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

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TO: Internal File

FROM: David W. Darby, Reclamation Specialist III, Project Lead 

RE: Lila Canyon Significant Revision to the Horse Canyon Mining and Reclamation Plan, Utah American Energy, Inc., Horse Canyon Mine, C/007/013-SR98A(1)-5

SUMMARY:

The Division of Oil, Gas and Mining received the latest submittal of the Lila Canyon, significant revision (SR) on January 19, 2001. The new operation and facilities will be built near the mouth of Lila Canyon. Facilities will consist of a mine portal, mine pad, buildings, a refuse pile, hydrologic structures, including a sedimentation pond, and topsoil stockpiles.

This analysis evaluates the surface water control structures, surface and groundwater water characteristics, and potential hydrologic consequences of the SR. Hydrologic structures were assessed to ensure they are sized to control, contain and transmit disturbed and undisturbed runoff to ensure minimal contamination and off-site impacts.

The existing hydrologic resources of the proposed Lila Canyon SR are detailed under section 720. The proposed operations and potential impacts to the hydrologic balance are described in Sections 728 and 730. All methods and calculations utilized to achieve compliance with hydrologic design criteria and plans are described in Section 740 and Appendix 7-4. 30.

There are several technical issues that need to be resolved before the application can be approved.

TECHNICAL ANALYSIS:

CLIMATOLOGICAL RESOURCE INFORMATION

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

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Analysis:

The proposed mine site is in an area that receives an average annual precipitation of approximately 12 inches, as described by Lines and others (1984). The permittee indicates an average annual precipitation as high as 13.69 inches, the information was downloaded from the Western Regional Climate Center as shown in Table 7-1A.

The permittee has provided mean annual temperatures and average seasonal temperatures in Table 7-1A, Chapter 7,

The closest weather station to the Lila Canyon Lease is located at Sunnyside, Utah. Based on relatively close proximity and similar locations, the west exposure of the Book Cliffs, the data from this station will be used to verify precipitation amounts and other weather conditions for the Lila Canyon Project.

Findings:

The permittee has submitted sufficient information to address this section.

ALLUVIAL VALLEY FLOORS

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

Analysis:

An assessment of the permits area by the regulatory authority concludes there are no alluvial valley floors that could be affected by mining. The premining land use is undeveloped rangeland which is not significant to farming; There is no farming activity upstream or downstream of the permit area, therefore, the proposed operations will not interrupt, discontinue, or preclude farming on an alluvial valley floor. The only potential of subirrigation is in very small area along upper perennial reaches of Little Park Wash, however these areas are very small with no chance of farming activities taking place.

Findings:

A determination of no alluvial valley floors exists in or adjacent to the permit area that can be impacted by mining operations.

HYDROLOGIC RESOURCE INFORMATION

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

Sampling and analysis

The surface-water monitoring point-source discharge will be conducted in accordance with 40 CFR Parts 122 and 123, R645-301-751 and as required by the Utah Division of Water Quality for Utah Pollutant Discharge Elimination System (U.P.D.E.S.) permits. A U.P.D.E.S. discharge permit application has been submitted to the Division of Environmental Health for the proposed sediment pond and mine water for the Lila Canyon operation. Existing U.P.D.E.S. permit applications for the Lila Canyon Lease are provided in Appendix 7-5. parameters are shown in Table 7-4. Water monitoring locations and sample frequencies are described in Table 7-3 and on Plate 7-4 .

As indicated in Section 731.220, surface-water monitoring data will be submitted at least every 3 months for each monitoring location. When analysis of any surface water sample indicates non-compliance with the permit conditions, the company will promptly notify the Division and immediately take actions to identify the source of the problem, correct the problem and, if necessary, to provide warning to any person whose health and safety is in imminent danger due to the non-compliance.

Baseline information

Within the permit area, the surface water resources consist of three main drainages: Horse Canyon Creek, an intermittent stream, Little Park Wash, an intermittent stream and Lila Canyon Creek, an intermittent stream. Horse Canyon flows to Icelander Wash which, in turn, flows to Grassy Trail Creek and the Price River. Little Park Wash flows southward to Trail Canyon and the Price River. Lila Canyon flows southwest to Grassy Wash, then south to the Marsh Flat Wash and the Price River. (See Plate 7-1)

Generally, Horse Canyon, Little Park and Lila Canyon Creeks flow during the spring snowmelt runoff period and also as a result of isolated summer thunderstorms. Due to the limited drainage area and elevation of Lila Canyon, the duration of the snowmelt flows is quite short and is limited to the very early spring. Locations of all baseline data points are shown on Plate 7-1. Baseline data information is included in Appendix 7-1. There are no streams, lakes or ponds or irrigation ditches known to exist within the proposed permit or adjacent areas. By late spring to early summer, usually no flow is evident in Horse Canyon Creek, below the minesite or Lila Canyon Creek.

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

Based on results of the PHC determination, base-line study and other available information, numerous small springs and seeps exist within, and adjacent to, the permit area. In

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addition, ephemeral drainages in the area flow in response to snow melt and precipitation events. The proposed surface-water monitoring program will monitor the significant surface water sources, including drainages above and below the disturbed mine site area, and all point-source discharges (i.e. sediment pond).

Ground-water information

Seeps, springs and potential mine water discharge will be monitored in accordance with the Ground Water Monitoring Plan in Chapter 7.

Surface-water information

The plan will provide data to show impacts to potentially affected springs, seeps, impoundments and drainages within and adjacent to the permit area, by comparison with relevant baseline data and with applicable effluent limitations

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

Surface-water quality protection is proposed to be accomplished by the plan described in Section 731 and the following methods:

- (1) Minimizing surface disturbance and proper handling of earth materials to minimize acidic, toxic or other harmful infiltration to ground-water systems;
- (2) Testing (as-necessary) to ensure stockpiled materials are non-acid and non-toxic;
- (3) Controlling and treating disturbed area runoff to prevent discharge of pollutants into surface-water, by the use of diversions, culverts, silt fences, sediment ponds, and by chemical treatment if necessary;
- (4) Minimizing and/or treating mine water discharge to comply with U.P.D.E.S. discharge standards;
- (5) Establishing where surface-water resources exist within or adjacent to the permit area through a Baseline Study (done) and monitoring quality and quantity of significant sources through implementation of a Water Monitoring Plan (proposed);

- (6) Proper handling of potentially harmful materials (such as fuels, grease, oil, etc.) in accordance with an approved Spill Prevention Control and Countermeasure Plan (SPCC).

Baseline cumulative impact area information

The Division will make a findings of the cumulative impacts when the Mining and Reclamation Plan is complete.

Modeling

Actual surface and ground water information is supplied in this application; therefore, modeling is not proposed. No surface water modeling has been conducted.

Alternative water source information

A search was conducted of the State of Utah Water Rights files for all rights occurring within, and adjacent to, the permit area for a distance of one mile. The location of those rights are shown on Plate 7-3. A description of each of the rights is tabulated in Table 7-2.

As noted in the table, the majority of rights are owned by UtahAmerican Energy, Inc. for industrial use. Other rights owned by the B.L.M. or individuals are primarily for stockwatering.

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

Probable hydrologic consequences determination

The Probable Hydrologic Consequences (PHC) Determination is provided as a separate document in Appendix 7-3. This determination indicates negative impacts of the mining or reclamation operation on the quality and quantity of surface and ground water under seasonal flow conditions for the proposed permit and adjacent areas.

The permittee identifies potential adverse impacts in Chapter 7 which consist of :

1. Increasing sediment loading;
2. Diminution or interruption of water supplies on water rights;
3. Discharge of contaminated groundwater;
4. Erosion and streamflow alteration;
5. Deterioration of water quality.

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Each of the above potential impacts have been evaluated in the PHC.

Water in this area is primarily used for stock or wildlife watering. Any impacts to the small surface springs or seeps as a result of mining would likely be offset by the emergence of new seeps or springs due to fracturing, mine water discharge or replacement of water rights as described under Sections 525, and 731.800.

With underground mining, there always exists a potential for impacting surface or ground water resources; however, as indicated in Section 525, subsidence effects are expected to be minimal due to the amount of cover and massive rock strata between the mining and the surface. Effects on underground water are also expected to be minimal, since this water is not presently issuing to the surface, and any necessary discharges of the water would be in accordance with U.P.D.E.S. requirements.

The permittee also addresses any potential impacts to receiving streams in the event mine water is discharged from the mine.

Findings:

The permittee submitted information to address this section.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

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

Analysis:

Affected Area Boundary Maps

All cross sections, maps and plans required by R645-301-722, and R645-301-731.700 have been prepared and certified according to R645-301-512. Contour Maps of the proposed disturbed area and mining areas are included as Plates 5-2A, 5-2B, 7-1 and 7-2. These maps are U.S.G.S. based contours and accurately represent the proposed permit and adjacent areas. Disturbed area maps are based on aerial photography for greater detail, and are tied to relevant U.S.G.S. elevations.

Monitoring Sampling Location Maps

The permit application package identifies that the location of all known seeps and springs, as well as watering ponds or tanks are shown on Plate 7-1. There are no streams, lakes

or ponds or irrigation ditches known to exist within the proposed permit or adjacent areas.

Permit Area Boundary Maps

Several maps including Plate 5-1 show the location of the permit boundaries for the Horse Canyon mine. The permit boundary has been divided into Permit Area A and Permit Area B. These areas have been identified on Plate 5-1, which also indicates that Permit area B is a significant revision to the Horse Canyon Permit. Plate 4-4 identify the areas on and adjacent to the Horse Canyon Mine that are designated Wilderness Study Areas (WSA's) currently being evaluated by the Bureau of Land Management for wilderness potential. Two WSA's lie within and adjacent to the proposed significant revision area. The Turtle Canyon WSA encompasses the eastern half of the SR and the Desolation Canyon WSA extends up from the south to encompass the south-eastern part of the SR.

Surface and Subsurface Ownership Maps

A search was conducted of the State of Utah Water Rights files for all rights occurring within, and adjacent to, the permit area for a distance of one mile. The location of those rights are shown on Plate 7-3. A description of each of the rights is tabulated in Table 7-2.

Subsurface Water Resource Maps

As mentioned above, the old Horse Canyon Mine is known to have standing subsurface water. In addition, any drill holes that have encountered water have been noted. Relevant cross sections of drill holes are shown on Plate 6-5. Water monitoring wells are shown on Plates 6-5 and 7-1 and results are included in Appendix 7-1.

Surface Water Resource Maps

Locations of all baseline data points are shown on Plate 7-1. Baseline data information is included in Appendix 7-1.

Location of all known seeps and springs, as well as watering ponds or tanks are shown on Plate 7-1. There are no streams, lakes or ponds or irrigation ditches known to exist within the proposed permit or adjacent areas.

Well Maps

Three water monitoring wells were drilled in the area, IPA #1, IPA #2 and IPA #3, to monitor mine water levels. These wells are shown on Plate 7-1.

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Contour Maps

Contour Maps of the proposed disturbed area and mining areas are included as Plates 5-2A, 5-2B, 7-1 and 7-2. These maps are U.S.G.S. based contours and accurately represent the proposed permit and adjacent areas. Disturbed area maps are based on aerial photography for greater detail, and are tied to relevant U.S.G.S. elevations.

Findings:

The applicant has submitted sufficient information to address this section.

OPERATION PLAN

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

Surface-water monitoring

Locations of all monitoring sites are shown on Plate 7-4, "Water Monitoring Location Map". Proposed monitoring methods, parameters and frequencies are described in Table 7-3, "Water Monitoring Stations", and Table 7-4, "Water Monitoring Parameters". Monitoring reports will be submitted to the Division at least every 3 months, within 30 days following the end of each quarter. The operational water monitoring plan will be implemented upon approval of the MRP.

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

DOGM had discussions with Kerry Flood, to the Bureau of Land Management, he originally proposed that the operator (UtahAmerican Energy, Inc.) develop a water monitoring plan for Range Creek, a perennial stream several miles north-west of the mine, to assess any potential impacts from mining to the perennial stream. No monitoring plan has been proposed by the operator. It was determined later by the BLM that Range Creek was substantially distal, that influence from mining activities were unlikely. It was suggested to the permittee that monitoring

Range Creek could protect the mine's interest in the event that other activities such as logging and grazing could impact the creek, which could be interpreted by the landowners to be effects caused by mining.

Discharges of water from this operation will be made in compliance with all Utah and federal water quality laws and regulations and with effluent limitations for coal mining promulgated by the U. S. Environmental Protection Agency set forth in 40 CFR Part 434. See Sections 731 and 742.

Acid and toxic-forming materials

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

Potentially acid- or toxic-forming materials will be identified by use of Material Safety Data Sheets (MSDS), or by direct sampling and analysis in the case of underground development waste.

Any material which exhibits acid- or toxic-forming characteristics will be properly stored, protected from runoff, removed to an approved disposal site or buried on site beneath a minimum of 4' of non-acid, non-toxic material.

Storage of potentially acid- or toxic-forming materials, such as fuel, oils, solvents and non-coal waste will be in a controlled manner, designed to contain spillage and prevent runoff to surface or ground water resources.

All oils and solvents will be stored in proper containers within enclosed structures. Fuels will be stored in appropriate tanks, enclosed within concrete or earthen bermed areas designed to contain any spillage.

Non-coal waste (garbage) will be stored in a designated location, in dumpsters, and removed to an approved landfill (East Carbon Development Contractors - ECDC) on a regular, as-needed basis.

Unused or obsolete equipment or supplies will be stored in a designated area. Drainage from the storage area will be directed to the sediment pond as shown on the Sediment Control Map, Plate 7-5.

Underground development waste (if any) will also be stored in a designated area. Such waste will be tested for acid- or toxic-forming potential, and if found to be acid- or toxic-forming, the waste site will be protected from surface runoff by the use of earthen berms.

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Transfer of wells

There are presently three monitoring wells on this permit. When these wells are no longer required, they will be sealed in a safe, environmentally sound manner in accordance with regulations .

Discharges into an underground mine

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

Gravity discharges

Based on historical data from other mines in the area, it is anticipated that some mine water will be encountered during the mining operation. Typically, such water is stored in, "sumps" or designated areas in the mine, for use in mining operations or treatment and discharged to the surface. Sumps are mined areas that have been sealed or dammed off where water can be stored. The operator can make the sumps a variety of sizes and can create several sumps in one mine.

Presently, the operator plans to use the water that is intercepted during mining operations. The operator has submitted an application to the Utah Division of Water Quality for a UPDES mine water discharge permit in the event water production is greater than can be used in the mine. The operator has identified the mine water monitoring site as L-5-G. Before mine water is discharged the permittee has stated that receiving channels will be studied before and during discharge to analyze any changes or adverse impacts.

The operator has not identified which channel will be receiving any excess mine water production or identified the method of transport from the discharge site to the channel.

Water quality standards and effluent limitations

Any discharge from the sediment pond will be made in compliance with all Utah and federal water quality laws and regulations and with effluent limitations for coal mining promulgated by the U.S. Environmental Protection Agency set forth in 40 CFR Part 434.

Diversions

There are is one major undisturbed diversion planned for this minesite. This diversion consists of a bypass culvert beneath the sediment pond and the old road grade, which will allow undisturbed runoff to bypass the site without mixing with disturbed area runoff. The permittee has proposed to install a 60 inch culvert, UC-2 (Plate 7-6) which will extend under the sedimentation pond and road grade embankment. The existing 36 inch culvert will be excavated and removed.

The applicant based the riprap sizing on calculations from Figure 7-26, Design of Outlet Protection Maximum Tailwater Condition, "Applied Hydrology and Sedimentology for Disturbed Areas", Barfield, Warner and Haan, 1983. Based on the calculations the apron has a 0 degree slope, designed to be 20 feet long and widening from 5 feet to 9 feet. Riprap is conservative with a D-50 of 12 inches. It will be placed to a depth of 1.5 D50 and will be embedded in a 6 inch layer of drain rock filter. Riprap will also be placed on a 2:1 side slope to the height of the culvert at the culvert outlet tapering to 2 feet at the outlet of the apron.

In a telephone conversation with Jim Wells, Utah Division of Water Rights on November 17, 2000, I asked what criteria was involved for a Stream Alteration Permit. The main requirement is that stream channel contain riparian vegetation and a relatively frequency of flow. The channel where culverts UC-1 and UC-2 will be placed does not meet those requirements. The channel is ephemeral and vegetation ranges between xeric to mesic, consisting of single leaf ash and rabbit brush.

Other diversions planned consist of disturbed area ditches and culverts, as shown on Plate 7-5. Design details for all diversions are provided in Appendix 7-4.

It is unclear from Plates 7-2 and 7-5 how undisturbed drainage above the disturbed areas DA-1 and DA-2 will be diverted or controlled. There are no indications of undisturbed drainage ditches to route disturbed area drainage away from the disturbed area. The area identified as DA-1 on Plate 7-2 is identified as undisturbed Plate 5-2. If the area (DA-1) is undisturbed does it need a diversion ditch (DD-1)?

The applicant indicates that all diversions will be constructed and maintained to comply with the requirements of R645-301-742.100 and R645-301-742.300. Details are described under those respective sections.

Plate 7-5 and 7-6 identify the undisturbed culverts, UC-1 and UC-2, in the south fork of Coleman Wash (which runs along the south side of the proposed mine pad). Both culverts will be constructed of 60 inches (diameter) corrugated metal pipe (CMP).

Calculations indicate that the 100 year-6 hour precipitation event would produce a flow of about 51.6 cubic feet per second (cfs) down the channel. A 60 inch culvert with a headwall of one depth in diameter, H/D 1 will pass a flow of about 95 cfs. A culvert of 36 inch diameter could have been used to pass the calculated runoff, however, late summer thunderstorms wash sediment and debris down the channels, and the larger 60 inch culvert was picked by Utah Division of Water Rights, (Stream Alteration Permit Program) and DOGM to ensure extra safety. The larger culvert should pass debris and extra large flows to protect the culvert and sedimentation pond built above the culvert. Culvert UC-1 will also be a 60 inch in diameter.

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The upstream embankment of culverts UC-1 and UC-2 will be protected by riprap. The permittee has submitted Figure 4, which illustrates a typical view of the trashrack and headwall structure for the undisturbed culverts.

Stream buffer zones

No development or disturbance will take place within 100 feet of a perennial stream. The only perennial stream identified by the permittee is Range Creek approximately 6 miles north-east of the mine portal.

Sediment control measures

Sediment control measures within and adjacent to the disturbed areas are detailed in Appendix 7-4. These measures include, but are not limited to:

As discussed in Appendix 7-4, runoff from the disturbed area will be captured in a sediment pond and/or treated as necessary to meet effluent limitations prior to discharge.

The primary means of velocity reduction in channels and at discharge points is the use of rip-rap; however, other methods such as straw dikes, check dams and/or vegetative filters may be employed during the operational or reclamation phases as determined necessary, and with Division approval.

Siltation structures

As described in Appendix 7-4, the only siltation structures planned for this operation are a sediment pond and possible minor, temporary sediment traps such as straw dikes and/or catch basins.

Siltation structures will be designed, constructed and maintained in accordance with regulations.

Sedimentation ponds

The general drainage plan the disturbed area is to divert surface flows using a system of ditches and culverts which direct flows to a single sedimentation pond for treatment. The sedimentation pond prior to discharge into the channel filled culvert, which carries it to the main channel off the permit area. Site drainage and design details are described in Appendix 7-4 and illustrated on Plates 7-6.

The sediment control plan and proposed sediment pond designs have been prepared and certified by Dan Guy, a Registered Professional Engineer, State of Utah.

Sediment pond locations, design plans and cross sections are provided on Plates 7-2, 7-5 and 7-6, respectively.

The pond is designed to contain the runoff from a 10 year - 24 hour precipitation event for the area in addition to a minimum of 2 years of sediment storage. See "Sediment Pond Construction Requirements" in Appendix 7-4 and Plate 7-6. The required volume of the sediment pond is calculated at 8.4 acres-feet, which includes 3 years of sediment storage. The existing sediment pond size will be a volume of approximately 8.5 acres-feet. Any discharge from the pond will be in accordance with the approved UPDES permit.

The proposed pond is not located where failure would expect to cause loss of life or serious property damage. As shown in Appendix 7-4, the proposed pond embankment will have a minimum of 3H : 1V on the inside slope and 2H : 1V on the outside. These slopes, along with the 95% compaction requirement, will ensure a static safety factor in excess of 1.3, as required.

All discharges from sedimentation ponds, diversions and culverts will be controlled to prevent channel erosion by the use of a riprap aprons where discharge velocities exceed 5 feet per second. Figure 4A shows a typical apron protection structure for UC-2. With the changes involving the emergency spillway the riprap size should be calculated to provide sufficient protection for the additional flow.

Other treatment facilities

Appropriate sediment control measures will be designed, constructed and maintained using the best technology currently available to prevent, to the extent possible, additional contributions of sediment to stream flow or to runoff outside the permit area and meet the effluent limitations under R645-301-751.

Exemptions for siltation structures

No exemptions requested by the permittee.

Discharge structures

In the last submittal the operator changed the design of the emergency spillway from a riprap channel over the embankment to a stand (drop) pipe.

The principle spillway is a corrugated metal pipe culvert which opens to the undisturbed channel culvert. The emergency spillway will be constructed of a corrugated metal stand pipe installed next to the principle spillway. Plate 7-6 shows a detailed view of the spillways. The cross-section on plate 7-6 shows a catwalk to access the spillways for sampling.

The emergency spillway discharges into the 60 inch undisturbed culvert, UC-2, and will be used in combination with the principle spillway to pass the flow of a 25 year-6 hour

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precipitation event, (See Appendix 7-4). The changes proposed for the corrugated metal pipe emergency spillway has a potential to increase flows over the discharge apron from UC-2. Calculations in Appendix 7-4 should reflect the worst case scenario for the combined flows, 25 year-6 hour flows, discharging from both the sedimentation pond and from the same event flows coming down the undisturbed channel, UC-2.

Diversions and culvert outlets that are expected to have flow velocities in excess of 5 fps will also be equipped with erosion and velocity controls as described in Appendix 7-4.

Impoundments

No other treatment facilities are planned for this operation. The operator has not discussed sediment control of or treatment of disturbed area around fan.

Casing and sealing of wells

One well is identified on the site, but is not used. There are no plans for other water wells on this site; however, if any wells are installed in the future, requirements of this section will be met.

Findings:

R645-301-731 The operator should describe how undisturbed drainage above the disturbed areas DA-1 and DA-2, shown on Plates 7-2 and 7-5, will be diverted or controlled.

R645-301-731 The operator should describe the need for the disturbed drainage ditch, DD-1 which captures undisturbed drainage, to route disturbed area drainage away from the disturbed area. The area identified as DA-1 on Plate 7-2 is identified as undisturbed Plate 5-2. If the area (DA-1) is undisturbed does it need a diversion ditch (DD-1)?

R645-301-731 The operator should identify which channel will be receiving any excess mine water production and identify the method of transport from the discharge site to the channel.

R645-301-731 Map 7-6 needs to be corrected to show the main stream channel connecting to culvert UC-2.

R645-301-742 The applicant needs to submit detailed plans of sediment control measures for the fan area.

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

The general area hydrology is identified in Plant 7-1. Plates 5-1 and 7-4 identify the effected area for the Lila Canyon area.

Mining facilities maps

The following is a list of cross-sections and maps provided in this section of the SR.

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

Mine workings maps

The Mine working map is located on Plate 5-5. The map contains a legend that details site information. The map also identifies the mining sequence.

Monitoring and sample location maps.

Operational ground-water and surface-water monitoring sites are listed in Table 7-3 and locations are shown on Plate 7-4. The proposed surface-water monitoring program will monitor Lila Canyon both above and below the disturbed mine site area at L-1-S, L-2-S, and L-3-S. No monitoring is proposed for Little Park Wash, although it appears to be the major surface drainage in the permit area, because no flow was observed during quarterly inspections in 1998 and 1999.

The sediment pond discharge at L-4-S and the potential mine discharge point at L-5-G will be monitored in accordance with UPDES Permit requirements. The currently monitored UPDES discharge points UT040013- 001A and - 002A, located in Horse Canyon, are shown on Plate 7-4.

Five seep and spring ground-water monitoring sites, L-6-G through L-10-G, are proposed. Water levels will be measured quarterly in wells IPA 1, 2, and 3. Locations are shown on Plate 7-4.

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Findings:

R645-301-512.100 The operator should identify on a Plate 7-5, how any mine water discharge would be transported from the portal to the stream channel.

RECLAMATION PLAN

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Analysis:

Surface-water monitoring

Surface-water monitoring will continue through mining and reclamation until bond release. Locations, parameters and/or sampling frequency (other than UPDES discharge points) may be modified by the Division

Acid and toxic-forming materials

Any material which exhibits acid- or toxic-forming characteristics will be properly stored, protected from runoff, removed to an approved disposal site or buried on site beneath a minimum of 4' of non-acid, non-toxic material.

Transfer of wells

There are presently no plans to transfer any wells to any other party. There are presently three monitoring wells on this permit. When these wells are no longer required, they will be sealed in a safe, environmentally sound manner in accordance with regulations (see Section 631.200

Discharges into an underground mine

No discharges planned to underground mines.

Gravity discharges

Section 731.520 explains why gravity discharges from the mine are not expected after mine closure.

The coal seam to be mined dips away from the portal site at approximately 10%. If water is encountered in the mining, it will likely be at a static level far below the exposed outcrop or rock slopes. This may result in some possible mine discharge from pumping, but not from gravity.

Water quality standards and effluent limitations

A reclamation surface and groundwater was not submitted.

Diversions

All disturbed and undisturbed area diversions will be removed during the backfilling and recontouring reclamation period. The permittee has not provided plans to show how Culvert UD-2 will be removed and a headwall established to direct flows under the roadbed.

Stream buffer zones

There will be no development within 100 feet of a perennial stream.

Sediment control measures

Upon completion of operations, the disturbed area will be reclaimed. All drainage and sediment controls are considered temporary and will be removed when no longer required. The sediment pond will remain in place until Phase II Bond Release requirements have been met. At that time, the pond will be removed and the area will be reclaimed in accordance with the approved plan.

Upon removal of the sediment pond, the area will be regraded and revegetated in accordance with the approved reclamation plan.

Siltation structures

See Appendix 7-4 for details on removal of siltation structures.

As indicated in Section 761, the sediment pond will remain in place until the stability and vegetation requirements for Phase II Bond Release are met. This will be a minimum of 2 years after the last augmented seeding. At this time, the pond will be removed and the area reclaimed.

Sedimentation ponds

The proposed sediment pond is considered temporary, and will be removed during final reclamation. The pond is designed in compliance with the requirements of the following sections, as required:

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The pond will be maintained until the disturbed area has been stabilized and revegetated. Removal shall not be any sooner than 2 years after the last augmented seeding;

Upon removal, the pond area will be reclaimed and reseeded according to the reclamation plan.

Discharge structures

The sedimentation will be used until Phase II bond release is received. Then the pond will be removed, the area recontoured and revegetated.

Impoundments

No impoundments will be left on site after reclamation.

Casing and sealing of wells

The permittee has committed to reclaim any existing wells in an environmentally sound manner. No well will be transferred.

Findings:

The proposed plan meets the requirements of this section.

RECOMMENDATIONS:

It is recommended that the TA not be approved until all concerns mentioned in the findings are corrected.