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TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

April 28, 2011

TO: Internal File

THRU: Ingrid Campbell, Mine Lead *IC*

FROM: Steve Christensen, Environmental Scientist *SKU*

SUBJECT: Gob Vent Holes, West Ridge Resources, Inc., West Ridge Mine, C/007/0041, Task ID #3809

SUMMARY:

On April 12th, 2011, the Division of Oil, Gas and Mining (the Division) received an amendment to the West Ridge Mining and Reclamation Plan (MRP). West Ridge Resources, Inc. (the Permittee) proposes to drill two additional gob gas vent holes (GVH). The proposed drill hole locations are located within the Bear Canyon drainage. One of the GVH's (GVH 4) will be installed within the existing GVH facility that was approved by the Division on November 12th, 2008 (Task ID #3077). The existing GVH facility is located at the end of the Bear Canyon Road. The other GVH (GVH 5) will be installed approximately 1/5 mile south of the existing facility directly adjacent to the Bear Canyon Road. The additional surface disturbance proposed with the application is approximately 0.02 acres. The additional disturbance will be associated with GVH 5 as GVH 4 will be located within the already approved GVH facility. The proposed GVH holes are located in T13S R13E SE 1/3 of Section 3.

The proposed sites will be accessed via an existing road. The road was constructed in the 1950's to access an exploratory drill hole. The alignment of the road is located in both SITLA and BLM land.

The following is a hydrologic analysis of the proposed GVH installation. The information is contained in Appendix 5-14A. Appendix 5-14A is considered an addendum to Appendix 5-14 which provides the design information for the existing GVH Facility where GVH 4 will be installed.

The amendment meets the requirements of the State of Utah R645-Coal Mining Rules and should be approved.

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TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

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

CLIMATOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.18; R645-301-724.

Analysis:

The amendment meets the Climatological Resource Information requirements of the State of Utah R645-Coal Mining Rules.

As the proposed GVH sites are located within the existing permit area, climatological data has been submitted and approved by the Division for this area. The climatological information begins on page 7-8 of the approved mining and reclamation plan (MRP) and continues to page 7-9.

The climatological information provided summarizes seasonal precipitation, wind directions and velocities as well as temperature ranges for the existing permit area.

Findings:

The amendment meets the Climatological Resource Information requirements of the State of Utah R645-Coal Mining Rules.

GEOLOGIC RESOURCE INFORMATION

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

Analysis:

The amendment meets the Geologic Resource Information requirements of the State of Utah R645-Coal Mining Rules.

As the proposed GVH sites are located within the existing permit area, geological data has been submitted and approved by the Division for this area. Chapter 6 of the approved MRP provides the geologic information necessary to determine the probable hydrologic consequences

of the proposed GVH installation as well as the geologic information necessary to assess the potential for successful reclamation following the cessation of operations at the GVH site.

Findings:

The amendment meets the Geologic Resource Information requirements of the State of Utah R645-Coal Mining Rules.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-724.

Analysis:

Sampling and Analysis

The amendment meets the Sampling and Analysis requirements of the State of Utah R645-Coal Mining Rules.

On page 7-3 of the approved MRP, the Permittee outlines the water quality sampling and analyses methods to be utilized. The Permittee commits to conduct water sampling according to the "Standard Methods for the Examination of Water and Wastewater" or EPA methods listed in 40 CFR Parts 136 and 434.

Baseline Information

The amendment meets the Baseline Information requirements of the State of Utah R645-Coal Mining Rules.

As the proposed GVH sites are located within the existing permit area, baseline hydrologic data has already been submitted and approved by the Division for this area.

Beginning on page 7-3 of the approved MRP, baseline ground water, surface water, geologic and climatologic data are described in detail in Chapter 7 of the approved MRP. Appendix 7-1 contains a substantive report (Investigation of Surface-Water and Groundwater Systems in the West Ridge Area, Carbon County, Utah) compiled by Mayo and Associates, LC in 2007. The study area of the Mayo and Associates report included the proposed GVH and associated topsoil stockpile site.

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The proposed GVH sites are both located directly adjacent to the Bear Canyon Drainage. Based upon 5 years of monitoring data (obtained from Stream Monitoring Sites ST-11, ST-12 and ST-13), the Bear Canyon Drainage is ephemeral. Flows were recorded at surface water monitoring sites ST-12 and ST-13 in the fall of 2005 (5 gpm and 1.5 gpm respectively). No observable flow has been observed since.

Additionally, no appreciable seeps or springs are located near the existing GVH facility or the proposed location for GVH-5.

Baseline Cumulative Impact Area Information

The amendment meets the Baseline Cumulative Impact Information requirements of the State of Utah R645-Coal Mining Rules.

Chapter 7 of the approved MRP contains the hydrologic information necessary in order for the Division to produce the Cumulative Hydrologic Impact Assessment and associated Cumulative Impact area.

Probable Hydrologic Consequences Determination

The amendment meets the Probable Hydrologic Consequences (PHC) requirements of the State of Utah R645-Coal Mining Rules.

The potential for detrimental impacts to the ephemeral (See Baseline Discussion) Bear Canyon Creek drainage is considered minimal. Based on previous investigations as well as field inspections performed in lieu of this proposal, no substantive baseflow systems that contribute flow to the Bear Canyon Creek drainage were identified near the GVH locations. In addition, the GVH well holes will be essentially hydraulically isolated from any potential surface water source. With the implementation of sediment controls at the site, the potential for increased sediment yield into the Bear Canyon drainage from the GVH sites (during construction, operation and reclamation phases) is considered minimal.

Additionally, the sediment control methods utilized at both sites will provide adequate erosion control (See Discussion Below).

In addition, the Permittee has committed to plugging and sealing the GVH drill holes prior to final reclamation. The GVH drill holes will be sealed in accordance with the applicable State and Federal regulations.

Based on the previous discussion, there is little potential for ground or surface water resources to be impacted by the installation/operation of GVH-4 and GVH-5.

Findings:

The amendment meets the Hydrologic Resource Information Requirements of the State of Utah R645-Coal Mining Rules.

OPERATION PLAN

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:

Plans and Drawings

The amendment meets the Plans and Drawings requirements of the Road Systems and Other Transportation Facilities requirements of the State of Utah R645-Coal Mining Rules.

The site of the existing GVH facility is located at the end of the Bear Canyon Road. This road is an existing public road that was recently upgraded by the Permittee to provide better access to the proposed GVH facility. The GVH facility (proposed GVH-4 location) is located adjacent to the road. Additionally, the proposed location for GVH-5 is located directly adjacent to the Bear Canyon Road approximately 400 feet south of the GVH Facility.

No additional road segments will need to be constructed in order to facilitate the installation of GVH-4 and GVH-5.

Findings:

The amendment meets the Plans and Drawings requirements of the Road Systems and Other Transportation Facilities requirements of the State of Utah R645-Coal Mining Rules.

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:

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Water-Quality Standards And Effluent Limitations

The amendment meets the Water-Quality Standards and Effluent Limitations requirements of the State of Utah R645-Coal Mining Rules.

No sediment ponds or impoundments will be utilized during the construction, operation and reclamation of the GVH sites. As such, the Permittee is not required to modify their existing UPDES permit.

The sediment controls to be implemented at the site will minimize the amount of sediment and suspended solids that leave the GVH sites. The existing GVH facility is overlain with gravel over the entire GVH site as well as riprap the proposed drainage ditch located on the south edge of the facility. In addition, energy dissipaters have been installed at 50' intervals in the proposed drainage ditch. Additionally, the cut slopes at the GVH Facility have been pocked and seeded in order to insure slope stability and minimize the amount of material that could potentially be eroded and lost in the newly constructed drainage ditch.

Diversions: General

The amendment meets the Diversions: General requirements of the State of Utah R645-Coal Mining Rules.

The drainage plan for the GVH facility does not incorporate the use of a diversion. The location of the GVH Facility is directly adjacent to the Right Fork of Bear Canyon drainage. However, disturbed runoff from the GVH pad is routed away from the Bear Canyon drainage to a drainage ditch. The ditch ultimately reports to the Right Fork of the Bear Canyon drainage, however no diversions are required or part of the drainage network.

Diversions: Perennial and Intermittent Streams

The amendment meets the Water-Quality Standards and Effluent Limitations requirements of the State of Utah R645-Coal Mining Rules.

Upon review of the baseline data associated with the Right Fork of Bear Canyon drainage, there are no perennial or intermittent streams that could be potentially impacted by the proposed GVH Facility or the proposed site location for GVH-5.

Stream Buffer Zones

The amendment meets the Water-Quality Standards and Effluent Limitations requirements of the State of Utah R645-Coal Mining Rules.

No intermittent or perennial streams are located within 100 feet of the proposed GVH Facility or location for GVH-5.

Sediment Control Measures

The amendment meets the Water-Quality Standards and Effluent Limitations requirements of the State of Utah R645-Coal Mining Rules.

GVH-4 will be installed at the existing/previously approved GVH Facility.

The GVH facility utilizes alternative sediment controls and is designated an Alternative Sediment Control Area (ASCA) as is the site location for GVH-5. The sediment controls that are utilized at the GVH Facility are depicted on the Bear Canyon GVH Facility Site Plan. Sediment control is achieved at the GVH Facility by utilizing the following.:

- 1) A riprap drainage ditch located on the south side of the GVH Facility site.
- 2) Energy dissipaters (i.e. Excelsior logs) have been installed in 50' increments.
- 3) A series of 4 Excelsior logs are maintained within the drainage ditch approximately 30-50' up gradient from where the ditch intersects the undisturbed drainage channel of the Right Fork of Bear Canyon. This series of Excelsior logs is intended to serve primarily as sediment traps, as opposed to energy dissipaters.
- 4) Upon the completion of the GVH facility construction, the cut slopes were pocked, seeded and covered with an amendment of wood straw.
- 5) The entire GVH pad site and adjacent roadway is covered with gravel in order to minimize erosion and facilitate access to the site throughout the year.

The combined utilization of these alternative sediment controls has proven to effectively reduce the amount of sediment leaving the GVH Facility.

Sediment control at the proposed GVH-5 site will be accomplished with the use of the following:

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- 1) Installing a double row of Excelsior logs between the pullout and the Bear Canyon Drainage channel prior to construction.
- 2) Installing a boulder outslope (rip-rap) to from the outer bank of the pullout area.
- 3) Use of a geotextile material between the boulder outslope and the inner granular fill material to prevent transmigration of the finer material through the outslope.;
- 4) Installing a layer of drainrock gravel over the entire surface of the completed pullout pad.
- 5) Installing a double row of Excelsior logs around the outer perimeter of the pullout area upon final construction.
- 6) Sloping the pullout pad away from the roadway and directing the flow towards the sediment control devices (i.e. Excelsior logs).
- 7) Separating the roadway from the pullout pad with a continuous row of concrete jersey barriers to prevent road runoff from entering the pullout area.

Detailed design drawings have been provided in Attachments 3 and 4 that depict the various components of the sediment control measures.

Siltation Structures: Sedimentation Ponds

The amendment meets the Water-Quality Standards and Effluent Limitations requirements of the State of Utah R645-Coal Mining Rules.

No sedimentation ponds are proposed with this amendment.

Findings:

The amendment meets the Hydrologic Information requirements of the State of Utah 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:

The application meets the Maps, Plans and Cross Sections of Mining Operations requirements of the State of Utah R645-Coal Mining Rules.

Appendix 5-14 contains the previously approved site plan drawings and cross-sections for the GVH Facility.

Attachment 3 of Appendix 5-14A contains site plan drawings for the proposed location for GVH-5. Drawing 3A depicts the pre-construction layout of the GVH-5 location. Drawing 3B depicts the sediment control measures to be utilized at the proposed GVH-5 location during its construction. Drawing 3C depicts the 'as constructed' configuration of the GVH-5 site including the locations of the sediment controls as well as the extent of overlain gravel material that will be placed on the surface. Attachment 4 of the application provides a cross-sectional view of the GVH-5 site. The cross-section clearly shows the volume of compacted fill material that will be brought on site as well as the locations of the Excelsior logs and additional boulders that will be placed on the outslope of the site.

Findings:

The amendment meets the Monitoring and Sampling Location Maps requirements of the State of Utah R645-Coal Mining Rules.

RECLAMATION PLAN

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Analysis:

Hydrologic Reclamation Plan

The application meets the Hydrologic Reclamation Plan requirements of the State of Utah R645-Coal Mining Rules.

On page 7-1b of Appendix 5-14, the Permittee commits to plugging and sealing the GVH boreholes in accordance with State and Federal regulations. During final reclamation, the pad area and associated cut slopes will be backfilled to approximate original contour. The fill material will be obtained from the adjacent roadway and leveling pads. The fill material will be the same material that was excavated from the cut slope during initial construction. The cut slopes will be backfilled in 18"-24" lifts and compacted with rubber-tired vehicles and/or vibratory mechanical equipment. After the cut slopes have been backfilled, they will be re-seeded and a row of excelsior logs will be installed along the full length of the toe of the slope between the slope and the adjacent road segment. The excelsior logs will serve to control sediment transport off the site until the vegetation has become established.

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Prior to reclaiming the GVH-5 site, all surface apparatus will be disassembled and removed. The drillholes will then be plugged and sealed in accordance with State and Federal Regulations. An expandable plug will be installed at the bottom of the hole (above the mine works) and the entire length of the drillhole will be filled with concrete to the surface. The pullout area associated with GVH-5 will be reclaimed to approximate original contour by removing the backfill material and additional boulders. Once the backfill material has been removed, the geotextile fabric will be carefully removed. At that point, the native topsoil will be scarified and re-seeded with the same seed mix as was approved for the GVH Facility. All of the removed backfill material will be removed from the site and disposed of at an approved facility.

Findings:

The application meets the Hydrologic Reclamation Plan requirements of the State of Utah R645-Coal Mining Rules.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

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

Analysis:

The application meets the Cumulative Hydrologic Impact Assessment requirements of the State of Utah R645-Coal Mining Rules.

The GVH Facility and proposed location for GVH-5 are located within the current Cumulative Impact Area (CIA). The proposed degasification project has been designed to produce minimal impacts to ground and surface water resources. As a result, revisions to the CHIA are not required at this time.

Findings:

The application meets the Cumulative Hydrologic Impact Assessment requirements of the State of Utah R645-Coal Mining Rules.

RECOMMENDATIONS:

The amendment should be approved at this time.

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