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August 11, 2020

Karin Madsen, Resident Agent
Genwal Resources, Inc.
P.O. Box 910
East Carbon, Utah 84520-0910

Subject: Application Review and Deficiencies, Final Reclamation Plan, Genwal Resources, Inc., Crandall Canyon Mine, C/015/0032, Task #6142

Dear Ms. Madsen:

The Division has reviewed your application. A copy of our Technical Analysis and Findings is enclosed. The Division has identified deficiencies in addressing the Utah Coal Mining Rules. The deficiencies are listed and will need to be addressed before further processing can occur. The initials of the deficiency's author are provided so that your staff can communicate directly with that individual should questions arise.

As you're aware, Division Order DO-19B was issued by the Division on February 4th of 2019. Approximately a year and a half has elapsed since that time and we have conducted three technical review iterations with the completion of this round. Although progress has been made, there are still basic deficiencies that were identified during the first round of review that remain outstanding. Going forward, I would strongly recommend that we conduct bi-weekly conference calls with our respective staffs in order to ensure the approval of the next submission.

Please revise the application accordingly in order for us to complete the processing of your permit change by no later than October 10, 2020. Thank you for your help during this process. If you have any questions, please call me at (385) 290-9937.

Sincerely,

Steve Christensen
Coal Program Manager

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Technical Analysis and Findings

Utah Coal Regulatory Program

PID: C0150032
TaskID: 6142
Mine Name: CRANDALL CANYON MINE
Title: FINAL RECLAMATION PLAN, DO-19B

General Contents

Right of Entry

Analysis:

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

The Permittee has provided copy of a new Special Use Permit (SUP) from the Manti La-Sal U.S. Forest Service (USFS) that covers the length of the proposed mine-water pipeline that would transport raw mine-water from the mine portals to a discharge point along Huntington Creek.

The SUP provided as Appendix 1-19 has not been signed by either a company representative or the USFS. This will need to be updated with a signed version. The SUP also states that construction of the pipeline must begin in 2020 and be completed by Fall 2021. These dates have not been indicated by the Permittee in any other section of the proposed updates to the MRP and should be clearly committed to by the Permittee if they are to be a requirement of the SUP.

The Permittee submitted appendix 5-27 *Crandall Canyon Mine Memorial, Emery County, Memorandum of Agreement*. This appendix contains the Quit Claim Deed documentation for the mine memorial area agreement between the Permittee and Emery County.

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 include a Forest Service Special Use Permit (SUP) for the proposed pipeline that has been signed and accepted by both parties. The Permittee must also incorporate the required construction deadlines set forth in the (SUP) into the MRP or obtain a revised SUP.

adaniels

Legal Description

Analysis:

The amendment does not meet the State of Utah R645 requirements for Legal Description.

The Permittee has updated the legal description within Chapter 1 of the MRP to include the area for the mine-water pipeline, and has included the pipeline legal description in appendix 5-30 as well. However, this legal description has not included the entire length of the pipeline. A portion of the NE section of Section 5 has been left out of the legal description. This must be included to ensure the entirety of the pipeline is included.

As part of the response to deficiencies in task 6049, the Permittee has expanded the disturbed area boundary to include the length of the Forest Service road (Crandall Canyon Road) and areas that will be disturbed by the proposed mine-water pipeline. This boundary is displayed on Plate 5-3.

Deficiencies Details:

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

R615-300-141, -301-521 The legal descriptions provided in Chapter 1 of the MRP as well as Appendix 5-30 leaves out a portion of Crandall Canyon road in the NE portion of Section 5. The legal description must be corrected as well as any associated acreages.

adaniels

Permit Application Format and Contents

Analysis:

The application does not meet the State of Utah R645 Permit Application: Format and Contents.

The EIS report is Attachment #4 of Appendix 5-30. In Attachment #4, Tosca Map Series description pages 3 of 4 and 4 of 4 are misplaced with the document. They are found after the Map Unit 3 description.

Plate 1a and Plate 2-6 Order III soil maps differ on the boundary of map unit 20 and map unit 711 soils. On Plate 2-6 map unit 20 does not extend to the creek or the roadway. Instead, map unit 711, Lucky Star – Adel – Bundel Families Complex extends across the drainage and up the south facing slope. Please correct this map conflict.

Deficiencies Details:

The application does not meet the State of Utah R645 requirements for Clear and Concise. The following deficiencies must be addressed prior to final approval:

R645-301-121.200,

1. Please ensure that Tosa Series Description pages 1 of 4 through 4 of 4 are together within the EIS soils report. Currently pages 1 and 2 follow the Map unit #1 pedon description and pages 3 and 4 follow the map unit 3 pedon description.
2. Plate 1a and Plate 2-6 Order III soil maps differ on the boundary of map unit 20 and map unit 711 soils. On Plate 2-6 map unit 20 does not extend to the creek or the roadway. Instead, map unit 711, Lucky Star – Adel – Bundel Families Complex extends across the drainage and up the south facing slope. Please correct this map conflict.

pburton

Environmental Resource Information

Historic and Archeological Resource Information

Analysis:

The amendment does not meet the State of Utah R645-301-411 requirements for Historic and Archeological Resource Information.

Appendix 5-30, Attachment #7 of the amendment contains a cultural resource report done by the Forest Service. This report indicates there is one NRHP-eligible site in the vicinity of the project (42EM722). A determination of "No Adverse Effect" for the project was made based on multiple mitigation strategies being implemented to protect site 42EM722. SHPO concurred with this determination. While these mitigation strategies are mentioned in the report (they include constructing the pipeline as close to the roadway as possible in the area of the site, developing a monitoring plan that includes having a federally registered archaeologist monitor the site during construction, and including an unanticipated discovery clause in the plan), they are not included in the project narrative.

Deficiencies Details:

The amendment does not meet the State of Utah R645-301-411 requirements for Historic and Archeological Resource

Information. The following deficiency must be addressed prior to final approval:

R645-301-411: The SHPO clearance presented in the amendment is predicated on the implementation of a number of mitigation strategies to protect site 42EM722. These strategies must be presented in the plan narrative.

tmiller

Fish and Wildlife Resource Information

Analysis:

The amendment does not meet the State of Utah R645-301-322 requirements for Fish and Wildlife Resource Information.

In Appendix 5-30, Attachments 5 and 6, there is a wildlife resource report and a biological assessment and biological evaluation. These reports indicate that the primary species of concern associated with this project is the golden eagle. As mentioned in the reports, there are not any known eagle nests within the ½-mile buffer zone at this time, however, in the Special Use Permit for the pipeline, found in Appendix 1-19, it states that no activities may be conducted within a ½-mile of any nests between Jan. 1 and August 31 without prior consultation and clearance from wildlife biologists. A commitment to do this must be included in the amendment.

Deficiencies Details:

The amendment does not meet the State of Utah R645-301-322 requirements for Fish and Wildlife Resource Information. The following deficiency must be addressed prior to final approval:

R645-301-322: The Permittee must make the appropriate wildlife commitments found in the Forest Service's Special Use Permit.

tmiller

Soils Resource Information

Analysis:

The application meets the State of Utah R645 for Soils: Environmental Description.

Plate 5-3 and 5-3a shows the new disturbed area boundary for the pipeline disturbance. The Crandall Canyon Disturbed Area Table states that there are 6.55 acres for the Crandall Canyon Road and Mine Water Pipeline being added to the total disturbed area with this amendment (Section 114, p. 1-11). The same table states the Total Disturbed Area as 40.78 acres.

An Order #1 Soil Survey of the pipeline disturbance along the roadway and at the confluence of Crandall and Huntington Creeks was conducted by Leland Sasser, Soil Scientist for Environmental Industrial Services (EIS) on October 29, 2019. The EIS report is Attachment #4 of Appendix 5-30 (e_p.424). The report includes series descriptions, pedon descriptions and photographs.

Along the roadway, Map Units #1, #2 and #3 are outlined on Google imagery. They are loam soils differing in rock fragment content and horizonation. The report summary states that along the roadway, Map Unit 1 soils have the greatest depth (p. 1). Pedon descriptions for Map Unit 1 Repp and Tosca soil types indicate bedrock in this unit is frequently greater than 54 inches. The topsoil horizon is 9 – 14 inches.

Depth to bedrock in Map Unit #2 Gompers and Wiggler soils is 12 – 15 inches and topsoil is 4 inches in depth.

Map Unit #3 is very shallow soil: 2 inches topsoil and bedrock at 7 inches, found on rock slopes (50 – 80%).

Near the confluence, Plate 1-1 shows the location of Map Units 4 & 5. Near the road and on the bank 40 feet above Huntington Creek are in Map Unit #4 (Datino/Snake John soils). These are well developed soils extending greater than five feet deep. Their topsoil horizons (A1 & A2) extend 8 to 9 inches and includes 32% gravels and cobbles. Below 14 inches, the subsoil in Map Unit 4 is more than half gravels, cobbles, stones, and boulders.

Soils of the stream terrace on slopes of 3 – 8 % are in Map Unit 5, Dancehall and Shupert soil types, which have a thin 3-4 inch topsoil layer with 25 - 38 % gravels, cobbles and stones. One pedon in Map Unit 5 had a six inch topsoil (Ab

)horizon is buried below three feet of cobbles, stones and boulders.

An Order III soil survey map is presented on Plate 1a. This plate outlines map unit 20 on the south facing slopes along the roadway and in the drainage (Crandall Creek). Map Unit 20 is Strich – Pathead – Podo Families Rubbleland Complex. Plate 1a outlines map unit 711 (Lucky-Star-Adel Family) on the north facing slopes down to the Crandall Creek. The Order III mapping was carried over to Plate 2-6 Permit Area Soil Survey map, which also shows the permit boundaries. On both Order III maps, the confluence of Crandall and Huntington Creeks fall within Map Unit 100 Bundo-Lucky Star Family soils.

Map Unit 100 soils are Typic Paleoboralfs. These riparian soils were also mapped in the 1,500 feet of Crandall Creek drainage that was buried by the mine site expansion in the years 1999-2000. A discussion of the Crandall Creek wetland analysis and riparian soil is found in MRP Chap. 3, Section 3.58, p. 3-30 and 3-31.

pburton

Operation Plan

Mining Operations and Facilities

Analysis:

jeatchel

Topsoil and Subsoil

Analysis:

The application meets the State of Utah R645 for Soils: Operation Plan.

The installation of a pipeline to relocate UPDES outfall # 2 from the facilities yard to Huntington Creek is described in Appendix 30 to the MRP. The pipeline will be placed in a trench along FS Road #0248 for distance of 2 miles. A USFS Special Use permit in Appendix 1-19 provides authorization for 2 miles of 8 inch diameter high density polyethylene pipeline from the mine site to Huntington Creek. A stream alteration permit will be obtained prior to commencement of construction (App. 30, Chap 5, p. 13). (e-p. 367)

The pipeline will be installed at some time either during operations or reclamation. If the pipe is installed during operations or during temporary cessation, the maelstrom treatment unit and settling ponds will be abandoned in place until final reclamation (Appendix 5-30 Plate 5-30-1b).

Chapter 2 of Appendix 30 describes pipeline soil handling procedures. (e-p. 360). During construction the pipeline ROW will be 20 ft wide, which overlaps with the road right of way (p. 1-12, e-p 32.). The pipe will be buried in a trench along the road shoulder. Previous studies indicate that 6-12+ inches of topsoil, more if encountered, will be removed during construction of the pipeline (App. 5-30, Chap 2, p. 6 and Attachment #4 Soil Survey). Along the length of the pipeline, topsoil will be salvaged and stored adjacent to the pipeline and replaced contemporaneously as construction moves down the roadway (App. 30, Chap 2, p. 6).

At its terminus, the pipeline will enter a concrete energy dissipater and flume (App. 30, p. 4). Appendix 5-30 Plate 5-30-3a, details the outlet structure. During construction of the energy dissipator, approximately 120 CY of riparian soil will be removed and stockpiled at the paved Truck Turn Around Area at the mine facilities shown on Plate 5-3a (App 30, p. 6).

A historical account of topsoil salvage at the mine site is provided in MRP, Chapter 2, Section 2.31.1. The four existing topsoil stockpiles shown on Plate 2-3 (e-p 663) will not be affected by the pipeline construction. Stockpile volumes are tabulated in MRP, Chapter 2, Section 2.42 as 12,912 CY. (e-p.58) Stockpile protection is described in MRP, Chapter 2, Section 2.31.4.

There are two undisturbed areas on the South facing slope shown on Figures 8A, 8B and 8C, found at the end of MRP Chapter 2. These undisturbed areas are specified as 0.21 acres above the shop and 0.17 acres below the portal access road, for a total of 0.38 acres undisturbed on Plate 8C. Surrounding these islands of undisturbed area are disturbed lands that were seeded with an interim mix (MRP Chap 2, Section 2.42 and Chap 3, Section 3.31, p. 3-13). The interim

seed mix contained western wheat grass, slender wheatgrass, mountain brome, great basin wild rye, and yellow sweet clover (Chap 3, p. 3-13).

Figure 8D shows the location where topsoil is protected *in situ* (in place) with geotextile fabric. The *in situ* soils are tabulated in Section 2.42 and on Figure 8C as in the stream bed and on the South slope beneath the coal stockpile yard expansion area.

Topsoil is in place beneath the four topsoil stockpiles.

pburton

Road System Plans and Drawings

Analysis:

The application does not meet the State of Utah R645 requirements for Road System Plans and Drawings.

The application does not meet the requirements of R645-301-534.140 because there is no clear plan within the narrative that describes how FR 0248 will be reconstructed upon final reclamation. The narrative on page 8 of Appendix 5-22 (PDF page 293), as well as Page 5-45 (PDF page 137), clearly states that according to the USFS Special Use Permit the dimensions of the paved area within FR 0248 will be decreased in width from a 27-foot subgrade and 22-foot running surface to a 20-foot subgrade and 14-foot running surface. But then additional narrative on page 5-45 further states that the road may need to be repaved due to the presence of the Miner's Memorial. The narrative is further complicated by text on page 5-46 which asserts that GENWAL will commit to reclaiming the road through the mine site to the specifications stated in the Road Use Permit at the time of final reclamation. This final assertion implies that the reclamation plan will change at some future time and that those plans are as yet unknown. If the narrative within the Special Use Permit contradicts the proposals within this amendment then the Permittee must collaborate with the Forest Service to resolve any discrepancies.

The current iteration of the reclamation plan for the Forest Service road makes three different claims and creates uncertainty as to exactly what the road will look like upon final reclamation. This may be remedied by simply removing the contradicting narrative on page 5-45 stating that the road may be repaved post-reclamation, and committing to reclaim the road according to some future specifications as stated on page 5-46.

Further, there appears to be a contradiction between the reclamation plan in the text versus what is itemized in the reclamation bond in regards to asphalt removal within the disturbed areas. The narrative on page 8 of Appendix 5-22 (PDF page 293), as well as Page 5-45 (PDF page 137), clearly states that all asphalt paving from the Forest Service Road will be removed and taken to an approved RCRA disposal site. Page 9 of Appendix 5-22 states that no removed asphalt paving will be buried within the reclaimed areas of the mine site. However, the demolition costs on page 47 of the reclamation bond only address costs for on-site disposal of asphalt and only address transportation costs within a 0.5-mile. The transportation costs should address the haulage of removed asphalt to the nearest RCRA disposal site as committed to in the narrative.

This deficiency was previously submitted under Tasks 5968 and 6049.

Deficiencies Details:

The application does not meet the State of Utah R645 requirements for Road System Plans and Drawings. The following deficiency must be addressed prior to final approval:

R645-301-534.140, -542.800: The Permittee must commit to a definite plan for the reclamation of Forest Service road 0248. The permittee must also ensure that the asphalt disposal costs are accounted for within the reclamation bond.

jeatchel

Road System Performance Standards

Analysis:

The amendment does not meet the State of Utah R645 requirements for Road System Performance Standards.

The application does not satisfy the requirements of R645-301-527.200 thru -527.230 because the narrative within Appendix 5-30 concerning specific pipeline construction dimensions and maintenance obligations in relation to the

USFS Special Use Permit remain unclear. The narrative on pages 9 - 14 of Appendix 5-30 describes the dimensions and installation protocols required to construct the proposed pipeline from the main portals to Huntington Creek. In general, the construction methods and dimensions are in accordance with the narrative in the USFS Special Use Permit, although there are a few discrepancies that require clarification. For example, Page 12 of Appendix 5-30 states that there will be two reinforced concrete manholes installed throughout the entire length of the pipeline to be used for maintenance and allow for venting. The bonding calculations also allow for the construction of only two manholes, and no other vents. But this is contrary to the narrative on page 12 of the Special Use Permit which states that vents will be installed every 1,000 feet along the alignment. Since the entire length is 6,550 feet, there should be 6 vents built into the alignment. The Special Use Permit also states that there will be Carsonite posts installed every 1,000 feet along the alignment whereas Appendix 5-30 is silent on this issue. The Special Use Permit also states on page 3 that construction of the pipeline will commence by Fall 2020 and be completed within one year, although agents for GENWAL have indicated that they have no intention of starting construction this year. The Permittee must consult with the USFS to ensure that the plans within this amendment are in accordance with the terms of the Special Use Permit.

The narrative on page 13 of Appendix 5-30 states that the maintenance of the pipeline will be minimal to non-existent. However, there are several long term maintenance items that are outlined in the Special Use Permit that should be acknowledged in the permit. These items are as follows:

- Water quality of the mine discharge should be sampled monthly to maintain compliance with DEQ permits (Page 13).
- The Permittee must pay the USFS a land-use fee of \$413.10 annually for the first 5 years of holding the Special Use Permit, and every 5 years thereafter (Page 7).

In addition to the discrepancies between the proposed amendment and the Special Use Permit outlined above, there needs to be a narrative within the Special Use Permit acknowledging that the pipeline is a permanent structure, and will become the property of the USFS once Phase 3 reclamation is achieved.

Deficiencies Details:

The amendment does not meet the State of Utah R645 requirements for Road System Performance Standards. The following deficiency must be addressed prior to final approval:

R645-301-121.200, -527.200 thru -527.230: The Permittee must reconcile the construction and maintenance narrative between what is proposed in this amendment, and what is stated in the USFS Special Use Permit. The Permittee should contact the Forest Service to ensure that all parties are in agreement with the pipeline construction dimensions as well as the maintenance obligations upon final reclamation.

jeatchel

Hydro Surface Water Monitoring

Analysis:

The amendment does not meet the State of Utah R645 requirements for Surface Water Monitoring.

The Permittee has proposed a pipeline to carry mine-water discharge from the current UPDES outfall 002 to a new discharge point directly into Huntington Creek at the base of Crandall Canyon. This includes a revised UPDES permit outfall 002 location. The draft UPDES permit has been provided. In addition to the monitoring that will take place at the new outfall location 002, the Permittee has proposed 2 additional surface water monitoring points along Huntington Creek. Location HCAP is located above the pipeline outlet, and HCBP is located below. Table 7-8(A) was added to indicate the parameters that will be monitored at these 2 new sites, these parameters include typical field measurements as well as collecting lab samples for TDS, TSS and Total Iron. Due to safety and site geomorphology challenges at these 2 site, flow measurements will either be the flow reported by the local Emery Water Conservancy District, or a result of an approximate measurement that do no require personnel to enter the stream. These methods are considered appropriate, especially due to the fact that water quality is the key measurements needed at these sites, not quantities, as quantity will not be negatively affected.

In addition to the water monitoring section of Chapter 7 being updated with these surface water monitoring locations, water monitoring Plates 7-12 and 7-18 were updated as well.

Deficiencies Details:

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

R645-301-731.220 Table 7-10 was updated appropriately to include water monitoring points HCAP and HCBP; however, this table references Table 7-4(B) for their monitoring protocol. This table does not exist and should be referencing Table 7-8(A). Table 7-10 must be updated correctly.

adaniels

Hydrologic Water Quality Standards

Analysis:

The amendment does not meet the State of Utah R645 requirements for Water Quality Standards.

The Permittee has proposed a pipeline to carry raw mine-water discharge from the current UPDES outfall 002-A to a discharge point into Huntington Creek at the bottom of Crandall Canyon. This has required a revision to the Permittee's current UPDES permit to create the new 002-B outfall location. The Permittee's revised UPDES permit is currently in draft form and is not final until the public comment period with the Utah Division of Water Quality (DWQ) has concluded and the DWQ has issued the final permit. The Permittee has provided a copy of the draft permit as part of this amendment. This draft UPDES permit includes the new outfall location 002-B and will allow for a Total Iron daily maximum limit of 3.5 mg/L at this location into Huntington Creek. Approval of the reclamation plan will require a finalized version of the UPDES permit.

Deficiencies Details:

The amendment does not meet the State of Utah R645 requirements for Water Quality Standards. The following deficiencies must be addressed prior to final approval:

R645-301-751 The Permittee must provide the Division a finalized and approved UPDES permit for the proposed discharge location of the mine-water pipeline before approval of the reclamation plan can be given.

adaniels

Hydrologic Diversion General

Analysis:

The amendment does not meet the State of Utah R645 requirements for Diversion, General.

The Permittee is proposing an 8 inch HDPE pipeline to be buried under the Crandall Canyon Forest Service road that would transport raw mine water discharge to an outfall directly in to Huntington Creek instead of at its current discharge point to Crandall Creek at the outfall of the mine water treatment system. This pipeline is considered a permanent diversion as it will remain in place indefinitely to handle the discharge coming from the Crandall Canyon Mine. Plates 5-30-2a through 5-30-2d lay out pipeline details and profiles.

Currently there is a conflict between the designed pipeline submitted as part of this reclamation plan and the design features listed in the FS SUP included in Appendix 1-19. Appendix B of the SUP states that air vents will be placed every 1000 feet along the length of the pipeline, the pipeline venting conflicts with the current plan for the pipeline. Currently the proposed pipeline includes 2 venting manhole covers along the length of the pipeline. The Permittee must resolve these discrepancies between them and the FS.

As part of the current reclamation plan proposal, the Permittee has resolved the buried depth of the pipeline issues that were present in Task ID 6049. The Permittee now clearly states that the pipeline will be buried 5 feet deep along the entire length to prevent any freezing issues.

The Permittee has included a design of the energy dissipation structure at the base of the pipeline, and the design of the riprap channel where the mine-water will flow from the pipeline in to Huntington Creek. The proposed riprap channel will consist of 9" D₅₀ stone placed in a channel that is 7.5 feet wide and approximately 10 feet in length. This channel will have a geotextile fabric placed under the riprap. The design calculations for the riprap channel are found in Appendix 5-30 Attachment 1. The drawing details are found on Plates 5-30-3a and 5-30-3c.

Deficiencies Details:

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

R645-301-742.312 The Permittee must resolve venting design differences between what is listed in Appendix B of the Forest Service Special Use Permit and what is proposed in the current pipeline design.

adaniels

Hydrologic Stream Buffer Zones

Analysis:

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

The Permittee has proposed a pipeline to carry mine-water discharge from the current UPDES outfall 002 to a discharge point directly into Huntington Creek at the bottom of Crandall Canyon. Huntington Creek is a perennial stream and a tributary to the San Rafael River. In addition to the mine-water discharging directly in to Huntington Creek, the Permittee is proposing an energy dissipater structure to minimize erosion on the banks of the receiving creek. The Permittee has committed to obtaining a Stream Alteration Permit from the Division of Water Rights prior to initiating work, and has stated that this permit will be provided to DOGM. To detail the sediment controls that will be in place within the vicinity of Huntington Creek the Permittee has created Plate 5-30-3c that details sediment control measures around the proposed pipeline disturbances at the outfall. This includes straw bales, silt fences, and excelsior logs. The Permittee has detailed how the different sediment control structures will overlap and their placements. With these controls in place and properly installed, these measures should prevent additional suspended solids associated with the pipeline disturbances from reaching Huntington Creek.

adaniels

Hydrologic Sediment Control Measures

Analysis:

The amendment meets the State of Utah R645 requirements for Sediment Control Measures.

The Permittee has proposed a pipeline to carry mine-water discharge from the current UPDES outfall 002 to a discharge point directly into Huntington Creek at the bottom of Crandall Canyon. Chapter 2 of Appendix 5-30 states that sediment control structures, (i.e., silt fences, excelsior logs, straw bales) will be installed below all construction areas to prevent loose sediment from entering either Huntington Creek or Crandall Canyon Creek, and that they will remain in-place until all reclamation and revegetation (or paving) is complete. Detailed locations of sediment control measures at the outfall location near Huntington Creek are given on plate 5-30-3C. Plates 5-16 and 5-30-3c give typical details of sediment control installations. See analysis in "Hydrologic Information Reclamation Plan" for sediment control findings during facility reclamation.

adaniels

Explosives General

Analysis:

The application meets the State of Utah R645 requirements for General Blasting.

The application meets the requirements of R645-301-524 because the narrative on page 5-19 outlines the steps that will be taken to achieve compliance in the event that blasting activities are required to install the mine water discharge pipeline along FR 50248. The narrative in Chapter 6 briefly mentions that drilling and blasting will only be used when absolutely necessary. For blasts that require more than 5 pounds of explosives, the Permittee will publish a schedule of the blasts and submit a formal blasting plan to the Division for approval. Blasting plans will be included in Appendix 5-23A.

jeatchel

Reclamation Plan

General Requirements

Analysis:

The amendment does not meet the State of Utah R645 General Reclamation Requirements.

The application does not satisfy the requirements of R645-301-541.100, -541.400, -542.500, and -121.200 because the following items within the reclamation narrative have not been adequately addressed since the previous submittal (Task# 6049):

- On pages 3, 4, 13, and 16 of Appendix 5-22, the narrative states that a Memorandum of Understanding (MOU) exists between Emery County and Genwal Resources which requires that a 150' section of the 72" diameter culvert that runs beneath the site remain in place after final reclamation is complete. In addition to the 150' section of culvert, a portion of the memorial parking area will also remain unreclaimed as access to the Miner's Memorial that lies to the west of the surface facilities. However, regardless of what is contained within the MOU, the final reclamation plans must meet the requirements of the State of Utah R645 rules. In order to meet those requirements, the 72" undisturbed bypass culvert must be removed in its entirety. Similar to all of the surface facilities on site, the bypass culvert was never designed and installed with the intention of being a permanent structure. Considering the size of the watershed that drains through the undisturbed culvert, especially through burn-scarred areas, the likelihood of the culvert becoming plugged at some future time is high. If this were to occur, the impounded water could create a safety issue that could also threaten to erode and undercut the walkway to the memorial, the parking areas, and the adjacent slopes and hillsides, creating a situation that is expensive and even more difficult to reclaim.
- The narrative throughout Appendix 5-22 and Chapter 5 indicate that all asphalted surfaces throughout the disturbed area will be demolished and removed, although the text on page 5-45 stating the main road may be repaved creates confusion and should be removed.
- The previous iteration of this amendment (Task# 6049) pointed out that a variety of proposed items throughout the permit are not addressed in the current reclamation bond. These include: Sediment structures such as Excelsior logs, check dams, etc. (Page 7, Appendix 5-22, & Page 7, Appendix 5-30), the use of fertilizers, inoculum, and polyacrylamide soil amendments (Pages 14 & 20, Appendix 5-22), laboratory analysis conducted on topsoil samples taken before topsoil redistribution and during final reclamation (Pages 18 - 20, Appendix 5-22), and the use of excessive labor to hand rake amendments into the newly laid topsoil (Pages 17 and 20, Chapter 2, & Pages 20 and 21, Appendix 5-22).

Deficiencies Details:

The amendment does not meet the State of Utah R645 General Reclamation Requirements. The following deficiencies must be addressed prior to final approval:

R645-301-541.100, -541.400, -542.500, and -121.200: The Permittee must address the following deficiencies in the reclamation plan:

- Restore the narrative that describes how the entire length of the 72" undisturbed culvert beneath the expansion area will be reclaimed in its entirety.
- Resubmit the design drawings, maps, and plates that illustrate the removal of the entire 72" undisturbed bypass culvert.
- Resubmit the designs for the footbridge spanning Crandall Creek upon final reclamation.
- Remove the sentence on page 5-45 that states that the presence of the memorial may dictate the main road be repaved.
- The following items must be addressed in the reclamation bond: sediment structures such as Excelsior logs, check dams, etc. (Page 7, Appendix 5-22, & Page 7, Appendix 5-30), the use of fertilizers, inoculum, and polyacrylamide soil amendments (Pages 14 & 20, Appendix 5-22), laboratory analysis conducted on topsoil samples taken before topsoil redistribution and during final reclamation (Pages 18 - 20, Appendix 5-22), and the use of excessive labor to hand rake amendments into the newly laid topsoil (Pages 17 and 20, Chapter 2, & Pages 20 and 21, Appendix 5-22).

jeatchel

WildLife Protection

Analysis:

The amendment meets the State of Utah R645-301-342 requirements for Wildlife Protection.

A fish barrier that is at least 6-ft. tall and contains a cement pad at the base to prevent pooling is included in the amendment. Its location can be found on Plate 5-17, and its design features can be found on Plate 5-21.

tmiller

Backfill and Grading General

Analysis:

The application does not meet the State of Utah R645 requirements for General Backfilling and Grading.

The application does not satisfy the requirements of R645-301-553 because the application does not offer a reclamation plan for the earthwork volumes throughout the entire length of the Expansion Area. The Permittee cites an MOU in Appendix 5-27 as the reason why the memorial parking area and the 72" culvert beneath that area will not be reclaimed. But since the terms of the MOU are either expired or are otherwise invalid the Permittee should proceed with reclamation for the entire length of the expansion area. The cut/fill volumes located on Plate 5-17a and Appendix 5-22 are predicated on a scenario where the memorial parking area and the 72" culvert beneath the site will not be reclaimed. The permittee must recalculate the cut/fill volumes taking into account the reclamation of the memorial parking area and removal of the entire length of the 72" culvert.

Page 9 of Appendix 5-22 states that excess fill will either be hauled to the Burma Pond for reclamation of that site, or taken to another site owned by the Permittee to be utilized at that location. The Permittee should calculate approximately how much surplus fill would need to be disposed of beyond the reclamation of Burma Pond, and have a clear plan for its eventual disposal.

Deficiencies Details:

The amendment does not meet the State of Utah R645 requirements for General Backfilling and Grading. The following deficiency must be addressed prior to final approval:

R645-301-553, -121.200: The Permittee must provide a cut/fill table that accounts for the earthwork volumes for all reclamation surfaces within the permit, including the memorial parking area and removal of the 72" culvert referenced in the MOU. Additionally, the Permittee should determine approximately how much surplus fill would need to be disposed of beyond the reclamation of Burma Pond, and have a clear plan for its eventual disposal.

jeatchel

Mine Openings

Analysis:

The amendment meets the State of Utah R645 requirements for Mine Openings.

The amendment meets the State of Utah R645 Mine Openings requirements in R645-301-542.710 because the Permittee has included cross-sectional drawings that display the measures to be used to plug and seal all of the portals within the permit area. According to the narrative on page 5-41, a final sealing plan will be approved by the BLM prior to permanent closure. The application proceeds to offer a description of the formal portal closure methods on page 5-47 and page 3 of Appendix 5-22. The cross-sectional drawings that accompany the sealing plan narrative are found on Plate 5-17. The drawings also illustrate the configuration of the proposed mine water discharge piping that will convey the mine water from the main portals to Huntington Creek upon final reclamation.

jeatchel

Topsoil and Subsoil

Analysis:

The application does not meet the State of Utah R645 for Soils: Reclamation Plan.

Once the new UPDES outfall #002 construction is completed, the Crandall Canyon Mine total disturbed acres will be

40.78 acres (GENWAL DISTURBED ACREAGE Table, Chap 1, Sec. 114, p. 1-10). The pipeline will be installed at some time either during operations or reclamation. If the pipe is installed during operations or during temporary cessation, the maelstrom treatment unit and settling ponds will be abandoned in place until final reclamation (Appendix 5-30, Plate 5-30-1b). App. 5-30 p. 9-10 states the timeline for pipeline installation at final reclamation.

The pipeline will be buried five feet deep, which may require blasting. The pipeline trench along the FS Road 0248 will be contemporaneously reclaimed (App. 30, Chap 5, p. 11). The dissipator and outlet structure at the confluence with Huntington Creek will be contemporaneously reclaimed after concrete has cured (App. 30 Chap 2, p. 6). Appendix 30 states that topsoil will be seeded within one week of placement with an interim seed mix. An interim seed mix is listed in Chapter 3, p. 3-13. However, following the listed species there is a statement that in the future the final reclamation mix will also be used for interim reclamation (Chap 3, p. 3-13). MRP Section 3.41.210 (p. 3-19) also states that the seed mixes in Appendix 3-6 will be used for interim and final reclamation. MRP, Chapter 3, Appendix 3-6 contains one non-riparian seed mix and one riparian seed mix. To be clear, the plan must specify that the non-riparian seed mix will be seeded along the road and the riparian seed mix will be seeded at the concrete dissipator disturbance near Huntington Creek.

MRP Chap 2, Section 2.42 Soil Redistribution describes final grading of 21.89 acres at the mine surface facilities. The Soil Redistribution table on page 2-10 specifies 6.94 acres where topsoil will be redistributed.

Plate 5-17 shows reclamation details of the disturbed boundary along the pipeline and roadway.

Figure 8C illustrates reclamation areas of the mine surface facilities and tabulates their total acreage to be 21.89 acres. That total is divided into reclamation areas as follows:

Emery County (1.81 ac); Portal Area (0.9 ac); Expansion Area (6.97 ac); Old Substation Area (1.03 ac); Old Loadout Area (1.35 ac); Forest Service Road Mine Site (1.50 ac); Forest Service Road (7.54 ac); and, Shop Area (0.79 ac).

Each reclamation area is subdivided by the following categories in order to determine the required topsoil volume.

Total Undisturbed/Unaffected (no topsoil)

Total Interim Reclamation (no topsoil)

Total Restored Streambed (no topsoil)

Total Reclaimed Area with Topsoil. This area to receive topsoil is 302,464.29 sq ft or 6.94 acres.

Fifteen inches of topsoil will be redistributed on all areas in the "with Topsoil" category, except the FS road which will receive 12 inches. A total of 12,878 CY yards of topsoil are required. This will effectively utilize all four stockpiles shown on Dwg 2-3. Stockpile volumes are tabulated in Section 2.42 as 12,912 CY. (e-p.58)

The Total Interim Reclamation Area on Figure 8C is calculated as 3.43 acres (149,425.57 sq. ft.). The reclamation plan will avoid re-affecting the interim seeded areas, although reseeding may be required. Consequently, the MRP, Chap 2, Sec. 2.42 suggests that these areas be scrutinized for success upon final reclamation. I recommend field verification of Plate 8C to verify the interim seeded areas acreage and condition during this field season, because there is conflicting information in the plan regarding interim reclamation areas. For instance, in MRP Chapter 3, Section 3.41.230 says that interim areas are shown on Plates 7-5 and Plate 5-16. However, only ASCA locations are shown on Plates 7-5 and Plate 5-16 has been replaced with sediment control information. Section 5.42.20 (p. 5-44) states that Plate 5-17 shows the interim reclamation and that 8.73 acres remain to be seeded.

Reclamation of areas shown on Figure 8C are described in App. 5-22, the Crandall Canyon Mine Site Reclamation Plan. The work flow is described in App. 5-22 p. 6. Backfilling and grading will start in the upper reaches and work down canyon (Sec 2.42). Fill will be placed in 12 – 18 inch lifts (Sec. 5.53). A timetable is given at the end of App. 5-22 shows topsoil redistribution on the North slope likely beginning in mid-August and revegetation of the North slope beginning a

month later. As work progresses, each section will be covered with hay mulch at a rate of 1T/ac and pocked (Sec 2.42). A reclamation timetable is provided at the end of App. 5-22, however the plan also states that in practice the reclamation steps will be ongoing in several areas simultaneously (App. 5-22, p. 2).

Depending on slope, fill will be either disced or scarified with a trackhoe prior to topsoil redistribution (Sec. 2.44). Scarification with a track hoe is restated in App 5-22, item 5, p. 11. Statements in Section 5.53 indicate that ripping may also be used. i.e. Slopes of less than 30% will be ripped to a depth of 18 inches prior to topsoil placement and areas of more than 30% will be ripped to a depth of 12 inches (p. 5-50). Both scarification with a track hoe and ripping are acceptable and meet the requirements of R645-301-242.200.

A qualified supervisor will monitor the topsoil redistribution operation to ensure even distribution of the topsoil (Section 2.42). Topsoil will be applied with a D-6 dozer. Redistributed topsoil will be sampled for nutrient content (Sec. 2.43) and depending on results, fertilizer will be broadcast and working into the topsoil. One ton/acre alfalfa or straw mulch will be incorporated with pocking (Sec 2.43). Pocks will be approximately 3 ft wide and 1.5 ft deep (Sec 2.42) and placed in a random, overlapping pattern (App. 5-22, p. 3). Seeding will follow pocking ASAP, but not before October 1st (Sec. 2.42), unless logistics require it. Weeds, if any, will be removed before seeding (Sec. 242).

Since replaced topsoil will be pocked, the statement that topsoil will be disced and harrowed on the contour, found in the MRP Chap 2, pg 16, should be removed.

There will be 14.95 acres in the surface facilities area that do not receive topsoil, including the FS road, Memorial parking area, south portal expansion area (including where topsoil is stored on slopes *in situ*), interim reclamation areas, the reclaimed stream channel (where topsoil is protected *in situ*), and the 1.4 acres of topsoil stockpile areas. These locations are also shown on Figure 8C.

Restoration of expansion area soils protected in situ is described in Chapter 2, Section 2.42. These soils will be sampled for nutrient content. Fertilizer or polyacrylamide will be applied followed by seeding (MRP, Chap 2, p. 17).

Polyacrylamide refers to many compounds. There are anionic and cationic forms of PAM. The positively charged cationic form is toxic and not used in erosion control. The anionic form is used for erosion control. As stated in the introduction (App. 22, Final Reclamation, p. 3) and in Section 6 Restoration of South and North Hillslopes (App. 5-22, p. 12) e- 297, the Permittee will consult with the Division 5 years prior to beginning reclamation to re-evaluate this technique.

Appendix 22 Sections 5, 6 & 7 describe the reclamation of the South Slope Expansion area. Section 6 describes removal of fill in 10 foot lifts to allow access to the re-exposed slope for raking the soil to relieve compaction. Section 7 describes a nutrient testing plan for soils stored in situ (App. 5-22, p. 20). If fertilizer is required it will be raked in. Microbial inoculum will be applied (p. 14). Seed will be raked in. These commitments for nutrient analysis and application of fertilizer, microbes and hydromulch with tackifier should re-vitalize the buried soils.

Except for the restored stream channel banks of less than 2h:1v shown on Plate 5-17, the South expansion area soils will not be pocked (Section 2.42). The North Slope expansion area along the creek is constructed of fill and it will be pocked and it will be treated with wood fiber mulch and tackifier at a rate of 3,500 lbs/ac (App. 22, p. 14).

Appendix 7-66 is the Burma Pond Evaporation pond reclamation plan.

Deficiencies Details:

The application does not meet the State of Utah R645 requirements for Soil Reclamation Plan. The following deficiencies must be addressed prior to final approval:

R645-301-121.200,

1. Appendix 30 states that topsoil will be seeded within one week of placement with an interim seed mix. Likewise Appendix 5-22, Section 6 (p. 13) states that the South expansion area will be seeded with an interim mix. An interim seed mix is listed in Chapter 3, p. 3-13. (e-p 20). However, following the listed species there is a statement that in the future the final reclamation mix will also be used for interim reclamation (Chap 3, p. 3-13). MRP Section 3.41.210 (p. 3-19) also states that the seed mixes in Appendix 3-6 will be used for interim and final reclamation. To be clear, Appendix 5-22 and 5-30 must specify that the interim mix is found in Appendix 3-6.
2. There is conflicting information in the MRP regarding existing interim reclamation areas. Chap 2, Sec. 2.42 and

Figure 8C provides new information on interim reclamation areas. MRP Chapter 3, Section 3.41.230 refers to Plates 7-5 and Plate 5-16 for interim reclamation areas, however, only ASCA locations could be found on Plates 7-5 and Plate 5-16 has been replaced with sediment control information. MRP Chap 5, Section 5.42.20 (p. 5-44) states that Plate 5-17 shows the interim reclamation areas and that 8.73 acres remain to be seeded. Please update the references to interim reclamation areas in the MRP.

R645-301-121.100, Since replaced topsoil will be pocked, the statement that after redistribution, topsoil will be disced and harrowed on the contour, found in the MRP Chap 2, pg 16, should be removed.

pburton

Hydrological Information Reclamation Plan

Analysis:

The application does not meet the State of Utah R645 requirements for Hydrology Information Reclamation Plan.

The currently approved reclamation plan has two phases to the reclamation work where earthwork, Crandall Creek reestablishment and seeding take place in phase one and the sediment pond is removed in phase two after approval from the Division. The Permittee is now proposing to remove the sediment pond as reclamation work in the canyon takes place instead of the currently approved plan of keeping it in place until vegetation is established on the reclaimed slopes up canyon. To support this plan the Permittee has submitted a report prepared by Professional Engineer, Richard White, who performed an analysis of deep gouging reclamation techniques. This analysis takes typically sized gouges (or pocks), assessing potential storm water inflows (using site specific National Weather Service storm data, and NRCS runoff calculation techniques) and predicting sediment in-fill rates to support the use of pocks and gouges in place of the current sediment pond for sediment controls. This report concludes that deep gouging is effective at minimizing soil loss and removal of the sediment pond as proposed in this amendment is a feasible reclamation technique that will support the necessary sediment controls.

While the Richard White report provides the analysis necessary to support the use of pocks and gouges on all reclaimed areas in place of keeping the sediment pond installed throughout reclamation, the currently proposed reclamation plan does not appear to propose the use of pocks and gouges on all reclaimed areas. Currently, it appears that some areas labeled "expansion area" on Plate 8c may not be pocked during reclamation. If this is the case, the Permittee needs to demonstrate how sediment control will be performed on these areas. Plate 5-17 seems to indicate that the steep slopes near Crandall Creek will not be pocked.

During review of the amendment there were two statements found in the currently approved MRP that are contradictory to the proposed timing of the sediment pond removal. These are found in Chapter 3 Section 3.41.100, and Chapter 5 Section 5.42.50. These sections seem to indicate that there is an agreement with the Forest Service that the pond will not be removed until after reclamation has been established, although there is no reference to documentation on this agreement. The Permittee must resolve this contradiction related to timing and get the Forest Service agreement on this issue.

As part of the current amendment being reviewed, the Permittee has proposed keeping the upper section of the 72" Crandall Creek culvert in place as shown on Plate 5-17. However, this is not in compliance with R645 requirements to restore natural drainages and is not acceptable for reclamation. The Forest Service (the land owner) has also indicated to the Division that leaving 150 feet of this culvert is not desired.

Deficiencies Details:

The application does not meet the State of Utah R645 requirements for Hydrology Information Reclamation Plan. The following deficiencies must be addressed prior to final approval:

R645-301-763.100 The steep sloped areas surrounding the restored Crandall Creek shown on Plate 5-17 appear to not be included in the pocking and gouging reclamation techniques justified as sediment controls through the Richard White report. Sediment control methods for areas not receiving pocking and gouging must be included in the reclamation plan.

R645-301-763 There are two statements found in the currently approved MRP that are contradictory to the proposed timing of the sediment pond removal. These are found in Chapter 3 Section 3.41.100, and Chapter 5 Section 5.42.50. These sections seem to indicate that there is an agreement with the Forest Service that the pond will not be removed until after reclamation has been established, although there is no reference to documentation on this agreement. The Permittee must resolve this contradiction related to timing and get the Forester Service agreement on this issue.

R645-301-762.100 and .200 The entirety of the 72" bypass culvert must be removed during reclamation to ensure that Crandall Creek is successfully restored and returned to its natural drainage patterns.

adaniels

Revegetation General Requirements

Analysis:

The amendment meets the State of Utah R645-301-353 requirements for General Revegetation Requirements.

Revegetation of the narrowed Forest Service Road is outlined in Appendix 5-22 under items #3 and #17, as well as in the time table. Areas of the roadway that are to be reclaimed will be topsoiled and left rough and pitted and interim seeding will be placed within one week of topsoil placement. Final seeding will then be done later in the year during more favorable planting conditions.

tmiller

Revegetation Timing

Analysis:

The amendment meets the State of Utah R645-301-354 requirements for Revegetation Timing.

Revegetation timing has been updated to include interim seeding after restoration and recontouring to stabilize the slope followed by final seeding later in the fall during more favorable planting conditions.

tmiller

Stabilization of Surface Areas

Analysis:

The application does not meet the State of Utah R645 for Soils: Stabilization

The pipeline energy dissipator and outlet will be protected with sediment logs and hay bales as shown on Plate 5-30-3c (e-p. 580)

The sediment pond will be removed in the first phase of reclamation (App. 5-22, p.3). Attachment #2 "Justification for Deep Gouging" to Appendix 5-22 supports this approach.

South expansion slopes will be treated with a PAM or anionic polyacrylamide compound prior to seeding and soil inoculation. Areas that will see a longer time period between topsoil preparation and final revegetation, such as the South Slope of the Expansion Area, will receive hay mulch and interim seeding to protect the soil until final vegetation and mulch can be administered. (App. 22, p. 13)

Details on straw incorporation differ between the MRP and Appendix 5-22. All final graded surfaces with or without topsoil will be surface roughened to incorporate 1 T/ac alfalfa or straw mulch (Section 2.43) or 2 tons/acre certified weed free alfalfa hay (App. 22, Item 10, p. 18). This does not include the South expansion area, which will be treated with hydromulch only, and Section 2.42 points out an exception where pocking will not be used along the FS road, where the topsoil will be left "rough and pitted" instead (p. 15). (e-p. 57)

All reclaimed areas will be hydroseeded and hydromulched in the fall (App 22, p. 2 and Sec. 3.41.220 Phase 1, p. 3-19). Application rates specified in the MRP Chapter 2 and 3 differ from those specified in Appendix 5-22. For example, Section 2.44 states that 1.5 tons/ac wood fiber mulch will be applied to slopes of 30% or less. Steeper slopes (such as in the North expansion area) will be treated with wood fiber mulch at a rate of 3,500 lbs/ac and tackifier. i.e. the stream channel slopes (App. 22, Item 14, p. 21). (e-p. 62) Section 3.41.230 Phase 2 Mulching states the entire facilities will be hydromulched at 1 ton/ac (2,000 lbs/ac, p 3-20). (e-p. 28)

Sediment control details are shown on Plate 5-16. Section 2.42 states that rills and gullies in excess of six inches that develop on the reclaimed area will be regraded and seeded.

Genwal will monitor erosion using the "Erosion Condition Classification System" developed by the BLM and modified by Mark Humphrey, OSM in 1990 (p. 3-24), keeping "SSF values " less than or equal to the surrounding undisturbed

areas. The Division located Ronnie Clark, 1980. Erosion Condition Classification System. BLM Technical Note #346, but does not have a copy of Humphrey's modification.

App. 22, Item 19 d further states that erosion monitoring will be conducted annually and repairs made will be reported with the annual report (App 22, p 23).

Deficiencies Details:

The application does not meet the State of Utah R645 requirements for Soil Stabilization. The following deficiencies must be addressed prior to final approval:

R645-301-121.100, MRP Chapter 2 and Chapter 3 and Appendix 5-22 conflict regarding incorporation of hay mulch and hydromulch application rate. Please indicate in the MRP chapters that reclamation details found in Appendix 5-22 supersede that described in the MRP for the mine facilities area.

pburton

Bonding Determination of Amount

Analysis:

The amendment does not meet the State of Utah R645 requirements for Determination of Bonding Amount.

The reclamation plan does not satisfy the requirements of R645-301-830 and R645-301-542.800 because the bonding calculations are missing several costs that are identified throughout the reclamation narrative. These items were documented in the previous two revisions (Task# 5968 & 6049) but still remain unaddressed. Some items from the previous bonding deficiency (Task# 6049) were addressed, but the following costs have not been adequately resolved:

- The construction of a pedestrian footbridge spanning Crandall Creek to access the Miner's Memorial.
- The haulage and disposal of all excess expansion area fill off-site.
- The cleanup and disposal of accumulated iron sludge within the mine water treatment pond.
- The off-site disposal of asphalt.
- The installation of sediment structures such as Excelsior logs, check dams, etc as stated on page 7 of Appendix 5-22, & page 7 of Appendix 5-30.
- The use of soil amendments (fertilizers, inoculum, and polyacrylamide soil amendments as stated on pages 14 and 20 of Appendix 5-22.
- The use of additional labor to hand rake amendments into the newly laid topsoil in the latter stages of reclamation as stated on pages 17 and 20 of Chapter 2, & pages 20 and 21 of Appendix 5-22.
- The laboratory analysis conducted on topsoil samples taken before topsoil redistribution and during final reclamation as stated on pages 18 - 20 of Appendix 5-22.
- The costs associated with constructing a fish barrier in the newly reclaimed Crandall Creek.
- Augmented revegetation costs to address reseeding in the areas of new disturbance from the installation of the proposed UPDES #002 outfall.
- The costs for monthly water sampling at the proposed UPDES #002 outfall throughout the liability period.

In addition to this list, there are several procedural items in regard to the calculation of the bond summary that require attention. They are as follows:

- As per the Division's technical directive (Tech 007), operators may not use regional cost indexes to calculate the reclamation bond. Therefore, the 88.1% cost adjustment for Price, Utah cannot be used in the bonding calculations.
- The Main Office Expense (6.8%) is lacking from the indirect costs. Please restore this cost back into the calculation of the indirect costs.
- The Project Management Fee should be 2.5%, not 3.5%.
- The "*Evaluation of Mine-Land Reclamation Costs in Utah*" should be removed from this amendment since it directly contradicts the established calculation practices outlined in Utah's Technical Directive 007.

Deficiencies Details:

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

R645-301-830, R645-301-542.800: Please address the bulleted items listed in the analysis above.