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TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

January 31, 2013

TO: Internal File

THRU: Priscilla Burton, Team Lead *PB lm 805*

FROM: Ken Hoffman, Hydrologist *KH*

RE: North Lease Permit Modification, Canyon Fuel Company, Skyline Mine, C/007/0005, Task #4208

SUMMARY:

The application from Canyon Fuel Co., LLC is for a 770.52 acre Significant Revision for the North Lease, BLM Coal Lease UTU-67939, of the Skyline Mine. The lease modification will add panels 13 – 15 Left, extending mining beneath Granger Ridge into Sections 25, 26 and 34 in T 12 S, R 6 E, refer to Dwg. 3.3-2. Drawing 1.6-1 shows the surface is owned by D. Euray Allred and Madelyn E. Allred Trust and the United States, managed by the U.S. Forest Service. This response to deficiencies received November 16, 2012 and original application received on May 2, 2012 (Task 4092), are the first electronic permit applications processed by the Coal Program.

This memo addresses the application's compliance with the hydrology (R645-301-700) section of the Utah Coal Mining Rules. The application contains a brief description of hydrology as well as a summary of spring and seep survey and baseline monitoring activities. The application covers water rights evaluation, baseline sampling, and hydrologic resource impacts. However the application includes numerous deficiencies. The application is not recommended for approval until the following issues are resolved:

R645.301.724.100 The application must include the location and ownership for the permit and adjacent areas of existing wells, springs and other ground-water sources, seasonal quality and quantity of ground water, and usage. Water quality descriptions will include, at minimum baseline information on, total dissolved solids or specific conductance corrected to 25 degrees C, pH, total iron, and total manganese. Ground-water quantity descriptions will include, at a minimum, approximate rates of discharge or usage. The amendment lacks the required monitoring parameters, sufficient data to show seasonal variation, and usage data. For

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amendment approval one spring/summer and one fall sample are required from the same water year to demonstrate seasonal variation.

R645.301.724.100 The application must include information on the status of water right 91-3916 and why no sampling was conducted.

R645.301.731.200 The application must include the name location, ownership and description of all surface-water bodies such as streams, lakes and impoundments, and information on surface-water quality and quantity sufficient to demonstrate seasonal variation and water usage. Surface water baseline quality descriptions will include, at minimum baseline information on total suspended solids, total dissolved solids or specific conductance corrected to 25 degrees C, pH, total iron, total manganese and flow. The amendment lacks the required monitoring parameters, sufficient data to show seasonal variation, and usage data. For amendment approval one spring/summer and one fall sample are required from the same water year to demonstrate seasonal variation.

R645.301.724 & R645.301.731.200 The permittee shall conduct a field investigation with the Division of Water Rights to ensure all water rights in the immediate area around the lease expansion are included and to assist in evaluating which locations require long term sampling.

R645.301.728.100 The PHC is inadequate with regard to the proposed lease expansion area. The application shall contain a determination of the probable hydrologic consequences (PHC) of the proposed operation based upon the quality and quantity of surface and ground water under seasonal flow conditions for the proposed permit and adjacent areas. The permittee shall complete collection of baseline information on seasonal water quality and quantity from the same water year and then update the PHC utilizing this information.

R645.301.728.200 PHC determination shall be based on baseline hydrologic, geologic, and other information collected for the permit application and may include data statistically representative of the site

R645.301.728.300 The PHC determination shall include findings on: whether adverse impacts may occur to the hydrologic balance; whether acid-forming or toxic-forming materials are present that could result in the contamination of surface or ground water supplies; and, what impact the proposed operation will have on sediment yield from the disturbed area; acidity, total suspended and dissolved solids, and other important water quality parameters of local impact; flooding or stream flow alteration; ground water and surface water availability; and other characteristics as required.

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R645.301.728.310 The PHC determination shall include findings on: whether adverse impacts may occur to the hydrologic balance. This finding must also include a determination on impacts to Wife Creek, Andrew Dairy Creek, East Fork Andrew Dairy Creek, Fish Creek and Scofield Reservoir.

R645.301.731.211 & R645.301.731.221 Based on the completed PHC the need for groundwater monitoring and surface water monitoring will need to be reevaluated. If the required water monitoring parameters of total iron and total manganese are not to be included in the monitoring plan it must discuss what parameters are to be excluded and why it is not needed.

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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 779.18, 783.18; R645-301-724.

Analysis:

The application includes climatological factors such as the Palmer Hydrologic Drought Index for Utah Region 4 in what is indicated to be PHC Appendix L.

HYDROLOGIC RESOURCE INFORMATION

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

Analysis:

Sampling and Analysis

The application includes results of groundwater sampling from the fall of 2011 and 2012 for the springs and surface water sampling from the fall of 2012 for the springs in the application area. Surface water samples were collected but not analyzed for all required baseline parameters. Most sites were only monitored for flow, field conductivity, temperature, and pH.

Baseline Information

Section 2.3.5.2 has been updated and states that these water rights are used for stock watering and are claimed by the USFS or the Euray Allred family. The Utah Division of Water Rights was consulted in October 2012 but has not yet been able to conduct a field investigation to confirm these existing water rights.

Baseline hydrologic ground-water information for fall 2011 and 2012 is presented in the *Summary of spring and seep survey and baseline monitoring activities in the Wife and Andrew Dairy Canyon Areas, 2011-2013*. The survey presents Table 1 and 2 with the following information on water rights:

Water Right	Site Name	Data Collected
WR 91-1039	S25-32	Sept 2011, Sept & Oct 2012
WR 91-1040	E. Fork Andrew Dairy	Oct 2012
WR 91-1041	Andrew Dairy Creek- Lower	Oct & Nov 2012

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WR 91-1043 & WR 91-1044	Wife Creek – Lower	Oct & Nov 2012
?	Wife Creek – Upper	Oct 2012
WR 91-3916	?	None?
WR 91-3917	S26-1	Oct 2012

From the text of the survey report it is unclear if WR 91-3916 is monitored and needs clarification. Baseline water information requires an explanation of seasonal quality and quantity of the existing groundwater and surface water. Additional sampling is required by the permittee to appropriately characterize the water quality and quantity in the proposed lease expansion and to demonstrate seasonal variation. The application shall collect samples from at least one full water year (spring/summer and fall) for baseline data and update Appendix L accordingly.

Baseline Cumulative Impact Area Information

Hydrologic and geologic information for the cumulative impact area are necessary to assess the probable cumulative hydrologic impacts of the proposed operation and all anticipated mining on surface- and ground-water systems. This information must include discussion of possible impacts to Scofield Reservoir.

Probable Hydrologic Consequences (PHC)

Section 2.3 was updated and states that the proposed mine plans indicate that 900-1300 feet of overburden separate the mine workings from the surface and that impacts to the water resources are not anticipated. Section 2.3 references to Appendix L as an updated PHC and the permittee has verbally clarified that the *Summary of spring and seep survey and baseline monitoring activities in the Wife and Andrew Dairy Canyon Areas, 2011-2013* is intended to be Appendix L.

The *Summary of spring and seep survey and baseline monitoring activities in the Wife and Andrew Dairy Canyon Areas* report need additional language to meet the requirements of a PHC. The proposed PHC Appendix L is insufficient and the PHC shall be modified to include:

- (1) *The application shall contain a determination of the probable hydrologic consequences (PHC) of the proposed operation based upon the quality and quantity of surface and ground water under seasonal flow conditions for the proposed permit and adjacent areas.*
- (2) *The PHC determination shall be based on baseline hydrologic, geologic, and other information collected for the permit application and may include data statistically representative of the site.*

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- (3) *The PHC determination shall include findings on: whether adverse impacts may occur to the hydrologic balance; whether acid-forming or toxic-forming materials are present that could result in the contamination of surface or ground water supplies; and, what impact the proposed operation will have on sediment yield from the disturbed area; acidity, total suspended and dissolved solids, and other important water quality parameters of local impact; flooding or stream flow alteration; ground water and surface water availability; and other characteristics as required.*

Groundwater Monitoring Plan

Groundwater hydrologic baseline information is presented in the *Summary of spring and seep survey and baseline monitoring activities in the Wife and Andrew Dairy Canyon Areas, 2011-2013*. Two springs were sampled as part of the baseline investigation but no sampling was conducted at water right 91-3916. Based upon the additional baseline data and the Division of Water Rights field visit the groundwater monitoring plan shall be evaluated.

Surface-Water Monitoring Plan

Surface water hydrologic baseline information is presented in the *Summary of spring and seep survey and baseline monitoring activities in the Wife and Andrew Dairy Canyon Areas, 2011-2013*. Four surface water locations were monitored for baseline information.

Findings:

Contents and information provided are not sufficient enough to meet the minimum requirements of this section of the Utah Coal Mining Rules. The following deficiencies must be addressed prior to the Division approval of the application:

R645.301.724.100 The application must include the location and ownership for the permit and adjacent areas of existing wells, springs and other ground-water sources, seasonal quality and quantity of ground water, and usage. Water quality descriptions will include, at minimum baseline information on, total dissolved solids or specific conductance corrected to 25 degrees C, pH, total iron, and total manganese. Ground-water quantity descriptions will include, at a minimum, approximate rates of discharge or usage. The amendment lacks the required monitoring parameters, sufficient data to show seasonal variation, and usage data. For amendment approval one spring/summer and one fall sample are required from the same water year to demonstrate seasonal variation.

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R645.301.731.200 The application must include the name location, ownership and description of all surface-water bodies such as streams, lakes and impoundments, and information on surface-water quality and quantity sufficient to demonstrate seasonal variation and water usage. Surface water baseline quality descriptions will include, at minimum baseline information on total suspended solids, total dissolved solids or specific conductance corrected to 25 degrees C, pH, total iron, total manganese and flow. The amendment lacks the required monitoring parameters, sufficient data to show seasonal variation, and usage data. For amendment approval one spring/summer and one fall sample are required from the same water year to demonstrate seasonal variation.

R645.301.724 & R645.301.731.200 The permittee shall conduct a field investigation with the Division of Water Rights to ensure all water rights in the immediate area around the lease expansion are included and to assist in evaluating which locations require long term sampling.

R645.301.728.100 The PHC is inadequate with regard to the proposed lease expansion area. The application shall contain a determination of the probable hydrologic consequences (PHC) of the proposed operation based upon the quality and quantity of surface and ground water under seasonal flow conditions for the proposed permit and adjacent areas. The permittee shall complete collection of baseline information on seasonal water quality and quantity from the same water year and then update the PHC utilizing this information.

R645.301.728.200 PHC determination shall be based on baseline hydrologic, geologic, and other information collected for the permit application and may include data statistically representative of the site

R645.301.728.300 The PHC determination shall include findings on: whether adverse impacts may occur to the hydrologic balance; whether acid-forming or toxic-forming materials are present that could result in the contamination of surface or ground water supplies; and, what impact the proposed operation will have on sediment yield from the disturbed area; acidity, total suspended and dissolved solids, and other important water quality parameters of local impact; flooding or stream flow alteration; ground water and surface water availability; and other characteristics as required.

R645.301.728.310 The PHC determination shall include findings on: whether adverse impacts may occur to the hydrologic balance. This finding must also include a determination on impacts to Wife Creek, Andrew Dairy Creek, East Fork Andrew Dairy Creek, Fish Creek and Scofield Reservoir.

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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

Drawing Northern Baseline Map is included as part of the seeps and springs survey report with the sampled baseline monitoring locations.

Subsurface Water Resource Maps

Map 2.3.5.2-1 has been updated to include the subsurface water resources in the proposed expansion.

Surface Water Resource Maps

Map 2.3.5.1-1 has been updated to include the surface water resources in the proposed expansion.

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:

Groundwater Monitoring

Table 2.3.7-1 has been updated to include springs S25-32 and S26-1 will be monitored quarterly, beginning in 2012 for flow, pH, specific conductance and water temperature. The collected baseline data and provided PHC are currently inadequate to evaluate what operational monitoring is needed.

Surface Water Monitoring

The amendment proposes that no surface water quality or quantity operational monitoring will be conducted. The collected baseline data and provided PHC are currently

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inadequate to evaluate what operational monitoring is needed. Based on the PHC the need for a surface water monitoring plan for Wife Creek, Andrew Dairy Creek, East Fork Andrew Dairy Creek or Fish Creek drainage shall be evaluated.

Acid- and Toxic-Forming Materials and Underground Development Waste

There is no toxic-forming material anticipated as part of this amendment.

Transfer of Wells

There are no wells being transferred as part of this amendment.

Discharges Into An Underground Mine

No discharges into the mine are proposed in the amendment.

Gravity Discharges From Underground Mines

The lease modification is not anticipated cause substantial change in mine water discharge quantity.

Water-Quality Standards And Effluent Limitations

The lease modification is not anticipated cause substantial change in mine water discharge quality.

Diversions: General

There are no diversions being proposed as part of this amendment.

Stream Buffer Zones

The amendment states that the nearest perennial stream begins 0.35 miles downstream in Wife Canyon.

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Sediment Control Measures

No sediment control measures are included as part of the amendment because the amendment doesn't propose any new surface operations.

Siltation Structures

No siltation structures or other treatment facilities are included as part of the amendment.

Discharge Structures

No discharge structures are included as part of the amendment.

Impoundments

No impoundments are included as part of the amendment.

Ponds, Impoundments, Banks, Dams, and Embankments

No impoundments, banks, dams, or embankments are included as part of the amendment.

Findings:

Contents and information provided are not sufficient enough to meet the minimum requirements of this section of the Utah Coal Mining Rules. The following deficiencies must be addressed prior to the Division approval of the application:

R645.301.731.211 & R645.301.731.221 Based on the completed PHC the need for groundwater monitoring and surface water monitoring will need to be reevaluated. If the required water monitoring parameters of total iron and total manganese are not to be included in the monitoring plan it must discuss what parameters are to be excluded and why it is not needed.

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

Map 2.3.6-1 has been updated to include the new proposed monitoring locations.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT (CHIA)

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

Analysis:

The Mud Creek Basin and Upper Huntington Creek Basin CHIA was reviewed and must be updated. The current CHIA is bounded to the north by the Granger Ridge and must be expanded to incorporate Fish Creek.

RECOMMENDATIONS:

The application is not recommended for approval until the deficiencies are addressed.