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State of Utah

DEPARTMENT OF NATURAL RESOURCES

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March 9, 2017

Kenneth S. Fleck, Manager of Geology and Environmental Affairs
Interwest Mining Company
P.O. Box 310
Huntington, Utah 84528

Subject: Revised Reclamation Plan, PacifiCorp, Cottonwood/Wilberg Mine, C/015/0019,
Task ID #5348

Dear Mr. Fleck:

The Division has reviewed your application. The Division has identified deficiencies that must be addressed before final approval can be granted. The deficiencies are listed as an attachment to this letter.

The deficiencies authors are identified so that your staff can communicate directly with that individual should questions arise. The plans as submitted are denied. Please resubmit the entire application.

If you have any questions, please call me at (801) 538-5350.

Sincerely,

A handwritten signature in blue ink, appearing to read "Steve Christensen".

Steve Christensen
Permit Supervisor

SKC/sqs

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Technical Analysis and Findings

Utah Coal Regulatory Program

March 9, 2017

PID: C0150019
TaskID: 5348
Mine Name: COTTONWOOD/ WILBERG
Title: REVISE RECLAMATION PLAN

Summary

Interwest Mining Company (IMC), a subsidiary of PacifiCorp, submitted an amendment to revise the Cottonwood/Wilberg Mine Reclamation Plan on December 13, 2016. The amendment modifies the final reclamation design.

IMC has incorporated deep gouging techniques on steep slopes in place of the existing design for contour and collection ditches. IMC proposes that using this as BTCA allows the removal of the sediment ponds at reclamation without the additional contributions of sediment to stream flow or outside the permit area. Justifying the revised sediment control techniques, IMC used RUSLE2 to model soil loss for the slopes in the disturbed and undisturbed areas.

The intent of this proposed reclamation plan for the Cottonwood/Wilberg Mine is to completely replace the current plan found in Volume 2 Part 4. IMC proposes to remove and replace Part 4 with the newly revised text for the reclamation plan, appendices, and all associated maps.

There are no changes to the Environmental Resource or Operations Plan and therefore no analysis has been made to those sections of the MRP.

Deficiencies Details:

ireinhart

Environmental Resource Information

General

Analysis:

The application proposes no changes to the existing and approved MRP for the Cottonwood/Wilberg Mine and therefore will not affect existing resources or current land use.

ireinhart

Reclamation Plan

General Requirements

Analysis:

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

The requirements of R645-301-540 are not met within the amendment includes an incomplete replacement of Volume 2 Part 4 Reclamation plan. The amendment is missing detailed bond estimates per R645-301-542.800 and no permanent feature or long term plan regarding the drainage out of the portal in Cottonwood Canyon to meet R645-301-541.400, -301-542.100, -301-542.400, and -301-553.400. Updates to the narrative included descriptions of dates when various stages of demolition were completed in June 2015. The cover letter of the amendment states that the amendment completely replaces Volume 2 Part 4, including appendices and plates. The amendment contain some general details on the sealing of the Trail Mountain Access portals in Cottonwood Canyon but does not include any narrative or timeline describing the permanent design, maintenance, and ownership of the drainage out of the portals and associated UPDES that meets R645-301-541.400, -301-542.100, -301-542.400, and -301-553.400. The letter from Emery only states that Emery County DOT takes on maintenance responsibility associated with the culvert underneath the roadway.

The narrative regarding the structures removal was updated in Section 540. A detailed time table of reclamation is shown in Part 4 Section 300 and in Figure 5-1. Appendix H now contains the demolition of structures. During demolition the Permittee attempted to blast of the shotcrete associated with the portal area but could not safely complete the demolition without compromising the integrity of the cliff. The shotcrete was installed along the rock outcrop for rockfall concerns and the Permittee proposes to leave the shotcrete in place as it does not affect the post mining land use.

Deficiencies Details:

The amendment does not meet the State of Utah R645 requirements for General Environmental reclamation in terms of engineering. The following deficiencies must be addressed prior to final approval.

R645-301-121.200: The Permittee replaced Plate 4-2 with Plate 4B but the narrative in Volume 2 Part 4 Sections 542 still has reference to Plate 4-2 instead of Plate 4B. The Permittee shall remove all references to Plate 4-2 within the MRP narrative.

R645-301-541.400, -301-542.100, -301-542.400, and -301-553.400: The Permittee must address a permanent design and maintenance schedule with a detailed timeline of construction and maintenance ownership that minimizes erosion and water pollution potential on and off the permit area.

cparker

PostMining Land Use

Analysis:

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

The description of the PMLU is located in Section 412 on pages 18-20. The PMLU is livestock grazing and wildlife habitat and managed for multiple uses under the Bureau of Land Management and US Forest Service (with the exception of the 1.86 acres of disturbance at the Cottonwood Fan Portal which is fee land).

ireinhart

WildLife Protection

Analysis:

The amendment does not meet the State of Utah R645-301-342 requirements for a fish and wildlife plan for the reclamation and postmining phase of operation as it does not address protective measures for Golden Eagles during the early nesting stages should one nest within close proximity of the mine site. The Permittee must continue to monitor for Golden Eagles and if one is found to have selected a nest in close proximity to the mine site, consultation with the Division and USFS must occur to determine appropriate protection measures to ensure chick survival.

Protected wildlife in the area include Golden Eagles as the escarpments surrounding the mine site provide known nesting locations. The escarpment face is inaccessible so the only disturbance to the birds are from noise and line of site. Any nest initiated adjacent to the existing facilities during reclamation operations would signify acceptance of the present situation, as was the case of dismantling the building facilities. All raptor nests will be reported to UDWR in Price.

The plant species provided in the final reclamation seed mix identified includes plant species that provide nutritional value and cover for fish or wildlife.

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

Deficiencies Details:

The amendment does not meet the State of Utah R645-301-342 requirements for a fish and wildlife plan for the reclamation and postmining phase of operation as it does not address protective measures for Golden Eagles during the early nesting stages should one nest within 1/2 mile of the mine site. The Permittee must continue to monitor for Golden Eagles and if one is found to have selected a nest in close proximity to the mine site, consultation with the Division and USFS must occur to determine appropriate protection measures to ensure chick survival. This information should be added to paragraph 5 page 16.

ireinhart

Approximate Original Contour Restoration

Analysis:

The amendment meets the State of Utah R645 requirements for Approximate Original Contour Restoration.

The amendment meets the R645-301-512.200, -553.110 through -553.150, and -302-270 as all grading will be place back to approximate original contours (AOC). AOC as defined by R645-301-553.100 through -553.150 is achieved when the final grade closely resembles the general surface configuration of the land prior to mining activities and provides a subsurface foundation for vegetative cover capable of stabilizing the surface from erosion. A typical cross section of the reclamation is shown on Plates 4A through Place 4C for the facilities area.

The amendment places the highwall elimination plan in Appendix B. The appendix details all eighteen portals of which sixteen meet the R645 definition of highwall elimination. Seven of the areas were disturbed prior to 1978 and are reclaimed to a different standard compared to the post 1978 highwalls. Narrative in Appendix B references a Figure 1 in Volume 2 part 4 that is supposed to show the typical sealing of portals however a Figure 1 of that nature does not exists within the amendment. Narrative also references Plates 4-1 and 4-2 which the amendment proposes to remove and replace with Plates 4B and 4C. The Permittee must correct the reference to presumably reference Figure 5-1 and Plates 4B and 4C. The portal highwalls will then be covered to sufficient depth and maintain a maximum slope of 1 ½ :1 in confined areas. In unconfined places, such as the Portal mains before the Wilber fire, fill will be placed at a 2H:1V.

Deficiencies Details:

The amendment does not meet the State of Utah R645 requirements for Approximate Original Contour. The following deficiency must be addressed prior to final approval.

R645-301-121.200 : The Permittee shall correct the reference to presumably reference Figure 5-1 and Plates 4B and 4C.

cparker

Backfill and Grading General

Analysis:

The amendment does not meet the State of Utah R645 requirements for Backfill and Grading.

The amendment does not meet the general requirements of R645-301-553 by detailing that PacificCorp will follow the specific fill requirements outlined within the geotechnical report in the backfill plan. The MRP must not only outline the geotechnical report design summary but commit to following the site specific design criteria: e.g. removal of any material larger than 8 inches, lifts no greater than one foot, and Proctor test for every 50,000 CY of fill place. The design criteria outlined within the geotechnical report are critical to match the stability analysis assumption need to be included in the general backfill and grading plan and due to the increased saturation of the deep gouging the Permittee must show documentation during construction that the strict compaction measures recommended were followed. A general backfill and grading plan that details how disturbed areas will be backfilled and graded to achieve the approximate original contour, eliminate all highwalls, spoil piles, and depressions, and achieve a postmining slope that does not exceed either the angle of

repose or such lesser slope as is necessary to achieve a long term static safety factor of 1.3 and to prevent slides, minimize erosion and water pollution both on and off the site, and support the approved postmining land use. The geotechnical report also addressed the stability concerns with the deep gouging and found that with proper compaction measures the strength parameters meet a calculated factor of safety of 1.32 against slope instability. The Permittee committed to having a qualified geotechnical engineer on site during slope construction to ensure quality control measures during construction but must also commit to the additional construction criteria within the geotechnical report.

The intent of amendment is to completely replace the current reclamation plan and show that removing the sediment ponds at reclamation and installing deep gouging techniques on steep slopes is the appropriate BTCA. Justification of the revised sediment control techniques is proven through soil lost models presented in the amendment Appendix A through I. The majority of the design features and construction of the deep gouging is found in the hydrology section of the MRP.

A typical cross section of the reclamation is shown on Plates 4A through Place 4C for the facilities area. Approximately 176,455 BCY of material will be cut to reclaim the facilities area and approximately 155,830 BCY of material will be backfilled and graded within the facilities disturbed area. Plate 4B shows the proposed final topography of the reclaimed slopes. The excess fill of approximately 20,625 BCY will be used in areas where more fill is needed to enhance or blend slopes. A slope stability analysis was completed by Johansen and Tuttle engineering in 1989 and by RB& G in 2016. The reports can be found in Appendix C and show that all cut fill slopes should be constructed no steeper than 2H:1V for material less than eight inches and no steeper than 1.25H:1V for material greater than eight inches.

Deficiencies Details:

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

R645-301-553: The Permittee will also include a commitment to following the site specific design criteria outlined within the geotechnical report of the removal of any material larger than eight inches, lifts no greater than one foot, and Proctor test for every 50,000 CY of fill place within the MRP Volume 2 Part 4 Section 553.100.

cparker

Mine Openings

Analysis:

The amendment does not meet the State of Utah R645 requirements for Mine Openings.

The requirements of R645-301-513.500, R645-301-529, and R645-301-551 are not met as the Permittee failed to address a long term reclamation plan regarding the UPDES discharge out of the Cottonwood Canyon portals into the old trail mountain permit area.

The amendment includes the addition of a detailed narrative regarding the Trail Mountain Access portal in Cottonwood Canyon. The portal is the lowest within the existing permit area and intercepted groundwater during development. To address the permanent discharge PacifiCorp installed three sediment traps in series located 100 feet apart. The sediment traps allow sedimentation of particles prior to discharge. A solid block seal was constructed 25 feet in by the portal entrance with a 6 inch French drain systems behind the seal. A secondary decant pipe was installed at the bottom of the seal along with a backup decant line installed two feet from the room. The thickness of the French drain filtering system is approximately four feet thick. Appendix I contains a letter from Emery County requesting the six inch buried PVC line be left in place to keep ice from potentially building up in the road ditch in the winter and causing frost heave on the road base. The narrative within Volume 2 Part 4 Section 542 details these portals were sealed and reclaimed in November 2014 and the Emery County Letter is dated February 4, 2015 in Appendix I. The letter from Emery only states that Emery County DOT takes on maintenance responsibility associated with the culvert underneath the roadway. The Permittee must address a permanent design and maintenance schedule with a detailed timeline of construction and maintenance ownership that minimizes erosion and water pollution potential on and off the permit area.

The amendment did include narrative stating when various portals were sealed and Figure 5-1 shows the typical portal seal utilized within the permit area. Table 5-2 shows the development and sealing of the various portals associated with the Cottonwood/Wilberg mines. Appendix B shows the backfill to eliminate as much as practicable eighteen areas of highwall concern.

Deficiencies Details:

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

R645-301-513.500, R645-301-529, R645-301-541.400, R645-301-542.100, R645-301-542.400, R645-301-551, and R645-301-553.140: The Permittee must address a permanent design and maintenance schedule with a detailed timeline of construction and maintenance ownership that minimizes erosion and water pollution potential on and off the permit area.

cparker

Topsoil and Subsoil

Analysis:

The application does not meet the requirements of suitable substitute topsoil and soils reclamation plan, R645-301-232.200 and R645-301-233 and R645-301-243.

Section 240 identifies the outslopes of the fill slopes as substitute topsoil (illustrated on Plate 4C). The fill was sampled in May 2016 at eight trench locations shown on App. C-1 Figure 2. Composite samples were taken from 0 - 5 feet or 0 - 10 feet intervals. Of the eight locations, the following five trench locations were analyzed by Inter-Mountain Laboratory for suitability and results are reported in Appendix A-1: Trenches 1, 2, 5, 6, 7 and 8. [Samples from trench 4 and trench 3 are missing from the soils suitability analytical reports in Appendix A-1, because a subsample from the stability core was not available for analysis (personal communication with Dennis Oakley, 2/28/2017).]

Results from the 0-5 ft interval from trenches 1, 2 and 6 are rated Unacceptable to Poor due to reported SAR values of 19.1, 10.3 and 12.9, respectively and indicate that this fill should be buried against the cut. (Refer to the Division Guidelines Table 4 for suitability criteria.) These samples could be retaken at shorter intervals to refine the data which also indicate high pH values in trenches 6 and 7 and high electrical conductivity in trench 2.

Results from Trench 6 (parking lot), 5-10 ft interval is unsuitable due to SAR/pH value of 52.3 in the sandy soil. This sample represents the pad which is 175 ft wide and 100 ft long. The unacceptable sample was 5 - 10 ft depth (could be deeper). Plate 4B sheets 1 & 2 illustrate that this pad will be cut and used as fill against the upper storage area. The soil represented by this sample from 5 - 10 feet depth (approximately 3,250 CY) must be buried in the fill. The reclaimed surface in this location must be sampled for pH, EC and SAR down to four feet.

Appendix A-2 provides the 1989 soils analysis and discussion. Soils were sampled at locations shown on Map 2-18 Cottonwood/Wilberg Mine Plan Area Soils Map. Map 2-18 is retained in Volume 5 of the MRP. Soils were sampled at 15 cm (6 inch) increments down to 45 cm (18 inches). Elevated sodium was a concern in 1989 at the W2 North location on the OUTSLOPE of the parking lot. Two options for management of the sodium hazard for reclamation were given: irrigation or treatment with gypsum.

Appendix A3 provides 2001 sample analysis of the fill slopes at locations shown on the 2001 Soil Sample Locations included in Appendix A3. There are 10 sample locations (two of them are labeled SS 8). Sample SS5 is in the TEST PLOT separated from the parking lot by a cutslope and a road. SS5 does not pose any unacceptable hazard to vegetation establishment in the depth sampled (0 - 18 inches). SS4 is on the fill slope below the substation. SS4 is unacceptable due to SAR values from 16 to 25 in the surface 18 inches. 2001 samples illustrate that the outslope fill may be suitable in some instances; that there is no acid forming potential in the overburden; and that no boron or selenium hazard exists in the fill. Appendix A-3 is missing analysis sheets numbered page 7 of 15 through page 12 of 15, because those sheets provided the 2001 Cottonwood Waste Rock site analyses (personal communication with Dennis Oakley, 2/28/2017).

Comparing samples over time (Appendix A1 & A2 & A3), it appears that at locations SS5 (Test Plot) revegetated face of the fill slope is suitable for reclamation, but the 0 - 5 ft surface of the pad fill at several locations (16-01, 16-02, 16-03, 16-04, 16-06) must be further examined prior to use as substitute topsoil. Second, it appears that sodium has moved down the profile and has concentrated at greater depths (10 ft +) below the parking lot surface.

A commitment is stated in Section 233 that redistributed overburden will be randomly sampled to assess suitability. Sampling should be conducted on a grid with one sample for each reclaimed acre. The field notes table found at the end of Appendix A-1 outlines the chemical characteristics to be sampled which are pH and EC. Information pertaining to the SAR value at the sampling locations is also critical and must be included in the field analysis. This sampling can be done with a Hach Kit on site. Field analysis results will be provided to the Division (and submitted for inclusion in Appendix A-1 of Part 4 of the MRP) prior to the removal of earth moving equipment from the site.

Section 240 refers to Plate 4D for the location of 120 CY of substitute topsoil which will be analyzed for suitability and used a final reclamation. Plate 4D shows three stockpiles and provides their volumes which total 3,256 CY. Please clarify.

Appendix A2 soil analysis of the fill slopes indicates that the overburden is deficient in Nitrogen and Phosphorus. Section

243 states that ammonium nitrate (30-50 lbs/ac) and triple phosphate (30-40 lbs/ac) will be applied to the surface prior to seeding. Test plots were treated with similar rates, but interim treatments used 50 lbs/ac ammonium nitrate and 75 lbs/ac triple phosphate (MRP, Part IV, p. 15). In June 1989, soil consultants A.R.Southard and T.H.Furst recommended the application of 20-50 lbs/ac nitrogen in the form of ammonium nitrate and 10 - 30 lbs/ac of P₂O₅ (phosphate). The rate described meets this recommendation.

Section 342.220 states that fertilizer will be applied and incorporated into the soil. It is highly desirable to include one or two nitrogen fixing species in the final seed mix. A revised final seed mix is provided in Table 3-3. It is quite similar to the existing approved final mix, but it does not have any nitrogen fixing species. Whereas the mix used on the test plots and on the interim slopes had three nitrogen fixing species (although two were not native, refer to the approved MRP, Part IV, p. 15, 17, 21 and 23).

Northern sweetvetch (*Hedysarum boreale*), Western sweetvetch (*Hedysarum occidentale* var. *canone*), curlleaf mountain mahogany (*Cercocarpus ledifolius*) and mountain mahogany (*Cercocarpus montanus*), all nitrogen fixing species were found within the permit/lease area in 1982 (Vegetation Information for the Wilberg Mine, Bio-Resources Inc. MRP Vol.2) Dr. A.R.Southard's soils report recommends that nitrogen fixing species be included in the seed mix to improve the overburden suitability as substitute topsoil (MRP Vol 2 part 4, App. D). The inclusion of a nitrogen fixing species in the mix will provide long term nitrogen to stimulate microbial activity and improve the overburden over time into a suitable soil resource. In addition to the pre-existing genus' *Cercocarpus* and *Hedysarum*, several other N-fixing genus' were suggested by Tim Anderson, USFS: *Trifolium*, *Astragalus*, *Purshia*, *Sheperdia* (email from Tim Anderson, 9/21/2015).

Deficiencies Details:

The application does not meet the requirements of substitute topsoil and soils reclamation plan. Prior to approval, the following must be provided in accordance with:

R645-301-232.200 and R645-301-233,

The sampling commitment in Section 233 must include:

- 1) A mapped sampling grid overlaid on the final reclamation surface shown on Plate 4E, showing one sample for every acre of the final reclamation surface.
- 2) A statement that samples will be composited over one foot increments from 0 – 4 feet.
- 3) The field notes table in Appendix A1 must include SAR value. (SAR can be analyzed on site with a Hach Kit or sent to the laboratory for analysis.)
- 4) A commitment to provide field analysis results to the Division (and submitted for inclusion in Appendix A-1 of Part 4 of the MRP) prior to the removal of earth moving equipment from the site so that unacceptable soil can be buried in the fill and poor quality soil can be amended.

R645-301-121.200, Please clarify whether the three stockpiles holding a total of 3,256 CY shown Plate 4D will be used in final reclamation.

R645-301-233.100, The approved reclamation plan provides for amendment of the substitute topsoil with fertilizer amendments in the short term and additions of nitrogen through nitrogen fixing species in the long term to create a soil medium that is the best available in the permit area. Please provide a rationale for the removal of the nitrogen fixing species from the final seed mix in Table 3-3 or retain a nitrogen fixing species in the seed mix. Please refer to the analysis section above for recommendations from the USFS on N-fixing species.

pburton

Road System Reclamation

Analysis:

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

The requirements of R645-301-534 are met within the amendment as there is no change to the existing MRP reclamation of all roads throughout the permitted area.

cparker

Road System Retention

Analysis:

The amendment meets the State of Utah R645 requirements for Retention of Roadway Facilities.

The requirements of R645-301-534 and -552 are met within the amendment as there is no change to the existing MRP that no road will be retained at the end of mining that exist throughout the permitted area.

cparker

Hydrological Information Reclamation Plan

Analysis:

The amendment revises the Cottonwood/Wilberg Reclamation plan by removing the sediment ponds contemporaneously as the site is backfilled and regraded. Reclamation will begin at the top of the disturbed area in both Left and Right Grimes Wash forks and work towards the base of the watershed until the sediment ponds are removed last. Reclaimed hillslopes will be pocked, hay mulched, and hydro-mulched. The main channel and smaller side channels will be rip-rapped and restored to a natural configuration. The time frame for restoration work in Grimes Wash is roughly three to six months.

1) The amendment meets the State of Utah R645 requirements for Surface and Groundwater Monitoring.

The amendment will not change the water monitoring program within MRP.

2) The amendment meets the State of Utah R645 requirements for Discharges into an Underground Mine.

The amendment does not propose any discharges into the sealed mine workings.

3) The amendment meets the State of Utah R645 requirements for Gravity Discharges from Underground Mines.

The final design of the portal seal and French drain for the Cottonwood breakout in Cottonwood Canyon is shown on the drawing titled, 'Cottonwood Mine TMA-Intake Portal, Mine Discharge/Drainage Manifold'. The gravity drainage mine water is covered by a UPDES permit and is sampled and reported according to standards set by the Division of Water Quality. The water is very high quality and has been compliant since it began draining from the mine when the portal was sealed. This water issues from a fracture extending to the surface only a few hundred yards in by the sealed portal. From the fracture in the entry it flows on the mine floor down dip to the portal. Since it does not form a mine pool or interact with the coal seam it will never need treatment.

4) The amendment meets the State of Utah R645 requirements for Diversions.

The amendment includes a narrative, designs, calculations, and maps of the final reclamation for the main and side channel diversions at the site. Appendix D-1 provides the NOAA Atlas 14 Point Precipitation Frequency Estimates at the mine site. These data are used for modeling runoff in the side channels using HydroCAD. The modeling and design for the main channels is already approved in the MRP. The design for the main Left and Right forks are provided in Appendix F. The design and location of the small drainages are provided in Appendix F-2 and Figure 1.

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

The application includes adequate sediment control measures that will be implemented during construction activities and once the site is fully reclaimed.

During construction runoff will be treated prior to exiting the permit area. Runoff from the reclaimed areas up-gradient of the inlet of the bypass culvert will be treated with sediment fences before entering the culvert. This design is shown on the drawing, 'Cottonwood Mine Sequence of Reclamation'. The rest of the runoff at the mine site will report as usual to the sediment ponds.

Reclaimed hillslopes will be pocked to prevent offsite impacts. Appendix D-2 includes designs and calculations for the Deep Gouge Geometry or the large and small pocks that will cover the reclaimed hillslopes. In Appendix D-3, a narrative and calculations show the deep pocks at the contact of reclaimed and undisturbed hillslopes are adequate to capture up-gradient undisturbed surface runoff. Appendix D-4 provides further detail of the adequacy of pocking to prevent sediment runoff from the site after it is reclaimed. Appendix Appendix G outlines the methods that will be taken to quantitatively assure the pocks function as designed, including installing staff gauges and running transects across the reclaimed hillslopes.

The amendment models the effectiveness of pocking at reducing soil erosion rates on the reclaimed hillslopes. In Appendix E, the Revised Universal Soil Loss Equation shows pocking will prevent sediment erosion by capturing and depositing

detached sediment particles after transporting only a few feet.

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

The reclamation operations are designed to minimize disturbance to the hydrologic balance within and adjacent to the permit area. The reclamation is designed and will be maintained through bond release to prevent material damage.

kstorrar

Revegetation General Requirements

Analysis:

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

The reclamation plan for final revegetation is located in Part 4, Section 340, starting on page 5 of the amendment. 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 (Tables 3-1 and 3-2 on page 7), seed mix (Tables 3-3 through 3-5 pages 8-10), planting methods, and mulching. Measures proposed to determine success of revegetation are identified in Section 341.250 on pages 13-15 and include the use of monitoring methods approved in Appendix A of the Divisions Vegetation Information Guidelines.

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

The seed mix is comprised of a diverse mix of species native to the area that should provide quality wildlife habitat, forage production and promote soil stability. The seed mix was modified based on consultation with the Division and U.S. Forest Service (land management agency) in 2015. Yellow Sweetclover (a legume) was removed from the mix due to the aggressive nature of disturbed sites and Utah Sweetvetch (legume) was removed due to another sensitive Sweetvetch in the area. In lieu of nitrogen-fixing legumes in the seedmix, nutrients and soil fertilizers will be applied at the completion of the pocking process as noted Section 243 on page 3.

The amendment meets the State of Utah R645-301-357 requirements for extended responsibility period. The extended responsibility period will be 10 years.

Page 12 of Part 4 discusses the maintenance and monitoring of revegetated sites to monitor the progression of reclamation success during the liability period.

Ireinhart

Revegetation Mulching and Other Soil Stabilization

Analysis:

The amendment meets the State of Utah R645-301-355 requirements for mulching and soil stabilizing.

Mulching and soil stabilizing practices are identified in Section 342.220 on pages 11-12. The plan is to start at the highest point of the slope and continuously move down. The process is to remove fill, stockpile existing topsoil, backfill and/or grade to natural slope, pock and mix straw mulch (weed free hay 2000 lbs/acre), apply fertilizer (30-50 lbs/acre or as recommended), and broadcast seed using a hydro seeder. Sections will be done one at a time so that machinery will not backtrack onto regraded slopes. Seeding will occur in the late fall or spring if conditions are right (timing and climate). A tackifier will be added to the mulch and after seed is applied.

Ireinhart

Revegetation Standards for Success

Analysis:

The amendment does not meet the State of Utah R645-301-356.231 requirements for revegetation standards for success as minimum stocking and planting arrangements are not identified.

Success standards are identified in Section 341.250 on pages 13-15. Standards for success, statistically valid sampling techniques for measuring success, and approved methods are identified in the Division's Vegetation Information Guidelines. The PMLU is livestock grazing and wildlife habitat and managed for multiple use under the Bureau of Land Management and US Forest Service. Therefore, as required by R645-301-356.210 and 356.230, success standards will be measured by production, cover, and shrub/tree density. Revegetated sites will be compared to reference sites that are identified on drawing 2-15A and marked in the field by a post.

Although not specifically required by regulation, the Division recommends the Permittee use exclosures on revegetated and reference sites to ensure accurate production and cover measurements for years 9 and 10 of the responsibility period. This will ensure that measurements are not compromised by livestock and wildlife grazing. See pages 13 & 14.

Deficiencies Details:

The amendment does not meet the State of Utah R645-301-356 requirements for revegetation standards for success. The following deficiency must be addressed prior to final approval:

R645-301-356.230. Minimum stocking and planting arrangements must be specified. The Permittee is required to consult with the Division, U.S. Forest Service (land management agency at mine site), BLM (land management agency at waste rock site), and Utah Division of Wildlife (Utah agencies responsible for wildlife programs) to determine stocking rates based on local and regional conditions. This information should be inserted and/or replace paragraph 3 page 14.

Ireinhart

Stabilization of Surface Areas

Analysis:

The application does not meet the requirements of soil stabilization plan, R645-301-244.

The currently approved final reclamation plan (Part IV, pg. 18) describes the application of 2 Tons/acre hay mulch followed by 2,000 lbs/ac hydromulch with tackifier.

Section 244 states that at least 1,500 lbs/acre hydromulch will be applied. The reclaimed slopes shown on Plate 4E are 34.4% ((3h:1v) to 51.2% (slightly steeper than 2h:1v). Most bonded-fiber mulch products have a recommended application rate of 3,000 lbs/ac on slopes 2h:1v. However, the 1988 seeding of the interim slopes were protected with 2,000 lbs/ac hydromulch. The test plots in 1990 evaluated mulch application and rates, but the results were not stated in the application.

Surface pocking (6 ft x 6 ft x 3 ft deep) will be used along the perimeter of the disturbed area to slow flow from the undisturbed area onto the disturbed area (Plate 4E). Surface pocking within the disturbed area will be 3 ft x 3 ft x 1.5 ft to contain and allow infiltration of runoff.

Deficiencies Details:

The application does not meet the requirements of soil stabilization plan. Prior to approval please make the following change in accordance with

R645-301-244,

- 1) Section 244 will state that wood fiber mulch will be applied at the manufacturers recommended rate for the reclaimed slopes or that a minimum a 2,000 lbs/acre wood fiber mulch will be applied.
- 2) Please indicate whether the results of the mulching test plot data or some other information is driving the lower mulch rates from the current plan of 2 Tons/acre hay mulch.

pburton

Maps Affected Area Boundary

Analysis:

Affected Area Boundary Maps

The amendment meets the State of Utah R645-301-521.100 requirements for Affected Area Maps.

The requirements of R645-301-542 are met within the amendment as Plate 4F shows the watersheds that will drain into the affect area.

Maps Bonded Area

Analysis:

The amendment meets the State of Utah R645 requirements for Bonded Area.
The requirements of R645-301-800 are met within the amendment as the bonded area map was updated within Plate 4B.

cparker

Maps Reclamation Backfilling and Grading

Analysis:

The amendment meets the State of Utah R645 requirements for Reclamation Backfilling and Grading Maps.
The requirements of R645-301-542 are met within the amendment Plate 4B shows the proposed final topography of the reclaimed slopes.

cparker

Maps Reclamation Facilities

Analysis:

cparker

Maps Reclamation Final Surface Configuration

Analysis:

The amendment meets the State of Utah R645 requirements for Final Surface Configuration Maps.
The requirements of R645-301-542 are met within the amendment as Plate 4B shows the estimated final surface configuration back to AOC.

cparker

Maps Reclamation Surface and Subsurface Man Made

Analysis:

The amendment meets the State of Utah R645 requirements for Reclamation of Surface and Subsurface Manmade Features Maps.
The requirements of R645-301-542 are met within the amendment as plates 4A through 4B show the removal of surface and or subsurface manmade features within the permit area.

cparker

Bonding Determination of Amount

Analysis:

The amendment does not meet the State of Utah R645 requirements for Determination of Bond Amount.
The amendment does not meet the requirements of R645-301-830.140 as the Permittee submitted an reference in appendix H stating that the currently head bond is adequate for the current MRP reclamation plan but the detailed MRP bond sheets are contained within Part 4 Appendix C which is replaced completely within the new amendment which removes all detailed line item bond sheets. In addition, the current MRP detailed bond information in Part 4 Appendix C estimates approximately 109,636 BCY of earthwork grading for dozer and track hoe work for the original stage 1 reclamation and 75,271 BCY of

earthwork grading for stage 1 in scraper work. Stage 2 reclamation stated approximately 54,141 BCY of earthwork grading for dozer and track hoe work and 19,949 BCY of earthwork grading for stage 2 in scraper work. The total earthwork sheets only account for 163,777 BCY of earthwork for grading and 95,220 CY for scraper. The amendment estimates approximately 176,455 BCY of material will be cut to reclaim the facilities area and approximately 155,830 BCY of material will be backfilled and graded within the facilities disturbed area. The change in grading plan results in approximately 12,678 BCY not accounted for within the bond reclamation estimate which is approximately \$26,550 in dozer grading and \$10,800 in excavator work. The Permittee must include updated line item details regarding the reclamation cost to the Division due to the difference in grading volumes being deemed significant.

Deficiencies Details:

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

R645-301-542.800, R645-301-830.140: The Permittee must include line item details regarding the reclamation cost to the Division. Appendix H of the amendment replaces Appendix C of the current MRP but does not contain any of the required relevant information. The Permittee shall provide a reclamation cost estimate similar in detail to the current approved Appendix C for the proposed amended reclamation plan.

cparker