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State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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December 2, 1996

Mr. Rick Olsen, President
Soldier Creek Coal Company
P. O. Box 1029
Wellington, Utah 84542

Re: Technical Review of Alkali Lease Revision, Soldier Creek Coal Company, Soldier Canyon Mine, ACT/007/018-96-1, Folder #3, Carbon County, Utah

Dear Mr. Olsen:

The Division has completed the Technical Analysis for the proposed Alkali lease addition to the Soldier Canyon Mine Permit. A number of technical deficiencies have been identified in the application which will need to be corrected before further processing can occur and before a permit can be issued. Please review the enclosed document which outlines the deficiencies. We encourage you to respond to the deficiencies as quickly as possible in order to complete the processing of this application. This is particularly important since your latest renewal application also includes information pertaining to the Alkali lease. We would anticipate that the correction of the deficiencies will include corrections for both the Alkali lease and the renewal application.

Please call me or any of the technical reviewers if you have questions.

Sincerely,

A handwritten signature in cursive script that reads "Daron R. Haddock".

Daron R. Haddock
Permit Supervisor

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Enclosure

cc: Keith Zobel (Coastal)
S. Johnson
W. Western
J. Smith
R. Davidson
P. Baker

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**State of Utah
Division of Oil, Gas and Mining
Utah Coal Regulatory Program**



**Soldier Creek Coal Company
ACT/007/018
Technical Analysis and Findings for Alkali Lease
November 21, 1996**

TECHNICAL ANALYSIS

Last Revised - November 21, 1996

INTRODUCTION

Soldier Creek Coal Company has applied to add the Alkali lease to the Soldier Canyon Mine permit area. The lease consists of 2177.52 acres of federal land which will all be mined using underground methods as an extension of the existing Soldier Canyon Mine. There are two parcels of fee land totaling 757.49 acres that will also be added. The federal and fee leases combine to add 2935.09 acres to the Soldier Canyon Mine permit area. No new surface facilities or disturbances are planned in connection with the lease additions.

This Technical Analysis (TA) is written as part of the permit review process. It documents the Findings that the Division has made to date regarding the application for a permit and is the basis for permitting decisions with regard to the application. The TA is broken down into logical section headings which comprise the necessary components of an application. Each section is analyzed and specific findings are then provided which indicate whether or not the application is in compliance with the requirements.

It may be that not every topic or regulatory requirement is discussed in this version of the TA. Generally only those sections are analyzed that pertain to a particular permitting action. TA's may have been completed previously and the revised information has not altered the original findings. Those sections that are not discussed in this document are generally considered to be in compliance.

SUMMARY OF DEFICIENCIES

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R645-301-121 -- No baseline or operational data are included in the Alkali Tract Significant Revision for springs 7, 23, and 24, all of which are listed in listed in Table 7.24-1. 32

R645-301-121 -- For Spring 10, there is no fault mapped that could carry ground water several hundred feet upwards from the Blackhawk Formation. Also, there is no identified source for an upward gradient from the Blackhawk Formation to the surface, which would be in opposition to the regional gradient described elsewhere in the Alkali Tract Significant Revision. 32

R645-301-121 -- It appears that the figure of 6,641 acres given as the area of the proposed LOM area on page 7-46 has not been updated to include the Alkali Tract Significant Revision. 35

R645-301-121 -- On pages 54 and 62 of Appendix 7M, reference is made to the rapid loss of production capacity in water production wells #1 and #2. There is no further information on these two wells in the Alkali Tract Significant Revision. 32

R645-301-121 -- The re-labeling of spring 5 to CC-53 is confusing and without apparent reason or purpose. 30

R645-301-121 -- There are no baseline data for springs CC-36 and CC-40. 32

R645-301-121 -- What appears to be a typographic error on page 7-165 identifies spring 30, rather than spring 10, as one of the six springs to be monitored. 61

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R645-301-121, -722.300 -- Exhibit 7.21-1 indicates NPDES discharge point 006, at the south end of the Proposed Refuse Disposal Site in Section 36, T. 13 S., R. 11 E., is a spring. 35

R645-301-121, -722.300 -- Springs CC-36 and CC-40 (page 7-157 and Appendix 7M - C) are marked as surface water monitoring points on Exhibit 7.21-1. 31

R645-301-121, -722.300 -- Well 11-2 is listed in Tables 7.24-1 and 7.24-4 but it is not shown on Exhibit 7.21-1 and there is no other information on well 11-2 in the Alkali Tract Significant Revision. 31

R645-301-121, -722.300, -724.100 -- The reference on p. 7-2 and Table 7.28-1 to Exhibits 7.24-1 and 7.24-2 for information on surface and ground water occurrence in and adjacent to the permit area is not clear. There is no Exhibit 7.24-1 nor 7.24-2 in the current MRP or Alkali Tract Significant Revision. 31

R645-301-121, -722.300, -731.222 -- It appears that surface water monitoring sites G-4 and G-7 are the same, but there is no explanation or reason given for G-4 being renamed G-7 for the Alkali Tract Significant Revision. 57

R645-301-121, -722.300, -731.222 -- It appears that surface water monitoring sites G-3 and G-9 may be the same, but the description of G-9's location in Table 7.24-1 does not agree with the location shown on Exhibit 7.21-1, and there is no explanation or reason given for G-3 being renamed G-9 for the Alkali Tract Significant Revision. 57

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R645-301-121, -722.300, -731.222 -- Locations described in Table 7.24-1 do not agree with locations shown on proposed Exhibit 7.21-1 for G-2, G-5, G-6, and particularly for G-8 and G-9. 61

R645-301-121, -722.300, -731.222 -- Table 7.24-1 lists surface water monitoring sites G-1, G-3, and G-4 that are not shown on Exhibit 7.21-1. 35

R645-301-121, -722, -722.300, -724.100, -731.211 -- The location of the spring labeled CC-53 on Exhibit 7.21-1 of the Alkali Tract Significant Revision does not match the location of spring 5 (which is identified as the same spring in Table 7.31-1) given in Table 7.24-1 and shown on Exhibit 7.21-1 of the current Soldier Canyon Mine MRP. 30

R645-301-121, -724.100 -- Appendix C in Appendix 7M lists thirty springs in and adjacent to the Alkali Tract Significant Revision area. Only CC-36, CC-40, and CC-53 are marked on Exhibit 7.21-1. 31

R645-301-121, -724.100 -- Concentrations for total manganese, required by statute, are not given in Appendix 7M nor elsewhere in the Alkali Tract Significant Revision. 31

R645-301-121, -724.100 -- It is not clear from the water rights (Table 7.24-2) or other information in the Alkali Tract Significant Revision, including maps or plans, if there are water wells, active or abandoned, associated with water rights 203 and 4124. 47

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R645-301-121, -724.100 -- Locations of the water quality monitoring wells at the previously proposed waste rock disposal site are shown on Exhibit 7.21-1, but the symbol for these wells is mislabeled in the map legend. 31

R645-301-121, -724.100 -- Neither Exhibit 7.21-1 nor Table 7.24-1 contain any information on the three springs in the Coal Creek drainage that are discussed on page 7-50 of the Alkali Tract Significant Revision. 31

R645-301-121, -724.100 -- On page 7-30, the descriptions of water level changes in wells 5-1 and 10-2 are switched in comparison to what is given in Figure 7.24-3 and Figure 17 and Table 7 in Appendix 7M. 32

R645-301-121, -724.100 -- Water production wells #1 and #2 discussed on pages 54 and 62 of Appendix 7M are not shown on a map. 49

R645-301-121, -724.100, -722.400 -- Status (appropriated, active beneficial use, abandoned, etc.) of water rights 203 and 4124 for appropriation of ground water, presumably by wells, is unclear from information on water rights and wells in the Alkali Tract Significant Revision. 30

R645-301-121, -724.200 -- Exhibits 7.21-1 and 7.21-2 make no distinction as to whether streams are perennial, intermittent or ephemeral. 36

R645-301-121, -724.200 -- No baseline or operational data are included in the Alkali Tract Significant Revision for surface water monitoring points G-6 through G-10, all of which are listed in listed in Table 7.24-1. 36

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R645-301-121, -724.200 -- SC3 must include surface water information for the Coal Creek area. This includes Coal Creek quantity and quality information and spring and seep information. 35

R645-301-121, -724.310, 728, 731.214 -- It is unclear if spring discharge, underflow, ground water recharge, consumption, and storage volumes given on pages 7-28, 7-33, 7-64, and 7-153 (Figure 7.28-20) have been updated to include the area of the Alkali Tract Significant Revision and to account for actual and projected coal production. . . 32

R645-301-121, -731.210 -- The monitoring plan does not include the option of continuing to monitor Well 5-1 in the case that Well 6-1 cannot be made usable for monitoring. 60

R645-301-121, -731.211 -- The quarterly and semi-annual water quality sampling schedule is tied to annual precipitation, but the explanation in Table 7.31-2 is unclear. 60

R645-301-121, -731.214 -- There is no discussion based on data in the Alkali Tract Significant Revision or Soldier Canyon Mine MRP indicating one year is sufficient time to determine that there have or have not been effects on springs from coal mining operations: cessation of monitoring of springs 4 and 8 in the Flagstaff and North Horn Formations, respectively, after one year appears to be without basis and contrary to the stated purpose of the monitoring plan. 60

R645-301-121-- Figures 7.28-1 and 7.28-3 do not show the correct outline of the Alkali Tract. 41

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R645-301-728.333 - The applicant must consider how increased flow volumes in the low flow months will effect downstream geomorphology and vegetation. Further, the applicant must analyze the effects of mining on flow and water quality in the Coal Creek watershed.	40
R645-301-731.200--SC3 must monitor Coal Creek as part of their surface water monitoring plan.	57
R645-301-731.200--Surface water stations G-1 and G-2 must be maintained as part of the surface water monitoring plan.	57

ADMINISTRATIVE INFORMATION

IDENTIFICATION OF INTERESTS

Regulatory Reference: R645-301-112

Analysis:

The applicant and operator are both Soldier Creek Coal Company. Soldier Creek Coal Company is owned by Sage Point Coal Company which is a wholly owned subsidiary of

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Coastal States Energy Company. The resident agent is C. T. Corporation Systems of Houston, Texas.

The application shows the officers and directors of Soldier Creek Coal Company and its parent and affiliated companies. The Division needs to check this information in the Applicator Violator System.

The application is required to contain the names and addresses of all owners of record of surface and mineral property both within and contiguous to the proposed permit area. Revised Map 1.12-1 shows surface ownership in the current and proposed permit area and includes contiguous areas. However, the plan does not include addresses for all entities owning surface property within and contiguous to the proposed permit area. According to Map 1.12-1, Dave Cave and others, Funnon Shimmin, and John Frederick Artman own land contiguous to the permit area, but they are not shown in the text of the application.

The mineral ownership information may need to be revised. According to the plan, the only legal or equitable owners of the coal to be mined are the United States government, the State of Utah, and Sage Point Coal Company. The text says these and Louise Iriart are the owners of coal contiguous to the proposed permit area. However, according to the new Map 1.12-2, it does not appear Louise Iriart owns coal rights contiguous to the permit area.

Previous versions of Map 1.12-2, including the map in the approved plan, show a portion of land in Section 9, Township 13 South, Range 11 East, where Sage Point Coal Company own coal rights. However, according to Map 1.12-2 in the latest submittal, the United States government owns the coal rights in this area contiguous to the proposed addition to the permit area. If this is correct, no changes need to be made, but if Sage Point owns and has leased the coal rights to Andalex, the application needs to be corrected accordingly.

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MSHA numbers are shown in Section 1.12.7 of the application.

Findings:

Information provided in the proposal does not meet all of the minimum regulatory requirements of this section. Prior to final approval, the applicant must provide the following:

1. The application needs to show the names and addresses of all owners of record of surface and mineral property within and contiguous to the proposed permit area.

VIOLATION INFORMATION

Regulatory Reference: R645-301-113

Analysis:

The applicant submitted new violation information with this application. Neither the applicant nor any of its subsidiaries, affiliates, or persons controlled by or under common control with the applicant has had a federal or state mining permit suspended or revoked in the last five years.

With the updated ownership and control information, the application includes bond forfeiture information about sixteen operations of Virginia Iron, Coal and Coke Company. Settlement agreements have been reached with the Virginia Division of Mined Land Reclamation for several of these operations. The Division needs to check through the Applicator Violator System to ensure the applicant is eligible to receive a permit.

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Findings:

Information provided in the proposal meets all of the minimum regulatory requirements of this section.

RIGHT OF ENTRY

Regulatory Reference: R645-301-114

The current plan shows right of entry information for the existing and the proposed permit areas.

Most of Section 32, Township 12 South, Range 12 East, is currently in the permit area. The applicant intends to delete this section from the permit area.. However, according to annual reports, Soldier Creek mined about 5.6 acres within this section in 1992 and 1993. The regulations do not appear to address the issue of deleting a portion of an underground mine from a permit area. Logically, the Division should ensure that all commitments relative to subsidence monitoring and water monitoring, particularly any underground water monitoring, have been fulfilled for the area. The Division should also make a finding that no further monitoring is needed. Because the portion of this section that was mined is relatively small and because it was not second-mined, it should be possible to make these findings.

Except for 40 acres, the coal rights in Section 32 are owned by the State of Utah and are in leases ML-22675 and 21994. The application contains letters from the Division of School and Institutional Trust Lands Administration indicating relinquishment of these leases has been approved.

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Findings:

Information provided in the proposal meets all of the minimum regulatory requirements of this section.

The applicant has proposed deleting a portion of the permit area. Before deleting this area, the Division needs to ensure that all appropriate monitoring and other requirements have been met.

UNSUITABILITY CLAIMS

Regulatory Reference: R645-301-115

Analysis:

The proposed expansion area is not within an area designated or under study for designation as an area unsuitable for mining. The Bureau of Land Management's environmental assessment says the unsuitability criteria for coal mining have been applied in the land use planning process and may receive further application in the process of reviewing and approving the mining plan. Granting the lease was found to be in conformance with the Price River Resource Management Framework Plan.

The permittee has permission to operate within 100 feet of the county road in the surface operations area.

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The application states there are no public roads and no occupied dwellings within the area proposed to be added to the permit area in the Alkali Tract significant revision. While there is a road in the Coal Creek area, it is apparently not a public road. The applicant owns the surface of the land in the area.

Findings:

Information provided in the proposal meets all of the minimum regulatory requirements of this section.

INSURANCE AND PROOF OF PUBLICATION

Regulatory Reference: R645-301-117

Analysis:

The Division has on file a copy of a certificate of insurance for the Soldier Canyon Mine.

After the Division determines the application administratively complete and the applicant has advertised the proposed revision in a newspaper for four consecutive weeks, the applicant will need to submit a proof of publication.

Findings:

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Information regarding the requirements of this section of the regulations was found to meet the minimum regulatory requirements. After the applicant has advertised the proposed revision, the applicant will need to submit a proof of publication.

PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES

Regulatory Reference: R645-301-411.144

Analysis:

There are no public parks or known sites eligible for listing in the National Register of Historic Places within the proposed permit or adjacent areas.

Findings:

Information regarding this section meets minimum regulatory requirements.

POSTMINING LAND USE

Regulatory Reference: R645-301-413

Analysis:

No changes to the approved postmining land use were included with the Alkali Tract revision. There are no owners of surface land that are not already included in the permit area. The plan contains comments about the postmining land use from these entities.

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Findings:

The applicant has complied with the requirements of this portion of the regulations.

ENVIRONMENTAL RESOURCE INFORMATION

LAND USE RESOURCE INFORMATION

Regulatory Reference: R645-301-112

Analysis:

Drawing 4.11-1 shows grazing allotments, abandoned croplands, Carbon County zoning, and mine development in the area of the current and proposed permit areas. The current mining and reclamation plan contains descriptions of the current and potential uses of the land in compliance with regulatory requirements.

Findings:

The applicant has complied with the requirements of this section of the regulations.

SOILS RESOURCE INFORMATION

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

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Analysis:

The only soil resource information provided in the Revision document is Exhibit 2.22-1, Soil Resource Map for the Soldier Canyon Mine. The map is taken directly from the Order-3 Carbon County soil survey published by the U.S. Department of Agriculture, Soil Conservation Service. The Order-3 soil-survey information is sufficient for lease expansions since no surface disturbance is associated with the Alkali expansion area. Exhibit 5.21-5, the Rock Canyon Seam Mine Plan, was revised to eliminate any indication of breakouts or any other surface disturbance within the Alkali lease area.

The Soil Conservation Service reviewed soil mapping data for the LOM permit area, including the Alkali lease area, and gave a negative determination for prime farmland status based on slope, soil erodibility and percent rock fragments. The May 30, 1996 SCS letter does not specifically state the Alkali lease area but acknowledges the Soldier Creek Coal Company Expansion area.

Findings:

This portion of the permit application is complete and accurate

VEGETATION INFORMATION

Regulatory Reference: R645-301-321

Analysis:

The application is for underground mine development for which no additional vegetation information is required. The applicant has committed to take aerial photographs to

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monitor the effects of underground mining on vegetation. This commitment was made primarily to fulfill the requirements of a stipulation in the federal coal leases.

Findings:

Information provided in the proposal meets minimum regulatory requirements of this section.

FISH AND WILDLIFE RESOURCE INFORMATION

Regulatory Reference: R645-301-322

Analysis:

Fish and Wildlife Information

The applicant submitted updated versions of three wildlife maps with the Alkali Lease Tract revision. Drawing 3.10-2 shows raptor nests, riparian zones, and spring locations in the current and proposed permit areas and in nearby areas. There are several raptor nest locations within the proposed addition to the permit area.

Drawing 3.10-3 is a game bird and lagomorph distribution map. This map shows critical habitat for sage grouse in the northern part of the current and proposed permit areas.

Big game distributions are shown on Drawing 3.10-4. Nearly all of the existing and proposed permit areas contain high priority habitat for elk or mule deer. The only critical big game habitat is in the area of the sewage lagoons and lower topsoil storage area. Wildlife

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Resources has confirmed that these areas are used heavily by wintering deer and that the areas are truly critical for maintenance of the local deer population.

Threatened and Endangered Species

The application includes no new threatened or endangered species information. Most of the surface of the proposed addition to the permit area is owned by Louise Iriart or Sage Point Coal Company. Small portions of the proposed permit area are managed by the Bureau of Land Management, and the Division needs to receive comments from the Fish and Wildlife Service about these areas.

The most likely threatened, endangered, proposed or candidate species to be in the proposed addition to the permit area is canyon sweetvetch. It is extremely unlikely this species would be affected by underground mining operations. It is possible it could occur in breakouts that might be built in the future. The species has no protection on private land, but the Bureau of Land Management does give it some protection on their lands. No new information is required at this time, but some baseline information may be required when the breakouts are proposed.

Other species with some potential of being affected include bald eagles, peregrine falcons, and the threatened and endangered fish of the Colorado River. No peregrine falcons were found in the raptor survey. Bald eagles frequent the general area in the winter, but they are usually found roosting in trees at lower elevations, especially near water. No bald eagle nest sites are known to occur in the proposed addition to the permit area.

The Fish and Wildlife Service has determined that water depletions in the Upper Colorado River Basin may affect certain threatened and endangered fish of this area. For this reason, they require a mitigation fee for water use in excess of 100 acre feet per year. As

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documented in Figure 7.28-20 in the application, annual water usage in the mine from 1985 to 1991 averaged about 41 acre feet. This includes losses from evaporation and water added to coal.

The amount of water used in conjunction with mining is not expected to increase substantially with addition of the Alkali Tract. In addition, as documented in the Probable Hydrologic Consequences document, there is little effect on surface water caused by use of water encountered in the mine. Nearly all of the water used in the mine is from perched aquifers not associated with surface flow. Therefore, since water use is less than 100 acre feet per year and since use is not expected to increase, no mitigation should be required.

Findings:

Information provided in the proposal meets all of the minimum regulatory requirements of this section.

It is unlikely the proposed permit revision would have any effect on any threatened, endangered, proposed or candidate species, including the threatened and endangered fish of the Upper Colorado River Basin.

HISTORIC AND ARCHAEOLOGICAL RESOURCE INFORMATION

Regulatory Reference: R645-301-412.140

Analysis:

The application includes no new historic or archaeological resource information. A cultural resource evaluation of most of the area proposed to be included in the permit area

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was previously included in the plan. Two isolated artifacts were discovered in the evaluation, but these were not considered significant. Based on the lack of sites and no above-ground disturbance, the Division of State History concurred with issuing the permit for the Alkali Incidental Boundary Change.

The cultural resource survey included most, but not all, of the area proposed to be added to the permit area. The west half of Section 10, Township 13 South Range 11 East, was not included in the survey. This area includes the bottom of Coal Creek Canyon and the Knight Ideal Mine which could theoretically contain cultural resource sites. However, according to Exhibit 5.21-5, the applicant plans no surface or subsurface activities in this area.

Based on the information in the plan and the fact that no mining is proposed for the area that was not surveyed, the Division should recommend that the Division of State History give its clearance for mining the area.

Findings:

Information regarding the requirements of this section of the regulations was found to meet the minimum regulatory requirements. Based on the information in the plan and the fact that no mining is proposed for the area that was not surveyed, the Division should recommend that the Division of State History give its clearance for mining the area. Additional cultural resource information will be required if the applicant proposes to mine in the west half of Section 10, Township 13 South Range 11 East.

GEOLOGIC RESOURCE INFORMATION

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

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Analysis:

The Alkali Tract Significant Revision contains no additional information for Chapter 6 - Geology except that maps have been expanded to include the additional area. A summary of hydrogeology is included on pages 7-94 through 7-135 in the PHC determination. Geologic information in the existing MRP is sufficient to assist in: determining the probable hydrologic consequences of the operation upon the quality and quantity of surface and ground water in the permit and adjacent areas, including the extent to which surface- and ground-water monitoring is necessary; determining all potentially acid- or toxic-forming strata down to and including the stratum immediately below the coal seam to be mined; determining whether reclamation can be accomplished and whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area; and, preparing the subsidence control plan.

Geologic information in the Alkali Tract Significant Revision and in the currently approved MRP includes a description of the geology of the proposed permit and adjacent areas down to and including the deeper of either the stratum immediately below the lowest coal seam to be mined or any aquifer below the lowest coal seam to be mined which may be adversely impacted by mining. Geologic cross sections and maps of areal geology and coal seam thickness have been updated to include the Alkali Lease Addition. The geology map does not indicate strike-and-dip or other features of structural geology. The map showing the thickness of rock between the Rock Canyon and Gilson seams has been reduced to simply indicate where the interburden is more than or less than thirty feet; because thirty feet is a widely accepted limit for mining in overlying or underlying seams, this map is adequate for indicating areas where only one of the two seams can be mined.

In no portion of the Soldier Canyon Mine permit area, the proposed Alkali Lease Addition, and adjacent areas are the strata down to the coal seam to be mined to be

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removed. The strata down to the coal seam to be mined are exposed at outcrops in and adjacent to these areas. No new samples have been collected and analyzed from test borings; drill cores; or fresh, unweathered, uncontaminated samples from rock outcrops for the Alkali Tract Significant Revision to the Soldier Canyon Mine MRP.

Collection, analysis, and description of additional geologic information has been determined not to be necessary to protect the hydrologic balance, to minimize or prevent subsidence, or to meet the performance standards.

Findings:

Geologic information for the Alkali Tract Significant Revision to the Soldier Canyon Mine MRP is complete and accurate except for the following deficiency:

- 1) Strike-and-dip, faults, and other structural geology features are not shown on the geology map - Map 6.22-7.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-720.

A coal mine permit application has been submitted to the Utah Division of Oil, Gas, and Mining (DOG M) by Coastal States Energy Company for the Dugout Canyon Mine, to be located southeast of the current Soldier Creek mine permit area. The Dugout Canyon permit application includes roughly the area covered by a previous mine permit issued to Sunedco for the Sage Point/Dugout Canyon Mine. A CHIA is being prepared that will include the Soldier Canyon and Dugout Canyon Mines.

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The Alkali Tract Significant Revision contains a new Chapter 7 on hydrology to replace Chapter 7 in the currently approved plan. It follows the same format as the current Chapter 7 but contains a large number of additions and revisions.

Sampling and analysis

Analysis:

Sampling and analysis is addressed on page 7-2, Section 7.23. This section states that analysis will be completed based on either "Standard Methods for the Examination of Water and Wastewater" or 40 CFR parts 136 and 434, when feasible. This statement in the Alkali Tract Significant Revision is not strictly true: except for tritium determination, methods to determine isotopic content of water are not covered by "Standard Methods for the Examination of Water and Wastewater" or the methodology in 40 CFR Parts 136 and 434. Tritium was determined at the University of Miami Tritium Laboratory using electrolytic enrichment and low level counting rather than the method in "Standard Methods for the Examination of Water and Wastewater". However, tritium data in the Alkali Tract Significant Revision are not used to determine water quality so do not fall under the requirements of R645-301-723.

Field measurements have been conducted with instruments calibrated according to manufacturers recommendations.

Findings:

The applicant has met the minimum requirements for surface-water sampling and analysis.

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Baseline information.

Ground water information.

A description of the ground water system is found in section 7.24.1 beginning on page 7-3 of the Alkali Tract Significant Revision.

Culinary and sanitary water for the mine is hauled in by truck. The Alkali Tract Significant Revision does not identify any water supply wells in the permit or adjacent areas. Only two water rights in Table 7.24-2 appear to involve possible pumping of ground water from the subsurface, 4124 in Section 28, T. 12 S., R. 12 E. (issued to Barnard Iriat for domestic, irrigation, and stockwatering use and located approximately one mile north of the northeast corner of the permit area) and 203 in Section 18, T 12 S., R. 12 E. (issued to California Portland Cement Company for industrial use and located near the Soldier Creek Mine). Water right 203 is apparently not being used by the mine and the status of use of water right 4124 is unknown.

Plate 1 shows the locations for twenty-four monitoring or observation wells discussed in current mine plans or permit submittals. UG-1 and UG-2 were constructed for the investigation for the design of the UG ventilation shaft and have been abandoned. At least five of the wells have been drilled from within the Soldier Canyon Mine down to or through the Gilson seam to monitor water levels in the regional aquifer (Appendix 7-I, Soldier Canyon MRP). MW-1C, MW-1M, MW-2M, and MW-3M have been used to monitor water quality at the proposed waste rock disposal site that is no longer in the mine plan.

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The current status of several wells is unclear. DM1, DM2, DM3, DM4, and 18-1 appear to be mine water discharge points rather than wells. Accessibility and functionality of most in-mine wells is not discussed .

On pages 54 and 62 of Appendix 7M, reference is made to the rapid loss of production capacity in wells #1 and #2. There is no further information on these two wells in the Alkali Tract Significant Revision.

The only water quality monitoring wells are the four located at the previously proposed waste rock disposal site. Locations are shown on Exhibit 7.21-1, but the symbol for these wells is mislabeled in the map legend. Also, springs CC-36 and CC-40 are marked as surface water monitoring points on Exhibit 7.21-1.

Exhibit 7.21-1 in the Alkali Tract Significant Revision shows spring CC-53, which is not listed in Table 7.24-1, in the extreme southwest corner of Section 31, T. 12 S., R. 12 E. (31ccc). According to Table 7.31-1, CC-53 is supposed to be the same as Spring 5, which is in Section 1, T. 13 S., R. 11 E. according to Exhibit 7.21-1 of the current Soldier Canyon Mine MRP and Table 7.24-1. (According to Table 7.24-1 this spring was identified as spring 55 in the Sage Point/Dugout Canyon Mine MRP.) The location and identification of springs 5 and CC-53 need to be clarified in Table 7.24-1 and shown correctly on Exhibit 7.21-1 of the Alkali Tract Significant Revision. For clarity, one name should be used consistently unless there is some reason or justification for changing the name.

Table 7.24-1 lists locations and elevations of 24 springs located in the permit and adjacent areas, including two not identified in the current MRP (#23 and #24). Locations of three of the springs (four if CC-53 is the same as spring 5) are on the new Exhibit 7.21-1 submitted with the Alkali Tract Significant Revision, but the other twenty-one (twenty if CC-53 is the same as spring 5) are not shown on the new map. Table 7.24-1 indicates five (four

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if CC-53 is the same as spring 5) of the springs not shown on Exhibit 7.21-1 are ground water monitoring sites. Exhibit 7.21-1 in the current MRP shows the locations of all twenty-two springs listed in Table 7.24-1 of the current MRP.

On page 7-50 of the PAP, three springs in the Coal Creek drainage are mentioned and Exhibit 7.21-1 and Table 7.24-1 are referenced for location and other information. Neither Exhibit 7.21-1 nor Table 7.24-1 contain any information on springs located in the Coal Creek drainage.

Appendix C in Appendix 7M lists thirty springs in and adjacent to the Alkali Tract Significant Revision area. Only CC-36, CC-40, and CC-53 are marked on Exhibit 7.21-1.

In addition to Exhibits 7.21-1 and 7.21-2, Exhibit 7.24-1 (p. 7-2 and Table 7.28-1) and 7.24-2 (Table 7.28-1) are also referenced for information on surface and ground water occurrence and surface and ground water monitoring stations in and adjacent to the permit area. No Exhibit 7.24-1 is found the Alkali Tract Significant Revision or in the current MRP.

Spring 10 has been identified in different studies as issuing from the Blackhawk, North Horn, and Price River Formations (pages 7-113 and 7-114). Plate 6.22-7 identifies the site of spring 10 as in the middle of the North Horn Formation. The uncertainty of the surface geology associated with this spring is acknowledged on page 7-114. Water chemistry and isotopic data are interpreted as indicating that the water flows several hundred feet upwards from the Blackhawk Formation along a fault and mixes with recent surface water from Soldier Creek or with recently recharged, shallow ground water. There is no fault mapped. Also, there is no identified source for an upward gradient from the Blackhawk Formation to the surface; such flow would be in opposition to the regional gradient described elsewhere in the Alkali Tract Significant Revision (I. e., page 58 Appendix 7M).

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Baseline information on surface and ground water includes data from Sunedco's Sage Point/Dugout Canyon MRP and SCCC's Soldier Canyon MRP. Collection of water quality data in the area for purposes of coal mine permitting began in 1976. Additional data were collected by Mayo and Associates in 1995 for the Alkali Tract Significant Revision. Water quality data have been collected from streams, springs, mine sumps, in-mine discharges, and drill holes. Other sources of information on geology and hydrology of the area include USGS investigations and unpublished theses.

Appendix 7M, part of the Alkali Tract Significant Revision, is titled "Investigation of surface and ground water systems in the vicinity of the Soldier Canyon Mine, Carbon County, Utah" and was prepared by Mayo and Associates. This appendix contains a PHC determination for the Alkali and Dugout Creek Tracts and recommendations for surface and ground water monitoring. This report contains a summary of discharge, temperature, solute composition, trace metal analysis, and dissolved oxygen data from several water quality studies. TSS, TDS, specific conductance corrected to 25 degrees C, pH, and total iron are reported for many samples. Manganese concentrations are also reported, but concentrations for total manganese, required by statute, are not given in this appendix nor elsewhere in the Alkali Tract Significant Revision or Soldier Canyon Mine MRP.

Appendix 7M includes data from as early as 1976 for springs 4, 5, 8, 10, 14, 15, 17, 18, 19, 20, 21, and 22 and for surface water monitoring points G-1, G-2, G-3, G-4, and G-5. Data for springs 1, 2, 3, 6, 9, 11, 12, 13, and 16 consist of one sample or observation at each site during the summer of 1976. No data are included for springs 7, 23, and 24 or for surface water monitoring points G-6 through G-10, all of which are listed in Table 7.24-1. Appendix 7M also contains: data on spring discharges that are based on an unidentified 1982 USGS study and a 1993-1994 seep and spring survey by Environmental Industrial Services (EIS); data on water discharged from the UPDES points; and data on water from in-mine discharges.

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Table 7.24-2 gives permitted quantity and use for surface and ground water on which a water right has been filed.

Table 7.24-1 identifies water level monitoring wells and lists wells 5-1, 10-2, and 32-1 as currently monitored for water levels. Exhibit 7.21-1 shows locations of wells currently monitored for water level: it shows well 6-1 in addition to the 5-1, 10-2, and 32-1. Well 6-1 has recently experienced casing failure or blockage (p. 7-30), yet is proposed as one of three wells to be monitored under the Alkali Tract Significant Revision (Table 7.31-1, p. 7-157). Table 7 of Appendix 7M gives water level data for all four wells. Well 10-2 is screened in the Castlegate Sandstone, wells 6-1 and 10-2 are screened in the Blackhawk Formation, and well 5-1 is screened in the Sunnyside and Rock Canyon coal seams of the Blackhawk Formation.

Locations of previously monitored wells listed in Table 7.24-1 are not shown on Exhibit 7.21-1. Other than being listed in Table 7.24-1, there is no information on wells SC-8, SC-1, and 18-1. Well 11-2 is listed in Tables 7.24-1 and 7.24-4 but there is no other information on well 11-2 in the Alkali Tract Significant Revision. Well 11-2 is not shown on Exhibit 7.21-1, contrary to the statement in Table 7.21-4. On Exhibit 7.21-1 of the current Soldier Canyon Mine MRP wells DM 1, 2, 3, and 4 are described as having been destroyed by ventilation shaft construction. Their destruction is not mentioned in the text, in Table 7.24-1, or on Exhibit 7.21-1 of the Alkali Tract Significant Revision.

Rocks in the permit and adjacent area are described in the Alkali Tract Significant Revision. They are dominantly sandstones, siltstones, and shales of marine and continental origin. Although all these can be water-bearing, sandstone is the principle water-bearing rock. Sandstone bodies are generally lenticular and discontinuous, separated and surrounded by low permeability shale and mudstones. Aquifers in these sandstones are poorly understood and difficult to quantify.

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Water levels measured in monitoring wells in the Soldier Canyon Mine area do not show evidence of a consistent piezometric surface. However, wells in areas east of the Soldier Canyon Mine indicate a mappable piezometric surface in the Castlegate Sandstone. In the Sage Point/Dugout Canyon Mine MRP it was concluded that in the area covered by that MRP, regional ground water movement is north to northwest with a gradient estimated to be slightly less than the dip of the strata. The regional water table is above the coal seams in at least part of the area to be mined. Average linear velocity is apparently less than 10 feet/year.

Water levels in the monitoring wells have not varied seasonally. Water levels in well 5-1 declined ninety-two feet from 1987 to 1995. Well 10-2 declined only ten feet over the same period. There was a decline of twenty-nine feet in well 6-1 from 1990 to 1993, at which time the well was found to be blocked, probably from casing collapse. The water level in well 32-1 rose thirty-four feet from 1990 to 1995. On page 7-30, the descriptions of water level changes in wells 5-1 and 10-2 are switched in comparison to what is given in Figure 7.24-3 of the Alkali Tract Significant Revision and Figure 17 and Table 7 in Appendix 7M.

The volume of ground water stored within the rocks above the Gilson seam in the Soldier Canyon Mine area is estimated to be 490,000 acre-feet (p. 7-28). Discharge to springs in the Soldier Canyon Mine area and underflow moving out of the Soldier Canyon Mine area are estimated on page 7-33. Inflows of water are common at working faces within the mine. Flows, at times large flows, occur from some fractures intercepted by mining. These inflows are consistent with the characterization of the Blackhawk Formation being saturated in most areas. Inflows at mining faces generally stop flowing within a few days and flows from fractures tend to diminish substantially over time, indicating either perched conditions or low recharge rates. Consumption, evaporation, and discharge volumes for 1985 - 1991 are on page 7-153. Recharge is estimated to be 742 acre-feet per year (p. 7-64) and proposed mining activities are expected to intercept an average of 460 acre-feet of ground water per

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year. It is unclear if ground water recharge, consumption, and storage estimates have been updated to include the Alkali Tract Significant Revision.

Unconfined ground water occurs in alluvial deposits along canyon bottoms. These deposits are generally thin and small in areal extent. Water in alluvium will generally move towards the axis of the canyon and down gradient along the axis.

Water rights are listed in Table 7.24-2 and mapped on Map 7.21-2. Water rights information includes usage, source, and location. Seasonal use and quantity vary significantly over the year. There is little use of spring or surface flows during the winter, but stockwatering consumes considerable water during the summer. Only two water rights, 4124 in Section 28, T. 12 S., R. 12 E. (issued to Barnard Iriat and located approximately one mile north of the northeast corner of the permit area) and 203 in Section 18, T 12 S., R. 12 E. (issued to California Portland Cement Company and located near the Soldier Creek Mine) appear to involve possible pumping of ground water from the subsurface. Water right 203 is apparently not being used by the mine and the status of use of water right 4124 is not indicated in the Soldier Canyon Mine MRP or Alkali Tract Significant Revision. Possible impacts of mining on water use will probably be limited to interactions between surface water and ground water.

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Findings:

The Alkali Tract Significant Revision meets the minimum requirements for baseline ground water resource information except for the following deficiencies:

R645-301-121, -724.100, -722.400 -- Status (appropriated, active beneficial use, abandoned, etc.) of water rights 203 and 4124 for appropriation of ground water, presumably by wells, is unclear from information on water rights and wells in the Alkali Tract Significant Revision.

R645-301-121, -722, -722.300, -724.100, -731.211 -- The location of the spring labeled CC-53 on Exhibit 7.21-1 of the Alkali Tract Significant Revision does not match the location of spring 5 (which is identified as the same spring in Table 7.31-1) given in Table 7.24-1 and shown on Exhibit 7.21-1 of the current Soldier Canyon Mine MRP.

R645-301-121 -- The re-labeling of spring 5 to CC-53 is confusing and without apparent reason or purpose.

R645-301-121, -722, -722.300, -724.100, -731.211 -- Only three (possibly four-see previous deficiency concerning spring 5) of the twenty-four springs listed in Table 7.24-1 are shown on Exhibit 7.21-1. Locations of five (or four) of the eight springs listed as ground water monitoring sites have been left off the map.

R645-301-121, -724.100 -- Neither Exhibit 7.21-1 nor Table 7.24-1 contain any information on the three springs in the Coal Creek drainage that are discussed on page 7-50 of the Alkali Tract Significant Revision.

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R645-301-121, -724.100 -- Appendix C in Appendix 7M lists thirty springs in and adjacent to the Alkali Tract Significant Revision area. Only CC-36, CC-40, and CC-53 are marked on Exhibit 7.21-1.

R645-301-121, -722.300, -724.100 -- The reference on p. 7-2 and Table 7.28-1 to Exhibits 7.24-1 and 7.24-2 for information on surface and ground water occurrence in and adjacent to the permit area is not clear. There is no Exhibit 7.24-1 nor 7.24-2 in the current MRP or Alkali Tract Significant Revision.

R645-301-121, -724.100 -- Concentrations for total manganese, required by statute, are not given in Appendix 7M nor elsewhere in the Alkali Tract Significant Revision.

R645-301-121, -724.100 -- Locations of the water quality monitoring wells at the previously proposed waste rock disposal site are shown on Exhibit 7.21-1, but the symbol for these wells is mislabeled in the map legend.

R645-301-121, -722.300 -- Springs CC-36 and CC-40 (page 7-157 and Appendix 7M - C) are marked as surface water monitoring points on Exhibit 7.21-1.

R645-301-121, -722.300 -- Well 11-2 is listed in Tables 7.24-1 and 7.24-4 but it is not shown on Exhibit 7.21-1 and there is no other information on well 11-2 in the Alkali Tract Significant Revision.

R645-301-121, -724.310, 728, 731.214 -- It is unclear if spring discharge, underflow, ground water recharge, consumption, and storage volumes given on pages 7-28, 7-33, 7-64, and 7-153 (Figure 7.28-20) have been updated to

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include the area of the Alkali Tract Significant Revision and to account for actual and projected coal production.

R645-301-121, -724.100 -- On page 7-30, the descriptions of water level changes in wells 5-1 and 10-2 are switched in comparison to what is given in Figure 7.24-3 and Figure 17 and Table 7 in Appendix 7M.

R645-301-121 -- No baseline or operational data are included in the Alkali Tract Significant Revision for springs 7, 23, and 24, all of which are listed in listed in Table 7.24-1.

R645-301-121 -- On pages 54 and 62 of Appendix 7M, reference is made to the rapid loss of production capacity in water production wells #1 and #2. There is no further information on these two wells in the Alkali Tract Significant Revision.

R645-301-121 -- For Spring 10, there is no fault mapped that could carry ground water several hundred feet upwards from the Blackhawk Formation. Also, there is no identified source for an upward gradient from the Blackhawk Formation to the surface, which would be in opposition to the regional gradient described elsewhere in the Alkali Tract Significant Revision.

R645-301-121 -- There are no baseline data for springs CC-36 and CC-40.

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Surface-water information

Analysis:

Surface-water baseline information is addressed in Section 7.24.2 on pages 7-43 to 7-51. This section is predominantly information for the original permit application but has been revised as part of the Alkali Lease amendment. Additional data were collected by Mayo and Associates in 1995 for the Alkali Tract Significant Revision.

The proposed life of mine (LOM) area shown on Exhibit 7.21-1 contains 6,641 acres of the Soldier Creek watershed according to the text on page 7-46. It appears that this LOM acreage figure has not been updated to include the Alkali Tract Significant Revision.

The regional hydrology report begins on page 7-44. In this section SC3 discusses waters in the Book Cliffs to the Price River down to its confluence with the Green River. Much of the water data reported in this section comes from Waddell, et. al, 1981. Collection of water quality data in the area for purposes of coal mine permitting began in 1976. Baseline information on surface water includes data from Sunedco's Sage Point/Dugout Canyon MRP and SCCC's Soldier Canyon MRP.

The head water of the Price River and Green River tend to have excellent water quality but deteriorate rapidly down stream. Geologically, shale areas contribute the greatest amount of sediment to the stream flow.

The life-of-mine (LOM) surface water hydrology is found beginning on page 7-46. Exhibit 7-46 shows the LOM area. The LOM area delineated on Exhibit 7-46 and the area of data collection by the Mayo and Associates report (Appendix 7M, Plate 1) are different. The Mayo Report does not include mining under the Coal Creek valley. This may significantly

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change the amount and type of data collected and the way in which collected data was analyzed.

Streams, lakes, ponds, and springs are shown on Exhibits 7.21-1 and 7.21-2. USGS topographic quadrangles show Soldier and Coal Creeks and several of their tributaries as perennial streams. Exhibits 7.21-1 and 7.21-2 make no distinction as to whether streams are perennial, intermittent or ephemeral.

Anderson Reservoir is located near the LOM area but no mining is to be done under or close to the reservoir. This is the only significant water body in the area. The average precipitation in the LOM area is 12 to 16 inches.

Exhibit 7.21-1 incorrectly indicates NPDES discharge point 006, at the south end of the Proposed Refuse Disposal Site in Section 36, T. 13 S., R. 11 E., is a spring. Also, springs CC-36 and CC-40 are incorrectly marked as surface water monitoring points.

Soldier Creek is addressed beginning on page 7-47; and Pine Creek on page 7-48. Data for Soldier Creek comes from a U.S. Geological Survey station (09-3139.75) located just down stream from the mine's surface facilities, and from a station established by SC3 (G-1) upstream from the LOM area. The records for the USGS station found in Appendix 7-I, Table I-2. Soldier Creek between these two stations is perennial. Stations G-2 and G-3 were established by SC3 on Pine Creek to monitor water quantity and quality. The characteristic of this stream is intermittent to perennial. Data is included in Appendix 7-I, Table I-3.

Springs in the LOM area including the Alkali Tract are addressed beginning on page 7-50. A total of 24 springs have been identified within the LOM area. Three of which are in that area of the new Alkali lease. Location and information about the springs can be found on Exhibit 7.21-1 and in Table 7.24-1. Six of the springs will be monitored under the permit,

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including two that will be part of the Alkali tract. Sections 7.28 and 7.31.2 provide details about the monitoring plan.

Findings:

The surface water information is complete and accurate except for the following deficiencies:

R645-301-121, -724.200 -- SC3 must include surface water information for the Coal Creek area. This includes Coal Creek quantity and quality information and spring and seep information.

R645-301-121, -722.300, -731.222 -- Table 7.24-1 lists surface water monitoring sites G-1, G-3, and G-4 that are not shown on Exhibit 7.21-1.

R645-301-121, -724.100 -- Concentrations for total manganese, required by statute, are not given in Appendix 7M nor elsewhere in the Alkali Tract Significant Revision.

R645-301-121, -722.300 -- Exhibit 7.21-1 indicates NPDES discharge point 006, at the south end of the Proposed Refuse Disposal Site in Section 36, T. 13 S., R. 11 E., is a spring.

R645-301-121 -- It appears that the figure of 6,641 acres given as the area of the proposed LOM area on page 7-46 has not been updated to include the Alkali Tract Significant Revision.

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R645-301-121, -724.200 -- No baseline or operational data are included in the Alkali Tract Significant Revision for surface water monitoring points G-6 through G-10, all of which are listed in listed in Table 7.24-1.

R645-301-121, -724.200 -- Exhibits 7.21-1 and 7.21-2 make no distinction as to whether streams are perennial, intermittent or ephemeral.

Climatological information

Analysis:

According to Section 7.24.4 climatological data are summarized on page 7-64.

Findings:

The climatological information is complete and accurate.

Baseline cumulative impact area information.

Analysis:

Section 7.25, page 7-74 provides information about the baseline cumulative impact area.

The Cumulative Hydrologic Impact Assessment (CHIA) of Soldier Creek Coal Company's Soldier Canyon Mine operations in Carbon County, Utah was updated by DOGM

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in October 1996, to include the Alkali Tract Significant Revision . The updated CHIA encompasses the probable cumulative impacts of all anticipated coal mining activities associated with the Soldier Canyon Mine on the hydrologic balance and whether the actual and proposed operations have been designed to prevent damage to the hydrologic balance outside the mine permit areas. Hydrologic and geologic information necessary to assess the probable cumulative hydrologic impacts of the proposed operation and all anticipated mining on surface and ground water systems in the Cumulative Impact Area (CIA) has been obtained from appropriate federal or state agencies and provided by the applicant. No adverse impacts on surface- and ground-water systems are anticipated from the proposed operations.

A separate CHIA was prepared in 1984 for the adjacent Sage Point-Dugout Canyon Mine, which was permitted but never developed. In March 1996, a new Permit Application Package (PAP) for a Dugout Canyon Mine was submitted by Coastal States Energy Company, owner of the Soldier Canyon Mine. The new Dugout Canyon Mine permit area includes roughly the west half of the Sage Point-Dugout Canyon permit area. A new CHIA that will cover both the Soldier Canyon and Dugout Mines is being prepared by DOGM.

The CHIA complies with federal legislation passed under the Surface Mining Control and Reclamation Act (SMCRA) and subsequent Utah and federal regulatory programs under R645-301-729 and 30 CFR 784.14(f), respectively.

Findings:

The baseline cumulative impact area information is complete and accurate.

Modeling

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Numerical modeling of ground water flow was done for an idealized fifty-foot thick sandstone aquifer underlying the Rock Canyon coal seam and dipping 8° to the north-northeast. GWSIM-II was the numerical simulation model used. The model indicated that the principle flow directions are: 1) in the direction of dip, and 2) toward Soldier Creek. No interpolation or statistical techniques have been included as part of the Alkali Tract Significant Revision or the Soldier Canyon Mine MRP.

Findings:

The Alkali Tract Significant Revision meets the minimum requirements for information on modeling.

Alternative water source information

Analysis:

Alternative water source information is found in Section 7.27 on pages 7-74 and 7-75. This section states that there is little potential for harm to other water users. Most water users in the area are supplying stock water with the exception of an irrigation diversion on Soldier Creek downstream from the mine. No surface coal mining has occurred or is propose as part of the Soldier Canyon Mine therefore the alternative water source regulation does not directly apply to this mine.

Findings:

The applicant has met the minimum requirements for alternative water source information.

Probable hydrologic consequences determination

Analysis:

The PHC determination is found in section 7.28 beginning on page 7-75. A report by Mayo and Associates, including a partial PHC determination, can be found in Appendix 7M. Pages 7-84 to 7-142 are dedicated to groundwater systems while pages 7-143 and 7-144 cover stream flows. Acid and toxic forming materials are discussed in Section 7.28.32 on page 7-145. A discussion of impacts of mining and reclamation operations begin on page 7-145, Section 7.28.33. Conclusions are drawn on page 7-152, Section 7.28.34.

Previous assessments of probable hydrologic consequences to the quantity and quality of ground water were based on 1) determining likely directions of ground water flow; 2) identifying locations of potential contaminant sources; and, 3) examining likely responses of the ground water systems to contamination. The Alkali Tract Significant Revision has added analyses of 4) solute and isotopic composition of surface and ground water data; 5) surface and ground water discharge data; and, 6) a re-evaluation of geologic data to determine surface and ground water interactions.

The PHC determination is based on baseline hydrologic, geologic, and other information collected for the Soldier Canyon Mine and the Alkali Tract Significant Revision. The area of investigation for the PHC determination extends from the uppermost pediment areas of the Mancos Shale on the south (base of the Book Cliffs) to the headwaters of the principal drainages on the north (base of the Roan Cliffs), and extends from the Coal Creek drainage on the west to the Pace Canyon drainage on the east. These features are shown on Figures 7.28-1 and 7.28-3, but these figures do not show the correct outline of the Alkali Tract Significant Revision.

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The PHC contains determinations that adverse impacts to the hydrologic balance will not occur and mining will not affect ground water discharge or solute composition of any spring. Toxic-forming materials that are present in mine discharge water have remained within discharge limits. Discharge waters have historically been alkaline and there are adequate carbonate minerals to neutralize potentially available acid. Monitoring of discharges from the mine indicate that sediment control measures are effective in controlling sediment yield from currently disturbed areas, and there will be no additional disturbed areas associated with the Alkali Tract.

The PHC thoroughly addresses the groundwater resources and systems; however, the surface-water resources are skimmed over without much analysis as to the existing resources or the effects that mining in the Soldier Canyon Mine, including the Alkali Tract, will have on those resources. The PHC does address springs and seeps as part of the groundwater systems but streamflow in Soldier Creek and Coal Creek and their tributaries is minimized in the discussion except for a statement that much of the summer flow in Soldier Creek is due to mine effluent. The potential negative effect from this increased stream flow is passed over without analysis.

Findings:

The applicant has met the minimum requirements for probable hydrologic consequences except for the following deficiency:

R645-301-728.333 - The applicant must consider how increased flow volumes in the low flow months will effect downstream geomorphology and vegetation. Further, the applicant must analyze the effects of mining on flow and water quality in the Coal Creek watershed.

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R645-301-121-- Figures 7.28-1 and 7.28-3 do not show the correct outline of the Alkali Tract.

Ground water monitoring plan

The ground water monitoring plan is based upon the PHC determination and the analysis of all baseline hydrologic, geologic, and other information in the Alkali Tract Significant Revision and current Soldier Canyon Mine MRP. Soldier Creek Coal Company interprets this information (page Appendix 7M-70) as indicating that:

- 1.) Ground water systems in the Flagstaff and North Horn Formations operate independently of the ground water system in the Blackhawk Formation;
- 2.) Temporal variability of flow in springs issuing from the Flagstaff and North Horn Formations is due to annual variations in precipitation; and,
- 3.) Mining will not affect ground water systems in the Flagstaff and North Horn Formations.

Table 7.24-1 lists twenty-four spring monitoring sites, including two new ones, and data from most of these sites are in the appendices. Only six spring monitoring sites are shown on Exhibit 7.21-1.

Recommended monitoring locations are listed in Table 7.31-1 (page 7-157) and shown on Exhibit 7.21-1. Table 7.31-2 outlines the recommended protocol for field and laboratory measurements, and Table 7.31-3 lists the recommended parameters for ground water quality monitoring. Purpose of the water quality monitoring program is to verify the three assumptions given above, to identify potential impacts of coal mining operations on the hydrologic balance, and to provide information to the Utah Division of Water Quality if impacts to water sources occur (pages 7-155 and Appendix 7M-70).

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Wells 10-2 and 32-1 are recommended to be maintained as monitoring wells. Well 6-1 is recommended to be maintained as a monitoring wells if the blockage in the casing can be removed or opened. Soldier Creek Coal Company recommends that Well 5-1 no longer be monitored routinely because this well appears to be simply monitoring the slow infiltration of drilling fluid and slug-test water into the coal seam; however, recent, more rapid declines of the water level correlate with mining activities nearby. The monitoring plan does not include the option of continuing to monitor Well 5-1 if Well 6-1 cannot be made usable for monitoring. These wells will be monitored for water levels only. The four wells at the former waste rock disposal site are no longer to be monitored.

Springs 4, 5, 8, 10, CC-36, and CC-40 will be monitored quarterly for flow and field parameters. The quarterly and semi-annual water quality sampling schedule is tied to annual precipitation, but the explanation in Table 7.31-2 is unclear as to frequency of sampling.

The proposed monitoring plan eliminates four springs issuing from the Flagstaff Formation (3, 15, 18, and 21) from the current monitoring plan but adds CC-36, and CC-40, which issue from the Flagstaff Formation in or adjacent to the Alkali Tract. There are no baseline data for springs CC-36 and CC-40.

According to Table 7.31-1, monitoring of springs 4 and 8 will be discontinued one year following the end of mining in the vicinity of the spring. This is in addition to the proposed immediate elimination of monitoring of springs 3, 15, 18, and 21 in the same area. There are no discussion based on data in the Alkali Tract Significant Revision or Soldier Canyon Mine MRP indicating one year is sufficient time to determine that there have or have not been effects on springs from coal mining operations. One of the stated purposes of the ground water monitoring program is to verify that mining will not affect ground water systems in the Flagstaff and North Horn Formations. Cessation of monitoring of springs 4

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and 8 in the Flagstaff and North Horn Formations, respectively, after one year appears to be without basis and contrary to the stated purpose of the monitoring plan.

Total iron, dissolved iron, total manganese, and dissolved manganese will be determined for ground water samples from springs during the third quarter only, supposedly because spring flow during that quarter is the least effected by precipitation and runoff and therefore is most representative of actual ground water conditions. Water quality parameters in Table 7.31-3 match those in the May 23, 1995, DOGM directive except for total alkalinity and total hardness: pH's are high and dissolved metals low in the vicinity of the Soldier Canyon Mine so total hardness and alkalinity are not a critical water quality parameters.

Findings:

The Alkali Tract Significant Revision meets the minimum requirements for baseline ground water monitoring plan except for the following deficiencies:

R645-301-121, -722, -722.300, -724.100, -731.211 -- (Repeat) - Only three (possibly four-see previous deficiency concerning spring 5) of the twenty-four springs listed in Table 7.24-1 are shown on Exhibit 7.21-1. Locations of five (or four) of the eight springs listed as ground water monitoring sites have been left off the map.

R645-301-121, -724.100 -- (Repeat) - Appendix C in Appendix 7M lists thirty springs in and adjacent to the Alkali Tract Significant Revision area. Only CC-36, CC-40, and CC-53 are marked on Exhibit 7.21-1.

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R645-301-121, -724.100 -- (Repeat) - Concentrations for total manganese, required by statute, are not given in Appendix 7M nor elsewhere in the Alkali Tract Significant Revision.

R645-301-121 -- (Repeat) - No baseline or operational data are included in the Alkali Tract Significant Revision for springs 7, 23, and 24, all of which are listed in listed in Table 7.24-1.

Surface water monitoring plan.

The surface water monitoring plan is based upon the PHC determination and the analysis of all baseline hydrologic, geologic, and other information in the Alkali Tract Significant Revision and current Soldier Canyon Mine MRP.

Monitoring locations are listed in Table 7.24-1 and shown on Exhibit 7.21-1. Site G-10 has been added to monitor surface flow from the Alkali Tract. Table 7.24-1 lists monitoring sites G-1, G-3, and G-4 and data from these sites are in the Appendices, but their locations are not shown on Exhibit 7.21-1. Exhibit 7.21-1 shows the location for G-10 and Table 7.24-1 lists it but does not give its location. Comparing Exhibit 7.21-1 from the Alkali Tract Significant Revision with that from the current Soldier Creek Mine MRP, it appears that G-4 and G-7 are the same, and Table 7.24-1 gives the same location for these two sites. Comparison of the two maps also indicates that G-3 and G-9 are the same, but the locations

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identified in Table 7.24-1 are not the same for the two sites; the location for G-9 in Table 7.24-1 is apparently incorrect as the given location would be several hundred feet north of Pine Creek. If G-3 is the same as G-9 and G-4 is the same as G-7, this is a potential source for confusion and there is no explanation or justification in the Alkali Tract Significant Revision as to why G-3 and G-4 have been given these new names. Furthermore, locations described in Table 7.24-1 do not agree with locations shown on proposed Exhibit 7.21-1 for G-2, G-5, G-6, and G-8, but only G-8 is off significantly.

Findings:

The Alkali Tract Significant Revision meets the minimum requirements for baseline surface water monitoring except for the following deficiencies:

R645-301-121, -722.300, -731.222 -- (Repeat) - Table 7.24-1 lists surface water monitoring sites G-1, G-3, and G-4 that are not shown on Exhibit 7.21-1.

R645-301-121, -724.100 -- (Repeat) - Concentrations for total manganese, required by statute, are not given in Appendix 7M nor elsewhere in the Alkali Tract Significant Revision.

R645-301-121 -- (Repeat) - No baseline or operational data are included in the Alkali Tract Significant Revision for springs 7, 23, and 24 or for surface water monitoring points G-6 through G-10, all of which are listed in Table 7.24-1.

R645-301-121 -- (Repeat) - Exhibits 7.21-1 and 7.21-2 make no distinction as to whether streams are perennial, intermittent or ephemeral.

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MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

Cross sections, maps, and plans included in the Alkali Tract Significant Revision as required by this section have been prepared by, or under the direction of, and certified by a qualified, registered, professional engineer.

Coal Resource and Geologic Information Maps

Analysis:

Geologic information in the Alkali Tract Significant Revision and in the currently approved MRP includes geologic cross sections and maps of areal geology and coal seam thickness that have been updated to include the Alkali Lease Addition. The geology map does not indicate strike-and-dip, faults, or other features of structural geology. The map showing the thickness of rock between the Rock Canyon and Gilson seams has been reduced to simply indicate where the interburden is more than or less than thirty feet; because thirty feet is a widely accepted limit for mining in overlying or underlying seams, this map is adequate for indicating areas where only one of the two seams can be mined.

Findings:

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The Alkali Tract Significant Revision meets the minimum requirements for coal resource and geologic information maps.

Monitoring Sampling Location Maps

Analysis:

It appears that no new test borings or core samplings have been done for the Alkali Tract Significant Revision. Information on elevation and locations of test borings and core samplings is not included in the Alkali Tract Significant Revision. This information should be in the current Soldier Canyon Mine MRP. Water monitoring and sampling location are shown on Exhibit 7.21-1. Deficiencies are discussed under "Hydrologic Resource Information - Baseline Information".

Findings:

The Alkali Tract Significant Revision meets the minimum requirements for subsurface water resource sampling location maps except for the related deficiencies discussed under "Hydrologic Resource Information - Baseline Information" and the following:

R645-301-121, -724.100 -- It is not clear from the water rights (Table 7.24-2) or other information in the Alkali Tract Significant Revision, including maps or plans, if there are water wells, active or abandoned, associated with water rights 203 and 4124.

R645-301-121, -722, -722.300, -724.100, -731.211 -- (Repeat) - The location of the spring labeled CC-53 on Exhibit 7.21-1 of the Alkali Tract Significant

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Revision does not match the location of spring 5 (which is identified as the same spring in Table 7.31-1) given in Table 7.24-1 and shown on Exhibit 7.21-1 of the current Soldier Canyon Mine MRP.

R645-301-121, -724.100 -- (Repeat) - Appendix C in Appendix 7M lists thirty springs in and adjacent to the Alkali Tract Significant Revision area. Only CC-36, CC-40, and CC-53 are marked on Exhibit 7.21-1.

R645-301-121, -722.300, -731.222 -- (Repeat) - Table 7.24-1 lists surface water monitoring sites G-1, G-3, and G-4 that are not shown on Exhibit 7.21-1.

R645-301-121, -724.100 -- (Repeat) - Locations of the water quality monitoring wells at the previously proposed waste rock disposal site are shown on Exhibit 7.21-1, but the symbol for these wells is mislabeled in the map legend.

R645-301-121, -722.300 -- (Repeat) - Springs CC-36 and CC-40 (page 7-157 and Appendix 7M - C) are marked as surface water monitoring points on Exhibit 7.21-1.

R645-301-121, -722.300 -- (Repeat) - Well 11-2 is listed in Tables 7.24-1 and 7.24-4 but it is not shown on Exhibit 7.21-1 and there is no other information on well 11-2 in the Alkali Tract Significant Revision.

R645-301-121 -- (Repeat) - Soldier and Pine Creeks are described on pages 7-47 through 7-50, but there is no description or discussion for Coal Creek.

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Subsurface Water Resource Maps

Analysis:

No new maps of subsurface water resources are included in the Alkali Tract Significant Revision.

Findings:

Subsurface water resource maps are complete and accurate except for the related deficiencies discussed under "Hydrologic Resource Information - Baseline Information" and the following:

R645-301-121, -724.100 -- Water production wells #1 and #2 discussed on pages 54 and 62 of Appendix 7M are not shown on a map.

R645-301-121, -724.100 -- It is not clear from the water rights (Table 7.24-2) or other information in the Alkali Tract Significant Revision, including maps or plans, if there are water wells, active or abandoned, associated with water rights 203 and 4124.

Well Maps

Analysis:

There are no gas and oil wells within the proposed permit area. There are three natural gas exploration wells approximately one-half to one mile north of the Soldier Canyon

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Mine permit area that are not shown on maps in the Alkali Tract Significant Revision. On pages 54 and 62 of Appendix 7M, reference is made to the rapid loss of production capacity in water production wells #1 and #2. There is no further information on these two wells in the Alkali Tract Significant Revision. It is not clear from the water rights (Table 7.24-2) or other information in the Alkali Tract Significant Revision if there are water wells, active or abandoned, associated with water rights 203 and 4124. (R645-301-121, -724.100)

Findings:

The Alkali Tract Significant Revision meets the minimum requirements for well maps except for the related deficiencies discussed under "Hydrologic Resource Information - Baseline Information" and the following:

R645-301-121, -724.100 -- (Repeat) - Water production wells #1 and #2 discussed on pages 54 and 62 of Appendix 7M are not shown on a map.

R645-301-121, -724.100 -- (Repeat) - It is not clear from the water rights (Table 7.24-2) or other information in the Alkali Tract Significant Revision, including maps or plans, if there are water wells, active or abandoned, associated with water rights 203 and 4124.

OPERATION PLAN

FISH AND WILDLIFE PROTECTION PLAN

Regulatory Reference: R645-301-333

Analysis:

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No changes to the fish and wildlife protection plan were included with the Alkali Tract permit revision. The following provisions are included in the current mining and reclamation plan.

If significant subsidence occurs or is about to occur during the April to July period of any year, a nesting survey will be completed to determine if any nesting raptors are in the potential area of impact. Major earthwork and blasting will be avoided during certain hours in May and June. Any subsidence cracks which could cause injury or death to livestock or wildlife will be repaired.

It is very unlikely any critical big game or sage grouse range would be adversely affected by the proposed expansion to the mining operations. There are a few areas of critical sage grouse range that overlap the subsidence buffer zone in Sections 1 and 2 of Township 13 South, Range 11 East. However, even if subsidence does occur in these areas, there is little chance of it damaging a grouse nest.

In the southwest quarter of Section 12 and the southeast quarter of Section 11, Township 13 South, Range 11 East, there are four golden eagle nests identified on Drawing 3.10-2. These nests are all in areas where second mining is planned as shown on Exhibit 5.25-1. Although it is unlikely, these nests could potentially be damaged or destroyed if subsidence occurred. The applicant will need to follow through with its commitments to monitor nests during periods when subsidence could occur.

Findings:

Information regarding the requirements of this section of the regulations was found to meet the minimum regulatory requirements.

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RENEWABLE RESOURCE SURVEY

Analysis:

The Operator identified grazing and recreational uses as renewable resources in the Alkali tract. Private dirt roads in the Alkali tract have the potential for being damaged should subsidence occur.

Findings:

In the MRP the Operator has committed to mitigating any subsidence related damage. That commitment would apply to all permitted lands.

SUBSIDENCE CONTROL PLAN

Analysis:

The Operator has not commented on how subsidence will be monitored in the Alkali tract. In the MRP he states that subsidence monitoring will consist of ground surveys when practical. Once the area becomes too large to be ground surveyed practically aerial, surveys will be used. There is no information on how the Alkali tract will be monitor for subsidence activities. Information on subsidence monitoring must include the location and types of control monuments.

While the Operator does not anticipate subsidence, the Division is concerned by the close proximity of panels to the permit boundaries. The Division wants to monitor

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subsidence on the panels located next to the permit boundaries. Should subsidence be detected the Operator would be required to mitigate the situation.

The Alkali Tract Significant Revision contains no additional information for Chapter 6 - Geology except that maps have been expanded to include the additional area. Geologic information in the Alkali Tract Significant Revision and in the currently approved MRP includes a description of the geology of the proposed permit and adjacent areas down to and including the deeper of either the stratum immediately below the lowest coal seam to be mined or any aquifer below the lowest coal seam to be mined which may be adversely impacted by mining. Geologic cross sections and maps of areal geology and coal seam thickness have been updated to include the Alkali Lease Addition. The map showing the thickness of rock between the Rock Canyon and Gilson seams has been reduced to simply indicate where the interburden is more than or less than thirty feet; because thirty feet is a widely accepted limit for mining in overlying or underlying seams, this map is adequate for indicating areas where only one of the two seams can be mined.

Findings:

The Operator has failed to provide information on how subsidence monitoring will be conducted in the Alkali lease area as required by R645-301-525.140.

Deficiencies:

The Operator failed to meet the requirements of R645-301-525.140 by not providing the Division with information on the subsidence monitoring activities that will occur on the Alkali lease.

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COAL RECOVERY

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

Analysis:

The Operator did not address this section in the PAP. From information outside the PAP the Operator has stated that mining in the ICB will be development mining only. The Division's main concern is that the Operator will conduct mining in a manner that will allow the maximum recovery of the coal in the Alkali Tract.

In a letter dated September 17, 1996, to Mr. Reid Olsen, general manager of Soldier Creek Coal Company, Mr. Mark E. Bailey, area manager for the BLM, stated in a letter to Mr. Reid Olsen, general manager of Soldier Coal Company, that the BLM had approved the revisions to Soldier Creek's resource recovers and protection plan (R2P2). The Division contacted Mr. Barry Grosely, of the BLM, by phone on October 16, 1996. Mr. Grosely has investigated the coal recovery program at the mine. He is satisfied that Soldier Creek is attempting to recover as much coal as possible.

Coal recovery at Soldier Creek will be hampered by burn areas and seam splitting. It is difficult to develop a mine plan that will insure maximum economic recovery until the mining conditions are fully known. Those conditions usually are not known until development work take place. During development work the Operator may modify the mining plan due to local mining conditions.

Findings:

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The Operator met the minimum regulatory requirements for maximum economic coal recovery.

OPERATIONAL 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.

Surface-water monitoring

Analysis:

Table 7.31-2 outlines the recommended protocol for field and laboratory measurements, and Table 7.31-4 lists the recommended parameters for surface water quality monitoring. The purpose for the surface water quality monitoring program is 1) to further evaluate the potential for hydrologic connection between the Blackhawk Formation and streams; and 2) to continue monitoring the effects of coal mine discharge waters on Soldier Creek (page Appendix 7M-69).

The surface-water monitoring plan begins on page 7-165 of the application. Stream monitoring locations are found on Drawing 7.21-1. Three stations are monitored on Soldier Creek, but SC3 proposes to drop monitoring at station G-1, north of the permit area, because it is located too far upstream to allow evaluations of the mine water discharge. They will also request removal of G-2, to the East, at a later time. This would leave G-5 as the only surface

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water monitoring site on Soldier Creek according to the text on page 7-166 of the mine MRP. This site is located down stream from the mine and would not have any reference to upstream water.

Site G-10 has been added to monitor surface flow from the Alkali Tract. Exhibit 7.21-1 shows the location for G-10 and Table 7.24-1 lists it but does not give its location. Comparing Exhibit 7.21-1 from the Alkali Tract Significant Revision with that from the current Soldier Creek Mine MRP, it appears that G-4 and G-7 are the same, and Table 7.24-1 gives the same location for these two sites. Comparison of the two maps also indicates that G-3 and G-9 are the same, but the locations identified in Table 7.24-1 are not the same for the two sites; the location for G-9 in Table 7.24-1 is apparently incorrect as the given location would be several hundred feet north of Pine Creek. If G-3 is the same as G-9 and G-4 is the same as G-7, this is a potential source for confusion and there is no explanation or justification in the Alkali Tract Significant Revision as to why G-3 and G-4 have been given these new names. Furthermore, locations described in Table 7.24-1 do not agree with locations shown on proposed Exhibit 7.21-1 for G-2, G-5, G-6, and G-8, but only G-8 is off significantly.

SC3 has not conducted any monitoring of Coal Creek. According to some maps, this creek flows through the proposed permit area. Though there are no surface facilities proposed in that area, underground mining could effect the water quantity and quality of this stream.

Findings:

The applicant has not met the minimum requirements for surface-water monitoring during mine operations. The following deficiencies are outstanding:

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R645-301-731.200--Surface water stations G-1 and G-2 must be maintained as part of the surface water monitoring plan.

R645-301-731.200--SC3 must monitor Coal Creek as part of their surface water monitoring plan.

R645-301-121, -731.211 -- (Repeat) - The quarterly and semi-annual water quality sampling schedule is tied to annual precipitation, but the explanation in Table 7.31-2 is unclear.

R645-301-121, -722.300, -731.222 -- It appears that surface water monitoring sites G-4 and G-7 are the same, but there is no explanation or reason given for G-4 being renamed G-7 for the Alkali Tract Significant Revision.

R645-301-121, -722.300, -731.222 -- It appears that surface water monitoring sites G-3 and G-9 may be the same, but the description of G-9's location in Table 7.24-1 does not agree with the location shown on Exhibit 7.21-1, and there is no explanation or reason given for G-3 being renamed G-9 for the Alkali Tract Significant Revision.

Ground-water monitoring.

Ground-water monitoring data will be submitted quarterly to DOGM, within ninety days of the end of the quarter. When the analysis of any water sample indicates noncompliance with the permit conditions, the operator will notify DOGM within five days.

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Equipment, structures, and other devices used in conjunction with monitoring the quality and quantity of ground water onsite and offsite will be properly installed, maintained, and operated and shall be removed by the operator when no longer needed.

The ground water monitoring plan is based upon the PHC determination and the analysis of all baseline hydrologic, geologic, and other information in the Alkali Tract Significant Revision and current Soldier Canyon Mine MRP. Soldier Creek Coal Company interprets this information (page Appendix 7M-70) as indicating that:

- 1.) Ground water systems in the Flagstaff and North Horn Formations operate independently of the ground water system in the Blackhawk Formation;
- 2.) Temporal variability of flow in springs issuing from the Flagstaff and North Horn Formations is due to annual variations in precipitation; and,
- 3.) Mining will not affect ground water systems in the Flagstaff and North Horn Formations.

Table 7.24-1 lists twenty-four spring monitoring sites, including two new ones, and data from most of these sites are in the appendices. Only six spring monitoring sites are shown on Exhibit 7.21-1.

Recommended operational monitoring locations are listed in Table 7.31-1 (page 7-157) and shown on Exhibit 7.21-1. Table 7.31-2 outlines the recommended protocol for field and laboratory measurements, and Table 7.31-3 lists the recommended parameters for ground water quality monitoring. Purpose of the water quality monitoring program is to verify the three assumptions given above, to identify potential impacts of coal mining operations on the hydrologic balance, and to provide information to the Utah Division of Water Quality if impacts to water sources occur (pages 7-155 and Appendix 7M-70).

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Wells 10-2 and 32-1 are recommended to be maintained as monitoring wells. Well 6-1 is recommended to be maintained as a monitoring wells if the blockage in the casing can be removed or opened. Soldier Creek Coal Company recommends that Well 5-1 no longer be monitored routinely because this well appears to be simply monitoring the slow infiltration of drilling fluid and slug-test water into the coal seam; however, recent, more rapid declines of the water level correlate with mining activities nearby. The monitoring plan does not include the option of continuing to monitor Well 5-1 if Well 6-1 cannot made usable for monitoring. These wells will be monitored for water levels only. The four wells at the former waste rock disposal site are no longer to be monitored.

Springs 4, 5, 8, 10, CC-36, and CC-40 will be monitored quarterly for flow and field parameters. The quarterly and semi-annual water quality sampling schedule is tied to annual precipitation, but the explanation in Table 7.31-2 is unclear as to frequency of sampling.

The proposed monitoring plan eliminates four springs issuing from the Flagstaff Formation (3, 15, 18, and 21) from the current monitoring plan but adds CC-36, and CC-40, which issue from the Flagstaff Formation in or adjacent to the Alkali Tract. There are no baseline data for springs CC-36 and CC-40.

According to Table 7.31-1, monitoring of springs 4 and 8 will be discontinued one year following the end of mining in the vicinity of the spring. This is in addition to the proposed immediate elimination of monitoring of springs 3, 15, 18, and 21 in the same area. There are no discussion based on data in the Alkali Tract Significant Revision or Soldier Canyon Mine MRP indicating one year is sufficient time to determine that there have or have not been effects on springs from coal mining operations. One of the stated purposes of the ground water monitoring program is to verify that mining will not affect ground water systems in the Flagstaff and North Horn Formations. Cessation of monitoring of springs 4

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and 8 in the Flagstaff and North Horn Formations, respectively, after one year appears to be without basis and contrary to the stated purpose of the monitoring plan.

Total iron, dissolved iron, total manganese, and dissolved manganese will be determined for ground water samples from springs during the third quarter only, supposedly because spring flow during that quarter is the least effected by precipitation and runoff and therefore is most representative of actual ground water conditions. Water quality parameters in Table 7.31-3 match those in the May 23, 1995 DOGM directive except for total alkalinity and total hardness: pH's are high and dissolved metals low in the vicinity of the Soldier Canyon Mine so total hardness and alkalinity are not a critical water quality parameters.

Findings:

The Alkali Tract Significant Revision meets the minimum requirements for information on operational ground water monitoring except for the following deficiencies:

R645-301-121, -731.210 -- The monitoring plan does not include the option of continuing to monitor Well 5-1 in the case that Well 6-1 cannot made usable for monitoring.

R645-301-121, -731.211 -- The quarterly and semi-annual water quality sampling schedule is tied to annual precipitation, but the explanation in Table 7.31-2 is unclear.

R645-301-121, -731.214 -- There is no discussion based on data in the Alkali Tract Significant Revision or Soldier Canyon Mine MRP indicating one year is sufficient time to determine that there have or have not been effects on springs from coal mining operations: cessation of monitoring of springs 4 and 8 in the

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Flagstaff and North Horn Formations, respectively, after one year appears to be without basis and contrary to the stated purpose of the monitoring plan.

R645-301-121 -- What appears to be a typographic error on page 7-165 identifies spring 30, rather than spring 10, as one of the six springs to be monitored.

R645-301-121, -722.300, -731.222 -- Locations described in Table 7.24-1 do not agree with locations shown on proposed Exhibit 7.21-1 for G-2, G-5, G-6, and particularly for G-8 and G-9.

Acid and toxic-forming materials

Analysis:

Drainage from acid- and toxic-forming materials and underground development waste into surface and ground water will be avoided by:

- 1.) identifying and burying or treating such materials; or,
- 2.) Storing such materials in a manner that will protect surface and ground water by preventing erosion, the formation of polluted runoff, and infiltration of polluted water.

Storage will be limited to the period until burial or treatment first becomes feasible, and as long as storage will not result in any risk of water pollution or other environmental damage (page 7-167).

Findings:

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The Alkali Tract Significant Revision meets the minimum requirements for information on acid- and toxic-forming materials.

Transfer of wells

Analysis:

Before final release of bond, exploratory or monitoring wells shall be sealed in a safe and environmentally sound manner. Ownership of wells will be transferred only with prior approval of the DOGM. The conditions of such transfer shall comply with State and local laws and the permittee shall remain responsible for the proper management of the well until bond release (page 7-167).

Findings:

The Alkali Tract Significant Revision meets the minimum requirements for operational information on transfer of wells.

Discharges into an underground mine

Analysis:

Pages 7-167 and 168 state that there will not be any discharges into the mine unless approved by the Division and MSHA.

Findings:

The applicant has met the minimum requirements for discharges into an underground mine.

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Gravity discharges

Analysis:

Pages 7-167 and 168 state that there will not be any discharges into the mine unless approved by the Division. Dip of the coal seams to the north prevents gravity discharge of water to the surface from the mine.

Findings:

The applicant has met the minimum requirements for gravity discharges.

Water-quality standards and effluent limitations

Analysis:

Water Quality standards and effluent limits are addressed in Section 7.52, page 7-206. The permittee states that effluent limits are established by the NPDES permit.

Findings:

The applicant has met the minimum requirements for water-quality standards and effluent limitations.

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Stream buffer zones

Analysis:

Stream buffer zones are addressed in the application on page 7-168 and shown on Exhibit 5.21-1. The stream buffer zones are designated with signs. Much of the stream buffer zone lies in the area of a stream alteration for which the permit can be found in Appendix 10.

Findings:

The applicant has met the minimum requirements for stream buffer zones.

Casing and sealing of wells.

Analysis:

Each well identified in the mine permit application as a ground water monitoring well will comply with the requirements of R645-301-748 and will be temporarily sealed before use and protected during use. Before final release of bond, exploratory and monitoring wells will be sealed in a safe and environmentally sound manner in accordance with R645-301-631, R645-301-738, and R645-301-765 (pages 7-167 and 7-172).

Findings:

The Alkali Tract Significant Revision meets the minimum requirements for information on casing and sealing of operational wells.

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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.

Monitoring and Sampling Location Maps

Analysis:

Exhibit 7.21-1 shows locations of surface and ground water monitoring sites. Deficiencies in these maps have already been discussed.

Findings:

The Alkali Tract Significant Revision meets the minimum requirements for information on operational maps and plans except for the following deficiencies:

R645-301-121, -722.300, -731.222 -- (Repeat) - Locations described in Table 7.24-1 do not agree with locations shown on proposed Exhibit 7.21-1 for G-2, G-5, G-6, and particularly for G-8 and G-9.

R645-301-121, -722.300, -731.222 -- (Repeat) - It appears that surface water monitoring sites G-4 and G-7 are the same, but there is no explanation or reason given for G-4 being renamed G-7 for the Alkali Tract Significant Revision.

R645-301-121, -722.300, -731.222 -- (Repeat) - It appears that surface water monitoring sites G-3 and G-9 may be the same, but the description of G-9's location in Table 7.24-1 does not agree with the location shown on Exhibit

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7.21-1, and there is no explanation or reason given for G-3 being renamed G-9 for the Alkali Tract Significant Revision.

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RECLAMATION PLAN

REVEGETATION

Regulatory Reference: R645-301-340

Analysis:

The current mining and reclamation plan contains final revegetation plans for the mine facilities area, and no further surface disturbance is currently proposed.

Findings:

Information regarding the requirements of this section of the regulations was found to meet the minimum regulatory requirements

RECLAMATION 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.

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Ground-water monitoring.

Equipment, structures, and other devices used in conjunction with monitoring the quality and quantity of ground water onsite and offsite will be properly installed, maintained, and operated and shall be removed by the operator when no longer needed.

Findings:

The Alkali Tract Significant Revision meets the minimum requirements for information on reclamation ground water monitoring.

Surface-water monitoring

Analysis:

The surface-water monitoring plan begins on 7-165 of the application. The reclamation monitoring plan is an extension of the operational monitoring plan.

Findings:

The applicant has met the minimum requirements for surface-water monitoring during mine reclamation.

Acid and toxic-forming materials

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Analysis:

Drainage from acid- and toxic-forming materials and underground development waste into surface and ground water will be avoided by:

- 1.) identifying and burying or treating such materials; or,
- 2.) Storing such materials in a manner that will protect surface and ground water by preventing erosion, the formation of polluted runoff, and infiltration of polluted water. Storage will be limited to the period until burial or treatment first becomes feasible, and as long as storage will not result in any risk of water pollution or other environmental damage (page 7-167).

Findings:

The Alkali Tract Significant Revision meets the minimum requirements for reclamation information on acid- and toxic-forming materials.

Transfer of wells

Analysis:

Before final release of bond, exploratory or monitoring wells shall be sealed in a safe and environmentally sound manner. Ownership of wells will be transferred only with prior approval of the DOGM. The conditions of such transfer shall comply with State and local laws and the permittee shall remain responsible for the proper management of the well until bond release (page 7-167).

TECHNICAL ANALYSIS

Last Revised - November 21, 1996

Findings:

The Alkali Tract Significant Revision meets the minimum requirements for information on transfer of wells during and after reclamation.

Discharges into an underground mine

Analysis:

Pages 7-167 and 168 state that there will not be any discharges into the mine unless approved by the Division.

Findings:

The applicant has met the minimum requirements for discharges into an underground mine.

Gravity discharges

Analysis:

Pages 7-167 and 168 state that there will not be any discharges into the mine unless approved by the Division. Dip of the coal seams to the north prevents gravity discharge of water to the surface from the mine.

TECHNICAL ANALYSIS

Last Revised - November 21, 1996

Findings:

The applicant has met the minimum requirements for gravity discharges.

Water quality standards and effluent limitations

Analysis:

Water Quality standards and effluent limits are addressed in Section 7.52, page 7-206. The permittee states that effluent limits are established by the NPDES permit.

Findings:

The applicant has met the minimum requirements for water-quality standards and effluent limitations.

Stream buffer zones

Analysis:

Stream buffer zones are addressed in the application on page 7-168 and shown on Exhibit 5.21-1. The stream buffer zones are designated with signs. Much of the stream buffer zone lies in the area of a stream alteration for which the permit can be found in Appendix 10.

Findings:

The applicant has met the minimum requirements for stream buffer zones.

AFFIDAVIT OF PUBLICATION

STATE OF UTAH)

ss.

County of Carbon,)

I, Kevin Ashby, on oath, say that I am the Publisher of the Sun Advocate, a twice-weekly newspaper of general circulation, published at Price, State and County aforesaid, and that a certain notice, a true copy of which is hereto attached, was published in the full issue of such newspaper for 1 (One) consecutive issues, and that the first publication was on the 19th day of November, 1996 and that the last publication of such notice was in the issue of such newspaper dated the 19th day of November, 1996.

Kevin Ashby
Kevin Ashby - Publisher

Subscribed and sworn to before me this 19th day of November, 1996.

Linda Thayne
Notary Public My commission expires January 10, 1999 Residing at Price, Utah

Publication fee, \$85.65

PUBLIC NOTICE

**Application for Permit Transfer
Canyon Fuel Company, LLC
Soldier Canyon Mine**

Notice is hereby given that Canyon Fuel Company, LLC, 555 Seventeenth Street, Denver, Colorado 80202, on or about November 19, 1996, submitted an Application for Permit Transfer for Permit No. ACT/007/018, covering operations for the Soldier Canyon Mine, to the State of Utah, Department of Natural Resources, Division of Oil, Gas, and Mining. The current permittee, Soldier Creek Coal Company, P.O. Box 1, Price, Utah 84501 will be merged into Canyon Fuel Company, LLC on or about December 20, 1996. In conjunction with the anticipated merger and change in the name of the owner of the mining operations, the Canyon Fuel Company, LLC filed the Application for Permit Transfer for the Soldier Canyon Mine permit in advance of closing to obtain approval for the transfer from the Division of Oil, Gas, and Mining.

Approval by the Division of Oil, Gas, and Mining will allow coal mining operations to continue in the permit area. The lands involving mining activities are located in Carbon County. The mine portals are located 12 miles northeast of Wellington, Utah in Soldier Canyon. The approximately 4,909.69 acre leasehold associate with the five-year plan involves all or part of the following coal lands:

LEGAL DESCRIPTION

The coal leases to be mined include State Leases ML-42648 and ML-42649 described as follows:
Lease ML-42648

Township 13 S., Range 12 E., Salt Lake Base and Meridian

- Section 8: E 1/2
- Section 10: S 1/2
- Section 11: S 1/2
- Section 14: All
- Section 15: All
- Section 17: NE 1/4; E 1/2 SW 1/4; SE 1/4
- Section 20: E 1/2 NW 1/4; SW 1/4 NW 1/4; N 1/2 NE 1/4
- Section 21: N 1/2; NW 1/4; NE 1/4
- Section 22: N 1/2; N 1/2 S 1/2
- Section 23: W 1/2 NW 1/4
- Containing 3640 acres

Lease ML-42649

Township 13 S., Range 12 E., Salt Lake Base and Meridian

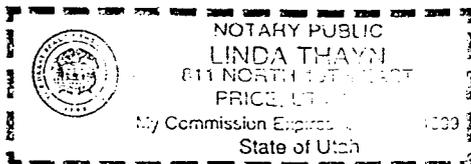
- Section 3: Lots 1, 2, 3, 4; S 1/2
- Section 4: Lots 1, 2, 3, 4; S 1/2
- Section 5: Lots 1, 2; SE 1/4
- Section 9: All
- Section 10: N 1/2
- Section 11: N 1/2
- Containing 2212 acres

All of Lease ML-42648 and the S 1/2 SE 1/4 of Section 9 of Lease ML-42649 will be permitted.

Copies of the complete application for transfer are available for public inspection at the Carbon County Clerk's Office, Carbon County Court House, 120 Main Street, Price, Utah 84501 and at the Utah Division of Oil, Gas, and Mining offices at 1594 West North Temple, Suite 1210, Salt Lake City, Utah 82114-5801.

Written comments, objections, and requests for informal conferences regarding the Application for Permit Transfer must be submitted, within 30 days of the date of the publication of this notice, to the Utah Division of Oil, Gas, and Mining, 1594 West North Temple, Suite 1210, Box 155801, Salt Lake City, Utah 84114-5801.

Published in the Sun Advocate November 19, 1996.



State of Utah
Department of Natural Resources
Division of Oil, Gas and Mining
1594 West North Temple
Suite 1210
P.O. Box 145801
Salt Lake City, Utah 84114-5801
(801) 538-5289

(Federal)

CONTENTS:

Reclamation Agreement

Exhibit "A"
Bonded Area

Exhibit "B"
Surety Bond Rider

Exhibit "C"
Liability Insurance

Permit Number: ACT/007/018
Date Original Permit Issued: November 5, 1996
Effective Date of Agreement: December 20, 1996

RECLAMATION AGREEMENT

This **RECLAMATION AGREEMENT** (hereafter referred to as "Agreement") is entered into by Canyon Fuel Company, LLC (hereafter referred to as the "Permittee") and the State of Utah, Department of Natural Resources, Division of Oil, Gas and Mining (hereafter referred to as the "Division").

For the purposes of this **AGREEMENT** the information provided below, shall constitute forms of definition or are for information regarding the Permittee or its operations.

"ACT": Title 40-10-1, et. seq., Utah Code Annotated (1953, as amended)

"BOND": A bond in compliance with Utah Administrative Rule 645-301-800, et. seq.

"BOND AMOUNT": \$3,238,000

"BOND TYPE": Surety

Bonding Company: United Pacific Insurance Company

Address: Reliance Surety Company
505 North Brand Blvd., #770
Glendale, CA 91203

Telephone Number: (818) 265-7550

"COMPANY OFFICERS": Richard D. Pick, Chief Executive Officer
Thomas F. Linn, Secretary
Chris M. Noble, Chief Financial Officer

"COOPERATIVE AGREEMENT": That certain agreement codified at 40 C.F.R. 944.30.

"DISTURBED AREA:" This term is as defined in Utah Administrative Code R645-100-200. The Permittee and the Division contemplate that the Disturbed Area will be as approved and shown in the Permit Application Package, but the Permittee's reclamation obligation and the bond related thereto are governed by applicable law.

"LIABILITY INSURANCE:" Public liability insurance policy submitted as part of the permit application and attached as Exhibit "C".

Insurance Company: Indemnity Insurance Co. of No. America

Address: Johnson & Higgins of California
Casualty Department
2029 Century Park East
Los Angeles, CA 90067

Telephone Number: (310) 551-4667

Policy Number: ISL G1 423256-0

Expiration Date: January 1, 1999

"MINE": Soldier Canyon Mine

"OSM": United States Department of the Interior,
Office of Surface Mining Reclamation and Enforcement.

"PERMIT": Utah Mining and Reclamation Permit No. Act/007/018

"PERMIT AREA": The area described in the Permit, which includes the Mine.

"PERMIT TRANSFER APPLICATION (PTA)":
On November 19, 1996 the Permittee filed an Application for Approval of the transfer of Permit No. ACT/007/018, which was approved, subject to conditions, on December 20, 1996.

"PERMITTEE":
Principal Address: Canyon Fuel Company, LLC
555 Seventeenth Street
Denver, CO 80202

Telephone Number: (303) 293-7576

Utah Address: 175 East 400 South, Ste. 1800
Salt Lake City, UT 84111

**"PERMITTEE'S UTAH REGISTERED AGENT
FOR SERVICE OF PROCESS":**

Address: CT Corporation Systems
50 West Broadway
Salt Lake City, UT 84104

Telephone: (801) 531-7090

"REGULATIONS": The regulations promulgated by the Division and OSM pertaining to coal mining and reclamation activities.

"SMCRA": The Surface Mining Control and Reclamation Act of 1977, 30 U.S.C. §§ 1201, et. seq.

"SURETY": United Pacific Surety

The following Exhibits are incorporated within and made a part of this Agreement.

EXHIBITS:

"BONDED AREA"	Exhibit "A"
"BONDING AGREEMENT"	Exhibit "B"
"LIABILITY INSURANCE"	Exhibit "C"

WHEREAS, on November 5, 1996 the Division issued a Permit No. ACT/007/018 to Soldier Creek Coal Company to engage in certain specified coal mining and reclamation operations (previously defined as the "Permit"); and

WHEREAS, on or about December 19, 1996 the Division approved the Permit Transfer Application (previously defined as the "PTA") submitted by "Permittee"; and

WHEREAS, prior to the transfer of the permit to conduct mining and reclamation operations on the property described in the Permit, the Permittee is obligated by the law, to file with the Division a bond ensuring the performance of the reclamation obligations in the manner and by the standards set forth by law; and

WHEREAS, the Permittee is ready and willing to file the Bond in the amount and in a form acceptable to the Division and to perform all obligations imposed by the Division pursuant to applicable laws under the Permit; and

WHEREAS, the Division is ready and willing to transfer the Permit to the Permittee upon acceptance and approval of the Bond.

NOW, THEREFORE, the Division and the Permittee agree as follows:

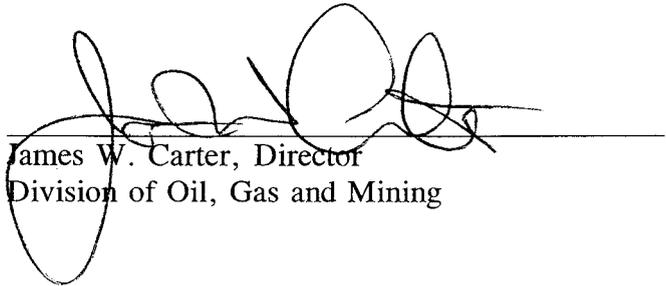
1. The provisions of SMCRA, the Act and the Regulations are incorporated by reference herein and hereby made a part of this Agreement. Provisions of the Act or Regulations and Rules shall supersede conflicting provisions of this Agreement.
2. The Permittee agrees to comply with all terms and provisions of this Agreement, the Permit (which is based upon the approved Permit Application Package), the Act and the Regulations, including the reclamation of all areas disturbed by surface coal mining and reclamation operations, despite the eventuality that the costs of actual reclamation exceeds the Bond Amount.
3. The Permit Application Package includes a legal description of the Permit Area, including the number of acres approved by the Division to be disturbed by surface mining and reclamation operations during the Permit period. For convenience, a copy of the description of the Permit Area is attached as Exhibit "A", and is incorporated by reference.
4. The Permittee agrees to provide a Bond to the Division and OSM in the form and amount acceptable to the Division ensuring the timely performance of the reclamation obligations in the manner and by the standards set forth in this Agreement, the Permit, (which is based upon the Permit Application Package), the Act and the regulations. The Bond is attached as Exhibit "B" and is incorporated by reference.
5. The Permittee agrees to maintain in full force and effect the Liability Insurance policy submitted as part of the Permit application and which is described in the attached Exhibit "C". The Division and OSM shall be listed as an additional insured on this policy.
6. In the event that the Permit Area and/or the Disturbed Area is increased through expansion of the coal mining and reclamation operations or decreased through partial reclamation, the Division shall adjust the Bond as appropriate in accordance with applicable law.
7. The Permittee does hereby agree to indemnify and hold harmless the State of Utah and the Division, and their respective employees and agents, from any claim, demand, liability, cost, charge, or suit initiated by a third party as a result of the Permittee or Permittee's agents or employees failure to abide by the terms and conditions of the approved Permit (which is based upon the approved Permit Application Package), and this Agreement. In the event the Cooperative Agreement is terminated, this paragraph will inure to the benefit of OSM with respect to Federal Lands, and otherwise to the benefit of the Division.

8. The terms and conditions of this Agreement are non-cancelable until such time as the Permittee has satisfactorily, as determined by the Division, reclaimed the Disturbed Area in accordance with this Agreement, the approved Permit (which is based upon the approved Permit Application Package), the Act, and the Regulations. Notwithstanding the above, the Division may direct, or the Permittee may request and the Division may approve a written modification to this Agreement in accordance with applicable law.
9. The Permittee may, at any time, submit a request to the Division to substitute the bonding method. The Division may approve the substitution if the new Bond form meets the requirements of the Act, and the Regulations, but no Bond shall be released until the Division has approved and accepted the replacement Bond.
10. This Agreement shall be governed and construed in accordance with the laws of the State of Utah. The Permittee shall be liable for all reasonable costs incurred by the Division to enforce this Agreement.
11. Any breach of the provisions of this Agreement, the Act, the Regulations, or the Permit (which is based upon the approved Permit Application Package) may, at the discretion of the Division, result in enforcement actions by the Division which include, but are not limited to, an order to cease coal mining and reclamation operations, revocation of the Permittee's Permit and forfeiture of the Bond.
12. In the event of forfeiture of the Bond, the Permittee agrees to be liable for additional costs in excess of the Bond Amount which may be incurred by the Division in order to comply with the Permit (which is based upon the approved Permit Application Package), the Act, and the Regulations. Any excess monies resulting from the forfeiture of the Bond, upon compliance with this Agreement, shall be refunded as directed by the Permittee or, if a dispute arises, as directed by a court of competent jurisdiction by interpleading the funds subject to the dispute.
13. No delay on the part of the Division in exercising any right, power, or privilege, under the Permit, the Bonding Agreement (Exhibit "B") and/or this Agreement shall operate as a waiver thereof, nor shall any single or partial exercise of any right, power or privilege thereof preclude other or further exercise of any right, power or privilege. The provisions of this Agreement are severable, and if any provision of this Agreement, or the application of any provision of this Agreement, to any circumstances is held invalid, the application of such provision to other circumstances, and the remainder of this Agreement, shall not be affected thereby.

14. Each signatory below represents that he/she is authorized to execute this Agreement on behalf of the named party. Proof of such authorization is provided on a form acceptable to the Division and is attached thereto.

SO AGREED this 13th day of December, 1996

STATE OF UTAH:


James W. Carter, Director
Division of Oil, Gas and Mining

PERMITTEE:

By: 
Chris M. Noble, Chief Financial Officer
Canyon Fuel Company, LLC

EXHIBIT "A"

PERMIT AREA

LEGAL DESCRIPTION

Exhibit "A"
Permit Area

Legal Description of Permit Area covered by the Bond:

Township 13 South, Range 12 East, SLBM

- Section 4: All;
- Section 5: All;
- Section 6: All;
- Section 7: All;
- Section 8: All;
- Section 9: W1/2, NE1/4, N1/2SE1/4;
- Section 17: N1/2;
- Section 18: N1/2N1/2, SE1/4NE1/4, S1/2NW1/4, NE1/4SW1/4NE1/4,
NW1/4SW1/4NE1/4; and
- Section 19: Portion of SW1/4SW1/4.

Township 12 South, Range 12 East, SLBM

- Section 32: NW1/4, SW1/4NE1/4, E1/2NE1/4, S1/2.

Township 13 South, Range 11 East, SLBM

- Section 1: E1/2SE1/4;
- Section 11: SE1/4SE1/4;
- Section 12: E1/2, E1/2NW1/4, E1/2SW1/4;
- Section 13: N1/2NE1/4, NE1/4NW1/4, SE1/4NE1/4, NE1/4SE1/4;
- Section 24: Portions of SE1/4SE1/4;
- Section 25: Portions of N1/2NW1/4SE1/4, Portions of S1/2SW1/4NE1/4;
- IBC #1 Legal: Beginning at the north east corner of Section 12,
Township 13 South, Range 11 East, go 2,508 feet south
00°26'03" east, thence 1,324 feet north 89°47'01" west.

thence 3,772 feet south 00°22'14" east, thence 921 feet north 45°20'28" west, thence 209 feet north 12°10'17" west, thence 252 feet north 00°40'55" east, thence 377 feet north 07°27'51" east, thence 151 feet north 06°50'34" west, thence 139 feet north 15°02'16" west, thence 1,236 feet north 36°36'37" west, thence 417 feet north 12°54'07" west, thence 281 feet north 07°34'52" west, thence 198 feet north 25°47'14" west, thence 197 feet north 39°01'24" west, thence 212 feet north 07°19'35" west, thence 425 feet north 27°01" west, thence 178 feet north 11°41'22" west, thence 864 feet north 27°07'43" west, thence 240 feet north 06°28'20" west, thence 238 feet north 01°12'13" west, thence 194 feet north 11°18'36" east, thence 315 feet north 16°52'27" east, thence 3,436 feet south 89°26'59" east, thence 2,508 feet south 00°26'03" east to point of beginning

IBC #2 Legal: Beginning at the north east corner of IBC#1; thence north 0°00'00" west for a distance of 3720.3 feet; thence north 90°00'00" west for a distance of 1,192.8 feet; thence south 28°00'00" west for a distance of 4,181.6 feet; thence south 89°0'00" east for a distance of 3,163.7 feet to the point of beginning; containing approximately 186 acres (See exhibit 1.12-2)

As described more precisely in the Soldier Canyon Mine Mining and Reclamation Permit on file with the Division of Oil, Gas, and Mining.

EXHIBIT "B"

SURETY BOND



Reliance

RELiance SURETY COMPANY
Philadelphia, Pennsylvania

RELiance INSURANCE COMPANY
Philadelphia, Pennsylvania

UNITED PACIFIC INSURANCE COMPANY
Philadelphia, Pennsylvania

RELiance NATIONAL INDEMNITY COMPANY
Philadelphia, Pennsylvania

08-500

RIDER

EXECUTED IN 2 COUNTERPART(S)

To be attached to and form a part of

Permit Number: ACT/007/018 UT-0023

Mine Name: Soldier Canyon Mine

Type of Bond: Reclamation Bond

Bond No. U1712871- 1

executed by SOLDIER CREEK COAL COMPANY, as Principal,

and by UNITED PACIFIC INSURANCE COMPANY, as Surety.

in favor of STATE OF UTAH, DEPARTMENT OF NATURAL RESOURCES, Division of Oil, Gas and Mining; U.S. DEPARTMENT OF THE INTERIOR, Office of Surface Mining Reclamation and Enforcement, as Oblige(e)s

and dated September 15, 1993

In consideration of the premium charged for the attached bond, it is hereby agreed to change:

1) THE NAME OF THE PRINCIPAL ON THE BOND

2) THE BOND NUMBER ON THE BOND

From: SOLDIER CREEK COAL COMPANY

From: U1712871- 1

To: CANYON FUEL COMPANY, LLC

To: U2760732

The attached bond shall be subject to all its agreements, limitations and conditions except as herein expressly modified.

This rider is effective December 20, 1996

Signed and Sealed December 9, 1996

Principal: CANYON FUEL COMPANY, LLC

C.F.O.

C.F.O.

Title

UNITED PACIFIC INSURANCE

COMPANY

By: Gary Dittfurth

Attorney-in-Fact

RIDER ACCEPTED (Please sign duplicate of this Rider and return to Surety)

By:

Date

[Signature]
December 20, 1996

**AFFIDAVIT OF QUALIFICATION
SURETY COMPANY**

-ooOOoo-

I, Gary Ditfurth, being first duly sworn under oath, deposes and says that he is the (officer or agent) Attorney-in-Fact of UNITED PACIFIC INSURANCE COMPANY, and that he is duly authorized to execute and deliver the foregoing obligations; and that said SURETY COMPANY is authorized to execute the same and has complied in all respects with the laws of Utah in reference to becoming sole surety upon bonds, undertakings and obligations herein.

(Signed) *Gary Ditfurth*
(Surety Company Officer)

Gary Ditfurth, Attorney-in-Fact

(Position)

Subscribed and sworn to before me this 9th day of December, 1996.

Maria Luisa Chua
Notary Public Maria Luisa Chua

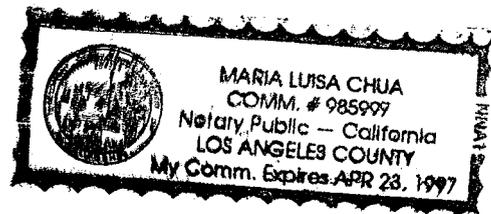
My Commission Expires: April 23, 1997

Comm. #985997

Attest:

STATE OF CALIFORNIA)

COUNTY OF LOS ANGELES)ss:



RELIANCE SURETY COMPANY
UNITED PACIFIC INSURANCE COMPANY

RELIANCE INSURANCE COMPANY
RELIANCE NATIONAL INDEMNITY COMPANY

ADMINISTRATIVE OFFICE, PHILADELPHIA, PENNSYLVANIA

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, that RELIANCE SURETY COMPANY is a corporation duly organized under the laws of the State of Delaware, and that RELIANCE INSURANCE COMPANY and UNITED PACIFIC INSURANCE COMPANY, are corporations duly organized under the laws of the Commonwealth of Pennsylvania and that RELIANCE NATIONAL INDEMNITY COMPANY is a corporation duly organized under the laws of the State of Wisconsin (herein collectively called "the Companies") and that the Companies by virtue of signature and seals do hereby make, constitute and appoint Gary Dittfurth, of Glendale, California their true and lawful Attorney(s)-in-Fact, to make, execute, seal and deliver for and on their behalf, and as their act and deed any and all bonds and undertakings of suretyship and to bind the Companies thereby as fully and to the same extent as if such bonds and undertakings and other writings obligatory in the nature thereof were signed by an Executive Officer of the Companies and sealed and attested by one other of such officers, and hereby ratifies and confirms all that their said Attorney(s)-in-Fact may do in pursuance hereof.

This Power of Attorney is granted under and by the authority of Article VII of the By-Laws of RELIANCE SURETY COMPANY, RELIANCE INSURANCE COMPANY, UNITED PACIFIC INSURANCE COMPANY, and RELIANCE NATIONAL INDEMNITY COMPANY which provisions are now in full force and effect, reading as follows:

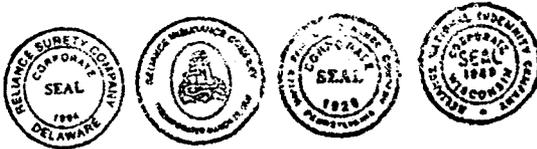
ARTICLE VII - EXECUTION OF BONDS AND UNDERTAKINGS

1. The Board of Directors, the President, the Chairman of the Board, any Senior Vice President, any Vice President or Assistant Vice President or other officer designated by the Board of Directors shall have power and authority to (a) appoint Attorney(s)-in-Fact and to authorize them to execute on behalf of the Company, bonds and undertakings, recognizances, contracts of indemnity and other writings obligatory in the nature thereof, and (b) to remove any such Attorney(s)-in-Fact at any time and revoke the power and authority given to them.
2. Attorney(s)-in-Fact shall have power and authority, subject to the terms and limitations of the Power of Attorney issued to them, to execute deliver on behalf of the Company, bonds and undertakings, recognizances, contracts of indemnity and other writings obligatory in the nature thereof. The corporate seal is not necessary for the validity of any bonds and undertakings, recognizances, contracts of indemnity and other writings obligatory in the nature thereof.
3. Attorney(s)-in-Fact shall have power and authority to execute affidavits required to be attached to bonds, recognizances, contracts of indemnity or other conditional or obligatory undertakings and they shall also have power and authority to certify the financial statement of the Company and to copies of the By-Laws of the Company or any article or section thereof.

This Power of Attorney is signed and sealed by facsimile under and by authority of the following resolution adopted by the Executive and Finance Committees of the Boards of Directors of Reliance Insurance Company, United Pacific Insurance Company and Reliance National Indemnity Company by Unanimous Consent dated as of February 28, 1994 and by the Executive and Financial Committee of the Board of Directors of Reliance Surety Company by Unanimous Consent dated as of March 31, 1994.

"Resolved that the signatures of such directors and officers and the seal of the Company may be affixed to any such Power of Attorney or any certificates relating thereto by facsimile, and any such Power of Attorney or certificate bearing such facsimile signatures or facsimile seal shall be valid and binding upon the Company and any such Power so executed and certified by facsimile signatures and facsimile seal shall be valid and binding upon the Company, in the future with respect to any bond or undertaking to which it is attached."

IN WITNESS WHEREOF, the Companies have caused these presents to be signed and their corporate seals to be hereto affixed, this July 19, 1996.



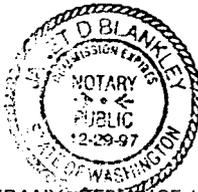
RELIANCE SURETY COMPANY
RELIANCE INSURANCE COMPANY
UNITED PACIFIC INSURANCE COMPANY
RELIANCE NATIONAL INDEMNITY COMPANY

Mark W. Alsup

STATE OF Washington }
COUNTY OF King } ss.

On this, July 19, 1996, before me, Janet Blankley, personally appeared Mark W. Alsup, who acknowledged himself to be the Vice President of the Reliance Surety Company, and the Vice President of Reliance Insurance Company, United Pacific Insurance Company, and Reliance National Indemnity Company and that as such, being authorized to do so, executed the foregoing instrument for the purpose therein contained by signing the name of the corporation by himself as its duly authorized officer.

In witness whereof, I hereunto set my hand and official seal.



Janet D. Blankley
Notary Public in and for the State of Washington
Residing at Puyallup

I, Robyn Layng, Assistant Secretary of RELIANCE SURETY COMPANY, RELIANCE INSURANCE COMPANY, UNITED PACIFIC INSURANCE COMPANY, and RELIANCE NATIONAL INDEMNITY COMPANY do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which is still in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 9th day of December 19 96.



Robyn Layng
Assistant Secretary

EXHIBIT "C"

LIABILITY INSURANCE

ACORD. CERTIFICATE OF INSURANCE

DATE (MM/DD/YY)
12/18/96

PRODUCER
Johnson & Higgins of California
Casualty Department
2029 Century Park East
Los Angeles, CA 90067
Tel: (310) 551-4667
0659A-GL5H OLIN

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

COMPANIES AFFORDING COVERAGE

- COMPANY A INDEMNITY INSURANCE COMPANY OF NORTH AMERICA
- COMPANY B
- COMPANY C
- COMPANY D

INSURED
ATLANTIC RICHFIELD COMPANY, ITS
SUBSIDIARIES AND SUBSIDIARIES
INCLUDING CANYON FUEL COMPANY, LLC.
6955 SOUTH UNION PARK CENTER
SUSITE 550
MIDVALE, UTAH 84047

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
A	GENERAL LIABILITY	ISL G1 423256-0	12-20-96	01-01-99	BODILY INJURY OCC	\$ N/A
	<input checked="" type="checkbox"/> COMPREHENSIVE FORM				BODILY INJURY AGG	\$ N/A
	<input checked="" type="checkbox"/> PREMISES/OPERATIONS UNDERGROUND EXPLOSION & COLLAPSE HAZARD				PROPERTY DAMAGE OCC	\$ N/A
	<input checked="" type="checkbox"/> PRODUCTS/COMPLETED OPER				PROPERTY DAMAGE AGG	\$ N/A
	<input checked="" type="checkbox"/> CONTRACTUAL				BI & PD COMBINED OCC	\$ 500,000
	<input checked="" type="checkbox"/> INDEPENDENT CONTRACTORS				BI & PD COMBINED AGG	\$ *500,000
	<input checked="" type="checkbox"/> BROAD FORM PROPERTY DAMAGE				PERSONAL INJURY AGG	\$ N/A
	<input checked="" type="checkbox"/> PERSONAL INJURY					
	AUTOMOBILE LIABILITY				BODILY INJURY (Per person)	\$
	<input type="checkbox"/> ANY AUTO				BODILY INJURY (Per accident)	\$
	<input type="checkbox"/> ALL OWNED AUTOS (Private Pass)				PROPERTY DAMAGE	\$
	<input type="checkbox"/> ALL OWNED AUTOS (Other than Private Passenger)				BODILY INJURY & PROPERTY DAMAGE COMBINED	\$
	<input type="checkbox"/> HIRED AUTOS					
	<input type="checkbox"/> NON-OWNED AUTOS					
	<input type="checkbox"/> GARAGE LIABILITY					
	EXCESS LIABILITY				EACH OCCURRENCE	\$
	<input type="checkbox"/> UMBRELLA FORM				AGGREGATE	\$
	<input type="checkbox"/> OTHER THAN UMBRELLA FORM					\$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY				STATUTORY LIMITS	
	<input type="checkbox"/> THE PROPRIETOR/PARTNERS/EXECUTIVE OFFICERS ARE:				EACH ACCIDENT	\$
	<input type="checkbox"/> INCL				DISEASE - POLICY LIMIT	\$
	<input type="checkbox"/> EXCL				DISEASE - EACH EMPLOYEE	\$
	OTHER					

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS

*PRODUCTS/COMPLETED OPERATIONS.
PERMIT NO. ACT/007/018 - SOLDIER CANYON MINE.
THIS CERTIFICATE IS ISSUED IN LIEU OF CERTIFICATE DATED DECEMBER 12, 1996.

CERTIFICATE HOLDER

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING
1594 WEST NORTH TEMPLE, SUITE 1210
P.O. BOX 145801
SALT LAKE CITY, UTAH 84114-5801

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL SEND BY MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT.

AUTHORIZED REPRESENTATIVE