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TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

January 30, 2012

TO: Internal File

THRU: Steve Christensen, Permit Supervisor *SC*

FROM: April A. Abate, Environmental Scientist III and Team Lead *AAA*
2-7-2012

RE: Midterm Permit Review, Savage Services Corporation, Savage Coal Terminal, C/007/0022, Task ID #3953

SUMMARY:

In accordance with R645-303-211, the Division of Oil, Gas, and Mining (the Division) is required to review each active permit during its term. The Division commenced the Midterm Review for the Savage Coal Terminal on November 23, 2011. This technical memorandum will review any and all commitments and permit conditions relating to geology and hydrology requirements of the R645-301-600 & 700 sections of the Utah Coal Rules.

The Master List of Commitments was reviewed for any commitments pertaining to geology and hydrology. One commitment relating to geology requires the permanent closure of wells that are no longer needed and for the operator to report on when wells are no longer needed. Two commitments relating to hydrology were identified: the operator has committed to collecting baseline parameters of groundwater and surface water to determine any long term impacts to water quality. The most recent baseline sampling event was completed on November 18, 2009. As a result, the Permittee is compliant with this commitment. The second requires an analysis of the waste stream from the processing plant. The commitment requires the Permittee to document the chemical properties of the process waste that is returned to the wash plant by performing a laboratory analysis of the waste stream.

The latest 5-year permit renewal for the Savage Coal Terminal was effective August 4, 2009. The Permittee has one special condition outlined in their permit (Section 18-Attachment A) which is to submit water quality data into the electronic database maintained by the Division. The Permittee has demonstrated compliance with this request.

The November 24, 2008 Master Technical Analysis document prepared by the Division determined that all geological information provided in the Mining and Reclamation Plan (MRP) was considered adequate to meet the requirements of this section. This technical review will

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focus on a review of the general contents, geology and hydrology sections of the MRP and any hydrology or geology commitments that appear to be outstanding.

Findings:

Midterm approval is not recommended until the following minor deficiencies are corrected in the MRP:

[R645-301-100]: Ownership and Control meets the R645 Utah Coal Rules. If any known transfer of surface or mineral ownership has occurred, than an updated Plate 1-1 and updates to Table 1-1 should be submitted to the Division.

[R645-301-728 & -765]: Currently, groundwater conditions at the site are monitored from two monitoring wells. One well CV-1-W, the French drain located near the northeast corner of the property and monitoring well S-2-GW near the southeast boundary of the property. Groundwater flow direction has been determined by previous studies to flow in a northeasterly direction. With the absence of data from groundwater monitoring well S-1-GW there is no groundwater delineation representative for the eastern boundary of the property. The Division recommends installing plugging S-1-GW in accordance with the -301.765 rule and installing a replacement well for S-1-GW.

[R645-301-728]: The Probable Hydrologic Consequences (PHC) section of the Mining and Reclamation Plan should be updated to be more reflective of current operational conditions at the existing wash plant (as opposed to language in the plan discussing the wash plant as proposed). The PHC also discusses refuse storage as being temporary, not to exceed one year from start up.

[R645-301-724.100]: Groundwater water quality tables are summarized for each data point at/related to the site in Tables 7-4 through 7-14c. Water quality data from the French drain should be updated on Table 4a and a new table summarizing water quality data should be added for monitoring well S-2-GW.

GENERAL CONTENTS

The Ownership and Control section R645-301-100 was reviewed in the MRP to determine if all the information presented was complete and up-to-date. All information presented in the MRP has been recently reformatted to follow each regulatory requirement by line item. None of the information in the MRP appeared to be out of date or incomplete with the regulatory requirements.

Identification of Interests:

Adjacent surface and mineral ownership names are shown on Plate 1-1. Table 1-1 also supplies the contact information for the surface and mineral owners. Plate 1-1 shows a revision date of September 2007.

Findings:

Ownership and Control meets the R645 Utah Coal Rules. If any known transfer of surface or mineral ownership has occurred, than an updated Plate 1-1 and an update to Table 1-1 should be submitted to the Division.

GEOLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.22; R645-301-623, -301-724.

Analysis:

The Permittee has addressed each regulation in the R645-301-600 coal rules. Most of which do not apply to the site since it is a surface processing operation and not an active mine. Geologic information is provided in the plan in Section 621 in Volume 2 of the MRP.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

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

Analysis:

Cross sections, maps and plans are referenced as Figures 6-1, 6-2 and 6-3 is based on maps and plans required as resource information for the plan, detailed site-specific information,

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and geologic literature and practices. The MRP includes geologic information in sufficient detail to assist in preparing the subsidence control plan.

Findings:

The geology section of the MRP meets the Utah Coal rules. No further action is required.

GROUNDWATER HYDROLOGY

A comprehensive groundwater investigation was conducted at the Savage Coal terminal in the early 1980s. The investigation resulted in a comprehensive understanding of the groundwater based on a monitoring well network that involved a multitude of groundwater monitoring wells that were located on and adjacent to the permit area. The site has been in operation for over 30 years and has produced an approximate 20-year body of groundwater data. A total of eight of the original monitoring wells were approved by the Division for decommissioning in 1998 when the original wash plant was taken off-line. The locations of the former monitoring wells are presented on Figure 7-7 in Chapter 7 of the MRP.

The groundwater studies conducted at the site have described groundwater existing as discontinuous perched aquifers residing within alluvium or in the weathered zones of the Bluegate Shale formation. These perched zones were reported to exist in topographic low zones of the underlying bedrock. Nearby canal irrigation water is also reported to influence site groundwater by providing a source of recharge.

With the restarting of the wash plant in 2006, two new monitoring wells S-1-GW and S-2-GW were installed to monitor groundwater conditions. Data from monitoring wells S-1-GW and S-2-GW has been collected since February 20, 2007. A French drain which has been active for over 30 years, CV-1-W collects groundwater at the northeast corner of the property. Monitoring well S-1-GW, near the northeast corner of the site has never produced any groundwater data. Groundwater data from S-2-GW, south of pond 5 consistently produces groundwater data with a depth to water level averaging 14.5 feet.

Water quality for each monitoring point at the site is summarized as its own respective baseline and current water quality tables beginning with Table 7-4 through 7-14c.

Probable Hydrologic Consequences

The Probable Hydrologic Consequences (PHC) section is found in Appendix 7-3 of the MRP. The PHC discusses a past history of activities at the site that involved a cessation in coal washing activities and refuse placement. The PHC that is in the plan now contains language

proposing to restart the wash plant, install a series of settling ponds, and store refuse on-site for a period listed as not longer than 1 year.

The PHC report concludes that the only PHC identified at the site would be from any acid/toxic contamination from the coal or refuse piles that could infiltrate to the groundwater table. The Permittee indicates that regular testing of coal and refuse for acid/toxic parameters as well as routine groundwater monitoring will minimize the potential for any groundwater contamination.

Findings:

[R645-301-728 & -765]: Currently, groundwater conditions at the site are monitored from two monitoring wells. One well CV-1-W, the French drain located near the northeast corner of the property and monitoring well S-2-GW near the southeast boundary of the property. Groundwater flow direction has been determined by previous studies to flow in a northeasterly direction. With the absence of data from groundwater monitoring well S-1-GW there is no groundwater delineation representative for the eastern boundary of the property. The Division recommends installing plugging S-1-GW in accordance with the -301.765 rule and installing a replacement well for S-1-GW.

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RECOMMENDATIONS:

Midterm approval is not recommended until these deficiencies are corrected in the MRP.