

May 1, 2003

TO: Internal File

THRU: Peter Hess, Sr. Reclamation Specialist/Engineering, Team Lead

FROM: David W. Darby, Sr. Reclamation Specialist/Hydrology

RE: Methane Degas, Canyon Fuel Company, LLC., Dugout Canyon Mine, C/007/039-03B

SUMMARY:

Canyon Fuel Company, LLC, submitted an application on March 7, 2003 to install two methane degasification wells for the Dugout Canyon Mine. The purpose of the well is to remove methane gas from the coal reserves to prevent hazardous conditions in the mine.

This technical review evaluates the geological settings and hydrologic impacts associated with drilling the degasification wells, MW-06 and MW-08. The locations of the wells are shown in Plate 1-4.

TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

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

GENERAL

Regulatory Reference: 30 CFR 783.12; R645-301-411, -301-521, -301-721.

Analysis:

The applicant provides geologic information describing the existing stratigraphy and structure of the Dugout Mine area in Section 621 through 627 of the MRP. Hydrologic resources are described in Chapter 7 of the MRP. The information provided in the amendment is designed for incorporation into the MRP.

TECHNICAL MEMO

No test boring or drill cores are planned at the well site. The applicant did not ask for a sampling waiver for acid or toxic forming materials. The sampling waiver is not requested, because the strata above the coal seam will not be removed as a result of these wells. The degasification wells are not test borings or water wells. The coal seam, floor and roof materials have already been sampled and characterized for baseline information in the permit.

Findings:

The Permittee has submitted sufficient information to address the General section of the regulations.

GEOLOGIC RESOURCE INFORMATION

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

Analysis:

A description of the regional geology, including stratigraphy and structure is presented in the Dugout Mine MRP. The applicant describes the stratigraphic units of the mine site in Section 623. A generalized geologic cross-section is shown in Figure 6-1. The well will be drilled from the North Horn Formation, through the Price River and Castle Gate Formations down to the Blackhawk Formation just above the coal seam to be mined. A typical drilling pad and well site is shown in Figure 5-2. Figure 5-6 depicts the well design.

Findings:

The applicant has submitted sufficient information in the MRP to address the Geologic Resources Information section.

HYDROLOGIC RESOURCE INFORMATION

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

Analysis:

Sampling and Analysis

There are no springs, streams, or ponds on the proposed drill site. A surface water-monitoring program is being implemented for the operational phase of the mine.

Baseline Information

There is no need to collect baseline information from the drilling operation. Ground water baseline information has been collected for the mining operation and is provided in the Dugout Canyon Mine MRP in Chapter 7, Section 724.100. Surface waters in the permit area are currently being monitored under the operation plan.

Ground-water Information

The well will be cased to create a continuous column from the Blackhawk Formation to the surface. During drilling of the wells, the groundwater could be affected. Once drilling is completed, the well will be cased and grouted. This will seal any groundwater movement between stratigraphic units.

Surface Water Information

Plate 7-1 of the MRP identifies several springs in the upper reach of Fish Creek, the channel near MW-06. The channel is likely perennial or intermittent which requires a buffer zone protection. Regulation R645-301-731.600 states:

“No land within 100 feet of a perennial stream or an intermittent stream will be disturbed by coal mining and reclamation operations, unless the Division specifically authorizes coal mining and reclamation operations closer to, or through, such a stream. The Division may authorize such activities only upon finding that if coal mining and reclamation operations will not cause or contribute to the violation of applicable Utah or federal water quality standards and will not adversely affect the water quantity and quality or other environmental resources of the stream.”

Information in the application presents potential influences to the stream channel adjacent to the pad for MW-06. The drill pad, MW-06, and development to upgrade the access road, Figure 1-1, will take place within 100 feet of a perennial stream channel.

The applicant discusses potential impacts from development in the PHC Determination, Section 728.300, and proposes mitigation for these impacts by constructing sediment control structures, Section 731.100.

The applicant does not identify the locations of the proposed sedimentation structures for development to ensure sediment generated from construction does not reach the stream channel, within the buffer zone. Figures 5-1 and 5-2 should show the location of the sediment control structures. Silt fences should be constructed prior to earthwork and the Division will require a mine employee to be present during development of the road and drill pad to ensure no earthwork or sedimentation occurs in the stream channel of Upper Fish Creek, R645-301-731.

TECHNICAL MEMO

The applicant proposes to upgrade the roads to the drill pad. Construction of the road should first be planned with sedimentation controls. The road slopes toward the drill pad adding additional sediment and runoff to the pad. The applicant should account for the runoff.

Probable Hydrologic Consequences

A Probable Hydrologic Consequences determination is presented in Section 728.300 of the MRP. Sediment control measures are planned.

Information on acid and toxic forming materials have been collected for mining of the Dugout Canyon Mine and are discussed in Sections 624.300 and 731.300 of the MRP. Analyses presented in chapter 6 of the MRP indicate that acid and toxic forming materials are not present within the permit area.

Findings:

R641-301-731, The applicant will commit to establishing silt fences between the construction sites and stream channel prior to development.

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:

Affected Area Boundary Maps

The affected area boundary is shown in Figures 1 and 5-1.

Existing Structures and Facilities Maps

The only structures in the vicinity of the proposed drill pads MW-06 and MW-08 are old logging roads that the operator plans to upgrade to gain access and develop the drill pads, Figure 1-1.

Existing Surface Configuration Maps

The applicant has submitted Figure 1-1, showing the drill hole locations and mine; Plate 1-4, the Permit Area; Figure 5-1, Drill Pad Layout MW-06; Figure 5-2, Drill Pad Layout MW-08; Figure 5-3, Operational Layout, MW-06; Figure 5-4, Operational Layout, MW-08; Figure 5-8, Contour Map, MW-06; Figure 5-9, Contour Map, MW-08.

Monitoring Sampling Location Maps

The monitoring sampling location map Plate 7-1 in the MRP, indicates several spring water resources in the vicinity of the proposed disturbed area MW-06, but no water sources on or adjacent to the proposed drill pad at MW-08.

Subsurface Water Resource Maps

Subsurface water resources are described in Section 722.100 of the MRP and 728.100 and the amendment. Drilling will penetrate several formations. During the drilling process, some perched water zones may be contacted; however, drilling mud should seal the adjacent areas from groundwater movement. During final well development, the well will be cased and the areas around the casing sealed to prevent vertical migration of ground water. No surface or ground water discharges will occur at the well site.

Surface Water Resource Maps

Plates 7-1, the surface water-monitoring map, and 7-2, the water rights and map, provided in the MRP indicates that MW-06 is the only drill pad adjacent to water resources.

Well Maps

Figure 1-1 identifies drill hole sites that will be used for methane degasification wells.

Findings:

The information provided in the amendment is not considered adequate to meet the minimum Maps, Plans and Cross-sections of Resource Information requirements of the Regulations. Prior to approval, the permittee must provide the following in accordance with:

R645-301-731, The applicant will be required to submit site maps showing the location of silt fence to contain disturbed area runoff during construction.

OPERATION PLAN

MINING OPERATIONS AND FACILITIES

Regulatory Reference: 30 CFR 784.2, 784.11; R645-301-231, -301-526, -301-528.

Analysis:

TECHNICAL MEMO

General

This plan pertains to a drilling operation, in relationship to a mining project. Mining is not described in this amendment.

A clear description of the use and life of the facilities during the operational period is provided.

Facilities and Structures

The applicant plans to construct two pads for degasification wells, MW06 and MW-08. The pads will be graded to provide a platform for a drill rig, 20, 000 gallon water tank trailer, and mud pit during drilling operations.

Findings:

The information provided in the amendment is not considered adequate to meet the minimum Mining Operations and Facilities requirements of the Regulations. Prior to approval the permittee must provide the following in accordance with:

R645-731, 1) The applicant shall construct and maintain a silt fence around the lower perimeter of the disturbed area until it can be shown that runoff from the drill pad or reclaimed portion of the pad will meet state water quality standards for the receiving stream. **2)** The applicant will commit to provide a person from the mine during road upgrade and drill pad development that will ensure no sediment or equipment is allowed to reach the upper reach of Fish Creek channel.

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:

Ground-water monitoring

The wells will be cased to create a continuous column from the Blackhawk Formation to the surface. During drilling of the wells, the groundwater could be affected. Once drilling is completed, the well will be cased and grouted. This will seal any groundwater movement between stratigraphic units.

Surface-water monitoring

No surface water monitoring is proposed for the drilling site. No surface water will be encountered other than that produced directly on the site. No discharges will occur from the disturbed area.

Acid and toxic-forming materials

Acid and toxic forming materials have been assessed in association with mining operations of the Dugout Canyon mine. No acid forming or toxic forming materials have been identified.

Diversions

No permanent diversions are planned. A drainage ditch will collect runoff and direct it to a silt fence.

Stream buffer zones

The upper reach of Fish Creek lies within 40 feet (Figure 5-8) of drill pad MW-06. The applicant will be required to maintain sediment control structures to prevent contamination of the stream or channel. There are no streams within the buffer zone at drill pad MW-08.

Sediment control measures

Sediment control measures will be implemented to contain disturbed area runoff on site. Calculations were presented in Attachment 7-1. Runoff calculations should include the upgraded access road, because it flows to the drill pad.

Siltation structures

Silt fences and ditches will be used on the pad sites to control sediment.

Sedimentation ponds

No sedimentation pond is proposed for the site; however, the mud pit will be used to contain runoff on site during pad development and drilling phase.

Other treatment facilities

Treatment facilities will consist of silt fences, straw bales, and ditches.

TECHNICAL MEMO

Exemptions for siltation structures

No exemptions have been requested.

Discharge structures

No discharge structures are proposed.

Impoundments

No impoundments are proposed other than the berm that surrounds the gas well pad.

Casing and sealing of wells

Wells will be sealed as identified in Sections 551 and 748 of the MRP. Permanent sealing method is described in Section 542.700 of the MRP. Sealing of the well will be in accordance with the Division guidelines, R645-301-765.

Findings:

The information provided in the amendment is not considered adequate to meet the minimum Hydrologic Information requirements of the Regulations. Prior to approval the permittee must provide the following in accordance with:

R645-301-731, The applicant will ensure protection of the stream channel adjacent to upper Fish Creek by installing and maintaining silt fences below the disturbed areas of the access road and drill pad during operations.

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:

Affected area maps

The affected area is identified as the well drilling pad that is identified in Figure 5-1 and the access road illustrated in Figure 1. Runoff controls for the road are described in the MRP under Section 534 of the MRP.

Mining facilities maps

Operational facilities and hydrologic controls are well defined or illustrated.

Findings:

Refer to Maps, Plans and Cross Sections of Mining Operations deficiency.

RECLAMATION PLAN

GENERAL REQUIREMENTS

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

Analysis:

The applicant has indicated that the well site will be reclaimed according to Section 540 in the MRP. A statement under Section 542.600 indicates that the roads will be left "since it is a pre-existing road"; however, since the applicant indicates the road will be upgraded the applicant will be required to reclaim the road and maintain sediment control until runoff meets State water quality standards.

Findings:

The information provided in the amendment is not considered adequate to meet the minimum requirements of this section of the coal rules. Prior to approval the permittee must provide the following in accordance with:

R645-301-761, The applicant shall submit plans for reclaiming the access roads upgraded for installing degasification equipment.

TECHNICAL MEMO

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:

General

A Reclamation Plan is provided in Section 540 of the MRP.

Ground-water monitoring

Not required for this application.

Surface-water monitoring

Not required during the reclamation period for this application; however, the applicant will have to show that there are no excess contributions of settleable solids for Phase III bond release.

Acid and toxic-forming materials

Acid and toxic-forming materials are not expected.

Transfer of wells

No transfer of wells is planned.

Water quality standards and effluent limitations

The applicant plans for total containment of runoff and sediments.

Diversions

The ditches directing flow to the silt fence shown on the operational maps will be reclaimed.

Siltation structures

All siltation structures will be removed.

Sedimentation ponds

No sedimentation ponds are planned.

Ponds, Impoundments, Banks, Dams, and Embankments

All hydrologic structures will be removed, regraded, or reclaimed after mining stops.

Casing and sealing of wells

Wells will be sealed as identified in Sections 551 and 748 of the MRP. Permanent sealing method is described in Section 542.700 of the MRP. Sealing of the well will be in accordance with the Division guidelines, R645-301-765.

Findings:

The applicant has submitted sufficient Hydrologic Information to meet minimum requirement of the regulations.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

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

The information presented in the amendment should not change the PHC significantly, and therefore, the CHIA should not have to be changed.

RECOMMENDATIONS:

This amendment application is not recommended for approval until the deficiencies mentioned above are addressed.