



Technical Analysis and Findings
Utah Coal Regulatory Program

September 18, 2015

PID: C0150019
TaskID: 4960
Mine Name: COTTONWOOD/ WILBERG
Title: REVISE FINAL RECLAMATION PLAN

Summary

Interwest Mining Company (IMC), a subsidiary of PacifiCorp, submitted an amendment to revise the Cottonwood/Wilberg Mine Reclamation Plan on July 28, 2015. The amendment modifies the final reclamation design. Cut and fill estimates have been recalculated for precision and maps 4-1, 4-1 and 4-3 have been amended to illustrate the new contours.

The Sediment Control Plan was also revised to utilize best technology currently available (BTCA). IMC incorporated deep gouging techniques on steep slopes in place of the existing design for contour and collection ditches. IMC proposes using BTCA allows the removal of the sediment ponds at reclamation without the additional contributions of sediment to stream flow or outside the permit area.

There are no proposed changes to the Environmental Resource or Operations Plan.

Deficiencies Details:

[Empty box for deficiencies details]

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General Contents

Violation Information

Analysis:

Information provided in the application meets the minimum requirements of the regulations.

Interwest Mining Company is a subsidiary of PacifiCorp. An AVS check was performed on August 24, 2015. There were no violations retrieved by the system.

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Operation Plan

Topsoil and Subsoil

Analysis:

pburton

Reclamation Plan

General Requirements

Analysis:

The application proposes no changes to the existing and approved MRP for the Cottonwood/Wilberg Mines operation plan and therefore will not affect existing resources or current land use. Furthermore, the mine is in the reclamation phase thus rendering the operation plan obsolete.

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General Requirements

Analysis:

The Division initiated a review for the Cottonwood/Wilberg application for changes to the final reclamation related to engineering and bonding, including:

- A review of the application portions of the permit to ensure that the mine plan contains the commitments for the application of the best technology currently available (BTCA) to prevent additional contributions of suspended solids to stream flows outside of the permit area.
- Evaluate the reclamation bond to ensure that coverage adequately addresses permit changes approved subsequent to permit approval or renewal, and to ensure that the bond amount is appropriately escalated in current-year dollars.

The minimum requirements of R645-301-540 and R645-301-830.140 are not met within the application; largely due to a lack of bonding information and changes proposed within the MRP that conflict with R645-301-356.300 and R645-301-763.100 rules that state in no case will the siltation structures be removed sooner than two years after the last augmented seeding.

The minimum requirements of R645-301-540 are not met within the application due to changes proposed within the MRP that conflict with R645-301-356.300 and R645-301-763.100 rules that state in no case will the siltation structures be removed sooner than two years after the last augmented seeding.

The application included an update to the subsidence control plan detailing the current status of the mine. The mine was sealed in 2001 and no underground mining has been conducted since that time. Demolition of the facilities commenced in November 2014.

Deficiencies Details:

The minimum requirements of R645-301-540 are not met within the application due to changes proposed within the MRP that conflict with R645-301-356.300 and R645-301-763.100 rules that state in no case will the siltation structures be removed sooner than two years after the last augmented seeding.

cparker

PostMining Land Use

Analysis:

Postmining land use is described on pages 34-35 which is grazing and wildlife habitat. The final reclamation plan is designed to meet the post-mining land use to the extent possible considering most of the reclamation consists of developing steep slopes and exposed hard rock surfaces. The seedmix contains plant species that support livestock grazing, wildlife habitat, and soil stability. The adjacent areas of the permit provide the majority grazing and habitat values.

Findings: Information provided in the application meets the minimum requirements of R645-301-412

Ireinhart

WildLife Protection

Analysis:

Protection of fish and wildlife is described on pages 45-49. It should be noted that an active Golden Eagle nest is located directly upslope (approximately ¼ mile) from the pad facility. During the 2015 nesting season, demolition activities, including blasting were constantly occurring on the pad site. Although significant noise and demolition activities were occurring at the site prior to, during, and after nesting, a golden eagle selected that nest and successfully hatched a chick. The nest was monitored by the Forest Service and the chick fledged successfully. Therefore, the statement on page 47 is substantiated. "Any nest initiated adjacent to the existing facilities would not require cessation of operations because this nesting action signifies acceptance of the present situation."

The planting mix of forbs, grasses, and shrubs is similar to the adjacent native plant communities and will provide food and cover for wildlife.

Findings: Information provided in the application meets the minimum requirements of R645-301-342

Ireinhart

Approximate Original Contour Restoration

Analysis:

The application meets the minimum R645-301-512.200 and -553.110 as there is no change in the MRP and all grading will be placed back to approximate original contours. Plate CM-10378-WB was updated to reflect the final reclamation to AOC.

cparker

Backfill and Grading General

Analysis:

The minimum requirements of R645-301-553 are met within the application as there is no change to the existing MRP grading reclamation details. Appendices A and B meet the minimum R645 rules as the appendices detail how each highwall and portal area throughout the site will be reclaimed in accordance with R645-301-553.120 through-553.150 and -553.530. The backfilling and grading of the site will start in the upper reaches of the disturbed areas and work down the canyons. All areas that will be backfilled will have hay mulch applied along with deep gouging to facilitate vegetation growth and control erosion of the backfilled areas. The MRP also details that after seeding reclaimed areas will be sprayed with a wood-fiber mulch and tackifier to assist in stabilizing the soil surface.

The application included updated backfilling calculations along with an update Plate CM-10378-WB detailing where cut/fill placement will take place throughout the disturbed areas of the Cottonwood/Wilberg mines. There will be an excess of approximately 21,000 BCY that the Permittee will utilize to blend and enhance the slope of reclaimed areas as demonstrated on CM-10378-WB.

Deficiencies Details:

R645-301-356.300 and -763.100 are not met within the application as the rules require siltation structures to remain in place for two years after the last augmented seeding.

- The Permittee will amend the MRP to the original text or describe an alternative scenario staging the reclamation of the ponds two years after the last seeding. All applicable time table schedules should also be update throughout the MRP per R645-301-542.100 and 542.200.

R645-301-550, -553, and 830.140 are not met within the application as the Permittee will include site specific plans that follow R645 rules design criteria for reclamation activities including backfilling and grading disturbance areas. Detail cost estimates with supporting calculations such as grading cut/fill volumes will be supplied to the Division.

- The Permittee's application changed the total cut/fill grading volumes from the original MRP to complete reclamation activities that do not meet all R645 Rules with the removal the sediment ponds prior to two years of seeding. The Permittee will update the grading volumes and relevant cost estimates within the MRP with a reclamation plan that meets the R645 rules, specifically R645-301-356.300 and R645-301-763.100.

cparker

Backfill and Grading on Steep Slopes

Analysis:

The minimum requirements of R645-301-553.13 and -553.6500 are met within the application as there is no change to the existing MRP grading reclamation details on the grade of steep slopes. The reclamation of the Cottonwood/Wilberg mine facilities and the Grimes wash area are difficult areas of reclamation due to the narrow canyon and over steepened slopes of the Grimes washes. The current MRP reclamation of these areas meets the requirements detail within the R645-301-553.130

cparker

Mine Openings

Analysis:

The minimum requirements of R645-301-542.710 and -551 are met within the application Volume 2 Part 4 Table of Portals, was updated to reflect the sealing date of all portals or underground entries throughout the Cottonwood and Wilberg mines. The majority of the portals were sealed in May of 2001 with the most recent sealing and reclamation completed up Cottonwood Canyon entries in November of 2014. Drawing CM-10378 details the location of where mine openings will be buried by reclamation embankments.

cparker

Topsoil and Subsoil

Analysis:

Analysis:

The application does not meet the requirements for soil nutrients and amendments, R645-301-243. The vegetation test plots were fertilized with 30 - 50 lbs/ac Ammonium nitrate and 30 - 40 lbs/ac Triple Phosphate (0-46-0). The test plot seed mix included two nitrogen fixing species: Utah sweet vetch and yellow sweet clover which were removed from the proposed final revegetation mix.

This revised reclamation plan includes 30-50 lbs/acre fertilizer, but the type of fertilizer is not specified. This revised reclamation plan should include nitrogen fixing species in the seed mix.

There has been no change to the topsoil redistribution plan which meets the requirements of R645-301-240 Soils Reclamation plan. The surface 18 inches of soil from the pad outslopes will be salvaged to generate 10,000 CY of substitute topsoil. After redistribution, the soil will be sampled for the parameters described in the Division's January 2008 Guidelines for Management of Topsoil and Overburden.

Deficiencies Details:

R645-301-243, The plan indicates 20-50 lbs/ac fertilizer will be applied at final reclamation, but the type of fertilizer to be applied should also be stated. The plan should include a nitrogen fixing species in the seed mix to promote long-term soil health.

pburton

Road System Reclamation

Analysis:

The minimum requirements of R645-301-534 are met within the application as there is no change to the existing MRP reclamation of roads throughout the permitted area. Roads required for maintenance of siltation structures will remain in place until the final revegetation at the drain field, after which the remaining roads will be roughened and reseeded.

cparker

Road System Retention

Analysis:

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

cparker

Hydrological Information Reclamation Plan

Analysis:

The application's proposed project work timeline is deficient per the reclamation rule R645-301-763.100. This rule states, "In no case will the (siltation) structure be removed sooner than two years after the last augmented seeding".

The amendment to revise the Cottonwood/Wilberg Reclamation plan does not meet the minimum hydrology requirements of the State's Coal Mining Rules. The amended Reclamation Plan proposes to remove the sediment ponds contemporaneously along with removing the backfill and the buried undisturbed bypass culvert in Grimes Wash. Reclamation would 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 finally removing the sediment ponds. Disturbed area hillslopes would be pocked, hay mulched and hydro-mulched and the channel would be rip-rapped and restored to its natural configuration. The time frame for restoration work in Grimes Wash would likely take place over the course of a few months. In lieu of the sediment ponds treating runoff the reclaimed hillslopes, the amendment proposes that pocking and mulching will sufficiently treat surface runoff prior to leaving the permit area.

Reclamation of the Cottonwood/Wilberg mine facilities and the Grimes Wash watershed will be logistically and hydrologically difficult to accomplish. The narrow canyon and very steep Left and Right forks of Grimes wash will make it difficult to reclaim the hillslopes and channels. Once the hillslopes are reclaimed it is difficult to route surface runoff from the disturbed area slopes to the sediment ponds during the two post-augmented seeding years or the transition period. The currently approved reclamation plan will capture and divert hillslope surface runoff to the sediment ponds in diversion channels running parallel to the main reclaimed 'undisturbed' channel. This water conveyance system will be difficult to construct and will require constant maintenance during the transition period. While this plan may be difficult to implement, it is the only current option that is in full compliance with the rules. This is because it utilizes the sediment ponds as the Best Technology Currently Available to treat runoff and prevent additional contributions of sediment outside the permit area.

Removing the ponds early on in the proposed reclamation plan is not implementing the Best Technology Currently Available to treat disturbed area runoff. The proposal attempts to demonstrate that sediment yields will be equal to or less than the background undisturbed area sediment yields by providing three RUSLE2 model runs. However, this sediment erosion model is unable to accurately quantify treatment effectiveness because RUSLE2 does not include pocking as a treatment option. The biggest concern with the proposed plan is there is no treatment alternative once the plan is implemented. If the hillslope pocking and mulching does not adequately prevent sediment from leaving the permit area and offsite impacts do occur, it is nearly impossible to implement secondary corrective measures to reduce elevated sediment yields from leaving the site.

In order to comply with the rules, the sediment ponds must stay in place during the two post-augmented seeding years. This means the undisturbed bypass culvert(s) will need to be left in place in some form or another to safely pass undisturbed runoff and to keep the proper sizing of sediment ponds for disturbed area runoff. An alternative to installing diversion channels running parallel to the main reclaimed channel is to leave the by-pass culvert fully in place while reclaiming the largest possible footprint within the permit area. The reclamation work will excavate the backfill, pad landings, and parking areas and treat hillslopes with pocking and mulching. Only enough fill will be left in the very bottom of Grimes wash to cover the bypass culverts and create a temporary surface channel that conveys runoff to the sediment ponds. This temporary surface channel will also function as an access road that can be used for any necessary repairs to hillslopes during the two-year transition period. After two years this access road can be utilized to remove the remaining fill, the bypass culverts, and the sediment ponds. As work proceeds from the top of the watershed to the bottom, the center undisturbed channel may be restored to its natural configuration. Given the MRP states, "(the) present buried (bypass culvert) diversions were placed generally along the existing stream bed" there will be very little disturbance on either side of the channel associated with this project work. The same hillslope treatment as before can be applied to these small boarding areas to help prevent offsite impacts. There is a high probability of success that once treated, these small areas with very short hillslope lengths will prevent additional contributions of sediment to runoff the permit area.

Deficiencies Details:

The application's proposed project work timeline is deficient per the reclamation rule R645-301-763.100. This rule states, "In no case will the (siltation) structure be removed sooner than two years after the last augmented seeding".

Contemporaneous Reclamation General

Analysis:

The minimum requirements of R645-301-553 of backfill and grading are met within the application the MRP details how top/sub soil will be placed contemporaneous as grading is completed. The MRP details how seeding will be completed in a timely manner after topsoil placement, along with other sediment erosion protection activities such as tackifier and hay mulching, to minimize erosion and maintain topsoil.

cparker

Revegetation General Requirements

Analysis:

The vegetation plan regarding interim stabilization and vegetation on pages 16-21 has been removed. This information is now obsolete because the mining phase is complete, all structures have been removed, and final reclamation is occurring at this time. The final revegetation plan and seed mix have been tweaked to incorporate new best management practices based on more recent reclamation success in the area. Planting of live shrubs and trees have been removed since live plantings have not been successful in the arid environment.

Deep gouging (pocking) techniques have been incorporated to facilitate reclamation success. Once pocking is complete, the area will be seeded and sprayed with a wood-fiber mulch and tackifier to stabilize surface erosion. The seed mix includes species to establish a diverse, effective and permanent cover capable of achieving the postmining land use. USFS was consulted on the new seed mix and removal of tree and shrub plantings.

Deficiencies Details:

The plan fails to address timing of vegetation pursuant to R645-301-354. Seeding must occur during the first normal period for favorable planting conditions after replacement of plant-growth medium.

The vegetation plan regarding interim stabilization and vegetation on pages 16-21 has been removed. This information is now obsolete because the mining phase is complete, all structures have been removed, and final reclamation is occurring at this time. The final revegetation plan and seed mix have been tweaked to incorporate new best management practices based on more recent reclamation success in the area. Planting of live shrubs and trees have been removed since live plantings have not been successful in the arid environment.

Deep gouging (pocking) techniques have been incorporated to facilitate reclamation success. Once pocking is complete, the area will be seeded and sprayed with a wood-fiber mulch and tackifier to stabilize surface erosion. The seed mix includes species to establish a diverse, effective and permanent cover capable of achieving the postmining land use. USFS was consulted on the new seed mix and removal of tree and shrub plantings.

Ireinhart

Revegetation Standards for Success

Analysis:

The sedimentation control plan proposes to use the deep gouging as an alternative to keeping the sedimentation ponds for the required 2 years after the last augmented seeding.

Deficiencies Details:

The sedimentation control plan proposes to use the deep gouging as an alternative to keeping the sedimentation ponds for the required 2 years after the last augmented seeding.

Information provided in the application is not considered adequate to meet the minimum requires of R645-301-356.300. In no case will the siltation structures (Sedimentation Ponds) be removed sooner than two years after the last augmented seeding. Prior to approval the permittee must modify the reclamation plan to adhere to the regulations cited.

Ireinhart

Stabilization of Surface Areas

Analysis:

Analysis:

The soil stabilization methods proposed in Volume 2 Part 4 of the reclamation plan meet the requirements of R645-301-244.200. Slopes will be graded no steeper than 1.5h:1v. Stabilization of reclaimed slopes will be accomplished through surface roughening to create pocks that are 3 ft in diameter and 1.5 ft deep. The surface roughening will incorporate 1 ton/ac hay mulch into the soil. Pocking will be followed by hydroseeding and hydromulching with 1 ton/ac wood fiber mulch and 500 lbs tackifier. This method is recommended in DOGM's Practical Guide to Reclamation found on the ogm.utah.gov website under permitting guidelines. This technique has been successfully utilized at several other Utah sites that have since received bond release. i.e. Willow Creek/School House Canyon; Star Point Mine; Des Bee Dove.

The RUSLE calculations provided compare the undisturbed 150 ft long, 65% slope with grazing as a management practice to reclaimed slopes 273 to 360 ft long with slopes of 34% - 51%, where management practices include plowing to 10 inches and mulch. The plowing is the most comparable to surface roughening proposed for the site. The RUSLE output indicates the reclaimed disturbed area slopes will produce 1.2 to 3.0 t/ac/yr soil loss which is about equal to the undisturbed slope soil loss estimated at 2.7t/ac/yr.

pburton

Cessation of Operations

Analysis:

The minimum requirements of R645-301-515 and -541 are met within the application as there is no change to the existing MRP plan of communication with the appropriate parties in the event of the cessation of operations and final reclamation.

cparker

Maps Bonded Area

Analysis:

The minimum requirements of R645-301-800 are met within the application as the bonded area remains unchanged.

cparker

Maps Reclamation BackFilling and Grading

Analysis:

The minimum requirements of R645-301-542 are met within the application due an updated Plate 4-2. Plate 4-2 meets the minimum requirements of R645-301-731.311 Identifying and burying and/or treating, when necessary, materials which may adversely affect water quality, or be detrimental to vegetation or to public health and safety if not buried and/or treated. Volume 2, Part 4, Page 1 of the text was edited to stat that concrete demolition would be buried in other areas requiring fill beyond the already approved area against the east highway cut in the lower parking lot. The Permittee supplied details of locations where concrete will be placed so as to prove the backfilling will not adversely affect water quality, detrimental to vegetation, or a threat to public health and safety.

cparker

Maps Reclamation Facilities

Analysis:

The minimum requirements of R645-301-542 are met within the application as there is no change to the existing MRP plan of facilities that will remain post mining operations.

cparker

Maps Reclamation Final Surface Configuration

Analysis:

The minimum requirements of R645-301-542 are met within the application as there is no change to the existing MRP plan of the estimated final surface configuration back to AOC.

cparker

Maps Reclamation Surface and Subsurface Man Made

Analysis:

The minimum requirements of R645-301-542.620 are not met within the application as the application contemplates reclaiming the ponds and associated culverts that were utilized for mining operations two years prior the last augmented seeding, which are reclamation activities that violate R645-301-356.300 and R645-301-763.100.

- The Permit will follow the existing MRP reclamation time table or supply an alternative reclamation scenario that meets the R645-301-542.600 rules for removing surface manmade features.

Deficiencies Details:

The minimum requirements of R645-301-542.620 are not met within the application as the application contemplates reclaiming the ponds and associated culverts that were utilized for mining operations two years prior the last augmented seeding, which are reclamation activities that violate R645-301-356.300 and R645-301-763.100.

- The Permit will follow the existing MRP reclamation time table or supply an alternative reclamation scenario that meets the R645-301-542.600 rules for removing surface manmade features, such as ponds and culverts.

cparker

Maps Reclamation Certification Requirments

Analysis:

R645-3010-512 minimum requirements are not met due to an electronic stamp used on all mine drawings and plates. The electronic stamp is by a Utah certified professional engineer with experience in underground mining operations, Mark Reynolds.

Deficiencies Details:

R645-3010-512 minimum requirements are not met due to an electronic stamp used on all mine drawings and plates. The electronic stamp is by a Utah certified professional engineer with experience in underground mining operations, Mark Reynolds.

- The Division at this time does not accept electronic stamps. Permittee will submit copies of all drawings to the Division with a physical PE stamp upon approval of the application.

cparker

Bonding and Insurance General

Analysis:

The application does not meet the minimum requirements of R645-301-800 as the application did not include updated costs for the additional earthwork volumes. The applicant is current on the bond and insurance standings. See Determination of Bond Amount section for more details regarding specific deficiencies.

Deficiencies Details:

The application does not meet the minimum requirements of R645-301-800 as the application did not include updated costs for the additional earthwork volumes. The applicant is current on the bond and insurance standings. See Determination of Bond Amount section for more details regarding specific deficiencies.

cparker

Bonding Form of Bond

Analysis:

The application meets the minimum requirements of R645-301-860.100 as the applicant currently maintains a surety bond amount of \$2,779,000 for 45.32 acres of disturbance, which is held by Travelers Casualty and Surety Company of America posted on 6/29/12. The fan portal and miller canyon breakout portals were removed from the bond liability and regulatory

Bonding Determination of Amount

Analysis:

The application does not meet the minimum requirements of R645-301-830.140 as the Permittee submitted detailed bond information in regards to the application. The original MRP was edited to match the update June 2012 line item demolition cost located in Appendix C of Volume 2. All demolition costs, such as asphalt removal, there were previously located in Items beyond 2-A of the demolition costs within Appendix C have been moved to items 1-A through 2-A. Minor text edits throughout the application include updating such line item references.

The current application does not include an updated bond reclamation cost estimate, Appendix C within the Cottonwood/Wilberg MRP. The current Appendix C was updated in June 2012 for a total earthwork cost of \$674,00 in 2012 Dollars for moving approximate 267,400 cubic yards of material. The updated information details a larger volume than currently outlined within the cost estimate. The Permittee will provide updated earthwork costs for the any new reclamation plans with the application.

Deficiencies Details:

The application does not meet the minimum requirements of R645-301-830.140 as the Permittee submitted detailed bond information in regards to the application. The original MRP was edited to match the update June 2012 line item demolition cost located in Appendix C of Volume 2. All demolition costs, such as asphalt removal, there were previously located in Items beyond 2-A of the demolition costs within Appendix C have been moved to items 1-A through 2-A. Minor text edits throughout the application include updating such line item references.

The current application does not include an updated bond reclamation cost estimate, Appendix C within the Cottonwood/Wilberg MRP. The current Appendix C was updated in June 2012 for a total earthwork cost of \$674,00 in 2012 Dollars for moving approximate 267,400 cubic yards of material. The updated information details a larger volume than currently outlined within the cost estimate. The Permittee will provide updated earthwork costs for the any new reclamation plans with the application.

Bonding Terms and Conditions Liability Insurance

Analysis:

The application meets the minimum requirements of R645-301-850 as the applicant currently holds liability insurance through Associated Electric and Gas Insurance Services, effective 10/1/14 through 10/01/15. The insurance includes the required Marsh from, explosives and claims made per occurrence.