State of Utah

Utah Oil Gas and Mining

Coal Regulatory Program

Skyline Mine
Canyon Fuel Company, LLC
C/007/0005
Technical Analysis
February 29, 2008

File in:
❑ Confidential
❑ Shelf
X Expandable
Refer to Record No 0007 Date 03032008
In C 0070005, 2008, Outgoing
For additional information

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TECHNICAL ANALYSIS DESCRIPTION

The Division ensures that coal mining and reclamation operations in the State of Utah are consistent with the Coal Mining Reclamation Act of 1979 (Utah Code Annotated 40-10) and the Surface Mining Control and Reclamation Act of 1977 (Public Law 95-87). The Utah R645 Coal Mining Rules are the procedures to implement the Act. The Division reviews each permit or application for permit change, renewal, transfer, assignment, or sale of permit right for conformance to the R645-Coal Mining Rules. The Applicant/Permittee must comply with all the minimum regulatory requirements as established by the R645 Coal Mining Rules.

The regulatory requirements for obtaining a Utah Coal Mining Permit are included in the section headings of the Technical Analysis (TA) for reference. A complete and current copy of the coal rules can be found at http://ogm.utah.gov

The Division writes a TA as part of the review process. The TA is organized into section headings following the organization of the R645-Coal Mining Rules. The Division analyzes each section and writes findings to indicate whether or not the application is in compliance with the requirements of that section of the R645-Coal Mining Rules.

GENERAL CONTENTS

IDENTIFICATION OF INTERESTS

Regulatory Reference: 30 CFR 773.22; 30 CFR 778.13; R645-301-112

Analysis:

General Chapter 1 volume contains information on corporate ownership for Canyon Fuel Company's affiliated Utah mines: SUFCO Mine, Skyline Mine, Soldier Canyon Mine, Banning Loadout, and Dugout Canyon Mines. (Section 111 of the MRP).

Section 112.400 of the MRP and Table 1-1 and Figure 1-1 (A – D) of General Chapter 1 provide a listing of affiliated coal mining operations under the control of Canyon Fuel Co., LLC. The listing includes the affiliated Utah mines itemized in Sec 111 and the successfully reclaimed bond release sites: Gordon Creek No. 2, 7, and 8, Gordon Creek No. 3 and 6, and Huntington Canyon No. 4 mine.

Figure 1-1 (A-D) also provides an organizational chart showing corporate ownership and control of Canyon Fuel Co., LLC by Arch Coal, Inc . The list of officers and directors for Canyon Fuel Co., LLC and its four corporate owners Arch Western Bituminous Group, LLC; Arch Western Resources, LLC; Arch Western Acquisitions Corp; and Arch Coal, Inc.) is found in Appendix 1-1. App. 1-1 was last updated in February 2007. Changes in officers are clearly noted with beginning and ending dates and are attested to by notarized statements from each corporate entity. [01302008]

Findings:

The information provided adequately addresses the minimum requirements of the General Contents – Identification of Interests section of the regulations.

VIOLATION INFORMATION

Regulatory Reference: 30 CFR 773.15(b); 30 CFR 773.23; 30 CFR 778.14; R645-300-132; R645-301-113

Analysis:

Section 113 of the MRP indicates that a current listing of violation information is provided in the General Chapter 1 volume for Utah affiliated mines. The most current list dated December 2004 – 2006 is found in Table 1-2.

Findings:

The information provided meets the requirements of the Regulations.

RIGHT OF ENTRY

Regulatory Reference: 30 CFR 778.15; R645-301-114

Analysis:

The information is on Page 1-35 in the Mining and Reclamation Plan. The Permittee has added additional information on Page 1-36 and 1-37 in the current submittal. The Bureau of Land Management has assigned UTU-67939 Winter Quarter Lease to Coastal States Energy Company in 1996.

The Waste Rock lease agreement between the Telonis Trust and Canyon Fuel Company and subsequent amendments are included in the MRP Section 3.2, Exhibit A. The March 1, 2007 lease amendment provides right of entry to 36.51 acres in T. 13 S., R. 7 E. Sec. 4 and 5 and will expire in 2020 (MRP Section 4.16, p. 4-89). With this right of entry, the Permittee plans to expand the disturbed area of the waste rock site from 7.68 acres to 12.81 acres over the next 15 years (Table 2.12.2-1). [01302008]

Findings:

The information provided adequately addresses the minimum requirements of the General Contents – Right of Entry section of the regulations.

LEGAL DESCRIPTION AND STATUS OF UNSUITABILITY CLAIMS

Regulatory Reference: 30 CFR 778.16; 30 CFR 779.12(a); 30 CFR 779.24(a)(b)(c); R645-300-121.120; R645-301-112.800; R645-300-141; R645-301-115.

Analysis:

The acreage currently included in state permit area is 7,121 acres. The North Lease contains 3,291 acres (all Federal surface). The addition of the North Lease will bring the permit

area to 10,374 (page 1-37 and Drawing No. 1.6-3). Total Federal coal acreage as a result of this revision is 9, 736 acres.

The existing disturbed acreage within permit area is 79.12 acres (page 1-42).

Findings:

The information provided adequately addresses the minimum requirements of the General Contents – Legal Description and Status of Unsuitability Claims section of the regulations.

PERMIT TERM

Regulatory References: 30 CFR 778.17; R645-301-116.

Analysis:

The addition of the North Lease will add five years to the life of mine, for a total of 6.5 years. The permit terms are five years, (MRP, p 1-40).

Findings:

The information provided adequately addresses the minimum requirements of the General Contents – Permit Term section of the regulations.

PUBLIC NOTICE AND COMMENT

Regulatory References: 30 CFR 778.21; 30 CFR 773.13; R645-300-120; R645-301-117.200.

Analysis:

The Permittee has incorporated a copy of the affidavit of publication from the Sun Advocate and Emery County Progress newspapers into the submittal.

Public notice was given in the two papers during the month of October 2002. The public comment period runs thirty days from the date of last publication; that is until November 29, 2002.

Certificates of Insurance are located in the General Chapter 1 Volume, App. 1-2. The insurance provider is Marsh USA, Inc. and the company affording coverage is Ace American

Insrance Co. The Division of Oil Gas and Mining is listed as the Certificate holder. Policies current through July 2008 are on file at the Division. [01302008]

Findings:

The information provided adequately addresses the minimum requirements of the General Contents – Public Notice and Comment section of the regulations.

PERMIT APPLICATION FORMAT AND CONTENTS

Regulatory Reference: 30 CFR 777.11; R645-301-120.

Analysis:

The Mine and Reclamation Plan (MRP) meets the requirements of R645-301-121.200 for the Biology Chapter and Archeology Section.

Findings:

The information provided adequately addresses the minimum requirements of the General Contents - Permit Application Format and Contents section of the regulations.

REPORTING OF TECHNICAL DATA

Regulatory Reference: 30 CFR 777.13; R645-301-130.

Analysis:

The MRP meets the requirements of R645-301-130 because qualified professionals conducted or directed the surveys and analysis for the supporting biological- and historical resource- related documents.

Maps are P.E. certified. Consulting firms have been identified in Section 2.1. The tables below provides a list of biological and archeological related information in the North Lease Subsidence Mining amendment including: titles of documents, dates of documents, names and organizations of those participating in biological and cultural resource data collection, and locations of resource collection projects. This table does not include the additional information in the MRP appendices. However, vegetation/wildlife and the cultural and historic reports are in Appendices A2 and the Confidential File, respectively.

Findings:

The information provided adequately addresses the minimum requirements of the General Contents – Reporting of Technical Data section of the regulations.

MAPS AND PLANS

Regulatory Reference: 30 CFR 777.14; R645-301-140.

Analysis:

The Permittee has submitted maps that are larger than 1:24,000. This meets the requirements.

Findings:

The information provided adequately addresses the minimum requirements of the General Contents – Maps and Plans section of the regulations.

COMPLETENESS

Regulatory Reference: 30 CFR 777.15; R645-301-150.

Analysis:

The Division determined that the Significant Revision was administratively complete on September 30, 2002.

Findings:

The information provided adequately addresses the minimum requirements of the General Contents - Completeness section of the regulations.

GENERAL CONTENTS

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 North Lease is in a montane area of elevation 8300 –9300 feet. Slopes are well vegetated with aspen and conifers. Two main drainages (Winter Quarters and Woods Canyon) flow northeast emptying into Mud Creek (or Pleasant Valley Creek). Each drainage has several reaches contributing flow. Winter Quarters Creek has a wide floodplain vegetated with grasses.

The coal seam of interest in the North Lease is the Lower O'Conner "A" seam in the Blackhawk Formation, which in the North Lease lies in a zone of compression. The compression appears to limit the ground water inflow to the mine.

Findings:

The information provided adequately addresses the minimum requirements of the Environmental Resource Information - General section of the regulations.

PERMIT AREA

Regulatory Requirements: 30 CFR 783.12; R645-301-521.

Analysis:

The permit area is listed as 10,374 acres (p 1-36 and 1-37 and Drawing No. 1.6-3)

Findings:

The information provided adequately addresses the minimum requirements of the Environmental Resource Information - Permit area section of the regulations.

HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION

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

Analysis:

The MRP meets the requirements of R645-301-411 regulations pertaining to historic resources. The MRP (Confidential Binder in Division PIC room) includes narratives, maps, and evaluations of historic resources. These documents describe and show locations of historic resources, within or adjacent to the permit area, that may be included in or eligible for inclusion in the National Register. There is proof of coordination efforts and clearances from the SHPO.

The Permittee provides a summary of historic resource surveys within the permit area (Vol. 1, Sec. 2.1). Confidential Binder Vol. A-4 2nd Volume includes survey reports submitted for specific mining projects and an Archeology map.

The Division, in consultation with SHPO, supports a finding of "no effect" to historic resources within or adjacent to the North Lease area because the project does not include surface disturbance for facilities. SHPO's comment on the undermining of the North lease is in the "Mining Plan Decision Document" (December 2002). The 1995 Environmental Assessment also states that the undermining of the North Lease area will have no effect to historic resources.

Page 2-4b has been revised to include a reference to Appendix A-3, two 2006 investigations for the proposed waste rock expansion area. They are both class three surveys each for a separate waste rock expansion location. Earth Touch Inc conducted them in July and November of 2006. The applicant has proposed to use the area included in the November 2006 survey. A copy has been forwarded to the SHPO for their concurrence with the DOGM findings. SHPO concurrence was received by way of "E"mail from Matt Seddon, the SHPO for Utah on October 17, 2007.

Findings:

The information provided adequately addresses the minimum requirements of the Environmental Resource Information - Historic and Archeological Resource Information section of the regulations.

CLIMATOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.18; R645-301-724.

Analysis:

Climatological information for the mine site is outlined in Section 2.6 of the approved MRP. The North Lease permit area is immediately adjacent to the north boundary of the existing

permit area. The climate for the North Lease is the same as the existing permit area. No new addition has been provided.

Findings:

The information provided adequately addresses the minimum requirements of the Environmental Resource Information - Climatological Resource Information section of the regulations.

VEGETATION RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.19; R645-301-320.

Analysis:

The MRP meets the requirements of R645-301-321 because there is adequate discussion of plant communities observed within the permit area. The MRP includes a summary of vegetation common to the permit area (Vol. 1A, Sec. 2.7, 2.7.1, 2.7.6). The MRP also includes survey reports submitted for different projects (Vol. A-2 North Lease 2nd Volume; Vol. A-2 2nd Volume).

The lease for the North Lease area (Winter Quarters Tract) provides a list of USFS biology-related stipulations.

The Division, in consultation with DWR and USFS, considers that the undermining of the North Lease area will most likely have no or little impact to vegetation along the Winter Quarters and Woods stream channels. The Permittee will conduct baseline and monitoring surveys that will help detect and quantify unforeseen and evident impacts to vegetation. The Permittee will mitigate, under the direction of the Division, if subsidence-related impacts occur (Vol. 1A).

The Permittee will initiate a vegetation survey program, based on the principles of a USFS Level III survey, for the Winter Quarters and Woods stream channels. The program will include a baseline survey in 2005, monitoring surveys two years prior and during undermining of specific lengths of the channels, and follow-up surveys two years after undermining of these specific lengths of the channels (Vol. A-2 2nd Volume; Vol. A-3 2nd Volume). The Permittee will also include additional water monitoring sites along perennial portions of Winter Quarters and Woods stream channels. This monitoring will help detect if there are evident impacts to the channel vegetation because of undermining.

Vegetation Resource Information is addressed in section 2.7.7, page 2-63 of the application. The 1981-82-vegetation information pertinent to the waste rock site has been

updated by data collected by Mt. Nebo Scientific. It is included in this application as "Vegetation of the Waste Rock Expansion Site" and can be found in Appendix Volume A-2 Volume 2. It includes but is not limited to quantitative and qualitative analyses, a T & E evaluation, reference areas and a vegetation map. The application includes a current Threatened, Endangered and Sensitive plant species list for the proposed waste rock expansion area as noted in section 2.9 tables 2.9-4 through 6. A short narrative describing why those species would not be found at the proposed waste rock expansion site is included in sections 2.1.2, 2.7, 2.8 and 2.9 of the MRP.

The Permittee will provide baseline infrared and black/white aerial photographs. The Permittee will also provide comparative photographs and pictures annually starting August 2002 that will include the North Lease area. A qualified biologist will review the pictures.

Findings:

The information provided adequately addresses the minimum requirements of the Environmental Resource Information - Vegetation Resource Information section of the regulations.

FISH AND WILDLIFE RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.21; R645-301-322.

Analysis:

GENERAL WILDLIFE

The MRP meets the requirements of R645-301-322 because there is adequate discussion, supporting documentation, or maps on fish and wildlife resource for the permit and adjacent areas (Vol. A-2; Vol. A-3; Confidential Binder Vol. A-4 2nd Volume; Vol. A-2 North Lease 2nd Volume; Vol. A-3 2nd Volume. Vol. 1A (Secs. 2.8 through 2.10) provide summaries of fish and wildlife that may occur within or adjacent to the permit area. Volume 3 (Sec. 4.18) provides a fish and wildlife plan. There is sufficient information to design or implement protection and enhancement plans.

The Division, in consultation with DWR and USFS, considers that the undermining of the North Lease area (Winter Quarters Tract) will most likely have no or little impact to fish and wildlife within the area. The Permittee will conduct baseline or monitoring surveys that will help detect presence of wildlife or quantify unforeseen impacts. The Permittee will mitigate, under the direction of the Division, if subsidence-related impacts occur (refer to R645-301-333.300; Vol. 1A).

Ungulates

The Utah Natural Heritage Program database shows the entire North Lease area as critical value elk summer use area and a high value deer summer. Drawing 1.6-3 has been revised to include the additions to the permit area that includes critical value summer deer and elk and high value winter moose habitats.

Macroinvertebrates, Fish, and other Aquatics

The Permittee will conduct macroinvertebrate surveys along Winter Quarters and Woods stream channels, using an USFS approved survey protocol. This protocol includes surveying for baseline two times a year (fall and spring) for two consecutive years prior to subsidence then monitoring every three years for a period determined by the Division and other agencies (Vol. 1A, p.2-71a). The Permittee initiated the baseline macroinvertebrate survey during the fall 2002 (Shiozawa 2002/2003). Plate 2.8.1-1 illustrates all the sample locations for macroinvertebrate surveys. The survey sites are along Winter Quarters, Woods, Eccles, Burnout, and James stream channels.

The Permittee conducted a qualitative fish survey for Winter Quarters and Woods stream channels in 2002 (Vol. A3 2nd Volume).

The Permittee will conduct baseline amphibian surveys along Winter Quarters and Woods stream channels in 2005 (Vol. 1A). The details of the survey protocols are in Vol. A2 2nd Volume.

Migratory and Game Birds, and Raptors

The MRP provides a summary of raptor surveys conducted within the main facility areas and within the North Lease area (Vol. 1A, Sec. 10). The MRP also provides results of surveys with nest locations (Vol. A2; Confidential Binder Vol. A-4 2nd Volume).

The Permittee states that there are no plans for surface disturbance for the North Lease (Vol. 1A). One concern of the Division, however, is the potential loss of cliff-nesting birds or cliff habitat for breeding, nesting, and roosting because of subsidence. The Permittee will conduct raptor surveys to obtain baseline data within one year prior to subsidence of cliff habitat (Vol. 1A, Sec. 2.10). The Permittee will also conduct follow-up surveys within one year if nests were observed during the baseline surveys and if operations resulted in subsidence. The baseline and follow-up surveys will help assess the degree of impact to the nests. These efforts will help the Division, USFS, and DWR develop an enhancement or mitigation plan, if necessary (refer to R645-301-322, R645-301-332).

THREATENED, ENDANGERED, AND SENSITIVE ANIMAL/PLANT SPECIES

The MRP meets the requirements of R645-301-322 because there is adequate discussion, supporting documentation, or maps on threatened, endangered, or sensitive (TES) plant or animal species that could occur within or adjacent to the permit area.

The Division, in consultation with USFWS, supports a finding of "no effect" to threatened or endangered plant or animal species that may occur within or adjacent to the North Lease area. The USFWS' comment on the undermining of the North Lease area is in the Mining Plan Decision Document December 2002.

According to the 1995 EA written jointly by the USFS and the BLM, the TES species that may occur within the North Lease area are the bald eagle, northern goshawk, and northern three-toed woodpecker.

The MRP (Sec. 2.1.2) indicates that there have been no TE species observed within or adjacent to project areas. The Utah Natural Heritage Program database shows no records of occurrence of TES plant or animal species for the North Lease area. The Permittee will provide supplementary information by conducting baseline surveys for certain TES species when necessary.

The Permittee will conduct northern goshawk as well as three-toed woodpecker surveys for the North Lease area in 2005. Vol. A2 2nd Volume provides the protocol for the goshawk and woodpecker surveys..

Plants

The Intermountain Proposed Endangered, Threatened, and Sensitive Species List, last updated in January 1999, indicates that the there may be endangered species that inhabit the Manti La Sal area. The Permittee consulted with USFS Manti La Sal District Botanist who stated, "none of the currently listed TE species or sensitive species is found in the Winter Quarters lease area" (Vol. 1A).

The application for task 2844 includes a "Waste rock area Raptor, Northern Goshawk, and incidental Species survey" that is referred to on page 2-111 of the application for task # 2800. The application for task 2800 refers the reviewer to section 2.8 through 2.10 and Appendix A-2 for existing wildlife information. Sections 2.8, Aquatic Wildlife Resources, 2.9 Terrestrial Wildlife and Appendix A-2 include a reference to the proposed waste rock expansion area. The application includes a detailed description and analyses of the wildlife resources within the proposed waste rock expansion area sufficient enough to develop a protection and enhancement plan required by section R645-301-333 of the regulations. The text in Section 2.9 has been updated.

Findings:

The information provided adequately addresses the minimum requirements of the Environmental Resource Information - Fish and Wildlife Resource Information section of the regulations.

SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.21; 30 CFR 817.22; 30 CFR 817.200(c); 30 CFR 823; R645-301-220; R645-301-411.

Analysis:

Drawing. No. 2.7.1-1b Permit Area Order III Soil Survey Map covers the additional permit area.

Waste Rock Site [01302008]

Section 2.11, Dwg 2.11-2 and Appendix Volume A-2 provide information on the soils of the waste rock site. The information presented in these two locations is taken from the published Carbon County Order III soil survey. The Carbon County soil survey indicates two map units: #23 Curecanti family/Pathead Complex (north facing slopes) and #115 Trag stony loam, 30 – 60% slopes (west facing slopes). The 2006 Clement survey further designates Map Unit #117, Trag-Beje-Senchert Complex on the north facing slope, Figure 1 (scale 1:33,000). Figure 1a, (scale 1:2,400) designates the two soil types that are present in the proposed disturbed area.

The waste rock expansion area is illustrated on Dwg No. 3.2.8-2 Revision 7 and on Figure 1a of the 2006 Clement Survey, Appendix Volume A2, Volume 2. Table 2.12.2-1 classifies the vegetation of the proposed disturbed area in acres as 3.4 acres aspen and 1.73 acres sagebrush/grass. The distinction in vegetation parallels the slope face and the soil type. Thus, the Division concludes that two-thirds of the expansion area (3.4 acres aspen/5.13 total acres) will disturb soils represented by soil pit SP1. The remaining third of the proposed expansion will disturb soils represented by soil pit SP2 (Senchert Series). For SP1, the soil horizons are as follows: A = 0 – 9 inches, B = 9 – 14 in., BC = 14 – 18 in. For SP2, the soil horizons are as follows: A = 0 – 10 inches, B = 10 – 23 in., BC = 23 – 38 in.

The two soil pits that are as shown on Figure 1a (scale 1:12,000) were excavated by hand to a depth of three feet. Due to the time of year, the surface soils were thawed with a propane torch prior to digging. Soils were described. Test pits were thoroughly photographed. Soil samples were provided to the laboratory seven months later in July 2007.

The consultant photographed and described iron staining in the C horizon (46 – 97 cm or 18 – 38 in.) of SP-1 and in the B horizon (25 – 58 cm or 9.8 – 23 in.) of SP-2, as well as a gray appearance of the sandstone casts in the BC horizon (58 – 97 cm or 23 – 38 in.) of SP-2. Iron deposition and gleying are redox features that indicate periods of soil saturation. The soil survey does not mention the climate regime or the elevation, but it is known by the Division to be cryic at the site elevation of 8,100 ft. and subject to perma-frost. This saturation/freeze/thaw system is associated with the redox features noted in the profile. The digging became difficult below 38 inches in the C horizon of both pits. Depth to the lithic contact was estimated at 200 cm or about six feet (App.Vol A-2, Vol. 2, Clement Soil Survey).

Findings:

The information provided adequately addresses the minimum requirements of the Environmental Resource Information – Soils Resource Information section of the regulations.

LAND-USE RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.22; R645-301-411.

Analysis:

Land Use is discussed in Section 2.12 of the Application. The existing land use for the North Lease area is wildlife habitat, grazing, recreation, forestry and mining. Previously mined areas are shown on Drawing 2.2.7-7. Land Use for the area is shown on Drawing No. 2.12.1-1.

The application includes a revision to table 2.12.2-1 for the additional acreage needed for the waste rock site. The table lists the "General Area Classification" of the waste rock site as "Disturbed". It has been revised to include the vegetative communities identified in the Mount Nebo Scientific report for the proposed waste rock expansion area. The narrative and proposed text change for task # 2800 refer the reviewer to sections 2.12.2 and 3.2.8 of the MRP, which states, "The rock waste disposal site is an abandoned strip mine pit and waste area which is accessed by existing roads." This section of the MRP also refers the reviewer to section 4.16 for a detailed description of the waste rock area. This section has been revised to include a description of the land use for the undisturbed acreage the applicant proposes to include in the waste rock expansion site.

Findings:

The information provided adequately addresses the minimum requirements of the Environmental Resource Information – Land-use Resource Information section of the regulations

ALLUVIAL VALLEY FLOORS

Regulatory Reference: 30 CFR 785.19; 30 CFR 822; R645-302-320.

Analysis:

Alluvial Valley Floor Determination

The Division finds that there is no alluvial valley floor within the permit area. The CHIA evaluation has determined that there are quaternary deposits at the mouth of Wood Canyon and Winter Quarters Canyon, located is downstream of and outside of the permit area.

The existence of an alluvial valley floor with irrigated pastures and areas of subirrigation along Mud Creek in Pleasant Valley below the Utah No. 2 Mine (now called the White Oak Load Out) was previously established by the Division (1984 Technical Analysis of the Valley Camp Mine, ACT/007/001, and Valley Camp MRP Map R645-301-411.100 Premining Land Use Map). Figure 2.12.D in the Skyline Mine MRP illustrates the locations of pastures downstream and outside the permit area.

Although the alluvial valley is outside the permit area, Skyline Mine discharge waters flow down Eccles Creek and then to Mud Creek. Mud Creek flows through Pleasant Valley, the alluvial valley floor. The gradient of Mud Creek is approximately 0.0091 ft/ft with a sinuosity ratio of 1.6. These figures were derived from aerial photographs (personal communication, November 15, 2002, between Rich White, Earth Fax Engineering, and Priscilla Burton). The channel flattens on approach to Scofield Reservoir with an average gradient of 0.02 to 0.1 ft/ft. Channel subsoils are silty sands and clayey silts, classified by the 1988 Carbon County Soil Survey as Silas and Silas Brycan series. The results of laboratory analysis on the physical properties of the soils in the creek are found in Appendix B of Appendix D of the July 2002 Addendum to the Skyline Mine PHC. Cross sections of the channel describe a channel bed that is 96% cobbles and gravels and side slopes that are 100% sand, silt and clay (Appendix E of Appendix D of the July 2002 Addendum to the Skyline Mine PHC). Low flow terraces are limited in extent and the channel is incised. There is no broad flood plain.

Cross sections of the Mud Creek channel were measured at six different stations. The piezometric surface was measured at four of those stations. At Station 7300, in the vicinity of Green Canyon, the groundwater is four feet below the surface. In the area of Station 14480, the groundwater level is eight feet below the surface, reflecting the rolling nature of the land and the incised nature of the stream channel. The ground water rises back up to four feet below the surface at Station 17340, the site of an irrigation diversion (Section 2.12 of the Skyline Mine MRP).

Measurements of flows taken on November 26, 2001 (Appendix D, Skyline Mine MRP) recorded 18.4 cfs in Mud creek after the confluence with Eccles Creek and 24.44 cfs after the confluence with Winter Quarters Creek. The gain in flow downstream was attributed to contributions from springs and side streams (2 – 3 cfs) and re-emerging base flow from the alluvium of 3 – 4 cfs (Section 2.12 and Appendix D July 2002 Addendum to the Skyline Mine PHC).

Similarly, there exists an alluvial valley floor in the broad, valley bottom of Winter Quarters Canyon and Woods Canyon, outside the permit area (MRP, Section 2.12). Figure 2.12.D illustrates the locations of pastures. Table 2.12.3 provides information on land ownership, pasture size, and crop grown. There are six landowners along Mud, Winter Quarters, and Woods Canyon Creeks. The land is used for grazing of pasture grass. All pastures were estimated to produce 2.5 Tons/acre of grass annually (Ray Jensen, Range Specialist for the Bureau of Land Management (BLM) is the source of this yield estimation. He suggested a range of 4000-6000 pounds/acre for sub-irrigated grassland, in 2001.) The predominant vegetation type is grass. Pastures are grazed by horses and cows (Division observation). The number of animals grazed on the pastures by each landowner is variable with time.

Within the permit area, the sinuosity of Winter Quarters Creek is 1.1 and the channel width varies from 6 – 8 ft. Flows ranged from 108 – 871 gpm during the baseline gathering study period. In Woods Canyon, the AVF is limited to 3 acres and sinuosity and channel width were not measured. However the flow ranged from 23 –410 gpm during baseline collection (Section 2.12).

The upper reaches of the streams contributing to the alluvial valleys will be undermined with planned subsidence as described in the MRP, Section 4.17 and Drawing No. 4.17.1-1 and Drawing No. 4.17.1-2. The anticipated maximum subsidence is six feet (Section 4.17 and Drawing 4.17.3-1A). Consequently, monitoring of stream flows (Section 2.4) and vegetation (section 2.7) during and immediately after mining will take place.

Protection of Agricultural Activities

Mud Creek stream channel vegetation was assessed in December 2001 by Dr. Patrick Collins of Mt. Nebo Scientific (Appendix A of Appendix D July 2002 Addendum to the Skyline Mine PHC). A level II investigation was conducted using the methods of the USDA Forest Service. Two reaches were located on Mud Creek. Reach #4 is located just below the confluence of Eccles and Mud Creeks. The riparian community was approximately 91 feet wide and consisted of willows, sedge and rush grasses. Approximately 80% of the banks were vegetated and stable. Downstream, at Reach #5, the width of the riparian community broadened to 120 feet and consisted mostly of willows growing in both riparian and wetland communities. Approximately 60% of the bank was vegetated and stable. (February 27, 2002 EarthFax report

in Appendix D of July 2002 Addendum to the PHC). Additional fieldwork observations were conducted in the summers of 2002 and 2003 (July 2004 Mt. Nebo Scientific, Inc report entitled, "Baseline Monitoring Riparian Plant Communities at Eccles Creek & Mud Creek 2002-2003"). According to the July 2004 report, there may be some increase of the riparian communities along the stream channel. Weak or unstable banks were found at 19 out of 49 locations in Eccles and Mud Creeks. However, no major catastrophic changes to the banks or the riparian communities near them were noted. The Permittee has been pro-active in stabilizing banks with dead wood and boulders. In these locations, the July 2004 study notes the banks are beginning to recover.

Monitoring

Scofield Reservoir is a drinking water source for Price, and a premiere cold water fishery in the State. Unfortunately, the EPA has listed it as an impaired water body. Of special concern is the concentration of total phosphorus in the reservoir (Appendix E of the July 2002 Addendum to the PHC). A significant source of phosphorus pollution in the Scofield Reservoir is the sediments entering the reservoir delivered by Mud Creek. Using the information in the Division's Water Quality Database for TSS and flow at sample locations C6 on Eccles Creek, VC9 on Mud Creek and VC1 on Mud Creek, the average sediment yield carried by Eccles and Mud Creek prior to 1999 was 2,710 Tons/yr. The average sediment yield carried by Eccles and Mud Creek between 1999 and 2002 has been 2,908 Tons/yr. This translates to an increase of 7% annually.

Consequently, the contributions of mine water to the increased phosphorus loading will be evaluated in the monitoring plan proposed by the Permittee (Section 2.12 Attachment 3). Monitoring at two sites on Eccles and five sites on Mud Creek will include: total flow, TDS, TSS, and total phosphorous, stream morphology. (Station locations are shown on Figure 1 Location of Reference Sites Attachment 3 Land Use of Section 2.12.) Stations will be monitored four times a year (seasonally) and for a period of one year following a reduction in discharge to a rate of 350 gpm or less. Sediment yield loading from flows in Mud Creek will be computed from the TSS and flow data collected. Annual evaluations of the stream will be summarized in a report to be submitted to the Division with the Skyline Mine Annual Report. The monitoring plan will also evaluate the changes in stream morphology and vegetation at the stations over the same time period. The Study Plan prepared by Dr. Patrick Collins on July 4, 2002 entitled "Continuing Studies of the Effects of Increased Flows on Riparian Communities at Eccles Canyon Creek & Mud Creek," is included in Attachment 3 of Section 2.12. This Level III assessment of the riparian communities of Eccles and Mud Creeks will be conducted for two years beginning in 2002 and being completed in 2003, with fieldwork being conducted in July and August.

The mine waters being discharged had an average Total Dissolved Solids (TDS) level of 600 mg/L in July of 2000. With continued pumping, the concentration of TDS has decreased to

less than 400 mg/L as of March 2002 and averaged 518 mg/L in 2003. Above the mine, the average concentration of TDS is 300 mg/L (July 2002 Addendum to the PHC).

Stations along Mud Creek will be monitored four times a year (seasonally) for a period of one year following a reduction in discharge to 350 gpm or less. Sediment loading in Mud Creek will be computed from the TSS and flow data collected. Annual evaluations of the stream will be summarized in a report to be submitted to the Division with the Skyline Mine Annual Report. The monitoring plan will also evaluate the changes in stream morphology and vegetation at the stations over the same time period.

Monitoring of stream flows (Section 2.4) and vegetation (Section 2.7) in Woods and Winter Quarters Creeks during and immediately after mining will provide a trigger for implementing the best technology available to mitigate the damage (Section 4.17). The BTCA for repair of subsidence cracks will be jointly determined immediately prior to implementation (Section 2.7), but will likely involve backfilling with surrounding material and bentonite (Section 4.17).

In accordance with R645-302-323.122, the Division finds that the Skyline Mine operations have not materially damaged the underground water systems in Pleasant Valley, which is outside the permit area of the existing coal mining and reclamation operation. The increased mine discharge has had no negative impact on agricultural activity along Mud Creek. Instability in the channel banks and increased erosion of the stream channel in reaches of the channel that are not well vegetated are very small in relation to the acreage being pastured and are negligible to the total production of the pastures.

The Division finds that there has been no significant impact to productivity of the pasturelands in Pleasant Valley.

The Division finds that the quality of the mine water discharge in terms of Total Dissolved Solids has improved with the quantity of water discharged. (No conclusive information on the Phosphorus contributions of sediments carried by the Mud Creek waters is available at this time.)

In accordance with R645-302- 324.300, The Division has required continued monitoring of the vegetation, erosion of banks, flows and chemical quality of the waters at established locations on Mud Creek, Winter Quarters Creek and Woods Canyon Creek.

Findings:

The information provided adequately addresses the minimum requirements of the Environmental Resource Information – Alluvial Valley Floors section of the regulations.

PRIME FARMLAND

Regulatory Reference: 30 CFR 785.16, 823; R645-301-221, -302-270.

Analysis:

Section 2.14 and Appendix Volume A-2 has a prime farmland determination letter for the area. There is no historical use of cropland within the proposed permit area. There is no planned surface disturbance within the additional permit area. The Division concurs with the Natural Resource Conservation Service that there is no prime farmland within the permit area

Findings:

The information provided adequately addresses the minimum requirements of the Environmental Resource Information – Prime Farmland section of the regulations.

GEOLOGIC RESOURCE INFORMATION

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

Analysis:

Clarity has been added to Section 2.2, the structural geology information by extending the Connellville Fault through the drawing 2.2.1-1 to match the text. And drawing 2.2.7-7 has been referenced in the text to identify Mines #1, #2, and #3.

Acid and Toxic analysis results for the North Lease area were not yet available as of the November 4, 2002 submittal. However, the seam to be mined is a continuation of Mine #3 where significant testing has been conducted. The seam of interest in the North Lease is the Lower O'Conner "A" seam. Drill logs for holes 91-26-1 and 91-35-1 were received with this application and placed in the Confidential Folder for the mine.

The Mine has committed to submitting new information when it becomes available, and the material placed at the waste disposal site is compositely sampled at a minimum of one (1) sample per 2000 tons hauled.

No additional geologic information was submitted by CFC as part of the North Lease Subsidence Mining amendment. However, additional information has been provided as part of the June 2004 PHC update (Kravits 2003). The information consists of 89 drill holes; 16 oil and gas exploration holes that penetrate the Starpoint Sandstone, 70 coal exploration holes which primarily terminate in the Storrs Sandstone or Panther Sandstone, and three (3) measured sections. The geologic study area encompasses three (3) ranges by five (5) townships in area,

centered on the Skyline permit area. Significant time was dedicated to creating isopach maps of the Storrs tongue, Storrs to Panther interval, Panther tongue, Panther to Trail Canyon Interval, Trail Canyon tongue, and Panther tongue to the base of the Star Point Sandstone Intervals. Three cross sections were also included; one dissecting the area from north to south, one at the southern portion of the Skyline permit area from east to west, and the third north of the Skyline permit area dissecting the Fish Creek Graben. The study provided valuable information addressing the regional geology surrounding the Skyline permit area. This work is provided to the Division on a CD. Additional geologic illustrations are available in Appendixes J and K, which were generated for the hydrologic modeling exercise.

Findings:

The information provided adequately addresses the minimum requirements of the Environmental Resource Information – Geologic Resources Information section of the regulations.

HYDROLOGIC RESOURCE INFORMATION

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

Analysis:

Sampling and Analysis

The Permittee has met the requirements of R645-301-723 by collecting and analyzing all water samples according to the methods in either "Standard Methods for the Examination of Water and Wastewater" or the methodology in 40 CFR Parts 136 and 434. Though consultants have collected data in some instances, the Permittee has overseen all sampling and analysis since mining operations began, including baseline for additional lease areas.

Baseline Information

Ground-water information

The Permittee has met the requirements of R645-724.100 by providing the following information as it pertains to the permit and adjacent areas:

- The location and ownership of existing wells, springs, and other groundwater resources.
- Seasonal quality and quantity of groundwater. and
- Data to show seasonal variation and usage.

The Permittee discusses groundwater resources in Sec. 2.3 of the MRP. They depict the locations of wells and springs, with ground water rights (ownership) designation on Plate 2.3.5.2-1. A seep and spring survey, including map, for the North Lease is located in a separate report titled "Winter Quarters Canyon 1993 Seep and Spring Survey."

Volume 4 of the MRP (two binders) lists all water right information for the permit and adjacent area, including approved usage.

The Permittee lists all baseline groundwater data in Appendix. A-1, and Volume 4. The Division also houses all water monitoring data on its Electronic Water Database, which the public may access at http://linux1.ogm.utah.gov/cgi-bin/appx-ogm.cgi.

In Section 2.3 of the MRP, the text clearly illustrates that the specific yields, and hydraulic conductivities of the rock strata surrounding the Mine are typically very low (yields of 0.2 to 0.7 percent). However, it also states that conditions encountered in the southern portion of the mine in August 2001 clearly changed this. A detailed analysis of these conditions are discussed in the 'July 2002 Addendum to the PHC'. The brief discussion provided, and the reference to the PHC adequately addresses previous Division concerns.

In Section 2.3.5.2 – Groundwater Rights, the Permittee clearly references the location of the water rights status. They are listed in Volume 4, 1st and 2nd binders, and illustrated on Plate 2.3.5.2-1. For the North Lease area, a total of seven springs and one stock watering pond have been monitored and data submitted to the Division since fall 2002. Although not currently initiated, beginning six-months prior to longwalling, and continuing for six-months afterwar the longwall passes any perennial sections of Winter Quarters Creek or Woods Creek, the Permittee will monitor flow monthly at thirty-one locations on Winter Quarters Creek and eleven locations on Woods Creek.

Surface-water information

The Permittee has met the requirements of R645-724.200 by providing the following information as it pertains to the permit and adjacent areas:

- The name, location, ownership, and description of all streams, lakes, and impoundments in the permit and adjacent areas.
- The location of any discharge into any surface water body in the permit area.
- Seasonal quality and quantity of surface water.
- Data to show seasonal variation and usage.

The Permittee discusses surface water resources in Sec. 2.4 of the MRP. They depict the locations of streams, and mine-water discharge points on Plate 2.3.6-1 and water rights

(ownership) on Plate 2.3.5.1-1. The north-western portion of Electric Lake falls within the permit area, and Scofield Reservoir lies approximately 3 miles to the east of the North Lease portion of the permit area. There are some stock-watering ponds in the North Lease area, and sedimentation ponds associated with the mine. The Permittee discharges water from the main portal area into Eccles Creek (flows to Scofield Reservoir), and from pumps located in James Canyon directly into Electric Lake.

Volume 4 of the MRP lists all water right information for the permit and adjacent area, including approved usage.

The Permittee lists all baseline surface water data in Appendix. A-1, and Volume 4. The Division also houses all water monitoring data on its Electronic Water Database, which the public may access at http://linux1.ogm.utah.gov/cgi-bin/appx-ogm.cgi.

The baseline data includes the major watersheds within, and adjacent to the permit area, which are: Eccles Creek, Mud Creek, Winter Quarters Creek, and Woods Creek.

Also included as baseline information, as a requirement of the November 2002 analysis are three (3) reports: EarthFax Engineering, Perennial Length and Gradient Studies of Winter Quarters Canyon and Woods Canyon Creek, 2003 and 2003; Riparian Plant Community Survey Near Scofield Utah, Winter Quarters and Woods Canyon, 2002; and Macroinvertebrates Studies, 2002 and 2003, Winter Quarters and Woods Canyon, respectively. Copies of the studies are included in Volume A-1 Hydrology Section.

In Section 2.5.3 – Alternative Water Supply, CFC has identified they currently own approximately 556 acre-feet of water rights in the Scofield Reservoir. In Section 2.5.3, CFC also commits to "correct any material damage resulting from subsidence caused to surface lands (which includes water rights), to the extent technologically and economically feasible, by restoring the land to a condition capable of maintaining the value and reasonably foreseeable uses that it was capable of supporting before subsidence damage." Additional comments include, "Restoring of water flows to impacted sources will be accomplished using the best technology currently available (BTCA)". As a final alternative, the mine will "explore the transferring of water rights to the injured party in flow equal to the determined loss and/or monetary reimbursement of proven material damages". The statements made will be implemented for water replacement should any damage occur.

Baseline Cumulative Impact Area Information

The Skyline Mine belongs to the "Mud Creek Basin and Upper Huntington Creek Basin" CHIA. The addition of the North Lease will not change the CHIA boundaries since they were included in the previous CHIA. There will be no mining operations in hydrologic basins other

than those approved in the current permit, therefore the Division does not require additional cumulative impact area information.

Sufficient information is available in the MRP and from Federal and State agencies to update the CHIA.

Modeling

Appendix J – HCI Ground Water Flow Modeling of Skyline Mine and Surrounding Area, Appendix K – Supplemental Report to Appendix J, and a November 2004 memo added to Appendix K has been submitted to be included as part of the Skyline Mine PHC. The modeling report is being adopted into the MRP as supporting evidence for the Skyline Mine PHC determination. Appendix J was not subject to a typical Division technical analysis outlining deficiencies, as it was developed for the law firm Manning, Curtis, Bradshaw and Bednar LLC, of Salt Lake City Utah, and is being considered supplemental information. However, Appendix K and the supplemental November 2004 information was developed with DOGM and OSM input. The Skyline PHC prefaces the model stating, "Several assumptions have been made on the volume, porosity, and transmissivity of the aquifer. It also admits that to construct an accurate groundwater model several groundwater points are needed, but no additional ground-water wells are planned.

In the introduction of the HCI model report - Appendix J the following qualifiers are also stated, "many of the components necessary for the Skyline model are not well-defined." Considerable uncertainty is also mentioned for values for hydraulic conductivity for each of these major hydrogeologic units and the relative permeability of the major structures. The introduction goes on to state, "Although some components such as recharge or stratigraphic thickness can be reasonably well-defined by the available data, other major components such as the vertical hydraulic conductivity of overburden units or the hydraulic characteristics of faults can only be evaluated from the reasonableness of the results of preliminary numerical simulations using assumed values. As such, the Skyline model is still in a heuristic stage in which it is being used to learn about the characteristics of the regional ground-water system."

For the proposed hydrogeologic numeric ground water model to be adopted as an appendix into the MRP, the reader is reminded numerous times in both the PHC section of the MRP and Appendix J of the limiting factors of the model. The surface and ground water hydrology of the Skyline area are poorly understood due to the limited availability of data and the nature of geologic faulting in the area. As stated in the PHC, "One purpose of the model is to help the mine define the recharge and discharge locations of the Star Point Sandstone aquifer and the determine the potential impacts, if any, to surface waters and their beneficial uses." Due to limited availability of data, the model needed to make significant assumptions on the volume, porosity, and transmissivity of the aquifer, which affects the accuracy of the model.

Although a comprehensive summary, Appendix J was lacking in documentation. The conceptual portion of the model assumes the water pumped from the fault and mine inflow water is primarily derived from groundwater, the impacts of concern are drawdown, potential subsidence associated with drawdown, and impacts of drawdown on water users in the permit area. Calibration for HCI's model was a process of adjusting the conceptual model parameters and boundaries to reasonably replicate field observed conditions for pre-mining water levels and estimated stream baseflows.

A significant finding in the HCI report (Appendix J) states (Page 44, Section 5.1), "The most significant finding of the model simulations is that it is possible to account for essentially 100 percent of the inflow into the Skyline Mine by depletion of storage in the deep groundwater system." The report also stated (Page 45) that given the conceptual parameters, "the hydraulic conductivity of the fault could not be increased in any portion of the fault other than between the lake and the mine -- an unusual constraint -- without causing significant, unmeasured drawdown in the Blackhawk Formation." This suggests the majority of water, according to the model, could not be supplied from Electric Lake. A second significant and fundamental finding of the model is the ground water gradient of the Star Point sandstone. The model indicates the ground water gradient is from south-southwest to north-northeast with a rate of 0.03 to 0.009 ft/ft. The recharge area is south of the Huntington and Cleveland reservoirs and the discharge area is around Scofield reservoir. However, the 'weighted value or qualifiers' of this statement is subjective based on 1) assumptions made in the conceptual model, 2) a limited understanding of groundwater recharge and discharge in the area, and 3) a lack of model verification.

Information supplied by Appendix K (submitted in June 2004, that was absent in Appendix J include the following:

- Figure 4 illustrates the drawdown differences in the shallow wells and deep wells
- Figures 5-9 illustrate the major layers of the model and the respective nodes in those layers
- Figures 10-12 provide major cross sections
- Figure 13 is a graph illustrating the distribution of the wells used, by formation and compares modeled to measured values
- Figure 14 graphs modeled to measured inflows; unfortunately minimal data was available for verification of modeled values
- Figure 15 graphs modeled to measured performance in the wells used in the model; two (2) of the three (3) graphs provided no data for verification.
- Figures 16-17 illustrate modeled inflow to the mine under different flooding scenarios
- Figure 18 predicts the longer impacts to major streams in the area.
- Tables 1-3 provide detailed water budgets quantifying overall model inflow and outflow from the sources and sinks and impacts to Electric Lake based on three (3) different mine flooding scenarios.

Figure 4 is significant because although there has been over 400-feet of drawdown in the Star Point wells, no or little affect has been observed in wells completed in the Blackhawk formation. Figure 13 illustrates whether there are any modeled drawdown biases toward formation. As an example, if all the Blackhawk formation wells plotted well below the *Perfect Correlation Line*, the model would be biased toward the Blackhawk Formation. Figures 14, 15, 16 and 17 are critical for providing validation of the model in the future as more data becomes available.

Appendix K submitted and the supplemental information supplied in November 2004 attempt to identify some potential impacts to both the recharge and discharge locations of the Star Point Sandstone. At some point after all pumping of ground water ceases, potential impacts include an estimated 0.2 cfs increase of flow to Mud Creek and an estimated 0.2 cfs decrease of flow to Huntington Creek below Electric Lake. Upper Huntington Creek and the Fish Creek remain essentially unchanged. If the current flooding of the mine remains with the pool elevation at approximately 8290 feet, current impacts to Electric Lake are estimated at 0.2 cfs and would increase to 0.6 cfs through 2013 – the current projection for mining to end. The details of the budgets are available in Tables 1-3 in Appendix K and Table 1 in the November 2004 memo.

Verification of the model as a predictive tool can only be done with additional simulations of the model. To run additional simulations of the model requires more data and often requires potentially time-consuming re-calibration of the model parameters and additional measured data for validation. Canyon Fuel Company commits to running additional simulations in 2006, and potentially every three (3) years thereafter if warranted.

The November 2004 memo addendum to Appendix K provided a numeric model simulation of post-mining conditions once all mining and pumping has ceased. The pool elevations are strongly influenced by the interconnection or increased hydraulic conductivity between the gob and Mine 1, 2, and 3 workings. The pool level or elevation of water within the mine workings is anticipated to stabilize at and elevation of 8,475 feet, or 102 feet below the Eccles Creek portal. Using the model developed in Appendix J, and with only minor modifications, the model predicts: 1) Upper Huntington Creek, Electric Lake, and the Fish Creek basin will return to pre-mining conditions; 2) Huntington Creek below Electric Lake discharge will decrease by 0.2 cfs (~90 gpm); and 3) the Mud Creek basin discharge will increase approximately 0.2 cfs.

Given the conceptual parameters of the model, the building of the numeric model adequately illustrated it is a reasonable scenario that the water can be derived from the deep groundwater system. However given the limited availability of data, use of the model as a predictive tool is questionable. It is not 'unreasonable' that another model could be constructed using different conceptual constraints that produced different results. Use of the model as reliable predictive tool would be questionable due to the numerous assumptions necessary because of limited data. Additional modeling is not warranted because acquisition of additional,

meaningful data is not possible. The model serves to bolster the Mine's PHC asserting that the water encountered in the mine is being sourced by the Star Point Sandstone.

Probable Hydrologic Consequences Determination

The Permittee met the requirements of R645-301-728 and sub-sections in the MRP. The Permittee expects the impacts to Woods and Winter Quarters Canyons to be similar to those in Burnout Canyon.

Section 2.5 - Hydrologic Impacts of Mining Activities, is the section of the MRP that essentially summarizes the Permittee's Probable Hydrologic Consequences Determination. Sub-sections include 2.5.1 – Potentially Affected Water Rights, 2.5.2 – Mining Impact on Water Quantity, and 2.5.3 – Alternative Water Supply, respectively. Prior to section 2.5.1, two introductory paragraphs list the relevant appendices used for the Permittee's PHC determination. This adequately addresses a previous Division concern to outline what additional appendices were used in the Permittees PHC determination.

Due to the complex nature of the hydrogeologic mining conditions encountered in the southern portion of the permit area since 1999, numerous detailed studies have been conducted and are summarized in the relevant subsections. The details backing the conclusions stated in this section and supplemental discussions can be found in the PHC evaluations. All pertinent studies, evaluations, and reports are listed in the front of this section and are referenced in the text. Primarily, mining conditions encountered in the southern portion of the Mine has instigated this submittal of mining in the North Lease area. The hydrogeologic conditions anticipated in the North Lease area are a continuation of conditions observed in Mine #3 and outlined in Sections 2.2, 2.3, and 2.4 of the MRP. No adverse impacts to the hydrologic regime are anticipated from advanced mining into the North Lease area. Although Mine #3 lies directly on top of the Storrs Tongue of the Star Point Sandstone, only minor inflows have been observed; a stark contrast from conditions observed in the southern portion of the permit area.

In Section 2.5.1 – Potentially Affected Water Rights, the Permittee provides a discussion of the water being encountered beneath the Huntington drainage, and how data and analysis indicate there is no significant connection between the surface waters and waters encountered in the mine.

Studies indicate that the Star Point Sandstone does not transmit water easily, does not have a significant discharge point located immediately down gradient of the mine, and age-dating of the water suggests that it takes thousands of years to move through the aquifer despite the high transmissivity of the fractures within the sandstone. The majority of inflow enters the mine through the floor along north-south trending fault and fracture zones within the Star Point Formation. The water is stored in the Star Point Sandstone under considerable potentiometric head, which indicates it is a confined aquifer. Being under considerable head also suggests the

recharge area is not in the immediate vicinity (Star Point Sandstone mapped to the east of the permit area). Also, data from upgradient wells is limited; the two wells owned by Canyon Fuel Co., located in Eccles Canyon are pumped for mine use. In addition, all the water rights in the Huntington drainage are within the Blackhawk Formation, which is hydraulically disconnected from the Star Point Sandstone by impermeable siltstones and shales. All of which indicates although the water encountered in the mine is located beneath the Huntington drainage, water rights located within the Huntington drainage are not being affected. The Mine analysis of the water quality (both of surface and in-mine flows), mine geology, drilling, and groundwater well data indicate the large inflows to the mine originate from deep within the Star Point Sandstone and are transported to the mine through faults and fractured sandstone from well below the mine. Skyline continues to monitor spring and stream flows in the Winter Quarters, Eccles, Mud Creek and Huntington drainages to identify impacts. The information provided adequately addresses the Division concern of inter-basin water transfer. Should conditions change, adequate monitoring of the inflows into the mine, and surface monitoring of springs and streams will document any mitigation that should take place.

In Section 2.5.2 – Mining Impacts on Water Quantity, the Permittee has provided a discussion on the studies conducted in Burnout Canyon which suggest no significant interruption or change in flow are anticipated in the perennial streams located in the North Lease caused by undermining and related subsidence. When subsidence does occur, the subsidence cracks tend to seal rapidly, preventing the deep percolation and subsequent loss of water. This is due to the impermeable nature of the Blackhawk Formation with its inter-bedded, fine-grained sandstones, siltstones and shales. Skyline mine intents to petition the Forest Service to allow the undermining of Winter Quarters Canyon based on the positive results of the Burnout Canyon study. Additional variables that reduce the possibility of adverse impacts caused by subsidence is the thickness of overburden over the majority of the area, and that only the Lower O'Connor A seam is the only coal unit to be mined.

Mining impacts on Water Quantity caused by increased discharge to Eccles Creek from mining in the North Lease are not anticipated. Many distinct differences in geology from the southern portion of the permit area are outlined in Section 2.2 of the MRP, a major factor being the in-situ stress of the rocks in the North Lease area have been tested and determined to be in compression in an east-west direction. Similar measurements taken in Mine #2 indicate the rocks are in extension in an east-west direction. Also, previous mining in the area (Mine #3) had no problems with water coming out of the Storrs Sandstone, the apparent source of in-flows in the southern portion of the mine.

To address the effects on water quantity discharged into Eccles Creek / Mud Creek a study was initiated in November 2001 and a work plan was revised in July 2002. The objective of the study is to characterize the physical characteristics of the stream channels, through both bank stability and vegetation, and through ongoing monitoring determine whether undesirable impacts are occurring along the stream due to excessive discharge from the mine. This is outlined briefly in Section 2.3.7 – Groundwater Monitoring Program of the MRP (pg. 2-35a) and

in detail in Volume 2.12 – Land Use (Attachment 3) of the MRP. Should any adverse impacts occur related to discharge, the monitoring program, as outlined should be able to identify and quantify any damages.

The Permittee has expanded comments on the 'positive effect on the aquatic flow system' the increased discharge has had on Eccles and Mud Creeks by including the following statement. "The increased flows to Scofield Reservoir most likely benefited the fish population in the lake by maintaining a sufficient level of dissolved oxygen to avoid a general fish kill that frequently occurs in the lake during periods of drought, such as has been occurring in the area since 2000." Although not completely substantiated, this statement is intuitively correct since the large volumes of water being discharged have TDS concentrations only slightly higher than background levels.

Within the July 2002 Addendum to the PHC, the following modifications were made in response to Division concerns cited in the October 25, 2002, technical analysis.

- A table of contents has been included at the beginning of the July 2002 Addendum to the PHC, and tabs have been added to segregate the various sections.
- Pages PHC A-11 through A-13 provide a brief discussion indicating the springs, seeps, and streams monitored within the Huntington drainage basin indicate the shallow ground water aquifers are controlled by the fluctuations in yearly precipitation or drought cycles, as supported by the graphs available in Appendix A.

In conjunction with the increased in-mine flow, age-dating analysis, of the encountered waters has been conducted by the Permittee. This has proven to be a critical analysis in the characterization of the water. Sampling has been infrequent for certain locations due to the inability to collect the samples caused by safety concerns. However, multiple analyses that have been conducted include: water chemistry; temperature; stable isotope (Deuterium, Oxygen 18); and unstable isotope (Tritium and Carbon 14). All of which consistently indicate that the surface waters of the Huntington basin are significantly different and consistently younger than the waters encountered as inflow into the mine. In addition, at sites where feasible, analyses are being conducted on a regular frequency. A summary discussion of this information is provided in the July 2002 Addendum to the PHC on pages PHC A-14 through PHC A-17, and the complete discussion is found in Appendix A (Petersen Report) and Appendix C (HCI report) of the July 2002 Addendum to the PHC. This information adequately addresses earlier mentioned Division concerns.

Pages PHC A-13 and PHC A-14 discuss the basic geomorphology of Eccles and Mud Creeks and the ongoing bank stability/vegetation study. A primary function of the study/monitoring is to assess whether the increased flow (44 times the normal daily flow) is having any long-term, adverse impacts to the streams.

A more in-depth discussion of the bank stability/vegetation study has been provided in Section 2.4.2 – Surface Water Hydrology, Flow Characteristics, and Section 2.12 – Land Use of

the MRP. It is also described in detail in Appendix D of the July 2002 Addendum to the PHC and Attachment #3 of Section 2.12. This adequately addresses earlier noted Division concerns.

The October 2002 Addendum to the PHC – Appendix G is an 'Internal Correspondence' that clearly provides a recent history (March 1999 – March 2002) outlining the significant mine in-flows, their respective location, elevations, and present in-flows and pressures. It goes on to describe the timing of when mining will be completed in the southern portion of the mine and the schedule and location for sealing certain portions of the mine. Once the southern portions of the mine are no longer mined, those sections will be allowed to flood. The flooding of mine workings will allow a pressure-head to build up against the current inflows. The pressure-head will continue to build against the inflows by filling the mine workings, up-gradient to the elevation of the 'West Mains'; a maximum elevation of approximately 8290 feet. Calculations estimate the current inflows of approximately 9200 gpm will be reduced to anywhere from approximately 2900 gpm to possibly no discharge into Eccles Creek by December 2004. This rate of discharge is based on no pumping conducted from Well JC-1, which would further reduce discharge to Eccles Creek. This information, combined with the minimal inflows anticipated from the North Lease area, suggests that any potential impacts to Eccles Creek and Mud Creek will be short-lived. This information adequately addresses earlier Division concerns of how the currently high discharges will be handled in the future.

The Skyline Mine PHC determination has been modified primarily to the degree that it has incorporated/modified date-sensitive statements relative to the submittal of the HCI modeling information - Appendix J, K, and November 2004 supplemental memo. The modeling information is considered supporting evidence to the Mine's position that the majority of water being encountered in-mine is being sourced from the regional Star Point Sandstone aquifer, outlines potential impacts to the surrounding area caused by long-term drawdown of the aquifer, and outlines probable consequences once mining is complete and mine workings are completely flooded. In Appendix K,Table 2 - Simulated Ground-Water outlines current and projected impacts to the surrounding area based on the current mining conditions; Figure 18 oulines impacts to streams through the next 50 years, and the November 2004 addendum outlines post-mining consequences. The model is not considered by the Division to be conclusive evidence, only supportive evidence suggesting the majority of water encountered in-mine could be sourced from the Star Point Sandstone and long-term affects to the surrounding area have been minimized.

Significant recent events that will potentially affect the inflows being encountered in the Mine are completion of mining in the southern portion of Mine #2 and the resulting flooding of the mine workings up to the 6-Left area. The flooding of the mine workings reached an elvation of 8280 feet (msl) in September 2004, resulting in approximately 240-feet of hydrostatic head on the major inflows being encountered in the mine (10 Left elevation 8040-feet; HCI Table 3). The current mine plan intends on keeping the workings flooded to this level for an extended period of time. This steady-state condition will enable the mine to more accurately monitor changes in overall mine-inflow, and potentially evaluate whether there is a correlation to

surrounding surface water. Conditions will continue to be monitored and assessed to determine whether impacts to surrounding areas are minimized.

Groundwater Monitoring Plan

The Permittee met the requirements of R645-301-731.211 and 212 by including a ground-water monitoring plan based upon the PHC determination and the analysis of all baseline hydrologic, geologic, and other information in the permit application (Section 2.3.7 of the MRP). The plan provides for the monitoring of parameters that relate to the suitability of the ground water for current and approved postmining land uses, and to the objectives for protection of the hydrologic balance. The Permittee outlines the quantity and quality parameters they will monitor, the sampling frequency, and site locations on Tables 2.3.7-1, 2.3.7-2, and 2.3.7-2A. The plan describes how the data will be used to determine the impacts of the operation upon the hydrologic balance. In addition to other parameters, the Permittee will sample for total dissolved solids, specific conductance, pH, total iron, total manganese, and water flows at all springs. At most of the wells, the Permittee just monitors levels. The Permittee submits ground water monitoring data to the Division every 3 months for each monitoring location, through the electronic data input (EDI) portion of the Division's Electronic Water Database. At this time, the Division does not require additional monitoring to that listed in Table 2.3.7-1 through 2.3.7-2A.

Section 2.3.6 – Groundwater Quality, discusses several well that were developed and completed in the Star Point Sandstone sandstone. Table PHC A-2, Well Data Summary Table, outlines: the wells in the groundwater monitoring plan; the formation in which the wells are screened; the screen elevation; and the historic water level within the well. This table provides valuable information in understanding the groundwater. A brief discussion of Well W2-1 (98-2-1) has been provided which briefly outlines current conditions within the southern portion of the permit area. Since the well is located along a major fault and fracture zone, the water level within the well has been drawn down through pumping 197-ft.(as of August 2, 2002) from historic levels. This same response however, is not seen in groundwater wells not directly connected with a fault system. For a complete discussion of the groundwater potentiometric surface, the reader is referred to the July 2002 Addendum to the PHC.

Surface-Water Monitoring Plan

The Permittee met the requirements of R645-301-731.221, 222, and 223 by including a surface-water monitoring plan based upon the PHC determination required under R645-301-728 and the analysis of all baseline hydrologic, geologic and other information in the permit application (Section 2.4.4 of the MRP). The plan provides for the monitoring of parameters that relate to the suitability of the surface water for current and approved postmining land uses, and to the objectives for protection of the hydrologic balance, as well as the effluent limitations found in R645-301-751. The plan identifies the surface water quantity and quality parameters to be monitored, sampling

frequency and site locations on Tables 2.3.7-1 through 2.3.7-2A. It describes how these data will be used to determine the impacts of the operation upon the hydrologic balance. In addition to other parameters, the Permittee will sample for total dissolved solids, specific conductance, total suspended solids, pH, total iron, total manganese and flow at all surface monitoring locations. For point-source discharges, the Permittee will monitor in accordance with their Utah Pollutant Discharge Elimination System (UPDES) permits. The Permittee submits surface water monitoring data to the Division every 3 months for each monitoring location, through the electronic data input (EDI) portion of the Division's Electronic Water Database. Monitoring submittals include analytical results from each sample taken during the approved reporting period.

Findings:

The information provided adequately addresses the minimum requirements of the Environmental Resource Information – Hydrologic Resource Information section of the regulations.

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 Division usually considers the affected area to be the same as the permit area. The affected area may include areas that the Permittee has not yet acquired or permitted but plans to do so in the future. Drawing No. 1.6-3, Skyline Mines Permit Area, shows the location of the permit boundaries.

Archeological Site Maps

The Permittee provides a summary of historic resource surveys within the permit area (Vol. 1, Sec. 2.1). Confidential Binder Vol. A-4 2nd Volume includes survey reports submitted for specific mining projects and an Archeology map.

Coal Resource and Geologic Information Maps

Plate 2.2.1-1 – Surface Geology has been updated to include the North Lease area. It has also been expanded to include the O'Connor fault and an extension of the Connelville fault through the former Winter Quarters Mine area. In addition, drawing 2.1.1-2 – General Geologic Map of Permit Area, has been submitted for a further understanding of the regional surface

geology. Drawing 2.1.1-2 expands geologic coverage east-west to include the Pleasant Valley fault and the Gooseberry fault; and north-south to include the Fish Creek graben area and the Electric Lake dam. The Star Point formation has also been mapped to help identify the anticipated discharge/recharge areas of the water being encountered in the southern portion of the current permit area. Quaternary-aged sediments have also been included in the lower reaches of the streams to help in the Alluvial Valley Floor (AVF) determination. On a regional scale when looking at fault alignments, the orientation in the southern portion of the permit area is south-southwest to north-northeast, while the orientation of the faults in the northern portion of the permit area is generally west-northwest to east-southeast. The central portion of the permit area is also truncated by a series of igneous intrusions (dikes). The geologic maps support the mine information indicating different geologic conditions exist.

In addition, Drawings 2.3.4-1A through –1C have been provided to give a graphic representation of the geology in cross-section. Drawing 2.3.4-1A provides a north-south cross section through the approximate center of the permit area; 2.3.4-1B runs east-west through the southern portion of the North Lease area; and 2.3.4-1C runs east-west through the southern portion of the current permit area, respectively. These drawings help illustrate the doming effect in the approximate middle of the property, the southwest to northwest dipping of the beds, and the thinning and pinching out of coal beds to the north. The additional information adequately addresses the Division's needs to identify the geology of the surrounding area.

Drawings 2.3.4-1A through 1-C were updated in November 2002 to provide graphic representation in cross section of the North Lease area. Additional geologic information is available in the Kravits report (November 3, 2003) and generalized cross sections in Appendix K (Hydrologic Model report) Figures 9-12.

Cultural Resource Maps

Cultural resource maps for the proposed waste rock expansion area are included in the November 2006' cultural resource inventory by Earth Touch Inc

Existing Structures and Facilities Maps

The Division usually considers the affected area to be the same the permit area. The affected area may include areas that the Permittee has not yet acquired or permitted but plans to do so in the future. Drawing No. 1.6-3, Skyline Mines Permit Area, shows the location of the permit boundaries.

Existing Surface Configuration Maps

Drawing No. 1.6-3, Skyline Mines Permit Area, shows the existing surface configurations. The map has topographic lines that appear to come from a USGS topographic

map. Because there are no scheduled surface facilities in North Lease Extension, the Division will not require the Permittee to provide a more detailed map.

The application includes a reference to the surface ownership maps for the proposed waste rock expansion area, Plate 1.6-1.

Mine Workings Maps

The Mine Workings Map has been updated to included proposed monitoring in the North Lease area. Modifications to the mining methods have been taken into account in areas surrounding perennial streams.

Drawing No. 2.2.7-7 shows the location of abandoned mine workings in and around the permit area. The horizontal distance between the proposed workings and the abandoned mine is 50 feet.

Monitoring and Sampling Location Maps

The Permittee has met the requirements of R645-301-731.730, and 722.300 by including a map showing the locations and elevations of each station used to gather baseline data on water quality and quantity, and each station to be used for water monitoring during coal mining and reclamation operations (See Plate 2.3.6-1). The Permittee prepared and certified the map according to R645-301-512.

In addition, as part of the Subsidence Monitoring Plan, a total of forty-two flow-monitoring sites have been assigned to monitor flow changes in areas possibly affected by subsidence. These sites are outlined on Drawing 2.3.6-2 – North Lease Subsidence Hydrologic Monitoring Points.

Permit Area Boundary Maps

Drawing No. 1.6-3, Skyline Mines Permit Area, shows the proposed permit area. The map is at a scale of 1 to 24,000.

Subsurface Water Resource Maps

Drawing 2.3.4-2 shows the potentiometric surface in the permit area based on information provided by the existing monitoring wells in the permit area. The map helps illustrate the lack of connectivity of groundwater between the North Lease area and the southern portion of the existing mine. It should be noted however, that the potentiometric surface in the North Lease area is 'inferred', based solely on information from two wells. Due to the

historically 'discontinuous' nature of the groundwater, it is possible that a continuous potentiometeric surface may not exist between these two wells.

Surface and Subsurface Manmade Features Maps

Plates 2.3.5.1-1 and 2.3.5.2-1 have been updated to include the North Lease area. No additional updates are necessary.

Surface and Subsurface Ownership Maps

None.

Surface Water Resource Maps

Plate 2.3.6-1 identifies the surface hydrology. Plate 1, Winter Quarters 2003 and 2004 Survey Site Plan, distinguishes between sections of the streams that are perennial and intermittent (solid and dashed lines, respectively). Winter Quarters and Woods Canyon were field verified to identify perennial reaches and beaver ponds impounding in excess of 0.25 acre-foot of water.

Vegetation Reference Area Maps

No surface disturbance is planned within the North Lease. No reference area is required.

Vegetation reference area maps for the proposed waste rock expansion area are included in the "Vegetation of the Waste Rock Expansion Site" report and can be found in Appendix Volume A-2 Volume 2.

Wildlife Maps

Wildlife maps are provided for in Appendix A-2 of the North Lease application and volume A-2 of the MRP. The applicant has committed to conduct a current raptor survey in the early summer 2003, prior to longwall mining.

The application includes a reference to Figures 2.9.1-A and 2.9.2-B for the proposed waste rock expansion area.

Findings:

The information provided meets the minimum requirements of the Environmental Resource Information – Maps, Plans, and Cross Sections of Resource Information section of the regulations.

OPERATION PLAN

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-230.

Analysis:

Topsoil Removal and Storage

Waste Rock Site [01302008]

Section 4.6.4.1 of the MRP indicates a total soil depth of 38 inches and a the topsoil stripping depth between 18 and 20 inches. The soil survey indicates that at a minimum one foot of topsoil is suitable. However greater depths must be salvaged to provide the necessary cover over the waste.

An area sufficient for "one to two years of waste rock placement" will be stripped of topsoil and stockpiled (Section 2.11). A site has been located to stockpile approximately 4,500 yd3 of topsoil. At a topsoil stripping depth of 18 inches, this allows for 1.8 acres to be stripped of soil and stockpiled. Contemporaneous reclamation of the site will allow no more than three acres of the site to be without topsoil at one time (Sec. 4.6.4.1). The stockpile location is shown on Plate 3.2.8-2. The topsoil stockpile will be seeded with the mix described in Table 4.6-1.

Findings:

The information provided meets the Operational Soil Resource information.

MINING OPERATIONS AND FACILITIES

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

Analysis:

The Permittee met the minimum requirements for this section of the TA by showing that the USFS modified the lease to allow full extraction mining under Woods Creek and Winter Quarters Creek. The Permittee update the MRP by removing the restriction on full extraction mining under Woods Creek and Winter Quarters Creek.

No surface facilities will be constructed in association with the North Lease Extension. There will be no additional support facilities or utility installations as part of the North Lease Extension.

No new mine openings are scheduled for the North Lease Extension.

There will be no change to the existing Air Quality permit.

There will be no anticipated surface disturbance and no soils handling operations.

There are no existing structures in the North Lease area.

The North Lease Extension will not require the Permittee to use any additional public roads or to relocate existing public roads.

The North Lease Extension will not require the Permittee to use any additional public roads or to relocate existing public roads.

No new roads or other surface transportation facilities will be constructed in association with the North Lease Extension.

No surface blasting will be associated with the North Lease Extension.
An original USFS lease stipulation was that no full extraction mining (longwall) would occur under Woods Creek and Winter Quarters Creek. The USFS has since modified the lease to allow full extraction mining under Woods Creek and Winter Quarters Creek. CFC intended that the North Lease subsidence permit modification submittal to address all the UCMR pertaining to full extraction mining in the North Lease area.

Findings:

The information provided adequately addresses the minimum requirements of the Operation Plan – Mining Operations and Facilities section of the regulations.

EXISTING STRUCTURES

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

Analysis:

The Permittee met the minimum requirements for this section of the TA. The Permittee does use or propose to use any structure or facility used in connection with or to facilitate coal mining and reclamation operations for which construction began prior to January 21, 1981.

Findings:

The information provided adequately addresses the minimum requirements of the Operation Plan – Existing Structures section of the regulations.

PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES

Regulatory Reference: 30 CFR784.17; R645-301-411.

Analysis:

The MRP meets the requirements of R645-301-411.144 because the Permittee identifies parks or historic resources that mining operations may adversely affect.

According to the information in the MRP and cultural resource survey there are no Public Parks or Historic places located within the proposed waste rock expansion area. There is a cemetery approximately ½ mile Northwest of the existing waste rock area.

Findings:

The information provided adequately addresses the minimum requirements of the Operation Plan – Protection of Parks and Historic Places section of the regulations.

RELOCATION OR USE OF PUBLIC ROADS

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

Analysis:

CFC will not relocate or use any additional public roads in connection with the North Lease. There is an old trail in the bottom of Winter Quarters Canyon. That structure should not be affected by subsidence.

Findings:

The information provided adequately addresses the minimum requirements of the Operation Plan – Relocation or Use of Public Roads section of the regulations.

COAL RECOVERY

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

Analysis:

The Permittee meet the requirements of this section of the regulations. The R645-301 Rules require that the Permittee conduct underground mining activities so as to maximize the utilization and conservation of the coal, while utilizing the best technology currently available to maintain environmental integrity, so that re-affecting the land in the future through surface coal mining operations is minimized.

The Division relies upon several factors to determine if the Permittee will maximize coal recovery. A major source of information is the Resource Recovery Protection Plan (R2P2) prepared by the BLM. The BLM has determined that the current R2P2 is adequate.

Eight million tons of Federal coal currently lie within the approved mining plan area. Addition of the North Lease will bring another twelve million tons of Federal coal into the mine permit area. Maximum production is five million tons/yr. Production has averaged four million tons/yr.

The Permittee plans to mine only the Lower O'Connor "A" seam in the North Lease Extension area. The general requirements for economic coal according to the Permittee are:

- Coal thickness is greater than 5 feet.
- Interburden thickness is greater than 40 feet.

However, due to equipment limitations the Permittee will only be able to mine coal with a minimum thickness of 7.5 feet.

The Permittee plans to conduct all mining (excluding development work) with longwall equipment. Some areas in the North Lease Extension are not suitable for longwall mining and will not be mined.

The only part of the North Lease Extension that the Permittee plans to mine in the next five years is the southeast section. The area to the west has low coal from parting and therefore cannot be mined with the available equipment. A dike and two major faults block access to the north. The Permittee plans to drill four to six exploration holes in 2003 to determine if mining conditions to the north are feasible.

The Division reviewed the November 2002 draft version of the Resource Recovery Protection Plan (R2P2). The Bureau of Land Management's review and decision on the R2P2 is still pending.

The Division often relies on information in the resource recovery protection plan (R2P2). The Division usually finds that the R2P2 contains enough information to make a determination about economic coal recovery.

Findings:

The information provided adequately addresses the minimum requirements of the Operation Plan – Coal Recovery section of the regulations.

SUBSIDENCE CONTROL PLAN

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

Analysis:

The Permittee met the requirements of this section of the R645-301 Rules. Those rules require the Permittee to conduct a survey, which shall show whether structures or renewable resource lands exist within the proposed permit area and adjacent area and whether subsidence, if it occurred, could cause material damage or diminution of reasonably foreseeable use of such structures or renewable resource lands.

The renewable resource subsidence surveys are part of Section 4.17.1 of the MRP. The Permittee found renewable resource within the permit boundary.

Renewable Resources Survey

The Permittee met the minimum requirements for the subsidence control plan by providing the following information:

- A description of the method of coal removal, such as longwall mining, including the size, sequence, and timing for the development of underground workings. The Permittee met those requirements by showing on Map 3.3-2, Lower O'Conner "A"/Flat Canyon Five Year Projected Mine Plan that they will use longwall in the North Lease. The information is adequate for the Division to use in its analysis.

- A map of underground workings showing the location and extent of areas where planned-subsidence mining methods will be used and including all areas where measures will be taken to prevent or minimize subsidence and subsidence related damage and where appropriate, to correct subsidence-related material damage. Map 4.17.3-1A, North Lease Presubsidence Survey Map, shows the areas where subsidence is anticipated, the amount of subsidence (potential subsidence contours) and those areas where the Permittee believes that subsidence cracks could occur. The information is adequate for the Division to use in its analysis.

- A description of the physical conditions, such as depth of cover, seam thickness, and lithology, which affect the likelihood or extent of subsidence and subsidence-related

damage. The Permittee showed the depth of cover and coal isopachs Map 2.2.7-2, Lower O'Conner "A"/Flat Canyon Overburden Map. The depth of cover ranges from 500 feet to 2,000 feet. The seam thickness is shown on Map 2.2.7-1, Lower O'Conner "A"/Flat Canyon Isopach. The geology report is in Volume A-3 of the MRP. The information is adequate for the Division to use in its analysis.

- A description of monitoring, if any, needed to determine the commencement and degree of subsidence so that, when appropriate, other measures can be taken to prevent, reduce, or correct material damage. CFC did not change the monitoring program, which consists of a commitment to conduct annual aerial surveys. In addition, CFC committed to conduct infrared aerial photography each year on the North Lease area.
  The Division now requires the Permittee to commit to conduct on the ground reconnaissance at least six months after a panel has been mined out, but no more than twelve months afterwards.

- Except for those areas where planned subsidence is projected to be used, a detailed description of the subsidence control measures that will be taken to prevent or minimize subsidence and subsidence-related damage, including, but not limited to: backstowing or backfilling of voids; leaving support pillars of coal; leaving areas in which no coal is removed, including a description of the overlying area to be protected by leaving the coal in place; and, taking measures on the surface to prevent material damage or lessening of the value or reasonably foreseeable use of the surface. The Permittee will use longwall mining methods for the North Lease. All mined area with the exception of mains are scheduled to be subsided. The information is adequate for the Division to use when analyzing when and where subsidence could occur.

- A description of the anticipated effects of planned subsidence, if any. In Section 4.17.1 of the MRP, the Permittee specifically mentions the anticipated subsidence effects in the North Lease area. The Permittee does not anticipate any subsidence related impacts on the pack trail in the bottom of Winter Quarter Canyon.

- A description of the measures to be taken to mitigate or remedy any subsidence-related material damage to, or diminution in value or reasonably foreseeable use of the land, or structures or facilities to the extent required under State law. In Section 4.17.4, Mitigation of Subsidence Effects, of the MRP, the Permittee states, "that mitigation will be contingent upon the findings of the subsidence monitoring program. Surface subsidence experienced to date, as shown in the 1987 and 1988 annual reports, has been less than 50% of the mining height even after 2 years has passed. As data are collected, methods of mitigation will be formulated."

- Other information specified by the Division as necessary to demonstrate that the operation will be conducted in accordance with the performance standards for subsidence control. The Division does not need any other information at this time.

Subsidence Control Plan

The mining of the North Lease includes undermining of perennial streams. As a portion of the Subsidence Monitoring Plan, drawing 2.3.6-2 has been provided which identifies the projected North Lease workings, areas of the permit area with less than 700-ft of cover, potential subsidence contours, and the Monthly North Lease Flow Monitoring Points. These flow monitoring locations (seven (7) total sites) will be monitored beginning at least 6-months prior to the area being mined, and continued to be monitored for at least 6-months after the area has been mined. Frequency of monitoring will be on a monthly basis; weather permitting. The additional information adequately identifies the areas of potential subsidence, and adequately monitors potential adverse impacts due to subsidence.

Components of the subsidence control plan are as follows:

- Map No. 3.3-2 and map No. 3.1.8-2 show the timing and sequence of mining operations. The Permittee has stated that except for development work all mining will be done with longwall equipment. The use of longwall equipment means that most subsidence should take place within weeks of mining and the ground should stabilize after six months.

- The Permittee must include map(s) that show the location and extent of the areas in which planned subsidence mining methods will be used and that identifies all areas where measures will be taken to prevent subsidence or subsidence related damage. No areas exist in the projected subsidence zone for the North Lease that need special protection.

- The physical conditions, such as depth of cover, seam thickness and lithology overlaying strata that affects the likelihood or extent of subsidence and subsidence related damage is contained in the geology section. That information is in the geology section of the PAP and is considered adequate.

- A description of the monitoring that is needed to determine the commencement and degree of subsidence. The Permittee did not address this issue in the PAP, with the exception of showing the location of subsidence monitoring points. Those points are shown on drawing No. 4.17.5-1. However, in the MRP the Permittee does describe a subsidence-monitoring program (MRP, Section 4.17.5). The monitoring program in the MRP is considered adequate.

- The subsidence-monitoring program uses aerial photography to determine the amount of subsidence and area affected. The Manti-LaSal National Forest Service developed the program. Most coal mines in Utah use aerial photography. Due to the rough terrain, monitoring survey points with terrestrial surveying is impractical.

- Terrestrial surveys are most useful for locating cracks and other subsidence features. The Permittee has committed to doing annual on-the-ground visual inspections of the ground surface of subsided areas.

- The Permittee has not identified any areas that need protection from subsidence damage.

- The Permittee described the measures to be taken in accordance with R645-301-731.530 and R645-310-525.500 to replace adversely affected, State-appropriated water supplies or to mitigate or remedy and subsidence-related material damage to the land and protected structures as follows:

In Section 2.5.3 of the PAP the Permittee states the following about replacement of State-appropriated water supplies.

> *"The restoration of water flows to impacted sources will be accomplished using the Best Technology Currently Available (BTCA). These activities may include, but not necessarily be limited to: transferring water rights to the injured party in flow equal to the determined loss; piping or trucking water to the location of the loss; sealing surface fractures to prevent further losses (i.e., stream floors on bed rock or in shallow alluvium); and, construction of a ground water well and the installation of pumps to restore flows; and monetary reimbursement for proven material damages. If the above efforts are not successful, the Skyline will explore the transferring water rights to the injured party in flow equal to the determined loss and/or monetary reimbursement for proven material damages."*

Part of any mitigation plan is to restore the land to the pre-mining land use. The land use is often associated with the availability of water. Therefore, any interruption of water supplies could affect the land use. The preferred method of mitigation is to restore the water supply. That can be done in a number of different ways including restoration of a spring or seep, sealing cracks and fissures or possibly drilling a well. Other alternatives include piping or trucking in water.

In some cases, the there is no economical or technically feasible way to restore water at the source. The only options for mitigation are to either transfer water right shares or to make monetary reimbursement. When all other options have been exhausted the Division will allow transfer of water rights and monetary reimbursement.

- In the MRP, the Permittee makes a general commitment to repair damage to surface lands and to non-commercial buildings and dwellings and related structures. A general commitment is acceptable to the Division because of the difficulty in predicting what type of mitigation would be needed.

- In accordance with R645-301-545.542, the Division has reviewed the information in the annual subsidence reports and the geology in the North Lease and found that a 22 angle-of-draw to be adequate for the North Lease. There are no buildings or structures in the North Lease permit area.

  The subsidence control plan must contain the following information:

- *A description of the method of coal removal, such as longwall mining, including the size, sequence, and timing for the development of underground workings.* CFC did not state those requirements in the amendment. Map 3.3-2, Lower O'Conner "A"/Flat Canyon Five Year Projected Mine Plan, shows longwall panels in the North Lease. However, in Section 4.17.1 of the MRP, CFC states that only development mining will occur in the North Lease. CFC does not mention switching from development mining to longwall mining in the amendment.

  In a phone conversation between Wayne Western of the Division and Chris Hansen of CFC on August 24, 2004, Chris mentioned that CFC submitted the amendment as part of the process to get permission to use longwall mining methods in the North Lease area.

  CFC must clarify their intensions by stating in the amendment that CFC seeks approval to conduct longwall mining in the North Lease area. This deficiency was identified in the Mining Operations and Facilities section of the technical analysis.

- *A map of underground workings showing the location and extent of areas where planned-subsidence mining methods will be used and including all areas where measures will be taken to prevent or minimize subsidence and subsidence related damage and where appropriate, to correct subsidence-related material damage.* Map 4.17.3-1A, North Lease Presubsidence Survey Map, shows the areas where subsidence is anticipated, the amount of subsidence (potential subsidence contours) and those areas where CFC believes that subsidence cracks could occur. All of the areas where CFC shows the potential for surface subsidence cracks to occur are on ridges, not in valleys. In a personal conversation between Wayne Western of the Division and Dale Harber of the USFS, Mr. Harber stated that the USFS is concerned that mining under perennial streams, especially perennial streams with less than 600 feet of cover could be damaged by subsidence cracks. The USFS and the Division will use the information on Map 4.17.3-1A in the analysis to determine if mining will cause damage to Woods Creek and Winter Quarters Creek.

- *A description of the physical conditions, such as depth of cover, seam thickness, and lithology, which affect the likelihood or extent of subsidence and subsidence-related damage.* CFC shows the depth of cover and coal isopachs Map 2.2.7-2, Lower O'Conner "A"/Flat Canyon Overburden Map. The depth of cover ranges from 500 feet to 2,000 feet. The seam thickness is shown on Map 2.2.7-1, Lower O'Conner "A"/Flat Canyon

Isopach. The geology report is in Volume A-3 of the MRP. The information is adequate for the Division to use in its analysis.

- *A description of monitoring, if any, needed to determine the commencement and degree of subsidence so that, when appropriate, other measures can be taken to prevent, reduce, or correct material damage.* CFC did not change the monitoring program, which consists of a commitment to conduct annual aerial surveys. In addition, CFC committed to conduct infrared aerial photography each year on the North Lease area.

- *Except for those areas where planned subsidence is projected to be used, a detailed description of the subsidence control measures that will be taken to prevent or minimize subsidence and subsidence-related damage, including, but not limited to: backstowing or backfilling of voids; leaving support pillars of coal; leaving areas in which no coal is removed, including a description of the overlying area to be protected by leaving the coal in place; and, taking measures on the surface to prevent material damage or lessening of the value or reasonably foreseeable use of the surface.* CFC proposes to use longwall mining methods for all areas of the North Lease. All mined area with the exception of mains are scheduled to be subsided. The information is adequate for the Division to use when analyzing when and where subsidence could occur.

- *A description of the anticipated effects of planned subsidence, if any.* In Section 4.17.1 of the MRP, CFC specifically mentions the anticipated subsidence effects in the North Lease area. CFC does not anticipate any subsidence related impacts on the pack trail in the bottom of Winter Quarter Canyon. CFC states that no subsidence will occur in the area until permission is granted by the USFS and the Division.

- *A description of the measures to be taken to mitigate or remedy any subsidence-related material damage to, or diminution in value or reasonably foreseeable use of the land, or structures or facilities to the extent required under State law.* In Section 4.17.4, Mitigation of Subsidence Effects, of the MRP, CFC states, "that mitigation will be contingent upon the findings of the subsidence monitoring program. Surface subsidence experienced to date, as shown in the 1987 and 1988 annual reports, has been less that 50% of the mining height even after 2 years have passed. As data are collected, methods of mitigation will be formulated."

  CFC stated that if any water rights are impacted, they would be replaced as discussed in Section 2.5.2 of the MRP.

  Additional information on how CFC will mitigate loss of state appropriated water rights is in Section 2.5.3, Alternative Water Supply, of the MRP. In that section, CFC mentions that mitigation methods include sealing cracks in streambeds and providing water from other sources.

Other information specified by the Division as necessary to demonstrate that the operation will be conducted in accordance with the performance standards for subsidence control. The Division does not need any other information at this time.

Performance Standards For Subsidence Control

In addition to the performance standards required by Utah Regulation, the Permittee will be required to meet the stipulations placed on the lease by the Forest Service. Of particular importance to subsidence control is Forest Service Lease Stipulation #9 that reads,

"Except at specifically approved locations, underground mining operations shall be conducted in such a manner so as to prevent surface subsidence that would: (1) cause the creation of hazardous conditions such as potential escarpment failure and landslides, (2) cause damage to existing surface structures, and (3) damage or alter the flow of perennial streams. The lessee shall provide specific measures for the protection of escarpments, and determine corrective measures to assure that hazardous conditions are not created."

Notification

The Permittee has mailed notification to the water conservancy district and to the surface land owner (U.S. Forest Service) concerning the identification of specific areas in which mining will take place, dates that specific areas will be undermined, and the location or locations where the operator's subsidence control plan may be examined. The Permittee has committed in Section 4.17.7 to provide the U.S. Forest Service with annual updates of subsidence information.

Findings:

The information provided adequately addresses the minimum requirements of the Operation Plan – Subsidence Control Plan section of the regulations

FISH AND WILDLIFE INFORMATION

Regulatory Reference: 30 CFR Sec. 784.21, 817.97; R645-301-322, -301-333, -301-342, -301-358.

Analysis:

The MRP meets the requirements of R645-301-333, R645-301-342, and R645-301-358 because the Permittee will use the best technology available to minimize impacting wildlife and its critical habitat. There is also sufficient information relating to protection/enhancement plans or there is adequate information to develop additional protection/enhancement plans, under the direction of the Division and other agencies.

Protection and Enhancement Plan

The DWR recently implemented a protection/mitigation agreement with the USFWS for the sage grouse. However, there will probably be no additional changes to the MRP concerning the grouse because there is no surface disturbance for facilities for the North Lease.

The plan for the North Lease area includes undermining perennial streams. Potential disturbance may result from subsidence that could affect stream channel habitat. The Permittee provides information supporting the unlikelihood of surface disturbance to the stream channels. Regardless, the Permittee will conduct baseline and monitoring surveys of vegetation, macroinvertebrate, and fish along Winter Quarters and Woods stream channels. The Permittee agrees to provide plans to avoid, protect, enhance, or mitigate under the direction of the Division.

The plan for the North Lease area includes also undermining some cliff habitat. Potential disturbance may result from subsidence that could affect this habitat. The Permittee provides information supporting the unlikelihood of surface disturbance to the cliffs. Regardless, the Permittee will conduct baseline and monitoring over-flight surveys of raptors and nests associated with the cliff habitat.

Endangered and Threatened Species

Colorado River Fish

The MRP includes derivations and values of consumption and addition of water to the Colorado River at the time of the North lease extension review (2002-2005). The Permittee estimated the total water balance as an annual net gain of 5,966 acre-feet (Vol.1A, Sec. 2.5). The Division, in consultation with the USFWS, considered that mining operations were "not likely to adversely affect" the endangered fishes of the Colorado River Basin because there was no indication of depleting water from the Basin.

The Permittee must update all equations and justifications with supporting documentation leading to the overall sum of water depletions or additions when projects would significantly change the current estimated value.

The application needs to include a current list of Threatened, Endangered and Sensitive animal species list for the proposed waste rock expansion area, Carbon County, and a discussion describing why each of those species would not be found within the proposed waste rock expansion site. The raptor survey completed by Terra Tech identified one raptor nest within ¼ mile of the proposed waste rock expansion area. According to the survey observations, photographs, and conversations with Jill Simmons from Terra Tech and Betsy Herrmann, biologist with the USFWS, the nest appeared to have been in place for some time indicating that raptors in the area had habituated to the activities at the waste rock site. Therefor a mitigation plan would not be required by the applicant. The application needs to include a current list of Threatened, Endangered and Sensitive animal species list for the proposed waste rock expansion

area, Carbon County, and a discussion describing why each of those species would not be found within the proposed waste rock expansion site. The raptor survey completed by Terra Tech identified one raptor nest within ¼ mile of the proposed waste rock expansion area. According to the survey observations, photographs, and conversations with Jill Simmons from Terra Tech and Betsy Herrmann, biologist with the USFWS, the nest appeared to have been in place for some time indicating that raptors in the area had habituated to the activities at the waste rock site. Therefor a mitigation plan would not be required by the applicant.

Bald and Golden Eagles

Bald eagles are not common in the area during the winter but could occasionally fly through or roost in the proposed addition to the permit area. Mining would have negligible effects on these birds. The Forest Service stated that Bald Eagles are frequently seen around Scofield reservoir in October and November, but leave after the reservoir freezes.

The application needs to include a current list of Threatened, Endangered and Sensitive animal species list for the proposed waste rock expansion area, Carbon County, and a discussion describing why each of those species would not be found within the proposed waste rock expansion site. The raptor survey completed by Terra Tech identified one raptor nest within ¼ mile of the proposed waste rock expansion area. According to the survey observations, photographs, and conversations with Jill Simmons from Terra Tech and Betsy Herrmann, biologist with the USFWS, the nest appeared to have been in place for some time indicating that raptors in the area had habituated to the activities at the waste rock site. Therefor a mitigation plan would not be required by the applicant.

Wetlands and Habitats of Unusually High Value for Fish and Wildlife

The perennial streams, springs and riparian areas within the North Lease area are probable habitats of high value for fish and wildlife. The 1995 EA reports that the riparian habitat appears to be in excellent condition on the forest (in the North Lease area), but below the forest boundary to the east it has been heavily impacted by livestock grazing.

The MRP provides updated-monitoring and vegetation information along the stream channels. The Permittee considers that subsidence will not impact seeps and springs and bases their conclusion on the study conducted in Burnout Canyon.

Streams, springs, and seeps may serve as refuge for isolated populations of benthic organisms, such as mollusks. Historical records for one rare mollusk (*Physella virgata*) exist for Carbon County. The 2002/2003-macroinvertebrate survey results only list one mollusk *Spaherium*. Future surveys may show positive results for other mollusks including the rare *Physella*.

This reviewer visited the site with Gregg Galecki, Environmental Coordinator for the Canyon Fuel Co., on August 7th, 2007. Leroy Mead, Biologist for DWR, visited the site

sometime between April 4th and the 18th, reporting his findings to the company. On September 28th the undersigned contacted Leroy to discus the results of his observations and those made on August7th. Site visit. The consensus was that, aside from the one raptor nest ¼ mile from the site there were no areas that were characteristic of wetlands or habitats of unusually high value for fish and wildlife. The applicant has offered to monitor the status of the nest near the waste rock site annually and include that information in the annual report regarding pre subsidence surveys for raptors. The additional language has been added to Volume A-2, Section 2.12 and Volume 3, Section 4.18, page 4-103, paragraph three of the MRP.

The application has been updated to include this information and Leroy Mead's findings about the status of Wetlands and habitats of unusually high value for fish and wildlife.

Findings:

The information provided adequately addresses the minimum requirements of the Operation Plan - Fish and Wildlife section of the regulations.

VEGETATION

Regulatory Reference: R645-301-330, -301-331, -301-332.

Analysis:

The MRP meets the requirements of R645-301-330, R645-301-331, and R645-301-332 because the Permittee provided measures to disturb the smallest area possible, plans to apply interim reclamation practices when applicable, and descriptions of mitigation procedures for subsidence-related impacts.

The MRP indicates that there is no anticipated surface effects to the North Lease permit area (Sec. 2.7.6). Regardless, the Forest Service Lease Stipulation # 7 requires monitoring of effects of mining.

The Permittee will implement an aerial photogrammetric monitoring program to help "determine the effects of underground coal mining on surface renewable resources (Sec. 4.17.5). The plan indicates that the monitoring program secures adequate baseline data prior to any subsidence to quantify the existing surface renewable resources…." The Division, however, determined that the Permittee will also conduct vegetation baseline and monitoring ground surveys along Winter Quarters and Woods stream channels.

The MRP indicates that aerial photographs were taken in August 2002 of the North Lease Tract to provide a baseline information. The Permittee plans to take annual aerial photographs, have a qualified person evaluate the data, and include a summary of the results in the Annual Report for the Skyline Mine. The MRP also describes color infrared aerial photography (CIR)

on the same scale as the photogrammetric monitoring (Sec. 4.17.5). If results identify that mining operations are diminishing habitat, the MRP must describe protection measures (refer to R645-301-333.300).

A description of how vegetation resources will be protected throughout the life of the mine for the proposed waste rock expansion area is provided for in Sections 2.7, 3.2.8 and 4.7 See also the requirements of section 301-331.

Findings:

The information adequately addresses the minimum requirements of the Operation Plan – Vegetation section of the regulations.

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:

There will be no changes to the following material handling systems: disposal of noncoal mine waste, coal mine waste, refuse piles, impounding structures, burning and burned waste utilization, return of coal processing waste to abandoned underground workings or excess spoil.

Refuse Piles

Waste Rock Site [01302008]

Approximately 30,000 yd3 capacity remained at the existing waste rock site in December 2006 (Volume 5a Tab 16). With an annual disposal need for 8,000 yd3 , the 5.13 acre expansion will allow for an additional 37 years of operation (Section 3.2.8, p. 3-49). [The 5.13 acres provides space for an additional 300, 294 yd3. If the waste rock is generated at a rate of 8,000 yd3/yr (9,840 tons @ 91 lb/cu ft density), the expansion will allow for 37 more years of operation.] This capacity allows for 2.5 times the rate of use over the past 20 years, based upon the previous estimation of 2,694 yd^3 /yr (4,000 tons at 110 lb/cu ft density, see replaced page 3-49a).

Design information for the site is found in Volume 5a Engineering Calculations Section 15a, Waste Rock Pile Slope Stability Analysis, as well as Section 16, Engineering Calculations. The waste will be placed in two foot compacted lifts and sloped 2h:1v to the east. Each twenty foot lift will be reclaimed (Section 3.2, pg. 3.55 – 3.56a).

Findings:

Information provided adequately addresses the minimium requirements of the Operation Plan – Spoils and Waste Materials section of the regulations. for the purposes of Spoil and Waste Material Operation Plan during development mining.

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

The Permittee presents much of the required hydrologic information in Sections 2.3 (groundwater), 2.4 (surface water), 2.5 (hydrologic impacts of mining activities), Exhibit "A" (PHC), and the 2-volume addendum to the PHC.

The Permittee has met the requirements of R645-301-731 by presenting a plan that includes maps and descriptions, indicating how they will meet the relevant hydrology requirements. Their plan is specific to the local hydrologic conditions, and contains the steps the Permittee will take during coal mining and reclamation operations, through bond release, to:

- Minimize disturbance to the hydrologic balance within the permit and adjacent areas.
- Prevent material damage outside the permit area.
- Support approved post mining land use in accordance with the terms and conditions of the approved permit and performance standards of R645-301-750.
- Comply with the Clean Water Act (33 U.S.C. 1251 et seq.)
- Meet applicable federal and Utah water quality laws and regulations.

The plan also includes the measures the Permittee will take to:

- Avoid acid or toxic drainage.
- Prevent, to the extent possible (using the best technology currently available) additional contributions of suspended solids to stream flows.
- Provide water treatment facilities when needed.
- Control drainage.

The plan specifically addresses any potential adverse hydrologic consequences identified in the PHC, and includes preventative and remedial measures.

The Division has required additional monitoring measures to assure that material damage to the hydrologic balance outside the permit area is prevented, those are now part of the plan.

The following sections of this technical memo discuss the specific ways in which the Permittee has met the regulations, as they pertain to the amendment.

Groundwater Monitoring

The Permittee has met the requirements of R645-301-731.211 and 212 by including a ground-water monitoring plan based upon the PHC determination and the analysis of all baseline hydrologic, geologic, and other information in the permit application (Section 2.3.7 of the MRP). The plan provides for the monitoring of parameters that relate to the suitability of the ground water for current and approved postmining land uses, and to the objectives for protection of the hydrologic balance. The Permittee outlines the quantity and quality parameters they will monitor, the sampling frequency, and site locations on Tables 2.3.7-1, 2.3.7-2, and 2.3.7-2A. The plan describes how the data will be used to determine the impacts of the operation upon the hydrologic balance. In addition to other parameters, the Permittee will sample for total dissolved solids, specific conductance, pH, total iron, total manganese, and water flows at all springs. At most of the wells, the Permittee just monitors levels. The Permittee submits ground water monitoring data to the Division every 3 months for each monitoring location, through the electronic data input (EDI) portion of the Division's Electronic Water Database. At this time, the Division does not require additional monitoring to that listed in Table 2.3.7-1 through 2.3.7-2A.

In accordance with R645-301-731.214, the Permittee will continue to monitor groundwater throughout the life of the mine, and during reclamation until bond release.

Consistent with the procedures of R645-303-220 through R645-303-228, the Division allowed modifications to the original MRP monitoring requirements, as the Permittee requested , since the Permittee has demonstrated, using the monitoring data obtained under R645-301-731.214 that:

- The coal mining and reclamation operation has minimized disturbance to the prevailing hydrologic balance in the permit and adjacent areas;
- Prevented material damage to the hydrologic balance outside the permit area (at least as far as changes in water *quality* are concerned, the Permittee will continue to monitor water *quantity* at each of these sites since the Permittee and the Division are continuously analyzing the Electric Lake Situation); and
- Water quantity and quality are suitable to support approved postmining land uses.

Under R645-301-731, the Division will require additional monitoring measures to assure that material damage to the hydrologic balance outside the permit area is prevented. Those measures are to monitor the 13 springs (S13-2, S14-4, S15-3, S22-5, S22-11, S23-4, S24-12, S26-

13, S34-12, S35-8, S36-12, 2-413, and 3-290) for the currently required laboratory parameters at high and low flow (where accessible) once every five years (2010, 2015, etc.), and whenever abrupt changes in flow occur.

Concerning continuing drawdown of the Star Point Sandstone aquifer for an extended period, the Division requested that any appreciable springs located in the Star Point Sandstone with elevations above approximately 8,300 feet (msl), that are not included in the current hydrologic monitoring program to be added. In response, Canyon Fuel has added Sulfur Spring (S24-1) to the water monitoring program. It is located downstream of Electric Lake and east of both the Connelville and O'Connor faults, but is located within the Star Point Sandstone and at the correct elevation. In addition, to help identify the waters entering Electric Lake, springs 8-253 (Flat Canyon), 2-413 (James Canyon), and S15-3 (Upper Huntington Creek) have been officially added to the Water Monitoring program to include tritium analysis for a period of three (3) years. Spring S15-3 was already on the water-monitoring schedule, but tritium was added.

Surface Water Monitoring

The Permittee has met the requirements of R645-301-731.221, 222, and 223 by including a surface-water monitoring plan based upon the PHC determination required under R645-301-728 and the analysis of all baseline hydrologic, geologic and other information in the permit application (Section 2.4.4 of the MRP). The plan provides for the monitoring of parameters that relate to the suitability of the surface water for current and approved postmining land uses, and to the objectives for protection of the hydrologic balance, as well as the effluent limitations found in R645-301-751. The plan identifies the surface water quantity and quality parameters to be monitored, sampling frequency and site locations on Tables 2.3.7-1 through 2.3.7-2A. It describes how these data will be used to determine the impacts of the operation upon the hydrologic balance. In addition to other parameters, the Permittee will sample for total dissolved solids, specific conductance, total suspended solids, pH, total iron, total manganese and flow at all surface monitoring locations. For point-source discharges, the Permittee will monitor in accordance with their Utah Pollutant Discharge Elimination System (UPDES) permits. The Permittee submits surface water monitoring data to the Division every 3 months for each monitoring location, through the electronic data input (EDI) portion of the Division's Electronic Water Database. Monitoring submittals include analytical results from each sample taken during the approved reporting period.

In accordance with R645-301-731.224, the Permittee will continue to monitor surface water throughout the life of the mine, and during reclamation until bond release.

Consistent with R645-303-220 through R645-303-228, the Division is allowing the modifications to the monitoring requirements, as requested in this application, since the Permittee has demonstrated, using the monitoring data obtained under R645-301-731.224 that:

- The Permittee has minimized disturbance to the hydrologic balance in the permit and adjacent areas;

- Prevented material damage to the hydrologic balance outside the permit area (at least as far as changes in water *quality* are concerned, the Permittee will continue to monitor water *quantity* at each of these sites since the Permittee and the Division are continuously analyzing the Electric Lake Situation);
- Water quantity and quality are suitable to support approved postmining land uses.

Under R645-301-731, the Division will require additional monitoring measures to assure that material damage to the hydrologic balance outside the permit area is prevented. Those measures are to monitor the 8 stream sites (CS-1, CS-7, CS-8, CS-10, CS-16, CS-17, CS-18, and VC-10) for the currently required laboratory parameters at high and low flow (where accessible) once every five years (2010, 2015, etc.), and whenever abrupt changes in flow occur.

Water-Quality Standards And Effluent Limitations

In Section 2.5.2 – Mining Impacts on Water Quantity (page 2-51a – 2-51b), a discussion outlines that the unanticipated discharges currently being generated greatly exceed the UPDES permit that was written when the mine was opened. Flows were expected to be less than 1,000 gpm and the limits on total dissolved solids (TDS) were created based on that volume. The initial flow increases encountered from 1999 through 2001 had problems with the toxicity caused by nickel concentrations and high TDS. With the significant inflow to the mine from the 10 Left area and changes in how water is handled underground the TDS and dissolved nickel declined over time. However, the Permittee had to increase mine discharge again in September 2004 to keep up with inflows, and the total dissolved solids (TDS) began to exceed the UPDES permit limit of 7.1 tons per day (tpd). However, the discharge continued to comply with the 1310 mg/L limit for TDS.

Canyon Fuel worked closely with DWQ to remedy the situation, and after much study and effort, DWQ modified the Skyline Mine UPDES permit in May of 2003 to remove the 7.1 ton per day limit for TDS, unless the 30-day average were to exceed 500 mg/l.

The Utah Division of Water Quality (DWQ) issued the current permit on Nov. 23, 2004; it allows for a daily maximum of total dissolved solids discharged (TDS) of 1310 mg/l and a 30-day average of 500 mg/l. There is no tons per day (tpd) daily maximum, unless the 30-day average exceeds 500 mg/l; then a 7.1-tpd limit is imposed. The permit also states:

Upon determination by the Executive Secretary that the Permittee is not able to meet the 500 mg/L 30-day average or the 7.1 tons per day loading limit, the Permittee is required to participate in and/or fund a salinity offset project to include TDS offset credits, within six (6) months of the effective date of this permit.

In September of 2004, Skyline's mine discharge began averaging 850-950 mg/l TDS, and due to volume of water pumped (approx 3500 gpm) theyalso routinely exceed the tons per day limit. Because the conditions at the mine will require such pumping for quite some time, Canyon Fuel Company prepared a salinity offset plan and submitted it as required to DWQ. The

*Division of Water Quality approved the plan on January 5, 2005, but it is retroactive to September 2004.*Findings:

The information provided adequately addresses the minimum requirements of the Operation Plan – Hydrologic Information section of the regulations.

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 Division usually considers the affected area to be the same as the permit area. The affected area may include areas that the Permittee has not yet acquired or permitted but plans to do so in the future. Drawing No. 1.6-3, Skyline Mines Permit Area, shows the location of the permit boundaries.

Mining Facilities Maps

No new surface mining facilities will be constructed.

Mine Workings Maps

The Permittee met the requirements for mine working maps by providing Map 3.3-2, Lower O'Conner "A"/Flat Canyon Five Year Projected Mine Plan. The map shows the location of the mine workings associated with the North Lease.

Drawing No. 2.2.7-7 shows the location of abandoned mine workings in and around the permit area. The horizontal distance between the proposed workings and the abandoned mine is 50 feet. The map also shows the existing and proposed workings.

Drawing No. 3.3-2, Lower O'Conner "A"/Flat Canyon Five Year Projected Mine Plan, show the location of the current and proposed mine workings. Douglas E. Johnson, a registered professional engineer, certified that map.

Monitoring and Sampling Location Maps

Plate 2.3.6-1 shows all regular water sampling sites. Drawing 2.3.6-2, North Lease Subsidence Hydrologic Monitoring Points, shows the forty-two sites to the Permittee will monitor flow at six months prior to- and six months after mining.

Certification Requirements

All maps that require certification have been certified.

Findings:

The information provided meets the minimum requirements of the Operation Plan – Maps, Plans, and Cross Sections of Mining Operations section of the regulations.

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:

No surface disturbance is proposed within the North Lease Permit Area. Therefore there is no information in the submittal for approximate original contour, reclamation of a disturbed area, backfilling and grading, mine openings and road system reclamation, stabilization of surface areas or post-mining land use.

Small areas associated with drill hole disturbance will be reclaimed. Reclamation of the drill holes is outlined under the exploration permit.

Since no new surface facilities or disturbance will occur because of the North Lease Extension, a bond adjustment is not required at this time.

The reclamation plan for the proposed waste rock expansion site is described in sections 4.1, *"Reclamation Plan"*, 4.2, *"Reclamation Timetable"*, 4.4, *"Backfill and Grading"*, 4.5, *"Soil Preparation"*, 4.6, *"Topsoil Handling"*, and 4.7, *"Revegetation"* of the MRP. Maps 4.16.1B, *"Waste Rock Disposal Site Reclamation Plan"*, and 1C *"Waste Rock Disposal Site Final Reclamation Plan"*, have been updated to include the proposed waste rock expansion area.

Findings:

The information provided adequately addresses the minimum requirements of the Reclamation Plan – General Requirements section of the regulations.

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-240.

Analysis:

Redistribution

Waste Rock Site [01302008]

Reclamation of the site is shown on Map 4.16.1-1C without a pond retained and on Map 4.16.1-1B with the pond retained (at landowners request). Redistribution of the topsoil and subsoil removed from the site will be returned to the 5.13 ac of proposed disturbance. Other reclamation activities remain unchanged.

Findings:

The information provided meets the requirements of the regulations for replacement of topsoil.

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:

Backfilling and Grading On Steep Slopes

Waste Rock Site [01301008]

The undisturbed slope is 80%, steeper than 1.5h:1v. The reclamation plan describes placement of the material in two foot lifts and reclamation of each 20 ft increment of fill ([pg 3-56]. Plate 3.2.8-2 illustrates a 2:1 slope with a flat area at the top of the pile. The pile will grade into the undisturbed mountain over a five foot elevation difference.

Currently the permittee does not cover the waste with four feet of material, due to a lack of pre-existing soil at the former mine site.

In accordance with the requirements of R645-301-553.252, the Permittee has provided photographs and chemical analyses to show that the requirements of R645-301-244 (stability) and R645-301-353 through 357 (vegetation establishment and success) can be met with less than four feet of cover over the mine waste (Table 4.6-5 and discussion in Section 4.6.4.1).

Findings:

The information provided meets the requirements of backfilling and grading.

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

In Section 2.4.4 of the MRP the Permittee commits to continued sampling 'throughout the post-mining period until the reclamation effort is determined successful by the regulatory authority'. This adequately covers the Hydrologic Reclamation Plan.

Findings:

The information provided adequately addresses the minimum requirements of the Reclamation Plan – Hydrologic Information section of the regulations.

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 Division usually considers the affected area to be the same as the permit area. The affected area may include areas that the Permittee has not yet acquired or permitted but plans to do so in the future. Drawing No. 1.6-3, Skyline Mines Permit Area, shows the location of the permit boundaries.

Bonded Area Map

The bonded area usually is the same as the disturbed area. Since there will be no additional surface disturbance there is no need to change the bonded area maps at this time.

Reclamation Backfilling And Grading Maps

There will be no changes to the backfilling and grading plans because of the North Lease Extension.

Reclamation Facilities Maps

No new reclamation facilities will be associated with the North Lease Extension.

Final Surface Configuration Maps

The final surface configuration will not change because of the North Lease Extension.

Reclamation Surface And Subsurface Manmade Features Maps

No new surface or subsurface manmade features are associated with the North Lease Extension.

Findings:

The information provided adequately addresses the minimum requirements of the Reclamation Plan – Maps, Plan, and Cross Sections of Reclamation Operations section of the regulations.

POSTMINING LAND USES

Regulatory Reference: 30 CFR Sec. 784.15, 784.200, 785.16, 817.133; R645-301-412, -301-413, -301-414, -302-270, -302-271, -302-272, -302-273, -302-274, -302-275.

Analysis:

According to the information in the MRP, volume 2, section 3.2.8 page 3-45b, *"The rock waste disposal site is an abandoned strip mine pit and waste area which is accessed by existing roads."* The land owner, Angelo Georgedes, Administrator for the Telonis Estate, had requested that the reclamation of the dump site be leveled to be used for corrals and livestock containment if need be in a letter dated August 27, 1982 to Vernal Mortensen, Vice President of Costal States Energy Company. Since Mr. Mortensen is no longer with the company and the mine is no longer owned or controlled by Costal States Energy Company. A letter from Wes Sorensen, General Mine Manager to the Telonis family is included in the application the Division is requesting that the applicant provide an updated landowner request for the final configuration of the property. Volume three section 4.1.1 page 4-3(a) states that, *"Part of the disturbed area affected by the disposal operation will, at the request of the property owner's representative, be leveled off and reclaimed to native rangeland for subsequent use as a corral".*

During conversations with Gregg Galecki at the August 7th on site meeting it appeared to this reviewer that the proposed waste rock expansion area would be reclaimed to the contours of the existing slope. It is reasonable to assume that both of these statements are true if the current landowner verifies the post mining land use request. A description of the reclamation of the waste rock area is provided for in sections 4.6, "*Topsoil Handling*", and 4.7, "*Revegetation*" of the MRP. Maps 4.16.1B, "*Waste Rock Disposal Site Reclamation Plan*", and 1C "*Waste Rock Disposal Site Final Reclamation Plan*", have been updated to include the proposed waste rock expansion area. The permit application will be conditioned to require the applicant to provide documentation from the landowner acknowledging the final configuration of the waste rock site as described in the Letter to Mr. Sampinos dated March 6, 2007.

PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES

Regulatory Reference: 30 CFR Sec. 817.97; R645-301-333, -301-342, -301-358.

Analysis:

Section 2.9.6 of the application has been updated to include a wildlife protection and enhancement plan for the proposed waste rock expansion site.

Findings:

The information in the application is adequate to meet the requirements of this section of the regulations.

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:

4.6.1, page 4-38(a), provides a general description of the contemporaneous reclamation of the waste rock site. As the waste rock is deposited it is compacted in 2' lifts for approximately 20' at which time the out slopes are top soiled and reseeded.

Findings:

The information in the MRP is adequate to meet the requirements of this section of the regulations.

REVEGETATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.111, 817.113, 817.114, 817.116; R645-301-244, -301-353, -301-354, -301-355, -301-356, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

Revegetation: General Requirements

Volume 3, Section 4.7, (Revegetation Plan), of the MRP provides a general description of the reclamation of the waste rock site. Topsoil removal, storage and redistribution is described in section 4.6 of the MRP and text additions to page 4-39(a) and (b).

Revegetation: Timing

Volume 3, Section 4.2, (Revegetation Timetable), table 4.2-1of the MRP provides a description of the reclamation timetable for the waste rock site. The figures in the table indicate that the waste rock site is slated for reclamation from 2022 to 2027. Scarification of topsoil and seeding in the late fall is described in section 4.7 page 4-49 of the MRP.

Revegetation: Mulching and Other Soil Stabilizing Practices

Fertilizer rates and applications are described in Volume 3, Section 4.5 of the MRP.

Revegetation: Standards For Success

Vegetation Resource Information is addressed in section 2.7.7 on page 2-63 of the application. The 1981-82-vegetation information pertinent to the waste rock site has been updated by data collected by Mt. Nebo Scientific. It is included in this application as "Vegetation of the Waste Rock Expansion Site" and can be found in Appendix Volume A-2 Volume 2. The vegetation analyses include quantitative and qualitative data for the expansion area and reference areas for the vegetative communities. Maps of the site and reference area locations are included with the data.

Findings:

The information in the application and MRP is adequate to meet the requirements of this section of the regulations.

BONDING AND INSURANCE REQUIREMENTS

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

Analysis:

Since no new surface facilities or disturbance will occur because of the North Lease Extension, a bond adjustment is not required at this time.

Findings:

The information provided adequately addresses the minimum requirements of the Reclamation Plan - Bonding and Insurance Requirements section of the regulations.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT (CHIA)

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

Analysis:

The Permittee has provided sufficient information concerning the North Lease addition to the Skyline Mine permit area for the Division to make a determination of the impacts to the cumulative hydrologic regime. The Division has determined the mining of the North Lease will have minimal if any impacts on the Cumulative Hydrologic Impact Area based on the following provided information:

- The proposed mining is a continuation of Mine #3 where no significant in-mine water was encountered; making no significant contribution to mine discharge.
- Based on Burnout Canyon subsidence studies, where two seams were mined, minimal impacts to the perennial nature of surface hydrology were noted due to subsidence. Only one (1) seam of mining is proposed in the North Lease area.
- The provided geologic information indicates the mine is located on a 'dome-like' feature; Mine #3 dips northwest while Mines #1 and #2 dip west southwest, and the hydrologic regime in Mine #3 is different and not in communication with the hydrologic regime of Mine #2 or Mine #1.
- In-mine mechanical tests conducted on the rocks in Mine #3 are in a state of compression (similar tests in Mine #2 indicate the rocks are in extension), which will further limit the hydraulic conductivity of the geologic units holding any potential water.
- Groundwater wells and exploration drill holes in the North Lease area indicated minimal water production potential.
- Adequate surface-water, groundwater, stream bank stability, and subsidence monitoring plans have been outlined to identify adverse impacts, should any begin to occur.

Based on the information currently submitted, and information submitted to the Division since the last Cumulative Hydrologic Impact Assessment (CHIA) revision, the Division CHIA is in the process of being updated. The modifications are primarily date-sensitive and do not affect the overall current assessment. The information provided, primarily the HCI numeric ground water modeling reports – Appendix J, K, and November 2004 are considered supporting evidence to indicate the mining operation has been designed to prevent material damage to the hydrologic balance outside the permit area.

Findings:

The information provided adequately addresses the minimum requirements of the CHIA section of the regulations. The Division finds that mining of the North Lease has been designed to minimize impacts within the permit area and to prevent material damage outside the permit area.