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DEPARTMENT OF NATURAL RESOURCES

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February 8, 2019

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

Subject: Conditional Approval of Completion of Final Reclamation, PacifiCorp,
Cottonwood/Wilberg Mine, C/015/0019, Task #5844

Dear Mr. Fleck:

The above-referenced amendment is approved conditioned upon receipt of 2 clean copies prepared for incorporation. Please submit these copies by February 28, 2019. Once we receive these copies, final approval will be granted.

A stamped incorporated copy of the approved plans will also be returned to you at that time, for insertion into your copy of the Mining and Reclamation Plan.

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

Sincerely,

Steve Christensen
Permit Supervisor

SKC/sqs

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Technical Analysis and Findings

Utah Coal Regulatory Program

PID: C0150019
TaskID: 5844
Mine Name: COTTONWOOD/ WILBERG
Title: COMPLETION OF FINAL RECLAMATION

Summary

The Cottonwood-Wilberg mine completed final reclamation in March 2018. The permittee has submitted this amendment as a precursor to submitting a Phase I bond release for the disturbed area of the site. The amendment is assigned Task #5844.

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General Contents

Legal Description

Analysis:

The application meets the State of Utah R645 requirements for Legal Description.

The Cottonwood-Wilberg mine was fully reclaimed in March 2018. The amendment updates the now reclaimed, disturbed area acreage, the permittee will be requesting bond release on in early 2019. The disturbed acres for the Main Mine slightly increased from 20.46 acres to 22.0 acres as shown in the Disturbed Area Reconciliation Table in Appendix G. The increased acreage is attributed to the higher accuracy survey method used to classify the disturbed/undisturbed boundary compared to the original less accurate boundary classification. The original survey method used a low pixel resolution and the boundary was traced on a 2-D plane. The new method used high resolution 3-D photogrammetric imagery to delineate the boundary. Determining surface area in 3-D increases the acres because the length of the resultant rise over run relief is used in calculating the area as opposed to only using the length of the horizontal run. Cottonwood mine has an extreme amount of relief from the channel bottom to the top of the reclaimed hillslopes and from the bottom of the site to the top of the site. This translates to the reasonable amount of acreage being added to the disturbed area. If for instance this was a reclaimed flat field a large discrepancy in disturbed acreage would not be expected between the two survey methods because the lengths of rise over run relief and only the horizontal run would be roughly the same.

kstorrar

Operation Plan

Fish and Wildlife Protection and Enhancement Plan

Analysis:

The amendment meets the State of Utah R645-301-342 requirements for fish and wildlife protection and enhancement.

The premining land use was wildlife habitat and it has been reclaimed as such using seed mixes appropriate for creating a habitat for wildlife similar in nature to the surrounding habitat. Additionally, the Cottonwood Mine Escarpment Study was developed and carried out during mine operation to develop a model to predict escarpment failure, identify impacts to resources, and develop effective mitigation measures for identified impacts. In 1989, an assessment of mule deer use on the BLM portion of the permit area was also included into this study. The results of the study were reported annually. In 2001, the portals in Grimes Wash were sealed and no active mining occurred in that area from that time until final reclamation was completed in March of 2018.

tmiller

Reclamation Plan

Topsoil and Subsoil

Analysis:

This amendment to update the permit to include as-built conditions post final reclamation meets the R645-301-250 soil performance standards requirements, because Volume 2, Part 4 provides soil reclamation as-built information.

The Cottonwood/Wilberg Mine Site area is recorded as 29.37 acres (Legal Financial Volume App. G, pg CTW-2). An as-built map Dwg # WS449D replaces Plate 3-16 in Volume 6. Final cross sections are shown on Plates 4C and station locations are shown on Plate 4B and on the un-named plate in Appendix A-2. Final cut volume was 6,870 CY and fill was 6,157 CY.

The location of substitute topsoil salvage is shown on Plate 4C. Comparative analyses between field and lab reports is noted on page 3 and details are found on an unnamed plate in Appendix A-2, making this plate a very handy field reference. The 2018 soil sampling data is discussed on page 3 and found in Appendix A-2. Subsoil and substitute topsoil placement is described on page 4. Hay mulch was incorporated with surface pocking (p. 3-4). Fertilizer type and amount and application method was Premium Garden Fertilizer 16-16-8 @ 40 lbs/acre and urea (46-0-0) @ 50 lbs/ac (page 4). Hydromulch and fertilizer was applied at 2,000 lbs/ac with guar tackified at 50 lbs/ac. (p. 5 and p. 13). Seed was applied by hand spreading (p. 13).

The final contours of the rock storage area are shown on Plate 4-D in Appendix A-2. At the rock and soil storage area, hay mulch was incorporated with roughening, but there was no pocking or hydromulch (p. 12).

Seeding and mulching occurred on August 2017 (on the upper bench) and in March 2018 on the remainder of the site (p. 9). Table 3-3 is the final seed mix for the Cottonwood Mine site includes: western wheatgrass, bluebunch wheatgrass, Indian ricegrass, Needle and thread grass, thickspie wheatgrass, basin wildrye, blueleaf aster, small burnett, Lewis flax, Parmler's Penstemon, serviceberry, fourwing saltbush, shadscale saltbush, and big Wyoming sagebrush (p. 10). Table 3-4, the Wilberg drainfield mix (p. 11) and Table 3-5 the Cottonwood fan portal mix (p. 12) are also listed. The latter two mixes vary from the Cottonwood Mine mix, due to changes in land managers preference. i.e. Yellow sweetclover, rabbitbrush, Ephedra, and Utah Sweet Vetch found in the earlier mixes were removed from the subsequent mixes.

An annual spring evaluation will be conducted of the site (p. 14). All noxious weeds will be eradicated if they become established on the site (p. 14). All rills and gullies will be filled and the soil reseeded. Maintenance and monitoring will be reported in the Annual Vegetation Monitoring Report (p. 14).

pburton

Road System Reclamation

Analysis:

The application meets the State of Utah R645 requirements for Road System Reclamation.

The application satisfies the requirements for R645-301-542.640 due to narrative on page 25 that describes reclamation procedures for the roads within the permit area. None of the asphalt used to pave roads was buried on site; instead, it was all hauled and disposed at the Emery County Landfill. Appendix H contains a detailed account of the asphalt quantities removed from the permit area.

Hydrological Information Reclamation Plan

Analysis:

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

Plan view maps and cross-sections of the backfilled and reclaimed areas are provided for the Cottonwood-Wilberg mine site. The maps and cross-sections show the Permittee has restored the pre-mining natural drainage patterns. The reclaimed land surface elevation seamlessly transitions to the adjacent undisturbed surface surrounding the site and the newly constructed drainages match the surrounding drainage patterns.

Reclaimed hillslopes are pocked have been capturing eroded soils since the completion of reclamation preventing any offsite impacts. Appendix D-2 in the MRP 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 in the MRP, narratives and calculations demonstrate the deep pocks at the contact of the reclaimed and undisturbed hillslopes adequately capture up-gradient undisturbed surface runoff. Appendix D-4 provides further detail of the adequacy of pocking to prevent sediment runoff from the site following final reclamation. Appendix Appendix G outlines the methods that have been implemented to quantitatively measure pocking effectiveness at preventing soil erosion including installing sediment staff gauges, a rain gauge and ISCO samplers above and below the site.

The amendment includes as built designs for the reclamation of a side drainage in the Right Fork of Grimes Wash. This additional design was determined to be needed as the site was actively being reclaimed and the permittee came upon a pre-law culvert. It was found the original designs for the side drainage had not accounted for removing the pre-law culvert and the anticipated reclaimed gradient would not have been too steep and not stable for handling anticipated runoff. Thus, this new design was prepared and reviewed by the Division's hydrologist prior to the removal of the culvert and construction of the reclaimed channel. At the time of the initial review it was deemed the new channel design met the State of Utah R645 minimum requirements for Reclamation Hydrology. The Division requested the side channel designs be submitted for incorporation into the MRP as as-built drawings following the completion of reclamation.

kstorrar

Revegetation General Requirements

Analysis:

The amendment meets the State of Utah R645-301-353 requirements for revegetation general requirements. The rock and soil storage area used during the reclamation of the Cottonwood Mine Site was reclaimed in March 2018 and was reseeded using the Cottonwood/Wilberg Mine Site Final Seed Mixture, found in Table 3-3, page 10 of the Part 4 Reclamation Plan section of the MRP.

tmiller

Maps Reclamation BackFilling and Grading

Analysis:

The application meets the State of Utah R645 requirements for Reclamation Backfilling and Grading Maps.

The application satisfies the requirements for R645-301-553.100 through -553.150 due to contour maps and cross sections that show detailed as-built reclamation surfaces. Plate 4B illustrates the final reclaimed surface topography at 2-foot contour intervals as well as slope profile illustrations for both left and right forks of Grimes Wash. Plate 4C adequately details the pre-mining and post-mining profiles and includes a cut/fill mass balance. The final mass balance volumes are: 116,317.59 cubic yards of cut and 106,108.00 cubic yards of fill. The extra cut material was used in areas where more fill could enhance the slopes or assist the reclaimed slopes to blend in better with the undisturbed terrain. All fill slopes were designed to be no greater than a 2H:1V gradient. A full time field technician from RB&G Engineering Inc. was present at the Mine during all backfilling activities to ensure proper compaction of all backfilled material.

jeatchel

Maps Reclamation Final Surface Configuration

Analysis:

The application meets the State of Utah R645 requirements for Final Surface Configuration Maps.

The application satisfies the requirements for R645-301-542.300 because Permittee has submitted as-built drawings that illustrate the final reclamation surface within the Permit area. Plate 4B is a certified drawing that illustrates final as-built surface conditions with cross section stations overlain every 50 feet along Grimes Wash. Plate 4C provides cross sectional profiles for every station drawn in Plate 4B and illustrates the surface configuration compared to the pre-reclamation surface at that location.

jeatchel

Maps Reclamation Monitoring and Sample Locations

Analysis:

The MRP meets the State of Utah R645 requirements for Reclamation Monitoring and Sampling.

The amendment does not alter the current water monitoring plan for the Cottonwood-Wilberg site. The current plan adequately monitors above and below the site to characterize and quantify the surface and groundwater resources within and adjacent to the permit area.

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