March 7, 2003

TO: Internal File

THRU: Priscilla Burton, Senior Reclamation Specialist; Co-team Lead; and
Dana Dean, P.E., Senior Reclamation Specialist, Co-team Lead

FROM: Wayne H. Western, Environmental Scientist III

RE: Lila Canyon Extension, UtahAmerican Energy Inc., Horse Canyon Mine, C/007/013-PM02B-2

SUMMARY:

The Horse Canyon Mine is located in the Book Cliffs coalfield in Emery County, Utah near the towns of East Carbon and Sunnyside. The Division refers to the existing Mining and Reclamation Plan (MRP) for Horse Canyon as Part A and to this Permit Application Package (PAP) for the Lila Canyon Extension as Part B.

The Cedar and Lila Point 7.5 Minute Quad maps, produced by the Geological Survey of the U.S. Department of the Interior (USGS, 1985) show the topography of Horse and Lila Canyons. Located on the western slope of the vast, and largely undeveloped, Tavaputs Plateau, the proposed project area includes some designated Wilderness Study Areas and some designated Wilderness Inventory Areas. However, the proposed Lila Canyon portal site lies just five miles from State Highway 6 and is immediately adjacent to an “unimproved” road (Plate 1-1).

The permit area for Horse Canyon Part A is 1,328 acres and the proposed permit area for Lila Canyon Extension Part B is 4,704 acres. The combination would bring the total new permit area to 6,032 acres.

Information found in the proposal does not meet the minimum requirements of the Regulations.

The Division should deny the permit until the Permittee satisfies each of the deficiencies described below.

TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

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

PERMIT AREA

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

Analysis:

The Permittee states in Section 112.600 of the PAP and on Plate 1-1 that Plate 1-1 is the official permit boundary map and that the Division should refer to it to clarify any questions about the permit boundaries. It shows the permit boundaries as Permit Area A- the Horse Canyon project, and Permit Area B- the Lila Canyon Extension.

Permit area acreages are shown on Table 4-2. The total area of the Horse Canyon mine is 5992.07 acres. The Permittee has listed the permit areas separately (Horse Canyon 1327.75 acres and Lila Canyon 4664,32 acres.) The coal acreages are listed on Table 4-2A, and are the same as listed in Table 4-2.

The Permittee did not include any subareas for which they anticipate seeking additional permits. In the past, the Permittee has indicated that they may seek additional permits for reserves south of the proposed permit area. To avoid confusion, the Permittee needs to state what, if any, additional subareas they may seek to permit over the life of the mine.

The Permittee states that the life of mine is 20 years but the mine map shows only 14 years of production.

In Section 521.141 of the PAP, the Permittee only refers to the life of the permit, which is 5 years, not the life of the mine for defining the permit boundary. The maps, plans, and cross-sections part of resources information section of the TA also addresses this issue.

Several maps, including Plate 1-2 (Disturbed Area Boundary), show the disturbed area boundary.

Findings:

The information in this section of the PAP is not adequate to meet the requirements of this section of the Regulations. Before approval, the Permittee must provide the following in accordance with:

R645-301-521.141 and R645-301-116.100, The Permittee must identify all subareas for which they may seek additional permits over the life-of-mine. The Permittee must show that information on maps and in the text of the PAP. In Section 521.141 of the PAP, the Permittee only refers to the life of the permit, which is 5 years. The maps, plans, and cross-sections of resources information section of the TA also addresses this issue. Examples of future expansion include, but are not limited to: southward expansion for additional coal reserves, and expanding the disturbed area for a future discharge point. Due to their size, the Permittee must show each of the potential expansion areas on maps of adequate scale.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

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

Analysis:

Affected Area Boundary Maps

The affected area map must include "all areas proposed to be affected over the estimated total life of the coal mining and reclamation operations, with a description of size, sequence, and timing of the mining of subareas for which it is anticipated that additional permits will be sought." In section 521.141 of the PAP, the Permittee states the following:

> "Boundaries of all areas proposed to be affected over the life of the permit are shown on Plate 5-1 and Plate 5-2 as well as others. At this time no additional subareas requiring additional permits is not anticipated at this time."

The Permittee states that they do not anticipate permitting additional subareas for the life of the permit. The permit life is only five years. On Plate 5-5, the Permittee shows that mining in the Lila Canyon area will continue for at least fourteen years. To avoid confusion, the Permittee must show the location of all subareas for which they may seek additional permits. Note that the Permit Section of this TA also discusses this issue.

One reason for identifying such subareas is to help the Division make a determination about maximum economic coal recovery. In the past, the Permittee has identified areas to the

south as future expansion areas. The Division needs to know the life-of-mine plan for the Lila Canyon area, including expansion areas they plan to permit in the future.

Existing Structures and Facilities Maps

Information dealing with the location of existing structures is found in section 521.120 of the PAP and its subsections (521.121-521.125). The information is inadequate, unclear, and contradictory.

R645-301-521.121 requires that the Permittee show the location of all buildings in, and within 1,000 feet of, the proposed permit area. The Permittee states, in section 521.121 of the PAP, that the location and current use of all buildings in, and within 1,000 feet of, the proposed permit area for part "B" is shown on Plate 5-2. This is confusing since Plate 5-2 only shows the disturbed area boundaries and does not extend 1,000 feet outside the permit area. In addition, there are no existing buildings in the area and the information in the text implies that there are buildings in the area. If no buildings exist then the Permittee must clearly state that information.

R645-301-521.123 requires that the Permittee show the location of all public roads in, or within 100 feet of, the proposed permit area. In section 521.123 of the PAP, the Permittee states that the proposed county road is shown on Plate 5-2. R645-301-521.123 deals with <u>existing</u> not proposed public roads. In addition to County Road 126, which is located in or near the disturbed area, there are other public roads within the permit area such as Little Park Road. These must be shown on the map and mentioned in the text.

R645-301-521.124 requires that the Permittee show the location of spoil, waste, coal development waste, and noncoal waste disposal, dams, embankments, other impoundments, and water treatment and air pollution control facilities within the proposed permit area. In section 521.124 of the PAP, the Permittee states that no such items exist within the proposed permit area.

R645-301-521.125 requires that the Permittee show the location of each sediment pond, permanent water impoundment, coal processing waste bank, and coal processing waste bank dam and embankment. In section 521.125 of the PAP, the Permittee states that Plate 5-2 shows the location of the proposed sediment pond and that coal processing waste banks and dams are not anticipated. Again, R645-301-521.125 deals with <u>existing</u> structures not proposed.

The purpose of the existing structures and facilities maps is to show the conditions that exist before the permit was issued. If certain structures and facilities listed in R645-301-521.120 and its subsections do not occur in or around the permit area, then the Permittee must clearly say so in the text of the PAP. If the structures do exist then the Permittee must clearly state so in the text. The Permittee must show the location of existing structures on maps that deal with premining conditions rather than operational.

Existing Surface Configuration Maps

Plate 5-1A shows the existing surface configuration for the Lila Canyon disturbed area. The map is at a scale of 1-inch equals 100 feet and the contour lines are on 25-foot intervals. The contour lines extend more than 100 feet beyond the disturbed area boundaries.

Several drawings, including Figure 1 (Appendix 5-7) and the 5-7A series show existing cross-sections and profiles. Those cross-sections and profiles show 5-foot evaluation intervals. The Division needs access to the most detailed information about the existing surface configuration at the disturbed site. Because the Permittee has access to 5-foot contour intervals, they must update the contour maps with the more detailed information.

In Section 521.141 of the PAP, the Permittee only refers to the life of the permit, which is 5 years, not the life of the mine for defining the permit boundary.

Plate 5-3, Subsidence Control Map, shows the existing topography of the Lila Canyon Extension. The contour lines appear to be taken off a USGS topographic map. The Division considers the contours on Plate 5-3 adequate to show the premining topography in the Lila Canyon Extension.

Mine Workings Maps

Plate 5-1, Previously Mined Areas, shows the location of the known mine workings in the Horse Canyon permit area. . The old mine workings include the Horse Canyon project and the old Book Cliffs Mine. The Permittee shows the approximate dates when each of the subareas of the Horse Canyon Mine and adjacent areas were worked. The area had mining activities from the 1940s to the 1980s. A registered professional engineer prepared and certified Plate 5-1. . See Plate II-2 in the Horse Canyon section of the mine plan for a detailed mine map of the Horse Canyon project.

Doelling lists additional coal mines and mining activity in the area. They include the Calkins prospect, the Lila Canyon prospect, and the Prentiss prospect. In addition to the Book Cliffs Mine other smaller mines were reported by Doelling such as: Prentiss, Utah Blue Diamond, Blue Diamond and Heiner Mine. Some of those mines either were in the same location as the Book Cliff Mine, or were incorporated into it.

On Plate 5-1 the Permittee shows the location of exploration entries in permit area “B,” Lila Canyon. However, the legend does not contain the line type showing the exploration entries.

Jay Marshall, who is a registered profession engineer in the State of Utah, certified plate 5-1.

Permit Area Boundary Maps

The Permittee states in Section 112.600 of the PAP and on Plate 1-1 than Plate 1-1 is the official permit boundary map and that the Division should refer to it to clarify any questions about the permit boundaries. It shows the permit boundaries as Permit Area A- the Horse Canyon project, and Permit Area B- the Lila Canyon Extension.

Plate 1-1 is helpful in identifying the entire permit area. However, the Division is interested in knowing the permit boundary in relationship with the disturbed area boundary. To aid the Division, the Permittee must show the permit boundary as well as the disturbed area boundary on Plate 2-1. In addition, the Permittee must state in the text and on Plate 2-1, or a map of the Permittee's choosing, that that Plate 2-1 or an equivalent map is the official disturbed area map.

Surface and Subsurface Manmade Features Maps

Section 521.120 of the PAP deals with the location of existing structures on maps. The information in that section and the following subsections is inadequate, unclear, and contradictory.

R645-301-521.122 requires that the Permittee show the location of all man-made features within, passing through, or passing over the proposed permit area. Including, but not limited to: major electric transmission lines, pipelines, and agricultural drainage tile fields. The Permittee states, in section 521.122 of the PAP, that they have shown all such structures on Plate 5-2. Again, this is confusing, since Plate 5-2 only shows disturbed area boundaries and does not extend 1,000 feet outside the permit boundary. In addition, there are no major electric transmission lines, pipelines, and agricultural drainage tile fields within the area with the exception of the culvert under County Road 126. If the only made-man structure in the proposed permit area is a culvert under County Road 126 then the Permittee must plainly state so.

Contour Maps

Plate 5-1A shows the pre-mining contours for the disturbed area. Several maps, including Plate 5-3 show contours for the entire Lila Canyon area. The contours for Plate 5-3 are based on contours from USGS topographic maps and accurately represent the pre-mining contours for the Lila Canyon Extension.

A qualified, registered, professional engineer prepared, or directed the preparation of, Plates 5-1A and 5-3 and certified them.

Findings:

The information in this section of the PAP is not adequate to meet the requirements of this section of the Regulations. Before approval, the Permittee must provide the following in accordance with:

R645-301-521.123 and R645-301-121.200, In the text of section 521.123 of the PAP and on all relevant maps, the Permittee must identify all public roads that exist in, and within 100 feet of, the permit boundary. In section 521.123 of the PAP, the Permittee only refers to County Road 126 as being within the proposed permit area. Yet, in Appendix 5-4 the Permittee explains in detail the existence of Little Park Road and some other public roads within the permit area. To avoid confusion, the Permittee needs to show and label the full right-of-way for County Road 126 and all other public roads on a map that deals with conditions that exist before the permit being issued. To be clear and concise the Permittee should show the road information on two maps, one map for the entire permit boundary and the second for the disturbed area boundary. Note that preexisting structures in the operations section of the TA refer to structures on which construction began before January 21, 1981.

R645-301-521.125 and R645-301-121.200, In the text of section 521.125 of the PAP, and on all relevant maps, the Permittee must identify all existing sediment ponds, permanent water impoundments, coal processing banks, and coal processing waste dams and embankments. In section 521.125 of the PAP, the Permittee mentions the proposed sediment pond. Since the proposed sediment pond is just that, proposed, the statement is confusing. The Permittee must list only those dams and impoundments within the proposed permit area that exist prior to the permit being issued

R645-301-521.150 and R645-301-521.190, The Permittee must show the pre-existing contours on Plate 5-1A as intervals of 5 feet or less. The Division needs the information to establish the pre-existing site conditions.

R645-301-521.111, The Permittee must list all known mine workings in, and adjacent to, the permit area. The Division found mine workings in the area listed in Doelling that the Permittee did not show on Plate 5-1. The Permittee should show those workings or state why they did not list them.

R645-301-521.111 and R645-301-121.300, The Permittee must list the line type for the exploration entries in the legend of Plate 5-1.

R645-301-521.190 and R645-301-121.200, The Permittee must designate one map as the official disturbed area boundary map and state which map it is in the text of the PAP.

R645-301-521.121 and R645-301-121.200, In the text of section 521.121 and all subsections and related maps the Permittee must identify only the surface and subsurface man-made features that exist on the site prior to the permit being issued.

OPERATION PLAN

MINING OPERATIONS AND FACILITIES

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

Analysis:

General

The Permittee proposes to develop surface facilities and mine portals near Lila Canyon. The Lila Canyon surface facilities will be used to access coal reserves in the southern area (Lila Canyon Extension) of the Horse Canyon Mine Permit. The proposed surface facilities would be located in the S1/2 of Section 15, T. 16 S., R.14 E. See Plate 5-5 for the proposed Lila Canyon Extension workings.

The Permittee chooses to develop the new mine facilities at the Lila Canyon site rather than use the existing facilities at the Horse Canyon site because:

- The Horse Canyon surface facilities have received Phase II bond release, with the exception of some buildings. The Permittee could use existing facilities for storage of equipment, and or supplies, during construction; and even possibly after Lila Canyon has been developed. Once the Permittee determines that the buildings are no longer needed, they will reclaim them, or possibly transfer ownership to a college or university. To receive Phase II bond release the Permittee had to complete all backfilling, grading, topsoil placement, placement of drainage controls and revegetation. The only remaining requirements to obtain final bond release are for the site to meet the vegetation success standards and to comply with the general performance standards. Development of the Horse Canyon site would entail disturbance of reclaimed ground.

- The existing Horse Canyon facilities are not suitable for a large-scale longwall operation. The old Horse Canyon Mine was not designed to produce 4,500,000 tons or coal per year. The Division was not able to obtain complete annual production figures for the Horse Canyon Mine, but in 1969, the mine produced 843,362 tons of coal. The information on Plate 5-1 suggests that coal production between 1970 and 1980 was on a similar scale.

- The Horse Canyon Mine workings are not in operational condition. Some of the main pillars were pulled during retreat mining and other areas are underwater. All but one portal has been sealed and backfilled. While reopening portals and shoring up old mine workings may be an option, such an alternative would be expensive.

The Division does not have the resources to independently verify that using the Horse Canyon facilities would be uneconomical nor has the Permittee given the Division detailed economic data to support the claim. The Permittee has offered some good reasons for developing the Lila Canyon facility. The Division does not have a compelling reason deny the development of the Lila Canyon facility.

The average gradient of the Lila Canyon Extension surface facilities site is 10%. The gentle slope of the area eliminates many of the problems encountered when reclaiming mine sites in steep canyon areas.

Access to the lower Sunnyside seam from the Lila Canyon facility site will be from two inclined portals that rise from the base of the sandstone cliffs upward at a 12% slope, for a distance of approximately 1,200 feet. The PAP refers to the inclined portals as rock slopes. The Permittee will develop a ventilation portal from the underground workings to the surface. See Plate 5-2 for the locations. While a road could be constructed to the outcrop, reclamation of the road to the standards in the R645 rules would be difficult if not impossible.

The Permittee will use the rock material from two of the tunnels and the portal face-ups to create a pad for surface facilities. The Permittee estimates they will remove 16,650 bank cubic yards to construct the rock slopes. The Permittee assumes a swell factor of 1.5; therefore, there will be around 25,000 loose cubic yards.

The material from the rock slopes is, by definition, coal mine development waste. Coal mine waste is defined as coal processing waste and underground development waste. R645-301-536 requires that all coal mine waste be placed within approved portions of the permit area. The Permittee will place material from the rock slopes in refuse piles.

Because the material from the rock slope will not contain coal, or material that is combustible or acid or toxic forming, the Division will allow the Permittee to use it as structural fill. Fill for other parts of the disturbed area will come from subsoils.

Type and Method of Mining Operations

Coal mining will begin in Section 15, T. 16 S., R. 14 E., in the Lower Sunnyside Coal Seam. Development of the Lower Sunnyside Coal Seam will be down dip toward the east. Two 1,200-foot tunnels will access the coal seam. The Permittee will drive the tunnels upward from the cliffs at a 12% grade. The Permittee will develop the ventilation fan portal from the underground workings to the surface. See Plate 5-2 for the location of the portals and Plate 5-5 for the mine workings.

The Permittee will conduct initial mining by the room-and-pillar method. Production in the first year will be around 200,000 tons, and around 1,000,000 to 1,500,000 tons per year during the second to fifth year. In Appendix 4-3, Air Quality, the Permittee stated in a letter to the Division of Air Quality, dated August 27, 1999, that they will produce a maximum of 1,500,000 tons per year.

If demand increases, the Permittee will install longwall equipment and production could peak at 4,500,000 tons per year. The estimated life-of-mine is 20 years.

Mine development will start with tunnel construction. Once the Permittee encounters the coal, development will continue using continuous miners and various types of haulage equipment.

The Permittee will ventilate the mine using an exhaust type system. They estimate that full production will require 900,000 cfm. Tunnels and entries from the surface will supply intake air.

The Permittee will use water sprays on all underground equipment as required for dust suppression. They will also place sprays along sections of the conveyors and at some transfer points.

The Permittee expects the workings to produce some water, with more water being produced as the depth of mining increases. The Permittee will use some of this water for dust suppression. They will collect the remainder in sumps and pump it to mined-out sections of the mine or to the surface. They will treat the water when necessary.

In Section 523, the Permittee listed the major mining equipment that they will use. The equipment is consistent with a major underground coal mining operation.

Facilities and Structures

The Permittee describes the new support facilities in Section 520, and shows them on Plate 5-2. The new structures and facilities listed include:

Buildings
- 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
- Guardrails
- Underground Pipes
- Chain Link Fence

Support Facilities
- Non-Coal Waste Area
- Equipment & Supplies Storage Area
- Topsoil Pile
- Refuse Pile
- Sediment Pond
- Slope Access Road
- Rock Slopes
- Mine Facilities Road
- Truck Loadout Road

Portal Access Road
Office/Bathhouse/Warehouse Asphalt Parking Area
Mine Parking
Fuel Tanks
Rock Dust Bins
Explosive Magazines

The Permittee will construct the buildings, support structures, and mine facilities using standard building materials such as steel, wood, and concrete. They will accomplish the Construction and demolition of the facilities using standard construction techniques. They will reclaim the surface facilities by removing the structures. They will salvage machinery and steel building components when possible. The Permittee will ship building debris, with the exception of concrete, off site for disposal.

The Division received a comment from SUWA that support structures and mine facilities should not be built on lands with wilderness characteristics, and that if such facilities are built, they should use camouflage, noise control, light control and limit nighttime operations to avoid disruption of the wilderness character. Management of the land to maintain its wilderness characteristics is the responsibility of the surface management agency, in this case the BLM. The Regulations do not use the word wilderness nor is there any engineering regulation that relates to lands with wilderness characteristics. The BLM has addressed this in the EA as a landowner.

Findings:

The Permittee has met the minimum regulatory requirements for the Mining Operations and Facilities section of the Regulations. This section deals with general information and the TA will address specific issues in detail in other sections.

EXISTING STRUCTURES:

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

Analysis:

An existing structure means a structure or facility used in connection with, or to facilitate, coal mining and reclamation operations, for which construction began before January 21, 1981. A structure constructed before January 21, 1981 does not have to meet the design criteria of structures constructed after that date. However, existing structures do have to meet the performance standards. Note: in the Environmental Section of the TA, existing structures refers to structures that existed prior to the permit being issued.

At the Lila Canyon site, no structures exist that will be used for coal mining and reclamation activities. Within the disturbed area, a culvert lies below County Road 126. The culvert is in poor shape and needs to be removed and replaced.

The Permittee states in section 526.115 of the PAP that the County will modify or reconstruct the culvert within the disturbed area boundary. If the County will do the work then the Division assumes that the project is a County project and does not involve the Permittee.

The Division assumes that the County will take measures to protect the environment and public during removal/replacement of the culvert. The Division does not regulate construction of public roads in permit areas.

The culvert that passes under County Road 126 will connect to the main bypass culvert that directs water from the undisturbed area to the discharge point and acts as a decant for the sediment pond. During reclamation, the Permittee will have to modify the culvert system. The modifications will include removing the bypass culvert and sediment pond.

The Permittee must describe how the bypass culvert will connect to the culvert under County Road 126. In addition, the Permittee must explain what modifications to the culvert and the surrounding slope will take place during reclamation.

Findings:

Information provided in the proposed amendment is not adequate to meet the requirements of the Existing Structures section of the Regulations. Prior to approval and in accordance with:

R645-301-526.115.4 and R645-301-526.116.1, The Permittee must show 1) what section of the culvert the County will install and what part the Permittee will install, 2) during reclamation, what work will be done by the County regarding modification of the culvert. The Division assumes that when the undisturbed bypass culvert is removed, modifications to the culvert will include a fluted inlet and the placing of riprap on the surrounding slope.

RELOCATION OR USE OF PUBLIC ROADS

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

Analysis:

The Permittee does not propose to relocate any public road. The Permittee does plan to tie the bypass culvert into Emery County's culvert under the Lila Canyon Road. Emery County

will install the culvert and will allow the Permittee to conduct mining operations within 100 feet of the Lila Canyon Road. To protect the public, Emery County will require the Permittee to place a 6-foot chain link fence between the disturbed area and the Lila Canyon Road.

Plate 5-2 shows the location of the proposed culvert, the Lila Canyon Road, the chain link fence, and the sediment pond. Figure 1 of Appendix 5-7, 5-7A-1 and 5-7A-2 show cross-sections for the sediment pond area.

Appendix 1-4 of the PAP contains a copy of a letter from the Emery County Road Department dated January 10, 2001. The letter states the following:

> "Said approval authorizes mining activities to be conducted within 100 feet of the public road with the provision that, to provide for public safety, a 6 foot chain link fence shall be constructed adjacent to the road right-of-way in the vicinity of the surface facilities area.
>
> "Additionally, the location of the fence must not restrict continued public use of the road."

The Permittee shows the location of the fence on Plate 5-2. The Division believes that the fence will offer the public protection from the hazards associated with the mining and reclamation facilities that are located within 100 feet of County road.

The Permittee states in section 521.133 of the PAP that they do not propose to relocation any public road. Within the permit area, there are at least two public roads, the Little Park Road and County Road 126. The Permittee does not plan to relocate Little Park Road.

Findings:

The information provided in the PAP does not adequately describe the relocation of the public road. Prior to approval and in accordance with:

R645-301-121.200, The Permittee must update section 526.116 of the PAP to state that in addition to the office complex and sediment pond the topsoil storage area and security building are also within 100 feet of County Road 126.

COAL RECOVERY

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

Analysis:

As part of the federal mine plan approval, and to meet the requirements of the federal leases, the Permittee is required to submit a Resource Recovery and Protection Plan (R2P2) to the BLM. The BLM staff analyzed the R2P2 for maximum economic recovery and found that the Permittee met that requirement.

The Permittee based the R2P2 on the assumption that all operations will be conducted within a logical mining unit (LMU). The Permittee does not show the location of the LMU on any maps in the MRP. Plate 5-4 has the LMU boundary in the legend but does not show the boundary on the map. Because the LMU boundary overlaps, or is identical to, the permit boundary, the Permittee may wish to show the LMU on another map.

The mine plan assumes that all the coal in the LMU is marketable. The coal in the Lila Canyon area is higher in sulfur than coal in the surrounding area. If the sulfur value exceeds contract specifications, the Permittee may be unable to market the coal. Should that occur the Permittee would have to modify the mine plan and leave some coal unmined.

Expansion of the mine to the west is impossible because the coal outcrops on the western escarpments. To the north are the old Horse Canyon Mine workings. The Permittee has looked at the potential for reworking the area and determined that there are no recoverable resources. Deep cover limits expansion to the east. The economic cut off of depth of cover for coal mining operations varies within the area from 2,500 feet to 3,000. Therefore, significant expansion to the east is limited at this time due to economics and technology.

Expansion to the south could be possible. The Permittee needs to discuss the possibility of expanding the operation to the south.

The Division staff reviewed the mine plan and found that The Permittee plans to recover all significant coal reserves within the permit area LMU that are possible to recover. The Division bases their findings on several factors, including technical analysis from other agencies, such as the BLM, for maximum coal recovery.

The Permittee will recover coal using a continuous miner. Section 522 discusses the use of barrier pillars to isolate the Horse Canyon Mine from the new Lila Canyon Extension, to ventilate, to provide independent escape routes, to protect escarpments, and to possibly retain large quantities of mine water.

The Permittee estimates first year production to be 200,000 tons, increasing in the second through fifth year to between 1,000,000 and 1,500,000 tons. Plans project the utilization of longwall mining to generate as much as 4,500,000 tons a year (Section 523). An increase of this size would require modification of the MRP.

Findings:

The information provided in the PAP does not adequately describe the relocation of the public road. Prior to approval and in accordance with:

R645-301-522 and R645-301-521.190, The Permittee must show the Logical Mining Unit boundaries on Plate 5-4 or an equivalent map. The Division is aware that the permit boundaries and the LMU boundaries overlap and that showing both on the same map could be difficult.

R645-301-522, The Permittee must discuss the potential for expanding the mine. The Division is interested in plans for expanding to the south and east.

SUBSIDENCE CONTROL PLAN

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

Analysis:

General

The Permittee included maps of the underground workings in the PAP. Plate 5-3, Subsidence Control Map, shows the location of water rights, springs, and eagle nests. The map also shows the location of the underground mine workings and the angle-of-draw. Plate 5-5, Mine Map, shows the schedule for mining and the location of first mining areas, full extraction areas, and main entries that will be protected. The R2P2 contains additional information on locations of pillars, entries, extraction ratios, and measures taken to prevent or minimize subsidence and related damage.

Renewable Resources Survey

The Permittee conducted a survey and found that no structures exist within the area of projected subsidence. The Permittee did find that some renewable resources including seeps and springs exist in the area of projected subsidence.

Plate 5-3, Subsidence Control Map is at a scale of 1:12,000. The map shows the location of the springs and water rights. The Division checked the location of several springs and found

that the locations on Plate 5-3 are not accurate. The Permittee must show the precise location of each spring in order to determine what the potential subsidence impacts could be. Some dirt roads exist in the subsidence zone, but do not appear on the subsidence map.

R645-301-525.200 lists those areas where underground coal mining and reclamation activities cannot be conducted beneath or adjacent to. The protected areas include public buildings and facilities, churches, schools, and hospitals. In addition, areas with impoundments of 20 acre-feet or more of water are included unless it can be proven that subsidence will not damage the structure. Aquifers that are an important source of a public water supply are also included. The subsidence survey found that no public buildings, public facilities, churches, schools, hospitals, impoundments, bodies of water with 20 acre-feet or more storage capacity, or aquifers that are a significant source of a public water system are located within the potential subsidence area.

The Division can suspend underground mining as stipulated in R645-301-525.220, which regulates damage to urbanized areas, major impoundments, and perennial streams. None of those items is located in the proposed subsidence zone.

In Chapter 7 of the PAP, the Permittee lists the location of each State appropriated water right, the amount of water associated with the right and the water use. The Division will rely on this information to resolve any problems involving water replacement issues.

On Plate 5-3, the Permittee does not list what the blue dots represent in the legend. On Plate 7-3, the blue dots represent underground water sources.

The location of the springs and other water rights information is not consistent on Plates 7-3 and 5-3. For example, Plate 5-3 does not show spring source 91-2521 and the location of spring source 91-617 is not constant on the two maps.

On Plate 5-3, the Permittee shows the location of eagle nests. Some of the nests are within the subsidence zone. The Permittee describes mitigation for the loss of eagle nests in Chapter 3 of the PAP.

The Division has received some public comments about the potential for subsidence to damage snake dens. DWR and BLM wildlife biologists, in consultation with the Division, have determined than any loss of snake dens to subsidence would be random and a minor impact to the population of snakes. For all wildlife issues, see the Operation Plan, Fish and Wildlife Information section of this TA.

R645-301-525.130 requires the Permittee to provide copies of the water rights survey and any technical assessment or engineering evaluation to the property owner, the water conservancy district, if any, where the mine is located and to the Division. The Permittee did not provide the

Division with proof that they gave the water rights survey information to the property owners or water conservancy district.

Subsidence Control Plan

The Permittee will prevent subsidence from occurring on the escarpments by only conducting first mining in the area. The Division will reassess control of subsidence in other areas after all resource information is collected.

Description of Coal Mining Method

Coal mining will begin in Section 15, T. 16 S., R. 14 E., in the Lower Sunnyside Coal Seam. Development of the Lower Sunnyside Coal Seam will be down dip toward the east. Two 1,200-foot tunnels will access the coal seam. The Permittee will drive the tunnels upward from the cliffs at a 12% grade. The Permittee will develop the ventilation fan portal from the underground workings to the surface. See Plate 5-2 for the location of the portals and Plate 5-5 for the mine workings.

The Permittee will conduct initial mining by the room-and-pillar method. Production in the first year will be around 200,000 tons, and around 1,000,000 to 1,500,000 tons per year during the second to fifth year. If demand increases, the Permittee will install longwall equipment and production could peak at 4,500,000 tons per year. The estimated life-of-mine is 20 years.

Plate 5-3 shows the areas where subsidence could occur, while Plate 5-5 shows the timing and sequence of mining. That information is sufficient for the Division to determine what areas will subside, and when.

Mine Map

Plate 5-5, Mine Map, shows the schedule for mining and the location of first mining areas, full extraction areas, and main entries that will be protected.

Plate 5-5 shows the underground workings and the areas where first mining only will be utilized to protect escarpments and the raptor nests that may exist on the escarpments. The areas to be protected from subsidence are confined to the western edge of the underground mine.

Subsidence Monitoring

The Permittee will initiate subsidence monitoring in an area before any second mining begins in that area. The subsidence-monitoring plan will consist of the following:

- Aerial subsidence monitoring

- A 200-foot grid
- 12-16 control points
- Six of these points outside the subsidence zone
- Accuracy of plus or minus 6 inches horizontally and vertically
- A map of subsided areas
- Annual surveys in active subsidence areas

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.

The Permittee will conduct a ground survey in conjunction with the quarterly water-monitoring program. They will note any cracks observed and report them to DOGM.

The two main objectives of the subsidence monitoring program are to determine 1) 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 useful to determine if any subsidence damage has occurred. The Permittee should pay particular attention to any stream channels with less than 1000 feet of cover to the coal.

Subsidence Control Measures

The Permittee plans to use just one subsidence control method in the Lila Canyon Extension, to protect the escarpments. They will leave barrier pillars and only allow first mining within 200 feet of the outcrop barrier. This will protect the escarpments.

Anticipated Subsidence Effects

The main panels of the Horse Canyon Mine (Permit Area A) in which past operators have conducted retreat mining 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 (Part A), the major impacts of subsidence are due to extension strains and not to total vertical subsidence. The prediction of average extension strain is accomplished with the use of the formula:

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

The solution of this equation for the Horse Canyon Mine configuration discussed above produces a predicted, average extension strain of 2.5×10^{-3} which is less than that the limiting strain of 5×10^{-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 (Part A), the cover thickness of over 2,000 feet is also much greater than the limiting thickness of 450 feet.

A cantilever effect of symmetrical subsidence on either side of thick pillars can greatly enhance the amount of extensive strain. The Horse Canyon MRP (Part A) 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 (Part A).

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 Sections 9, 10, 15 and 16, T. 16 S. R.14 E. Those areas have cover averaging 800 feet but do not exceed 1,000 feet of cover. The Permittee noted a number of the subsidence features 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 the only subsidence related activity noted within the Horse Canyon permit area 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 the Permittee plans to subside in the Lila Canyon Extension has 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.

In areas with less than 1,000 feet of cover, subsidence features could include tension cracks, fissures, sinkholes, and ground lowering. In the southwest part of the permit area, the cover drops to less than 500 feet. Parts of Little Park Wash, an ephemeral stream, are located in the shallow cover area.

Should subsidence damage Little Park Wash the most likely causes would be cracks, fissures, or sinkholes. Should Little Park Wash be damaged the Permittee could most likely make repairs by hand. If equipment is needed, the Permittee could access most areas by Jeep trails.

Minimize Damage to Non-commercial and Occupied Buildings

No non-commercial or occupied buildings exist within the proposed subsidence zone.

Replacement of Adversely Affected State-Appropriated Water Supplies and Mitigation to Material Damage of Land and Protected Structures

R645-301-525.400 requires that the Permittee describe how they will replace any State-Appropriated water supplies that may be damaged by mining operations. The Division needs to have a good idea about what type of alternative water sources are available. Possible sources for water replacement include, but are not limited to, piping or trucking water, transferring water rights, sealing surface fractures and the construction of wells. The Permittee needs to evaluate which methods would be available in the area and when they would use each method.

Repair of Damages

The Permittee committed to restore surface lands to the extent technologically and economically feasible. While the use of heavy equipment in some areas is not practical, there are alternatives that others have used to reclaim mines in Utah and that have been quite successful. Those methods include manual labor and the use of explosives. The Utah Abandoned Mine Lands (AML) Program has used explosives in wilderness areas to eliminate hazards caused by mining.

Since no structures exist within the subsidence zone, the Permittee does not have to address how they will repair damage to buildings and other related structures.

Two items that are of concern to the Division are roads and streams. All dirt roads in the Lila Canyon tract are in areas with over 1,000 feet of cover or where mining will not take place. If subsidence damage should occur to the roads, the Permittee has committed to repair the damage by regrading the road. Since the roads will be accessible to earthmoving equipment, the Division finds the commitment adequate.

The Division is concerned that subsidence could damage the ephemeral streams located in areas of less than 1,000 feet of cover. Part of Little Park Wash, an ephemeral stream, has less than 1,000 feet of cover. Based on experience in the area, subsidence could cause cracks, fissures, or sinkholes to form. Should those features occur, the Permittee would most likely be able to repair the damage using hand methods. If hand methods prove to be impractical, the Permittee could have the option of moving equipment into the area. Jeep trails, which cover most of the area, could be used to move equipment in if necessary.

Rebuttable Presumption of Causation by Subsidence

The Permittee has used an angle of draw of 21.5° in its subsidence calculations. The rebuttable presumption of causation for damage within the angle-of-draw, means that if damage to non-commercial buildings or occupied residential dwellings occurs as a result of earthen movement, the assumption exists that the mining caused the damage, unless the Permittee can prove otherwise. R645-301-525.541 assumes an angle-of-draw of 30° unless the Permittee can demonstrate that another angle-of-draw is more appropriate. Since there are no non-commercial buildings or occupied residential dwellings in the area the 30° angle-of-draw rebuttable presumption does not apply.

Adjustment of Bond Amount for Subsidence Damage

The Division has received a comment from SUWA requesting that additional bond be required to ensure that the Permittee will repair subsidence related damage. The Division does not bond for subsidence damage that has not yet occurred, except for conditions outlined in R645-301-525.550. The general practice to protect buildings and other structures is for the Permittee to purchase liability insurance, see R645-301-525.520, R645-301-525.530, and R645-301-830.500. Additional bond will be required, when subsidence-related material damage has occurred to land, structures, or facilities or where contamination, diminution, or interruption to a water supply has occurred.

Performance Standards for Subsidence Control

The Permittee will comply with all provisions of the approved subsidence control plan.

Notification

The Permittee is required to notify the water conservancy district, if any, and the owners and all occupants of surface properties and structures above the underground workings. The notification will include the specific areas where mining will occur and the location or locations where the Permittee's subsidence control plan may be examined.

Findings:

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

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. Note that the information on Plate 5-3 is inconsistent with that of Plate 7-3. See the analysis section for more details.

R645-301-525.120 and R645-301-121.200, The Permittee must define the blue dot symbol on Plate 5-3.

R645-301-525.130, The Permittee must show that all property owners in, and around, the Lila Canyon tract, as well as the water conservancy district received copies of the water rights survey.

R645-301-525.130 and R645-301-121.200, The Permittee states in section 525.130 that they do not entirely agree that R645-301-525 requirements should apply. The Division is unaware of any options that the Permittee has about the need to comply with the R645-301-525 regulations. The Permittee must discuss those issues in the PAP. The discussion in Chapter 7, Section 727 is inadequate to comply with R645-301-525.130 and R645-301-121.200.

R645-301-525.400, The Permittee must list the possible sources and methods to replace State-Appropriated water supplies that subsidence may damage. The Permittee needs to determine what replacement sources are available and how they will implement them.

SLIDES AND OTHER DAMAGE

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

Analysis:

The requirements for slides and other damage consist of two parts. The first part requires that at any time a slide occurs, which may have a potential adverse effect on public, property, health, safety, or the environment, the person who conducts the underground mining activities shall notify the Division by the fastest available means and comply with any remedial measures required by the Division. In section 515.100 of the PAP, the Permittee commits to phone the Division if a slide occurs (Section 515) and inform them of the slide and proposed remedial plan. The Division will then determine the adequacy of the remediation plan. The Permittee has also committed to report any potential hazards found during impoundment inspections.

The second requirement is that the PAP will incorporate a description of notification when potential impoundment hazards exist. The requirements for the description are: If any examination or inspection discloses that a potential hazard exists, the person who examined the impoundment will promptly inform the Division of the finding and of the emergency procedures formulated for public protection and remedial action. If the Permittee cannot formulate or implement adequate procedures, the Division will be notified immediately. The Division will then notify the appropriate agencies that other emergency procedures are required to protect the public. In section 515.200 of the PAP, the Permittee commits to notify the Division of any impoundment hazards they discover during an inspection and the methods that will be used to remedy the situation.

Findings:

The Permittee meets the minimum regulatory requirements for slides and other damage.

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 Classification System

Plate 5-2 shows the location of all roads that the Permittee will use for coal mining and reclamation activities within the disturbed Lila Canyon area. The roads within the disturbed area boundary include: the county road, the mine facilities road, the coal loadout road, and the portal access road. All of the roads in the disturbed Lila Canyon area that the Permittee will construct

are classified as primary roads. The roads were classified as primary roads because they will be used to transport coal and/or will be used frequently for more than six months.

Plans and Drawings

Roads

The Permittee must give the Division adequate plans and drawings for each road that they will construct in the disturbed area. The Permittee has identified two roads they will construct in the disturbed area: the Mine Facility Road, and the Portal Access Road.

In section 527.200 of the PAP, the Permittee states that detailed designs and descriptions for each road are in Appendix 5-4, Appendix 7-4, and on Plate 5-2. On Plate 5-2 of the PAP, the Permittee shows the location of the Mine Facility Road. In Appendix 5-4, the Permittee states that the road will be gravel at first, but will be paved in the long term. The Mine Facility Road will be approximately 24' wide and will have drainage controls.

The only cross-section or other design drawing is Figure 1 in Appendix 5-4. That figure is not a detailed design, but rather a conceptual drawing. The Division found several problems including, but not limited to:

1) Figure 1 is not certified,
2) The designs in Figure 1 do not match the specifications in section 527.200 of the PAP (drawing shows 16' width and the text states that the road will be 24' wide),
3) The drawing is not to scale,
4) The Permittee must give separate designs and cross-sections for each road. The general design in Figure1, Appendix 5-4 shows that a ditch will be on the out slope of each road. However, Figure 7-5 shows that sections of both the Mine Facility Road and the Portal Access Road do not have ditches. The Permittee must either have ditches for all roads or show that alternative methods are adequate to prevent erosion, and water pollution.

The Division believes that the designs for the portal access road are inadequate. The Permittee does not show a turnaround area, though they plan to transport underground development waste from the rock slopes using the portal access road. Based on the size of the trucks, the Division believes that there is inadequate room at the portal face up area for the trucks to be loaded and turn around. Since the Permittee will need to haul coal mine waste (rock slope material) from the portals to the refuse pile, large trucks will be using that road during initial construction.

Measures to be Taken to Obtain Division Approval for Alteration or Relocation of Natural Drainage

The Permittee does not propose to alter or relocate any natural drainage. The Permittee does propose to construct the Main Facility Road within 10 feet of the Right Fork of Lila Wash. Because of the close location to the drainage, the Division will require the Permittee to supply detailed drawings and cross-sections that show how the Permittee will protect the undisturbed drainage.

Location of Roads in Intermittent or Perennial Streams a Ford

The Permittee does not propose to locate a road in the channel of an intermittent or perennial stream, locate a temporary ford in the channel of an intermittent or perennial stream, or install a low-water crossing of a perennial or intermittent stream channel.

Drawings and Specifications for each Low-Water Crossing of Perennial or Intermittent Stream Channels so that The Division Can Maximize the Protection of the Stream

The Permittee plans no low-water crossings.

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.

The Permittee states in Section 542.600 that there will be no roads left within the disturbed area after final reclamation. The Permittee will reclaim all roads upon cessation of mining.

Performance Standards

The Permittee must ensure that each ancillary and primary road will meet the performance standards outlined above in the Minimum Regulatory Requirements for Road Systems and Other Transportation Facilities.

In meeting regulatory requirements, the Permittee has provided the following information:

- Appendix 5-5 has information about slope stability for the roads. The Permittee states that they performed a slope stability analysis for the road embankment and road cut slope. The stability analysis is in Appendix 5-5.

  Portal Access Road: The Permittee shows the road on Plate 5-2. It will provide access from the bathhouse area to the rock slope portals. The road is a 1,600 feet long with a maximum grade of 12.5%. The cut slopes will be no steeper than1H:1V with a maximum height of 23 feet. Fill slopes will not be steeper that 2H:1V with a maximum height of 50 feet. The Permittee states that cross sections for the road are on Figure 6, Appendix 5-5. However, there is no such figure. Nor does the Permittee give the needed safety factor information.

The road embankment will have a safety factor of 2.48 under dry conditions and 1.58 for saturated conditions. The road cut slopes will have a safety factor of 1.85 under dry conditions and 1.31 under saturated conditions. The minimum safety factor required for those slopes is 1.30. Thus, the slopes meet or exceed the safety factors of the Utah Coal Rules.

Main Mine Road: The Permittee does not discuss the Main Mine Road in the stability analysis.

- The Permittee did additional stability analysis using STABLE, a slope stability program. The Permittee analyzed several road embankment and cut-slope configurations in the disturbed area. Each cut slope exceeded the minimum safety-factor requirement of 1.3. The Permittee does not include printouts of the analysis. The Division needs that information to verify the input and output conditions.

- Primary roads have been located in the pad area. The Permittee has designed the pad area to minimize erosion, insofar as is practicable. In addition, the roads are located on stable surfaces.

- The Permittee does not propose to have any temporary fords in perennial or intermittent streams.

- The primary roads will have adequate drainage controls.

- The road base shown for the primary roads in Figure 1 of Appendix 5-4 will be 6-inch road base gravel. Other mines have used that type of material and the Division considers it adequate.

Primary Road Certification

The road plans and cross-sections are located in Appendix 5-5 and on Plate 5-2. A registered professional engineer certified the plans.

A qualified registered professional engineer shall also certify the actual construction or reconstruction of primary roads in a report to the Division. The Permittee must provide those reports, called as-builts, to the Division upon completion of the road.

Other Transportation Facilities

In section 520 of the PAP and on Plate 5-8, the Permittee describes and shows the conveyors that will be used at the Lila Canyon facility. The main conveyor will transport coal to the surface. The main conveyor belt is 60 inches wide, extends 320 feet from the portal, and has

a belt speed of 700 feet per minute. Since the Permittee plans to leave the ground beneath the conveyor as undisturbed due to the steepness and remoteness of the area, the Permittee will totally enclose the conveyor.

The coal will move from the main conveyor to the stacking tube. From there, the coal will feed into a reclaim tunnel and load onto the reclaim tunnel conveyor (48 inches wide and 280 feet long, covered where above ground). Next, the coal will go to the crusher.

From the crusher the loadout conveyor will transport the coal to the loadout bin. The loadout conveyor is 48 inches wide, 210 feet long and has a belt speed of 500 feet per minute. The Permittee will cover the above-ground portion of the conveyor.

From the loadout bin, the truck conveyor will transport the coal to coal trucks for over-the-road transport. The truck conveyor is 48 inches wide, 50 feet long and the Permittee will cover all above-ground sections.

On Plate 4-4, the Permittee labeled a county road as a proposed coal haul road. While the Permittee will be using the proposed county road to transport coal from the mine to State Highway 6, that road is a public road and not a road owned or controlled by the mine. The Division has made a separate finding on the disposition of this road and has determined that it should not be permitted. The activities proposed for this road are commensurate with activities allowed on public roads of this designation. The Permittee does not propose to utilize this road for coal mining and reclamation operations; transportation of coal is not considered coal mining and reclamation operations. To avoid confusion the Permittee must label the proposed coal haul road as a county road.

Findings:

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

R645-301-527.230, The Permittee must show that trucks and other vehicles they will use during the construction, use, and reclamation of the portal will have enough room to turn around and be loaded, or they must modify the portal access road design.

R645-301-527.210, The Permittee must give the Division detailed designs for each road that will be constructed in the disturbed area. A general commitment to provide the Division with additional engineering designs is inadequate. If the Permittee needs more time to develop road designs then they should wait until the designs are complete before submitting the PAP. At a minimum, the Permittee must give the Division detailed designs for both the Main Mine Road, and the Portal Access

Road. The information in the text and that in Appendix 5-4 are contradictory. See analysis section for details.

R645-301-527.210, R645-301-527.220 and R645-301-527.230, The Permittee needs to give the Division detailed maps and cross-sections that show how the South Fork of the Lila Wash will be protected from mining activities, especially from the Main Facility Road, which is located 10 feet from the drainage.

R645-301-527.210 and R645-301-121.200, The Permittee must either include Figure 6 in Appendix 5-4 or remove reference to that figure.

R645-301-534.130, The Permittee must include a safety factor analysis for all the roads in the disturbed area or show why they are not needed. The Permittee must also include summary sheets from the computer printouts.

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

Noncoal waste can be classified as non-hazardous or hazardous and include recyclable materials, asphalt and concrete. Non-hazardous waste consists of garbage, which the Permittee will place in dumpsters. The Permittee will then ship the non-hazardous waste to a state licensed disposal site, most likely East Carbon Development Corporation (ECDC.) The Permittee will send hazardous waste, as defined by the Resource Conservation and Recovery Act (RCRA), to a state licensed disposal site - most likely ECDC. See Section 528.224 of the PAP for more details about hazardous waste disposal. Scrap material and used machinery usually goes to a scrap dealer or a recycling center for disposal.

The Division will allow the Permittee to dispose of concrete debris on site. The Permittee will dispose of concrete on site by placing the concrete in areas that will be backfilled and graded, as shown on Plate 5-6.

The PAP indicates in Section 542.640 that the Permittee will place a minimum of two feet of cover over “road surfacing materials that are unsuitable for vegetation establishment.” The road surfacing material that the Permittee is allowed to bury under two feet of cover is limited to sand and gravel. The Permittee must ship asphalt off site and bury concrete under four feet of cover.

Coal Mine Waste

In section 528.320 of the PAP, the Permittee states that coal mine waste will consist of: coal processing waste, and underground development waste. The underground development waste consists of three subcategories: rock slope material, underground development waste that contains coal, and reject material from the coal crushing operation. The location of the coal mine waste storage facilities (refuse pile) is shown on many maps and cross sections including: Map 5-2, Surface Area; Figure 1, Appendix 5-7; and Figure 2, Appendix 5-7. The location of the coal mine waste is shown as "hatched marked" on the cross-sections and labeled.

The Permittee will construct the coal mine waste disposal site (refuse pile) as follows:

- Ground Preparation: The Permittee will remove vegetation and topsoil from the site and store it in the designated topsoil piles. Next, they will remove the subsoil as shown on Figure 1 in Appendix 5-8 and fill the cell that is created with coal mine waste. The Permittee plans to construct several such cells.
- Placement of Coal Mine Waste (Refuse): The Permittee states in Appendix 5-7 that coal mine waste will be placed into the cells. The Permittee will construct the section of the refuse pile that contains only structural fill by placing the material in the cell, compacting it and then covering the area with four feet of non acid-, non toxic-forming material.
- Coal Processing Waste Testing: The Permittee will test the material from the rock slopes during the initial startup and at the ¼, ½ and ¾ mark and at the end of the project. Material from the crusher or coal sections of the mine will be tested every 6,000 tons.
- Spreading and Compaction: The Permittee states that compaction will take place using a wheeled loader during the filling operation. They will place the material in lifts with a maximum thickness of 12 inches.
- Drainage: The Permittee will grade the subsoil to allow proper drainage and to prevent the impoundment of water.

The main design criterion for coal mine waste disposal areas are as follows:

The coal mine waste must be disposed of in a way that minimizes the adverse effects of leachate and surface-water runoff on surface and ground water quality and quantity. The Division does not anticipate that the Permittee will encounter significant amounts of acid or toxic-forming material. If the Permittee does encounter significant amounts of acid or toxic-forming materials, the 4 feet of material placed over the coal mine waste will limit any leachate from coming in contact with surface water. There are no water resources underneath the coal mine waste. Therefore, groundwater resources will not be damaged from leachate from the coal mine waste disposal site.

The Permittee must construct the coal mine waste disposal facility (refuse pile) to ensure mass stability and prevent mass movement during and after construction. The coal mine waste

disposal facility has a static safety factor of 16.19. The minimum required static safety factor is 1.5. The Permittee based the stability calculations on cross section 8+00 (Figures 1 and 2, Appendix 5-7).

After final grading, the Permittee will cover the coal mine waste disposal area (refuse pile) with 4 feet of non acid-, non toxic-forming material. The 4-foot cover will be adequate to protect vegetation from any acid or toxic materials.

The coal mine waste storage facility will be located within the disturbed area of the Lila Canyon Extension. Access to the site will be restricted to mine personnel during normal mining operations. In the event of the mine going into temporary cessation the cover, and cell construction methods will protect the public from hazards associated with the site.

The Permittee does not anticipate that any coal mine waste will be disposed of outside the permit area, nor do they anticipate placing coal mine waste from another operation in the Horse Canyon Permit area. If the need arises, the Permittee must modify the MRP.

A registered professional engineer (P.E.) designed the coal mine waste disposal facility. The Division will require P.E. certified as-built drawings after when the Permittee finishes construction of the site.

The Permittee has committed to notify the Division in the event of a potential hazard at the coal mine waste disposal site. See the section on slides and other damage in this TA for details on how the Permittee will handle emergencies.

In Appendix 5-7, the Permittee estimates that there will be 25,000 loose cubic yards of underground development waste generated from portal construction. The Permittee expects an insignificant amount of additional refuse to come from the operation of the screening plant and the mine itself. Appendix 5-7 indicates that there is room at the refuse disposal facility for storage of an additional 19,500 cu yards of mine waste.

Refuse Piles

The Coal Mine Rules' definition of terms are found in R645-100-200 as follows:

- A refuse pile is a surface deposit of coal mine waste that does not impound water.
- Coal mine waste means coal processing waste and underground development waste.
- Coal processing waste means earth materials that are separated from the product coal during cleaning, concentrating, or the processing or preparation of coal.
- Underground development waste means 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.

Coal processing waste will be limited to materials from the crusher. The Permittee will not dispose of material separated from the coal during the crushing process underground. The coal processing waste will be disposed of in the refuse pile shown on Plate 5-2 and described in Appendix 5-7.

The Permittee plans to generate 16,650 bank cubic yards of material during the construction of the rock slopes that lead from the surface facilities area to the coal seam. The Permittee assumes that the loose material will take up 1.3 times the in-place volume. Therefore, a disposal site with the capacity for approximately 25,000 cubic yards of coal mine waste is necessary. Because the material from the rock slopes is not expected to contain coal or acid- or toxic- forming materials, the Permittee proposes to use the 25,000 cubic yards of material for structural fill.

The Permittee will not use refuse material from the crushing process or from material taken from within the section of the mine that has coal as structural fill. To distinguish the two types of refuse, the Permittee refers to one as rock slope material. See Section 536.300 in the PAP for details.

The Utah coal rules do not have any specific requirements for the use of refuse as structural fill. The rules do specifically state that refuse can be used for structural backfill in underground mines (R645-301-536.700) and to construct dams and embankments (R645-301-536.800.) The Utah coal rules (R645-301-536.900) also state that refuse piles must meet the requirements of 30 CFR 77.214 and 30 CFR 77.215:

The Permittee shows the location of the refuse pile on Plate 5-2. The Permittee labeled the material from the rock slopes that they will use for structural fill, and marked it differently than the coal processing waste. In Appendix 5-7, the Permittee states that they will place 25,000 cubic yards of rock slope material in the refuse pile as structural fill and that up to 19,473 cubic yards of coal processing waste can be disposed of in the refuse pile. Section 520 (Refuse Piles) gives the refuse- pile capacity as 150,000 tons. Numbers used for rock density and swell factor can affect the conversion to cubic yards, but this number seems to indicate roughly 50% more material than the refuse pile design in App. 5-7.

To avoid confusion, the Division will require the Permittee to list separately the amounts of rock slope material, and coal processing waste material in Table 1, Appendix 5-7.

Appendix 5-7 contains detailed information on the construction of the refuse pile/coal mine waste disposal facility. Figure 1, Appendix 5-7 shows the location of the refuse pile and the division between the rock slope material and coal waste in plan view. The profiles show the pre-mining, operational, and reclaimed stages of the refuse pile. Figure 2, Appendix 5-7 shows the cross-sections for the refuse pile.

The profiles and cross-sections show how the Permittee will construct the refuse pile. The Permittee will salvage the top 18 inches of pre-disturbed ground as topsoil, then remove the subsoil.

On Figure 1, Appendix 5-7, the Permittee shows that they will place coal mine waste in the refuse pile. However, on Figure 2, Appendix 5-7, the Permittee shows that they will place slope rock material in the entire refuse pile. Because the Permittee will handle the rock slope material differently than the material with coal, the Permittee must distinguish between the two types of materials in the cross-sections and profiles.

On Figure 2, Appendix 5-7, the Permittee shows that they will cover the slope rock (coal mine waste) with 18 inches of topsoil and 30 inches of fill material, totaling 48 inches of cover. However, R645-301-553.252 requires that all refuse piles be covered with a minimum of 4 feet of cover unless otherwise approved by the Division.

The Permittee has estimated the amount of rock slope material to be 25,000 loose cubic yards. Section 536.300 states there is unlikely to be any coal in the slope rock material, but Section 537.200 discusses treatment of slope rock material containing coal. This is not necessarily contradictory, but it is confusing. The Division has requested further information on the separation of coal containing waste from the structural fill.

Section 528.320 distinguishes the coal-free coal mine waste, which the Permittee will use as structural fill, from the material that will go into an apparently separate refuse pile. However, the PAP makes it clear that these two areas are adjacent and conjoining and will be treated as one area or structure, especially during reclamation.

Figure 1, Appendix 5-7 shows that the Permittee will divide the refuse pile into two sections. The western section will be rock slope material, used to create a structural fill. The eastern section has the capacity for 19,437 cubic yards of coal mine waste (see Appendix 5-7).

The Permittee outlines the testing of coal mine waste in Appendix 5-7. The Permittee will test all rock slope material five times. The Permittee will only use rock slope material as structural fill. The testing will take place during the initial start up, at the ¼ mark, the ½ mark, and the ¾ mark and near completion. The Permittee will test other coal mine waste, generated during operations from the crusher and underground development, containing coal every 6,000 cubic yards.

The Permittee will treat and dispose of all coal mine waste as if the material were acid- or toxic-forming. All coal mine waste will be disposed of under four feet of material.

Impounding Structures

The Permittee will not construct any impoundments from coal mine waste. The only impoundment structure at the Lila Canyon site is the incised sediment pond.

Burning and Burned Waste Utilization

The plan to extinguish fires that occur in the refuse pile is in Appendix 5-3. In the event of a small fire, the Permittee will cover the area with soil to smother the flames. For large fires, the Permittee will remove burning materials and spread them into thin layers for extinguishing. Since all of the stockpiled soil has been committed to reclamation efforts, the Permittee must explain where the fire suppression soil will come from.

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 the generation of any excess spoil.

Findings:

The information provided does not meet the minimum acceptable requirements of the Regulations. Prior to approval and in accordance with:

R645-301-521.124, The Permittee must show the location of the structural fill and refuse disposal areas on the cross sections on Figure 1 Appendix 5-7.

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:

Discharges Into An Underground Mine

There are no plans to discharge any water into an underground mine.

Gravity Discharges From Underground Mines

Gravity discharge from the mine is not expected. The proposed access portals are below the coal outcrop, as shown on Plates 5-2 and 7-5. Two 1,227-foot access tunnels will slope up at approximately 12 percent from a starting elevation at the surface of approximately 6,150 feet to intersect the coal seam at approximately 6,300 feet elevation. Maximum ground-water elevation measured in the three IPA piezometers is 5,975 feet, and maximum projected elevation in the vicinity of the rock-slope tunnels is approximately 6,000 feet (Plate 7-1). Ground-water levels would need to rise approximately 150 feet just to reach the starting elevation of the tunnels at the base of the Book Cliffs (6,150 feet) and approximately 300 feet to reach the intersection of the tunnels with the coal seam (6,300 feet). Therefore, it is unlikely that water levels will ever reach the intersection of the tunnel and coal seam. It is also unlikely the rock slopes will intercept ground water in the Blackhawk Formation.

Impoundments

The Permittee proposes to construct only one sedimentation pond, which will be located 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 requirement of 1.3. 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 Division of Water Rights also looked at and approved the sedimentation pond design. The Division has a copy of the approval letter.

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 freeboard will resist overtopping by waves and by sudden increases in storage volume.

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 Permittee will inspect the sediment pond according to the requirements of R645-301-514. A professional engineer has certified the pond designs according to the requirements of R645-301-512.

Findings:

The Permittee has met the minimum requirements for the hydrology section of the operational regulations.

SUPPORT FACILITIES AND UTILITY INSTALLATIONS

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

Analysis:

The Permittee refers to the new support facilities in the following sections of the PAP: Section 520, Plate 5-2, the appendices of Chapter 5, and 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
Topsoil Pile
Refuse Pile
Sediment Pond
Slope Access Road
Rock Slopes
Mine Facilities Road
Truck Loadout Road
Portal Access Road
Office/Bathhouse/Warehouse Asphalt Parking Area
Mine Parking
Fuel Tanks
Rock Dust Bins
Explosive Magazines

The Permittee failed to show the location of each structure on Plate 5-2. For example, the Permittee did not show the location of the explosive magazines or power lines. To avoid this mistake the Permittee must give each structure a number. The Permittee must list the numbered structures in the engineering section of the PAP, on the surface facilities map, and in the bond calculations.

Plate 5-8 is a detailed map with cross-sections that shows the coal handling facilities. Those facilities consist of a truck loadout, a scale, a 48-inch conveyor from the loadout bin to the truck loadout, a 48-inch conveyor from the loadout bin to the crusher, a 48-inch reclaim conveyor, a stacking tube, and a 60-inch conveyor from the mine.

The Permittee will construct the buildings, support structures, and mine facilities using standard building materials such as steel, wood and concrete and will use standard construction techniques for the construction and demolition of the facilities. The Permittee will accomplish reclamation of the surface facilities by removing the structures. When possible, they will salvage machinery and steel building components. The permittee will ship all building debris, with the exception of concrete, off site

The Permittee is required to construct and maintain support facilities to:

- Control or prevent erosion, siltation, water pollution, and damage to public or private property.
- Minimize damage to fish, wildlife, and related environmental issues such as minimizing additional contributions of suspended solids to streamflows.
- Minimize damage to oil, gas, and water wells; oil, gas, and coal-slurry pipelines; railroads, and other utilities.

All support facilities will be located within the disturbed area. Runoff from the disturbed area will report to the sedimentation pond for treatment before being discharged. For additional details on erosion, siltation, and water pollution see the Hydrology section of this TA. Fish and wildlife issues are discussed in detail in the Fish and Wildlife Protection Plan section of this TA.

Findings:

The information provided does not meet the minimum acceptable requirements of the Regulations. Prior to approval and in accordance with:

R645-301-526.220, R645-301-521.161, R645-301-521.190 and R645-301-300.121.200, The Permittee must show the location of each surface facility on Plate 5-2, or an equivalent map. To avoid confusion and to insure that all surface facilities and utilities are shown the Permittee will number all facilities and utilities, a list of the numbered facilities and utilities will be shown in the engineering section of the PAP, on Plate 5-2 and in the bond calculation section of the PAP.

SIGNS AND MARKERS

Regulatory Reference: 30 CFR Sec. 817.11; R645-301-521.

Analysis:

The Permittee committed to place signs and markers as required by the Utah Coal Rules. Those Rules require that signs and markers for underground coal mines:

- Be posted, maintained, and removed by the person who conducts the coal mining and reclamation operations.
- Be of a uniform design that can be easily seen and read, be made of durable material, and conform to local laws and regulations.
- Be maintained during all activities to which they pertain.
- Be displayed at each point of access from public roads to areas of surface operations and facilities on permit areas.
- Show the name, business address, and telephone number of the Permittee who conducts coal mining and reclamation operations and the identification number of the permanent program permit authorizing coal mining and reclamation operations.
- Be maintained until after the release of all bonds for the permit area.
- Clearly mark the perimeter of all areas affected by surface operations or facilities before beginning mining activities.
- Be erected to mark buffer zones as required under R645-301-731.600 and be clearly marked to prevent disturbance by surface operations and facilities.
- Be erected to mark where topsoil or other vegetation-supporting material is physically segregated and stockpiled as required under R645-301-234.

Findings:

The Permittee has met the minimum requirements of the signs and markers section of the regulations.

USE OF EXPLOSIVES

Regulatory Reference: 30 CFR Sec. 817.61, 817.62, 817.64, 817.66, 817.67, 817.68; R645-301-524.

Analysis:

R645-301-524.220 allows the Permittee to submit a specific blasting plan separate from the PAP. The Permittee has opted to submit a detailed blasting plan if and when they propose to blast.

Findings:

The Permittee has met the minimum regulatory requirements for the use of explosives.

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 1-1, Permit Area Map, shows the location of the entire Horse Canyon Permit area. The area includes permit area A, which is the Horse Canyon project, and permit area B, which is the Lila Canyon Extension. The map does not show any areas of potential future expansion. In the past, the Permittee has indicated that they might seek additional reserves to the south. In addition, the Permittee has indicated that they could expand the disturbed area to a discharge point. The permit section of the environmental part of this TA addresses those deficiencies.

Mining Facilities Maps

Plate 5-2 shows the surface facilities for the Lila Canyon Extension. The Division has reviewed the facilities and structures list and found that the Permittee did not include all of the facilities mentioned in the PAP on Plate 5-2. The Permittee must show all surface facilities and structures on Plate 5-2. The operation section of this TA addresses this deficiency.

With the changes required for the sedimentation pond, mine water discharge pond, and undisturbed culverts; the Permittee will need to submit new facilities plans.

The operations maps are not accurate and the Permittee needs to correct them. For example, on Figure 1 of Appendix 5-7 the Permittee mislabeled some elevations: at station 8+00, the correct elevation is 5895 instead of 5898. The map shows the accuracy of the elevations to the nearest 1,000th of a foot. It is impossible to measure such accuracy in the field.

At station 6+00, the Permittee shows the grade during operations as 5 degrees. However, the map shows the shop/warehouse located on station 6+00, so that area would be flat. In addition, the Permittee committed to placing 4 feet of material over the fill (rock slope material) before constructing buildings. However, the cross-sections do not show the rock slope material covered with any material.

On Plate 5-7A-2, at station 6+00, the Permittee also shows that the shop/warehouse will be on a slope instead of flat ground. In addition, the Permittee does not show in the legend what the red hash marks mean.

Mine Workings Maps

The Division discussed the known abandoned and inactive workings in the Environmental Section of the TA. The Division found that the Permittee did not discuss all known abandoned mine workings in the area.

In this section the Division will discuss the proposed mine workings for the Lila Canyon section of the permit area. Plate 5-5 shows the projected mine workings for the Lila Canyon Extension. The only openings are the two rock tunnels and the ventilation portal. The Permittee shows the timing and sequence of the mining operation on the map.

Findings:

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

R645-301-521.150, The Permittee must show the correct surface elevations and configurations on all operational maps. The Permittee must show how they will cover the refuse pile with fill before construction of the buildings. In addition, the Permittee must show that the area where they will construct buildings is flat.

R645-301-521.150, and R645-301-121.200, To avoid confusion the Permittee should not show elevations to the nearest 1,000th of a foot. See analysis section for more details. In addition, the Permittee must label the red hash marks on cross-section 5-7A-2 and similar maps and cross-sections.

RECLAMATION PLAN

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -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:

The definitions of Approximate Original Contour (AOC) are contained in the Surface Mining Control and Reclamation Act (SMCRA) and the Utah coal rules. The objectives of post-mining backfilling and grading is to return the site to a configuration resembling the topography of the land prior to mining and to blend the site into the drainage pattern of the surrounding terrain. At the same time, the Permittee must meet reclamation performance standards, including controlling erosion; establishing mass stability; and establishing permanent, diverse, and effective vegetative cover.

The Division's Technical Directive 002 is intended to reconcile the specific performance standard requirements of the regulatory program with the general definitions of AOC in a way that accomplishes the objectives of SMCRA.

Final Surface Configuration

The Permittee did not request a variance from AOC. The Division reviewed all the premining and postmining topographic maps and cross sections and determined that the postmining topography, excluding elevation, closely resembles its premining configuration based on the following:

- The premining topography shown on Plate 5-1A is similar to the postmining topography shown on Plate 5-6. The main differences between the premining and postmining topography is that the postmining contours are smoother. However, pocking and other surface roughening techniques tend to make the postmining surface look more natural after a few years.

- The cross-sections shown on Plate 5-7A-1 through Plate 5-7A-4 show that premining and postmining contours will be similar. The major changes will occur in the area of the main mine facilities. The area in and around the reclaimed refuse pile will be higher than the premining topography. The area in and around cross-section 4+00 to 12+00 will have smoother postmining contours.

- Figure 2 of Appendix 5-7 shows detailed cross-sections of the premining and postmining refuse-pile area. The reclaimed refuse pile will be a slight mound. The mound will not impound any water. See the profile on Figure 1 of Appendix 5-7 for details.

- The Permittee shows premining and postmining cross-sections on Plate 5-7B-1 through Plate 5-7B-3. The Permittee will leave a small cut slope from the road embankment as shown in cross-section 16+00. The concrete disposal area will be a slight mound as shown on cross-section 18+00.

- Three critical areas for final surface configuration are the portal areas. The Permittee is required to eliminate all highwalls. Plate 5-9 shows detailed cross-sections for all portal areas. The premining contours for the rock slope portals show the face up areas to be a cliff. Therefore, the Permittee is required to backfill the areas to form cliffs. The Permittee will construct the ventilation fan portal on a natural slope and restore it to the same configuration.

All Highwalls to be eliminated

The Permittee states the following in Section 553.120:

"Minor highwalls may be created with the development of the rock slope portals. Upon completion of mining, these entries will be sealed as per Closure for Mine Openings Appendix 5-6, and highwalls will be eliminated during the reclamation phase of the operation. During

reclamation, suitable materials will be placed against the portals. This material will be shaped to eliminate the highwall and to bring the slope back to the approximate original contour."

Plate 5-9 shows the premining, operational and postmining cross sections for all portals. The two portals that provide access to the mine via the rock tunnel will have highwalls or face-ups that are approximately the same height as the openings, which is 6 feet. The highwalls may be slightly taller because the Permittee may need to remove loose rock. Since the portal face up areas are in a nearly vertical cliff, the Permittee will eliminate the highwall by backfilling against the portal face-up.

The fan portal will have a 17-foot highwall. The Permittee will have to remove some of the cliff when they construct the fan facility, because it will be in a high cliff. After reclamation, the Permittee will backfill the highwall to the premining topography.

Safety is a major concern with highwalls. Since the Lila Canyon highwalls are in an existing cliff, the existence and reclamation of the highwalls will not create additional safety hazards. The steep cliffs above the two lower reclaimed portals will prevent people, livestock, and wildlife from traveling over the highwall areas. People, livestock, and wildlife traveling over the upper reclaimed highwall will face the same hazards as found on any other slope in the area.

Because the Permittee will restore the highwall areas to approximate premining topography, the Division finds that the highwall elimination plans meets the minimum requirements of R645-301-553.120.

Hydrology

The main concerns with hydrology are that the Permittee restore drainages, control sediment, and prevent hazardous and toxic discharges. The Division considers that the Permittee will meet those conditions when they meet the hydrologic reclamation requirements.

Findings:

The Permittee meets the minimum approximate original contour restoration requirements of the regulations.

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:

General

The AOC section of this TA discusses AOC and highwall elimination issues in detail. No spoil piles will be associated with the site. No major depressions will be present after reclamation, see Plate 5-6, Post Mining Topography.

Slope Stability:

The slope stability requirements are in R645-301-553.130, which states that the postmining slope will not exceed either the angle of repose or such lesser slope as is necessary to achieve a minimum long-term static safety factor of 1.3 and prevent slides. The reclaimed slopes at the Lila Canyon Extension site will meet the slope stability requirements because:

- The angle of repose for materials in and around the Lila Canyon site is approximately 35°, a 1.5h: 1v slope. The steepest reclaimed slope is the upper portion of the slope near the fan portal, and that slope will not exceed 35°.
- The Permittee may leave some minor cut slopes along the reclaimed road after reclamation (see cross-section 16+00 on Plate 5-7B-1). Before the Division approves cut slope retention, the Permittee must explain why the cut slope must stay. In Section 553 of the PAP the Permittee states

  > "Some minor cut slopes along the reclaimed road may be left after reclamation due to the difficulty and inability to reclaim all material pushed over the side while making the road cut. See plate 5-7B-a cross-section 16+00 for details. UEI will make reasonable efforts to minimize the cut slopes being left."

  On cross-section 16+00 the Permittee shows that the cut slope will be reclaimed by placing material on the exposed slope. Due to the steepness of the slope, any attempt to completely backfill the cut slope is impractical. The Permittee needs to discuss the issue in more detail. For example, if the Permittee could show that slope stability requirements could not be met if the cut slope were backfilled, or that the exposed cut was in rock, and therefore stable, the Division could determine it allowable to leave the slopes.

- The safety factor calculations for the reclaimed slopes are in Appendix 5-5. The reclaimed slopes that the Permittee analyzed will have a minimum static safety factor of 4.8 under dry conditions and 3.1 under saturated conditions.

- A registered professional engineer has prepared the backfilling and grading plan. The engineer designed the plan to ensure that the slopes would be stable and resistant to slides. By keeping the slope angle less than the angle-of-repose and by having the safety

factor greater than 1.3, slides will be prevented from occurring. Pocking the steep slope surfaces will prevent minor slide and surface slumping. Pocking interlocks the topsoil with the subsoil layers.

Post-Mining Land Use:

The post mining land-use finding is in the post-mining land use section of the TA. The reclaimed contours will be compatible with the post mining land use. The postmining land uses are wildlife habitat, grazing, and incidental recreation, which are identical to the premining land uses. The postmining land use is in accordance with the BLM's management plans. See Appendix 4-2 of the PAP for a BLM postmining land-use approval letter.

Settled and Revegetated Fills:

The variances from AOC and other requirements for existing spoil or underground development waste do not apply to the Lila Canyon Extension since those materials are not present on the site before permit issuance.

Spoil Disposal:

Spoil is overburden removed during coal mining and reclamation. Overburden is all of the material that overlies a coal deposit, with the exception of topsoil. The only spoil that the Permittee will generate at the Lila Canyon Extension will be at the fan portal. The Permittee will use that spoil as backfill at the fan portal site. The proper compaction of spoil is a performance standard that the Permittee must meet during reclamation.

Disposal of Coal Mine Waste and Underground Development Waste:

The Division and Permittee consider the material from the rock slope tunnels to be coal mine waste; therefore, that material must be disposed of in a refuse pile. In addition to the rock slope material, mine development waste and reject material from the crushing process are also potential sources of coal mine waste.

The reclamation plan for the refuse pile is in Appendix 5-7. The refuse pile will meet the requirements of R645-301-553.250 because:

- The reclaimed slopes will meet the AOC requirements and will support the postmining land use. The Permittee will construct no terraces on the outslopes of the refuse pile. The grade of the outslopes will not be steeper than 3H: 1V; see Figure 2 of Appendix 5-7 for details.
- The Permittee will cover all refuse material with a minimum of 4 feet of material; see Figure 2 of Appendix 5-7 for details.

- The slopes in and around the reclaimed refuse pile will have very gentle slopes with a stability factor greater than 8 (see Appendix 5-7). The minimum safety-factor requirement is 1.3. Thus, the slopes of the reclaimed refuse pile are considered stable.

Exposed Coal Seams and Acid- and Toxic-Forming Materials and Combustible Materials:

The only exposed coal will be at the fan portal area. The cross section of the reclaimed fan portal on Plate 5-9 shows that the coal seam will be backfilled by more than 4 feet of fill materials.

Previously Mined Areas

There are no known previously mined areas in the disturbed area boundaries for the Lila Canyon site.

Steep Slopes

Neither backfilling and grading on steep slopes, nor special provisions for steep slope mining are considered for this TA because Lila Canyon Extension area is not considered a steep slope mine. Special provisions for steep slope mining apply when the permittee plans to get a variance from AOC requirements. Since the permittee did not apply for an AOC variance, they are not required to address these requirements.

Findings:

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

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. For example, the Permittee could discuss stability issues (see analysis section for details).

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. See Appendix 5-6 for the portal-sealing plan. The portal-sealing plan meets Division and MSHA requirements. In addition, the Permittee will seal all wells when no longer needed.

As part of the performance standards, the Division will require the Permittee to barricade and fence mine entries that are temporarily inactive in the permit area. The Permittee must post warning signs around the entries and periodically inspect and maintain the barricades.

Findings:

The Permittee meets the minimum mine openings requirements of the regulations.

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:

Reclamation

The Permittee has committed to reclaim all roads, including the removal of culverts in the disturbed area, with the exception of the County Road. The Permittee will remove and bury the road surfaces (road base gravel) on site and cover them with a minimum of two feet of material. They will bury concrete under four feet of material. The Permittee does not currently propose to asphalt any surfaces. Should that change, they will remove all asphalt and ship it offsite to a landfill or recycling center.

Retention

The Permittee states in section 642.600 of the PAP that there will be no roads left in the disturbed area after reclamation with the exception of the portion of the County road that lies within the disturbed area boundary. The Permittee needs to state how they will modify the culvert under the road and the embankment next to the road after the sediment pond is removed.

Findings:

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

R645-301-534, The Permittee must state how they will modify the county road that lies within the disturbed area boundary during reclamation. Specifically, the Division wants to know how the Permittee will modify the culvert, and how the surface will be stabilized

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 1-1, Permit Area Map, shows the affected areas for the Horse Canyon Mine. The areas include Part A, the Horse Canyon Project and Part B, the Lila Canyon Extension.

Bonded Area Map

The Division bonds for activities that will occur within the disturbed area boundaries. Several maps show the disturbed area boundaries, including Plate 5-2, Surface Area.

Reclamation Backfilling and Grading Maps

Several maps and cross-sections will be used during backfilling and grading. The general cross-sections are on Plate 5-7A-1 through Plate 5-7A-4 and Plate 5-7B-1 through Plate 5-7B-3. Cross-sections on Figure 1 and Figure 2 in Appendix 5-7 show the final backfilling and grading plan for the refuse pile. Plate 5-6 shows the postmining contours. Those maps are adequate to ensure proper backfilling and grading.

The Permittee will need to submit new reclamation maps with the changes identified in the operation plan concerning removal of the undisturbed drainage culverts and adjusting the sedimentation pond.

Final Surface Configuration Maps

Plate 5-6 shows the postmining contours for the disturbed area.

Reclamation Surface and Subsurface Manmade Features Maps

The Permittee states that no manmade features will remain in the reclaimed area, except the 60-inch culvert section that will underlie the county road in the south fork of Coleman Wash.

Findings:

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

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

BONDING AND INSURANCE REQUIREMENTS

Regulatory Reference: 30 CFR Sec. 800; R645-301-800, et seq.

Analysis:

Form of Bond (Reclamation Agreement)

The Permittee did not submit a rider to the bond as part of the application. The Division allows the Permittee to submit a bond separately after the Division has determined the bond amount, which can be done only after the TA has been completed. Before the Division issues a permit, the Permittee must post a bond; see the requirements of R645-301-820. Upon receipt of the bond, the Division then makes a finding about whether or not the bond is in the proper form; see R645-301-860 for the requirements for the proper form of the bond. The Division cannot issue the permit until the Permittee has posted an adequate bond.

Determination of Bond Amount

The Permittee currently has a reclamation bond for $2,809,000 in 2003 dollars. The bond for the Horse Canyon project is $1,253,00 in 2003 dollars. The Permittee has posted $1,556,000 for the Lila Canyon Extension additional area.

The Division calculated the bond based on the structures listed in the PAP. Since the Permittee did not list all of the structures in the bond calculations, the Division cannot complete the bond calculations at this time.

The Permittee needs to include all costs associated with reclamation in the bond calculations. Items missing from the revegetation cost estimate include, but are not limited to, seedlings, and fencing.

The Division has received comments from SUWA about calculating reclamation costs for the repair of subsidence related damage. The reclamation costs would be used in determining the bond amount. R645-301-830.130 requires that the reclamation cost estimate take into account the probable difficulty of reclamation, considering such factors as topography, geology, hydrology, and revegetation potential. The Division bases the reclamation cost estimate on the Office of Surface Mining's Reclamation Cost Handbook. The handbook does not mention estimating subsidence repair costs. The reasons are: 1) the Permittee is assumed to be in compliance with all regulations including repair of subsidence damage at the time of bond forfeiture and 2) the damage amount is unknown at the time of bond calculation. Because subsidence is an expense that cannot be calculated beforehand, the Division assumes that such costs will be covered by the contingency factor.

The one exception to the "no bonding for subsidence" rule is for subsidence damage to State appropriated water rights that are damaged by subsidence, but not repaired within 90 days. See R645-301-525.550. Since no damage has occurred, or is expected to occur, to State appropriated water rights, the Division will not require the Permittee to include subsidence damage as a line item in the bond calculations.

The Division has received comments from SUWA about the use of outdated cost estimates and equipment handbooks. The Division calculated the reclamation cost using updated handbooks and cost reference manuals in 2001. Before the permit is issued, the Division will update the reclamation costs with the latest cost information.

Terms and Conditions for Liability Insurance

The Permittee is required to submit a certificate issued by an insurance company authorized to do business in Utah to demonstrate that the Permittee has a public liability policy in force for the coal mining and reclamation activities in the permit area. The policy will provide a minimum insurance coverage for bodily injury and property damage of $300,000 for each occurrence and $500,000 aggregate.

The Permittee has an ACCORD form in Appendix 8-2 and 8-3 from the Federal Insurance Company stating the policy limits. However, the policy expiration date is June 1, 2001. The information in the Division's insurance files shows that the policy was renewed and expired on June 1, 2002. The amounts of the policy are as follows:

- General aggregate limit $2,000,000
- Products/completed operations aggregate limit $1,000,000
- Advertising injury and personal limit $1,000,000
- Each occurrence $1,000,000
- Medical expense limit $10,000

The policy amounts are adequate to meet the minimum regulatory requirements.

The Permittee must maintain the policy in full force during the life of the permit or any renewal thereof, including the liability period necessary to complete all reclamation operations. The policy will include a rider requiring that the insurer notify the Division whenever substantive changes are made in the policy, including any termination of failure to renew. The ACCORD form, in Appendix 8-2 and Appendix 8-3, states that the issuing company will notify the Division at least 45 days before cancellation.

The Division has received some comments from SUWA about bonding/insurance for subsidence damage. The R645-301-890 rules only require insurance for bodily injury and property damage.

Before the Division issues an approval for the Lila Canyon Extension, the insurance policy will be analyzed to insure that it meets the minimum regulatory requirements.

R645-301-525.520 allows the Permittee to purchase premium-prepaid insurance policy to cover the cost of repairing or replacing subsidence caused damage to non-commercial buildings, dwellings, and related structures. Since no non-commercial buildings, dwellings, and related structures are located in the subsidence zone, the Permittee does not need to purchase subsidence related insurance.

Even if such structures were in the subsidence zone, the Permittee is not required to purchase subsidence insurance, but has the option to do so.

Findings:

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

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

RECOMMENDATIONS:

The Division should deny the permit until the Permittee satisfies each of the above-mentioned deficiencies.

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