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State of Utah  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

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July 23, 2002

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Via Fax on 7/23/02  
(435) 613-0805

Jay Marshall, Resident Agent  
Utah American Energy Inc.  
P.O. Box 986  
Price, Utah 84501

Re: Typographical Corrections to the Technical Analysis of New Permit Application, Lila Canyon Extension, Utah American Energy, Inc. (UEI), Horse Canyon Mine, C/007/013-PM02B-1, Outgoing File

Dear Mr. Marshall:

The Division has noted typographical errors in the Horse Canyon Mine, Lila Canyon Extension C/007/013-PM02B-1 Technical Analysis document dated July 19, 2002. Please replace the pages of the Technical Analysis and the Summary of Deficiencies with the enclosed corrected pages. These corrections do not include any substantive changes. We apologize for the confusion.

Sincerely,

Mary Ann Wright  
Associate Director, Mining

an  
Enclosure

- cc: Lowell P. Braxton, w/o
- Clyde Burrell w/o
- Herb McHarg (Certified Mail 7099 3400 0016 8895 6634; Via fax on 7/23/02 435-587-2193)
- Jim Kohler, BLM w/o
- Jim Fulton, OSM w/o
- Ranvir Singh, OSM w/o
- Tom Rasmussen, BLM w/o
- Wes Curtis, Gov. Planning & Budget w/o
- Robert Morgan, DNR w/o
- Tom Faddies, SITLA w/o
- Val Payne, ECPLC w/o
- Josiah Eardley, w/o
- David Levanger, Carbon County Planning & Zoning w/o
- Bryant Anderson, Emery County Planning & Zoning w/o
- Elise Erler w/o
- Price Field Office

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change.” Therefore, it appears the BLM will be managing these lands as in the past until further assessment has been completed.

There has been some previous mining activity in Lila Canyon. The road at the bottom of Lila Canyon was built in the 1950's to provide access for coal exploration. The PAP discusses a coal prospect in the canyon. Two sealed breakouts are located in the left fork of the canyon where the Sunnyside Coal Seam was exposed. Coal was transported back through the Horse Canyon Mine. It is not clear if the coal prospect and the breakouts are the same. It is believed the breakout was opened during the 1950's. This breakout was utilized post-1977 and therefore, the current Coal Regulatory Program has jurisdiction over this disturbance and it is included in the permit area. The narrative and maps of the PAP should be changed to reflect the correct information.

### **Findings**

Information provided in the application is not considered adequate to meet the minimum Land Use Resource Information requirement of the Regulations. Prior to approval, the Permittee must provide the following in accordance with:

**R645-301-121.100**, Plate 4-4 must be updated to reflect recent changes made by the BLM (January 2002) in the boundary of the Desolation Canyon Inventory Unit.

**R645-301-121.200**, The application must either correctly cite the location of the BLM's 1993 Environmental Assessment prepared for management of the Turtle Canyon Wilderness Study Area or remove the reference.

**R645-301-120**, The PAP discusses a coal prospect in Lila Canyon. The PAP must be changed to provide the correct information concerning coal mining in Lila Canyon.

## **ALLUVIAL VALLEY FLOORS**

Regulatory Reference: 30 CFR 785.19; 30 CFR 822; R645-302-320

### **Minimum Regulatory Requirements:**

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.

#### **Alluvial valley floor determination**

Permit applicants who propose to conduct surface coal mining and reclamation operations within a valley holding a stream or in a location where the permit area or adjacent area includes any stream, in the arid and semiarid regions of the United States, as an initial step in the permit process, may request the Division to make an alluvial valley floor determination with respect to that valley floor. The applicant shall demonstrate and the Division shall determine, based on either available data or field studies submitted by the applicant, or a combination of available data and field studies, the presence or absence of an alluvial valley floor. Studies shall include sufficiently detailed geologic, hydrologic, land use, soils, and vegetation data and analysis to demonstrate the probable

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existence of an alluvial valley floor in the area. The Division may require additional data collection and analysis or other supporting documents, maps, and illustrations in order to make the determination.

The Division shall make a written determination as to the extent of any alluvial valley floors within the area. The Division shall determine that an alluvial valley floor exists if it finds that unconsolidated streamlaid deposits holding streams are present; and there is sufficient water available to support agricultural activities as evidenced by the existence of current flood irrigation in the area in question; the capability of an area to be flood irrigated, based on evaluations of streamflow, water quality, soils, and topography; or, subirrigation of the lands in question derived from the ground-water system of the valley floor.

If the Division determines in writing that an alluvial valley does not exist pursuant to the requirements of this section, no further consideration of this section is required.

Applicability of statutory exclusions

If an alluvial valley floor is identified and the proposed surface coal mining operation may affect this alluvial valley floor or waters that supply the alluvial valley floor, the applicant may request the Division, as a preliminary step in the permit application process, to separately determine the applicability of the statutory exclusions set forth in this section. The Division may make such a determination based on the available data, may require additional data collection and analysis in order to make the determination, or may require the applicant to submit a complete permit application and not make the determination until after the complete application is evaluated.

An applicant need not submit the information required and the Division is not required to make the findings required of this section when the Division determines that one of the following circumstances, heretofore called statutory exclusions, exist:

1. The premining land use is undeveloped rangeland that is not significant to farming;
2. Any farming on the alluvial valley floor that would be affected by the surface coal mining operation is of such small acreage as to be of negligible impact on the farm's agricultural production. Negligible impact of the proposed operation on farming will be based on the relative importance of the affected farmland areas of the alluvial valley floor area to the farm's total agricultural production over the life of the mine; or,
3. The circumstances set forth in Section 822.12(b)(3) or (4) of this Chapter exist.

For the purpose of this section, a farm is one or more land units on which farming is conducted. A farm is generally considered to be the combination of land units with acreage and boundaries in existence prior to August 3, 1977, or if established after August 3, 1977, with those boundaries based on enhancement of the farm's agricultural productivity and not related to surface coal operations.

(c) Summary denial. If the Division determines that the statutory exclusions are not applicable and that any of the required findings of Paragraph (e)(2) of this section cannot be made, the Division may, at the request of the applicant:

(1) Determine that mining is precluded on the proposed permit area and deny the permit without the applicant filing any additional information required by this section; or

(2) Prohibit surface coal mining and reclamation operations in all or parts of the area to be affected by mining.

(d) Application contents for operations affecting designated alluvial valley floors. (1) If land within the permit area or adjacent area is identified as an alluvial valley floor and the proposed surface coal mining operation may affect an alluvial valley floor or waters supplied to an alluvial valley floor, the applicant shall submit a complete application for the proposed surface coal mining and reclamation operations to be used by the Division together with other relevant information as a basis for approval or denial of the permit. If an exclusion of Paragraph (b)(2) of this section applies, then the applicant need not submit the information required in Paragraphs (d)(2)(ii) and (iii) of this section.

(2) The complete application shall include detailed surveys and baseline data required by the Division for a determination of--

(i) The essential hydrologic functions of the alluvial valley floor which might be affected by the mining and reclamation process. The information required by this subparagraph shall evaluate those factors which contribute to the collecting, storing, regulating and making the natural flow of water available for agricultural activities on the alluvial valley floor and shall include, but are not limited to:

(A) Factors contributing to the function of collecting water, such as amount, rate and frequency of rainfall and runoff, surface roughness, slope and vegetative cover, infiltration, and evapotranspiration, relief, slope and density of drainage channels;

(B) Factors contributing to the function of storing water, such as permeability, infiltration, porosity, depth and direction of ground water flow, and water holding capacity;

(C) Factors contributing to the function of regulating the flow of surface and ground water, such as the longitudinal profile and slope of the valley and channels, the sinuosity and cross-sections of the channels, interchange of water between streams and associated alluvial and bedrock aquifers, and rates and amount of water supplied by these aquifers; and

(D) Factors contributing to water availability, such as the presence of flood plains and terraces suitable for agricultural activities.

(ii) Whether the operation will avoid during mining and reclamation the interruption, discontinuance, or preclusion of

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velocity of winds, and seasonal temperature ranges that is representative of the permit and adjacent areas is presented in the PAP. The hydrologic regime and hydrologic balance of the Horse - Lila Canyon area are not perfectly understood and never will be; however, the PHC determination has not made use of current baseline data collected since 2000 and submitted with the PAP.

Potential adverse impacts identified are: increased sediment loading, diminution or interruption of water supplies on water rights, discharge of contaminated ground water by pumping, erosion and streamflow alteration, and deterioration of water quality (Page-24, Ch. 7).

Water will be held in sumps as long as possible to promote the settling of sediments and sampled prior to discharge to ensure compliance with UPDES standards (Page 26, Ch. 7).

**Findings:**

**R645-301-721, 724.200,** (1) The Permittee must submit a surface monitoring plan to survey all streams and channels in and adjacent to the permit area. The Permittee must collect and evaluate quantitative and qualitative data for all surface water sources. The survey must establish baseline information and trends for each monitoring site. From the data, the Permittee must characterize the surface waters in or adjacent to the permit area as perennial, intermittent or ephemeral. Classification can be based on water table elevations (with respect to channel surface) and biologic (plant and aquatic) communities present, or the established classification established in the definitions under R645-301-100. Descriptive adjustments based on the life of the mine should be made to describe unusual wet or dry periods that may confound average rainfall and runoff conditions. The Permittee must conduct monthly sampling for all perennial sources and monitor for parameters as per Table 7-4, as committed to in the application on Page 36, Section 731.220, Volume 6, and in accordance with the DOGM Water Monitoring Guidelines. The Permittee must conduct monthly sampling during periods of flow for intermittent streams and monitor for water quality as committed to in the application on Page 36, Section 731.220, Volume 6, and in accordance with the DOGM Water Monitoring Guidelines. The Permittee must conduct quarterly surveys for ephemeral streams and monitor for water quality as committed to in the application on Page 36, Section 731.220, Volume 6, and in accordance with the DOGM Water Monitoring Guidelines. (2) The Permittee shall provide information in a table and illustrate on maps the area and extents of drainage basins in and adjacent to the mine permit area. The table shall identify the area of the drainage basin that flows in and through the permit area. (3) The Permittee must conduct a survey for springs and seeps in all the draws and washes of the Lila Canyon Extension and adjacent areas, particularly the lower reaches that are incised into the Price River Formation and underlying strata, and the potential for other discharge points in other areas, such as Range Creek, must be evaluated.

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**R645-301-731, -731.221** The Permittee shall identify and describe all water resources within the drainage basins and potential impacts to the resource and downstream users. The Permittee will discuss methods of mitigation to surface water resources and channels in the event subsidence should occur and water resources are impacted. The Permittee will describe access and feasibility of mitigation of subsidence impacts to perennial, intermittent or ephemeral stream channels and how channel restoration could be accomplished.

**R645-301-724, 725, 728, (1)** Information from the Kaiser South Lease PAP on the crest-staff gauges and piezometers A-26, A-28, and A-31 in Little Park Wash must be included in the Lila Extension PAP to be used in determining the PHC and to be available to the Division to use in preparing the TA and CHIA. (2) Water-quality data for inflows to the Horse Canyon Mine are in the current Horse Canyon Mine MRP, but the Permittee has not discussed water quality of this saturated zone. The Permittee must include this information in the discussion of water quality in the saturated zone. (3) At least four water level measurements and one suite of water-quality analyses were done at S-32, but there is no information on the current condition of S-32 in the PAP. The Permittee needs to visit the site of this water-monitoring well and determine if it is still usable. If it is usable, the Permittee needs to add it to the monitoring plan

**R645-301-722.100, 724.300,** It states on page 11 (Ch. 7) that field conductivity indicates springs occurring higher in the stratigraphic section have lower electric conductivity, indicating local flow systems, and refers to Table 7-1: Table 7-1 does not relate conductivity to geologic occurrence, and information explicitly relating springs to stratigraphy or lithology is not given anywhere in the PAP. The Permittee must add information substantiating that there is a relationship between position in the stratigraphic section and electric conductivity. It states on page 12 of Chapter 7 and on page 21 of Chapter 6 that there are no hydrology data for S-32. The Permittee needs to correct these pages - and anywhere else similar statements occur - because hydrology data for S-32, including water-quality data, are in Appendix 6-1.

**R645-301-724.100, (1)** Baseline monitoring data for L-11-G and L-12-G, two springs shown on Plate 7-4 and discussed in Section 731.211 as ground-water monitoring points, must be added to the PAP. The Permittee must determine if the Horse Canyon Well is functional or useful as a well or piezometer and begin monitoring water quality and quantity if feasible. (2) The Permittee must adequately discuss the occurrence of water in the exploratory boreholes, as noted on driller's logs. (3) The Permittee must analyze and discuss information on water in the saturated zone as part of the ground-water baseline description. (4) The Permittee must sample and analyze water from the IPA piezometers for baseline water-quality

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Subsidence monitoring will continue for five years after mining stops or until subsidence is complete. If for three years in a row, the subsidence is measured to be less than 10 percent of the highest subsidence year, subsidence will be determined to be complete, and no additional monitoring for that area will be required.

A ground survey will be performed in conjunction with the quarterly water-monitoring program. Any cracks observed will be noted and reported to DOGM.

The two main objectives of the subsidence monitoring program are to 1) determine when subsidence starts and stops and 2) if any damage has occurred. The aerial monitoring program, which measures ground movement, is the best way to determine when subsidence begins and ends. Ground surveys are done to determine if any subsidence damage has occurred. The Permittee should pay particular attention to any stream channels under 1000 feet of cover.

### *Subsidence Control Measures*

The only subsidence control method that will be used in the Lila Canyon Extension is to protect the escarpments. Leaving barrier pillars and only allowing first mining within 200 feet of the outcrop barrier will protect the escarpments.

### *Anticipated Subsidence Effects*

The main panels of the mine in which retreat mining has been completed have dimensions of approximately 1,200 feet wide by 4,000 feet long. The cover (h) in these areas is approximately 2,000 feet. Using the methods described in the National Coal Board's *Subsidence Engineers' Handbook* the S/m ratio for this geometry would be 0.55 where "S" is the maximum subsidence and "m" is the seam extraction thickness. For an average seam extraction thickness of 12 feet, the total subsidence would be 6.6 feet. However, as described on page V-12 of the Horse Canyon MRP, the major impacts of subsidence are due to extension strains and not total vertical subsidence. The prediction of average extension strain is accomplished with the use of the formula:

$$+E = 0.75 S/h \text{ where } S = \text{Subsidence and } h = \text{depth of cover}$$

The solution of this equation for the Horse Canyon Mine configuration discussed above produces a predicted, average extension strain of  $2.5 \times 10^{-3}$  which is less than that the limiting strain of  $5 \times 10^{-3}$  for protecting surface waters and groundwater resources. Thus, it is unlikely that the gradual compression expected over much of the subsidence area will have any deleterious effects on the overlying renewable surface resources. As reported in Chapter V of the Horse Canyon MRP, the cover thickness of over 2,000 feet is also much greater than the limiting thickness of 450 feet.

The amount of extensive strain can be greatly enhanced by a cantilever effect of symmetrical subsidence on either side of thick pillars. The Horse Canyon MRP indicates in Chapter V, that Dunrud demonstrated this effect at the Geneva (Horse Canyon) mine over the barrier pillar separating the Geneva and Book Cliff mines. A nearly vertical break line occurred over the pillar with the appearance of large surface fissures hundreds of feet long and as much as 3 feet wide. The cover thickness in this area was about 900 feet. Such features would obviously have the greatest effect on the surface and groundwater resources in the area.

The pace at which subsidence occurs depends on many controls including the type and speed of coal extraction, the width, length and thickness of the coal removed, and the strength and thickness of the overburden. Observations of subsidence by Dunrud over the Geneva and Somerset Mines indicate that the subsidence effects on the surface occurred within months after mining was completed, and the maximum subsidence was essentially completed within 2 years of the finishing of retreat mining as reported in Chapter V of the Horse Canyon MRP.

In the 1992 annual subsidence report for the Horse Canyon Mine, the Permittee reported subsidence features outside of the Horse Canyon permit area but within the area underlain by workings of both the Book Cliffs Coal Mine and the Geneva Coal Mine. The surface subsidence features were observed in Sec 9, 10, 15 and 16, T. 16 S. R.14 E. Those areas have cover averaging 800 feet but did not exceed 1,000 feet. A number of the subsidence features were noted including:

- Open jointing and fissuring related to cliff face retreat and spalling
- Swarms of fissures related to extensional ground movements above or adjacent to the property- boundary barrier pillar between the Book Cliffs and Geneva Mines. The fissures are generally parallel to sub-parallel to the barrier pillar and are developed primarily along existing regional joint sets. Individual fissures can reach hundreds of feet in length and as much as three feet in width. Vertical displacement on the order of a few inches has been observed at some localities.
- Modifications in vegetation and soil structure were often associated with fissure development. Fallen trees were observed along several fissures and cryptogamic soil communities had been disrupted locally.
- At one or two locations cool air was felt emanating from the larger fissures.

The 1992 annual subsidence survey showed that within the Horse Canyon permit area the only subsidence related activity noted was cliff spalling that occurred in 1958. Close examination of the outcrop areas and soil covered slopes directly above and to the north of the area of cliff failure did not reveal any evidence of mine subsidence features.

Most of the area scheduled to be subsided in the Lila Canyon Extension is greater than 1,000 feet of cover. In areas with more than 1,000 feet of cover no surface subsidence features are anticipated with the exception of ground lowering.

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The question of increased salinity in the Colorado River system has been raised by SUWA. The PHC should address the potential of increasing salinity in the Colorado River by discharging water from the mine, how salts dissolved from the Mancos Shale by mine-discharge water might impact the salinity of the Colorado River, and the potential for water from the mine reaching the Price River.

**Impoundments**

The Permittee proposes to construct only one sedimentation pond that will be in the southwest corner of the disturbed area (See Plate 5-2). The sedimentation 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 and will not need to be regulated as such. A registered professional engineer certified the sedimentation pond design.

In Appendix 5-5, the Permittee shows the results of the static safety factor analysis. The lowest safety factor of the embankments is 2.35 for the slopes under saturated conditions, which exceeds the 1.3 requirement. The Permittee did include the analysis of the physical and engineering properties of the foundation materials.

The Permittee states in Appendix 5-5 that the pond is protected against sudden draw down. The analysis shows that the pond will be safe under sudden draw down conditions. The safety factor calculated in the analysis is 2.02. A safety factor of 1.0 is considered safe under rapid draw down conditions; therefore, the Permittee meets the regulatory requirements.

The sedimentation pond design was approved by the Division of Water Rights. The Division has a copy of the approval letter.

A freeboard is planned to resist overtopping by waves and by sudden increases in storage volume. The elevation of the emergency spillway is 5841 feet while the top of the embankment will be 5843 feet, with a freeboard of 2 feet and a volume of 2.36 ac-ft.

The outslopes of the sedimentation pond will be planted with an approved seed mix to help prevent erosion and promote stability. No highwalls are associated with the impoundment.

The application discusses treatment facilities around the fan portal. The small disturbed area will be treated using silt fences and a berm to control and contain the expected runoff of 0.06 acre-feet for the 10-year, 24-hour design precipitation event.

The sediment pond will be inspected according to the requirements of R645-301-514. The designs have been certified by a professional engineer according to the requirements of R645-301-512.

### **Casing and Sealing of Wells**

Section 765 does not mention the Horse Canyon Well. If any wells are installed in the future, the requirements of R645-301-765 will be met (765).

#### **Findings:**

**R645-301-731.211**, The Permittee must more clearly or specifically describe how the monitoring information will be used to determine the impacts of mining on the hydrologic balance and what actions will be taken in case water monitoring indicates non-compliance with the permit.

**R645-301-121.200**, The Permittee must update the statement on Page 32 (Ch. 7) that the springs have not been monitored since 1995.

**R645-301-751, -731.200**, The Permittee must include a copy of the UPDES permit, which was issued in 1999, in the PAP.

**R645-301-724, -731.200**, The Permittee must clarify the nature of L-12-G and its relationship to L-6-G, H-18, H-18A, and H-18B.

**R645-301-724, -731.200**, The Permittee must update Table 7-3 to include L-11-G and L-12-G.

**R645-301-724, -731.200**, The Permittee must add water-monitoring data from the monitoring program implemented in July 2000; including L-11-G and L-12-G, to the PAP.

**R645-301-731.400, -765**, The Permittee must discuss transfer and permanent casing and sealing of the Horse Canyon Well in Horse Canyon.

**R645-301-731** The Permittee must evaluate the impacts from mine discharges and sedimentation pond discharges on receiving channels prior to mining. The Permittee must assess the level contaminants such as dissolved salts, and toxic elements (such as boron and selenium), and channel sediments will cause downstream of the permit area to the Price River. A model using mine water discharges ranging from 0 to 500 gallons per minute shall be evaluated to determine the potential of impacts to the Price River and the fishery. In the PHC, the Permittee must describe the probable impacts from mine water discharges impacting the Price River and fishery from high mine water discharges, chemical and sediment contamination.

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**R645-301-731** The Permittee must submit plans for the mine water discharge system prior to mining. The plan will specify pipe size to handle at least 500 gpm, routing, discharge area and designs for erosion control at the discharge area.

**R645-301-731** The Permittee must submit appropriate plans to consolidate discharge points by routing mine water through the sedimentation pond or, if meeting UPDES limits, discharging in the same area as the sedimentation pond discharge. This action should reduce impacts to stream channels and reduce monitoring and reporting of data.

**R645-301-731** If mine discharge is routed to the sediment pond, the Permittee must submit design plans for a sedimentation pond to contain and control the runoff from the mine pad area for treatment of the 10 year-24 hour precipitation event falling on the mine pad and treatment of at least a 500 gpm mine water discharge.

**R645-301-731** The Permittee must submit a copy of the approved UPDES permit.

**R645-301-731** Prior to mining, the Permittee must assess the channel morphology and characteristics of channels downstream from proposed UPDES monitoring sites. The Permittee must assess the potential impacts of mine water discharges to downstream channels from the discharge site to the Price River. In the PHC, the Permittee must describe the impacts to downstream channels.

## **SUPPORT FACILITIES AND UTILITY INSTALLATIONS**

Regulatory Reference: 30 CFR 784.30, 817.180, 817.181; R645-301-526.

### **Minimum Regulatory Requirements:**

Each applicant for an underground coal mining and reclamation permit shall submit a description, plans, and drawings for each support facility to be constructed, used, or maintained within the proposed permit area. The plans and drawings shall include a map, appropriate cross sections, design drawings, and specifications sufficient to demonstrate compliance.

Support facilities shall be operated in accordance with a permit issued for the mine or coal preparation plant to which it is incident or from which its operation results. In addition to the other provisions of this part, support facilities shall be located, maintained, and used in a manner that: prevents or controls erosion and siltation, water pollution, and damage to public or private property; and, to the extent possible using the best technology currently available, minimizes damage to fish, wildlife, and related environmental values and minimizes additional contributions of suspended solids to streamflow or runoff outside the permit area. Any such contributions shall not be in excess of limitations of State or Federal law.

All surface and underground mining activities shall be conducted in a manner which minimizes damage, destruction, or disruption of services provided by oil, gas, and water wells; oil, gas, and coal-slurry pipelines, railroads; electric and telephone lines; and water and sewage lines which pass over, under, or through the permit area, unless otherwise approved by the owner of those facilities and the Division.

Support facilities shall be operated in accordance with a permit issued for the mine or coal preparation plant to which it is incident or from which its operation results. In addition to the other provisions of this part, support facilities shall be located, maintained, and used in a manner that prevents or controls erosion and siltation, water pollution, and damage to public or private property. Support facilities shall, to the extent possible using the best technology currently available, minimizes damage to fish, wildlife, and related environmental values; and, minimizes additional contributions of suspended solids to streamflow or runoff

outside the permit area. Any such contributions shall not be in excess of limitations of State or Federal law.

**Analysis:**

The new support facilities are described in Section 520, shown on Plate 5-2, described in the appendices in Chapter 5 or listed in the bond calculations. Appendix 5-4, New Facility Design, shows the design for the roads and sewage system. Appendix 5-7 has the designs for the refuse pile. The new structures and facilities listed include:

Building

- Office/Bathhouse
- Shop Warehouse
- Security Shack

Utilities

- Mine Substation
- Power Lines
- Power Poles
- Water Treatment Plant
- Potable Water Tank
- Process Water Tank
- Sewer Tank & Drain Field

Mine Facilities

- Ventilation Fan
- 60-inch Conveyor from tunnels to Coal Stockpile
- Run of Mine (ROM) Underground Belt from Stockpile to Crusher
- 48-inch Conveyor from Crusher to Loadout Bin
- 48-inch Conveyor from Loadout Bin to Truck Loadout
- Reclaim Tunnel, Escape Tunnel, Fan and Fan House
- ROM Storage Pile
- Crusher Screen Plant
- Truck Scale and Loadout
- Coal Loadout Storage Bin
- Coal Stacking Tube
- Culverts (Note: names, diameter and length must be included)
- Guardrails
- Underground Pipes
- Chain Link Fence

Support Facilities

- Non-Coal Waste Area
- Equipment & Supplies Storage Area

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the Horse Canyon project.

The DOGM Abandoned Mine Reclamation program inspected the area in and around the Lila Canyon site and found no evidence of underground workings not shown on Plate 5-1.

Plate 5-5 shows the projected mine workings for the Lila Canyon Extension. The only openings are the two tunnels and the ventilation portal. The timing and sequence of the mining operation is shown on the map.

**Monitoring and Sample Location Maps**

Operational 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 was established to collect data around the Lila Canyon Extension both above and below the disturbed site at L-1-S, L-2-S, and L-3-S. The sedimentation pond discharge point, L-4-S, and the potential mine discharge point, L-5-S, will be monitored in accordance with UPDES permit requirements. Current UPDES discharge points UT040013-001A and -002A are also shown on Plate 7-4. Locations of seep and spring ground-water monitoring sites L-6-G through L-12-G and piezometers IPA 1, 2, and 3 are shown on Plate 7-4.

**Findings:**

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

**R645-301-731**, The Permittee will submit affected area maps showing the relationship of the mine permit to adjacent and downstream drainages.

**R645-301-731**, The Permittee shall provide updated facilities maps to show the change in sedimentation pond location, change in culvert plans (UC-1 and UC-2), change of the mine discharge system, sedimentation pond discharge system, disturbed area drainage reconfiguration and UPDES discharge structures.

**R645-301-731.600**, The Permittee shall submit maps depicting a 100 foot buffer zone along perennial and intermittent channels.



**SUMMARY OF DEFICIENCIES**

**SUMMARY OF DEFICIENCIES**

*The Technical Analysis of the proposed permit changes cannot be completed at this time. Additional information is requested of the permittee to address deficiencies in the proposal. A summary of deficiencies is provided below. Additional comments and concerns may also be found within the analysis and findings made in this Draft Technical Analysis. Upon finalization of this review, any 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.*

*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:*

***Regulations***

- R645-300-121.150**, The Permittee must provide public notice of the intention to conduct mining within 100 feet of the outside right-of-way of the public roads and timing and duration of closure during installation of a culvert in the existing public road..... 24
- R645-300-132.110**, Evidence that the violation at Belmont Coal (OH permit D1020) has been corrected or is in the process of being corrected to the satisfaction of the agency that has jurisdiction over the violation must be provided to the Division..... 20
- R645-301-113.300**, Appendix 1-3, Violation Information, needs to be updated for the period February 1999 to February 2002 to include at least three years of violation history for the Permittee and any subsidiary or affiliate of the Permittee..... 20
- R645-301-116.100**, The Permittee must clearly state the anticipated number of acres of surface disturbance to be affected during the life of the mine and statements of the number of disturbed acres must be consistent within the PAP. .... 31
- R645-301-120**, (1) Page 25 of the PAP repeats several paragraphs on page 22, the plan must be revised to be clear and concise. (2) "Contemperance" seed mixture (page 29) and "contemperance" (contemporaneous?) revegetation (page 30) must be described or clarified. (3) The entire section 356 is confusing and contradictory compared to other statements in section 341.250. The PAP must be modified to make the revegetation success standards clear and concise. (4) The process requires that DOGM must consult with DWR concerning shrub species and ratios to be transplanted. The statement concerning transplanted species and ratios are to be determined by the BLM and DWR is confusing to the process and must be modified. The species and planting rates must be provided..... 189

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- R645-301-120**, Section 333 states; it has been demonstrated that subsidence has little direct impact on wildlife or vegetation with the exception of escarpment failure and disruption of ground water. Data must be provided to substantiate this claim or the statement amended in the PAP. .... 115
- R645-301-120**, The PAP discusses a coal prospect in Lila Canyon. The PAP must be changed to provide the correct information concerning coal mining in Lila Canyon..... 49
- R645-301-120**, The PAP statement “the operational activities at the site impact the wildlife slightly but most of the wildlife in the area will either accept or adjust their behavior to coexist with the operations” (Section 333.) should be amended or further explained in the PAP. .... 115
- R645-301-120**, The PAP states (page 10) that usage by sheep is considered infrequent and minimal and there is abundance of other suitable similar habitat. This statement must be substantiated or amended..... 115
- R645-301-120**, The Permittee has committed to working with USFWS and DWR in analyzing the potential and construction of alternative nest sites. This statement confuses the process required by the coal regulations. The Permittee must revise this statement to read that the mine will work with the Division who will then consult with USFWS, DWR and BLM for mitigation requirements (Section 322.220). .... 115
- R645-301-121.100**, Table 3-1 and Section 322.210 in the PAP must be updated. The peregrine falcon is not a threatened species. The map in Appendix 3-5 has a mislabeled nest; nest 946 is labeled as 820..... 42
- R645-301-121.100**, Plate 4-4 must be updated to reflect recent changes made by the BLM (January 2002) in the boundary of the Desolation Canyon Inventory Unit..... 49
- R645-301-121.200 and R645-301-322.100**, The process requires that DOGM must consult with DWR and USFWS. The statement that EIS will consult with these agencies is confusing to the public and must be changed to reflect the permitting process. .... 43
- R645-301-121.200 and R645-301-521.180**, The Permittee must give a complete list of all facilities and structures in the Lila Canyon disturbed area in section 520 of the PAP and on Plate 5-2. Items not listed include but are not limited to: power poles, potable water tank, process water tank, sewer tank and drain field, ventilation fan, truck scale, truck loadout, underground pipes, chain link fence, asphalt parking lot, fuel tanks, rock dust bins, culverts, and explosive magazines..... 95
- R645-301-121.200 and R645-301-521.190**, The Permittee must 1) state in the text of the PAP where the inert rock slop material will be placed in the refuse pile and where coal mine waste that does contain coal will be placed, 2) show where coal mine waste suitable for structural fill will be placed and where material containing coal will be placed in the refuse pile. The maps

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- and cross sections include, but are not limited to: drawing 5-7A and 5-7B, and Figure 1 and Figure 2 in Appendix 5-7..... 139
- R645-301-121.200,** (1) The Permittee must use the term “rock-slope material” in conjunction with, or replaced by, a term defined by the Regulations. (2) The Permittee will list separately the amount of rock slope material and coal processing waste material in Table 1 in Appendix 5-7. (3) Section 528.320 distinguishes the coal-free slope rock material used as structural fill for the shop – warehouse from the material that will go into an apparently separate refuse pile. The Permittee must 1) state in the text of the PAP where the inert rock slope material will be placed in the refuse pile and where coal mine waste that does contain coal will be placed, 2) show where coal mine waste suitable for structural fill will be placed and where material containing coal will be placed in the refuse pile. The text should make it clear that these two areas are adjacent and adjoining and will be treated as one area or structure, especially during reclamation (4) In Section 537.200, the distinction, or similarity, between low areas to be used as pads and the refuse storage area (sic. plural “pads” – there is only one pad shown on Figure 1 of App. 5-7 and Plate 5-2) is confusing and needs clarification. (5) The Permittee must clarify Section 536.300 to be consistent with Section 537.700. The Sections might appear contradictory in stating that there is unlikely to be any coal in the slope rock material, but treatment is planned for slope rock material containing coal. (6) Section 536.600 isn’t clear as to how and why slope rock material placed in the pads will be spread out and graded; this leaves the impression it will not be buried as part of the refuse pile reclamation but rather spread across the site. Section 537.200 clarifies this, but 536.600 should also be clear. .... 140
- R645-301-121.200,** (1)The Permittee must provide a legible copy of the first page of the 1989 Water Monitoring Data in Appendix 7-2. (2) The Permittee must clarify the basis for the interpretation of the existence of a ground-water divide in the saturated zone and the implications for the hydrologic balance. (3) The Permittee must clarify and discuss the source of the information on the Geneva exploration tunnel, and the amount of water known to be in the entries and the amount that will be pumped when the Lila Canyon Extension intercepts the tunnel..... 81
- R645-301-121.200,** The Permittee makes reference to the Lila Canyon Extension Permit Area (LMPA) throughout Chapter 6. The Division understands this submittal is an extension to the Horse Canyon Mine permit. The Permittee needs to use clear and consistent language in identifying this submittal. .... 62
- R645-301-121.200,** The Permittee must update the statement on Page 32 (Ch. 7) that the springs have not been monitored since 1995..... 156
- R645-301-121.200, -624.100,** The Permittee needs to incorporate permeability values for the Sunnyside Sandstone, that were published by Balsley in 1981 and that are referred to in the PHC, into the PAP. .... 63
- R645-301-121.200, 624.100, 130,** Saturated strata in the lower Blackhawk Formation are

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separated from the perched zones in the upper Wasatch Group by upper Blackhawk, Price River and undifferentiated North Horn-Flagstaff Formations Strata that contain approximately 80 percent clays, shales, siltstones, and mudstones (Ch. 7, Page-7). The PAP needs to identify the sources of the information on percentage of fine-grained sediments in the stratigraphic column and on swelling clays. .... 63

**R645-301-121.200, -624.100**, Minor water inflows from the exploration entries is anticipated (Page-40, Ch. 6); this reference to exploration entries is unclear and confusing because there are no anticipated exploration entries identified in the Lila Canyon Extension. The Permittee needs to clarify whether this refers to the Geneva tunnel or other exploration entries. .... 62

**R645-301-121.200, -624.100**, The PAP states on page 11 (Ch. 6) that the portion of the Sunnyside Sandstone which underlies the Lower Seam is "occasionally considered to be a potential aquifer"; the basis or source of this consideration appears to be the ability of this unit to transmit ground water in the Sunnyside area, but this is not clear. The statement itself is unclear and confusing, in particular the meaning of "occasionally considered to be a potential aquifer" in this context. The Permittee needs to clarify and substantiate these statements. .... 63

**R645-301-121.200, -728**, The PHC must contain the following findings: (1) The Permittee must include an assessment of the probable hydrologic consequences to the Range Creek drainage in the determination of the PHC. (2) The PHC determination does not include findings on whether acid-forming or toxic-forming materials are present that could result in the contamination of surface- or ground-water supplies. The Permittee needs to add this finding to the PHC. (3) The Permittee states that downstream effects from discharging water from the mine will be similar to those experienced at the Horse Canyon Mine. The Permittee needs to discuss, describe, or quantify what the impacts were at the Horse Canyon Mine. (4) It is not clear what hydrologic resources might be impacted. The Permittee needs to determine the PHC to Lila, Coleman, and other intermittent washes. (5) The Permittee needs to determine pre-mine, pre- discharge characteristics of Lila Wash. (6) The Permittee needs to discuss in the PHC the springs and stream channels being monitored in the Lila Canyon Extension area. (7) The Permittee needs to evaluate current baseline data in determining the PHC. (8) The Permittee needs to evaluate probable impacts to water quality and water quantity with respect to water-right users and wildlife in determining the PHC. (9) In the PHC, the Permittee needs to address the issue that has been raised concerning increasing salinity in the Colorado River by discharging water from the mine, and especially how salts dissolved from the Mancos Shale by mine-discharge water might impact the salinity of the Colorado River. This should include a determination of the probability of mine discharge reaching Grassy Trail Creek and the Price River. (10) The Permittee must characterize the channels and flow patterns within each drainage basin, describe all water uses associated with those basins, potential impacts to those uses and describe the total hydrologic impacts to surface water resources on and adjacent to the permit area based on sampling, monitoring, characterization and studies. (11) The Permittee must use this information to summarize the potential for mitigation and hydrologic impacts on and off the permit area in the PHC. (12)

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- The PHC must describe all probable hydrologic consequences from subsidence, discharges to stream channels, impacts to channels, sediment loading, salt loading and impacts to aquatic wildlife. (13) The Permittee must survey and describe the surface water resources and drainage of Range Creek and address probable impacts from mining in the PHC. (14) The Permittee must provide adequate data, including water rights, to make a determination of the probable hydrologic consequences to the Range Creek drainage. (15) The Permittee states that downstream effects from the discharging of water from the mine will be similar to those experienced at the Horse Canyon Mine. The Permittee must provide discussion, description, or quantification of what the effects were at the Horse Canyon Mine. (16) The Permittee must address the probability of increasing salinity in the Colorado River from water discharged from the mine, and especially how salts dissolved from the Mancos Shale by mine-discharge water might impact the salinity of the Colorado River. This should include a determination of the probability of mine discharge reaching the Price River. (17) The Permittee must determine pre-mine, pre-discharge characteristics of Lila Wash. .... 82
- R645-301-121.200, 731.111, 731.121,** Because the PAP uses the Sunnyside Mine as an example of why there is no need to perform further analysis for acid- and toxic-forming materials, the PAP needs to better explain how the handling and disposal of coal mine waste at the Lila Canyon Extension is designed to avoid acid- and toxic-drainage, such as that evident at the Sunnyside Mine refuse pile..... 63
- R645-301-121.200,** The application must either correctly cite the location of the BLM's 1993 Environmental Assessment prepared for management of the Turtle Canyon Wilderness Study Area or remove the reference..... 49
- R645-301-121.200,** The PAP (section R6450301-320) infers that all vegetation resources of the entire Lila extension, except a 400-acre area have been described. The information presented does not support that statement. The Permittee must clarify what areas have been described and describe how the 400-acre area not surveyed (south face of the "Bookcliff") is similar... 37
- R645-301-121.200,** The Permittee must clearly label the county road from Highway 6 to the mine site as a county road on maps. .... 126
- R645-301-121.200,** The Permittee must state that the county road that is located within the disturbed area will be left after reclamation. .... 181
- R645-301-121.200,** The Permittee must state the information about the roads and conveyors in a comprehensive form in one location in the PAP. At present, the information about the roads and conveyors is scattered throughout the PAP..... 126
- R645-301-121.200,** The Permittee needs to reconcile the contradictory statements on Page 40 that water inflow from fractures is expected to be insignificant and on Page 41 that faults may contain substantial water..... 62

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- R645-301-121.300**, The Permittee needs to incorporate or reference all pertinent information from the existing MRP into the Lila Canyon Extension PAP. .... 25
- R645-301-130** The Permittee shall reevaluate the PAP to identify sources of opinion, substantiate comments with specific, detailed information, or strike comments without basis. .... 26
- R645-301-130**, The PAP must contain the names, organizations and qualifications of all contributors to the application, including but not limited to the South Lease vegetation study, the Mexican spotted owl surveys, the soil survey, and consulting hydrologists, engineers and geologists. .... 25
- R645-301-142**, The Permittee should delineate coal mining and reclamation operations that occurred prior to August 3, 1977 (Pre-SMCRA) from those that occurred prior to August 3, 1977 but were continuously used, and those that occurred after August 3, 1977 (Post-SMCRA) ..... 26
- R645-301-222.400**, The Permittee should provide baseline soils analyses of total nitrogen and available phosphorus for the six soil map units. .... 47
- R645-301-231.100**, The PAP must describe a method of ensuring that the soil is neither too dry, nor too wet during topsoil removal operations. This may entail timing of operations during a favorable season or watering the soil to optimum moisture content between 10 and 15% before beginning removal. .... 120
- R645-301-231.400**, The Permittee must accurately relate the dimensions of the topsoil pile in Section 232.100 for a 26 foot high pile as calculated in Figure 1. .... 120
- R645-301-232.200**, Topsoil salvage described in the PAP should include salvage of the surface layer of topsoil from 0 – 4 inches along with the vegetation to be set aside for application to the surface of the topsoil pile after gouging..... 120
- R645-301-232.700**, The Permittee must provide in the next submittal the results of the conveyor pan feasibility analysis committed to in Section 232.710 in order to apply the best technology available to protect the topsoil where it will not be salvaged on the rocky slopes below the conveyor..... 120
- R645-301-234.220**, The Permittee should evaluate an alternate location for storage of fan portal topsoil..... 120
- R645-301-234.230**, The topsoil pile construction should include the replacement of the surface 0 – 4 inches of the surface soil to the surface of the gouged pile, immediately followed by irrigation to ensure good contact with the topsoil pile..... 120

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- R645-301-242.120**, The PAP should eliminate from the equipment list any equipment that would create excessive compaction of the reclaimed surface. i.e. road grader. .... 180
- R645-301-243**, The PAP should outline the number of samples to be taken and the parameters to be analyzed during analysis of the topsoil stockpile before its use during reclamation and note in Appendix 5.8 that fertilizer choice and application will be based upon this testing. .... 180
- R645-301-244.200**, The PAP should describe the inoculation of the site with biologic soil crusts. .... 191
- R645-301-251**, The PAP should reference Plate 2-3 Topsoil salvage and Replacement, to illustrate and clarify the discussion found in Section 242.100. .... 180
- R645-301-321.100**, The disturbed area communities must be defined and sampled by a person qualified in the field of plant taxonomy and quantitative ecology and according to the Division's Vegetation Information Guidelines. Biologic soil crusts must be included in the vegetation sampling. Vegetation sampling must be performed during a time of greatest species diversity, preferably in late spring. Raw data sheets must be provided. .... 37
- R645-301-322**, The application must describe the vegetation surrounding each spring and address amphibian occurrence. .... 43
- R645-301-322**, The entire area that may be affected and adjacent areas must be surveyed for raptors. The southwest section of the permit area appears as suitable cliff habitat. This area is outside the subsidence buffer zone but within the permit area and immediately adjacent to the buffer zone. Other rock outcrops are within the permit area and require surveys. .... 42
- R645-301-322**, The Mexican spotted owl survey (Appendix 3-4) must be corrected to reflect the actual survey and a new plan must be submitted to survey all areas shown in the 1997 Mexican spotted owl habitat model. .... 42
- R645-301-322**, The PAP must be changed to state the actual areas surveyed for raptors. .... 42
- R645-301-322.210**, Surveys and/or habitat assessment must be provided for the bald eagle, San Rafael cactus, Winkler cactus, Wright fishhook cactus, Book Cliffs blazing star, and Creutzfeldt flower. Additional impact assessment must be provided for the bonytail chub, Colorado pikeminnow, Humpback chub, and razorback sucker. .... 43
- R645-301-322.230**, A survey should be conducted for water sources along the face of the Book Cliffs. The seeps in the southwest canyon are significant to Rocky Mountain bighorn sheep and a commitment to monitoring throughout mining must be made. .... 43
- R645-301-323.400**, The vegetation maps of the permit and disturbed area must be corrected to include greater detail, adjacent areas, and correlate to each other. The plant communities

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- found within the permit area must be described, including any associated with seeps, springs or other water sources. .... 37
- R645-301-331**, The interim seed mixture contains several aggressive spreading non-native species. Yellow sweetclover, alfalfa, and forage kochia must be removed or replaced in the interim seed mixture. .... 121
- R645-301-332**, The effects of subsidence on the seeps found in the unnamed canyon in the southwestern corner of the permit area must be addressed. As a valuable wildlife resource, these seeps must be protected from loss. Other effects of subsidence must also be discussed particularly in areas with less than 1000 feet of cover. The effects to snakes and other wildlife species must be addressed..... 115
- R645-301-333**, The PAP must describe all efforts to minimize disturbances to wildlife and wildlife habitat. This can be done by protecting the drainage immediately south of the disturbed area from construction. This drainage is used by wildlife as a transportation corridor. It is not obvious to the Division that the mine needs to disturb this area when there are islands of undisturbed areas on the pediment. .... 115
- R645-301-333**, The PAP must include a discussion of the possible effects of a mine water discharge to the endangered fish of the Upper Colorado River Basin and methods of minimizing those effects. .... 114
- R645-301-341**, All references to disking as a seedbed preparation method must be removed from the PAP. .... 189
- R645-301-353.120**, The final reclamation seed mixture must be modified to replace the diversity found on site and remove the introduced species. .... 189
- R645-301-353.140**, The PAP must describe practices used to reestablish biological soil crusts. .... 189
- R645-301-356**, The PAP must describe success standards that will be used to judge the success of the reclamation. This requirement can only be met once all the resource data is complete. .... 189
- R645-301-358.530**, The PAP must describe how hazardous materials (i.e. oil and grease) will be removed from the pond and provide greater detail of the daily monitoring to ensure no negative impacts to wildlife will occur..... 115
- R645-301-411.140**, The Permittee must provide the following: (1) The survey conducted by Rebecca Rauch, Miller in 1991 and Montgomery in 1999 must be included in the PAP, or reference removed from the PAP. (2) Site 42EM2517, a Fremont component rock shelter, must be shown on Plate 4-3 and discussed in the PAP. (3) The EA states that seven sites are

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found in Little Park Wash, only two are identified on Plate 4-3. Copies of all historic resources studies conducted in the permit area must be provided and all sites identified on Plate 4-3. (4) Studies conducted in spring 1998 as shown on Plate 4-3 must be provided and the comment removed from the plate. .... 33

**R645-301-521**, The Permittee must explain and clarify the discrepancy between the acreage given for permit area on page 11, 14, Table 1.1 and Table 4.2 ..... 31

**R645-301-521.141 and R645-301-521.190**, The Permittee must state in the PAP text and on Plate 1-1 that Plate 1-1 is the official permit boundary map and it will be used to clarify any questions about the permit boundaries..... 31

**R645-301-521.190**, The Permittee must explain the environmental, safety, technical/engineering and economic reasons for building new portals and facilities. .... 95

**R645-301-521.190**, The Permittee must provide documentation on usage and ownership for the unimproved road from Horse Canyon to the mine site, County Road #126 from Highway 6 to the Lila Canyon Extension, and RS2477 south of the mine site..... 99

**R645-301-521.565**, The Permittee must include the topsoil pile as a topographic feature on the cross sections of Plate 5-7A-2..... 120

**R645-301-525.110**, The Permittee must show the precise location of each seep, spring, stock pond, existing water right and dirt road on Plate 5-3..... 108

**R645-301-525.120**, The Permittee must state what impact subsidence could have on dirt roads in the subsidence area and what mitigation methods will be used if damage occurs, including accessing the site..... 108

**R645-301-525.430 and R645-301-525.490**, The Permittee must state what the possible effects of subsidence will be in areas of shallow cover (less than 1,000 feet), in particular stream channels. The Division is specifically interested in potential damage to Little Park Wash and the unnamed stream in the southwest corner of the permit area; the re-assessment of the subsidence control plan; and possible mitigation methods..... 108

**R645-301-525.490 and R645-301-525.540**, The Permittee must demonstrate why a 21.5° angle-of-draw is valid for the Lila Canyon Extension instead of 30°. The 30° is assumed by the Division for all material damage unless demonstrated otherwise. .... 108

**R645-301-526.110 and R645-301-526.115**, The Permittee must describe the existing structures within the permit area that will be used for coal mining and reclamation in the existing structures section of the PAP. Those structures include public, and possibly private, dirt roads and vehicle ways that will be used for monitoring and sampling programs and the existing county road and culvert within the disturbed area boundary that will be upgraded. .... 96

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- R645-301-526.116**, The Permittee must describe how public will be protected when the undisturbed drainage culvert and sediment pond spillways are installed within the disturbed area under the county road. .... 99
- R645-301-527.200**, The Permittee needs to describe each of the conveyors that will be used, including but not limited to: the 60-inch conveyor from the portal to the stacking tube, the conveyor in the reclaim tunnel, the 48-inch conveyor from the stacking tube to the crusher, the conveyor from the crusher to the storage bin and the conveyor from the storage bin to the truck loadout. .... 126
- R645-301-527.210**, At a minimum the description of each mine road must include the road width, the average and maximum road gradient, road surfacing materials, the type of fill that will be used, if any culverts or bridges will be used, the drainage ditches and drainage structures. .... 126
- R645-301-528**, (1) The Permittee must describe how the coal mine waste that comes from the rock slope tunnels will be compacted to provide adequate support for the surface structures. At a minimum, the Permittee must state the lift thickness, the minimum compaction standard and what type of equipment can achieve the compaction standard. (2) The Permittee must explain the discrepancy in the design capacity of the refuse disposal site given in Section 520 which is conflicted by the information in App. 5-7 and provide estimation of projected waste disposal needs based on drill logs, historic information from the Horse Canyon Mine and current market requirements. .... 140
- R645-301-528.323.1**, The Coal Mine Waste Fire Extinguishing Plan (Appendix 5-3) must describe an alternative source of soil material for fire suppression, use of the salvaged subsoil is not acceptable. .... 139
- R645-301-528.332**, The Permittee must describe asphalt disposal. .... 139
- R645-301-528.350**, The Permittee must describe the methods that will be used to place the coal mine waste in the refuse pile to ensure that the material does not constitute a fire hazard. At a minimum, the Division needs to know the maximum lift thickness and how the material will be compacted to reduce air circulation. .... 139
- R645-301-532.100**, The Permittee must either eliminate the disturbance to the drainage in the southern end of the disturbed area by the truck turn around loop or show good cause. .... 126
- R645-301-532.100**, the Permittee must explain why Horse Canyon facilities are not being reclaimed concurrently with the development of the Lila Canyon Extension. .... 95
- R645-301-536.900**, (1) The Permittee must describe how all surface structures will be protected from any potential hazards associated with the refuse pile. The Division is interested in how the shop/warehouse will be protected from potential hazards including settling and coal mine

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waste fires. (2) The Permittee must describe how the refuse pile will be designed so as not to impede drainage or impound water..... 140

**R645-301-542** The Permittee will submit reclamation maps portraying reclamation at Phase I to illustrate the reclaimed surface area configuration after all mining structures are removed, and at Phase II to illustrate the reclaimed surface area configuration after all hydrologic structures are removed..... 193

**R645-301-542.600**, The Permittee must state why the county road will be compatible with the postmining land use. .... 181

**R645-301-542.742**, The PAP should clearly indicate which road surfacing materials will be buried under a minimum of two feet of cover and which fall under the requirements for four feet of cover. .... 139

**R645-301-553**, The Permittee must describe the location of cut slopes that will be left after final backfilling and grading. The Permittee will also explain why those cut slopes will be left. See cross-section 16+00 in 5-7B-1 for details..... 177

**R645-301-553.252**, Section 232.500 of the PAP should specify the use of subsoils as cover over the entire waste rock site, including rock slope waste and refuse and the Permittee must explain what contaminants will be monitored in the stored subsoil and how the monitoring will take place. .... 120

**R645-301-622, -624, -722, -724**, To help evaluate potential impacts in the Range Creek drainage, the Permittee needs to extend information on geology and hydrology, including cross-sections and maps, to include the Range Creek drainage..... 63

**R645-301-623, -624.130, -724.500, -725.200**, Resource maps and plans and site specific information are based on, among other sources, the old PAP for the Kaiser South Lease area. The Permittee has a copy of the Kaiser South Lease PAP. Relevant geologic information from the Kaiser South Lease PAP - such as data from the alluvial piezometers - should be incorporated into the Lila Extension PAP, be used in determining the PHC, and be available to the Division to use in preparing the TA and CHIA. .... 63

**R645-301-624.100**, As mining progresses down dip, localized fracture systems and faults may contain substantial water. This water is thought to be in place with little or no recharge (Page-41, Ch.6). The Permittee needs to explain the reasons this water is thought to be in place with little or no recharge. .... 61

**R645-301-624.100**, Subsurface water inflow associated with fault or fracture systems are possible, however, this potential is not expected to be significant in the Lila Canyon Extension(Page-40, Ch. 6). The Permittee needs to explain the reasons inflow from fractures is expected to be insignificant..... 61

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- R645-301-624.100, 121.200,** The Permittee needs to clarify or resolve inconsistent, contradictory, or unsubstantiated statements in the PAP concerning faults and the relationship of faults to ground water..... 61
- R645-301-624.100, -722.100,** The PAP states there are no observable discharge points, that there is no use or potential use, nor is the water elemental in preserving the hydrologic balance in the permit and adjacent areas and, for these reasons, there is no aquifer in the Mesa Verde Group (Ch. 7, Page-7). This and similar statements in the PAP need to be reevaluated because of the discovery of the seeps in the unnamed drainage in the southwestern corner of the permit area. The Permittee must evaluate whether or not the Sunnyside Seam and related saturated strata are an aquifer - meaning "a zone, stratum, or group of strata that can store and transmit water in sufficient quantities for a specific use;" and if they are an aquifer, whether it is regional, local, or intermediate in extent ..... 81
- R645-301-624.100,** Much of the Horse Canyon Mine is below the potentiometric surface indicated by the IPA piezometers and the car-dump sump, but water entered the Horse Canyon Mine in large amounts only where the Sunnyside Fault was intercepted in deeper, down-dip areas. Observations of shale in the underlying rock is the explanation for dryness of the mine discussed in the PAP. The Permittee needs to more adequately discuss the reasons why water from the saturated strata did not enter the Horse Canyon Mine and why similar relatively dry conditions are anticipated in the Lila Canyon Extension..... 62
- R645-301-624.100,** The PAP states on page 26 of Chapter 6 that vertical displacements of faults range from 15 feet to more than 275 feet with displacement diminishing toward the east, and on page 27 that vertical displacements as long as 205 feet have been measured at the outcrop in these major faults: Plate 6-2 shows displacement of 295 feet on the Williams Draw fault at the outcrop. The PAP states on page 27 that the Entry Fault is offset 50 feet in the central part of the lease, but offset may disappear before reaching the outcrop: Plate 6-2 shows 50 feet of offset on this fault at the outcrop. The Permittee needs to clarify information on faults in the text and on the maps in the PAP. .... 61
- R645-301-624.100,** The Sunnyside Fault, other faults, the elevation of the Horse Canyon Mine workings (in particular where the Sunnyside Fault was encountered and water flowed into the Horse Canyon Mine), and other potentiometric, geologic, and hydrologic information relevant to understanding the ground water in the saturated strata of the Blackhawk Formation are not adequately discussed in relation to each other and to the proposed mine and are not shown together on a single map, drawing, or cross section. The Permittee needs to adequately discuss and show together on a single map, drawing, or cross-section, the relationship of the proposed mine to: the Sunnyside Fault, other faults, the elevation of the Horse Canyon Mine workings (in particular where the Sunnyside Fault was encountered and water flowed into the Horse Canyon Mine), and other potentiometric, geologic, and hydrologic information relevant to understanding the ground water in the saturated strata of the Blackhawk Formation..... 62
- R645-301-624.310,** Drill-logs in Appendix 6-1 note that pyrite was visible in many cutting or

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core samples; although these are not analyses, they are indicators of potential acid- and toxic-forming materials in the strata above and below the Sunnyside Seam. The PAP makes no mention of these observations of pyrite: the Permittee needs to summarize the information on these logs on the occurrence of pyrite in strata above and beneath the Sunnyside Seam..... 63

**R645-301-721, 724.200,** (1) The Permittee must submit a surface monitoring plan to survey all streams and channels in and adjacent to the permit area. The Permittee must collect and evaluate quantitative and qualitative data for all surface water sources. The survey must establish baseline information and trends for each monitoring site. From the data, the Permittee must characterize the surface waters in or adjacent to the permit area as perennial, intermittent or ephemeral. Classification can be based on water table elevations (with respect to channel surface) and biologic (plant and aquatic) communities present, or the established classification established in the definitions under R645-301-100. Descriptive adjustments based on the life of the mine should be made to describe unusual wet or dry periods that may confound average rainfall and runoff conditions. The Permittee must conduct monthly sampling for all perennial sources and monitor for parameters as per Table 7-4, as committed to in the application on Page 36, Section 731.220, Volume 6, and in accordance with the DOGM Water Monitoring Guidelines. The Permittee must conduct monthly sampling during periods of flow for intermittent streams and monitor for water quality as committed to in the application on Page 36, Section 731.220, Volume 6, and in accordance with the DOGM Water Monitoring Guidelines. The Permittee must conduct quarterly surveys for ephemeral streams and monitor for water quality as committed to in the application on Page 36, Section 731.220, Volume 6, and in accordance with the DOGM Water Monitoring Guidelines. (2) The Permittee shall provide information in a table and illustrate on maps the area and extents of drainage basins in and adjacent to the mine permit area. The table shall identify the area of the drainage basin that flows in and through the permit area. (3) The Permittee must conduct a survey for springs and seeps in all the draws and washes of the Lila Canyon Extension and adjacent areas, particularly the lower reaches that are incised into the Price River Formation and underlying strata, and the potential for other discharge points in other areas, such as Range Creek, must be evaluated. .... 79

**R645-301-722,** (1) The Permittee must submit a hydrologic map identifying the drainage basins in and adjacent to the proposed permit area. The map must identify all drainage basins, stream channels ponds and water monitoring sites by name. (2) The Permittee must submit a map identifying and characterizing stream reaches, and showing where mining will take place within 100 feet (horizontally) of a stream channel. (3) The Permittee will submit maps showing the drainage relationships between the proposed permit area and the nearest perennial stream channels, specifically the Price River and Range Creek and its tributaries. (4) Maps and cross sections in the PAP include only a small portion of the Range Creek drainage. Resource maps and cross sections, including those showing geology, hydrology, and water rights, need to be extended at least as far as the channel of Range Creek to help evaluate potential impacts in the Range Creek drainage..... 90

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- R645-301-722**, The Permittee must change the verbiage in the Modeling, Section 726 to the modeling that has been performed and will be done for support data in the PAP..... 82
- R645-301-722.100, 724.300**, It states on page 11 (Ch. 7) that field conductivity indicates springs occurring higher in the stratigraphic section have lower electric conductivity, indicating local flow systems, and refers to Table 7-1: Table 7-1 does not relate conductivity to geologic occurrence, and information explicitly relating springs to stratigraphy or lithology is not given anywhere in the PAP. The Permittee must add information substantiating that there is a relationship between position in the stratigraphic section and electric conductivity. It states on page 12 of Chapter 7 and on page 21 of Chapter 6 that there are no hydrology data for S-32. The Permittee needs to correct these pages - and anywhere else similar statements occur - because hydrology data for S-32, including water-quality data, are in Appendix 6-1. .... 80
- R645-301-724, 725, 728**, (1) Information from the Kaiser South Lease PAP on the crest-staff gauges and piezometers A-26, A-28, and A-31 in Little Park Wash must be included in the Lila Extension PAP to be used in determining the PHC and to be available to the Division to use in preparing the TA and CHIA. (2) Water-quality data for inflows to the Horse Canyon Mine are in the current Horse Canyon Mine MRP, but the Permittee has not discussed water quality of this saturated zone. The Permittee must include this information in the discussion of water quality in the saturated zone. (3) At least four water level measurements and one suite of water-quality analyses were done at S-32, but there is no information on the current condition of S-32 in the PAP. The Permittee needs to visit the site of this water-monitoring well and determine if it is still usable. If it is usable, the Permittee needs to add it to the monitoring plan..... 80
- R645-301-724, -731.200**, The Permittee must clarify the nature of L-12-G and its relationship to L-6-G, H-18, H-18A, and H-18B. .... 156
- R645-301-724, -731.200**, The Permittee must add water-monitoring data from the monitoring program implemented in July 2000, including L-11-G and L-12-G, to the PAP. .... 156
- R645-301-724, -731.200**, The Permittee must update Table 7-3 to include L-11-G and L-12-G. .... 156
- R645-301-724.100**, (1) Baseline monitoring data for L-11-G and L-12-G, two springs shown on Plate 7-4 and discussed in Section 731.211 as ground-water monitoring points, must be added to the PAP. The Permittee must determine if the Horse Canyon Well is functional or useful as a well or piezometer and begin monitoring water quality and quantity if feasible. (2) The Permittee must adequately discuss the occurrence of water in the exploratory boreholes, as noted on driller's logs. (3) The Permittee must analyze and discuss information on water in the saturated zone as part of the ground-water baseline description. (4) The Permittee must sample and analyze water from the IPA piezometers for baseline water-quality data, or justify why it is not feasible ..... 81

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- R645-301-724.410**, The Permittee shall provide up-to-date climatological information. The Permittee shall indicate if the Sunnyside Weather Station is still functioning. If the weather station is not functioning at Sunnyside the Permittee should install a weather station at the Lila Canyon Extension to verify precipitation amounts..... 34
- R645-301-724.410**, The Permittee will discuss and characterize the type of precipitation events that are typical of the area and how the minesite and drainages are affected..... 34
- R645-301-724.420**, The Permittee must commit to installation of a rain gauge at the site to comply with the reporting requirements of the Air Quality Approval Order dated August 27, 1999(page 5). ..... 34
- R645-301-731** If mine discharge is routed to the sediment pond, the Permittee must submit design plans for a sedimentation pond to contain and control the runoff from the mine pad area for treatment of the 10 year-24 hour precipitation event falling on the mine pad and treatment of at least a 500 gpm mine water discharge..... 157
- R645-301-731** Prior to mining, the Permittee must assess the channel morphology and characteristics of channels downstream from proposed UPDES monitoring sites. The Permittee must assess the potential impacts of mine water discharges to downstream channels from the discharge site to the Price River. In the PHC, the Permittee must describe the impacts to downstream channels. .... 157
- R645-301-731** The Permittee must evaluate the impacts from mine discharges and sedimentation pond discharges on receiving channels prior to mining. The Permittee must assess the level contaminants such as dissolved salts, and toxic elements (such as boron and selenium), and channel sediments will cause downstream of the permit area to the Price River. A model using mine water discharges ranging from 0 to 500 gallons per minute shall be evaluated to determine the potential of impacts to the Price River and the fishery. In the PHC, the Permittee must describe the probable impacts from mine water discharges impacting the Price River and fishery from high mine water discharges, chemical and sediment contamination..... 156
- R645-301-731** The Permittee must submit a copy of the approved UPDES permit..... 157
- R645-301-731** The Permittee must submit appropriate plans to consolidate discharge points by routing mine water through the sedimentation pond or, if meeting UPDES limits, discharging in the same area as the sedimentation pond discharge. This action should reduce impacts to stream channels and reduce monitoring and reporting of data. .... 157
- R645-301-731** The Permittee must submit plans for the mine water discharge system prior to mining. The plan will specify pipe size to handle at least 500 gpm, routing, discharge area and designs for erosion control at the discharge area. .... 157

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**R645-301-731**, The Permittee shall provide updated facilities maps to show the change in sedimentation pond location, change in culvert plans (UC-1 and UC-2), change of the mine discharge system, sedimentation pond discharge system, disturbed area drainage reconfiguration and UPDES discharge structures..... 165

**R645-301-731**, The Permittee will submit affected area maps showing the relationship of the mine permit to adjacent and downstream drainages. .... 165

**R645-301-731, -731.221** The Permittee shall identify and describe all water resources within the drainage basins and potential impacts to the resource and downstream users. The Permittee will discuss methods of mitigation to surface water resources and channels in the event subsidence should occur and water resources are impacted. The Permittee will describe access and feasibility of mitigation of subsidence impacts to perennial, intermittent or ephemeral stream channels and how channel restoration could be accomplished. .... 80

**R645-301-731.211**, The Permittee must more clearly or specifically describe how the monitoring information will be used to determine the impacts of mining on the hydrologic balance and what actions will be taken in case water monitoring indicates non-compliance with the permit. .... 156

**R645-301-731.400, -765**, The Permittee must discuss transfer and permanent casing and sealing of the Horse Canyon Well in Horse Canyon. .... 156

**R645-301-731.600**, The Permittee shall submit maps depicting a 100 foot buffer zone along perennial and intermittent channels. .... 165

**R645-301-751, -731.200**, The Permittee must include a copy of the UPDES permit, which was issued in 1999, in the PAP. .... 156

**R645-301-761**, The Permittee must submit pre-disturbance, operational and reclamation profiles and cross sections of the stream channel both upstream and downstream of the sediment pond, using an appropriate scale to show reclamation design. .... 184

**R645-301-830.140**, The Permittee must list every proposed structure in the bond calculations, and all revegetation costs. .... 197