

# TECHNICAL MEMORANDUM

## Utah Coal Regulatory Program

---

August 23, 2010

TO: File

THRU: Priscilla Burton, Lead *PB m sas*

FROM: James D. Smith, Environmental Scientist *JDS 08/23/2010*

RE: Winter Quarters Access Road, Canyon Fuel Company, Skyline Mine, Permit # C/007/0005, Task ID #3597

### SUMMARY:

On July 27, 2010 the Division received an application from Canyon Fuel Company (CFC) for the Winter Quarters Access Road. CFC proposes to add road base and gravel and improve drainage to facilitate use of the road as an ancillary road during construction of the WQVF. The road will not be used to transport coal or mine waste or for regular mining activities.

The landowners, the Allred Family Trust and Scofield Town, are to continue use of the road throughout construction, operation, and reclamation of the WQVF. Skyline will improve and maintain the road on the Allred land and Scofield Town will improve and maintain the section of the road owned by the town.

This amendment adds approximately 4.9 acres to the Skyline Mine disturbed area, but no soil or vegetation is to be disturbed because the improvements are to be done within the footprint of the existing road. Historic features are to be avoided.

This memo addresses Hydrology and related regulations found in R645-301. Hydrology information is mainly found in the Winter Quarters Access Road Hydrology Report prepared by EarthFax Engineering, Inc. and included as part of this amendment.

This amendment is recommended for approval.

**TECHNICAL MEMO**

---

**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:**

EarthFax obtained design storm magnitudes from the NOAA ATLAS 14, Point Precipitation Frequency Estimates web page (<http://hdsc.nws.noaa.gov/hdsc/pfds/sa/utyfds.html>).

**Findings:**

Climatological Information in this amendment is sufficient to meet the requirements of the Utah Coal Mining Rules.

**HYDROLOGIC RESOURCE INFORMATION**

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

**Analysis:**

**Baseline Information**

EarthFax calculated upstream and site watershed areas and average slopes from 10-foot contour interval topographic map provided by Psomas Engineering. Section 3.2 of the EarthFax report contains descriptions of the Drainage Area Characteristics

**Findings:**

Baseline Hydrologic Information in this submittal is sufficient to meet the requirements of the Utah Coal Mining Rules.

## 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:

##### General

CFC plans to add stable road base, diversion ditches, culverts, and riprap pads at culvert outfalls. The watershed area to be diverted by the ditches is approximately 396.68 acres, which includes the road and the undisturbed areas above the road.

EarthFax Engineering, Inc. prepared the Winter Quarters Access Road Hydrology Report included as part of this amendment. That report contains location and background information, hydrologic analyses to determine runoff discharge for design storm events, and diversion ditch, culvert, and riprap pad sizing and design criteria. Engineering calculations are included as attachments to the EarthFax report.

Storm runoff calculations are included in Attachment A. EarthFax calculated storm water discharge for the area using HydroCAD version 9.1. EarthFax modeled most of the area as sagebrush range in poor to fair condition to allow for a more conservative design; however, UW-9 was modeled as sagebrush range in fair condition, and the road was modeled as a gravel road.

The design for the reconstruction or upgrading of the WQVF access road incorporates appropriately sized and placed diversion ditches and culverts. No part of the road will be located in the channel of an intermittent or perennial stream or an ephemeral stream that drains a watershed of at least one square mile (Figure 1, Winter Quarters Access Road Hydrology Report prepared by EarthFax Engineering, Inc.). The Permittee is not relocating the road, so downstream sedimentation and flooding are not conditions the Permittee can control through location selection.

This amendment does not affect the water monitoring plan; no additional monitoring is planned for the access road.

---

TECHNICAL MEMO

---

### **Acid- and Toxic-Forming Materials and Underground Development Waste**

The road is to be improved with the addition of road base and gravel. No topsoil is to be removed. Excess coal-mine waste generated by construction of the WQVF is to be disposed of at the Skyline Waste Rock Disposal Site and will not be used in road improvement.

#### **Diversions: Miscellaneous Flows**

EarthFax designed a series of diversion ditches to direct runoff from the undisturbed areas above the road and into culverts that are to carry the runoff under the road. All flows will be ephemeral.

EarthFax has designed the diversion ditches and culverts to safely convey runoff from a 25-year, 6-hour storm event. Velocities for D1-D8 will not be greater than 5 fps. The greatest depths within the D1-D7 will be 0.57 ft., leaving more than 40% freeboard, and the greatest depth in D8 will be 0.96, leaving more than 35% freeboard.

The diversion ditches will be constructed from native or imported materials and will be rip-raped as necessary to prevent channel degradation.

EarthFax designed the culverts to allow for maintenance and cleaning and to withstand traffic loads. Riprap pads at the culvert outfalls will reduce velocity and prevent erosion. Minimum diameter is to be 18 inches. The Permittee is to install culverts to match existing grade and prevent disturbing the adjacent undisturbed area as much as possible. Culvert slopes are to vary between 2 to 10 percent; velocities were calculated based on a 10 percent slope and maximum depths within culverts were calculated using a 2 percent slope.

#### **Sediment Control Measures**

The Permittee plans to divert runoff from undisturbed areas away from the disturbed area via ditches and culverts. No other Sediment Control Measures are planned.

#### **Discharge Structures**

The Permittee has planned riprap pads at the culvert outfalls to reduce velocity and prevent erosion.

#### **Findings:**

Hydrologic Information in the Operation Plan is sufficient to meet the requirements of the 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:

#### Affected Area Maps

Winter Quarters Access Road Plan and Details (Dwg. 3.2.11-B-1) shows the general layout of the proposed road drainage improvements; this drawing is certified. Figure 1 of the EarthFax report outlines the drainage area contributing runoff to the ditches and culverts: DW-1 thru DW-9 are road segments and UW-1 thru UW-9 are adjacent, upgradient undisturbed areas.

### Findings:

Maps, Plans, and Cross Sections of Mining of Hydrologic Operations are sufficient to meet the requirements of the Utah 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 landowners, the Allred Family Trust and Scofield Town, are to continue use of the road throughout construction, operation, and reclamation of the WQVF. Skyline will improve and maintain the road on the Allred land through bond release, and Scofield Town will improve and maintain the section of the road owned by the town.

### Findings:

Hydrologic Reclamation Information is sufficient to meet the requirements of the Coal Mining Rules.

TECHNICAL MEMO

---

## CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

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

### **Findings:**

The CHIA was updated for the WQVF amendment. No further update is required by this amendment.

### **RECOMMENDATIONS:**

Approve this amendment.

O:\007005.SKY\FINAL\WG3597\WG3597jds.doc