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Technical Analysis and Findings

Utah Coal Regulatory Program

April 4, 2017

PID: C0070039
TaskID: 5368
Mine Name: DUGOUT CANYON MINE
Title: WASTE ROCK SITE PHASE II EXPANSION

General Contents

Right of Entry

Analysis:

The amendment meets the State of Utah R645-301-114 requirements for providing a description of the document upon which the applicant bases their legal right to enter. Chapter 1, Section 114, page 1-4 of the Refuse Pile Amendment identifies Warranty Deed, Contract # SC-023, Exhibit C (No. 801673), Page 270, dated 9/1/91. This deed includes ownership of the refuse pile located within Section 18: E1/2NE1/4.

lreinhart

Right of Entry

Analysis:

The amendment does not meet the State of Utah R645 requirements for Right of Entry.

In attachment 1-1, the Permittee provides an Encroachment Permit from Carbon County. The permit allows the Permittee to conduct construction activity within the Carbon County road system. The access is required in order to construct the access road to Sediment Pond 2 and undisturbed culvert (UC-3). Upon review of the permit, the expiration date is identified as April 6th, 2016.

Per conversations with Dugout Mine representatives, a new Encroachment Permit has been obtained from Carbon County that will facilitate the construction of the access road and undisturbed culvert.

The Permittee must provide an up to date Carbon County Encroachment Permit in order to facilitate the construction of the proposed access road and undisturbed culvert.

Deficiencies Details:

The amendment does not meet the State of Utah R645 requirements for Right of Entry. The following deficiency must be addressed prior to final approval:

R645-301-114: The Permittee must provide an up to date Carbon County Encroachment Permit in order to facilitate the construction of the proposed access road and undisturbed culvert.

schriste

Legal Description

Analysis:

The amendment does not meet the State of Utah R645-301-121.120 and/or R645-301-141 requirements for providing a legal description that identifies the land (on a map) subject to coal mining (and reclamation).

Page 1-9 incorrectly describes the Waste Rock Storage Facility as Section 18: Portions of NE1/4, SW1/4 and SE1/4 of the NE1/4. According to the maps, the permit area is not located in the SW1/4 of the SE1/4 of the NE1/4. Therefore, the Division assumes, the correct description is Section 18: Portion of NE/1/4 of the NE1/4 and portion of NW1/4 of the SE1/4 of the NE1/4.

Page 1-9 reflects an updated acreage of 104.68 acres. Acreage associated with G-29 has been removed since that well pad was never built and the Waste Rock Site has increased to 28.2 acres. The acreage table on page 1-10 changed accordingly. Plate 1-1 and RA Plate 1-1 show disturbed acreage and permit area.

Deficiencies Details:

The amendment does not meet the State of Utah R645-301-121.120 and/or R645-301-141 requirements for providing a legal description that identifies the land (on a map) subject to coal mining (and reclamation).

Page 1-9 incorrectly describes the Waste Rock Storage Facility as Section 18: Portions of NE1/4, SW1/4 and SE1/4 of the NE1/4. According to the maps, the permit area is not located in the SW1/4 of the SE1/4 of the NE1/4. Therefore, the Division assumes, the correct description is Section 18: Portion of NE/1/4 of the NE1/4 and portion of NW1/4 of the SE1/4 of the NE1/4.

The Permittee must correct the legal description.

lreinhart

Environmental Resource Information

Historic and Archeological Resource Information

Analysis:

The amendment meets the State of Utah R645-301-411.140 requirements for cultural and historic resources information.

The amendment does not include changes to Section 411.140 on page 4-2. Cultural and historic literature and site evaluations of the area were performed by Senco-Phenix in 1998. A copy of the report is located in Attachment 4-1. The report provides a narrative that describes the nature of cultural and historic resources within the permit area. Two IPs (primary and secondary flakes and chunks) were located within the Waste Rock Site and both were recommended as Not Eligible for the National Register of Historic Places. Coordination with the State Historic Preservation Officer (SHPO) is evidenced by letter dated August 2, 2005 (Task ID 2156). The Refuse Pile Expansion (Waste Rock Site) will have a "no effect" on historic resources within or adjacent to the project area.

A map pursuant to R645-301-411.141 is provided in the confidential Attachment 4-1. There are no public parks or cemeteries within 100 feet of the permit area. Utah has approximately 169.3 miles of designated Wild and Scenic River, all of which are tributaries of the Virgin River in southwest Utah and outside the adjacent area. National System of Trails in Utah are inclusive of the Pony Express, California National Historic Trail, Mormon Pioneer Trail, and Old Spanish National Historic Trail. None of the trail systems are within the permit area.

lreinhart

Climatological Resource Information

Analysis:

The amendment meets the State of Utah R645 requirements for Climatological Resource Information Requirements.

The Permittee provides climatological information in two places within the approved Mining and Reclamation Plan (MRP). Climatological data is summarized in Appendix 4-1 of the main MRP as well as in RA Attachment 7-5, Climatological Information within the Refuse Pile Amendment MRP.

Twenty nine years of annual precipitation data (by month) for the refuse pile area are provided in Appendix 7-5. The data was obtained from the National Oceanographic Atmospheric Administration (NOAA) database.

Additionally, minimum and maximum temperature data is provided in Appendix 7-5 during a period of record from 1968 to 1995. Snow and sleet data is provided as well as degree days within Appendix 7-5 of the Refuse Pile Amendment.

schriste

Vegetation Resource Information

Analysis:

The amendment meets the State of Utah R645-301-321 requirements for vegetation resource information.

The amendment does not propose any changes to the Vegetation information located in Chapter 3 of the Refuse Pile Amendment, Section 321, pages 3-2 though 3-6. During May of 1998, the vegetation in the area designated for the refuse pile was surveyed by Patricia Johnston and George S. Cook and they determined it to be a Black sagebrush/galleta grass and Pinyon-Juniper, semi-desert shallow loam site. George S. Cook of the NRCS surveyed the conditions and production of the area; his finding is in Section 321.200. The report and survey for the area are included in RA Attachment 3-1. Vegetation communities adjacent to the refuse pile site are shown on RA Figure 3-1. Photographs of the Refuse Pile area prior to the 1998 gravel mining are included in RA Attachment 3-1.

lreinhart

Fish and Wildlife Resource Information

Analysis:

The amendment meets the State of Utah R645-301-322 requirements for fish and wildlife resource information.

The amendment does not include any changes to the Refuse Pile Amendment or Volume 1 of the MRP, Section 322, Fish and Wildlife Information. Fish and Wildlife Information is located in Chapter 3, Section 322, pages 3-10 through 3-24.

The Waste Rock Site is not within a Greater Sage-grouse Management Area and therefore additional consultation on this species did not occur with Utah Division of Wildlife.

RA Attachment 3-3 is a list of federally listed, threatened, and endangered and candidate species (TES). This list was compiled in June 2002. Pursuant to Section 7 of the Endangered Species Act, the Division conducted analysis of current TES (Consultation Code: 06E23000-2017-SLI-0197) and compared the 2017 list to the 2002 list and verified all current species have been previously evaluated. These species include: Mexican Spotted owl, Yellow-Billed Cuckoo, Bonytail chub, Colorado pikeminnow, Humpback chub, and Razorback sucker. Sensitive species include: White-tailed Prairie-dog, Ferruginous Hawk, Kit Fox, Burrowing Owl, and Northern Goshawk. All state sensitive species listed, with the exception of the Kit Fox were previously evaluated. The Waste Rock Site is not located within Critical, Substantial, or High Value habitat for Kit Fox. (http://dwrcdc.nr.utah.gov/rsgis2/Search/Map.asp?Id=583)

A letter from the UDWR referencing the lack of federally listed threatened or endangered fish or wildlife species is located in Attachment 3-2. Due to the disturbed condition of the land associated with the extraction of gravel, T&E plant species are not likely to exist within the permit area. The refuse pile site does not support habitat for bats or fish.

The Division determined that approval of this amendment would not affect a listed species or designated critical habitat and therefore did not initiate formal consultation with U.S. Fish and Wildlife Service.

Sections 333.300 and 358.500 of the MRP contain additional discussion pertaining to protective measures. CFC plans to enhance the site by restoring a disturbed gravel pit to natural rangeland.

lreinhart

Soils Resource Information

Analysis:

Analysis:
The application to expand the Dugout Waste Rock site meets the requirements of R645-301-220 Environmental Description

because the soil survey of the site was completed in 1999 by Dan Larsen and the results of the survey are shown on RA Attachment 2-1.

The application will expand the permit boundary in the NE1/4 Sec. 18 T. 14 S. R 12. E. by 1.4 acres. The refuse pile footprint will expand by approximately 4.5 acres (Division estimate) as follows. The expansion fills the triangular permit boundary by lengthening the pile along the West fence line by 400 linear feet and extending the pile to the SE approximately 480 feet. Sediment pond 2 will be built at the SE toe of the pile. West fenceline soils have been previously salvaged. (Topsoil storage pile #2 and subsoil storage pile #2 are stored along the West fenceline.)

Undisturbed soils will be encountered in a wedge shaped section of land SE of the current disturbed area. These soils were mapped by the NRCS Order III survey as Map Unit 49 Haverdad loam alkali,0-3% slopes. Map Unit 49 is a very deep, well drained alluvial soil derived from sandstone and shale. The 1988 Carbon County Soil survey states that Haverdad Loam, alkali, 0 - 3% slopes has a topsoil layer 7 inches deep and is strongly alkali below a depth of 17 inches.

Dan Larsen's Order I survey, further differentiates Map Unit J: undisturbed, shallow and moderately deep cobbly soils over shale, populated with pinyon trees; and Map Unit H: undisturbed, deep relatively non-gravelly soils dominated by big sagebrush. Soil samples taken at location DCW5 represents map unit J and location DCW10 represents map unit H. These soil sample locations are shown on Map SM-1 Soils Inventory Map in RA Attachment 2-1. The soil descriptions are provided in Appendix S1, RA Attachment 2-1.

Map Unit J is Strych family, loamy skeletal mixed calcareous, mesic Typic Haplocalcid. It's ground cover is 40% gravel - cobble -stone sized rock. The clay loam A horizon is 8 inches thick with near neutral pH. The Bk horizon (from 8 - 24 inches) is also a clay loam, but has less rock fragments and an accumulation of 26 % carbonates. The C horizon is a sandy clay loam which has similar rock fragments as noted on the A surface. The Division recommends that all of the A and B horizon be salvaged together for use as topsoil.

Map Unit H is Haverdad family, fine loamy, mixed (calcareous) mesic Typic Torrifluvents. It's ground cover is less than 5% rock fragments. The loam A horizon is 4 inches thick with neutral pH. The clay loam Bw horizon (4 - 13 inches) is noticeable by its change in color. The C1 sandy clay loam has 25% gravels and extends to 30 inches. The loamy C2 horizon has just slightly less clay, 10% gravels, 10% cobbles and extends to 102 inches below the surface. The Division recommends that the A and B horizon are salvaged together.

Photographs from the Division's site visit on March 16, 2017 establish the current condition and productivity of the undisturbed soil. Map Unit H has been heavily grazed leaving prickly pear and big sagebrush as the dominant species, along with a ground cover of weedy annuals.

pburton

Land Use Resource Information

Analysis:

The amendment meets the State of Utah R645-301-411 requirements for land use information.

The amendment modifies Figure 4-1 to update the expanded permit boundary.

The Refuse Pile Amendment Ch. 4, Section 410 on pages 4-1 and 4-2 pre-mining land-use is described as a gravel pit from 1998-1999. In preceding years the area was utilized as open range for livestock and wildlife habitat. Section 321.200 provides forage production per acre.

lreinhart

Alluvial Valley Floors

Analysis:

The amendment meets the State of Utah R645 requirements for Alluvial Valley Floor Determination.

The proposed increase to the Dugout Canyon Mine's refuse pile facility disturbed area is small (1.4 acres). Such a small increase in disturbed area acreage does not require that the Permittee revisit the Alluvial Valley Floor Determination information provided in Chapter 9 of the Refuse Pile Amendment.

Within Chapter 9 of the Refuse Pile amendment, the Permittee provides a discussion as to the previously approved investigation as to the presence or absence of an alluvial valley floor within or adjacent to the refuse pile site.

Figure 6-1, Area Geology depicts the surficial geology within and adjacent to the refuse pile site. Quaternary alluvium is present directly east of the permit boundary. However; the surface geology of the refuse site itself is dominated by Mancos Shale and pediment gravels. As such, the refuse pile's construction did not require the removal or disturbance of alluvial fill material.

Based on information provided in Section 411.130 of the main MRP, the nearest area of irrigated crop-land that could be considered for Alluvial Valley Floor determination is approximately 4 miles southwest of the Dugout Mine facility.

Additionally, based on soil test pits that were constructed in advance of the permitting and construction of the site, no water was encountered nor was evidence of mottling or other indications of high water tables that could be utilized by agricultural crops.

schriste

Hydro Baseline Information

Analysis:

The amendment meets the State of Utah R645 requirements for Baseline Information.

Beginning on page 7-3 of the Refuse Pile Amendment MRP (RA MRP), the Permittee provides ground and surface water information. The refuse pile area is located within the Dugout Creek watershed. Dugout Creek has been observed and characterized as intermittent in the area of the refuse pile site. Several small tributaries to Dugout Creek are located adjacent to the refuse pile site and are ephemeral in nature. Two baseline surface water monitoring points are located in the ephemeral drainage: one point located upstream of the refuse pile with the second point located downstream of the site at the county road crossing (SS-1 and SS-2). SS-1 and SS-2 have each produced measurable flows only four times in the period of record since monitoring at these sites began in 1998. The drainage is clearly an ephemeral in nature and responds to snowmelt and precipitation events when flow is observed.

Baseline ground water data was obtained from four monitoring wells located approximately 2 miles south of the Soldier Canyon Mine. Additionally, ground water data (quality and quantity) has been obtained quarterly since 2003. The ground water within the permit and adjacent area is a sodium-sulfate-chloride type with a depth to water ranging from 25 to 90 feet below the surface.

schriste

Hydro Baseline Cumulative Impact Area

Analysis:

The amendment meets the State of Utah R645 requirements for Baseline Cumulative Impact Area Information.

The refuse pile is located within the existing and approved cumulative impact area (See Plate 1 Cumulative Impact Area (CIA) Book Cliffs Area II CHIA). The Book Cliffs Area II Cumulative Hydrologic Impact Assessment (CHIA) presents and evaluates the potential cumulative impacts to hydrologic resources of the refuse pile and area coal mining operations. As such the site is located within the existing CIA boundary and discussed in the Book Cliffs Area II CHIA. A revision to the CHIA is not required with the proposed waste rock site expansion.

schriste

Probable Hydrologic Consequences Determination

Analysis:

The amendment meets the State of Utah R645 requirements for Probable Hydrologic Consequences (PHC) determination.

Beginning on page 7-5 of the RA MRP, the probable hydrologic consequences of the refuse pile site are discussed. The RA

MRP identifies contamination from acid- or toxic-forming materials, increased sediment yield from disturbed areas, increased total dissolved solids concentrations (TDS), impacts to ground and surface water availability, hydrocarbon contamination and contamination of ground and surface water from road salting activities.

Acid- or Toxic-forming Materials are discussed on page 7-6 of the RA MRP. Based on baseline data presented in Chapter 6 of the MRP, no acid- or toxic-forming materials have been identified in the soils or strata at the site. Additionally, the Permittee commits to sampling refuse materials generated by the mine in an effort to identify any potentially acid- or toxic-forming materials. In the event that such materials are identified, the Permittee commits to burying the material under a minimum of 4 feet of non-acid, non-toxic, non-combustible materials during final reclamation.

The potential for increased sediment yield from the disturbed area and impacts associated with acidity, total suspended solids and total dissolved solids going off-site are considered minimal. The storm water runoff system at the site employs a combination of diversions, sediment ponds, berms and straw bales to minimize the potential of increased off-site sediment yield. These sediment control measures have been designed per State of Utah R645 performance standards and are routinely inspected and maintained.

Potential impacts to ground and surface water availability are considered minimal. The primary reason being the relatively scant amount of hydrologic resources located within and adjacent to the refuse pile site (i.e. ground and surface water). An ephemeral drainage is located directly adjacent to the site; however, since monitoring of this drainage began in 1998, only 4 flow events have been sampled at the site. Additionally, the surficial Mancos Shale layer that dominates the surface at the site is relatively impermeable.

schriste

Maps Existing Structures and Facilities

Analysis:

The amendment meets the State of Utah R645 requirements for Existing Structures and Facilities Maps.

Plate 5-1, Dugout Refuse Pile Design Operational Plan Phase II provides a plan view of the refuse pile site including all elements of the storm water conveyance system, top soil and sub-soil pile locations etc.

schriste

Maps Monitoring and Sampling Locations

Analysis:

The amendment meets the State of Utah R645 requirements for Monitoring and Sampling Location Maps.

Plate 7-1A, Drainages, Sediment Control Structures and Sampling Locations Phase II depicts the locations of the three ground water monitoring sites (DH-1, DH-2 and DH-3) as well as the two surface water monitoring sites (SS-1 and SS-2).

schriste

Maps Vegetation Reference Area

Analysis:

The amendment meets the State of Utah R645-301-323 requirements for maps and aerial photographs.

Map and photographs of the permit area and adjacent area are provided on Plate 1-1 and RA Figure 3-1 shows the location of the reference area.

lreinhart

Operation Plan

Existing Structures

Analysis:

The application meets the the State of Utah R645 requirements for existing structures. There are no existing structures in the proposed expansion area.

wwestern

Air Pollution Control Plan

Analysis:

The amendment meets the State of Utah R645-301-422 requirements for air pollution control plan.

A description of the coordination and compliance efforts with the Utah Division of Air Quality is discussed in Section 422 page 4-12 and 4-13. A copy of the Approval Order (DAQE-AN0116340008-07, Project Code: N011634-0009) and supporting information can be found in Appendix 4-1.

lreinhart

Coal Recovery

Analysis:

Not applicable

wwestern

Subsidence Control Plan Renewable Resource

Analysis:

The amendment meets the State of Utah R645-301-332 requirements since there is no subsidence at the Waste Rock Site.

lreinhart

Subsidence Control Plan Renewable Resource

Analysis:

Not applicable

wwestern

Subsidence Control Plan Subsidence

Analysis:

Not applicable

wwestern

Subsidence Control Plan Performance STD

Analysis:

Not applicable

wwestern

Subsidence Control Plan Notification

Analysis:

Not applicable

wwestern

Subsidence Control Plan Slides and Other Damage

Analysis:

Not applicable

wwestern

Fish and Wildlife Protection and Enhancement Plan

Analysis:

The amendment meets the State of Utah R645-301-333 requirements to describe how using best technology currently available to minimize adverse impacts to fish and wildlife, including compliance with the Endangered Species Act.

A discussion of the location and operation of haul and access roads and support facilities to avoid or minimize impacts on fish and wildlife species is located in Section 333 on page 3-29 of Chapter 3 of the MRP. Protection measures that will be used during active mining include minimizing the total area of disturbance, design, construction, and operation of facilities to minimize biological impacts including barriers to wildlife movements, design and installation of electrical equipment to minimize electrocution hazards, establishment of stream buffer zones, control and monitoring of surface discharges and water quality, exclusion of wildlife from potentially hazardous areas, and reclamation of disturbed areas when they are no longer needed.

In addition, raptor surveys are conducted within a ½ mile buffer of active mining facilities. The amendment includes a raptor survey from 2015 in which the results of the Waste Rock Site are located on pages 7 & 8. No new nests were discovered.

lreinhart

Topsoil and Subsoil

Analysis:

Analysis:
The application does not meet the requirements of R645-301-230, Soil Operation Plan, because the estimated depth of recovery of topsoil and subsoil from Map Units J and H and the acreage of topsoil removal from each map unit is not described.

The application will expand the permit boundary by 1.4 acres. The refuse pile footprint will eventually expand by 4.3 acres (RA 2-2 redline version shows the increase in area covered goes from 548,552 sq. ft. to 736,810 sq. ft). The expansion fills the triangular permit boundary by lengthening the pile along the West fence line by 600 linear feet and extending the pile to the SE approximately 500 feet. To accomodate this expansion, the Division estimates that approximately 4 to 5 undisturbed acres will be stripped of topsoil and subsoil, mostly from Map Unit J (pinyon covered and cobbly soils). Sediment pond 2 will be mostly constructed in Map Unit H.

Topsoil and subsoil salvage will be accomplished with front end loaders and other wheel mounted equipment. (Section 242.100, p. 2-17)

The Phase II expansion storage locations and volumes are described on Chap. 2, p. 2-15. Three storage locations will hold a total of 11,610 CY. There will be 4,088CY placed in existing topsoil pile #1;and 4,436 CY topsoil will be placed in new stockpile #3, and 3,086 CY used in contemporaneous reclamation of the refuse pile.
Recovery of 11,610 CY from 4 to 5 acres requires a 1.6 ft. (19 inch) topsoil recovery depth. The Division recommends salvaging the A and B horizons together to provide additional topsoil resource for cover over the refuse pile. The A+B horizon extends 24 inches in Map Unit J. The A+B horizon extends 13 inches in Map Unit H.

The Phase II expansion is also estimated to produce 2,920 CY subsoil to be placed in subsoil stockpile #1 and 23,933 CY subsoil to be used contemporaneously (Chap 2, p. 2-15). The total volume of subsoil recovered is therefore 26,853 CY. Recovery of this volume from 4.5 acres requires a salvage depth of 3.7 ft. of subsoil. The RA Attachment 2-1 Table 3.41 (p. 9) outlines the estimated average salvage depth by map unit. Map unit J has an estimated salvage depth of 18 inches (perhaps limited by carbonate accumulation). Map H has an estimated salvage depth of 60 inches. To provide adequate cover over the refuse and eliminate the need for a borrow area, the total depth of salvage could be five feet or more (personal communication with Bill King, 4/3/2017). The Division recommends salvage and stockpiling of the A + B horizons combined. The Division also recommends salvage of the C horizon in construction zones for use in contemporaneous

reclamation and maintaining the remaining C horizon in situ. The in-situ storage would be seeded with an interim vegetative cover, to stabilize the soil and increase its value and productivity. Including a legume in the interim mix is ideal.

Subsoil pile #2 will be consumed in contemporaneous reclamation of an area of the refuse pile which is outlined on RA Map 2-2. Topsoil pile #3 will take its place. Topsoil pile #2 will remain.

Deficiencies Details:

The application does not meet the requirements of R645-301-231.100, Description of the Methods for removing topsoil. Prior to approval please provide the following information in accordance with

R645-301-231.100, Provide the estimated acreage of Map Units J and H to be disturbed and the depth of recovery of topsoil (A+ B horizons) and subsoil (C horizons) from each map unit (J & H). Describe plans for in-situ storage, if any: area to remain in situ, protection such as seeding and signing of the C horizon subsoil.

pburton

Vegetation

Analysis:

The amendment meets the State of Utah R645-301-331 requirements for protection of vegetation.

The amendment does not include any changes to the MRP Refuse Pile Amendment or Chapter 3. The Refuse Pile Amendment notes the refuse pile site was previously disturbed for the excavation of gravel. The gravel was mined by Nelson Construction and used in the construction of the Carbon County Dugout Canyon Road. Following the excavation work, the site was left in a disturbed condition. Section 341.200 describes the seed mixes to be used in final reclamation and interim reclamation. The interim seed mix will be planted to stabilize all areas not actively being utilized on the refuse pile site. The practice will continue until final reclamation grading begins.

lreinhart

Road Systems Classification

Analysis:

The application meets the State of Utah R645 requirements. The Operator will construct two additional temporary roads to access the sedimentation ponds. The roads will be reclaimed as part of reclamation.

wwestern

Road System Plans and Drawings

Analysis:

The amendment meets the State of Utah R645 requirements for Plans and Drawings relative to road systems.

In section 732.400 and 742.400 of the RA MRP, the Permittee discusses the road design and sediment control measures to be implemented at the refuse site. No permanent roads are contemplated with the refuse site. All of the roads are considered temporary and will be reclaimed. None of the roads are located within the channel of an intermittent or perennial stream or an ephemeral stream that drains a watershed larger than one square mile.

schriste

Road System Performance Standards

Analysis:

The application meets the State of Utah R645 requirements for road system and performance standards. The two temporary roads will meet the same standards that are in the approved plan.

wwestern

Road System Certification

Analysis:

The application meets the State of Utah R645 requirements for road system certification. The two temporary roads will be designed and constructed according to the approved mining and reclamation plan.

wwestern

Spoil Waste Coal Mine Waste

Analysis:

The application meets the State of Utah R645 requirements for spoil waste coal mine waste.

The waste rock site expansion is designed to minimize adverse effects of surface and ground water. Surface water from the slopes will be directed to drainages and which flow into sediment ponds.

The slopes will be 2H : 1V and have a safety factor of 1.8 or higher. The 2H : 1V slopes are gentile enough to ensure mass stability and prevent mass movement during and after construction. While the waste rock pile is near a County road the stability factor indicates that the expansion should not create a public hazard.

The material will be place and compacted to prevent combustion.

wwestern

Spoil Waste Refuse Piles

Analysis:

The proposed waste rock expansion will increase the disturbed area boundaries at the site from 26.8 acres to 28.2 acres. The engineer studies what were completed in the past are adequate to allow for the expansion. The maps and cross sections have been updated to show the expansion.

The waste rock site expansion is designed to minimize adverse effects of surface and ground water. Surface water from the slopes will be directed to drainages and which flow into sediment ponds.

The slopes will be 2H : 1V and have a safety factor of 1.8 or higher. The 2H : 1V slopes are gentile enough to ensure mass stability and prevent mass movement during and after construction. While the waste rock pile is near a County road the stability factor indicates that the expansion should not create a public hazard.

The material will be place and compacted to prevent combustion.

wwestern

Spoil Waste Refuse Piles

Analysis:

The amendment meets the Refuse Pile Requirements of the State of Utah R65 rules.

Chapter 5 of the RA MRP describes the construction of the refuse pile site. The refuse site is primarily designed as the storage area for the refuse generated from Canyon Fuel Company properties (i.e. Skyline, Dugout and Sufco).

The refuse pile site can be generally characterized as having minimal hydrologic resources (i.e. ground and surface water). An ephemeral drainage is located directly adjacent to the site; however, it has produced a measurable flow four times since 1998 (See DOGM Water Quality Database sites SS-1 and SS-2). Additionally, the potential for impacts to ground water resources is considered minimal due to the surficial geology of the site being dominated by Mancos Shale. The Mancos Shale has very low permeability and thus the potential for vertical migration of any leachate to the underlying ground water (approximately 35'- 90' below grade) is considered minimal.

schriste

Spoil Waste Impounding Structures

Analysis:

The amendment meets the State of Utah R645 requirements for Impounding Structures.

The embankments of the two impoundments at the refuse pile site are not constructed from coal waste material and will not be used to impound coal mine waste. The impoundment structures on the refuse site are designed for storm water runoff management and sediment control.

schriste

Hydrologic Ground Water Monitoring

Analysis:

The amendment meets the State of Utah R645 requirements for Ground Water Monitoring.

On page 7-9 of the RA Amendment, the Permittee provides the ground water monitoring plan for the site. There are three monitoring wells utilized for water monitoring purposes (DH-1, DH-2 and DH-3). Quarterly water levels are obtained from of them. Once a year (during the 4th quarter), water quality samples are obtained from DH-1. Annual water quality samples will be obtained from DH-1 until final bond release. The samples obtained from DH-1 are analyzed for the parameters listed in Table 7-24, Groundwater Monitoring Program. The parameters listed meet the requirements per R645-301-731.211.

schriste

Hydro Surface Water Monitoring

Analysis:

The amendment meets the State of Utah R645 requirements for Surface Water Monitoring.

Two surface water monitoring sites (SS-1 and SS-2) are located adjacent to the refuse pile site. The monitoring points are located within an ephemeral drainage to the west and south-west of the refuse pile site (one upstream of the pile with the second point located downstream). The sites are monitored per protocol 1 outlined in Table 7-5 of the Surface Water Monitoring Program within the main MRP. The parameters outlined in protocol 1 meet the requirements of R645-301-731.220.

schriste

Hydrologic Acid and Toxic forming Materials

Analysis:

The amendment meets the State of Utah R645 requirements for Acid- and Toxic-Forming Materials.

On page 7-10 of the RA MRP, the Permittee discusses acid- or toxic forming materials. The Permittee provides a commitment to monitor/sample the materials placed on the refuse pile and analyze them for acid- or toxic-forming materials. In the event that such materials are identified, the Permittee commits to placing it under a minimum of 4 feet of non-acidic, non-toxic, non-combustible materials. Results from samples collected are provided in Attachment 5-4 of the RA MRP and within Appendix 5-7 of the approved MRP.

schriste

Hydrologic Water Quality Standards

Analysis:

The amendment meets the State of Utah R645 requirements for Water Quality Standards and Effluent Limitations.

Appendix 7-6 of the RA MRP provides a copy of the most current Utah Pollutant Discharge Elimination System (UPDES) permit. UPDES Permit No. UT0025593 was issued by the Utah Division of Water Quality on August 26th, 2015 and became effective on September 1st, 2015. The UPDES permit will expire on August 31st, 2020.

The Permittee has added an outfall to the UPDES Permit (Outfall 007). Outfall 007 is identified in the recently revised UPDES permit as the outfall for the proposed sediment pond to be constructed with the waste rock expansion (sediment pond 2).

schriste

Hydrologic Diversion General

Analysis:

The amendment does not meet the State of Utah R645 requirements for Diversions: General.

RA Attachment 7-7, Dugout Canyon Mine Refuse Pile Phase II Hydrology Design Report provides the detailed design information for the runoff and sediment control measures to be constructed and implemented at the refuse pile site. In designing the various conveyance structures, the Permittee utilized HydroCAD 10.0. The HydroCAD modeling report is provided in Attachment 7-7. Chapter 3 of RA Attachment 7-7 discusses how the curve number (CN) values were obtained from Natural Resources Conservation Service (NRCS) data. The NRCS identifies the majority of the native soil types on site as being within Hydrologic Soil Group B. The Permittee made the assumption in their calculations that the site will not have vegetation in developed areas. Non-pond disturbed areas were assumed to have a CN value of 86 and the pond areas a CN value of 98. These CN values are very conservative. A conservative CN value of 71 was assumed for undeveloped and reclaimed areas where Pinyon and Juniper will be located. The subsoil and topsoil stockpiles are to be revegetated with native grass and were assumed to be of poor vegetative cover. The Permittee utilized a CN value of 67 for these areas; again, a conservative value.

Plate 7-2A, Operational and Reclamation Storm Water Conveyance Details Phase II provides cross-sectional views of the various diversions (i.e. ditches and berms). Table 6 of Attachment 7-7 provides detailed design information for the various diversions to be implemented and constructed at the refuse site (i.e. design storm event, maximum depth, freeboard, maximum velocity and rock size). Table 7 of Attachment 7-7 provides the same design information in Table 6 relative to the reclamation phase for the site.

RA Table 7-3, Diversion Design Summary provides the detailed design information for the diversions to be constructed at the refuse pile site. Upon review of the Table 7-3 as well as the design calculations and modeling provided, the Permittee has utilized the incorrect design storm event for the operational diversions. A 10-year, 6-hour event was utilized for the temporary diversions (i.e. the diversions that will be reclaimed post-mining activity). Per the requirements outlined in R645-301-746.212, a 100-year, 6-hour precipitation event is to be utilized in designing diversion channels that receive runoff from areas above a refuse pile and runoff from the surface of the refuse pile itself. The Permittee must revise the design calculations and subsequent sizing of diversions by utilizing a 100-year, 6-hour event. The performance standard for refuse pile diversions requires the use of a more robust precipitation event for design purposes (i.e. a 100-year, 6-hour event versus a 10-year, 6-hour event).

Diversion culverts are discussed on page 7-14 of the RA MRP. The proposed expansion calls for the construction of undisturbed culvert UC-3. UC-3 will convey runoff from the undisturbed area east of the refuse pile and from UC-1 under the access road to Sediment Pond 2. Additionally, the Permitee provides the design information for undisturbed culvert UC-3 in Attachment 7-7. However, it appears that a detailed design drawing for culvert UC-3 (i.e. a cross-sectional view and inlet/outlet detail) were not provided. Per R645-301-731, -740 and -742.300, the Permittee must provide the detailed design drawings for how culvert UC-3 will be constructed and installed (i.e. cross-sectional view and inlet/outlet details). Additionally, an as-built for undisturbed culvert UC-1 must be provided for inclusion into the MRP.

On page 7-13 of Attachment 7-7, the Permittee provides a narrative of the storm water routing to be utilized at the site. At the bottom of page 7-13, the Permittee discusses diversion swales DS-1 and DS-2. A statement is made about DS-1 that upon review of Plate 7-1A, requires clarification. The Permittee must clarify the first sentence on page 7-13 of Attachment 7-7 under Diversion Swales. It indicates that disturbed swale DS-1 will convey runoff from DD-1 to DD-6 over the Upper Haul Road. However, upon review of Plate 7-1A, it's unclear as to how this would occur. DS-1 appears to convey runoff from DD-6 to DD-8. Please clarify.

Deficiencies Details:

The amendment does not meet the State of Utah R645 requirements for Diversions: General. The following deficiencies

must be addressed prior to final approval:

R645-301-731, -740 and -742.300: The Permittee must provide the detailed design drawings for how culvert UC-3 will be constructed and installed (i.e. cross-sectional view and inlet/outlet details). Additionally, an as-built for undisturbed culvert UC-1 must be provided for inclusion into the MRP.

R645-301-746.212: The Permittee must revise the design calculations and subsequent sizing of diversions by utilizing a 100-year, 6-hour event. The performance standard for refuse pile diversions requires the use of a more robust precipitation event for design purposes (i.e. a 100-year, 6-hour event versus a 10-year, 6-hour event).

R645-301-732.300, -742.300: The Permittee must clarify the first sentence on page 7-13 of Attachment 7-7 under Diversion Swales. It indicates that disturbed swale DS-1 will convey runoff from DD-1 to DD-6 over the Upper Haul Road. However, upon review of Plate 7-1A, it's unclear as to how this would occur. DS-1 appears to convey runoff from DD-6 to DD-8. Please clarify.

schriste

Hydrologic Diversion Perennial and Intermitten

Analysis:

The amendment meets the State of Utah R645 requirements for Diversions: Perennial and Intermittent Streams.

The refuse pile site is not located within or adjacent to a perennial or intermittent stream drainage. As a result, this portion of the rules does not apply. The performance standards established for diversions associated with refuse piles apply in in this case.

schriste

Hydrologic Diversion Misc. Flows

Analysis:

The amendment meets the State of Utah R645 requirements for Diversions: Miscellaneous flows.

Although the flow diversions within the refuse pile site could be characterized as miscellaneous flows, as the site is a refuse pile, the required design standards for such diversions are outlined in R645-301-746.212.

schriste

Hydrologic Stream Buffer Zones

Analysis:

The amendment meets the State of Utah R645 requirements for Stream Buffer Zones.

The proposed expansion and the site itself are not located within 100' of a perennial or intermittent stream.

schriste

Hydrologic Sediment Control Measures

Analysis:

The amendment meets the State of Utah R645 requirements for sediment control measures.

The Permittee proposes the utilization of a variety of sediment control measures to prevent, to the extent possible, additional contributions of sediment to stream flow or to runoff outside the permit area.

A series of diversions (berms, ditches and swales) have been designed to route storm water flow to two primary sediment ponds (Sediment Pond 1 and Sediment Pond 2- See Plate 7-1A). With proper construction, maintenance and inspection, the sediment control measures will effectively route any suspended solids to one of the two primary sediment ponds. Rip rap details have been provided for the spillway designs of both primary sediment ponds and for diversion ditches to be constructed in more erodible material. Additionally, a terrace will be constructed in the final configuration of the refuse pile on the southern and south-eastern portion of the pile to help reduce overland flow velocities.

The Division finds that the proposed sediment control measures represent the best technology currently available.

schriste

Hydrologic Siltation Sedimentation

Analysis:

The amendment meets the State of Utah R645 requirements for Siltation Structures: Sedimentation Ponds.

The Permittee proposes the construction of a second sediment pond (Sediment Pond 2) with the refuse site expansion. The detailed design information for Sediment Pond 2 is provided in Attachment 7-7 of Chapter 7. Tables 1-4 in Attachment 7-7 provide the stage capacities of the two sediment ponds (i.e. Sediment Pond 1 and Sediment Pond 2). Table 5 provides the overflow structure details for the Sediment Pond 1 and Sediment Pond 2 spillways.

A narrative describing the design considerations for Sediment Pond 2 is provided in Section 742. Sediment removal from both sedimentation ponds (1 and 2) will occur when the sediment level reaches the 60% clean-out elevation. As with Sediment Pond 1, Sediment Pond 2 has been designed as a total containment structure. Sediment Pond 2 has been designed to fully contain the resulting runoff from a 100-year, 24-hour precipitation event as opposed to a 10-year, 24-hour event. As a result, additional storage volume is achieved. As Sediment Pond 2 is a total containment pond, no decant structures have been incorporated in its design. If water is to be removed, it would be pumped in compliance with the aforementioned UPDES permit.

Plate 7-3A, Operational Sedimentation Pond Details Phase II provides the design drawings (i.e. plan view, cross-sectional view of Sediment Pond 2. In addition, Plate 7-3A provides a cross-sectional view of the single-channel spillway to be constructed with a call-out for the 4" riprap detail.

As the pond is designed for total containment, short circuiting is of minimal concern. The MSHA requirements defined in 30 CFR 77.216 do not apply to either of the sediment ponds at the refuse pile site as they will not impound water or sediment to an elevation of 20 feet or more above the upstream toe of the structures. The runoff volume reporting to Sediment Pond 2 generated from a 100-year, 24-hour storm event was calculated as 56,900 cubic feet (1.3 acre feet). The annual sediment yield contribution to Sediment Pond 2 was calculated to be 26,900 cubic feet (0.679 acre feet). The crest elevation of the spillway for Sediment Pond 2 corresponds to a holding capacity of 2.27 acre feet.

schriste

Hydrologic Siltation Treatment

Analysis:

The amendment does not meet the State of Utah R645 requirements for Siltation Structures: Other Treatment Facilities.

On page 5, 6, 7 Attachment 7-7 describes two sediment basins (SB-1 and SB-2 respectively). The sediment basins are located directly adjacent to the topsoil and sub-soil stockpiles. The sediment basins have been designed to treat the 10-year, 24-hour event per the requirements of R645-301-742.231.

However; the sediment basins are not depicted on any of the surface facility maps (namely Plate 5-1 and Plate 7-1A). The Permittee must revise Plates 5-1 and 7-1A to depict the locations of sediment basins SB-1 and SB-2.

Deficiencies Details:

The amendment does not meet the State of Utah R645 requirements for Siltation Structures: Other Treatment Facilities. The following deficiency must be addressed prior to final approval:

R645-301-731, -740 and -742.231: The Permittee must revise Plates 5-1 and 7-1A to depict the locations of sediment basins SB-1 and SB-2.

schriste

Hydrologic Discharge Structures

Analysis:

The amendment meets the State of Utah R645 requirements for discharge structures.

On page 7-20 of Chapter 7 of the RA MRP as well as in Attachment 7-7, the Permittee provides the design considerations and supporting calculations for the discharge structure of Sediment Pond 2. Per R645-301-743.131, the Division may approve a single-open channel spillway that is of non-erodible construction and designed to carry sustained flows. The Permittee has designed a single open channel spillway that has been designed with a median riprap diameter of 4 inches. The riprap will be underlain with a geo-fabric liner. Plate 7-3A, Operational Sedimentation Pond Details Phase II provides the design drawings (i.e. plan view, cross-sectional view of Sediment Pond 2. In addition, Plate 7-3A provides a cross-sectional view of the single-channel spillway to be constructed with a call-out for the 4" riprap detail.

A 25-year, 6-hour precipitation event was utilized in the design of the single open channel spillway as required per R645-301-743.300.

schriste

Maps Affected Area

Analysis:

The application meets the State of Utah R645 requirements for Affected Area maps.

Plate 7-1A, Drainages, Sediment Control Structures and Sampling Locations Phase II depicts the various drainage control measures and sediment control structures that will be used operationally.

Plate 7-2A, Operational and Reclamation Storm Water Conveyance Details Phase II provides cross-sectional views of the diversion ditches and berms to be utilized for storm water routing at the refuse pile site.

Plate 7-3A, Operational Sedimentation Pond Details Phase II provides plan and cross-sectional views of the two sediment ponds to be utilized at the refuse pile site (Sediment Pond 1 and Sediment Pond 2). Additionally, Plate 7-3A provides the spillway/outlet details for both sediment ponds.

Plate 7-4A, Operational Watersheds Phase II depicts the delineated watersheds during the operational phase of the refuse pile.

Plate 7-5A, Reclamation Watersheds Phase II depicts the final topography of reclaimed watersheds at the refuse pile site.

schriste

Maps Facilities

Analysis:

The amendment does not meet the State of Utah R645 requirements for Mining Facilities Maps.

Plate 5-1, Dugout Refuse Pile Design Operational Plan, Phase II depicts the operational configuration of the refuse pile site in addition to providing topographic contours. Upon review of Plate 5-1, it appears that some drainage conveyance structures are not depicted or not depicted in their entirety.

The Permittee must revise Plate 5-1 to depict the full extent of undisturbed ditch UD-1. The Permittee must revise accordingly.

Plate 7-1A, Drainages, Sediment Control Structures and Sampling Locations, Phase II provides a detailed plan view drawing of the hydrologic features (monitoring locations, diversions, sediment control measures etc.) for the refuse pile site. Upon review of Plate 7-1A, there are some clarifications that must be addressed. The Permittee must provide the following revisions and/or clarification to Plate 7-1A:

1) Revise the depiction of undisturbed ditch and disturbed ditch so that they are different from one another. The map and legend calls out both the undisturbed and disturbed ditches as a light blue, hatched line. For clarification, they must be depicted differently.
2) The depiction of ditches must be consistent. The legend shows ditches as light blue, hatched line. However; in some instances (e.g. DD-11 and UD-1) ditches are depicted as a solid blue line which is not identified in the legend of Plate 7-1A.
3) It appears that disturbed drainage ditch DD-6 is not depicted on Plate 7-1A. Please revise accordingly.

Deficiencies Details:

The amendment does not meet the State of Utah R645 requirements for Mining Facilities Maps. The following deficiencies must be addressed prior to final approval:

R645-301-731: The Permittee must revise Plate 5-1 to depict the full extent of undisturbed ditch UD-1.

R645-301-731: The Permittee must provide the following revisions and/or clarification to Plate 7-1A:

1) Revise the depiction of undisturbed ditches and disturbed ditches so that they are different from one another. The map and legend calls out both the undisturbed and disturbed ditches as a light blue/ hatched line. For clarification, they must be depicted differently.

2) The depiction of ditches must be consistent. The legend shows ditches as light blue, hatched line. However; in some instances (e.g. DD-11 and UD-1) ditches are depicted as a solid blue line which is not identified in the legend of Plate 7-1A.

3) Disturbed ditch DD-3 is depicted in two locations on Plate 7-1A. In one instance, it's on the west side of the refuse pile. In another, DD-3 is called out on top of the refuse pile just south of the inlet of DD-10. The Permittee must revise this discrepancy.

schriste

Maps Monitoring and Sampling Locations

Analysis:

The amendment meets the State of Utah R645 requirements for Monitoring and Sampling Location Maps.

Plate 7-1A, Drainages, Sediment Control Structures and Sampling Locations Phase II depicts the locations of the 5 hydrologic monitoring locations within and adjacent to the refuse pile site (surface water monitoring sites SS-1 and SS-2 and ground water monitoring sites DH-1, DH-2 and DH-3).

schriste

Reclamation Plan

General Requirements

Analysis:

The application meets the State of Utah R645-541 requirements for General Reclamation. There is an approved reclamation plan for the Waste Rock Site. The expansion of the site from 26.8 acres to 28.2 acres does not alter the general reclamation plan. The expansion will allow the capacity of the site to increase from 1,081,162 tons to 1,949,887 tons (additional capacity 868,725 tons).

wwestern

PostMining Land Use

Analysis:

The amendment meets the State of Utah R645-301-412 requirements for postmining land use.

The amendment does not make any changes to the Refuse Pile Amendment Ch. 4.

The description of the PMLU is located in Sections 412 and 412 on pages 4-3 and 4-5. The proposed use is wildlife habitat and livestock grazing. The plan explains how the proposed postmining land use is to be achieved and the necessary support activities which may be needed to achieve the proposed land use; The PMLU is consistent with surface owner plans and applicable Utah and local land-use plans and programs. The post-mining roads are discussed in Section 542.600.

lreinhart

WildLife Protection

Analysis:

The amendment meets the State of Utah R645-301-342 requirements for a fish and wildlife plan for the reclamation and postmining phase of operation.

Enhancement measures are identified in Section 342 on pages 3-46 and 3-47 and include revegetation to sustain and improve wildlife habitat following the termination of mining operations. Habitats will be restored and enhanced beyond their pre-mining conditions since the pre-mining condition was a gravel pit.

The plant species provided in the final reclamation seed mix identified on page 3-9 of the Refuse Amendment includes plant species that provide nutritional value and cover for wildlife.

The proposed operation will not affect the continued existence of endangered or threatened species or result in the destruction or adverse modification of their critical habitats, as determined under the Endangered Species Act.

lreinhart

Approximate Original Contour Restoration

Analysis:

The application meets the State of Utah R45 requirements for Approximate Original Contours. The waste rock site will be reclaimed so that the slope will be similar to those in the surrounding areas. The drainage will be restored so that it blends into the surrounding drainage patters.

wwestern

Backfill and Grading General

Analysis:

The application meets the State of Utah R645 requirements for general back filling and grading. The expansion will result in a second sediment pond that will drain the eastern portion of the waste rock pile. At reclamation, the Sediment Pond 2 will be reclaimed and the natural drainages altered so that surface flow will be around the pile.

The slopes achieves a postmining slope that does not exceed either the angle of repose or such lesser slope as is necessary to achieve a minimum long term static safety factor of 1.8 which exceed the minimum requirement of 1.3.

The slopes will minimize the potential for slides by exceeding the minimum safety factor of 1.3. The final surface will be pocked and/or matting will be used to control erosion.

wwestern

Backfill and Grading Previously Mined

Analysis:

Features not present on site.

wwestern

Backfill and Grading on Steep Slopes

Analysis:

Steep slopes are not present on the site.

wwestern

Mine Openings

Analysis:

No mine openings at the site.

wwestern

Topsoil and Subsoil

Analysis:

Analysis:
The application does not meet the requirements of R645-301-240, Reclamation Plan, because the total subsoil volume should include 2,753 CY of subsoil in subsoil pile #2.

The final height of the refuse pile will be 5,996 ft. The slopes will be graded to a maximum of 2h:1v. A ten foot wide terrace will be graded into the pile slope at 5,925 ft. to divde the outslope into two runs of 65-70 ft. (Chap 2., p. 2-17 and RA Plate 5-1).

RA Attachment 2-2 provides the total refuse pile surface area adjusted for slope to be 792,473 sq ft (18.19 acres). The soil cover plan remains unchanged. It is to mix 1 foot of subsoil with the surface foot of waste to avoid an abrupt change in texture; to lay 2.6 additional feet of subsoil over the mixed subsoil/refuse; and to cover the subsoil with 0.4 feet of topsoil. The volume required to achieve four feet of cover is 117,403 CY (Chapter 2, Sec. 242.100, p. 2-14). The volume of imported subsoil required under the described reclamation scenario is 46,515 CY. A borrow area was designated to the South of the Waste Rock site to recover this extra material (RA Attachment 2-3).

Contemporaneous reclamation of 4.5 acres on the refuse pile will be accomplished with use of subsoil pile #2 and live haul of subsoil and topsoil from the expansion, shown on RA Plate 2-2. Within the 4.5 acres, a 0.15 acre test plot, on the NE facing outslope, will demonstrate the success of using only two feet of cover over the waste, in accordance with R645-301-553.252. The waste has been routinely sampled (1 sample/5,000 CY) for acid/toxic parameters (Chap 5, p. 5-18, refer to annual reports for laboratory analysis). Waste samples analyzed for the past several years have been sand to loamy sand in texture, slightly alkaline and saline, but do not have boron or selenium toxicity and are not acid forming. Pyritic sulfur is the dominant form of sulfur in all samples, but there is adequate neutralization potential in the form of calcium carbonate to neutralize any acid formation. The samples were lacking sufficient amounts of the macronutrients: nitrogen and phosphorus and potassium for plant growth. If the waste in the contemporaneous test plot has similar characteristics, it will need adequate supplementation for vegetation growth.

The contemporaneous topsoil and subsoil volumes are 3,086 CY and 23,933 CY, respectively (p. 2-15). In addition, existing subsoil pile #2 which holds 2,753 CY will also be consumed in the contemporaneous reclamation. That brings the Total available subsoil volume listed on p. 2-15 to 38,817 CY. Adding in this extra 2,753 CY changes the total required imported volume to 43,762 and all calculations given in RA Attachment 2-2 and on p. 2-15 and 2-16.

Refuse will be ripped prior to subsoil application (Section 341.200, p. 3-10). To avoid compaction, soil will be spread using track mounted equipment (Section 241.100). Soil samples will be collected for analysis of soil nutrients. Plans for sampling stockpiled soil materials for soil nutrients at the time of use have not changed (RA Chap 2, Section 243). One ton/acre weed free hay will be incorporated into the surface soils (on the contour) along with soil nutrients (if required, based on testing). Seed will be either broadcast or hydroseeded. Warm season grasses will be hydroseeded. Cold season grasses will be broadcast in the late Fall (Section 341.200). Hydroseeding of warm season grasses will be followed by hydromulch application at 2,000 lbs/ac and tackifier. The final reclamation seed mix is provided in Section 341.200, p. 3-9. Excelsior blanket will be used on the outslopes of the pile (Section 242.100, Erosion).

Deficiencies Details:

The application does not meet the requirements of R645-301-240, Reclamation Plan. Please provide the following in accordance with
R645-301-121.200, Include the 2,753 CY of subsoil pile #2 in the total subsoil reclamation volume provided on pages 2-15 and 2-16 and in RA Attachment 2-2.

pburton

Road System Reclamation

Analysis:

The application meets the State of Utah R645 requirements for road reclamation. At time of reclamation all temporary access roads will be reclaimed in accordance with the approved plan.

wwestern

Hydrological Information Reclamation Plan

Analysis:

The amendment meets the State of Utah R645 requirements for Hydrologic Reclamation Plan.

The Permittee discusses the hydrologic reclamation plan in section 540 of Chapter 5 of the RA MRP as well as on page 9 of Attachment 7-7. Plate 5-2, Dugout Refuse Pile Design Reclamation Plan Phase II depicts the final surface topography and permanent drainage components that will be retained post final reclamation. Plate 7-5A, RA Table 7-3, Diversion Design Summary provides a list of the permanent diversions to be retained following final reclamation. Plate 7-5A, Reclamation Watersheds, Phase II depicts the reclaimed watersheds and drainage patterns that will be established following final reclamation. A timetable for completion of each step of the reclamation plan is presented in RA Figure 5-1.

Per the requirements of R645-301-742.323, the Permittee has utilized a 100-year, 6-hour precipitation event for the design of all permanent diversions. The permanent diversions to be retained are berms RB-1, RB-2, RB-3, RB-4, RB-5, RB-6, diversion ditches RD-1, RD-2, RD-3, RD-4, RD-5, RD-6, RD-7, RD-8 and swale RS-1. A 10' wide terrace will be constructed on the southern slope of the refuse pile at approximately 5,925 feet in elevation. The terrace will work to slow overland flow velocities and in turn serve to provide slope stabilization while vegetation is established on the site. The terrace will be tied into the permanent diversions to allow for controlled flow off the pile during the bond liability period.

The two sediment ponds (Sediment Pond 1 and Sediment Pond 2) will be reclaimed following the termination of activity at the refuse pile site. On page 7-12 of Chapter 7 of the RA MRP, the Permittee states that the sedimentation ponds will be maintained until removal in accordance with the reclamation plan. The emergency spillway for Sedimentation Pond 1 will be extended up-gradient to create permanent diversion RD-4. The emergency spillway for Sedimentation Pond 2 will be removed.

Natural drainage patterns for the area will be restored by removing the sediment ponds and temporary diversions. As the refuse site is located between two ephemeral drainages, the impact to natural drainage patterns is not considered significant. The reclamation of the site will establish natural, pre-mining activity drainage patterns.

Section 765 of Chapter 7 of the RA MRP indicates that when no longer required for monitoring of water levels and potential adverse impacts, the monitoring wells located on site will be capped, sealed and backfilled.

schriste

Contemporaneous Reclamation General

Analysis:

The amendment meets the State of Utah R645-301-352 requirements for contemporaneous reclamation.

Contemporaneous reclamation will commence on the northeastern portion of the refuse pile and proceed to the south until final reclamation is achieved. See section 242.100 for more details.

lreinhart

Revegetation General Requirements

Analysis:

The amendment meets the State of Utah R645-301-341 requirements for a revegetation plan.

The amendment does not make any changes to the existing approved reclamation plan. The reclamation plan for final revegetation is located in the Refuse Pile Amendment, Section 340 on pages 3-8 through 3-11 and Section 340 of Ch.3 pages 3-33 through 3-46. The plan describes how all lands disturbed by mining and operations (except water areas and surface of roads approved as part of the postmining land use) comply with the biological protection performance standards. The plan includes a detailed schedule and timetable for each major step (Section 242.100 of MRP and pages 3-10 and

3-11), seed mix (page 3-9), planting methods and mulching (page 3-11).

The amendment meets the State of Utah R645-301-353 requirements for vegetative cover.

The revegetation plan is described in Section 353 on page 3-13. All areas disturbed will be regraded and seeded with the seedmix on page 3-9. This seedmix should result in vegetative cover that is diverse, effective, and permanent comprised of native species and compatible with wildlife and livestock.

lreinhart

Revegetation Standards for Success

Analysis:

The amendment does not meet the State of Utah R645-301-356 requirements for revegetation standards for success.

Measures proposed to determine success of revegetation are identified on pages 3-15 and 3-16 of the Refuse Amendment. The success of the reclaimed area will be compared with the approved reference area (RA Figure 3-1). As shown on the top of page 3-16, both the Waste Rock Site and Reference area are sagebrush/grass vegetation communities. The text in the 2nd paragraph states "No reference area has been designated for the Pinyon-Juniper site." Figure 3-1 is located on page 3-22 and shows the location of the reference areas in NW1/4NE1/4 Section 8. On the contrary, plate 3-1E shows the reference area as a Pinyon/Juniper/Sagebrush area. Plate 3-1E must be reconciled.

The designated post-mining land use is wildlife habitat and livestock grazing and therefore, production, cover, and shrub density shall be used to determine revegetation success. Refer to Section 411 of the approved MRP for additional information. Page 3-54 of the MRP states, "The success of revegetation for fish and wildlife habitat will be determined on the basis of tree and shrub stocking and vegetative ground cover. Minimum stocking and planting arrangements will be those approved by the Division on the basis of local and regional conditions. Cover success will not be less than that required to achieve the approved postmining land use.

R645-301-356.231 requires minimum stocking and planting arrangements to be specified by the Division on the basis of local and regional conditions and after consultation with and approval by Utah agencies responsible for the administration of forestry and wildlife programs. Consultation and approval will be on a permit specific basis and will be performed in accordance with the "Vegetation Information Guidelines" of the division. The Permittee must commit to determine minimum stocking and planting arrangements in accordance with said regulation prior to reclamation and revegetation of the Waste Rock Site.

Deficiencies Details:

The amendment does not meet the State of Utah R645-301-356.231 requirements for revegetation standards for success. The Permittee must commit to determine minimum stocking and planting arrangements in accordance with regulations prior to reclamation and revegetation of the Waste Rock Site (MRP page 3-54). The Permittee must reconcile the vegetation community of the reference area located on Page 3-1E. (Pinyon-Juniper vs. Sagebrush)

lreinhart

Stabilization of Surface Areas

Analysis:

Analysis:
The application meets the requirements for soil stabilization, R645-301-244.

Section 331 states that the interim seed mix will be planted to stabilize all areas not actively being utilized on the refuse pile site.

During final reclamation, the refuse pile will be graded to final contours and then ripped to a depth of two feet. Cover soils will be applied and the surface foot will be ripped into the waste rock (RA Attach. 2-2). The cover soil will be left rough (pocked and gouged on the flatter slopes). One ton/acre noxious weed free hay will be incorporated into the surface soils, followed by seeding and hydromulch at 2,000 lbs/ac (Chap 3, Section 341.200). Excelsior blanket will be used on the 2h:1v outslopes of the reclaimed pile (Section 242.100, Erosion).

pburton

Maps Bonded Area

Analysis:

The acreage table and the bonded area maps have been updated to show the expansion of the waste rock site.

wwestern

Maps Reclamation BackFilling and Grading

Analysis:

The application meets the minimum requirements of the State of Utah R645 requirements for providing maps for backfilling and grading. RA Plate 5-2 shows the configuration of the waste rock site at time of final reclamation. The map was adequate to review the engineering aspects of the reclamation plan.

Cross sections for the reclaimed site are on maps RA Plate 5-1A and RA Plate 5-1B. The cross sections were adequate to evaluate the backfilling and grading requirements.

wwestern

Maps Reclamation Final Surface Configuration

Analysis:

The application meets the minimum requirements the State of Utah R645 requirements for final surface configuration maps. Map RA Plate 5-2 shows the final surface configurations. The map was used by the Division to evaluate the reclamation plan.

wwestern

Bonding Determination of Amount

Analysis:

wwestern

Bonding Determination of Amount

Analysis:

The application for bonding is deficient and does not meet the State of Utah R645 requirements for Mining Operations and Facilities. The following deficiency must be addressed prior to final approval

The permittee submitted all the changes for bonding for the Dugout, Waste Rock Site Phase II Expansion Task #5368 except there was a small error in the calculation for hay tonnage in the re-vegetation bond sheets. Page 3 of 25. I talked to Bill and he sent me the correction.

Deficiencies Details:

The application for bonding is deficient and does not meet the State of Utah R645 requirements for Mining Operations and Facilities. The following deficiency must be addressed prior to final approval

The Permittee need to correct the error in the hay tonnage calculation on page 3 of 25 in the vegetation bond sheets. The 15.6 tons of hay per acre was suppose to change but didn't with the add acreage. The correct hay tonnage is 21.9 ton.

bwiser

CHIA

CHIA

Analysis:

The amendment meets the State of Utah R645 requirements for Cumulative Hydrologic Impact Assessment (CHIA)

The refuse pile is located within the existing and approved cumulative impact area (See Plate 1 Cumulative Impact Area (CIA) Book Cliffs Area II CHIA). The Book Cliffs Area II Cumulative Hydrologic Impact Assessment (CHIA) presents and evaluates the potential cumulative impacts to hydrologic resources of the refuse pile and area coal mining operations. As such the site is located within the existing CIA boundary and discussed in the Book Cliffs Area II CHIA, a revision to the CHIA is not required with the proposed waste rock site expansion.

schriste