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TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

February 17, 2009

TO: Internal File

THRU: Jim Smith, Permit Supervisor JS 2/18/09

FROM: Steve Christensen, Environmental Scientist III SKC

RE: Mid Term Review, Consol Energy Company, Emery Deep Mine, C0150015, Task # 3103

SUMMARY:

The Division of Oil, Gas and Mining (the Division) initiated a mid-term review of the Emery Deep Mine with a letter to Consol Energy Company (the Permittee) on May 20th, 2008. Item number 3 as outlined in the May 20th, 2008 Division letter was to ensure that the plan contains commitments for application of the best technology currently available (BTCA) to prevent additional contributions of suspended solids to stream flows outside of the permit area.

The Emery Deep MRP contains commitments to use BTCA to prevent additional contributions of suspended solids to stream flows outside of the permit area.

The response to the previously identified deficiency relative to the UPDES permit has been addressed. The mid-term should be approved at this time.

TECHNICAL ANALYSIS:

OPERATION PLAN

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:

Water-Quality Standards And Effluent Limitations

The MRP meets the requirements for Water-Quality Standards and Effluent Limitations as outlined in R645-301-751. The Permittee operates under a UPDES discharge permit (#UT0022616) issued by the Utah Division of Water Quality (DWQ) and controls discharges from the mine to be consistent with that permit. The Emery Mine UPDES permit currently allows a maximum salt load of 12 tons/day to be discharged from the mine. If this load were discharged constantly throughout the year, the annual salt load from the mine to the Muddy Creek watershed would be 4,380 tons/year. Upon discussions with DWQ personnel, it's anticipated that the salt-load limit will change to approximately 3,839 tons/year.

Diversions: General

The MRP meets the requirements for Diversions as required in R645-301-732.300, 742.100, 742.200, 742.300, 742.320 and 742.330. The drainage ditch designs consist of a narrative description, design parameters, flow calculations, flow line profiles and cross-sections for each ditch. The Permittee incorporated design parameters including: drainage area calculations, design storm information, curve numbers and channel dimensions. Upon review of the information/data presented within the MRP, it appears that all diversions have been designed, located, constructed and used to prevent, to the extent possible, additional contributions of suspended solids to stream flow outside the permit area.

The design storms used for the ditches were a 10-year/24-hour event for temporary ditches (not associated with refuse disposal areas) and a 100-year/24-hour event for permanent stream diversions, waste disposal site diversion and ditches associated refuse disposal areas. The ditches have been designed to maintain flow velocities during design storm event peak flows under 4.0 feet per second (fps) in earthen channels and less than 12 fps in rock lined channels. The Permittee has committed to utilizing rock checks and/or other stabilizing structures in earthen

channels where gradient slopes result in peak velocities exceeding 4.0 fps. In addition, channel bottoms will armored with rock riprap where necessary.

All diversions are depicted on Surface Drainage Control Maps Plates VI-10, VI-10A, VI-10B and VI-10C. Table VI-18 provides a summary of the operational diversion ditches and culverts at the mine site. The table provides design criteria utilized in the sizing of the ditches including: bottom width, side slopes, design flow depth and the design storm event. Detailed design calculations and drawings are presented in Appendix VI-6 of the MRP.

The Permittee constructed a crossing over Quitchupah Creek in the late 1970's using a multi-plate arch on a concrete foundation. The structure consists of concrete wing walls and was equipped with a guardrail. The crossing was installed to allow access to the stockpile area south of Quitchupah Creek. It replaced two 3-foot diameter culverts, which were determined to be undersized for design flood conditions. The design information for this structure is provided in Appendices IV-7 and IV-8.

Stream Buffer Zones

The MRP meets the Stream Buffer Zone requirements as provided in R645-301-731.600. Page VI-27 discusses stream buffer zones. Plate V-5, Subsidence Monitoring Points and Buffer Zones, depicts the location of stream buffer zones established on both Christiansen Wash and Quitchupah Creek. All perennial and intermittent streams in the permit area are protected by 100-foot stream buffer zones on either side of these streams. Coal mining and reclamation operations have been designed to minimize any adverse affects on water quantity and quality for these receiving streams. Areas surrounding the streams that are not to be disturbed are designated as buffer zones, and the Permittee has marked these areas as specified in R645-301-521.260.

Sediment Control Measures

The MRP meets the Sediment Control Measure requirements as provided in R645-301-732. On page VI-32, the application discusses the various sediment control measures implemented at the site. The sediment control measures have been designed, constructed and maintained to accomplish the following:

- Prevent additional contributions of sediment to stream flow or to runoff outside the permit area;
- Meet the effluent limitations defined in Section VI.5.1; and
- Minimize erosion to the extent possible.

The sediment control plan includes:

- Retention of sediment within the disturbed area;
- Diversion of runoff away from the disturbed area;
- Diversion of runoff using channels or culverts through disturbed areas to prevent additional erosion;
- Provision of riprap, silt fences, site revegetation, ponds and other measures that reduce overland flow velocities, reduce runoff volumes, or trap sediment; and
- Treatment of mine drainage in underground sumps prior to being discharged to the surface.

The Permittee also utilizes a number of alternative sediment control methods for surface drainage that does not pass through a sedimentation pond. Details regarding the alternative sediment controls are provided in Appendix VI-8. Table VI-21 provides the locations of the alternative sediment controls that have been installed at the mine site. Alternative sediment control measures installed at the site include: runoff collection berms, rock check dams, silt fences and vegetative cover.

Siltation Structures: Sedimentation Ponds

The MRP meets the Siltation Structures: Sediment Ponds requirements as provided in R645-301-732.200 and –742.220. The mining operation utilizes 5 sedimentation ponds, not including the 3 mine-water discharge ponds. Discussion of the design of the mine-water discharge and sedimentation ponds are discussed in Section VI.4.2.2 of the MRP.

The sedimentation ponds were designed to provide treatment or full containment of the total runoff volume from a 10-year, 24-hour precipitation event. The sedimentation ponds were constructed with a dewatering system consisting of slide gates that remain closed except when dewatering. Dewatering of these ponds occurs after a minimum of 24 hours of storm water detention is provided to achieve effluent limitations. A registered professional engineer certified all sedimentation ponds at the Emery Mine after construction with as-built drawings submitted and approved by the Division. In addition, all ponds are inspected in accordance with applicable regulations.

Plans and cross sections associated with the sedimentation and mine-water discharge ponds are located provided on Plates VI-14 through VI-20, Plate VI-20A and Appendix VI-7 of the approved MRP. Each plan is designed to work individually to manage the design sediment volume and safely convey the peak discharge rate from its respective drainage area. All sedimentation ponds are located as near as possible to the disturbed areas that report to them.

Sediment storage and cleanout quantities (i.e. volumes and elevations) are presented in Table VI-19. The calculations utilized to generate these quantities are presented in Appendix

VI-7. The Permittee commits to clean out each pond when its actual sediment storage equals 60% of the design volume.

Siltation Structures: Exemptions

There are no Small Area Exemptions (SAEs) described in the Emery Deep MRP.

Discharge Structures

The MRP meets the Discharge Structures requirements as provided in R645-301-734, -744. Page VI-29 of the application discusses the spillway designs of the sedimentation ponds. The spillways were designed to safely discharge the peak runoff from a 25-year, 24-hour precipitation event. The design of the spillways incorporates a minimum of 1.0 feet of freeboard above the peak water surface to the crest of the pond embankment. The Permittee commits to controlling the discharge from the sedimentation ponds by riprap and other methods on page VI-29.

The Emery Mine contains eight discharge-monitoring points that are regulated under the Utah Pollutant Discharge Elimination system (UT0022616). The discharge points are described in detail in Table VI-11. The primary discharge from the mine consists of water from the underground workings that is diverted into mined-out areas that serve as sumps. The sumps allow for fines contained in the water to settle out prior to being discharged to the surface.

Findings:

The MRP meets the State of Utah R645-Coal Mining Rules.

RECOMMENDATIONS:

The Emery Deep Mine's MRP outlines sediment and erosion control practices that, upon review, constitute the utilization of the best technology currently available.