



# State of Utah

DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

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May 26, 1999

TO: File

THRU: Joe Helfrich, Permit Supervisor *JH*

FROM: Sharon Falvey, Senior Reclamation Specialist *SFF*

RE: Willow Creek As-Built, Permit Amendment, Cyprus Plateau Mining Corporation, Willow Creek Mine, ACT/007/038-98G, Folder #2, Carbon County, Utah

## SYNOPSIS:

Cyprus Plateau Mining Corporation (CPMC) has submitted an amendment to obtain approval for changes made during the mine construction at the Willow Creek Mine. The changes are included in four volumes submitted to the Division on April 30, 1999. Hydrology differs significantly from the approved plan which is amended based on the changes primarily completed during construction. This review focus is on the maps and text information.

Information regarding the K-Seam in-mine water was omitted as stated in the applicants cover letter: however, it is recommended that baseline information for wells, drilled to identify and characterize the K-Seam water and recharge source, be submitted to the Division to obtain input prior to finalizing a plan that might not be acceptable to the Division. The applicants cover letter also indicated that as-built information for Ponds 012A, 012B, and culvert DC-24 still needs to be submitted. In addition, the reclamation plan is no longer complete, due to changes made to the operations configuration. The reclamation plan will not be considered in this review but, the Division needs to make sure the Reclamation Plan becomes updated.

## TECHNICAL ANALYSIS:

## **ENVIRONMENTAL RESOURCE INFORMATION**

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR Sec. 783., et. al.

## **MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION**

Regulatory Reference: 30 CFR Sec. 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

**Analysis:**

**Surface Water Resource Maps**

Lakes, streams, ponds, and springs within and adjacent to the proposed permit area are shown on Maps 15 and 16. Map 16A and other maps show the disturbed area boundary: However, the "disturbed area boundary" is mislabeled as the "permit area boundary". The area at the north east portion of the site is disturbed in the Willow Creek buffer zone. Since the bridge, previously approved for construction, was not installed in this location, the reason for disturbing this area is not clear. If this area was not actually disturbed, the disturbed area boundary should be changed.

The regional vegetation map and regional soils map needs to be extended to include the adjacent area watersheds that report to the drainage controls at the mine. Maps 5 and 6 or the watershed maps should include this information so that appropriate CN (curve number) determinations can be verified. However, CN values and logic used appear reasonable for this region.

**Water Monitoring Location Maps**

Ground-water and surface-water monitoring stations are shown on Map 15 in Volume 15. Map 15, does not include the wells drilled in association with in-mine water interception associated with amendment 97-G. This information still needs to be provided and it is recommended that baseline information for wells, drilled to identify and characterize the K-Seam water and recharge source, be submitted to the Division to obtain input prior to finalizing a plan that may not be acceptable.

**Findings:**

The proposed amendment does not meet the requirements for the R645 regulations. The permittee should provide the following in accordance with:

**R645-301-120.** Provide a plan that is complete, clear and concise. 1) Correct the maps which have the "disturbed area boundary" mislabeled as the "permit area boundary".

**HYDROLOGIC INFORMATION**

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

**Analysis:**

**General**

Vegetative cover, as used for the curve number vegetation, was not found in the vegetative information for the area. Vegetation and Soils were not mapped for watershed areas extending beyond the permit and could not be used to verify CNs; However, the CNs used were reasonable for this region. Designs for drainage and sediment control measures for this amendment were not certified.

**Groundwater**

Page 4.7.10 continues to indicate water will not be pumped to the surface even though water currently is being pumped to the surface.

**Surface Water Rights**

The plan updated the quantity of acre feet withdrawn from the Price River. Previous requirements were projected to be 90 acre feet/year on page 4.7-37. This was changed to 730 acre feet/year the plan and now reflects values also presented on page 4.7-11.

**Stream buffer zones.**

The approved plan shows the 100 foot buffer zone was to be maintained through the facilities area except in a 200 foot segment at the main access road bridge crossing, and along a 800 foot length of Willow Creek reconstruction. The final construction resulted in reduced buffer zones along two linear stretches, 300 feet long, totaling 600 feet plus the 800 linear feet Willow Creek reconstruction.

The applicant has proposed removing maps showing the proposed stream channel configuration, pool riffle sequence and configuration. The existing segments disturbed within the buffer zone are delineated on map 18 to identify the sections that are within the 100 foot buffer zone. See further discussions under **Diversions** in this TA.

The area at the north east portion of the site is disturbed within the Willow Creek buffer zone. Since the bridge, previously approved for construction, was not installed in this location, the reason for disturbing this area is not clear. The reason for disturbing this area needs to be provided under discussion for the stream buffer zone disturbance.

The proposed Barn Canyon ventilation pad is within an ephemeral drainage. An existing road will be utilized for access and maintenance issues. The existing road is aligned within the canyon drainage. Stream buffer zone regulations are applicable by definition because the site drains a watershed greater than one square mile. Buffer zone approval is being completed

in conjunction with the Barn Canyon approval amendment 98B.

### **Diversions.**

The approved plan provided ditch and culvert designs sized for the 25-year, 24-hour precipitation event, while the as-builts are provided for the 10-year, 6-hour event. Although the 10-year, 6-hour event meets minimum regulatory requirements, all perimeter ditches should be designed to pass the greater peak flow from the 10 year, 24-hour event or 10 year 6-hour event. The greater peak flow from the 10 year, 24-hour event or 10 year 6-hour event is hereby required under R645-742.314 for the disturbed area perimeter drainage and undisturbed perimeter ditches and maintenance standards are to be held to this design measure. These measures are required to: 1) ensure the pond volume is retained for the design event by reducing the potential for undisturbed upstream drainage contributing runoff to the sedimentation pond, and 2) ensure the perimeter ditches adjacent to willow creek will continue to discharge to the pond for the 10 year, 24-hour event (minimum design requirements for the sedimentation pond).

Because changes were implemented in the field during construction and were not approved prior to implementation, their function in the field will determine the success with which regulatory intent is met. Areas noted as having the potential for contributing sediment off-site are listed below. Also the ditches labeled UD according to this plan means the drainage reports to Willow Creek and in some areas conveys disturbed drainage. These areas should be the focus, during drainage inspections conducted following or during runoff events.

- Refer to Map 23B: UP-5 and UP-4 convey disturbed area and road drainage to an undisturbed drainage.
- Refer to Map 23C: The map indicates the energy dissipator at the junction of UC-4 and UC-5 may be replaced with a drop inlet. It is recommended that designs for the drop inlet be provided as this are could potentially commingle undisturbed and disturbed runoff.
- Refer to Map 23C: Overflow from the junction of DD-5 and DC-18 should not enter UP-12. The drainage UP-12 collects drainage from a disturbed area and is shown to be treated with straw bales and silt fence and needs to be labeled as an ASCA.
- Refer to Map 23D: UC-10 should be monitored for potential erosion below the culvert. If adequate bedrock/rock substrate is present on the adjacent stream bank the discharge may not be a problem.
- Refer to Map 23E: It is not clear whether UD22B is intended to report to the depression at the north end of the ditch 6156 ft elevation. If this depression overflows in a 10 year - 24 hour event it would report to the pond. Therefore, it is not clear whether ASCA 5 would report to Pond 12b for the required design event. UC-16

should be monitored for potential erosion at the culvert outlet. If any design changes resulted at Pond 12b from the as-built drainage they are not being reviewed at this time.

A 4" pipeline is provided to transfer water from pond 001 to 013. The plan also states that water from pond 001 will be pumped to other ponds as necessary. The plan needs to provide the volume and elevation for water to be contained in the pond that retains the runoff storage volume required for the design event. The method must also include a means for checking the elevation during an inspection.

The applicant has requested that maps 16, 27, 28, and 29 be removed from the plan. These maps contained the proposed willow creek channel configuration and design information that was used to re-construct the channel. An as-built survey detailing how the reconstruction meets the details in the plan or varied from the details should be provided. The survey should include accounting of the pool riffle ratio in the reconstructed stream section. Design maps should be retained until a detailed as built survey is identified.

#### **Sediment control measures.**

#### **Sedimentation Ponds**

The sediment control plan for sedimentation ponds was changed to be designed for the 10-year 24-hour runoff event, previously presented as a 25-year 24-hour runoff event, page 4.5-40 in this amendment. Pond 001 was not completed according to the approved plan and pond 002 is designed with 0.1 foot between the decant and spillway elevation according to EZ13-18. Because there is more storage available in the pond, than is required to retain the designed runoff volume, the primary spillway elevation can be reduced. Reducing the riser elevation also increases the potential energy and the flow rate through the primary spillway so both the primary and emergency spillways may not be needed to pass the design event thorough the spillway on pond 002. Changes from the approved pond design and pond construction are identified for pond 001 in Table 1.

Table 1.

<b>Proposed Design Sediment Pond 001 v.s. As-built</b>			
Element	Proposed	As-built	Comments
Area Draining to Pond	26 acres	40.92 acres	
Max Capacity Elevation/volume	6168.5 ft/ 6.88 acre feet	6169.2 ft/ 9.7 acre feet	
Max sediment capacity	.33 acre feet	1.32 acre feet	
Minewater discharge	0.1cfs/five day period	0.17 cfs/three day period	
Design capacity	25-yr, 24-hr 2.97	10-yr, 24-hr 3.16	
Excess Storage	2.58	4.88	
Primary Spillway vertical riser	6168.5	6169.2	Actual freeboard between primary and emergency is 0.3 feet. The designs show adequate excess storage capacity to primary. Additional freeboard between the primary and emergency spillway needs to be provided.
3-Orifice discharge	6165.5	6165.5	
Oil skimmer	Oil skimmer with trash rack	Trash rack only	An oil skimmer needs to be placed on the primary spillway.
Emergency Spillway	6168.5	6169.5	
Minimum freeboard	1.37	0.99 (text pg 4.5-50)	
Embankment top width	40 ft	20ft	Elements for stability should be reviewed by an engineer.
Side slopes	on all impoundments not steeper than 2H:1V	Commitment removed: actual steepest side slope not provided.	Elements for stability should be reviewed by an engineer. See pg 4.7-25.
Pond Embankment	Not located in text	6170.95	

Variations in approved and implemented plans at the Willow Creek Mine also include removal of Pond 003 and re-design of pond 12A and 12B. Pond 12A and 12 B are not reviewed or approved at this time. According to the cover letter dated April 30, 1999 sediment ponds 12A

and 12B need additional re-surveying and will be submitted later.

The text in the permit states that the MSHA pond will be inspected quarterly on some pages; and weekly or, as authorized by MSHA on other pages. No MSHA authorization was provided in the plan.

### **Alternate Sediment Control Measures**

The previous plan approved 3 ASCA (Alternate Sediment Control Areas). The as-built has 6 ASCA and one area that is not labeled as such. ASCA-1 and associated drainage was constructed to report to an undisturbed area drainage. The road drainage should be made to report to the sedimentation pond as the best technology currently available.

ASCA-4 is provided in the area adjacent to the west portal long tunnel. This area is treated with sediment retention basin and silt fence or straw bales. ASCA-1 is provided for the methane pump station using a gravel berm and a silt fence with a notch. As these were not part of the approved plan, designs were not reviewed. The standards for success will be determined by the inspector in the field.

### **Water quality standards and effluent limitations.**

The transfer of minewater from Sediment Pond No. 001 to Sediment Pond 003 is shown on Map 18B. This pipe is proposed to be used to transfer water to other ponds as well. However, the plan needs to describe the proposed method transferring water to other ponds, and needs to show that the sedimentation ponds can still meet the sizing criteria and effluent limitations. Presently, the applicant can not discharge the underground mine water. Discharge from ponds containing minewater will have to show compliance with the UPDES permit before discharge.

### **Findings:**

This amendment does not meet the minimum requirements of this section. The amendment must include the following:

**R645-301-731.200.** Table 4.7-2, needs to clearly distinguish between operational and baseline water monitoring. Table 4.7-2 in Exhibit 12, of the existing plan and Table 3 under chapter 2.1 need to be consistent.

**R645-742.314.** Although the 10-year, 6-hour event meets minimum regulatory requirements, all perimeter and tributary ditches transporting undisturbed upstream drainage and disturbed area drainage along the perimeter of Willow Creek to the sedimentation pond, are hereby required to pass and be maintained for the greater design peak flow resulting from the 10 year, 24-hour event or 10

year 6-hour event by R645-742.314. Text in the plan will state that maintenance standards will be held to this design measure. Since the plan was approved based on a 25-year, 24-hour design, and most if not all ditch configurations presently exceed these standards, the standard is reasonable. The design standard will increase success in meeting minimum requirements for treating runoff by: 1) eliminating contribution from undisturbed upstream drainage to the pond in an event greater than the 10-year 6 hour event but, less than the 10 year 24 hour event, and 2) ensure the perimeter ditches adjacent to willow creek will continue to discharge to the pond and be treated for the 10 year, 24-hour event (minimum design requirements for the sedimentation pond).

**R645-301-712.** Provide certification for drainage and sediment control measures designs for this amendment.

**R645-301-120.** Provide a plan that is complete, clear and concise. 1) correct page 4.7.10, which indicates water will not be pumped to the surface even though water currently is being pumped to the surface.

**R645-301-742.** The drainage UP-12 collects drainage from an disturbed area and is shown to be treated with straw bales and silt fence and should be labeled as an ASCA.

**R645-301-740.** Information related to designs for the Willow Creek channel reconstruction can not be removed from the plan until an as-built survey detailing how the Willow Creek reconstruction meets the criteria for wildlife enhancement is provided. Details as to why construction varied from the plan and details for resulting pool and riffle construction should be provided and include an accounting of design elements that were used in the reconstructed stream sections. Correct the C-1 C-2 form so the maps and designs are retained until the survey can be conducted.

**R645-301-742.221.31.** 1) The plan needs to provide a) the volume(s) and pond elevation (for maximum sediment volume plus minewater volume) in all ponds proposed to contain minewater, b) show that the runoff storage volume, required for the design event, can be retained (preferred), or treated with the proposed minewater pond volume, c) the method must include a means for checking the elevation during an inspection. 2) A pond volume curve/elevation identified for the overflow water to be contained in the thickener pond is also needed.

**R645-301-514.320.** Sedimentation pond 013 meets MSHA criteria and needs to be monitored weekly or, provide documentation indicating MSHA has approved a reduced inspection interval. Clarify the conflicting inspection schedule in the text of the plan.

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**R645-301-742.110.** The sedimentation ponds need to incorporate standard engineering practices including: 1) An oil skimmer on the primary spillway outlet on pond 001, 2) Adequate elevation between the primary and emergency spillway (1 ft. standard engineering practice) for ponds 001 and 002.

**RECOMMENDATION:**

Deficiencies outlined in this amendment should be addressed prior to approval. Should the remaining Barn Canyon information be approved prior to approving this amendment, it will need to be carefully coordinated. The water monitoring plan was changed without describing why. The DOGM inspector needs be aware of the water monitoring changes.

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