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T E C H N I C A L M E M O R A N D U M

Utah Coal Regulatory Program

May 28, 2004

TO: Internal File

THRU: Dana Dean, P.E., Co-Team Lead

FROM: Wayne H. Western, Environmental Scientist III/Engineering, and Co-Team Lead

RE: Lila Canyon Extension, UtahAmerican Energy, Inc., Horse Canyon Mine, C/007/0013, Task #1859

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.

GENERAL

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

Analysis:

The Horse Canyon Mine is in the Book Cliffs coalfield in Emery County near East Carbon and Sunnyside, Utah on the western slope of the Tavaputs Plateau. The 7.5 Minute Quadrangle maps that cover the permit area are Cedar and Lila Point, produced by the Geological Survey of the U.S. Department of the Interior. The proposed Lila Canyon Project facilities site is five miles east of State Highway 6. See Plate 1-1 for permit boundary locations and Plate 1-2 for the disturbed area boundaries.

The proposed area of development includes some lands designated by Congress as Wilderness Study Area. See Plate 5-3. UEI does not propose to build any surface facilities in the Wilderness Study Area. Underground mining could cause some subsidence in the Wilderness Study Area however, subsidence is not considered surface disturbance.

The existing Mining and Reclamation Plan (MRP) for Horse Canyon is referred to as Part A and the application for Lila Canyon Extension is referred to as Part B. The permit area for Horse Canyon Part A contains 1,327.75 acres and the proposed permit area for Lila Canyon Extension Part B consists of 4,664.32 acres. The combination of Horse Canyon Part A and Lila Canyon Extension Part B would bring the total new permit area to 5,992.07 acres.

Findings:

Information provided in the application meets the minimum General Environmental Resource Information requirements of the Regulations.

PERMIT AREA

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

Analysis:

UEI divided the permit area for the Horse Canyon Mine into Part A, the Horse Canyon Project, and Part B, the Lila Canyon Extension. They stated that total acreage for the Horse Canyon Mine was 5,992.07 acres. The permit area for Horse Canyon Project, Part A, is 1,327.75 acres and the area for Lila Canyon Extension, Part B, is 4,664.32 acres. UEI showed the permit boundary on several maps including Plate 1-1, Permit Area Map and other maps in the PAP.

UEI showed the federal coal leases on Table 1-1 and on Plate 5-4. They stated on Table 1-1 that the total number of federal lease acres 5,544.01 acres. The reason why the federal lease acreage does not equal the permitted acreage is the boundary or the permit area is not the same as the lease boundaries.

Table 4-2 breaks out the private, state and federal acreage within Parts A and B of the permit area. Table 4-2A breaks out the private, state and federal acres of coal ownership within Parts A and B of the permit area. UEI showed the total acreage in Part A as 1327.75 acres and in Part B Lila Canyon 4664.32 acres.

The surface facilities for Part A Lila Canyon will be located in T.16S, R.14 E, Section 15, SE 1/4 SW 1/4. The area is located upon an alluvial/colluvial bench at an elevation of 5,800 to 6,500 feet where the two forks of Lila Canyon converge.

The outer perimeter of the disturbed area contains approximately 42.6 acres. The actual disturbed area that contains the pads, silos, coal processing structures, parking will consist of approximately 25 .3 acres. UEI will leave 17.3 acres of undisturbed islands within the disturbed area. UEI showed the disturbed area boundary on several maps including Plate 1-2, Disturbed Area Map.

UEI applied for a lease-by-application with the BLM for areas south of the Lila Canyon Extension. Jay Marshall told Wayne Western of the Division that UEI did not include the lease-by-application areas within the affected area boundaries because:

- UEI does not know the boundaries of any future lease because the BLM determines the lease boundaries.
- UEI does not know what the coal market will be in 10 to 15 years and therefore they do not know if the lease-by-application areas will be economically viable.
- UEI does not know if they will get the leases.

On Plate 5-5, Mine Map, UEI showed they would mine the reserves from 2005 to 2019, 14 year life –of-mine. On Table 3-3, Reclamation Schedule, UEI showed that reclamation would

begin in 2024. Thus the anticipated life-of-mine is 19 years. In order for UEI to maintain the anticipated production of 4,500,000 tons per year, they will have to seek additional permits.

UEI needs to be consistent about the life-of-mine. Either UEI must show that reclamation will begin in the year 2019 or discuss where they could obtain additional reserves to extend the life-of-mine to 19years. The Division also discussed the issue in the Section on Maps, Plans, and Cross Sections of Resource Information of the TA. That section deals with affected area boundary maps. To avoid duplicating a deficiency, the Division will only address the deficiency in this section.

Findings:

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

R645-301-521.141 and R645-301-121.200, UEI must be consistent when describing the life-of-mine and the affected area boundaries. UEI must state in the text either that the life-of-mine is 14 years or discuss where they could obtain additional reserves. Plate 5-5, Lila Canyon Mine, shows that mining will last 14 years, while Table 3-3 shows that mining will last 19 years, and Section 116.100 shows that it will last 24 years.

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, UEI stated the following:

> Boundaries of all areas proposed to be affected over the life of the mine are shown on Plate 5-1 and Plate 5-2 as well as others. At this time, no additional subareas requiring additional permits are proposed for the life of the mine.

UEI listed Plate 5-1 and Plate 5-2 as the maps that show the affected area boundaries. Plate 5-1, Previously Mine Areas, shows the permit boundaries for the Horse Canyon Mine. Plate 5-2 shows the disturbed area boundaries for the Lila Canyon Mine site. R645-301-521.141 deals with permit and affected area boundaries. Therefore, UEI must remove the reference to Plate 5-2 to avoid confusion.

UEI shows on Plate 5-5, Mine Map, that they plan to mine all recoverable reserves in the Lila Canyon Project between 2005 and 2019. The life of mine shown on Plate 5-5 is 14 years. However, in Table 3-3 UEI states that mining will continue until 2024, which means the life-of-mine is 19 years, and Section 116.100 shows that it is 24 years. The Division also addresses this issue in the Permit Area section of the TA.

Existing Structures and Facilities Maps

UEI is not consistent about the existing structures and facilities that exist in the Lila Canyon Mine area.

In section 526.110 UEI states:

> Only two existing structures, a 36" CMP culvert located near the new proposed sediment pond, and the County road on top of Little Park, can be found within the Lila Canyon Permit. The existing culvert is shown on plate 5-1A. The existing road on Little Park can be found on Plate 5-1 as well as most other plates showing the surface area of the Lila Canyon Permit.

In section 521.120 UEI states:

> Only two existing structures, a 48" and a 24" CMP culvert located near the new proposed sediment pond, can be found at the Lila Canyon Mine. The existing culverts are shown on plate 5-1A.

On Plate 5-1A, Pre Mining Contours, UEI show a 24” and a 48” culvert. UEI did not label Little Park Road on Plate 5-1 or show the line type for roads in the legend. UEI must be consistent about the existing structures at the Lila Canyon Mine site. In addition, UEI must reference the correct maps.

In Section 521.100, UEI stated that the only existing structures were a 24” and a 48” culvert. However, UEI states in Section 521.123 that Little Park Road is also an existing structure.

Note that existing structures in the environmental resource section of the TA refer to structures on which construction began before January 21, 1981.

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 5-foot intervals. The contour lines extend more than 100 feet beyond the disturbed area boundaries.

UEI gave the Division a series of cross sections and profiles that show the pre-disturbed topography at the Lila Canyon Mine site. The series consists of Plate5-7-A-1 through 5-7-A-4, Plate 5-7-B-1 through 5-7-B-3 and Plate 5-7C. Those cross-sections and profiles show 5-foot evaluation intervals.

Plate 5-3, Subsidence Control Map, shows the existing topography of the Lila Canyon Extension area. 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 pre-mining 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. UEI 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

In section 521.111 UEI gives a narrative of mining activity that occurred in the area. The Book Cliff Mine engulfed many small mines. The exact location of the small mines is not known so UEI showed previously mined area associated with the Book Cliff Mine. So the exact location of each prospect was not shown

On Plate 5-1, UEI shows the location of exploration entries in permit area "B," Lila Canyon. Those exploration entries are most likely a breakout for the Geneva Mine. A fan was located at the breakout to assist in ventilation.

Jay Marshall, who is a registered professional engineer in the State of Utah, 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. The exploration entries are shown on Plate II-2.

Permit Area Boundary Maps

Plate 1-1, Permit Area Map shows the permit boundaries as Permit Area A- the Horse Canyon project, and Permit Area B- the Lila Canyon Extension. Plate 1-1 is only mentioned once in the PAP. In Section 321 .100 UEI refers to Plate 1-1 as Permit and Lease Area Map. To avoid confusion UEI must use the same name throughout the PAP.

On Plate 1-2 UEI shows the disturbed area boundaries. The plate also has UTM coordinates to help the Division locate the disturbed area in relationship to the permit boundaries.

Surface and Subsurface Manmade Features Maps

UEI does not have any maps titled Surface and Subsurface Manmade Features. UEI shows the culverts in the disturbed area boundary on several maps and Little Park Road on Plate 4-1. As mentioned in the Existing Structures and Facilities Maps Section the information about the culverts is inadequate, unclear, and contradictory.

R645-301-521.122 requires that UEI 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. UEI 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 UEI must plainly state so.

Contour Maps

UEI submitted several plates showing the contour of the land on and adjacent to the proposed permit area.

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, UEI must provide the following in accordance with:

R645-301-521.141 and R645-301-121.200, UEI must not refer to Plate 5-2 an affected area boundary map in section 521.141 of the MRP. UEI stated that Plate 5-2 showed the affected area boundaries. Plate 5-2 does not show the potential affected area boundaries rather the disturbed area boundaries.

R645-301-521.120 and R645-301-121.200, The information on Plate 5-1A, Pre Mining Contours is not consistent with the information in the text. UEI shows a 48" and a 24" culvert on Plate 5-1A and in Section 521.120 but refers to only one 36" culvert in Section 526.110. UEI must clearly state the number any type of culverts in the Lila Canyon Extension disturbed area boundaries. In addition, UEI states in Section 526.110 that Little Park Road can be found on Plate 5-1. UEI did not label Little Park Road on Plate 5-1 nor did they show the line type for a road in the legend. UEI must also properly label the Little Park Road on Plate 5-1 and label it as a pre existing structure. In Section 120.120 UEI must state the Little Park Road is also an existing structure.

R645-301-121.100, UEI must be consistent about how they refer tp Plate 1-1. UEI labeled the map as Permit Area Map but in Section 321.100 they refer to the map as Permit and Lease Area Map.

OPERATION PLAN

MINING OPERATIONS AND FACILITIES

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

Analysis:

General

UEI proposes to develop surface facilities and mine portals near Lila Canyon. They will construct the Lila Canyon Project in, T. 16 S. R.14 E Section 15, S1/2. See Plate 5-5 for the Lila Canyon Extension workings.

UEI chose to develop the new mine facilities at the Lila Canyon site rather than use the existing facilities at the Horse Canyon site for the following reasons:

- Development of the Horse Canyon site would entail disturbance of reclaimed ground.

  UEI partially reclaimed the Horse Canyon mine site and received Phase II bond release (Section 528.110). Division records indicate that UEI did the reclamation in 1990 and 1991, with Phase I bond release granted on February 5, 1997. The Division sent a decision document for Phase II bond release of 51.56 acres to the Office of Surface Mining for their concurrence on October 19, 1999. UEI still has 22.7 acres to reclaim for a total of 74.26 acres within the permit area. On November 10, 1999, the Division granted Phase II bond release on the condition that UEI remove a sediment pond and culvert. The Division granted final approval of the Phase II bond release on September 6, 2002. Within the 22.7 acres, several buildings at the site remain standing and negotiations are underway for post-mining use of the buildings by a second party. At Phase II bond release, all the backfilling, grading, topsoil placement, drainage controls and vegetation have been completed. The only remaining items are that the site meets the vegetation success standards and complies with the general performance standards.

- The existing Horse Canyon facilities are not suitable for a large-scale longwall operation.

  The Horse Canyon Mine was not originally designed to produce 4,500,000 tons of coal per year (Section 520). 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. While reopening portals and shoring up old mine workings may be an option, such an alternative would be expensive. In addition, the travel time from the

Horse Canyon portals to the Lila Canyon Expansion area would result in long travel times for both miners and equipment.

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

The average gradient of the Lila Canyon Extension site is 10%. The gentle slope of the area reduces many of the problems of reclaiming mine sites developed in steep canyon areas.

Access to the lower Sunnyside seam at this location requires tunneling from the base of the cliffs upwards at 12% through a sandstone rock-slope for a distance of approximately 1,200 feet. UEI refers to these inclined portals as rock-slopes in the PAP. They will drive the ventilation portal from the underground workings to the surface. See Plate 5-2 for the locations.

While UEI could construct a road to the outcrop, reclamation of the road to the standards in the R645 rules would be difficult if not impossible. Development of the rock slope tunnels increases UEI's ability to reclaim the site.

UEI will use the rock material from the two access tunnels and the portal face-up areas to create a pad for surface facilities. UEI will construct other cut/fill pads from subsoils. The amount of bank rock material that UEI will remove to construct the rock slopes is 16,650 bank cubic yards. UEI assumes a swell factor of 1.5; therefore, the loose cubic yards of material would be 25,000 cubic yards.

The material from the rock slopes is by definition underground development waste and 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. UEI will place the material from the rock slopes in a refuse pile.

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 UEI to use that material as structural fill. Fill for other areas of the disturbed area will come from subsoils.

UEI will initially conduct mining by room-and-pillar methods in the Lower Sunnyside Coal Seam. They estimate production in the first year to be 200,000 tons, increasing to 1,000,000 to 1,500,000 tons per year in the second through the fifth year. If demand increases, UEI will install longwall equipment and production could peak at 4,500,000 tons per year.

In the PAP, UEI proposed to construct mine access portals, a ventilation portal, an elevated conveyor, a coal storage pile and reclaim system, a crusher, a truck loop and truck loadout, a warehouse and storage yard, an office, parking and bathhouse facilities, a substation, water storage and water treatment facilities (leach field), a topsoil storage pile and a sediment pond.

To support the new center of activity at Lila Canyon, Emery County will upgrade the existing County Road #126 from State Highway 6 to a corral and from this point will upgrade unimproved roadway RS 2477 from the corral to the Lila Canyon Extension surface facilities (Appendix 1-4).

Findings:

The information provided meets the minimum general requirements of Mining Operations and Facilities.

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 this TA, existing structures in the Lila Canyon Extension refers to structures that exist before the Division issues a permit.

In Section 526.110 of the PAP, UEI states:

> The only existing structures are found in Horse Canyon (Part "A" of this permit) and are the remains of the United States Steel operation. Horse Canyon has received phase II bond release and the remaining structures have been left in place for future use. Only two existing structures, a 36" CMP culvert located near the new proposed sediment pond, and the County road on top of Little Park, can be found within the Lila Canyon Permit. The existing culvert is shown on plate 5-1A. The existing road on Little Park can be found on Plate 5-1 as well as most other plates showing the surface area of the Lila Canyon Permit. Several vehicle ways will be used for water and subsidence monitoring. These ways branch off the Little Park Road and generally follow the ephemeral drainages. The ways

are shown on Plate 5-1 as well as most other plates showing the surface area of the Lila Canyon Permit. More detail of the existing Little Park Road can be found in Appendix 5-4.

The information in the PAP is contradictory. UEI states that the only existing structures are at the Horse Canyon Project, but later states that there are existing structures at the Lila Canyon Extension. UEI also states that there are two 36" culverts but then states there is only one 48" culvert. The Division covered that deficiency in the Maps, Plans, and Cross Sections of Resource Information section of this TA.

UEI shows two culverts on several maps including Plate 1-2, Disturbed Area Map. However, UEI only addresses the removal of one 48" culvert and in Section 526.110 is silent on the 24" culvert mentioned in Section 521.120.

UEI states that Emery County will remove the existing 48" culvert when they upgrade County Road 126.

UEI 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 UEI.

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

Findings:

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

R645-301-526.115.4 and R645-301-526.116.1, Regarding the culvert under the county road; UEI must show: 1) what section of the culvert the County will install and what part UEI will install, 2) what work will be done by the County regarding modification of the culvert during reclamation, and 3) how the culvert north of the sediment pond will be modified when the County modifies the road. 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:

There is only one public road in the Lila Canyon Extension area, the Little Park Road. UEI will not relocate Little Park Road. They will use the road for access to subsidence and water monitoring points. UEI has no plans to relocate or upgrade Little Park Road.

There are several Jeep trails and wheel tracks within the Lila Canyon Extension area. The Division does not consider the Jeep trails and wheel tracks to be roads because they were not engineered and do not receive maintenance.

Emery County will upgrade and pave the existing County Road #126 (2.63 miles) and RS2477 roadway from State Highway 6 to the Lila Canyon Extension surface facilities (Appendix 1-4, Agreement between Emery County and UEI dated October 19, 1999).

The permitting status of the road was questioned by the Division when an article entitled " Utah DOGM Office Clears Way to Process Lila Canyon Permit," was published in the Sun Advocate, Thursday February 28, 2002. The press release stated that UEI planned to build a 4.7-mile road from the mine site to a Union Pacific rail line. A public notice placed in both the Sun Advocate and the Emery County Progress in April 2002, subsequently clarified that Emery County would construct and improve the 4.7-mile road from the mine site to U.S. Highway 6.

UEI does plan to tie the bypass culvert into Emery County's culvert under the County Road 126. Emery County will install the culvert under the road and has consented to allow mining operations within 100 feet of the public road. To protect the public, Emery County requires a 6-foot chain link fence between the disturbed area and the Lila Canyon Road (see Appendix 1-4, letter from the Emery County Road Department dated January 10, 2001). 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.

Plate 5-2 shows the location of the proposed culvert, County Road 126, the chain link fence and the sediment pond. See Plate 7-6 in Appendix 7-4 for sediment pond designs.

Findings:

The information provided in the PAP meet the minimum regulatory requirements for this section of the regulations.

COAL RECOVERY

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

Analysis:

As part of the federal mine plan approval process, and to meet the requirements of the federal leases, the BLM required UEI to submit a resource recovery and protection plan (R2P2). The BLM staff analyzed the R2P2 for maximum economic recovery and found that UEI met that requirement.

The BLM based the R2P2 determination on the assumption that UEI will mine within a logical mining unit (LMU). UEI shows the location of the LMU on Plate 5-4.

UEI based the mine plan on the assumption that all the coal in the LMU is marketable. The coal in the Lila Canyon Expansion is higher in sulfur than coal in the surrounding area. If the sulfur value exceeds contract specification, UEI may be unable to market the coal. Should that occur UEI would have to modify the mine plan and some coal would not be mined.

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. UEI 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 to coal based on depth of cover varies within the area from 2,500 feet to 3,000 feet of cover. Therefore, significant expansion to the east is limited at this time due to economics and technology.

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

The Division staff reviewed the mine plan and found that all significant coal reserves within the permit area LMU that could be recovered, will be recovered. The Division bases their findings on several factors including technical analysis from other agencies, such as the BLM.

Coal will be recovered using a continuous miner during the first five years. If conditions warrant, longwall methods could be employed.

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.

Federal leases cover 5,544 acres of coal reserves (Table 1.1, page 11, Chapter 1), but Horse Canyon Parts A and B will mine through 5,163 Federal lease acres according to Table 4.2A, Chapter 4.

UEI estimated the first year's production to be 200,000 tons, increasing in the second through fifth years 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:

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

R645-301-522, UEI must discuss the potential for expanding the mine. The Division is interested in future plans for expanding to the south and east. UEI has submitted a lease by application to the BLM for additional leases in the area.

SUBSIDENCE CONTROL PLAN

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

Analysis:

General

Plate 5-3, Subsidence Control Map, shows the location of renewable resources that subsidence could damage such as 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 projected mine workings in the Lila Canyon Extension. Both Plate 5-3 and Plate 5-5 have a scale of 1:12,000 and UEI had professional engineer certify the maps.

UEI did not state what the angle-of-draw was in the subsidence section of the PAP. In the coal recovery section of the PAP and on Plate 5-3, UEI listed the angle-of-draw as 21.5 degrees. In the MRP, UEI listed U.S. Geologic Survey Professional Paper 332, Some Engineering Geologic Factors Controlling Coal Mine Subsidence in Utah and Colorado, as a reference. The author's finds were that in Utah and Colorado the average angle of draw is 21.5 degrees. The Division and other government agencies usually accept a 21.5 angle-of-draw until information from the subsidence monitoring program can be used to determine the actual 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 UEI will protect. 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

UEI conducted a survey and found that no structures exist within the area of projected subsidence. UEI 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 location of the water rights came from the water right descriptions, which lists the locations to the nearest quarter section.

Plate 5-3 shows the maximum extent of subsidence at a 21.5 degree angle-of-draw. The Division was not able to duplicate the subsidence boundaries using a 21.5 degree angle-of-draw, particularly in Sections 11, 14, 19 and 30. UEI must explain why they did not use a constant 21.5 degree angle-of draw or draw the maximum extent of subsidence using a 21.5 degree angle-of-draw.

UEI must also label the line types shown on Plate 5-3 and Plate 5-5. In particular, UEI must show the roads and drainages. The Division needs that information to determine areas where subsidence damage could occur.

If the line types are consistent from map to map, UEI showed the location of the Little Park Road and some Jeep Trails that branch off the main road on Plate 5-3. Part of Little Park Road lies within the subsidence zone.

The Division has observed that subsidence usually does not cause damage to dirt roads. The damage to dirt roads is usually minor and mostly consists of tension cracks. In the past, the Permittees in Utah have easily repaired roads damaged by subsidence.

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 the Permittee can prove 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, UEI 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.

In Section 727 of the PAP, UEI states the following:

> Any State-Appropriated water supply that may be damaged by mining operations will either be repaired or replaced. As soon as practical, after proof of damage by mining in Lila Canyon, of any State-Appropriated water supply, UEI will replace the water. Water replacement may include sealing surface fractures, piping, trucking water, transferring water rights, or construction of wells. The preferable method of replacement will be sealing of surface fractures effecting the water supply. As a last resort UEI will replace the water by transferring water rights or construction of wells.

The Division concurs with the water replacement program. The first option should be to restore any water lost. UEI proposes to do that by sealing cracks, piping, or trucking water. When repairs are not possible, UEI commits to replacing water either by drilling wells or, as a final option, transferring water rights.

In Chapter 3 of the PAP, UEI stated that the two threatened or endangered species in or around the Lila Canyon Extension are the bald eagle and black-footed ferret. While there have been no sightings of bald eagles within the Lila Canyon Extension within the past three years the area has the potential for supporting bald eagles.

On Plate 5-3, UEI shows the location of eagle nests. There is one active and one tended nest within a ¼ mile of the surface facilities. The close proximity of the surface facilities to the nests makes their future use unlikely. Mitigation will consist of a prey base off-site vegetation treatment project approved by the USFWS, UDWR, and BLM. However, if either of these nests or any future nest is lost because of mining activities (subsidence), UEI is committed to working with the Division, who will then consult with USFWS and UDWR for mitigation requirements.

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 UEI 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 State Water Rights Division told UEI that there are no water conservancy districts in or around the Lila Canyon Extension. UEI did not provide the Division with proof that they gave the water rights survey information to the property owners.

Subsidence Control Plan

UEI 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. UEI will drive the tunnels upward from the cliffs at a 12% grade. UEI 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.

UEI 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, UEI 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

UEI 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.

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

The Division determined that ground surveys conducted in conjunction with water monitoring are insufficient to determine subsidence effects. The main reason is that regularly schedule monitoring programs do not cover the entire permit area,and often miss the areas where subsidence features are most likely to occur, such as near the panel edges. UEI needs to conduct ground surveys for each panel no earlier than six months after mining in the panel ceased but no more than twelve months.

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. UEI should pay particular attention to any stream channels with less than 1000 feet of cover to the coal.

Subsidence Control Measures

UEI 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, UEI 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. UEI 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 UEI 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 UEI could most likely make repairs by hand. If equipment is needed, UEI 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 UEI 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. UEI needs to evaluate which

methods would be available in the area and when they would use each method.

Repair of Damages

UEI 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, UEI 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, UEI 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, UEI would most likely be able to repair the damage using hand methods. If hand methods prove to be impractical, UEI 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.

In Section 727 of the PAP, UEI stated:

> Any State-Appropriated water supply that may be damaged by mining operations will either be repaired or replaced. As soon as practical, after proof of damage by mining in Lila Canyon, of any State-Appropriated water supply, UEI will replace the water. Water replacement may include sealing surface fractures, piping, trucking water, transferring water rights, or construction of wells. The preferable method of replacement will be sealing of surface fractures effecting the water supply. As a last resort UEI will replace the water by transferring water rights or construction of wells.

Rebuttable Presumption of Causation by Subsidence

UEI 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 UEI can prove otherwise. R645-301-525.541 assumes an angle-of-draw of 30° unless UEI 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 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 UEI 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.

UEI has 90 days to repair the damage before the Division can require additional bond. The Division may increase the 90-day period up to one year if subsidence is not completed within 90 days.

Performance Standards For Subsidence Control

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

Notification

UEI 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 UEI's subsidence control plan may be examined

Findings:

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

R645-301-525.430, In Section 525.120 of the PAP, UEI stated that the depth of cover ranges from 1,500 feet to approximately 2,000 feet. Plate 5-5 shows that the minimum cover is 500 feet. UEI must clearly state the depth of cover in the subsidence section of the PAP.

R645-301-525.440, UEI must develop a subsidence monitoring plan that includes a ground survey for panels no earlier than six months after mining was completed and not later than twelve months after mining was completed.

R645-301-525.130, UEI must show that all property owners in, and around, the Lila Canyon Extension received copies of the water rights survey.

R645-301-525.110 and R645-301-121.200, UEI must 1) either draw the maximum subsidence boundaries on Plate 5-3 and Plate 5-5 at a 21.5 degree angle-of-draw, or state why the angle-of-draw varies, and 2) show in the legends what the different line types represent, particularly the symbols for roads and stream channels.

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, UEI 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. UEI 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 UEI 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, UEI 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:

UEI 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 UEI will use for coal mining and reclamation activities within the disturbed Lila Canyon area. The roads within the disturbed area boundary include the Mine Facilities Road, and the Portal Access Road. The Division classifies all of the roads in the disturbed area as primary roads. The Division classified the roads as primary roads because UEI will use the roads to transport coal and/or they will be used frequently for more than six months.

Plans and Drawings

Roads

UEI must give the Division adequate plans and drawings for each road that they will construct in the disturbed area. :

Main Facilities Road

- A registered professional engineer must certify all maps, cross sections, and profiles.
- UEI must show all culverts and ditches on Plate 5-2, Surface Area, and on the cross sections in Appendix 5-4.
- UEI must show the flow path for all ditches and culverts on Plate 7-5.
- UEI must show ditches on each cross section in Appendix 5-4.

Portal Access Road

- A registered professional engineer must certify all maps, cross sections, and profiles.
- UEI must show the location of each cross section on a plat map.
- UEI must show the flow path for all ditches and culverts on Plate 7-5.
- UEI must show ditches on each cross section in Appendix 5-4.

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

UEI does not propose to alter or relocate any natural drainage. UEI does propose to construct the Main Facility Road within 20 feet of the Right Fork of Lila Wash. Because of the close location to the drainage, the Division will require UEI to supply detailed drawings and cross-sections that show how UEI will protect the undisturbed drainage.

Location of Roads in Intermittent or Perennial Streams

UEI 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

UEI plans no low-water crossings.

Plans to Remove and Reclaim Each Road that would not be Retained Under an Approved Post-mining Land Use, and the Schedule for this Removal and Reclamation.

UEI states in Section 542.600 that:

> A small portion of the county road (in the vicinity of the sediment pond culvert) will be left after final reclamation. The county road will allow for access for ranchers, and recreationalists conforming with the post mine land use of wildlife, grazing, and incidental recreation. There will be no roads left within the disturbed area after final reclamation. UEI will reclaim all roads upon cessation of mining.

The statement contradicts other statements that the County Road is outside of the disturbed areas and that therefore, UEI has no jurisdiction over the road. See Plate 5-2.

Performance Standards

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

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

- Appendix 5-5 has information about slope stability for the roads. UEI states that they performed a slope stability analysis for the worst-case scenario for the embankments and cut slopes. UEI must show the location of the cut slope and embankment that they analyzed and explain why those cross sections represent the worst-case scenario.

- UEI must show the ditches and drainage system for each road. In addition UEI must show how they will prevent or minimize erosion

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

- UEI 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 Appendix 5-4 will be 8-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 must certify the plans.

A qualified registered professional engineer shall also certify the actual construction or reconstruction of primary roads in a report to the Division. UEI 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 5-4, UEI describes and shows the conveyors they will use 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 UEI plans to leave the ground beneath the conveyor as undisturbed, due to the steepness and remoteness of the area, UEI 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. UEI will cover the aboveground portion of the conveyor.

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

Findings:

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

R645-301-534.140, UEI must clarify the remarks in Section 542.600 about part of the County Road being left after final reclamation. The County Road is outside of the disturbed/permit area and UEI has no jurisdiction over the road.

R645-301-527.210, R645-301-527.220 and R645-301-527.230, UEI 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 20 feet from the drainage

R645-301-527.200 and R645-301-527.210, UEI must show 1) the location of each culvert and ditch on Plate 5-2, 2) show the flow path for all culverts and ditches on Plate 7-5, and 3) show each ditch on the cross sections in Appendix 5-4.

R645-301-512.250, UEI must have all the plans, maps, cross sections, and profiles for each primary road certified by a registered professional engineer.

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 Mine Wastes

Noncoal waste can be classified as non-hazardous or hazardous and includes recyclable materials, asphalt and concrete. Non-hazardous waste consists of garbage that UEI will dispose of by placing in dumpsters. UEI will have the non-hazardous waste shipped to a state licensed disposal site, most likely East Carbon Development Corporation (ECDC.) UEI will send hazardous waste, as defined by Resource Conservation and Recovery Act (RCRA), to a state licensed disposal site - most likely ECDC. See Section 528.330 of the PAP for more details about hazardous waste disposal.

The Division will allow UEI to dispose of concrete debris on site. The on-site disposal of concrete will be done 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 a minimum of two feet of cover will be placed over sand and gravel road surfacing materials and asphalt will be disposed off-site. Concrete will be buried by four feet of cover

Coal Mine Waste

Appendix 5.7 describes 25,000 loose cubic yards of underground development waste generated from portal development. Additional refuse will 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.

In section 528.320 of the PAP, UEI 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 cross-hatched on the cross-sections and labeled.

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

- Ground Preparation: UEI will remove vegetation and topsoil from the site and store it in the designated topsoil piles. Next, they will remove the subsoil and fill the site with coal mine waste. UEI will divide the refuse pile into two sections, the first one will be used for rock slope material, and the second section will be used for underground coal mine waste and reject material from the crusher.
- Placement of Coal Mine Waste (Refuse): UEI states in Appendix 5-7 that coal mine waste will be placed into the cells. UEI 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: UEI will test the material from the rock slopes during the initial startup, at the ¼, ½ and ¾ marks, 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: UEI 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: UEI 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 UEI will encounter significant amounts of acid or toxic-forming material. If UEI 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.

UEI 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. UEI based the stability calculations on cross section 8+00 (Figures 1 and 2, Appendix 5-7).

After final grading, UEI 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 4 feet of cover, and cell construction methods will protect the public from hazards associated with the site.

UEI 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, UEI 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 when UEI finishes construction of the site.

UEI 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 UEI will handle emergencies.

In Appendix 5-7, UEI estimates that there will be 25,000 loose cubic yards of underground development waste generated from portal construction. UEI 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. UEI 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.

UEI 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. UEI 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, UEI proposes to use the 25,000 cubic yards of material for structural fill.

UEI 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, UEI 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:

UEI shows the location of the refuse pile on Plate 5-2. UEI 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, UEI 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 44,400 yd3.

UEI needs to list the amounts of rock slope material and coal processing waste material separately in Table 1, Appendix 5-7. Note that all structural fill will be place between cross sections 4+00 and 8+00 on Figure 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 UEI will construct the refuse pile. UEI will salvage the top 18 inches of pre-disturbed ground as topsoil, then remove the subsoil.

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

On Figure 2, Appendix 5-7, UEI 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. .

Section 528.320 distinguishes the coal-free coal mine waste, which UEI 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 UEI 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).

UEI outlines the testing of coal mine waste in Appendix 5-7. UEI will test all rock slope material five times. UEI 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, the ¾ mark, and near completion. UEI will test other coal mine waste, generated during operations from the crusher and underground development, containing coal every 6,000 cubic yards.

UEI 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

UEI 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

Appendix 5-3 Coal Mine Waste Fire Extinguishing Plan calls for smothering potential fires with borrowed soil material. The source of the borrowed soil is not determined, but implies an off-site source. On-site subsoils are already committed for use as final reclamation cover over the mine waste. On-site subsoil cover may not be used for fire suppression.

Return of Coal Processing Waste to Abandoned Underground Workings

UEI does not propose to dispose of coal mine waste underground.

Excess Spoil:

UEI does not anticipate the generation of any excess spoil.

Findings:

The information provided meets the minimum acceptable requirements of the Regulations.

SUPPORT FACILITIES AND UTILITY INSTALLATIONS

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

Analysis:

UEI 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:

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 (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

UEI showed the location of each structure on Plate 5-2.

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.

UEI 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. UEI will accomplish reclamation of the surface facilities by removing the structures. When possible, they will salvage machinery and steel building components. UEI will ship all building debris, with the exception of concrete, off site

UEI 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 meets the minimum acceptable requirements of the Regulations.

SIGNS AND MARKERS

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

Analysis:

UEI 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:

UEI 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 UEI to submit a specific blasting plan separate from the PAP. UEI has opted to submit a detailed blasting plan if and when they propose to blast.

Findings:

UEI 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, UEI has indicated that they might seek additional reserves to the south. 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. UEI did not show the location of some culverts on Plate 5-2. That deficiency is addressed in the road section of the TA.

Mine Workings Maps

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. UEI shows the timing and sequence of the mining operation on the map.

Findings:

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

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, UEI must meet reclamation performance standards including: controlling erosion; establishing mass stability; and establishing permanent, diverse, and effective vegetative cover.

The Division intended Technical Directive 002 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

UEI did not request a variance from AOC. The Division reviewed all the pre-mining and post-mining topographic maps and cross sections to determine if the post-mining topography, excluding elevation, closely resembles its pre-mining configuration. The Division's finding were as follows:

- UEI showed the pre-mining topography shown on Plate 5-1A and the post-mining topography on Plate 5-6. One difference between the pre-mining and post-mining topography is that the post-mining contours were usually smoother. However, pocking and other surface roughening techniques tend to make the post-mining surface look more natural after a few years.

- The topography on Plate 5-1A and Plate 5-6 are the same for the topsoil storage area and the sediment pond. Restoring the site to the exact original contours is all but impossible due to the surface roughening techniques that UEI will use, and the limitation of earthmoving crew and equipment. In addition, the post-mining contours on Plate 5-6 are not consistent with cross section 4+00 on Plate 5-7A-2. On the map, UEI showed that they would remove the sediment pond; while on the cross-sections UEI showed that the pond would stay. The Division also addressed the deficiency in the map section of the TA.

- The cross-sections shown on Plate 5-7A-1 through Plate 5-7A-4 show that pre-mining and post-mining contours will be similar between cross section 0+00 and 18+00. 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 pre-mining topography. The reason for the increase in elevation is that coal mine waste will be disposed of in that area. The

increase in elevation is minor and will not interfere with surface flows. UEI will leave cut slopes from the road embankment as shown in cross-section 16+00.

- UEI showed pre-mining and post-mining cross-sections on Plate 5-7B-1 through Plate 5-7B-3 for cross sections 20+00 to 26+00. The concrete disposal area will have an elevation slightly lower than the pre-mining elevation as shown on cross-section 18+00. The reason for the elevation decrease is the pre-mining slopes do not meet the minimum safety factor requirements (safety factor of 1.3) therefore; the area cannot be restored to the pre-mining contours. The post-mining contours do meet the minimum safety factor requirements and blend into the surrounding area.

- Figure 2 of Appendix 5-7 shows detailed cross-sections of the pre-mining, operational and post-mining 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.

- Three critical areas for final surface configuration are the portal areas. UEI is required to eliminate all highwalls. Because the Lila Canyon Extension will be developed after the passage of SMCRA, the Division cannot allow any highwalls to remain after reclamation. Plate 5-9 showed detailed cross-sections for all portal areas. The pre-mining contours for the rock slope portals showed the face up areas to be a cliff. Therefore, UEI is required to backfill the areas to form cliffs. UEI will construct the ventilation fan portal on a natural slope and restore it to the approximate pre-mining configuration.

  All Highwalls to be eliminated

  UEI 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 pre-mining, operational and post-mining 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 UEI may need to remove loose rock. Since the portal face up areas are in a nearly vertical cliff, UEI will eliminate the highwall by backfilling against the portal face-up.

The fan portal will have a 17-foot highwall. UEI will have to remove some of the cliff when they construct the fan facility, because it will be in a high cliff.

Because the fan portal area will be in an isolated area, getting earthmoving equipment to the site without going throw the portal will be difficult. Because of the size restriction of the mine, the type of equipment that UEI can bring through the mine is limited. If UEI plans to bring equipment in and out of the mine for reclamation, they must develop a plan to reclaim the highwall without sealing the portal. If UEI plans to airlift the equipment in and out, they must describe the type of equipment that they will use. Plateau Mining Corporation developed a technique to reclaim highwalls at remote sites. They used collapsible fences to hold the material in place until the equipment could be moved underground. This method may work at Lila. UEI needs to provide a detailed explanation of how they will reclaim the highwall at the fan portal breakout.

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 UEI will restore the highwall areas to approximate pre-mining 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 UEI restore drainages, control sediment, and prevent hazardous and toxic discharges. The Division considers that UEI will meet those conditions when they meet the hydrologic reclamation requirements.

Findings:

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

R645-301-542 and R645-301-553, UEI must give the Division a detailed reclamation plan for the fan portal site. The plan must show how UEI will reclaim the 17-foot highwall. If UEI plans to bring the equipment in and out of the portal, they must develop a plan to reclaim the highwall without sealing off the portal. In addition, UEI must describe the type of equipment that they will use given the limitations

of the mine. If UEI plans to airlift the equipment in and out, they must describe the type of equipment that will be used.

R645-301-542.200, UEI must give the Division reclamation maps that show the reclaimed contours at the topsoil stockpile area, and at the sediment pond. The pre-mining topography on Plate 5-1A and the post-mining topography shown on Plate 5-6 are the same. Restoring the site to the exact original contours is all but impossible. In addition, the post-mining contours on Plate 5-6 are not consistent with cross sections 4+00 on Plate 5-7A-2. On the map, UEI showed that they would remove the sediment pond while on the cross section UEI showed that the sediment pond would remain after final reclamation. UEI must correct that deficiency.

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 excess 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 post-mining 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.

In Appendix 5-5 UEI discusses slope stability for the Lila Canyon Extension. In Table 1 they list the summary of the laboratory test results. However, UEI does not show how they used the direct shear test results to determine the interior angle of friction or the cohesion. UEI must show how those values were determined.

UEI assumed that all the backfilled and graded slopes, as well as cut slopes, would be in homogenous material. When the Division visited the site they saw that the slopes usually did not consist of homogeneous material; rather the slopes consisted of bedrock covered with soil. Therefore, the assumption about homogeneous soil is not valid.

UEI assumed that all failures would be circular. Slopes that consist of bedrock and a thin soil covering seldom have circular failures. Therefore, UEI must look at noncircular failures.

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 post-mining land uses are wildlife habitat, grazing, and incidental recreation, which are identical to the pre-mining land uses. The post-mining land use is in accordance with the BLM's management plans. See Appendix 4-2 of the PAP for a BLM post-mining 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 UEI will generate at the Lila Canyon Extension will be at the fan portal. UEI will use that spoil as backfill at the fan portal site. The proper compaction of spoil is a performance standard that UEI must meet during reclamation.

Disposal of Coal Mine Waste and Underground Development Waste:

The Division and UEI 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 post-mining land use. UEI 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.
- UEI 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.

Special Provisions for Steep Slope Mining

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 would apply if UEI planned to get a variance from AOC requirements. Since UEI did not apply for an AOC variance, they are not required to address these requirements.

Findings:

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

R645-301-553.130 and R645-301-122, UEI must show how the interior friction angle and the cohesion for the soils were determined from the direct shear test results or reference the source for the soil properties.

R645-301-553.130 and R645-301-121.200, UEI must show that all reclaimed areas and cut slopes will be in soil only or they must do safety factor calculations with a bedrock/soil interface. The profiles in Appendix 5-5 show that the slopes consist only of soil. The Division saw that the slopes in Lila Canyon consist of bedrock with a few feet of soil cover. While circular failure is unlikely in bedrock noncircular failure can occur along the bedrock/soil interface. Therefore, UEI must submit additional failure analysis based on noncircular failures.

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:

UEI 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, UEI will seal all wells when no longer needed.

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

Findings:

UEI 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

UEI has committed to reclaim all roads within the disturbed area boundaries. UEI will remove and bury the road surfaces (road base gravel) on site and cover it with a minimum of two feet of material. UEI will bury concrete under four feet of material.

UEI stated in the text of the PAP that they would dispose of the asphalt off site, see 542.640 of the PAP. However, in the bond calculations (Appendix 8-1) UEI calculates asphalt disposal on the assumption that the material will be disposed of on site. UEI must correct the contradiction.

Retention

UEI states in section 642.600 of the PAP that there will be no roads left in the disturbed area after reclamation.

Findings:

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

R645-301-830.140, UEI must either include the cost of disposing asphalt off site or modify the PAP by including an on-site asphalt disposal site.

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 post-mining contours.

The contours on Plate 5-6 showed that UEI would reclaim the topsoil storage area and sediment pond to the exact pre-mining contours. The contours on Plate 5-6 are not consistent with the cross sections on Plate 5-7A-2. The cross section 4+00 shows that the sediment pond will remain after reclamation, while on Plate 5-6 UEI showed they would reclaim the sediment pond to the exact pre-mining contours.

UEI 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 post-mining contours for the disturbed area. The disturbed map is not consistent with Plate 5-1A. On Plate 5-6, in the fan portal area, UEI has two parallel undisturbed-area boundary lines; while on Plate 5-1A there is only one line. UEI must show the same disturbed area boundaries on all maps.

Reclamation Surface And Subsurface Manmade Features Maps

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

R645-301-542, UEI must submit reclamation maps that show the post-mining contours at the topsoil storage site and at the sediment pond. In addition, UEI must submit cross sections that show final reclamation of the sediment pond. The topography on Plate 5-1A and Plate 5-6 are the same for the topsoil storage area and the sediment pond. Plate 5-6 shows the sediment pond will be removed at final reclamation but cross section 4+00 on Plate 5-7A-2 shows the pond will remain.

R645-301-542, UEI must show the same disturbed area boundaries on Plate 5-6 as they do on all other maps.

BONDING AND INSURANCE REQUIREMENTS

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

Analysis:

Form of Bond

UEI submitted a rider to the bond in 2003 for the Lila Canyon Extension for $1,556,000. The Division will evaluate the bond after they approve the reclamation plan.

The Division will allow UEI 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, UEI 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 UEI has posted an adequate bond.

Determination of Bond Amount

The Division reviewed the bond calculations in Appendix 8-1. The Division noticed that UEI calculated asphalt disposal on the assumption that the material would be disposed on site. However, in the PAP, UEI repeatedly stated that asphalt would be disposed off site. The bond calculations must be consistent with the reclamation plan.

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.

UEI did not bond for subsidence. The regulations do not require a Permittee to bond for subsidence unless damage occurs to either structures or facilities protected under R645-301-525.500 or when contamination, diminution or interruption to a water supply protected under R645-301-731.530 occurs. UEI did obtain subsidence insurance.

The Division will finalize the bond after the reclamation plan is approved.

Terms and Conditions for Liability Insurance

UEI is required to submit a certificate issued by an insurance company authorized to do business in Utah to demonstrate that UEI 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.

UEI 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, 2004. The Division will require an updated ACCORD form prior to issuing the approval for the Lila Canyon Extension.

Since the Horse Canyon Mine has a valid permit, UEI is required to have insurance at all times. The amounts of the policy are as follows:

- General aggregate limit $3,000,000
- 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.

UEI 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 or 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.

UEI also has subsidence coverage included with $250,000 property damage deductible under the general liability policy.

Findings:

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

R645-301-830.140, UEI must either include the cost of disposing asphalt off site or modify the PAP by including an on-site asphalt disposal site.

R645-301-830.140, UEI must have documentation showing that they are properly insured before the Division will approve the Lila Canyon Extension. The ACCORD in Appendix 8-2 showed that the insurance policy will expire on June 1, 2004.

RECOMMENDATION:

Do not approve the application until UEI has addressed all deficiencies.