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#3341

TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

August 18, 2009

TO: Internal File

THRU: Dave Darby, Team Lead
James D. Smith, En Sci III, Hydrology, Permit Supervisor

FROM: Peter Hess, En Sci III, Engineering / Bonding

RE: NEW SEDIMENTATION OVERFLOW POND , Canyon Fuel Company, LLC, SUFCO Mine, C/041/002, Task ID # 3341

SUMMARY:

The Permittee submitted a permit amendment to the Division on June 22, 2009 to permit for construction a sedimentation overflow pond which is to be constructed 800 feet down gradient of the Mine facilities sediment pond but north of the spring collection field (lower canyon).

The overflow sediment pond will serve two functions at this site;

1) the additional volume will increase settling time, and improve mine water discharge quality, and
2) inflow which would normally report to the upper pond will have the capability of bypass through a diversion culvert to the new overflow pond. This will allow any water in the upper pond to be drained, such that sediment removal and other required maintenance can be performed.

This application is a minor revision to the current State permit, as the new construction will only disturb an additional 4.6 % of the already approved disturbed area acreage.

This technical memorandum will review the following items in the TID # 3341 Application;

a) text changes in Chapter 5, Engineering,
b) Plates relevant to Chapter 5, Engineering and Chapter 7, Hydrology and the P.E. certifications required.

c) Review of Appendix 7-23, Slope Stability Analysis for the Overflow Pond Embankment
d) Review of Adjustment of Bond Calculations to Include the Overflow Sediment Pond.

TECHNICAL ANALYSIS:

OPERATION PLAN

MINING OPERATIONS AND FACILITIES

Regulatory Reference: 30 CFR 784.2, 784.11; R645-301-231, -301-526, -301-528.

Analysis:

As previously noted, the Permittee is proposing to construct a secondary sediment catchment below the Mine facilities pond in East Spring Canyon to increase sediment storage volume, improve discharge water quality, and allow for cleaning of the upper pond when required.

The Permittee has submitted text revisions to include the new pond in the mining and reclamation plan as follows; Chapter 5, pages 5-2, 5-3, 5-14, 5-56, 57, 58 and 5-59.

Page 5-2 contains a minor revision which adds Plate 5-2B to this MRP. Plate 5-2B shows the location of the proposed new sedimentation overflow pond which is being permitted (Task ID # 3341).

Page 5-3 contains two minor revisions to the Chapter 5 text, one of which pinpoints the location of the new pond as 800 feet down gradient of the existing main facilities area sediment control structure.

Page 5-14 contains a minor text addition which indicates that topsoil storage pile locations are shown on Plate 5-2B.

Pages 5-56, 57, 58 and 5-59 make minor text revisions to the sediment control structures implemented at SUFCO, the slope stability of the associated impounding embankments for those ponds, a description of the draw down of the water level in each pond during a storm event, and a description of each decant device installed or to be installed at each of the three sediment ponds. Also, page 5-57 refers to an included slope stability analysis for the Task ID # 3341 impounding embankment.

Findings:

The requirements of R645-301-526, Mine Facilities, do generally not relate to the construction of sediment control facilities. The proposed sediment control structure and its design features will be discussed elsewhere within this memo.

The requirements of R645-301-528 are not applicable to this permit revision to construct a new sediment control pond.

The minor text revisions and design features or references to other parts of this application meet the minimum regulatory requirements of this section.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 784.24, 817.150, 817.151; R645-301-521, -301-527, -301-534, -301-732.

Analysis:

Road Classification System

All roads within the SUFCO Mine disturbed area boundaries are ancillary roads, with the exception of the Sevier County road, which is the surfaced / primary coal haul access route. The surfaced extension of this road between the access control gate and the truck loading facility within the disturbed area boundary is the only primary road. The new road which must be developed to access the site of the new sedimentation overflow pond will be a dirt surface road.

Plans and Drawings

In order to access the location for the new sedimentation overflow pond, it will be necessary to construct a 300 foot ancillary road from the lower Quitchupah Canyon road to the location of the impounding embankment.

All roads used by SUFCO Mine were (are / PHH) designed in accordance with applicable county, UDOT, and U.S. Forest Service standards (See page 5-59, section 5.3.4 Roads).

"All ancillary roads are unimproved dirt roads", (See same reference).

Plate 7-4A shows the plan view of the new pond and its location relative to other surface features which have already been implemented by the SUFCO Mine.

Performance Standards

Plate 7-5A contains a cross-section / description of the drainage control ditch which will be constructed parallel with the new ancillary road which accesses the overflow sedimentation pond.

Primary Road Certification

The new road will be an ancillary dirt surface road, which does not require a P.E. certification.

Plate 7-5A is certified by a Utah registered professional engineer and meets the requirement of R645-301-512.120, Surface Facilities and Operations.

Other Transportation Facilities

The requirements of this section are not applicable to this permit amendment.

Findings:

The minimum regulatory requirements of this section have been met.

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

The Permittee (Canyon fuel Company, LLC / SUFCO Mine) is proposing to construct a secondary impoundment below the main mine site facilities pond in East Spring Canyon. This construction will include a bypass diversion which will allow the secondary to treat runoff which would normally report to the primary cell during cleanout of the upper pond. This cleanout process is described on page 7-56, Chapter 7 of the Task ID # 3341 proposal.

Water-Quality Standards And Effluent Limitations

The main facilities sediment control structure has an approved UPDES discharge outfall, which is permitted through the Utah Division of Water Quality (UPDES point 002). The new overflow sediment pond will have the capability of operating in series

with the mine yard concrete sediment trap, or the primary sediment pond, or both. The outfall (discharge point) for the new mine sedimentation overflow pond will be located differently from the upper pond outfall. Therefore, it must also have a permitted outfall location through the Utah DWQ.

Sediment Control Measures

Page 7-63 of the Task ID #3341 application describes the topsoil pile which will be constructed as part of the construction of the new mine overflow sedimentation pond. The storage pile will be an alternate sediment control area which utilizes containment berms and silt fence material to treat runoff reporting off this disturbed area. The disturbed area of the overflow pond topsoil stockpile is 0.141 acres.

Siltation Structures: Sedimentation Ponds

The Task ID # 3341 proposal was submitted in order to construct an additional pond below the existing Mine site sediment pond in East Spring Canyon. This new impoundment will be plumbed in order that it may operate independently of, or in series with, the upper pond, which has a permitted UPDES discharge point. The new overflow sedimentation pond is designed to retain sediment from the disturbed mine facilities and treat the runoff from the 10-year 24-hour event. "The overflow pond is designed to allow for flood control and sediment settling while the primary sediment pond is being drawn down for sediment removal. A series of canal boxes with valves will allow the primary sediment pond to be bypassed for draw down, sediment removal, and maintenance," (See page 7-60 of the Task ID 3341 application). "The overflow pond was constructed to allow for continued compliance with State and Federal regulations", (See page 7-64, section **7.4.2.2 Siltation Structures**).

Siltation Structures: Other Treatment Facilities

The two topsoil storage piles associated with the upper pond (0.105 acres) and the new overflow sedimentation pond (0.141 acres) will utilize containment berms and silt fences to capture and treat intercepted precipitation reporting from the soil piles. Both areas are alternate sediment control areas, (refer to Page 7-63 in the TID # 3341 application).

The new topsoil storage pile has a design for the retention berm, as shown in Appendix 7-23. Berms will be constructed with 1H:1V side slopes.

Discharge Structures

As stated on Page 7-67A, Chapter 7, of the Task ID # 3341 application, **Dewatering Device**, "the overflow pond dewatering device is designed to decant at the 60 % sediment level, 7,243.62 feet. Water will be discharged from the pond in accordance with UPDES guidelines".

The primary spillway detail is shown on Plate 7-5A. The primary spillway consists of a 24 inch corrugated metal pipe riser, which is set to discharge at elevation 7252.5 feet. An oil skimmer is attached.

A secondary open channel spillway is also included and details of this emergency overflow are shown on Plate 7-5A. The emergency spillway will be constructed to discharge at elevation 7253.0 feet. The primary and secondary spillways will be constructed in order to meet the requirements of R645-301-743.130.

Impoundments

The "new sedimentation overflow pond" being permitted as Task ID # 3341 will be the fourth impoundment permitted for the SUFCO Mine. The other impoundments are listed as follows;

1) Mine site sediment containment (primary impoundment).
2) the concrete catchment adjacent to the truck loading facilities
3) the waste rock impoundment and in-series decant pond (no discharge off permit area).

Ponds, Impoundments, Banks, Dams, and Embankments

Appendix 7-23 contains a slope stability analysis for the impounding embankment for the new sedimentation overflow pond. According to the analysis, nearly 5,000 various failure surfaces were evaluated for this embankment fill.

The results of the submitted analysis show that the inside slope of the impounding embankment has a factor of safety (minimum static safety factor) of 1.98.

The outside slope of the impounding embankment has a factor of safety of 1.76.

Both factors of Safety exceed the minimum regulatory requirement for impounding embankments, which has been established at 1.3 for a normal pool with steady state seepage saturation conditions (See R645-301-533.110).

Plate 7-5A shows longitudinal cross-section A-A Prime through the proposed overflow sedimentation pond. The impounding embankment will be constructed having a 2H:1V inside slope, and a 3H:1V outslope. The vertical height of the impounding embankment (as determined from A-A Prime, Plate 7-5A) is 16.5 feet. This design

correlates with the shape of the embankment (2H:1V inslope, 3H:1V outslope) depicted in the slope stability analysis, Appendix 7-23.

All submitted Plates containing information relative to the overflow sediment pond design are P.E. certified by Mr. Richard B. White, Utah registered professional engineer. The slope stability analysis correlates with the submitted design and is therefore part of that design.

Findings:

The submitted application meets the minimum regulatory requirements of this section of the R645 Coal Mining Rules.

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

Analysis:

Affected Area Maps

The Task ID # 3341 application contains the following affected area maps;

a) EXTENDED EAST SPRING CANYON SURFACE FACILITIES / Plate 5-2Bv17, and
b) Plate 5-6v16, LAND OWNERSHIP, LEASE, AND PERMIT AREA MAP.

The proposed new sedimentation will be located on surface managed by the USDA / USFS Fish Lake National Forest. The new pond will require amending Special Use Permit 4109-01 RIC96, from 9.2 acres to 11.5 acres (an increase of 2.294 acres), (E-mail communication to / from Mike Davis on 7/27/2009). SUFCO submitted an application for amending this SUP to the USFS as of July 20, 2009.

Surface Facilities Maps

Plate 5-2Bv17 shows a plan view of all of the surface facilities for the SUFCO Mine located in East Spring Canyon.

Mine Workings Maps

There are no mine workings depicted on either map submitted as part of Task ID # 3341.

Mine workings are not relevant to this application.

Monitoring and Sampling Location Maps

None of the plates submitted as part of Task ID # 3341 are relative to water monitoring sampling regimes or vegetation sampling.

Certification Requirements

All plates submitted as part of Task ID # 3341 for Chapter 5, Engineering, are certified by Mr. John D. Byers, Manager of Technical Services for the Permittee. Mr. Byers is a registered engineer in the State of Utah.

All plates submitted as part of Task ID # 3341 for Chapter 7, Hydrology, are certified by Mr. Richard B. White, a Utah registered professional engineer.

All plates meet the requirements of R645-301-512 as they relate to certification by a registered professional engineer.

Findings:

The minimum regulatory requirements of this section of the R645 Coal Mining Rules have been addressed.

RECLAMATION PLAN

BONDING AND INSURANCE REQUIREMENTS

Regulatory Reference: 30 CFR Sec. 800; R645-301-800, et seq.

Analysis:

General

Form of Bond

The bond held by the Division to reclaim the SUFCO Mine is a surety issued by the Argonaut Insurance Company, which has an A.M. Best rating of "A" (as of June 30, 2009).

Determination of Bond Amount

The amount of bond held for the SUFCO Mine is $ 4,439,000 (2009 dollars).

The Permittee submitted revised cost sheets (See APPENDIX 5-9) for demolition, earthwork and revegetation of the overflow sedimentation pond. An evaluation of the

revised cost sheets indicates that the new overflow pond will increase the direct costs (demolition, earthwork, and revegetation) by $ 27,470.00.

An increase in indirect costs of $ 34,832.00 has been determined.

The total cost to the SUFCO Mine reclamation bond requirement has been increased by $34,832.00. Total cost is now $ 2,247,389.00.

The escalated cost for four years at an escalation factor of 0.0444 is an additional $ 426,514.00.

The bond amount required to reclaim this site is $ 2,674,000.00.

The bond posted for the SUFCO Mine is $ 4,439,000.00.

Terms and Conditions for Liability Insurance

The Permittee maintains adequate general liability insurance coverage for this site, which is renewed on a yearly basis.

Findings:

The Permittee has adequate bond coverage in place to reclaim the new overflow sedimentation pond.

RECOMMENDATION:

Task ID # 3341, **New Overflow Sedimentation Pond,** should be approved.

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