

# TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

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October 29, 2008

TO: Internal File

THRU: Jim Smith, Permit Supervisor *DS 11/10/08*

FROM: Steve Christensen, Environmental Scientist *SKC*

SUBJECT: Installation of GVH Facility, West Ridge Resources, Inc., West Ridge Mine, C/007/0041, Task ID #3077

## SUMMARY:

On October 22, 2008, 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 construct and install a gob gas vent hole facility (GVH). The proposed location for the GVH is T13S R13E SE1/4 of Section 3. The GVH will consist of three drill holes, four methane extractor units and the interconnecting piping. Associated with the construction of the GVH is a topsoil stockpile that will be located in T13S R13E NE1/4 of Section 10.

The Permittee has requested an expedited review by the Division to maximize the safety to the miners and minimize the potential for a mine shut down due to excessive methane levels.

The proposed site 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 review has been assigned Task ID #3077 for tracking purposes.

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 site (including topsoil pile) is 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 site (including topsoil pile) is 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 site (including topsoil pile) is 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

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in 2007. The study area of the Mayo and Associates report included the proposed GVH and associated topsoil stockpile site.

The proposed GVH and topsoil stockpile site are located in the Right Fork of Bear Canyon. The proposed project locations overly an area of the West Ridge Mine that has previously been mined by longwall techniques (i.e. planned subsidence). The mining occurred in the area of the proposed project site beginning in the fall of 2007 and continuing into 2008.

Prior to mining activity occurring in the area of the GVH sand topsoil stockpile site, the Permittee began water monitoring on the drainage located in the Right Fork of Bear Creek. Three sites were established in that drainage (ST-11, ST-12 and ST-13) and were monitored beginning in July of 2007. The monitoring of this drainage was conducted in order to establish baseline flow conditions for the drainage prior to undermining the area.

The three sites continue to be monitored as part of the Permittee's operational water monitoring plan. The data has been submitted quarterly to the Divisions electronic database. Upon review of the submitted data, the drainage in the Right Fork of Bear Creek is ephemeral in nature. No appreciable seeps or springs are located near the proposed GVH and topsoil stockpile site.

**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.

Beginning on page 7-12d of the amendment, the Permittee discusses the PHC relative to the proposed GVH project. Attachment 7, *GVH Operational Drawings*, provides a detailed design drawing of the gob gas vent holes, as they will be constructed. Upon review of the design of the degas wells, the Permittee proposes to construct the GVH holes with a 20 foot length of 16 inch non-perforated steel surface casing that will be cemented in place. The cement collar at the

top of the steel casing at the surface will prevent surface water, soil moisture as well as any shallow ground water (within 20 feet of the surface) from entering the GVH wells.

From approximately 20 feet below grade to 200 feet below grade, the Permittee proposes to utilize a 9.625-inch non-perforated steel casing that will be cemented into place. This segment of steel casing will effectively isolate the GVH well from any groundwater that may be present. The remaining segment of the GVH well will be comprised of 150 feet of 8.75 inch slotted steel casing. The slotted casing will be left open to the rock strata for the purpose of allowing the methane gas produced from the gob areas to vent to the surface. While there is some potential for drainage of some Blackhawk Formation ground water into the GVH holes in the interval overlying the gob, the potential for appreciable or sustained groundwater drainage through the GVH wells is minimal for the following reasons: 1) Ground water systems in the Blackhawk Formation are perched/isolated systems (See Mayo and Associates PHC report in Appendix 7-1 of the approved MRP). 2) The GVH holes are located near the up-dip ends of the Castlegate Sandstone and Blackhawk Formations which effectively limits the recharge potential for ground water and 3) The 150 foot interval of the Blackhawk Formation overlying the gob area was in all likelihood fractured as a result of the longwall mining that occurred in 2007 and 2008.

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 location. In addition, as previously discussed, 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 site (during construction, operational and reclamation phases) is minimal.

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. The Permittee provides a detailed description of the plugging and sealing methods to be utilized on page 7-12e.

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

#### **Groundwater Monitoring Plan**

The amendment meets the Groundwater Monitoring Plan requirements of the State of Utah R645-Coal Mining Rules.

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Based on the baseline data contained in the approved MRP, no appreciable ground water resources are located near the proposed GVH site. As a result, additional groundwater monitoring is not required.

**Surface-Water Monitoring Plan**

The amendment meets the Surface-Water Monitoring requirements of the State of Utah R645-Coal Mining Rules.

Since July of 2007, the Permittee has been monitoring three surface water sites within the Right Fork of Bear Canyon (ST-11, ST-12 and ST-13). The three surface water-monitoring sites were established back in 2007 in order to obtain baseline data on the drainage prior to being undermined. The three sites are still part of the active/operational water-monitoring program for the West Ridge Mine.

The data is submitted to the Divisions electronic water-monitoring database. Based on the submitted data, the Right Fork of Bear Canyon is ephemeral in nature.

**Findings:**

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

**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:**

**Monitoring and Sampling Location Maps**

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

The Permittee submitted Plates 7-6, *Hydrologic Monitoring Map, Historical Monitoring Locations* and Plate 7-7, *Operational Monitoring Locations* with the amendment. The maps depict the historically and actively monitored ground and surface water sites respectively. The maps have been updated to depict the proposed location of the GVH site and associated topsoil stockpile.

### **Subsurface Water Resource Maps**

The amendment meets the Subsurface Water Resource requirements of the State of Utah R645-Coal Mining Rules.

The Permittee submitted Plate 7-3, *Water Rights* and Plate 7-5, *Seep/Spring Survey Map*. The two plates depict the locations of the various ground water resources and associated water rights within the permit and adjacent area.

### **Surface Water Resource Maps**

The amendment meets the Surface Water Resource Map requirements of the State of Utah R645-Coal Mining Rules.

The Permittee submitted Plate 7-3, *Water Rights*. Plate 7-3 depicts the surface water resources and associated water rights within the permit and adjacent area. Additionally, Plates 7-6, *Hydrologic Monitoring Map, Historical Monitoring Locations* and Plate 7-7, *Operational Monitoring Locations* depict the surface resources within the permit and adjacent area.

### **Well Maps**

The amendment meets the Well Map requirements of the State of Utah R645-Coal Mining Rules.

The Permittee submitted Plate 7-6, *Hydrologic Monitoring Map*. Plate 7-6 depicts the locations of the water wells within the permit and adjacent area.

### **Findings:**

The amendment meets the Maps, Plans and Cross Sections of Resource Information requirements of the State of Utah R645-Coal Mining Rules.

## **OPERATION PLAN**

## **SUBSIDENCE CONTROL PLAN**

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**Analysis:**

**Subsidence Control Plan**

The amendment meets the Subsidence Control Plan requirements of the State of Utah R645-Coal Mining Rules.

The proposed GVH site was undermined by longwall techniques in 2007 and 2008. Based upon the subsidence monitoring data collected in the area of the proposed GVH facility, the area has stabilized. The extent of subsidence in the area was approximately 3 feet. No surface cracks or other evidence of subsidence were noted during that monitoring effort. Additionally, the Right Fork of Bear Canyon did not exhibit any detrimental signs or evidence of subsidence. The proposed GVH facility and its operation will not produce subsidence.

**Findings:**

The amendment meets the Subsidence Control Plan requirements of the State of Utah R645-Coal Mining Rules.

**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 GVH pad 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 site. The GVH site will be located adjacent to the road.

The amendment contains correspondences with SITLA representatives that provide information on the road. SITLA Minerals Resource Specialist Randy Harden wrote a letter to Mr. Dave Shaver of West Ridge Resources, Inc. (dated October 22<sup>nd</sup>, 2008). Mr. Harden discusses that, as the Bear Canyon Road is located on both Bureau of Land Management (BLM) land as well as SITLA land. Federal right-of-way U 01756 was issued for the road by the BLM in 1951. The road was initially constructed in order to facilitate mining exploration. SITLA received fee simple title to the lands that currently encompass sections of the Bear Canyon Road in 1998. The Permittee has a lease agreement with SITLA for use of the land. Section 8.1 of

the lease agreement provides that the Lessee may use the surface estate to the extent reasonably necessary for the economic operation of the leasehold. As such, SITLA approved the road improvements conducted by the Permittee on September 17<sup>th</sup>, 2008.

SITLA maintains that the Bear Canyon Road is a public road and maintains it as such for various multiple uses including oil and gas leasing, industrial use, grazing, other mineral extraction etc. SITLA will maintain jurisdiction over the roads use, maintenance and upgrading. It is SITLA's position that the Permittee's utilization of the road is not considered to be surface coal mining activities subject to permitting by DOGM.

**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, -300-148, -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 amendment meets the General Hydrologic Information requirements of the State of Utah R645-Coal Mining Rules.

Chapter 7 of the approved MRP provides detailed ground and surface water information. As the GVH facility and topsoil stockpile are located within the existing permit area, the ground and surface water data within the approved MRP adequately describes the hydrologic resources in the area.

**Groundwater Monitoring Plan**

The amendment meets the Groundwater Monitoring Plan requirements of the State of Utah R645-Coal Mining Rules.

Based on the baseline data contained in the approved MRP, no appreciable ground water resources are located near the proposed GVH site. As a result, additional groundwater monitoring is not required.

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**Surface-Water Monitoring Plan**

The amendment meets the Surface-Water Monitoring requirements of the State of Utah R645-Coal Mining Rules.

Since July of 2007, the Permittee has been monitoring three surface water sites within the Right Fork of Bear Canyon (ST-11, ST-12 and ST-13). The three surface water-monitoring sites were established back in 2007 in order to obtain baseline data on the drainage prior to being undermined. The three sites are still part of the active/operational water-monitoring program for the West Ridge Mine.

The data is submitted to the Divisions electronic water-monitoring database. Based on the submitted data, the Right Fork of Bear Canyon is ephemeral in nature. Recorded flows are exceedingly small (0-5gpm).

**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 facility. As such, the Permittee is not required to modify their existing UPDES permit.

The sediment controls to be implemented at the site will minimize (or possibly improve) the amount of sediment and suspended solids that leave the site. The Permittee has committed to laying 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 will be installed at 50' intervals in the proposed drainage ditch. Additionally, upon the completion of the site, the cut slopes will be 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 proposed drainage plan for the GVH facility does not incorporate the use of a diversion. The proposed location of the GVH facility is directly adjacent to the Right Fork of Bear Canyon drainage. However, disturbed runoff from the GVH pad will be routed away from the Bear Canyon drainage to a drainage ditch. The ditch will ultimately report to the Right Fork

of the Bear Canyon drainage, however no diversions will be required or part of the drainage network.

The Permittee has monitored the drainage of the Right Fork of Bear Canyon with three surface water-monitoring (one site up-gradient and two down-gradient of the GVH facility) sites since the summer of 2005. The water monitoring data supports the characterization that this drainage is ephemeral in nature. The flows in the drainage are exceedingly small (0-5 gpm). As a result, no diversions are proposed with this amendment.

#### **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.

Since July of 2007, the Permittee has been monitoring three surface water sites within the Right Fork of Bear Canyon (ST-11, ST-12 and ST-13). The three surface water-monitoring sites were established back in 2007 in order to obtain baseline data on the drainage prior to being undermined. The three sites are still part of the active/operational water-monitoring program for the West Ridge Mine.

The data is submitted to the Divisions electronic water-monitoring database. Based on the submitted data, the Right Fork of Bear Canyon is ephemeral in nature. Recorded flows are exceedingly small (0-5gpm).

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**Diversions: Miscellaneous Flows**

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

The proposed construction of the GVH facility and associated topsoil stockpile will not require the diversion of any drainage (perennial, intermittent or ephemeral).

**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 topsoil stockpile.

**Sediment Control Measures**

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

The amendment proposes to make the GVH facility an alternative sediment control area (ASCA). Due to the relatively small size of the GVH facility site (0.24 acres) and the narrow configuration within the canyon itself, the Permittee proposes to use a variety of alternative sediment controls rather than construct a sediment pond. The aforementioned sediment and their proposed locations are depicted on the Bear Canyon GVH Facility Site Plan. The amendment outlines the use of the following alternative sediment controls:

- 1) The proposed drainage ditch located on the south side of the GVH facility site will be entirely armored with riprap.
- 2) Energy dissipaters (i.e. Excelsior logs) will be installed in 50' increments within the newly constructed drainage ditch.
- 3) A series of 4 Excelsior logs will be installed within the proposed 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 completion of the GVH facility construction, the cut slopes will be pocked, seeded and covered with an amendment of wood straw.

- 5) The entire GVH pad site and adjacent roadway will be covered with gravel in order to minimize erosion and facilitate access to the site throughout the year.

The combined utilization of the aforementioned alternative sediment controls will effectively reduce the amount of sediment leaving the site prior to construction.

#### **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.

#### **Discharge Structures**

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

The proposed GVH facility design does not include the utilization of a discharge structure.

#### **Impoundments**

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

The proposed GVH facility design does not include the construction of an impoundment.

#### **Ponds, Impoundments, Banks, Dams, and Embankments**

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

The proposed GVH facility design does not include the construction of a pond, impoundment, bank, dam or embankment.

#### **Findings:**

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

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## 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:

#### Monitoring and Sampling Location Maps

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

The amendment contains Map 7-6, *Hydrologic Monitoring Map (Historical Monitoring Locations)* as well as Map 7-7, *Operational Monitoring Locations*. The maps depict historic as well as operational ground and surface water monitoring sites.

### 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 the amendment, 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.

**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 proposed GVH facility and topsoil stockpile is 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.