0029

#3274
BK

TECHNICAL MEMORANDUM
Utah Coal Regulatory Program

June 10, 2009

TO: Internal File

THRU: James D. Smith, Permit Supervisor, Environmental Scientist III DS 06/11/09
Steve Christensen, Team Lead SC

FROM: Peter H. Hess, Environment Scientist PHH by SCS

RE: Add Degas Wells G25 and G26, Canyon Fuel Company LLC, Dugout Canyon Mine, C/007/0039 and Task ID #3274

SUMMARY:

Canyon Fuel Company, LLC / Dugout Canyon Mine submitted an application to the Division on April 30, 2009 to permit two additional degasification wells (G-25 and G-26) for the Dugout Canyon Mine. The purpose of the holes is to enhance the coal extraction process from longwall panel GIL-10 (panel #10 in the Gilson seam) that is located in Sections 20 and 29 of Township 13 South Range 13 East, SLBM . The wells will provide additional venting / dilution potential for the mine's ventilation system.

The Division has identified this permit application as Task ID # 3274. This memo will address the adequacy of the R645 engineering requirements as well as the Chapter 8, Bonding information.

TECHNICAL ANALYSIS:

OPERATION PLAN

MINING OPERATIONS AND FACILITIES

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

Analysis:

The purpose of the proposed methane de-gasification wells is to enhance the venting / dilution capability of the mine's ventilation system, such that dangerous levels of methane gas are not allowed to accumulate within the gob area (area where the coal seam has been extracted and the roof has been allowed to cave) and / or the bleeder entries.

As depicted on FIGURE 5-16, TYPICAL WELL DESIGN (Incorporated August 11, 2006), the wells will be drilled to depths such that the hole bottom will stop twenty-five feet above the roof elevation of the Gilson coal seam. Depending on the amount of overburden at the specific well site, the well depths could vary from 1250 to 2050 feet.

Chapter 6, Geology, page 6-2, section **625**, (Task ID #1642) states, "it is not anticipated that any additional geologic data will need to be collected at the well sites". Section **624.300** also states "no test boring(s) or drill cores are planned at the site". Therefore, none of the coal seam will be extracted for analysis. This also pertains to wells G-25 and G-26. The wells will be permitted as a mining related activity under the R645 coal rules.

None of the methane wells will be plugged post drilling, as their purpose is to bleed off the combustible gases within the mine, improving safety conditions and mining productivity. The anticipated life / usage of the degasification hole(s) is determined by the Permittee, based upon volumes of methane gas being liberated at the time that plugging is evaluated.

Findings:

This application duplicates degasification well submittals which have been permitted through the Division on numerous previous occasions.

EXISTING STRUCTURES:

Regulatory Reference: 30 CFR 784.12; R645-301-526.

Analysis:

The proposal to construct the methane degasification wells will occur in an area well outside of the disturbance created by the Mine's facilities. There are no known dwellings, public buildings, schools, churches, or community buildings within 1,000 feet of the pre-determined well locations. There is no indication that blasting will be done during the construction/ reclamation process of the well sites. This regulation is not applicable.

Findings:

There are no known structures in the area of the methane well development sites. This regulation is not applicable.

RELOCATION OR USE OF PUBLIC ROADS

Regulatory Reference: 30 CFR 784.18; R645-301-521, -301-526.

Analysis:

All access roads within the surface lease agreement area are owned by the surface landowners, the heirs of the Milton and Ardith Thayn Trust. There are no public roads involved in the submittal.

Findings:

This regulation is not applicable to this submittal.

COAL RECOVERY

Regulatory Reference: 30 CFR 817.59; R645-301-522.

Analysis:

As stated previously, the methane wells will be drilled to depths varying from 1250 to 2050 feet, depending on the amount of overburden at the well location. All boreholes will be stopped at a depth that correlates to twenty-five feet above the roofline elevation of the Gilson coal seam. No coal will be recovered from the strata that are being bored to develop wells G-25 and G-26 in the Dugout Mine permit area. No test borings or drill cores are planned at the well sites.

Wells G-25 and G-26 are on the SITLA lease.

Findings:

This regulation is not applicable to this amendment.

SUBSIDENCE CONTROL PLAN

Regulatory Reference: 30 CFR 784.20, 817.121, 817.122; R645-301-521, -301-525, -301-724.

Analysis:

Renewable Resources Survey

A discussion relative to **Structures and Renewable Resource Lands** is included as part of Chapter 5, page 5-27 of the Dugout Canyon Mine mining and reclamation plan. Same indicates that there are no major electrical transmission lines, pipelines, or agricultural drainage tile fields within the area to be extracted using long wall mining methods. All roads in sections 20 and 29 are the private property of the heirs of the Milton and Ardith Thayn Trust. As previously mentioned, the permittee has been granted use of these roads via the surface lease agreement between Canyon Fuel Company and the heirs of the Milton and Ardith Thayn Trust.

Subsidence Control Plan

Chapter 5, page 5-8, section **525 Subsidence** (Task ID #3274) of the application indicates "no subsidence will occur at the well sites, as a result of drilling and development of the degasification well sites. Subsidence could occur at the well site because of underground mining..." The application references Section 525 of the approved mining and reclamation plan.

As the long wall panel is extracted from the Gilson seam, the roof will cave behind the shields as the face is mined and the shields are advanced. Although the broken material will swell to a certain extent as it breaks and falls, some settling of the overburden will propagate to the surface. The overall elevation of the surface over the panel will diminish.

Subsidence Monitoring is discussed on pages 5-28 through 5-31 of the approved mining and reclamation plan. The commitment made by the permittee on page 5-30 is to install one monitoring point per panel.

Performance Standards For Subsidence Control

The permittee has an approved subsidence control plan in place, as evidenced via review of the approved mining and reclamation plan.

Notification

Chapter 5, page 5-34, section **525.300 Public Notice of Proposed Mining,** indicates that "each owner of property or resident within the area above an underground mining block and adjacent area that may be affected by subsidence will be notified by mail at least six months prior to mining or within that period if approved by the Division". That notification will include 1) the identification of specific areas in which mining will take place, 2) dates the specific areas will be undermined, and 3) the location or locations where the Dugout Canyon Mine subsidence control plan may be examined.

Findings:

The information provided meets the minimum regulatory requirements of this section.

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 application contains a plan view / contour map for proposed degasification well G-25, (FIGURE 5-1). The drawing depicts the pre-existing road accessing the G-25 site. FIGURE 2 depicts cross-sections A-A' and B-B'. These sections indicate that the pad area will be developed on a mountain top, which is generally flat lying. No large cuts or fills will be required. FIGURES 1 and 2 are P.E. certified by Mr. Richard B. White, Utah registered professional engineer.

FIGURE 3, APPROXIMATE DRILLING LOCATION FOR G-25, shows a proposed drill location for the degasification well. Notes on this drawing state that the location of the hole may vary.

One length of the G-25 pad will parallel 300 feet of the pre-existing road, and the road will be included within the disturbed area of G-25. Sediment control will consist of:

1) diverting undisturbed runoff away from the pad via a berm surrounding the G-25 and G-26 pads.

2) Disturbed area (pad) runoff will be made to report to the lowest corner of the pad, where it will be treated by a silt fence or straw bale dike. A mud pit will be developed to collect drill cuttings and drilling muds. Water bars will be placed where the disturbed area perimeters must include the existing road in the area. All runoff will be contained and treated prior to leaving the disturbed area.

The acreage associated with both well pads is 3.6 acres (@ consisting of 1.8 acres).

Primary Road Certification

The permittee's application states that the G-25 and G-26 wells will be developed near existing private roads (See Figures 1,2, and 3). See Chapter 5, page 5-9, **527.100 Road Classification**.

The well pad locations were chosen adjacent to existing roads to minimize the amount of disturbance necessary. The existing roads have a surface constructed of compacted native subsoil material. The road is depicted on FIGUREs 5-1 for well G-25 and G-26. The roadway length that is contained within each of the well disturbed area **will not be reclaimed** upon the completion of the methane venting process.

As these roads are pre-existing, neither meet the road classification requirements in the R645 Coal Mining Rules for primary or ancillary roads.

Findings:

The information provided meets the minimum regulatory requirements of this section.

SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

Analysis:

Disposal Of Noncoal Mine Wastes

All noncoal waste generated by the well drilling activities will be disposed of in the same manner as waste generated at the main mine facilities area.

There will be no noncoal waste disposal areas at any of the proposed well sites.

Coal Mine Waste

Chapter 5, page 5-3, section 513.300 Underground Development Waste, Coal Processing Waste, and Excess Spoil addresses this requirement. None of these types of material will exist at the well sites.

Refuse Piles

No refuse piles will exist at the well sites, (Chapter 5, page 5-3, Section **513.400, Refuse Piles**).

Impounding Structures

"No impoundments will exist at the well sites, " (See **Chapter 5**, page **5-14**, section **533 Impoundments** of the submittal).

Burning And Burned Waste Utilization

This section is not applicable to this submittal.

Coal Mine Waste

No coal waste will be stored at the well sites, (Chapter 5, page 5-15, section **536, Coal Mine Waste**).

Excess Spoil:

This section is not applicable to this submittal.

Findings:

The permittee has addressed those sections that are felt to be relevant to the proposed drilling of the two methane vent wells. The submitted information is adequate to meet the minimum regulatory requirements of this section.

SUPPORT FACILITIES AND UTILITY INSTALLATIONS

Regulatory Reference: 30 CFR Sec. 784.30, 817.180, 817.181; R645-301-526.

Analysis:

The proposed methane vent wells are intended to enhance the mine ventilation system, allowing additional venting and dilution capability of the combustible mine gases that are inherent in the coal seam, as well as the adjacent strata. Thus, they are a support facility.

Chapter 5, page 5-9, section **526.200 Utility Installation and Support Facilities** of the submittal addresses this requirement. According to that information, no utilities will be installed at the well sites. A portable methane-exhausting unit will be installed, and the operation of that machine will be initiated with portable propane bottles. Upon start up, the device will be switched over to operate from the methane concentrations venting from the well, and will thus be self-sufficient.

Findings:

The information provided meets the minimum regulatory requirements of this section.

SIGNS AND MARKERS

Regulatory Reference: 30 CFR Sec. 817.11; R645-301-521.

Analysis:

Chapter 5, pages 5-6 and 5-7, section **521.200, Signs and Markers** addresses this requirement of the R645 coal rules. The application commits the permittee to install a mine and permit identification sign at each well site that is developed. The identification sign will contain the following information: mine name, company name, company address, and telephone number, MSHA identification number, and the permanent program identification number.

The application commits the permittee to install disturbed area perimeter markers to identify all acreage to be affected before beginning mining activities.

Stream buffer zone signs will not be required at either of the proposed well sites (G-25 and G-26).

Topsoil storage signs will be placed on all topsoil stockpiles.

All signs and markers will be maintained until no longer needed, generally until all Phase III bond release requirements have been met.

Findings:

The information provided meets the minimum regulatory requirements of this section.

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:

Mining Facilities Maps

The methane well submittal includes three maps/drawings for each of the two wells that are being proposed; these include:

1) A contour map, which depicts the undisturbed surface contour, and the relationship of the well pad (FIGURE 1).

2) A typical cross section for each well pad, depicting the pre-disturbed and final reclamation surface configuration, as well as the Operational surface configuration (FIGURE 2).

3) A plan view of the "approximate" drilling layout for each of the proposed well sites showing the drill hole location and the mud pit. The plan view shows the various methods to control and treat intercepted precipitation, including sloping the pad(s), and the installation of berms and silt fences (FIGURE 3).

All three figures for each of the two proposed wells are P.E. certified by Mr. Richard B. White, Utah registered professional engineer.

Mine Workings Maps

Not applicable to this amendment.

Monitoring and Sampling Location Maps

All maps relative to this requirement are incorporated into the approved mining and reclamation plan for the Dugout Canyon Mine.

Certification Requirements

As noted above, all plans, drawings, and maps that are relative to this submittal have been certified by a Utah registered professional engineer.

Findings:

The submitted information is adequate to meet the minimum regulatory requirements of this section.

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:

Upon completion of the well site, the areas not required for the exhaust blower will be regraded to approximate original contour, (See Chapter 5, page 5-15, section **537.200, Regrading of Settled and Revegetated Fills).**

Upon completion of the methane venting activities the wells will be reclaimed (See Chapter 5, page 5-16, **541.300 Underground Coal Mining and Reclamation Activities**. Revegetation activities will commence; the only remaining equipment will be the disturbed area perimeter fence, and the permittee identification sign, which will remain until authorization is granted by the Division to remove same.

Findings:

The minimum regulatory requirements have been addressed.

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

Analysis:

Upon completion of the drilling phase of the well(s), the disturbance(s) will be reclaimed by regrading that portion not necessary for the venting phase to approximate original contour, (See Chapter 5, page 5-20, section **553.100 Disturbed Area Backfilling**

and Grading, Approximate Original Contour). See page 5-22, Chapter 5, section **553.900, Regrading of Settled and Revegetated Fills** (TASK ID# 3247). As indicated, "upon completion of the well site, the areas not required for the exhaust blower will be regraded to approximate original contour". If any settling should occur within the reshaped area, the permittee's submittal makes the commitment to regrade the settled areas. After the venting phase of the degasification wells has been completed, the remainder of the disturbance will be reclaimed, returning the acreage associated with venting phase to approximate original contour. This will be followed by roughening and reseeding of the area. The disturbed area perimeter fence and the associated permittee identification signs will remain in place until the Division has made a determination that all reclamation standards have been adequately addressed.

Findings:

The submitted information meets the minimum regulatory requirements of this section.

BACKFILLING AND GRADING

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

Analysis:

General

See previous analysis under **APPROXIMATE ORIGINAL CONTOUR RESTORATION.**

Previously Mined Areas

The area has not been mined previously; the requirements of this section are not applicable to the methane well submittal.

Backfilling and Grading On Steep Slopes

Chapter 4, page 4-1, section **411.120 Land Capability** (Task ID #1642), indicates, "the well site areas are located on the flatter mesa tops and rolling terrain". A review of FIGUREs 1 for both G-25 and G-26, which are contour maps for each of the respective well sites, reveals that, based on a determination of the slope gradient that neither of the well site surfaces increase in elevation at an angle steeper than 12 degrees. Both are generally flat lying. By definition, steep slopes are slopes that increase in height when the vertical angle is twenty degrees or more. Therefore, neither of the well sites are being proposed in what would be considered a steep slope area.

Special Provisions for Steep Slope Mining

This requirement is not applicable to this submittal.

Findings:

The information submitted meets the minimum regulatory requirements of this section.

MINE OPENINGS

Regulatory Reference: 30 CFR Sec. 817.13, 817.14, 817.15; R645-301-513, -301-529, -301-551, -301-631, -301-748, -301-765, -301-748.

Analysis:

Reclamation of the methane vent wells is addressed in Chapter 5; section **540 RECLAMATION PLAN**, section **550, RECLAMATION DESIGN CRITERIA AND PLANS**, and section **560, PERFORMANCE STANDARDS**.

Section **541.100, Commitment** indicates, "Upon permanent cessation of methane venting, Dugout Canyon Mine will seal the wells and permanently reclaim all affected areas in accordance with the R645 regulations and this reclamation plan."

The sealing of wells involves meeting the minimum regulatory requirements associated with R645-301-765. Page 7-13, **Chapter 7, HYDROLOGY**, section **748, Casing and Sealing Wells,** refers one to **Chapter 5, ENGINEERING**, section **542.700, Final Abandonment of Mine Openings and Disposal Areas.** Page 5-19, (which has been revised to specifically address degas wells G-25 and G-26) states, "All openings will be sealed in accordance with Federal Regulations 43 CFR Chapter 11, Subpart 3484, (3) per a decision by the BLM and UDOGM.

The casings will be plugged at the bottom to hold concrete. A lean concrete mixture will be poured into the casing until the concrete is within five (5) feet of the surface. At that time, the casing will be cut off at ground level and the rest of the casing will be filled with lean concrete. The concrete will be allowed to harden before the final reclamation is completed."

Methane degasification wells are unique in that they are drilled to a depth that is approximately twenty-five feet above the coal seam that is being extracted. As the longwall face retreats and extracts the coal from the area beneath the borehole, the roof caves as the longwall shields are advanced in order to protect the machinery. Hopefully, the roof caves up to the bottom of the degasification well, completing the circuit, and

allowing atmosphere containing mine gases to be vented to the surface. An exhaust blower will sit on the surface creating a low pressure across the wellhead, venting the mine gases from the underground gob area.

It is generally accepted that more than 90% of the subsidence associated with coal extraction via longwall mining methods will occur within the first year after completion of the extraction process. The casing of the methane vent well may be subjected to crushing or shearing anywhere along its length, due to the shifting, bending and/or breaking of the strata adjacent to the well. Thus, the venting of combustible gases from the gob areas of the mine may be short lived. The plugging of these casings may only be effective in preventing adverse environmental or health and safety effects to a certain extent. The prevention of cross contamination of aquifers may not be possible in consideration of the fact that the plugging of the hole may not be possible for its entire depth.

Findings:

The permittee has committed to plugging the degasification well casings to the extent possible to prevent adverse environmental damage or possible effects to health and safety. This commitment is the best that can be given at this point in time, as only the future will tell if the partial plugging of the wells will be adequate. The minimum regulatory requirements of this section have been addressed.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 701.5, 784.24, 817.150, 817.151; R645-100-200, -301-513, -301-521, -301-527, -301-534, -301-537, -301-732.

Analysis:

Retention

As mentioned elsewhere in this technical memorandum, the roads which will be used to access degasification wells G-25 and G-26 are in place at the present time and are the property of the heirs of the Milton and Ardith Thayn Trust. They will stay in place after the venting phase of the wells has been completed. The surface use agreement in place between Canyon Fuel Company and the Trust allows the Permittee the use of the roads for the length of the agreement.

Findings:

The submitted information meets the minimum regulatory requirements of this section.

CONTEMPORANEOUS RECLAMATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.100; R645-301-352, -301-553, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

General

Upon completion of the drilling phase of the well(s), approximately 60-70% of the disturbance(s) will be reclaimed by regrading that portion to approximate original contour, (See Chapter 5, page 5-14, section **-553.100 Disturbed Area Backfilling and Grading, Approximate Original Contour**) roughening the area to enhance moisture retention and re-seeding the area with the seed mix approved by the Division. See page 5-15, Chapter 5, section **537.200, Regrading of Settled and Revegetated Fills.** As indicated, "upon completion of the well site, **the areas not required for the exhaust blower** will be regraded to approximate original contour. Because of the nature of the well site, settling is not anticipated. However, if settlement does occur, these areas will be regraded". This commitment is adequate.

Findings:

The submitted information meets the minimum regulatory requirements.

MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

Analysis:

Affected Area Boundary Maps

The general location of the proposed wells is depicted on PLATE 1-4, which shows the permit boundary for the Dugout Canyon Mine. The proposed disturbance for each of the wells is depicted as FIGUREs 1 for wells G-25 and G-26. All figures are P.E. certified by a Utah registered professional engineer.

Bonded Area Map

The bonded area for both wells G-25 and G-26 is depicted by FIGUREs 5-1.

Final Surface Configuration Maps

The permittee has committed to returning the drill pad areas to approximate original contour. Thus, the final surface configuration should very closely resemble the contours depicted on FIGUREs 5-1.

Certification Requirements

All maps and drawings requiring certification as listed under R645-301-512 are P.E. certified by Mr. Richard B. White, Utah registered professional engineer.

Findings:

The submitted information meets the minimum regulatory requirements of this section.

BONDING AND INSURANCE REQUIREMENTS

Regulatory Reference: 30 CFR Sec. 800; R645-301-800, et seq.

Analysis:

General

The permittee has submitted a reclamation cost estimate for the well sites. However, the Division has determined that an error exists for cost of hay mulch for a one acre area. A check of the RS Means catalog for hay mulch placed to a one inch depth (RMS029105000250) is $ 69.85 per 1,000 square feet of application area.

The Permittee clarified on June 10, 2009 that the size of the area to be disturbed / reclaimed will only be one acre (43,560 square feet). Therefore the cost for hay mulch placed to a one inch depth is $ 69.85 X 43.56 = $ 3,042.

This line item needs to be corrected for the vegetation costs for degasification wells G-25 and G-26.

Determination of Bond Amount

An error approximating $ 6,000 was discovered in the revegetation costs for the Task ID # 3274 application. The error has been discussed with the Permittee, and revised costs will be submitted in response to deficiencies aired within the first review of Task ID # 3274.

Therefore, in accordance with;

1) R645-301-830.140, Detailed Estimated Cost Sheets, the Permittee must submit a revised line item cost estimate for material for hay mulch one inch deep applied over a one acre area (bond estimate pages 84 and 85).

Findings:

The application needs a minor revision to the bond estimate for the re-vegetation of degasification wells G-25 and G-26 prior to receiving a recommendation for approval.

RECOMMENDATION:

The submittal needs a minor revision to receive a recommendation for approval. All other minimum regulatory requirements have been adequately addressed.

O:\007039.DUG\FINAL\WG3274\PHH3274.doc