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TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

June 7, 2011

TO: Internal File

THRU: Daron Haddock, Permit Supervisor

FROM: James D. Smith, Environmental Scientist III *DS 06/07/11*

RE: Water Monitoring Revisions, Utah American Energy, Inc., Horse Canyon - Lila Canyon Mine, Permit #C/007/0013, Task ID #3822

SUMMARY:

The Division received this proposed amendment on May 3, 2011. The Permittee proposes to temporarily cease monitoring at most surface and ground water sites, with resumption of monitoring two years before anticipated second mining. This may be the opportune time to reduce the parameters measured, the frequency of monitoring, or the sites selected for monitoring, but the Permittee is instead stopping, temporarily, monitoring of water resources overlying the mine.

Table 7-3 indicates that the Permittee has already implemented this reduced data collection plan without approval from the Division.

During this review, the Division found several deficiencies not directly related to this amendment. These are described in this Tech Memo but have not been listed as deficiencies so as to expedite the review of this amendment. The Division will provide separate notification to the Permittee of the changes to the MRP required by these deficiencies.

The Division should not approve this amendment until the Permittee has adequately addressed the deficiencies identified in this Memo

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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:

General

The Permittee is proposing that precipitation data will no longer be collected at gauge RS-2 in Little Park Wash, above the mine. This site, installed to comply with a Board Order, has been used (along with crest stage gauges) to demonstrate that flow in the Little Park Wash drainage is ephemeral and was accurately characterized by the baseline data presented in the Permit Application. The Division concurs that precipitation monitoring at RG-1, in the disturbed area, is sufficient and monitoring the second site, RS-2 in Little Park Wash, is no longer useful or necessary.

Table 7-3 indicates that the Permittee has already implemented the reduced data collection plan without approval from the Division. The soonest this plan can be implemented is the third quarter 2011. Furthermore, Table 3 does not indicate that this suspension is temporary – the same language is used for spring L-6-G and L-10-G, where monitoring was permanently suspended in 2003, and L-13-S, L-14-S, L-15-S, and L-18S that are being permanently dropped from the monitoring plan with this amendment. The Permittee needs to distinguish between temporary and permanent cessation in Table 7-3

The commitment in Section 731.200 to monitor for baseline parameters every five years will still apply to all sites, even if such sites are in temporary suspension; this should be clarified.

Water Monitoring

Monitoring sites HC-1, RF-1, and RS-2 and UPDES outfalls -001A and -002A are no longer monitored, yet Plate 7-4 shows them as active (for later action).

The Permittee is requesting cessation of monitoring during the first quarter of the sites in Little Park and Stinky Spring Wash. Adverse weather and ground conditions make access to the monitoring sites in Little Park unfeasible, if not dangerous. The Division concurs that because of snow on the ground – in particular on the access road - and cold temperatures, access to monitoring sites in Little Park Wash is limited during the first quarter. Review of data from past first-quarters indicates no-flow and no-access are by far the most common reported results: only a handful of first-quarter reports from Little Park Wash monitoring sites contain data other than no-access or no-flow. The arguments of poor access that apply to the sites in Little Park are less of an issue with seeps L-16-G and L-17-G, which are located near the base of the Book Cliffs escarpment.

Groundwater Monitoring

Spring L-20-G, Quaker Spring, is being added to the monitoring plan. It will be monitored for baseline parameters for two years, and after that for operational parameters.

The proposed change includes the statement that “No significant groundwater impacts have been identified from current first mining activities.” (Section 731.214.2) Operations in the coal seam are not even one year old and of limited extent, the mine workings have not penetrated to the projected contact with the piezometric surface, the entries have not approached springs or water rights of interest, and no full-extraction mining has been done. Although subsidence resulting from mining will probably be substantially confined to the surface immediately above the mine workings, impacts to the hydrologic systems can extend over a much larger area (the Adjacent Area). The Permittee must identify a minimum distance from springs and seeps, wells, and stream monitoring points at which monitoring will resume, or, alternatively, commit to resuming sampling two years before projected mining, as shown on current mine maps, approaches streams and springs.

The character of the ground-water systems has been described in the MRP. While springs in Little Park Wash are apparently not connected to the coal seam, the water monitored by the IPA wells is in close proximity to the coal seam, if not in direct contact. Suspension of monitoring of these wells while the mine is not encountering water is understandable, but once the mine encounters water, water levels in these wells should be monitored. The Permittee needs to include a commitment to resume monitoring of these wells when water is encountered in the mine or when the mine workings cross the projected intercept of the coal seam and piezometric surface shown on Plate 7-1.

Seeps L-16-G and L-17-G in Stinky Spring Wash are located near the top of the Mancos Shale and just below the coal seam outcrop. They appear to flow from a local ground-water system related to the Central Graben Fault. Their location near the coal seam outcrop differentiates them from the other springs and seeps, which flow from strata well above the coal seam. Furthermore, it is known these two seeps are important to the bighorn sheep in the area.

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Because of their importance to wildlife and proximity to the coal seam, the Division does not accept the proposed suspension of monitoring at these two sites. The arguments of poor access that apply to the sites in Little Park are less of an issue with these two sites which are located at the edge of the valley floor.

Surface-Water Monitoring

The Permittee proposes to cease monitoring with crest stage gauges and single stage samplers in Little Park and Lila Wash. These were installed in compliance with a Board Order to help demonstrate that flow in the drainages is ephemeral and had been accurately characterized by the baseline data presented in the Permit Application. The Division concurs that further monitoring with these gauges, and the associated single stage samplers, is no longer useful or necessary.

Monitoring at surface-water sites L-13-S, L-14-S, L-15-S, and L-18-S has established that the respective drainages have ephemeral flow. The Permittee has requested removal of these sites from the monitoring plan. As already approved in the current MRP, these sites can be removed from the monitoring plan because they have served the purpose of confirming the ephemeral nature of the drainages. Division agrees that these sites can be eliminated with no detriment to the water monitoring plan. L-19-S will remain to monitor Little Park Wash at the permit boundary.

The Permittee proposes to change the frequency of monitoring at surface sites LS-1, LS-2, and LS-3 from monthly to quarterly. The Permittee contends that monitoring has established that there are no impacts from mining at these sites, justifying the reduction of frequency. Surface disturbance, which will be the main source of mining impact, began in 2008 and continues because surface facilities are still under construction. The Division does not concur that monitoring frequency can be decreased at these sites based on a conclusion that there are no impacts from mining. However, because flow in these channels is ephemeral, episodic, infrequent, and usually short-lived, monitoring on a monthly schedule is perhaps excessive. But monitoring on a quarterly schedule with no regard to in-stream conditions could be pointless. As these three sites are readily accessible from the mine office, a suggested monitoring schedule would be to report flow volume and duration whenever flow occurs at these sites and to measure field parameters and collect samples for lab analysis from the first flow – if any – to occur each quarter.

The proposed amendment includes the statement that “No significant surface water impacts have been identified from current first mining activities.” (Section 731.224.2) While this may be true of areas most likely to be impacted by the surface disturbance, operations in the coal seam are not even one year old and of limited extent, the mine workings have not penetrated to the projected piezometric surface, the entries have not approached springs or water rights of interest, and no full-extraction mining has been done. Although subsidence resulting from

mining will probably be substantially confined to the surface immediately above the mine workings, impacts to the hydrologic systems can extend over a much larger area (the Adjacent Area). The Permittee must identify a minimum distance from springs and seeps, wells, and stream monitoring points at which monitoring will resume, or, alternatively, commit to resuming sampling two years before projected mining, as shown on the most recent mine map, approaches hydrologic features.

Discharge Structures

Section 731.222.2 needs to be updated: the UPDES permit has been issued and a copy is in Appendix 7-5 (for later action).

Findings:

R645-301-731.220, Monitoring on a monthly schedule at sites LS-1, LS-2, and LS-3 is perhaps excessive, but monitoring on a quarterly schedule with no regard to in-stream conditions could be pointless. As these three sites are readily accessible from the mine office, a suggested monitoring schedule would be to report flow volume and duration whenever flow occurs at these sites and to measure field parameters and collect samples for lab analysis from the first flow – if any – to occur each quarter.

R645-301-731.200, Table 7-3 indicates that the Permittee has already implemented this reduced data collection plan without approval from the Division. The soonest this plan can be implemented, if approved, is the third quarter 2011. Furthermore, Table 3 does not indicate that this suspension is temporary – the same language is used for springs L-6-G and L-10-G, where monitoring was permanently suspended in 2003. The Permittee needs to distinguish between temporary and permanent cessation in Table 7-3

R645-301-731.200, The Division expects the commitment in Section 731.200 to monitor for baseline parameters every five years to still apply, including all sites that are in temporary suspension; the Permittee needs to clarify this in the proposed changes.

R645-301-731.200, Water monitored by the IPA wells is probably in contact with the coal seam. Suspension of monitoring of these wells while the mine is not encountering water is understandable, but once the mine encounters water, water levels in these wells should be monitored. The Permittee needs to include a commitment to resume monitoring of these wells during mine development when water is encountered in the mine or when the mine workings cross the projected intercept of the coal seam and piezometric surface, as it is shown on Plate 7-1.

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R645-301-731.200, Because of the importance of L-16-G and L-17-G to wildlife, the Division does not accept the proposed suspension of monitoring at these two sites. The Permittee needs to retain the monitoring of these two seeps as currently described in the MRP.

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:

On Plate 7-4, the colors and linetypes that distinguish Permit Areas "A" and "B" are unclear and confusing. The Legend shows Permit Area "A" is solid yellow, which agrees with what is on the map; however, Area "A" on the map is outlined by a blue dashed line, which is Area "B" according to the Legend, and the black dashed line around Area "B" on the map is not shown in the Legend (for later action).

Plates 7-4 and 7-5 indicate the Permit Area includes the lands in Horse Canyon that were transferred to the College of Eastern Utah Foundation in September 2005. All maps examined, including the surface ownership maps, in both Part A and Part B of the MRP show this land as part of the Permit Area and under ownership and control of UAE. The Division released the reclamation bond on all but 0.49 acres of the Horse Canyon Mine. Permit Area "A" shown on the maps is no longer relevant (for later action).

Mine Workings Maps

The Permittee proposes to temporarily cease monitoring at several sites with resumption of monitoring two years before second mining is anticipated. Plate 5-5 shows the projected dates and locations for mining the coal as they were projected in June 2010, and when compared to the Coal Production map in the 2010 Annual Report, Plate 5-5 is already out of date and totally inadequate to determine the location and timing of mining. Plate 5-5 must be updated and the Permittee must commit in the MRP to updating this plate on a regular basis, annually at a minimum, and whenever there is a substantial change in the layout or timing of mining, and to provide to Division inspectors a copy of the most recent map when they are on-site for inspections.

Certification Requirements

Jay Marshall, a Professional Engineer, has certified the submitted maps.

Findings:

R645-301-521.141, -729.100, The Permittee proposes to temporarily cease monitoring at several sites, with resumption of monitoring two years before second mining is anticipated. Plate 5-5 shows the dates and locations for mining as they were projected in June 2010. When compared to the Coal Production map in the 2010 Annual Report, Plate 5-5 is already out of date and totally inadequate to determine the location and timing of mining. Plate 5-5 must be updated and the Permittee must commit in the MRP to updating this plate on a regular basis, annually at a minimum and whenever there is a substantial change in the layout or timing of mining, and to provide to Division inspectors a copy of the most recent map when they are on-site for inspections.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

Regulatory Reference: 30 CFR Sec. 784.14; R645-301-730.

Analysis:

This is not a significant revision.

Findings:

The CHIA does not need to updated or revised.

RECOMMENDATIONS:

The Division should not approve this amendment until the Permittee has adequately addressed the identified deficiencies.