed ground-water monitoring plan is based on results of the Baseline Study and PHC determination (Appendix 7-3). Based on results of these studies, the only ground water expected in the permit area from springs or seeps and perched aquifers that may be encountered by the proposed mining.

Seven ground-water monitoring sites are proposed for this property under the Ground Water Monitoring Plan, designated as L-5-G through L-11-G. (See Table 7-3). Station L-5-G is the potential mine discharge point, and will be monitored at least monthly, or as occurs, in accordance with UPDES Permit requirements. Stations L-6-G through L-11-G are significant springs located over the area of proposed mining. These springs will be monitored on a quarterly basis for parameters listed in Table 7-4.

It is not clear from the MRP when operational ground-water monitoring will begin. Ground-water monitoring, if implemented, will continue through mining and reclamation until bond release. Seeps and springs will be monitored quarterly.

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Because mining has not started and no portals are presently discharging on or adjacent to the proposed Lila Canyon Mine permit area, no underground water is presently available for baseline sampling. If ground water is encountered in a quantity that requires discharge, mine discharges will be monitored monthly or as frequently as discharges occur, will be monitored in accordance with requirements of section 731.210, and a monitoring plan will be proposed at that time. Monitoring will continue until the ground-water source is no longer accessible.

The MRP states that at a minimum, total dissolved solids or specific conductance corrected to 25 degrees C, pH, total iron, total manganese and water levels will be monitored, but Table 7-4 contains a more complete list of parameters for which water samples from seeps, springs, and streams will be analyzed.

Ground-water monitoring data are to be submitted every 3 months to the Division. Monitoring submittals will include analytical results from each sample taken during the approved reporting period. Sections 731.212 of the MRP contains a commitment from the permittee that when the analysis of any ground-water sample indicates noncompliance with the permit conditions, the operator will promptly notify the Division and immediately take the actions provided for in "145 and 731"; it is not clear what "145 and 731" are.

The permittee commits in Section 731.215 that equipment, structures and other devices used in conjunction with monitoring the quality of ground water on-site and off-site will be properly installed, maintained and operated and will be removed by the operator and will be removed by the operator when no longer needed.

Surface-water monitoring.

Surface-water monitoring will be conducted according to the surface-water monitoring plan in Section 731.220 of the MRP; the Technical Analysis of that plan, including deficiencies, is in the Hydrologic Resource Information section of this TA and is not repeated here.

It is not clear from the MRP when operational surface-water monitoring will begin. Streams will be monitored monthly; sediment pond and mine discharges will be monitored monthly or as frequently as discharges occur.

Point-source discharge monitoring will be conducted in accordance with 40 CFR Parts 122 and 123, R645-301-751 and as required by the Utah Division of Environmental Health for Utah Pollutant Discharge Elimination System (UPDES) permits. A UPDES discharge permit application has been submitted to the Division of Environmental Health for the proposed sediment pond and mine water for the Lila Canyon operation. UPDES permit applications for the Lila Canyon Mine are provided in Appendix 7-5 (p.34).

Monitoring reports will be submitted to the Division at least every 3 months, within 30 days following the end of each quarter (p.33). When analysis of any surface water sample indicates non-compliance with the permit conditions, the company will promptly notify the Division and

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immediately take actions to identify the source of the problem, correct the problem and, if necessary, to provide warning to any person whose health and safety is in imminent danger due to the non-compliance (p.35).

Surface-water monitoring will continue through mining and reclamation until bond release. The permittee commits in Section 731.225 that equipment, structures and other devices used in conjunction with monitoring the quality of surface water on-site and off-site will be properly installed, maintained and operated and will be removed by the operator and will be removed by the operator when no longer needed.

The permittee proposes in Section 731.121 that surface-water quality protection is to be accomplished by the plan described in Section 731 and the following methods:

- (1) Minimizing surface disturbance and proper handling of earth materials to minimize acidic, toxic or other harmful infiltration to ground-water systems;
- (2) Testing (as-necessary) to ensure stockpiled materials are non-acid and non-toxic;
- (3) Controlling and treating disturbed area runoff to prevent discharge of pollutants into surface-water, by the use of diversions, culverts, silt fences, sediment ponds, and by chemical treatment if necessary;
- (4) Minimizing and/or treating mine water discharge to comply with UPDES discharge standards;
- (5) Establishing where surface-water resources exist within or adjacent to the permit area through a baseline study and monitoring quality and quantity of significant sources through implementation of a Water Monitoring Plan;
- (6) Proper handling of potentially harmful materials (such as fuels, grease, oil, etc.) in accordance with an approved Spill Prevention Control and Countermeasure Plan (SPCC).

Acid and toxic-forming materials.

Underground development waste will be stored in a designated area. Such waste will be tested for acid- or toxic-forming potential, and if found to be acid- or toxic-forming, the waste site will be protected from surface runoff by the use of earthen berms (p. 39).

All storage, burial and treatment practices will be as described in this permit, and consistent with applicable material handling and disposal provisions of the R645-Rules (p. 40).

Transfer of wells.

There are presently three monitoring wells on this permit. When these wells are no longer required, they will be sealed in a safe, environmentally sound manner in accordance with regulations (see Section 631.200).

There are presently no plans to transfer any wells to any other party.

Discharges into an underground mine.

There are no plans to discharge any water into an underground mine (Section 731.510).

The only proposed discharges from this operation will be from the sediment pond and/or underground mine water. Each of these potential discharges would be monitored and controlled within requirements of approved UPDES Discharge Permits

Gravity discharges.

There are no cross sections showing location and extent of ground water and its relation to geologic structure and stratigraphy. There are no cross sections showing the relationship of the rock tunnels to the structure, stratigraphy, and ground water.

Based on historical data from other mines in the area, some mine water can be expected to be encountered during the mining operation. Typically such water is stored in "sumps" or designated areas in the mine and used for mining operations or discharged to the surface. The only planned discharges of water from this site are sediment pond discharge or underground mine water discharge.

The proposed access portals are below the coal outcrop, as shown on Plates 5-2 and 7-5. The fan is to be located above the outcrop. The coal seam to be mined dips away from the portal site at approximately 10%. The two 1,227 foot long slopes will slope up to the east at approximately 12%, from a starting elevation of approximately 6150'. The intersection of the coal seam and the rock slope will take place at approximately 6,300 feet elevation. Maximum ground-water elevation measured in the three IPA wells was 5,972 feet, and maximum projected elevation in the vicinity of the rock-slope tunnels is approximately 6,000 feet (Plate 7-1), so the likelihood that the rock slopes will intercept ground water in the regional aquifer is small.

The permittee states on page 44 that the water level in the mine would need to rise approximately 20 feet to reach the contact of the rock slope with the coal seam and produce a gravity discharge through the tunnels. It is not clear what this means; the numbers provided in the MRP indicate ground-water levels would need to rise approximately 150 feet just to reach the starting elevation of the tunnels and 300 feet to reach the intersection of the tunnel with the coal seam. Water monitoring results and other historical data in the area do not indicate this is likely to occur.

Surface entries and accesses of drift mines are stated to be located so as to prevent or control gravity discharge from the mine. No water is presently issuing from strata above or below the coal outcrop, so the permittee assumes that any water encountered in the underground mining will not be under artesian pressure or have sufficient hydrostatic head to raise it to the portal site but will likely be at a static level far below the exposed outcrop or rock slopes. This is not known to be an acid-producing or iron-producing coal seam.

At the present time, there are no plans to divert water from the underground workings of this operation to any other underground workings.

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Water quality standards and effluent limitations.

Point-source discharge monitoring will be conducted in accordance with 40 CFR Parts 122 and 123, R645-301-751 and as required by the Utah Division of Environmental Health for Utah Pollutant Discharge Elimination System (UPDES) permits. A UPDES discharge permit application has been submitted to the Division of Environmental Health for the proposed sediment pond and mine water for the Lila Canyon operation. Existing UPDES permit applications for the Lila Canyon Mine are provided in Appendix 7-5 (p.34).

Diversions.

There is one undisturbed diversion planned for this site. This diversion consists of a bypass culvert beneath the sediment pond, which will allow undisturbed runoff to bypass the site without mixing with disturbed area runoff.

Other diversions planned consist of disturbed area ditches and culverts, as shown on Plate 7-5. Design details for all diversions are provided in Appendix 7-4.

All diversions will be constructed and maintained to comply with the requirements of R645-301-742.100 and R645-301-742.300. Details are described under those respective sections of this chapter.

The permittee has presented precipitation-frequency values on for expected peak flow events.

Culverts

Culvert details are provided in Appendix 7-4. All undisturbed culvert inlets will be provided with headwall protection, consisting of inlet sections, rock or concrete.

Stream buffer zones.

There are no proposed coal mining or reclamation operations within 100 feet of a perennial or intermittent stream.

Channels on the east and west side of the disturbed area are ephemeral . The permittee has proposed to place a culvert and sedimentation pond in the channel on the east side of the property.

Sediment control measures.

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The general plan for this site is to drain runoff from the disturbed area into a single sedimentation pond for treatment prior to discharge. Site drainage and design details are described in Appendix 7-4.

The sediment control plan and proposed sediment pond designs have been prepared and certified by a Registered Professional Engineer, State of Utah.

Sediment pond locations, design plans and cross sections are provided on Plates 7-5 and 7-6 , respectively.

The proposed sediment pond is not located within a potential subsidence area from past underground mining operations.

The permittee has not provided sediment control measures for the substation located on the hillside.

Siltation structures.

The only proposed siltation structure for this site is the sediment pond. All disturbed area runoff is proposed to be directed to this pond for final treatment prior to discharge.

As discussed above, all disturbed area runoff is proposed to be directed to a sediment pond for final treatment prior to any discharge. The proposed sediment pond will be located at the low point of the disturbed area, as shown on Plate 7-5.

The proposed sediment pond is considered temporary, and will be removed during final reclamation. The pond is designed in compliance with the requirements of the following sections, as required:

The pond will be maintained until the disturbed area has been stabilized and revegetated. Removal shall not be any sooner than 2 years after the last augmented seeding;

Upon removal, the pond area will be reclaimed and reseeded according to the reclamation plan;

The proposed sediment pond does not meet the size or other qualifying criteria of MSHA, 30 CFR 77.216(a);

There are no plans for construction of coal processing waste dams or embankments at this site.

There are no plans to construct roads that will require alteration or relocation of natural drainageways, other than by providing culverted crossings over ephemeral drainages. There are no plans to alter or relocate any intermittent or perennial drainages in conjunction with road construction.

Road construction and design details are provided in Chapter 5 of this MRP Road drainage and culvert design details are provided in Appendix 7-4.

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Impoundments.

- (1) The permittee proposes to construct only one sediment pond, that will be located in the southeast corner of the disturbed area (See Plate 5-2). The sediment pond will have a maximum storage capacity of 12 acre feet and a height of 11 feet. Therefore the pond does not meet the criteria for an MSHA pond.
- (2) The permittee had the sediment pond design certified by Dan Guy, who is a registered professional engineer. The Division does not consider the designs adequate because they do not contain cross sections of the width and length of the sediment pond and the contours on the sediment pond are not labeled. See R645-301-533.700
- (3) In Appendix 5-5 the permittee shows the results of the safety factor analysis. The lowest safety factor is 2.35 for the cut slopes under saturated conditions. The safety factor exceeds the 1.3 requirement. The permittee must show the cross sections that were used to determine the safety factors.
- (4) The Division's hydrologist will determine if the impoundment has adequate freeboard to resist overtopping by waves and by sudden increases in storage volume.
- (5) The permittee did not include not include the analysis of the physical and engineering properties of the foundation materials. The permittee must include that information in the MRP. See R645-301-533.210
- (6) The permittee states in Appendix 5-5 that the pond is protected against sudden drawdown. The permittee list four reasons why the pond is protected against sudden drawdown. None of the reasons explain why the pond would be protected against pore pressure in the embankment due to rapid drawdown. The permittee must supply the Division with additional information about how the pond is protected against sudden drawdown. See R645-301-533.300.

The permittee states that the pond design was approved by the State Engineers Office. The permittee must give the Division a copy of the State Engineers approval letter. See R645-301-521.190.
- (7) The permittee committed to have the external slopes of the impoundment will be planted with an approved seed mix to help prevent erosion and promote stability. The Division biologist and hydrologist will review the vegetation plan.
- (8) The Division's hydrologist will determine if the spillways are properly designed.
- (9) There are no highwalls associated with the impoundment.
- (10) The permittee committed to conduct inspections as stated in the **Utah Coal Rules**.

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A review of the operation plan finds that the permittee has evaluated hydrologic designs in compliance with standards supported by the Division. However, one of the proposals for project development and some of the values used in hydrologic calculations are questioned as feasible to the Division.

The permittee proposes fill an ephemeral channel and construct a sedimentation pond on the fill. A diversion culverts UC-1 and UC-2 will be constructed which are intended to transmit flows below the fill. The permittee used frequency-duration data (precipitation data) garnered from the Horse Canyon Mine Plan. This same information was likely obtained from the NOAA Atlas Volume 2 publication, Page 5, Appendix 7-4.

It has been observed by hydrologist working at the Division that the area along the Book Cliffs are prone to late summer thunderstorms that deliver torrential rainstorms that flood the ephemeral channels. The difference in elevation can change rapidly from the valley floor to the mountain ridges. The canyons of the Book Cliffs act to capture the high intensity snows and transmit them at great velocities to the channels below. Thus, the flow in the channels should consider the rate of precipitation at the mountain ridges instead of the valley. And any channel structures should design for the higher and more intense storms. Adding to the failure of hydrologic structures is the amount of debris along the stream banks, such as dead trees, sagebrush, loose sediment in the stream channels and barren, unprotected stream banks.

The permittee should incorporate a higher value for peak discharges and plan to construct the sedimentation pond in another location away from the ephemeral channel. The permittee should consider the potential of placing the sedimentation pond southwest of the access road. This would eliminate the need for a large culvert, and provide a safer and better means of ephemeral flow transport.

Some of the values such as land slope, yielding a lower curve number, and hydraulic lengths are questioned

Casing and sealing of wells.

There are no wells planned for the Lila Canyon Mine; however, if any wells are installed in the future, they will be permanently sealed in accordance with section 765 of the Coal Mining Rules (p. 85).

Findings:

Operation Plan Hydrologic Information is not considered adequate to meet the requirements of this section. Prior to approval the permittee must provide the following information in accordance with:

R645-301-521.190, The permittee must provide the Division with a copy of the letter from the State Engineer stating that the sediment pond design has been approved.

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R645-301-533.700, The permittee must have cross sections for both the width and length of the sediment pond on Plate 7-6.

R645-301-533.700, The permittee must label the contour lines on Plate 7-6.

R645-301-533.100, The permittee must give the Division copies of the cross sections that were used in the slope stability analysis.

R645-301-533.210, The permittee give the Division the physical and engineering properties of the sediment pond foundations.

R645-301-533.300, The permittee must show how the pond will be protected against sudden drawdown. Specifically the permittee must show that pore pressure in the embankments will not cause the pond to fail should a sudden drawdown occur.

R645-301-731.521 - The permittee states on page 44 that the water level in the mine would need to rise approximately 20 feet to reach the contact of the rock slope with the coal seam and produce a gravity discharge through the tunnels. It is not clear what this means; the numbers provided in the MRP indicate ground-water levels would need to rise approximately 150 feet just to reach the starting elevation of the tunnels and 300 feet to reach the intersection of the tunnel with the coal seam.

R645-301-731.212 - Section 731.212 of the MRP contains a commitment from the permittee that when the analysis of any ground-water sample indicates noncompliance with the permit conditions, the operator will promptly notify the Division and immediately take the actions provided for in 145 and 731; it is not clear what "145 and 731" are.

R645-301-731.210 - It is not clear from the MRP when operational ground- and surface-water monitoring will begin.

SUPPORT FACILITIES AND UTILITY INSTALLATIONS

Regulatory Reference: 30 CFR Sec. 784.30, 817.180, 817.181; R645-301-526.

Analysis:

The permittee committed to install and operate all utility installations and support facilities are required by R645-301-526.200

Findings:

The permittee met the minimum requirements of this regulation.

SIGNS AND MARKERS

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Regulatory Reference: 30 CFR Sec. 817.11; R645-301-521.

Analysis:

The permittee committed to place signs and markers are required by the Utah Coal Rules.

Findings:

The permittee met the minimum requirements of this section.

USE OF EXPLOSIVES

Regulatory Reference: 30 CFR Sec. 817.61, 817.62, 817.64, 817.66, 817.67, 817.68;
R645-301-524.

Analysis:

The Division reviewed the general blasting information and found it adequate. R645-301-524.220 allows the permittee to submit a specific blasting plan separate from the MRP. The permittee has opted to submit a detailed blasting plan later.

Findings:

The permittee met the minimum requirements of this section. Under the requirements of R645-301-524.200 the permittee opted to submit the specific blasting plan as a separate submittal. The Division approved the permittee's request to submit the blasting plan as a separate submittal.

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731,
-302-323.

Analysis:

Affected Area Maps

Plate 5-5 shows the areas where mining is expected to occur. Plate 5-2 shows the area that is scheduled to be disturbed. The Division found deficiencies in those maps. Details of the deficiencies are in other sections of the TA. The deficiencies are listed below.

Mining Facilities Maps

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Plate 5-2 shows the mine facilities. The Division has reviewed the map and some deficiencies that are listed below. Details for the deficiencies are listed in other sections of the TA.

Monitoring and Sampling Location Maps

See the Maps, Plans, and Cross Sections in Resource Information. A TA of Monitoring and Sampling Location Maps was done in that section and is not repeated here.

Ground-water and surface-water monitoring sites are listed in Table 7-3 and locations are shown on Plate 7-4. The proposed surface-water monitoring program will monitor Lila Canyon both above and below the disturbed mine site area at L-1-S, L-2-S, and L-3-S and the sediment pond discharge at L-4-S. No monitoring is proposed for Little Park Wash, which appears to be the major surface drainage in the permit area. Seven ground-water monitoring sites, L-5-G through L-11-G, are proposed. Seeps and springs will be monitored quarterly. Station L-5-G is the potential mine discharge point and will be monitored in accordance with UPDES Permit requirements. Stations L-6-G through L-11-G are springs located over the area of proposed mining. The relationship of these springs to seeps and springs monitored previously by JBR Consultants, EarthFax Engineering, and others is not clear. The names do not correspond to those used in gathering earlier data, and locations on Plate 7-4 do not clearly correspond with locations on Plate 7-1.

Certification Requirements.

All cross sections, maps and plans required by R645-301-722 as appropriate, and R645-301-731.700 have been prepared and certified according to R645-301-512 (p. 4).

Findings:

The Monitoring and Sampling Location Maps for the Mining Operations Plan provided in the MRP are not considered adequate to meet the requirements of this section. The deficiencies listed in the Maps, Plans, and Cross Sections of the Resource Information section are not repeated here.

R645-301-528.100, The permittee must show the coal storage areas on the surface facilities maps. The permittee will only be allowed to store coal in those coal storage areas outlined on the surface facilities map. The permittee must also label the coal loading and transportation areas.

R645-301-525.490, The permittee must show on Plate 5-5 or other similar maps those areas where subsidence control methods (first mining only) will be used to protect surface structures such as escarpments, seeps and springs and eagle nests.

R645-301-525.100, The permittee must provide the Division with a map of the permit area at a scale of 1:12,000 or larger that shows the areas where subsidence could occur.

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R645-301-527 and R645-301-534, The permittee must provide the Division with certified plans and drawings for the roads in the Lila Canyon area. The plans and drawings must contain the following information:

R645-301-512, Include a map, appropriate cross sections, design drawings, and specifications for road widths, gradients, surfacing materials, cuts, fill embankments, culverts, bridges, drainage ditches, low-water crossings, and drainage structures;

R645-301-512, Scales need to be checked, Map 7-2 shows a scale of 1" = 200', whereas the scale is somewhat different on Map 7-6.

R645-301-730, Water shed parameters should be checked and corrected as a result of scale readings.

R645-301-730, Tables identifying characteristics of the watersheds should also reference the map they are located.

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RECLAMATION PLAN

GENERAL REQUIREMENTS

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

Analysis:

The operator has submitted reclamation information in each major section of the MRP. There exists several inconsistencies and deficiencies that still need to be addressed. The following

Upon completion of operations, the disturbed area will be reclaimed. All drainage and sediment controls are considered temporary and will be removed when no longer required.

Findings:

The operator's evaluated proposals with associated findings and deficiency information are listed under each of the following sections.

POSTMINING LAND USES

Regulatory Reference: 30 CFR Sec. 784.15, 784.200, 785.16, 817.133; R645-301-412, -301-413, -301-414, -302-270, -302-271, -302-272, -302-273, -302-274, -302-275.

Analysis:

The postmining land uses will be the same as premining land uses. This will be accomplished through the reclamation plan presented in other sections of the application. Support activities to achieve the postmining land use will include site monitoring; remedial actions, such as regrading, reseeding, and replanting; and fencing as necessary to restrict access and grazing.

The postmining land use is in accordance with the Bureau of Land Management's management plans. Appendix 4-2 contains a letter from the Bureau of Land Management stating the postmining land use for the area is wildlife habitat, grazing, and incidental recreation.

Section 412.200 contains a statement that resumption of the original land use at the mine site should not need approval of the land management agency. This comment should be deleted, and in its place, the operator should reference the letter from the Bureau of Land Management in Appendix 4-2.

Findings:

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

R645-301-412, Section 412.200 contains a statement that resumption of the original land use at the mine site should not need approval of the land management agency. This comment should be deleted, and in its place, the operator should reference the letter from the Bureau of Land Management in Appendix 4-2.

PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES

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

Analysis:

The application says the sediment pond will be maintained through the life of the operation and bond liability period at which time it will be allowed to pass through normal pond succession until such time as the pond will be removed when effluent criteria are met at about year six following reclamation. This statement contradicts itself and at least one other section of the application. If the pond is to be maintained through the bond liability period, it will be functional after at least ten years, rather than six, following the last augmented seeding, irrigation, or other work. Stating that the pond will be allowed to pass through normal succession implies it will be allowed to silt in rather than being maintained.

Sections 761 and 763.100 indicate the sediment pond will remain in place until the stability and vegetation requirements for Phase II Bond Release are met and that this will be a minimum of 2 years after the last augmented seeding. At this time, the pond will be removed and the area reclaimed. As discussed above, Section 342 says the pond will remain for at least six years. The hydrology section of the application says nothing about allowing the pond to go through succession.

There is little doubt that a water source in this area would serve as a wildlife habitat enhancement. However, it is not known whether the pond would actually contain water a significant part of the year and would thus serve as an enhancement. It is also not known whether the water quality would be suitable for wildlife use. Even if it does contain water, the enhancement would only be temporary.

The operator needs to clarify how long the pond will be allowed to remain and what maintenance will be done. Before the pond can be considered an enhancement, the operator needs to demonstrate that water in the pond would be suitable for wildlife use.

As discussed above, Wildlife Resources feels the operator should install a watering device in the area. The operator should investigate whether additional methods would serve to enhance wildlife habitat after reclamation.

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The species in the seed mixture, with the required changes, will potentially provide good forage and cover for wildlife. The application indicates the grouping of the plants will be in a manner which optimizes edge effect cover and gives other benefits to fish and wildlife. Because there will be no transplanting, the plants will not necessarily be grouped unless they happen to grow that way. The comments in the application about optimizing the edge effect should be eliminated unless the operator provides specific means by which this will be accomplished.

Findings:

R645-301-342, In Section 342, the application says the sediment pond will be maintained through the life of the operation and bond liability period at which time it will be allowed to pass through normal pond succession until such time as the pond will be removed when effluent criteria are met at about year six following reclamation. This statement contradicts itself and other parts of the application and needs to be modified. The operator needs to clarify how long the pond will be allowed to remain and what maintenance will be done. To leave the pond as wildlife habitat enhancement, the operator would need to demonstrate that water in the pond would be suitable for wildlife use.

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-270, -301-271, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

Analysis:

In Section 512.260 the Permittee states that a professional engineer has certified the design for the proposed variance from the approximate original contours. In Section 553.110 the Permittee states that he will obtain a post mining topography that is similar to the premining contours. The Division is not sure what the Permittee intends to do regarding restoring the land to the approximate original contours.

Findings:

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

R645-301-121.200, The Permittee must clarify if he intends to seek a variance from the approximate original contour requirements.

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BACKFILLING AND GRADING

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

Analysis:

In Section 512.260 the Permittee states that a professional engineer has certified the design for the proposed variance from the approximate original contours. In Section 553.110 the Permittee states that he will obtain a post mining topography that is similar to the premining contours. The Division is not sure what the Permittee intends to do regarding restoring the land to the approximate original contours.

Findings:

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

R645-301-121.200, The Permittee must clarify if he intends to seek a variance from the approximate original contour requirements.

MINE OPENINGS

Regulatory Reference: 30 CFR Sec. 817.13, 817.14, 817.15; R645-301-513, -301-529, -301-551, -301-631, -301-748, -301-765, -301-748.

Analysis:

The Permittee committed in Section 529 of the PAP to seal all underground openings when no longer needed according to Division requirements. Appendix 5-6 has plans for portal seals. The portals will be sealed according to Division and MSHA requirements.

Mine entries which are temporarily inactive, but has a further projected useful services under the approved permit application, will be protected by barricades or other covering devices, fenced, and posted with signs, to prevent access into the entry and to identify the hazardous nature of the opening. These devices will be periodically inspected and maintained in good operating condition by the person who conducts the activity.

When monitoring wells IPA-1, IPA-2, and IPA-3 are no longer required they will be sealed in a safe, environmentally sound manner in accordance with regulations (PAP section 731.400). If any wells are installed in the future they will be cased and sealed according to the regulations (PAP section 748).

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Findings:

The Permittee met the minimum requirements of this section.

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-240.

Analysis:

Chapter 2, Soils, Sections 240 through 244, discusses the soil's reclamation plan for the proposed Lila Canyon Mine. The Analysis section discusses reclamation information as follows:

- Soil Redistribution
- Soil Nutrients and Amendments
- Soil Stabilization

Soil Redistribution

Section 241 references Appendix 5-8 for an in-depth discussion of the reclamation plan for the Lila Canyon Mine. Appendix 5-8 states that 47.9 acres will be reclaimed. Chapter 2 Soils states that 38.95 acres will be disturbed. The plan needs to be in agreement between amount of disturbance and reclamation acreage.

Reclamation will begin once all surface facilities and structures have been demolished and removed. Cut areas will be restored to approximate original contour. Cut areas will be backfilled and regraded using fill material taken from adjacent pad areas. Reclamation of slopes will take place in vertical increments (lifts) simultaneously with the reclamation of the pad area in corresponding lifts. The adjacent hillside will be reclaimed and revegetated. Furthermore, the plan states that much of the revegetation efforts on these slopes can be accomplished by using the adjacent pad fill areas as a work platform for equipment and materials. The following are needed:

- It is not obvious or clear in the PAP where cut and fill slopes will occur as described. Therefore, the PAP needs a cut and fill contour map to correlate discussion concerning backfilling cut slopes from adjacent pad areas.
- Clarification is needed for illustrating where adjacent pad areas are located within the disturbed area that will be used as work platforms for backfilling cut slopes and newly exposed hillsides.
- The statement that the adjacent reclamation pad area will be reclaimed in corresponding lifts is unclear since the pad is being removed, not built up.

Section 242 states that after approximate original contour (AOC) is achieved, the surface will be prepared. Pocking will be the primary method for roughening the AOC surface. Pocking is described as imprinting the soil surface with a pattern of depressions measuring approximately 18 inches by 24 inches

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by 8 inches deep. This would be an absolute minimum for pock size. The best available technology will be used for enhancing the ability of the soil to absorb moisture. Clarification is needed as follows:

- Describe if Pocking will occur before or after topsoil placement.
- Describe the density of pock placement on the soil surface.

Section 242.100 states that previously stockpiled topsoil will be redistributed on the same areas in a uniform thickness of approximately 8 inches on the scarified, postmining regraded fill surface. On flat areas, soil will be reapplied using road grader and/or crawler tractor. On steep slope areas, soil will be reapplied using a front-end loader, crawler tractor, and/or trackhoe. Soil will be applied in horizontal lifts. Boulders will be replaced to achieve a near natural surface condition. Alleviating or minimizing soil compaction is not discussed. The following are needed:

- Describe methods for minimizing and alleviating fill and replaced subsoil and topsoil compaction.
- Describe methods for reducing soil slippage between the fill and soil interface.
- At best to allow achievement of the vegetation performance standards of diversity and erosion control, segregated soil types need to be redistributed in the same area and at the same depth they were salvaged from. Soil types strongly influence the biology performance standards of vegetation diversity and erosion control. **At worst**, mixed soils should be redistributed at the same depth in those areas where they were salvaged.
- Salvaged and stockpiled "topsoil" rock (boulders and large stones) need to be reincorporated with the redistributed topsoil, and replaced on the ground surface.
- Sections 242.300 through 242.320 reference Section 242.100. Section 242.100 does not address Sections 242.300 through 242.320. The plan needs to address R645-301-242.300 through R645-301-242.320.

Soil Nutrients and Amendments

Sections 231.300 and 243 state that topsoil will be sampled, as it is hauled from the storage piles, and tested for nitrogen, phosphorus and potassium content. One grab samples will be taken from each truck load. Field measurements will be used for pH and EC parameters to allow immediate identification of salinity problems and acid problems. If problems are identified in the field, additional sampling will better define the extent and nature of the problem. Sections 231.300 and 243 give reference to topsoil field sampling and testing. All sampling, testing and result interpretation must be done by a qualified soil scientist. The soil scientist must be shown to be qualified to sample, test and interpret data results. An amendment attesting the soil scientist qualifications must be filed with the Division to obtain approval prior to sampling and testing of the topsoil material.

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Section 243 states that based on laboratory analyses, nutrients and soil amendments will be added to make the redistributed soil similar to the undisturbed soils and aid in establishment of vegetation cover. The plan states that the nutrients and amendments can be added by hydroseeding, broadcasting, or by drilling. If the nutrients and amendments are broadcast to the ground surface, they will be intermixed with the soil by discing or raking. Drilling, discing or raking are not compatible with extreme rocky soils, rocky surfaces, or with surfaces that have been deep gouged or pocked. Correct the plan to indicate surface preparation practices that are compatible with the rocky soil and surfaces, and that are consistent with other reclamation practices (e.g., pocking).

Soil Stabilization

Section 244.100 states that vegetation will be the primary method for controlling erosion and fugitive dust. Other measures that will help in erosion control and soil stabilization is pocking and rock placement.

Section 244.200 states that pocking will be the primary method used to roughen the soil surface. In addition, wood fiber mulch will be applied at a rate of 2,000 pounds per acre to the reclaimed areas that have been regraded and covered by topsoil or substitute topsoil. The wood fiber mulch will be tacked to the surface with a tackifier. The Division recommends using composted sewage sludge as a soil treatment. Past experience has shown that composted sewage sludge has been very effective in helping alleviate soil crusting, reducing soil bulk density, and improving water infiltration. In addition, as with other organic matter amendments, the use of composted sewage sludge builds soil structure which improves water retention and helps control erosion.

Findings:

Information provided in the application is not considered adequate to meet the requirements of this section of the regulations. The operator must provide the following in accordance with:

R645-301-120, The following items are needed to help add clarity and eliminate discrepancies in the plan:

- Appendix 5-8 states that 47.9 acres will be reclaimed. Chapter 2 Soils states that 38.95 acres will be disturbed. The plan needs to be in agreement between amount of disturbance and reclamation acreage.
- It is not obvious or clear in the PAP where cut and fill slopes will occur as described. Therefore, the PAP needs a cut and fill contour map to correlate discussion concerning backfilling cut slopes from adjacent pad areas.
- Clarification is needed for illustrating where adjacent pad areas are located within the disturbed area that will be used as work platforms for backfilling cut slopes and newly exposed hillsides.
- The statement that the adjacent reclamation pad area will be reclaimed in corresponding lifts is unclear since the pad is being removed, not built up.

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R645-301-242, R645-301-244, The following are needed to help clarify and describe soil redistribution, placement, and stabilization:

- Describe whether Pocking will occur before or after topsoil placement. Describe the density of pock placement on the soil surface.
- Describe methods for minimizing and alleviating fill and replaced subsoil and topsoil compaction.
- Describe methods for reducing soil slippage between the fill and soil interface.
- **At best** to allow achievement of the vegetation performance standards of diversity and erosion control, segregated soil types need to be redistributed in the same area and at the same depth they were salvaged from. Soil types strongly influence the biology performance standards of vegetation diversity and erosion control. **At worst**, mixed soils should be redistributed at the same depth in those areas where they were salvaged.
- Salvaged and stockpiled "topsoil" rock (boulders and large stones) need to be reincorporated with the redistributed topsoil, and replaced on the ground surface.
- Drilling, discing or raking are not compatible with extreme rocky soils, rocky surfaces, or with surfaces that have been deep gouged or pocked. Correct the plan to indicate surface preparation practices that are compatible with the rocky soil and surfaces, and that are consistent with other reclamation practices (e.g., pocking).

R645-301-242.300 through 242.320, Sections 242.300 through 242.320 reference Section 242.100. Section 242.100 does not address Sections 242.300 through 242.320. The plan needs to address R645-301-242.300 through R645-301-242.320.

R645-301-130, Sections 231.300 and 243 give reference to topsoil field sampling and testing. All sampling, testing and result interpretation must be done by a qualified soil scientist. The soil scientist must be shown to be qualified to sample, test and interpret data results. An amendment attesting the soil scientist qualifications must be filed with the Division to obtain approval prior to sampling and testing of the topsoil material.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 701.5, 784.24, 817.150, 817.151; R645-100-200, -301-513, -301-521, -301-527, -301-534, -301-537, -301-732.

Analysis:

The Permittee committed to reclaim all roads including removal of bridges and culverts in the disturbed area. The road surfaces will be removed and buried on site and covered with a minimum of two feet of material. The roads will be ripped and top soiled prior to seeding.

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All roads within the disturbed area are temporary, and will be removed and reclaimed upon completion of operations. An access road will be left in place to reach the sediment pond; however, this road will also be removed and reclaimed when the sediment pond is removed.

Findings:

The Permittee met the minimum requirements of this section.

HYDROLOGIC INFORMATION

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

Analysis:

Ground-water monitoring.

Reclamation hydrology is described in PAP section 760 and in Appendix 7-4. PAP section 760 refers to Appendix 7-4. Appendix 7-4 contains no information on ground-water monitoring during reclamation.

Surface-water monitoring.

Reclamation hydrology is described in PAP section 760 and in Appendix 7-4. PAP section 760 refers to Appendix 7-4. Appendix 7-4 contains no information on surface-water monitoring during reclamation.

Acid and toxic-forming materials.

The operator plans to cover all identified toxic and acid forming material at least 4 feet deep in material.

Transfer of wells.

There are no wells planned for the Lila Canyon Mine; however, if any wells are installed in the future, they will be permanently sealed in accordance with section 765 of the Coal Mining Rules (p. 85).

Discharges into an underground mine.

The operator does not expect to discharge any surface waters into the mine.

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Gravity discharges.

The operator does not expect to discharge mine water

Water quality standards and effluent limitations.

A reclamation surface and groundwater was not submitted.

Diversions.

Upon removal of roads, culverts and diversions will also be removed and the natural drainage patterns will be restored.

Cut and fill slopes will be reshaped according to the approved reclamation plan. This reshaping will be compatible with the postmining land use and will complement the drainage pattern of the surround terrain. Road reclamation is described in Section 550.

Stream buffer zones.

The definition of a buffer zone requires that the stream be perennial or intermittent. Only ephemeral streams appear on the minesite where disturbance will occur.

Sediment control measures.

The operator proposed to remove all sediment control structures except the sedimentation as mentioned below. There are not specific hydrologic reclamation maps which identify the flow patterns or any special sediment control systems to control runoff after the structures are removed.

A proposal was made to the operator to construct the sedimentation pond west of the access road. Structures adopted for this feature should be submitted.

Sedimentation ponds.

A timetable for reclamation activities is provided in Section 542.100.

As indicated in Section 761, the sediment pond will remain in place until the stability and vegetation requirements for Phase II Bond Release are met. This will be a minimum of 2 years after the last augmented seeding. At this time, the pond will be removed and the area reclaimed.

The above statement would continue to be a fact even if new plans are submitted to change the location of the pond from the ephemeral drainage to another site as requested in the Operation plan by the permit reviewer.

Other treatment facilities.

The operator has not provided information detailing all berms, culverts and silt fences.

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Discharge structures.

As mentioned in the operation plan, the operator needs to submit designs and cross-sections for the inflow channels and discharge structure for the sedimentation pond.

Casing and sealing of wells.

There are no wells planned for the Lila Canyon Mine; however, if any wells are installed in the future, they will be permanently sealed in accordance with section 765 of the Coal Mining Rules (p. 85).

Findings:

Reclamation hydrologic information is not considered adequate to meet the requirements of this section. Prior to approval the operator must provide the following information:

R645-301-761- Appendix 7-4 contains no information on ground- or surface-water monitoring during reclamation.

MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

Analysis:

Affected Area Boundary Maps

Plate 5-4 shows the boundaries of all lands that are expected to be affected by the Lila Canyon project. Plate 5-6, Plate 5-7A and Plate 5-7B show the reclamation topography and cross section. Since the reclamation work will be completed in 6 months the Permittee does not need to show the timing and sequence of reclamation.

Bonded Area Map

Plate 5-6 shows the area for which a reclamation bond will be posted.

Reclamation Backfilling and Grading Maps

Plate 5-6, Plate 5-7A and Plate 5-7B show the reclamation contours and cross sections. Plate 5-6 needs to show the center lines of the cross section. The Permittee must give the Division cross sections that show reclamation of the portal areas. That would be best done if some cross section that are perpendicular to the current cross section were included in the PAP.

Findings:

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

Reclamation Facilities Maps

The Permittee will not leave any facilities after final reclamation. Therefore, such a map is not needed.

Final Surface Configuration Maps

Plate 5-6 shows the proposed final surface topography.

Plate 5-6, Plate 5-7A and Plate 5-7B show the reclamation contours and cross sections. Plate 5-6 needs to show the center lines of the cross section. The Permittee must give the Division cross sections that show reclamation of the portal areas. That would be best done if some cross section that are perpendicular to the current cross section were included in the PAP.

Reclamation Monitoring and Sampling Location Maps

There is no reclamation ground- or surface-water monitoring Plan in the PAP.

Certification Requirements

All reclamation maps were prepared by registered Engineers , Jay Marshall, P.E. or Dan Guy, P.E., certified in Utah.

Findings:

Information on Maps, Plans, and Cross Sections of reclamation hydrologic monitoring and sampling is not considered adequate to meet the requirements of this section. Prior to approval the operator must provide the following information:

Due to recommendations by the permit review team and deficiencies identified in the Technical Analysis document, it is likely that there will be changes in the reclamation procedures and map details. One recommendation, noted, is the recommendation to construct the sedimentation pond in an area other than in the ephemeral drainage. This change would lead to changes in reclamation maps and cross-sections.

R645-301-542, Plate 5-6 must show the center lines for the cross section in Plate 5-7A and Plate 5-7B.

R645-301-542, The Permittee must give the Division detailed cross section that show highwall elimination. The Division suggests that the cross sections that show highwall elimination be perpendicular to the cross section on Plate 5-7A and Plate 5-7B.

REVEGETATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.111, 817.113, 817.114, 817.116; R645-301-244, -301-353, -301-354, -301-355, -301-356, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

Revegetation Plan

Table 3-3 in Chapter 3 is a general reclamation timetable. The same timetable is in Table 3-2 in Chapter 5. This timetable shows phases of reclamation, and no explanation for these phases could be found in the text. The phases shown include "Phase 1 (Earthwork) Lower Area," "Seeding and Mulching/Earthwork Road/Portal," and "Seeding and Mulching (Lower Area 2) Completion of Upper Area." The text needs to discuss where these areas are and the exact reclamation sequence.

Table 3-3 indicates seeding and mulching could begin as early as September 1, but seeding should be delayed until as late in the fall as possible. The application does not give enough detail of the reclamation sequence to determine how late in the year it would be feasible to seed.

After mining has ended, buildings will be demolished and the site graded to approximate original contour on all areas except, according to Appendix 5-8, the rock ledges. The Division must apply the requirements of R645-302-270 to any area not being returned to approximate original contour. If the operator truly desires an exemption from the approximate original contour restoration requirements, this regulation must be fully addressed.

In Chapter 2, the application discusses soil salvage, storage and redistribution. The soils strongly influence the biology performance standards of vegetation diversity and erosion control. The application indicates soils would be stored in a single storage pile and redistributed to a uniform thickness of eight inches.

The soils on the slopes tend to be coarser and more resistant to erosion than those in flatter areas. Mixing the soils would lead to more erosion on the slopes. Also, the area would not have the same diversity of soils as presently exists, so there would be less diversity of habitats for plants and a less diverse plant community. The operator needs to show how soils will be segregated and redistributed in a manner that will allow achievement of the vegetation performance standards of diversity and erosion control.

Also in the soils section, the application discusses reclamation of the coal refuse storage area and the area where material from the rock slopes would be placed. The material from the rock slopes is coal mine development waste and must be handled the same as coal refuse. These areas need to be covered with at least four feet of the best available nontoxic, noncombustible material to achieve revegetation in accordance with the R645-301-350 performance standards.

Section 341.220 says the area will first be graded to approximate premining conditions. The soil will then be ripped to a depth of eighteen inches and disced. Next, topsoil will be distributed to a depth

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of eight inches. Tillage will continue until the size of the average soil clods on the surface is less than one inch.

Continuing to till the soil until soil clods are this small is not necessary or desirable in this kind of site. It might be necessary to break up the very largest clods, but this usually happens naturally as topsoil is redistributed.

The second paragraph under the heading "Erosion" in Appendix 5-8 says it is imperative that the area be pock marked as it is recontoured. Section 244.200 also discusses gouging. The Division agrees pock marking the area or gouging it is essential. Gouging is a form of water harvesting that increases the amount of precipitation that goes into the soil and becomes available for plant growth. This site is dry enough that a form of water harvesting is considered essential for successful reclamation.

According to Section 341.220, the surface will be covered with 2000 pounds per acre of alfalfa or native grass hay which is crimp-discd into the soil. The area will then be seeded and fertilized. Although this section does not discuss gouging, discing hay into the soil would destroy most of the gouges and negate their effects.

The reclamation sequence in Section 341.220 does not discuss gouging or pocking, and Appendix 5-8 does not discuss applying alfalfa or native grass hay as a soil amendment. Therefore, the application is not consistent, and the Division is unsure what reclamation methods the operator intends to use.

Section 244.200 describes the gouges as being about eighteen by twenty-four inches and eight inches deep. These are absolute minimum measurements. Gouges should normally be at least twelve inches deep.

The operator needs to describe how the gouges will be placed. The soil can be gouged so that virtually the entire area is covered by gouges, or the gouges can be spaced some distance apart. Covering the entire area is the most effective.

The seed mixture for final reclamation is shown in Table 3-4. It consists of eighteen species, sixteen of which are native to the area. The two introduced species are yellow sweet clover and alfalfa, and the Division recommends the operator eliminate yellow sweet clover or reduce the seeding rate for this species. While it has been used at several reclamation sites in the past, there are indications it may have allelopathic properties, and it is known to persist in many areas.

The other species are acceptable, but without reliable precipitation figures, it is impossible to be certain whether they are adapted to the site. When the Division has more reliable precipitation data, it may be necessary to adjust the seed mix.

The three dominant grasses found in the vegetation study are not included in the seed mix. Some believe that bluebunch wheatgrass, a palatable but grazing-intolerant grass, has been replaced in this area by the less palatable Salina wild rye. Therefore, it is probably more appropriate to include bluebunch wheatgrass, as the operator has done, than Salina wild rye.

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The warm season grasses, such as galleta and blue grama, are sometimes difficult to establish, but they should still be included in the seed mix since they are among the more important grasses in the area. Sand dropseed was not found in the vegetation survey, and it could be eliminated from the seed mix.

Needle and thread grass is a desirable species that was found in the area although it is not a dominant species. Seed of this species is normally available commercially, and it establishes from seedings. The Division recommends it be included in the seed mix.

The seeding rate shown in Table 3-4 is high, about 176 seeds per square foot for broadcast seeding. The *Interagency Forage and Conservation Planting Guide for Utah* recommends broadcast seeding at a rate of about 50-100 seeds per square foot.

The application says the preferred seeding method will be to use a rangeland drill with shrub species possibly being broadcast seeded to avoid plugging the drill. Broadcast seeding would be done by hand or using a rotary seeder, and a light cover of soil would be spread over all broadcast seeds.

Drill seeding tends to reduce surface roughness which the Division considers vital for this site. Unless the operator can show that surface roughness will not be reduced when using this seeding method, a different technique should be used.

The application says straw mulch will be spread on all inaccessible areas using a blower or by hand and that the mulch will be anchored by crimping. An optional method will be to hydromulch with 2000 pounds per acre of wood fiber mulch and 60 pounds per acre of a tackifier.

The application does not say what mulching method or rate will be used in accessible areas. It also does not say at what rate the straw mulch would be applied. If an area is inaccessible and would have straw applied, it would also be inaccessible to equipment needed to crimp the straw. In addition, crimping, like drill seeding, is likely to reduce the effects of gouging. The operator needs to clarify the mulching methods and rates.

The Division recommends the operator use straw mulch on the entire area and anchor it with hydromulch applied at a reduced rate and a tackifier. This method has proven successful at other mines in Utah.

There will be no irrigation, and no pest or disease control measures are planned. The Division does not anticipate irrigation will be necessary as long as water harvesting methods are used. There are no serious pest control problems in the area of which the Division is aware, so, hopefully, no control measures will be necessary.

The application says in Section 357.301 the Lila Canyon Mine would like to reserve the right to apply for augmentation of reclaimed areas without jeopardizing or extending the bond liability period on a site specific case scenario. The regulations in R645-301-357 are designed to allow a limited amount of reseeded and other work for specific purposes without lengthening the extended liability period. These regulations define the limits of these practices where they are not considered augmentative. Augmented seeding is not allowed without lengthening the extended liability period; therefore, the statement in 357.301 must be modified.

Success Standards

In this section, the application says the reference area for the mine site disturbance was established adjacent to the existing facilities during the summer of 1985. It appears this is a reference to the current Horse Canyon mining and reclamation plan. If the operator intends to use the reference area at the Horse Canyon Mine, the application needs to include all pertinent data to compare the reference area with the proposed disturbed area.

As discussed in the "Vegetation Resource Information" section of this analysis, there is inadequate information to determine whether the reference areas shown in Appendix 3-2 can be approved as success standards for vegetation cover or other vegetation parameters. The operator needs to propose methods for measuring diversity, seasonality, and erosion control and success standards for these parameters.

The Division is required in R645-301-356.230 to consult with the Division of Wildlife Resources and gain approval for the tree and shrub density standard for success. The standard set in consultation with Wildlife Resources is 1500 per acre. This standard needs to be included in the application.

The numbers of woody plants in the proposed disturbed pinyon-juniper area are skewed because over half are *Leptodactylon pungens*, a subshrub. In the shrub/grass disturbed and reference areas, about two-thirds of the woody plants are green rabbitbrush, a small shrub that is not particularly desirable for forage. For these reasons, the standard was based more on the species expected to become established in the area than on the existing vegetation.

Field Trials

The application says the methods outlined have a proven performance based on the successful reclamation of the Horse Canyon Mine.

At this time, the Division does not anticipate it will be necessary to establish field trials. As the operator clarifies the reclamation plan, the Division may decide revegetation methodologies need to be tested.

Findings:

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

R645-301-341.100, The operator needs to clarify the reclamation timetable in Tables 3-3 in Chapter 3 and 3-2 in Chapter 5. There are terms used in these schedules that are not explained elsewhere in the application.

R645-301-341.110, R645-301-354, Tables 3-3 and 3-2 indicate seeding and mulching could begin as early as September 1. Seeding should be delayed until as late in the fall as possible, preferably until November.

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- R645-301-553**, Appendix 5-8 indicates all areas will be returned to approximate original contour except the rock ledges. Unless the operator obtains a variance, all areas must be returned to approximate original contour.
- R645-301-341**, The operator needs to show how soils will be segregated and redistributed in a manner that will allow achievement of the vegetation performance standards of diversity and erosion control.
- R645-301-341**, Areas of coal mine waste disposal need to be covered with at least four feet of the best available nontoxic, noncombustible material to achieve revegetation in accordance with the R645-301-350 performance standards.
- R645-301-341**, Section 341.220 says tillage will continue until the size of the average soil clods on the surface is less than one inch. This is likely to unnecessarily compact the soil, and it reduces soil structure. It may be necessary to break up the largest clods, but continuing to till the soil until soil clods are less than one inch diameter is not necessary or desirable in this kind of site.
- R645-301-341**, The operator needs to resolve inconsistencies in the reclamation methods shown in Section 341.220 and Appendix 5-8. According to Section 341.220, the surface will be covered with 2000 pounds per acre of alfalfa or native grass hay which is crimp-disced into the soil, but this is not mentioned in Appendix 5-8. Appendix 5-8 discusses gouging but Section 341.220 does not.
- R645-301-341**, The Division considers water harvesting, such as gouging, to be an essential component of reclamation at this site. Any reclamation methods inconsistent with leaving a rough surface need to be modified or eliminated. In Appendix 5-8, the operator commits to gouging the site, and crimp discing mulch and drill seeding are likely to reduce the gouges so they will not be as effective as they need to be.
- R645-301-341**, Assuming gouging will be the water harvesting method used, the operator needs to describe how the gouges will be placed.
- R645-301-341.210**, Blue grama and galleta are important warm season grasses in the proposed disturbed area, and they need to be included in the seed mix for final reclamation.
- R645-301-341.210**, The seeding rate shown in Table 3-4 is excessive. The *Interagency Forage and Conservation Planting Guide for Utah* recommends a broadcast seeding rate of 50-100 seeds per square foot.
- R645-301-341.230**, The application does not say what mulching method or rate will be used in accessible areas. It also does not say at what rate the straw mulch would be applied. If an area is inaccessible and would have straw applied, it would also be inaccessible to equipment needed to crimp the straw. The operator needs to clarify the mulching methods and rates.

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R645-301-341, The application says in Section 357.301 the Lila Canyon Mine would like to reserve the right to apply for augmentation of reclaimed areas without jeopardizing or extending the bond liability period on a site specific case scenario. Augmented seeding is not allowed without lengthening the extended liability period; therefore, the statement in 357.301 must be modified.

R645-301-341.250, The application says the reference area for the mine site disturbance was established adjacent to the existing facilities during the summer of 1985. It appears this statement is referring to the current Horse Canyon mining and reclamation plan. If the operator intends to use the reference area at the Horse Canyon Mine, the application needs to include all pertinent data to compare the reference area with the proposed disturbed area.

R645-301.341.250, As discussed in the "Vegetation Resource Information" section of this analysis, there is inadequate information to determine whether the reference areas shown in Appendix 3-2 can be approved as success standards for vegetation cover or other vegetation parameters.

R645-301-341.250, The operator needs to propose methods for measuring diversity, seasonality, and erosion control, and success standards for these parameters.

R645-301-341.250, The operator needs to include the woody plant density success standard of 1500 per acre established in consultation between the Division and the Division of Wildlife Resources.

R645-301-342, The operator needs to investigate whether other enhancement measures could be used at this site during the reclamation phase of operations. The application should contain a discussion of potential enhancement measures.

R645-301-342, Comments in the application about optimizing the edge effect should be eliminated unless the operator provides specific means by which this will be accomplished.

The Division recommends the operator eliminate yellow sweet clover from the seed mix or reduce the amount that would be planted. Also, the Division recommends the operator include needle and thread grass in the seed mix.

Because precipitation figures in the application are inconsistent, the Division cannot be certain whether the species in the seed mix are adapted to the site. Some changes may be needed when the Division has reliable precipitation data.

CESSATION OF OPERATIONS

Regulatory Reference: 30 CFR Sec. 817.131, 817.132; R645-301-515, -301-541.

Analysis:

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The Permittee committed to comply with R645-301-515 and R645-301-541 for temporary and permanent cessation. In the event of temporary cession that will last more than 30 days the Permittee will notify the Division. After permanent cessation the Permittee committed to remove all equipment and surface structures.

Findings:

The Permittee met the minimum requirements of this section.

Bonded area map.

Plate 5-6 shows the area for which a reclamation bond will be posted.

Reclamation backfilling and grading maps.

Plate 5-6, Plate 5-7A and Plate 5-7B show the reclamation contours and cross sections. Plate 5-6 needs to show the center lines of the cross section. The Permittee must give the Division cross sections that show reclamation of the portal areas. That would be best done if some cross section that are perpendicular to the current cross section were included in the PAP.

Reclamation facilities maps.

The Permittee will not leave any facilities after final reclamation. Therefore, such a map is not needed.

Final surface configuration maps.

Plate 5-6 shows the proposed final surface topography.

Reclamation monitoring and sampling location maps.

Reclamation surface and subsurface manmade features maps.

Reclamation treatments maps.

The Permittee does not proposes to leave any surface or subsurface manmade features in the reclaimed area.

Findings:

Information provided in the proposed amendment is not considered adequate to me the requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

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R645-301-542, Plate 5-6 must show the center lines for the cross section in Plate 5-7A and Plate 5-7B.

R645-301-542, The Permittee must give the Division detailed cross section that show highwall elimination. The Division suggests that the cross sections that show highwall elimination be perpendicular to the cross section on Plate 5-7A and Plate 5-7B.

BONDING AND INSURANCE REQUIREMENTS

Regulatory Reference: 30 CFR Sec. 800; R645-301-800, et seq.

Analysis:

Form of bond. (Reclamation Agreement)

Determination of bond amount.

The Division will not review this section until the reclamation plan has been approved.

Terms and conditions for liability insurance.

Findings:

The Division will review this section after the reclamation plan has been approved.

OPERATIONS IN ALLUVIAL VALLEY FLOORS

Regulatory Reference: 30 CFR Sec. 822; R645-302-324.

Analysis:

Conditions for an alluvial valley floor do not exist. There is no subirrigation in the proposed permit area or adjacent areas. There are no agricultural activities in the area other than grazing on undeveloped rangeland.

Findings:

Because there is no alluvial valley floor, the minimum requirements of this section are satisfied.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

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

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The Division will provide an assessment of the probable cumulative hydrologic impacts (CHIA) of the proposed operation and all anticipated mining upon surface- and ground-water systems in the cumulative impact area. The CHIA will be sufficient to determine, for purposes of permit approval, whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area. The Division will allow the permittee to submit data and analyses relevant to the CHIA with the permit application. The application for a mining permit will not be approved until the CHIA has been completed.

Recommendation:

In lieu of the number and variety of technical deficiencies that need to be addressed, the technical analysis team recommends rejection of the permit until the outstanding issues and deficiencies are addressed completely.

It is recommended that the operator reconsider the plans to construct a fill area, culvert system and sediment pond in the undisturbed drainage, however, to relocate the sedimentation pond in an area where the pond will be incised and the drainage is not filled.

It is strongly recommends the following: (1) Each of the different soils (e.g., SBG) need to salvaged separately, segregated, and stockpiled according to each of the seven soil types ; and (2) Segregated soil types need to be redistributed in a manner that will allow achievement of the vegetation performance standards of diversity and erosion control.

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