

File: ACT/007/007
#3, 15 w/ maps

RECEIVED

MAR 21 1985

DIVISION OF OIL
GAS & MINING

Kaiser Steel
Sunnyside Mine
(Haul Road Amendment)

*(No cover letter provided)
by Company

UMC 817.150 Roads: Class I: General

- a. Each person who conducts underground coal mining activities shall design, construct or reconstruct, utilize, and maintain Class I Roads and restore the area to meet the requirements of UMC 817.151-817.156 and to control or minimize erosion and siltation, air and water pollution, and damage to public or private property.

Response

Applicant has designed, and will construct or reconstruct, utilize, and maintain this Class I Road and will restore the area to meet the requirements of UMC 817.151-817.156 and will control or minimize erosion and siltation, air and water pollution, and damage to public or private property.

- b. To the extent possible using the best technology currently available, Class I Roads shall not cause additional contributions of suspended solids to streamflow or to runoff outside the permit area. Any such contributions shall not be in excess of limitations of State or Federal law.

Response

Applicant will, using the best technology currently available - i.e. proper ditching, culverts, and silt fences, control runoff and avoid additional contributions of suspended solids to streamflow or to runoff, outside the permit area. Any such contributions shall not be in excess of limitations of State or Federal Law.

- c. All Class I Roads shall be removed and the land affected regraded and revegetated in accordance with the requirements of UMC 817.156 unless-

Response

All Class I Roads will be removed and the land affected regraded and revegetated in accordance with the requirements of UMC 817.156.

1. Retention of the road is approved as part of the approved postmining land use or as being necessary to control erosion adequately;

Response

Not Applicable (see Response above).

2. The necessary maintenance is assured; and

Response

The necessary maintenance is assured for the life of the mine and/or until the completion of the postmining restoration.

3. All drainage is controlled according to UMC 817.153.

Response

All drainage will be controlled until completion of the postmining restoration.

- d.
 1. The design and construction or reconstruction of Class I Roads shall be certified by a registered qualified professional engineer in accordance with UMC 817.151-817.154, except to the extent that alternative specifications are used. Alternative specifications may be used only after approval by the Division upon a demonstration by a registered qualified professional engineer that they will result in performance equal to or better than that resulting from Class I Roads complying with UMC 817.151-817.156.

Response

The design and construction or reconstruction of Class I Roads has been certified by a registered qualified professional engineer in accordance with UMC 817.151-817.154.

2. The design shall incorporate the demand for mobility and travel efficiency, based on geometric criteria, both horizontal and vertical, appropriate for the anticipated volume of traffic and weight and speed of vehicles to be used.

Response

The design does incorporate the demand for mobility and travel efficiency, based on geometric criteria, both horizontal and vertical, appropriate for the anticipated volume of traffic and weight and speed of vehicles to be used.

UMC 817.151 Roads: Class I: Location

- a. Class I Roads shall be located, insofar as possible, on ridges or on the most stable available slopes to minimize erosion.

Response

The majority of this project is reconstruction and maintenance of existing facilities. The new construction is designed to minimize erosion.

- b. No part of any Class I road shall be located in the channel of an intermittent or perennial stream unless specifically approved by the Division.

Response

No part of this project is located in the channel of an intermittent or perennial stream.

- c. Stream fords are prohibited unless they are specifically approved by the Division as temporary routes during periods of construction. The fords shall not adversely affect stream sedimentation or fish, wildlife, and related environmental values. All other stream crossings shall be made using bridges, culverts, or other structures designed, constructed, and maintained to meet the requirements of UMC 817.153.

Response

The stream crossing is a 90 inch by 60 foot culvert.

- d. Class I Roads shall be located to minimize downstream sedimentation and flooding.

Response

This road is located to minimize downstream sedimentation and flooding.

UMC 817.152 Roads: Class I: Design and Construction

Class I Roads shall be designed and constructed or reconstructed in compliance with the following standards in order to control subsequent erosion and disturbance of the hydrologic balance.

- a. Vertical alignment. Except where other reasonable grades are demonstrated to and approved by the Division as necessary to control site-specific conditions, maximum road grades shall be as follows:
1. The overall grade shall not exceed 1v:10h (10 percent).

Response

The overall grade of this project does not exceed 9.1 percent.

2. The maximum pitch grade shall not exceed 1v:6.5h (15 percent).

Response

The overall grade of this project does not exceed 9.1 percent.

3. There shall be not more than 300 feet of pitch grade exceeding 10 percent within any consecutive 1,000 feet of Class I Roads, but in no case shall there be any pitch grade over 15 percent.

Response

The overall grade of this project does not exceed 9.1 percent.

- b. Horizontal alignment. Class I Roads shall have horizontal alignment consistent with the existing topography as possible, and shall provide the alignment required to meet the performance standards of UMC 817.150-817.156. The alignment shall be determined in accordance with the anticipated volume of traffic and weight and speed of vehicles to be used. Horizontal and vertical alignment shall be coordinated to ensure that one will not adversely affect the other and to ensure that the road will not cause environmental damage.

Response

This road will have horizontal alignment as consistent with the existing topography as possible, and will provide the alignment required to meet the performance standards of UMC 817.150-817.156.

- c. Road cuts.

1. Cut slopes shall not be steeper than specifically authorized by the Division which shall not authorize slopes steeper than 1v:1.5h in unconsolidated materials or 1v:0.25h in rock, except that steeper slopes may be specifically authorized by the Division if geotechnical analysis demonstrates that a minimum safety factor of 1.5, or such other lesser safety factor as the Division may approve based on site-specific evaluation, can be maintained.

Response

No cut exceeds 5 foot vertical. All cuts will be on a 1v:3h.

2. Topsoil or other materials suitable under UMC 817.22 when available, shall be placed on all cut slopes of 1v:1.5h or flatter to aid in establishing vegetation necessary to control erosion.

Response

In areas of new construction, the topsoil will be stripped and replaced on the cut slopes.

3. Temporary erosion-control measures shall be implemented during construction to minimize sedimentation and erosion until permanent control measures can be established.

Response

Due to the size of the project, permanent silt fences will be installed to minimize sedimentation and erosion at the locations shown on Plate EEOG-090-1 and installed in conformance to PLate III-34. (see enclosed PLates).

- d. Road embankments. Embankment sections shall be constructed in accordance with the following provisions:
 1. All vegetative material, and topsoil where topsoil is present in sufficient quantities to allow mechanical collection, shall be removed from the embankment foundation during construction to increase stability, and no vegetative material or topsoil shall be placed beneath or in any Class I Road embankment.

Response

In areas of new construction, the topsoil will be stripped before the fill slopes are constructed.

2. Where an embankment is to be placed on side slopes exceeding 1v:5h (20 percent), the existing ground shall be plowed, stepped, or, if in bedrock, keyed in a manner which increases the stability of the fill. The keyway shall be a minimum of 10 feet in width and shall extend a minimum of 2 feet below the toe of the fill. However, when it is demonstrated to the Division through geotechnical testing that alternative construction methods will result in meeting the applicable performance standards, the Division may approve the use of such alternative construction methods.

Response

The existing ground will be plowed and compacted before the fill slopes are constructed.

3. Material containing by volume less than 25 percent of rock larger than 6 inches in greatest dimension shall be spread in successive uniform layers not exceeding 12 inches in thickness before compaction. However, when it is demonstrated to the Division through geotechnical testing that alternative construction standards, the Division may approve the use of such alternative construction methods.

Response

All material will be spread in successive uniform layers not exceeding 12 inches in thickness before compaction.

4. Where the material for an embankment consists of large-size rock, broken stone, or fragmented material that makes placing it in 12-inch layers impossible under Paragraph (d)(3) of this Section, the embankment shall be constructed in uniform layers not exceeding in thickness the approximate average size of the rock used, but the layers shall not exceed 36 inches in thickness. Rock shall not be dumped in final position, but shall be distributed by blading or dozing in a manner that will ensure proper placement in the embankment, so that voids, pockets, and bridging will be reduced to a minimum. The final layer of the embankment shall meet the requirement of Paragraph (d)(3) of this Section. However, when it is demonstrated to the Division through geotechnical testing that alternative construction methods will result in meeting the applicable performance standards, the Division may approve the use of such alternative construction methods.

Response

Not Applicable (layers will not exceed 12 inches).

5. Each layer of the embankment shall be completed, leveled, and compacted before the succeeding layer is placed. Loads of material shall be leveled as placed and kept smooth. The successive layers shall be compacted evenly by routing the hauling and leveling equipment over the entire width of the embankment. The procedure shall be continued until no visible horizontal movement of the embankment material is apparent.

Response

Each layer of the embankment will be completed, leveled, and compacted before the succeeding layer is placed.

6. Embankment layers shall be compacted as necessary to ensure that the embankment is adequate to support the anticipated volume of traffic and weight and speed of vehicles to be used. In selecting the method to be used for placing embankment material, consideration shall be given in the design to such factors as the foundation, geological structure, soils, type of construction, and equipment to be used. A structural and foundation analysis shall be performed to establish design standards for embankment stability appropriate to the site. Publications of the American Association of State Highway and Traffic Officers (AASHTO), including AASHTO T-99, T-91, and the modified AASHTO test, or other specifications generally recognized by transportation engineers as adequate for design of highway embankments, shall be used to determine the degree of compaction required, on the basis of soil type and the anticipated volume of traffic and weight and speed of vehicles to be used. Compaction effort shall be adequate to achieve the degree of compaction required. No life shall be placed on a layer until the design density is achieved throughout the layer. AASHTO specifications such as T-99, T-180, the modified AASHTO test, or other comparable specifications approved by the Division shall be used as guidelines for determination of the maximum dry density for granular materials.

Response

The subbase will be compacted to 90 percent of the value shown by maximum laboratory density tests, and the gravel will be compacted to 95 percent of the value shown by maximum laboratory density tests.

7. Material shall be placed in an embankment only when its moisture content is within acceptable levels to achieve design compaction.

Response

Material will be placed in an embankment only when its moisture content is within acceptable levels to achieve design compaction.

8. Embankment slopes shall not be steeper than 1v:2h, except that where the embankment material is a minimum of 85 percent rock, slopes shall not be steeper than 1v:1.35h if it has been demonstrated to the Division that embankment stability will result. Where rock embankments are constructed, they shall meet the requirements of Paragraph (d) (4) of this Section.

Response

Embankment slopes will not be constructed steeper than 1v:2h on this project.

9. The minimum safety factor for all embankments shall be 1.25, or such higher factor as the Division may specify.

Response

The minimum safety factor for all embankments will be 1.25, or such higher factor as the Division may specify.

10. The road surface shall be sloped toward the ditch line at a minimum rate of one-quarter inch per foot of surface width, or crowned at a minimum rate of one-quarter inch per foot of surface width as measured from the center-line of the road.

Response

The minimum crown of the road will be constructed at a 2 percent rate.

11. All material used in embankments shall be suitable for use under Paragraphs (d) (1)-(8) of this Section. The material shall be reasonable free of organic material, coal or coal blossom, frozen materials, wet or peat material, natural soils containing organic matter, or any other material considered unsuitable by the Division for use in embankment construction.

Response

All material used in embankments will be suitable for use under Paragraphs (d) (1)-(8) of this Section.

12. Excess of unsuitable material from excavations, as defined in Paragraph (d)(11) of this Section, shall be disposed of in accordance with UMC 817.71. Acid - and toxic-forming material shall be disposed of in accordance with UMC 817.48, 817.71(j), 817.81, and 817.103.

Response

All excavated material in this project will be used in embankments.

13. Acid-producing materials shall be permitted for constructing embankments for only those Class I Roads constructed or reconstructed on coal processing waste banks and only if it has been demonstrated to the Division that no additional acid will leave the confines of the coal processing waste bank. In no case shall acid-bearing refuse material be used outside the confines of the coal processing waste bank. Restoration of the road shall be in accordance with the requirements of UMC 817.103-817.117. However, nothing in this Section shall prohibit the use of coal refuse or coal processing waste which has been demonstrated to the Division to be nonacid and nontoxic-forming and to be a material suitable for its intended use as a construction material.

Response

Acid-producing materials will not be used in constructing the embankments on this project.

14. Topsoil or other material suitable under UMC 817.22 shall be placed on all embankment slopes of 1v:1.5h or flatter to aid in establishing vegetation and to minimize erosion. Topsoil material depth shall be adequate to support vegetation and to prevent erosion.

Response

Topsoil or other material suitable under UMC 817.22 will be placed on all embankment slopes of 1v:5h or flatter to aid in establishing vegetation and to minimize erosion. Topsoil material depth will be adequate to support vegetation and to prevent erosion.

15. Temporary erosion-control measures shall be incorporated during construction to control sedimentation and minimize erosion until permanent control measures can be established.

Response

Due to the size of the project, permanent silt fences will be installed to minimize sedimentation and erosion at the locations shown on Plate EEOG-090-1 and installed in conformance to Plate III-34. (see enclosed Plates).

- e. Topsoil removal. Before initiation of construction or reconstruction of a Class I Road, topsoil and other materials, as determined under UMC 817.22, shall be removed from the design roadbed, shoulders, and surfaces where associated structures will be placed, and shall be stored in accordance with UMC 817.23.

Response

In areas of new construction, the topsoil will be stripped and stored in accordance with UMC 817.23.

UMC 817.153 Roads: Class I: Drainage

a. General.

1. Each Class I Road shall be designed, constructed or reconstructed, and maintained to have adequate drainage, using structures such as, but not limited to, ditches, cross drains, and ditch relief drains. The water-control system shall be designed to safely pass the peak runoff from a 10-year, 24-hour precipitation event or a greater event if required by the Division.

Response

The 90 inch by 60 foot corrugated metal pipe has been designed to safely pass the peak runoff from a 10-year, 24-hour precipitation event, see sediment structure worksheet Page 29 & 30, also Plate III-28, Mine Permit Application, a copy which is attached.

2. Sediment control shall comply with UMC 817.42 and 817.45.

Response

Sediment control will comply with UMC 817.42 and 817.45, by installation of silt fences as shown on Plate EEOG-090-1 and installed in conformance with Plate III-34.

3. Vegetation shall not be cleared for more than the width necessary for road and associated ditch construction, to serve traffic needs and for utilities.

Response

Vegetation will be cleared for more than the width necessary for road and associated ditch construction.

b. Ditches.

1. A ditch shall be provided on both sides of a through-cut and on the inside shoulder of a cut-and-fill section, with ditch relief cross drains spaced according to grade. Water shall be intercepted before reaching a switchback or large fill and drained safely away in accordance with this Section. Water from a fill or switchback shall be released below the fill, through conduits or in riprapped channels, and shall not be discharged onto the fill. Drainage ditches shall be placed at the toe of all out slopes formed by the construction of roads.

Response

A ditch will be provided on both sides of a through-cut and on the inside shoulder of a cut-and-fill section. There are no switchbacks on this proposed project.

2. On flat sections of Class I Roads where rolling topography is insufficient to provide for free flow of water in the ditch section. Road sections may be constructed to elevate the road surface above the original ground surface to facilitate drainage.

Response

Not Applicable (see Plate EEOG-090-2).

c. Culverts and bridges.

1. (i) Culverts with an end area of 35 square feet or less shall be designed to safely pass the 10-year, 24-hour precipitation event without a head of water at the entrance. Culverts with an end area of greater than 35 square feet, and bridges with spans of 30 feet or less, shall be designed to safely pass the 20-year, 24-hour precipitation event. Bridges with spans of more than 30 feet shall be designed to safely pass the 100-year, 24-hour precipitation event or a larger event as specified by the Division.

Response

The 90 inch by 60 foot corrugated metal pipe has been designed to safely pass the peak runoff from a 20-year, 24-hour precipitation event. (See sediment structure worksheet, Page 29 & 30, and also Plate III-28, Mine Permit Application, a copy which is attached).

(ii) Drainage pipes and culverts shall be constructed to avoid plugging or collapse and erosion at inlets and outlets.

Response

Drainage pipes and culverts will be constructed to avoid plugging or collapse and erosion at inlets and outlets by installation of end sections where required.

(iii) Trash racks and debris basins shall be installed in the drainage area wherever debris from the drainage area could impair the functions of drainage and sediment-control structures.

Response

No trash racks and debris basins are required on this project due to the characteristics of the drainage area and upstream structures.

(iv) All culverts shall be covered by compacted fill to a minimum depth of 1 foot.

Response

All culverts will be covered by compacted fill to a minimum depth of 1 foot. (See Plate EEOG-090-2).

(v) Culverts shall be designed, constructed, and maintained to sustain the vertical soil pressure, the passive resistance of the foundation, and the weight of vehicles to be used.

Response

Culverts will be designed, constructed, and maintained to sustain the vertical soil pressure, the passive resistance of the foundation, and the weight of vehicles to be used.

2. Culverts for road-surface drainage only shall be constructed in accordance with the following:

(i) Unless otherwise authorized or required under Paragraphs (ii) or (iii), culverts shall be spaced as follows:

(a) Spacing shall not exceed 1,000 feet on grades of 0 to 3 percent.

(b) Spacing shall not exceed 800 feet on grades of 3 to 6 percent.

(c) Spacing shall not exceed 500 feet on grades of 6 to 10 percent.

(d) Spacing shall not exceed 300 feet on grades of 10 percent or greater.

Response

Culverts will be installed as shown on Plate EEOG-090-2, which spacing will be closer than required above.

(ii) Culverts at closer intervals than the maximum in Paragraph (c)(2)(i) of this Section shall be installed if require by the Division as appropriate for the erosion properties of the soil or to accommodate flow from small intersecting drainages.

Response

Spacing of the culverts shown on Plate EEOG-090-2 exceed the requirements of (i) above.

(iii) Culverts may be constructed at greater intervals that the maximum indicated in Paragraph (c)(2)(i) of this Section if authorized by the Division upon a finding that greater spacing will not increase erosion.

Response

Not Applicable (see Plate EEOG-090-2).

(iv) Culverts shall cross the road at not less than a 30 degree angle downgrade.

Response

All culverts to be installed will have slopes adequate to prevent sedimentation in the proposed culverts.

(v) Culverts may be designed to carry less than the peak runoff from a 10-year, 24-hour precipitation event if the ditch will not overtop and will remain stable.

Response

Not Applicable (all culverts will carry the 10-year, 24-hour precipitation event).

(vi) The inlet end shall be protected by a rock headwall or other material approved by the Division as adequate protection against erosion of the headwall. The water shall be discharged below the toe of the fill through conduits or in riprapped channels and shall not be discharged onto the fill.

Response

The inlet end will be protected by a rock headwall or end section to protect against erosion, and no water will be discharged onto the fill slopes.

- d. Natural drainage. Natural channel drainageways shall not be altered or relocated for road construction or reconstruction without the prior approval of the Division, in accordance with UMC 817.43 and 817.44. The Division may approve alterations and relocations only if-
1. The natural-channel drainage is not blocked;
 2. No significant damage occurs to the hydrologic balance; and
 3. There is no adverse impact on adjoining landowners.

Response

Not Applicable (the natural drainageway will not be altered).

- e. Stream crossings. Drainage structures are required for stream channel crossings. Drainage structures shall not affect the normal flow or gradient of the stream, or adversely affect fish migration and aquatic habitat or related environmental values.

Response

Not Applicable (the 90 inch by 60 foot corrugated metal pipe will not affect the normal flow or gradient of the stream, or adversely affect the aquatic habitat).

UMC 817.154 Roads: Class I: Surfacing

- a. Class I Roads shall be surfaced with rock, crushed gravel, asphalt, or other material approved by the Division as sufficiently durable for the anticipated volume of traffic and weight and speed of vehicles to be used.

Response

The surfacing of the proposed road will be 18 inches of crushed gravel. The 18 inch depth was arrived by comparisons of soil samples taken in the general area. Currently we are waiting for results from test run on samples taken at this site.

- b. Acid- or toxic-forming substances shall not be used in road surfacing.

Response

Acid- or toxic-forming substances will not be used in road surfacing.

UMC 817.155 Roads: Class I: Maintenance

- a. Class I Roads shall be maintained in such a manner that the required or approved design standards are met throughout the life of the entire transportation facility including surface, shoulders, parking and side areas, approach structures, erosion control devices, cut-and-fill sections, and such traffic-control devices as are necessary for safe and efficient utilization of the road.

Response

The proposed road will be maintained in such a manner that the required design standards are met throughout the life of the road.

- b. Class I Road maintenance shall include repairs to the road surface, blading, filling of potholes, and replacement of gravel or asphalt. It shall include revegetating, brush removal, watering for dust control, and minor reconstruction of road segments as necessary.

Response

The proposed road will be maintained in such a manner to provide a reasonable running surface for weight and speed of vehicles to be used.

- c. Class I Roads damaged by catastrophic events such as floods or earthquakes shall not be used until reconstruction of damaged road elements. The reconstruction shall be completed as soon as practicable after the damage has occurred.

Response

Reconstruction of damaged roads will be completed as soon as practicable after the damage has occurred.

UMC 817.156 Roads: Class I: Restoration

- a. Unless the Division approves retention of a Class I Road as suitable for the approved postmining land use, immediately after the road is no longer needed for operations, reclamation, or monitoring-
1. The road shall be closed to vehicular traffic;
 2. The natural-drainage patterns shall be restored;
 3. All bridges and culverts shall be removed;
 4. Roadbeds shall be ripped, plowed, and scarified;
 5. Fill slopes shall be rounded or reduced and shaped to conform the site to adjacent terrain and to meet natural-drainage restorage standards;
 6. Cut slopes shall be shaped to blend with the natural contour;
 7. Cross drains, dikes, and water bars shall be constructed to minimize erosion;
 8. Terraces shall be constructed as necessary to prevent excessive erosion and to provide long-term stability in cut-and-fill slopes; and
 9. Road surfaces shall be covered with topsoil in accordance with UMC 817.24(b) and revegetated in accordance with UMC 817.111-817.116.

Response

After the road is no longer needed for operations, reclamation to meet the above requirements will be completed as soon as practicable.

- b. Unless otherwise authorized by the Division, all road-surfacing materials shall be removed, hauled or conveyed, and disposed of under UMC 817.89.

Response

All road-surfacing materials will be removed and disposed of under UMC 817.89 unless otherwise authorized by the Division.

R-226 (Rev. 1/77)
 HIGHWAY RIGHT-OF-WAY
 ENCROACHMENT

PERMIT

18629

District No. 4 Date March 15, 1985 Application of Kaiser Steel Corporation
 , By Lynn Huntsman , Title Chief Engineer

Address P.O. Box D, Sunnyside, Utah , Phone 888-4421 , in Carbon County
 is hereby granted, subject to the Regulations for the Control and Protection of State Highway Rights-
 of-Way, Standard Specifications for Road and Bridge Construction, Specifications for Excavation on
 State Highways, General Safety Orders of the Industrial Commission, Safety Manual for Road and
 Bridge Construction, Instructions to Flagmen, the approved plans, and any special limitations set
 forth herein, permission for the purpose of Reconstruct an existing approach.

within right-of-way limits of Highway No. 123 , State Maintenance Section No. 04-123-01 ,
 Milepost No. 11.30 , in the following location:
About 1/2 mile northeast of the Sunnyside post office on the east side
of the highway.

Receipt of \$5.00 permit fee is hereby acknowledged (delete where not applicable). The work permit-
 ted herewith shall commence March 20 , 1985 and shall diligently be prosecuted to completion. The
 work shall be completed and all disturbed surfaces or objects restored on or before July 1,
 1985. In the event work is commenced under this permit, the applicant agrees to prosecute the same
 to completion by the date herein above specified. In the event the applicant fails or refuses to complete
 the work the Utah Department of Transportation may, at its election, fill in or otherwise correct any
 existing impediments at the expense of and subject to immediate payment by the applicant.

Applicant shall execute a bond in the minimum amount of \$1000, increased by multiples thereof as
 determined by the District Director, to insure faithful performance of the permittee's obligation.
 The bond shall remain in force for three years after completion of the work.

Before work permitted herewith is commenced, the applicant shall notify: Gerald Wallace at 637-3294
 and commencement of said work is understood to indicate that the applicant
 will comply with all instructions and regulations of the Utah Department of Transportation with respect
 to performance of said work, and that he will properly safeguard said work to prevent accident and
 shall indemnify and hold harmless the Utah Department of Transportation from all damages arising
 out of any and all operations performed under this Permit.

Permittee shall not perform any work on State highway right-of-way beyond those areas or operations
 stipulated on the permit.

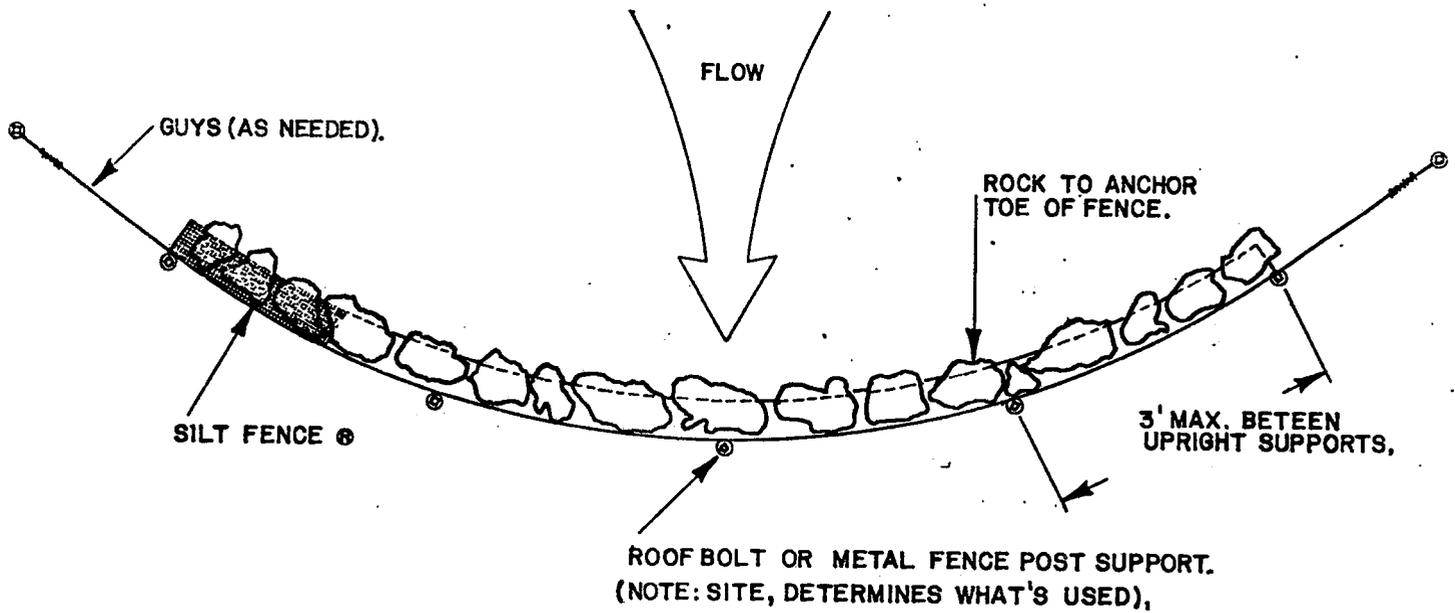
If applicant fails to comply with Utah Department of Transportation regulations, specifications, or
 instructions pertinent to this permit, the District Director or his duly authorized representative
 may by verbal order suspend the work until the violation is corrected. If the applicant fails or refuses
 to comply promptly, the District Director or his authorized representative may issue a written order
 stopping all or any part of the work. When satisfactory corrective action is taken, an order permitting
 resumption of work may be issued.

Special Limitations: As per submitted drawing.

X Lynn Huntsman
 (Signature of Applicant)

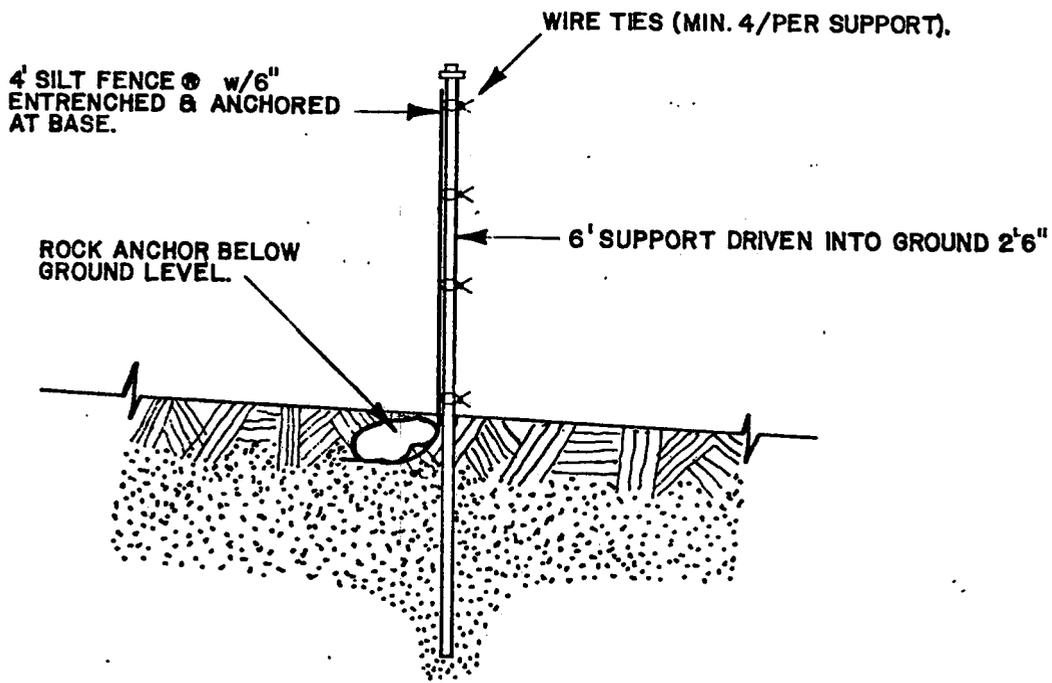
Approved by: Alfred Dickens

For - District Director



**PLAN
TYPICAL SITE**

NOTE: GALVANIZED TIE WIRE TO BE USED IN STRUCTURE CONST..



END VIEW (TYPICAL)

**KAISER
STEEL**

SUNNYSIDE MINES

REVISIONS		
NO.	DATE	BY
1		
2		
3		
4		

SILT FENCE INSTALLATION (TYPICAL)			
PLATE III-34			
<i>DRAWN BY</i>	BFA	<i>DATE</i>	11-29-84
<i>CHECKED BY</i>	DCP	<i>DATE</i>	11-29-84
<i>APPROVED</i>		<i>SCALE</i>	1" = 2'

DRAWING NO.
A5-0125

CULVERT CALCULATION

$$H = \frac{2.5204(1+K_e)}{D^4} + \frac{466.18n^2L}{D^{16/3}} \left[\frac{Q}{10}\right]^2$$

Where H = head in feet

K_e = entrance loss coefficient = 0.5

D = diameter of pipe in feet

n = Manning's roughness coefficient

L = length of culvert in feet

Q = design discharge rate in cfs

$$D = 6'$$

$$L = 60'$$

$$Q = 111.5$$

$$H = .504'$$

The existing culvert adequately handles the expected flow.

SEDIMENT STRUCTURE WORKSHEET

Sediment Structure:	M-CV, see Plate III-28
Soil Type:	Various types
Hydrologic Group:	B-D
Land Use:	Woods
Land Condition:	Good
Curve Number:	56
Storm Event:	
x 10-year 24-hour:	1.84"
25-year 24-hour:	2.20"
50-year 24-hour:	2.49"
100-year 24-hour:	2.66"
Contributing Area:	13,483 acres
Slope of Area:	24% Length of Drainage: 5900'
Slope of Drainage:	24%

RUNOFF CALCULATIONS

$$S = \frac{1000}{CN} - 10 = 7.857$$

$$Q = \frac{(P - .2(S))^2}{P + .8(S)} = 0.0089$$

PEAK RUNOFF CALCULATION

$$T_1 = \frac{1.8(S+1)^{.7}}{1900(\text{Slope})^{.5}} = 5.140$$

$$T_c = T_1 / .6 = 8.566$$

$$q_p' = 10^{(2.50963) - (0.6995)(\log T_c) - (0.14808)(\log T_c)^2 + (0.07074)(\log T_c)^3}$$

$$q_p' = 61.06$$

$$q_p = q_p' (\text{Area in square miles}) Q = 11.45 \text{ cfs}$$

Add 100 cfs for maximum reservoir outflow, total = 111.45

**APPLICATION FOR AN UNDERGROUND
COAL MINE PERMIT REVISION**

**KAISER COAL CORPORATION
SUNNYSIDE MINES
CARBON COUNTY, UTAH**

**KAISER
COAL**

KAISER COAL CORPORATION
102 SOUTH TEJON STREET, SUITE 800 ■ P.O. BOX 2679
COLORADO SPRINGS, COLORADO 80901-2679
(303) 475-7005 ■ TELEX 289 909

*Orig Mine file
K. Neal
L. Baxter
J. Whitehead*
RECEIVED

DEC 26 1985

**DIVISION OF OIL
GAS & MINING**

December 23, 1985.

HAND DELIVERED

Ms. Dianne Nielson
Utah Division of Oil, Gas & Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Attn: Mr. John Whitehead

Re: Response to Stipulations on the Sunnyside Mines
Permit Revision Application

Dear Mr. Whitehead:

This letter is to serve as a cross reference for Kaiser Coal Corporation's response to the three (3) stipulations listed in the findings document for the Sunnyside Mines Permit Revision. Fourteen (14) copies of the responses were transmitted to the Utah Division of Oil, Gas & Mining ("UDOGM") on Friday, December 20, 1985.

Stipulation 817.41-(1)

Within 30 days of permit revision approval, the applicant must commit to providing seven additional quarterly water quality samples according to the parameters listed in Table III-23 (1 of 4) of the MRP for Development Tunnel Inflow

Response: To be added to the end of page 33 of the Sunnyside Mines Permit Revision Application. Kaiser Coal Corporation will sample water inflows to the old works near the permit revision area. Samples will be taken on a quarterly basis over the course of the next two (2) years. A total of seven (7) quarterly samples will be taken. The samples will be tested according to the following parameters list:

Updated p 33, 40 added 12/30/85

J.W.

Field Measurements:
Water Levels or Flow
pH
Specific Conductivity
Temperature

Laboratory Measurements: (mg/l)
Total Dissolved Solids Magnesium
Total Hardness Manganese
Aluminum Mercury
Arsenic Molybdenum
Barium Nickel
Boron Nitrogen:
Carbonate Ammonia
Bicarbonate Nitrite
Cadmium Nitrate
Calcium Potassium
Chloride Phosphate
Chromium Selenium
Copper Sodium
Fluoride Sulfate
Dissolved Iron Sulfide
Lead Zinc

Stipulation 817.59-(1)

The applicant must submit an approved R2P2 for this revised mine area.

Response: A Resource Recovery and Protection Plan (R2P2) has been submitted to UDOGM. The Resource Recovery and Protection Plan was distributed to the appropriate agencies on December 10, 1985.

Stipulation 817.97-(1)

The applicant shall commit that should Kaiser's subsidence monitoring indicate an adverse impact on deer winter range in the permit area, Kaiser Coal Corporation will consult with DOGM and DWR to develop and implement mitigation.

Response: To be added to the end of page 40 of the Sunnyside Mines Permit Revision Application. Kaiser's subsidence monitoring program will serve to indicate if damage occurs to the deer winter range in the permit revision area as a result of subsidence. If an adverse impact on the deer winter range in the permit revision area is noted as a result of subsidence monitoring, Kaiser will consult with UDOGM and the Division of Wildlife Resources to develop and implement a mitigation plan.

Ms. Dianne Nielson
December 23, 1985

Page Three

Kaiser appreciates the prompt handling which UDOGM has so far given this permit revision application. We hope that the momentum may be maintained and the permit revision issued on a timely basis as noted in the letter dated December 11, 1985 from Ms. Dianne Nielson to Mr. Allen Klein.

Very truly yours,

KAISER COAL CORPORATION

Alan H. Garmowsky for Martin P. Holmes

Martin P. Holmes
Manager
Permits and Compliance

CHP:ski
Encl.

**KAISER
COAL**

KAISER COAL CORPORATION
102 SOUTH TEJON STREET, SUITE 800 ■ P.O. BOX 2679
COLORADO SPRINGS, COLORADO 80901-2679
(303) 475-7005 ■ TELEX 289 909

RECEIVED

NOV 04 1985

November 4, 1985

**DIVISION OF OIL
GAS & MINING**

Ms. Dianne Nielson
Director
Utah Department of Natural Resources
Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Re: Sunnyside Mines Permit Revision Application

Dear Ms. Nielson

Attached please find fourteen (14) copies of the Sunnyside Mines Permit Revision Application. Kaiser Coal Corporation has prepared this permit revision application in accordance with our understanding of discussions and meetings held with the Utah Division of Oil, Gas and Mining personnel. Pursuant to earlier meetings, Kaiser Coal submitted a draft revision application to the Division on October 30, 1985. The Division reviewed the draft revision application and Division personnel met with Kaiser Coal personnel on November 1, 1985 to review Division comments on the draft revision application.

Please review the attached permit revision document and provide us with your comments as soon as possible. Kaiser Coal would be happy to receive your comments, either written or verbally in order to speed the approval process.

Kaiser Coal appreciates the prompt response that the Division has given to this permit revision application. We hope that this spirit of cooperation between the Division and Kaiser Coal can be maintained.

Kaiser Coal personnel and ACZ Inc. personnel are at the disposal of you and your staff to answer any and all questions concerning this

Ms. Dianne Nielson
November 4, 1985

Page Two

permit revision application. Please contact me at the letterhead address or Mr. Conrad Parrish of ACZ Inc. at (303) 879-6260 if we can be of any assistance.

Sincerely,

KAISER COAL CORPORATION



Martin P. Holmes
Manager, Permits and
Regulatory Compliance

MPH:ski

cc: C. Borrell - Kaiser Coal
A. Klein, OSM - Denver
D. Dragoo - Fabian & Clendenin
D. Sturges - Delaney & Balcomb
A. Czarnowsky - ACZ Inc.

Prepared For
Utah Division of Natural Resources
Oil, Gas & Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180

PERMIT REVISION APPLICATION
Sunnyside Mines
Sunnyside, Utah

November 4, 1985

Submitted By
Kaiser Coal Corporation
102 South Tejon, Suite 800
Colorado Springs, Colorado 80903

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INTRODUCTION

The introductory section to the Kaiser Coal Corporation ("Kaiser") Permit Revision Application is an integral part of the permit revision application. This introduction is designed to provide the reviewer with important information. Information contained in this introduction is:

- Document Description
- Urgency
- Document Organization
- Document Scope
- Description of Revision Area and Operations
- Summary of Environmental Impacts

DOCUMENT DESCRIPTION

This Application is a request to revise the Sunnyside Mines Permanent Program Permit Application Package (PAP). The Sunnyside Mines PAP has currently been reviewed and approved by the Utah Division of Oil, Gas & Mining ("UDOGM") and is currently in the hands of the Office of Surface Mining ("OSM") for their approval. Kaiser is requesting that, following appropriate approvals by UDOGM and OSM, this permit revision become part of the Sunnyside Mines Permanent Program Permit.

URGENCY

Kaiser is requesting that UDOGM give this permit revision application rapid attention through the review and approval process. Kaiser has worked hard to ensure that UDOGM understands the urgency of this request and that Kaiser understands the UDOGM requirements for approval of this request. During several meetings and telephone calls held over the course of the last month, Kaiser has explained their position to the UDOGM. Briefly, that position is:

- Kaiser has recently been able to revitalize the Sunnyside Mines through sales of coal to firms other than the Kaiser Steel Mill at Fontana, California

- Workers have been recalled to the Sunnyside Mines and the mines are currently producing near their capacity
- The revitalized Sunnyside Mines are currently encountering mining problems related mostly to depth of mining
- In order to maintain production at the Sunnyside Mines, Kaiser needs to move part of its production equipment from the deep area of the current mines to the area requested in this application
- If Kaiser is not able to gain access to the coal requested under this permit revision application in the very near future, irreparable damage may occur to Kaiser, the Sunnyside Mines, and the workers at the Sunnyside Mines
- Kaiser is committed to doing everything that is reasonable and necessary to ensure that this permit revision application receives expeditious handling by UDOGM

UDOGM has been very responsive to Kaiser's needs. UDOGM has agreed to work with Kaiser to ensure rapid approval of this permit revision application. UDOGM has been very helpful to Kaiser and discussing the requirements which Kaiser must meet in this permit revision request. Kaiser appreciates this response on the part of UDOGM.

The extensive contacts made with the UDOGM staff were intended to ensure that the UDOGM staff has had the opportunity to provide comment on the contents of this application. Kaiser hopes that UDOGM can review and approve this permit revision request promptly and, likewise, submit this document to OSM for approval so that mining may begin in the requested area in the early part of January, 1986.

DOCUMENT ORGANIZATION

This permit revision application is organized by regulation. The decision to organize this document by regulation was made after consultation with UDOGM. UDOGM indicated that organizing this permit revision request by regulation would allow for a more expeditious review by the UDOGM staff.

DOCUMENT SCOPE

As previously mentioned, this is a permit revision application. Kaiser is requesting that an area of approximately 150 acres be attached to the Sunnyside Mines permit boundary. The area requested is immediately adjacent to the Sunnyside Mines permit boundary and is contiguous with that boundary on two (2) of its four (4) sides, as shown on the Permit Area Map (Map 1). The intimate geographic continuity of these two areas has, in a large part, affected the scope of this document.

The Sunnyside Mines permit boundary, shown on the Permit Area Map (Map 1), is the correct and most recent permit boundary for the Sunnyside Mines. The area shown includes two (2) road segments which were recently added to the Sunnyside Mines permit boundary.

Once approved, this document will become part of the Sunnyside Mines Permit. Therefore, it was decided that the only issues covered in this document are matters which are unique to the permit revision area. Matters which are general in nature and are identical to features found in the Sunnyside area are already contained in the Sunnyside Mines PAP. Therefore, once this permit revision application is approved and attached to the Sunnyside document, the two (2) documents together comprise the Sunnyside Mines Permit. Matters not addressed in this permit revision application are, therefore, intentionally omitted because they are currently covered in the Sunnyside Mines PAP.

Specific cross references to the Sunnyside Mines PAP have been made in this application only in those areas requested by UDOGM. The purpose of these specific cross references is to expedite the review of this permit revision request by addressing areas which UDOGM felt are either particularly sensitive or which require a specific finding on the part of UDOGM.

Regulations responded to in this permit revision application are, therefore, either items which have been found to be important to the revision area of 150 acres or items specifically requested to be cross

referenced by UDOGM for their convenience. All other regulations are covered under the current Sunnyside Mines PAP.

DESCRIPTION OF REVISION AREA AND OPERATIONS

The description of the revision area and subsequent planned operations covered by this permit revision application is given specifically to justify the contention that most of the Utah Coal Mining Regulations are covered by the current Sunnyside Mines PAP.

The total acreage covered by the Sunnyside Mines PAP is currently 14,385 acres. The area requested under this permit revision application is only 150 acres. The area requested under this permit revision application comprises slightly more than one (1) percent of the total area of the current Sunnyside Mines PAP. The relationship of the area covered by this request to the Sunnyside Mines permit boundary is shown on the Permit Area Map (Map 1). The Permit Area Map (Map 1) shows the almost insignificant nature of this addition to the Sunnyside Mines permit boundary. It also shows the relationship of the area covered by this permit revision request to the current Sunnyside Mines operations area.

The mining method to be employed in this area is identical to the mining methods currently used at the Sunnyside Mines. Development mining will be done by continuous miners. The continuous miners will be used to develop a longwall panel of approximately 600 feet by 6,000 feet. The area requested under this permit revision request comprises one (1) longwall panel. The coal produced during the development and extraction in this panel area will be handled through the existing Sunnyside Mines operations. The coal will be transported initially via rail through the existing Sunnyside Mines. After development work for a new beltway is complete, the coal will be transported through the Sunnyside Mines via conveyor belts.

Equipment to be used in the development and extraction of the area covered by this permit request is equipment which is currently in use at

the Sunnyside Mines. Upon approval of this permit revision request, a continuous miner crew will be moved from a portion of the Sunnyside Mines area to this new development area. The continuous miner development crews will proceed with the development of the longwall panel as shown on the Mine Plan Map (Map 2). As soon as the longwall panel is completely developed, a longwall setup from the Sunnyside Mines will be moved into the panel. This crew will proceed to extract the coal from within the panel until the panel is exhausted. These are the same crews, the same equipment, and the same methods currently employed at the Sunnyside Mines.

Coal produced from these operating sections will be produced from Federal Coal Lease No. SL068754. There is a long history of production from this federal coal lease. Production in this lease area started in 1956 and continued on an intermittent basis through 1977. Total production from this federal lease to date has been approximately 768,100 tons.

As shown on the Mine Plan Map (Map 2), there will be no surface disturbances within this area.

The Mine Plan Map (Map 2) also shows that no new hydrologic regimes will be entered by mining in this area. This permit revision area is adjacent to some old exploration works which are included in the Sunnyside Mines permit area. The old works have already affected the hydrologic regimes in the B Canyon area. Therefore, the planned mining in the permit revision area should not create any additional hydrologic disturbance.

A positive impact is expected on the Sunnyside Mines surface facilities as a result of transferring production to the area covered by this permit revision application. Although the total tonnage produced by the Sunnyside Mines will not change as a result of the addition of this area to the permit area, what will change is the quality of the coal mined and the quantity of water produced from the mine.

The operating sections which are planned to be moved to the new production area are currently producing from an area that has large rock splits. Washing the coal currently being produced by these sections results in a reject of approximately 40 percent of the run-of-mine coal. This high reject ratio has put a tremendous strain on the Sunnyside Mines coarse and fine refuse storage and disposal areas. Coal produced from the area covered by this permit revision application is expected to run approximately ten (10) percent reject through the preparation plant. This lower reject ratio will serve to reduce some of the inherent pressure put on the Sunnyside Mines coarse and fine refuse disposal areas.

Water flow from the Sunnyside Mines has historically followed a pattern of increasing with depth from the outcrop. For a considerable distance in from the outcrop, no water is produced during the mining of coal at the Sunnyside Mines. As extraction proceeds downdip, more water is encountered. The production sections which will be moved in to the area covered by this permit revision application are currently mining in an area which is a considerable distance from the outcrop. By moving these production sections to this permit revision area, a reduction in water flow from the mine should result.

SUMMARY OF ENVIRONMENTAL IMPACTS

Environmental impacts, as a result of coal mining in the area covered by this permit revision, will be negligible. This is mostly due to the fact that there will be no surface disturbance within this area. The lack of surface disturbance in the area precludes any impacts to wildlife, land use, air quality, or vegetation resources in the area. The area contains no alluvial valley floors or prime farmlands. Surface water quality and quantity in the area will not be affected by underground mining. A hydrologic survey of the area indicates that there are no seeps and springs within the affected area.

There will be minimal effects to ground water resources in the area. There will also be minimal surface effects due to subsidence over the

longwall panel. The effects on ground water and of subsidence are discussed under the appropriate regulation in this permit revision application.

Based on Kaiser's analysis of the operations plan for the area, the following facts are evident:

- There will be no surface disturbance in this area
- There are no new hydrologic regimes entered in this area
- There are no man made structures above this underground mining area
- This area will be used strictly as a replacement area for current Sunnyside Mines production

These facts have led Kaiser to the conclusion that this request is, in actuality, a request by Kaiser for an extension of their mine permit area across an imaginary line that was previously established as the permit boundary.

The extension of mine operations across an "imaginary" line is, in Kaiser's opinion, a very minor change in the operations of the Sunnyside Mines and represents almost negligible impact to the environment in the area. Therefore, Kaiser has chosen to organize this document in keeping with the minor nature of the requested revision. As mentioned previously, only the regulations affected specifically by moving across this imaginary line are addressed in this permit revision application.

UMC 771.25 - PERMIT FEES

The required \$5.00 permit application fee has been paid at the time of filing of this document. Exhibit 1, Permit Application Fee Receipt, contains a copy of the receipt issued by UDOGM upon receipt of the permit application fee with this permit application.

UMC 771.27 - VERIFICATION OF APPLICATION

Kaiser Coal Corporation is submitting with this permit revision application, the required verification of application. The verification of application is contained in Exhibit 2, Verification of Application. The verification of application has been signed by an official of Kaiser and contains the required affidavit.

UMC 782.16 - RELATIONSHIP TO AREAS DESIGNATED
UNSUITABLE FOR MINING

The Permit Area Map (Map 1) shows the location of the permit boundary requested under this permit revision application. Kaiser has examined the area with respect to areas designated unsuitable for mining. The area requested in this permit revision application does not contain any areas designated unsuitable for mining. The area is not under study as unsuitable for coal mining activities in an administrative proceeding begun under UMC 764, 30 CFR 765, or 30 CFR 769 and as stated in the following:

- The area requested is not within the boundaries of any National Park System, the National Wildlife Refuge System, the National System of Trails, the National Wilderness Preservation System, or the National Wild and Scenic Rivers System including study rivers designated under Section 5(A) of the Wild and Scenic Rivers Act.
- The area is not within the boundaries of any National Forest
- The area is not on any lands which will adversely affect any publically owned park or places included on the National Register of Historic Places
- The area is not within 100 feet of any public road
- The area is not within 300 feet of any occupied dwelling and there are no known occupied dwellings within the boundaries of the permit area requested
- There are no public buildings, schools, churches, community or institutional buildings or public parks within the permit area or within 300 feet of the permit area
- There area no known cemeteries within the permit area or within 100 feet of the permit area
- There are no alluvial valley floors or prime farmlands located within the permit area

UMC 782.21 - NEWSPAPER ADVERTISEMENT AND PROOF OF PUBLICATION

The required newspaper advertisement is currently being run in the appropriate newspaper. A copy of the newspaper advertisement and a proof of publication will be supplied in Exhibit 3, Newspaper Advertisement and Proof of Publication as soon as the publication period is complete.

UMC 783.14 - GEOLOGY DESCRIPTION

The geology of the area covered by this permit revision application is identical to the geology of the Sunnyside Mines permit area which adjoins this area on two (2) sides. A description of the Sunnyside permit area geology can be found in Chapter 6 of the Sunnyside Mines PAP. Chapter 6 of the Sunnyside Mines PAP is found in Book 6 of that application. The Sunnyside geology is appropriate to this permit revision application area as the only thing that separates these two (2) areas is the "imaginary" line drawn as the permit boundary for the original Sunnyside Mines.

As a supplement to the geologic information found in the Sunnyside Mines PAP, geologic logs of drill holes B1 and B2 can be found in Exhibit 4, Geologic Information. Drill holes B1 and B2 are located within the permit revision area, as shown on the Hydrology and Geology Map (Map 3). The information from these holes has been correlated to the existing Sunnyside Mines area and is shown on the Geologic Cross Section Map (Map 4).

Information on the roof and floor material in the permit revision area is shown on Table 4-1, Roof and Floor Analysis in Exhibit 4, Geologic Information. The samples were taken in the old works adjacent to the permit revision area. Approximate location of the sample points is shown on the Hydrology and Geology Map (Map 3).

The geologic occurrence of ground water in the old works adjacent to the permit area is described in Section 783.15, Ground Water Information.

Coal quality data appears on Table 4-2, Coal Quality Data in Exhibit 4, Geologic Information. The coal quality samples were taken in the old works adjacent to the permit revision area. Approximate locations of the sample points is shown on the Hydrology and Geology Map (Map 3).

UMC 783.15 - GROUND WATER INFORMATION

This section presents a discussion of ground water conditions within the permit revision area and adjacent areas. Conclusions drawn herein are based on a detailed seep and spring inventory of the area and information provided in the original Sunnyside Mines PAP.

A seep and spring inventory was conducted from September 23 through 27, 1985 within an area extending at least one (1) mile from the boundary of the permit revision area as shown on the Hydrology and Geology Map (Map 3). The area was traversed on foot to allow springs and seepage points to be precisely located, examined, and sampled.

Prior to collecting data from individual springs within the study area, infra-red aerial photographs of the study area were examined for potential ground water sources. This review indicated that numerous seeps and springs occurred in Whitmore Canyon, with very little potential for seeps and springs on the west-facing side of the Book Cliffs.

A reconnaissance of the area was then conducted by truck to locate potential access routes and areas of greatest potential for seepage. General geologic conditions were observed during this reconnaissance.

Field ground truthing of the area was conducted by traversing the area on foot. Several traverses were run in each canyon by following the general contour of the land. Binoculars were used to check areas across canyons that had been previously surveyed (or would be subsequently surveyed) to ensure that all springs were located.

Geologic conditions at all seeps and springs were noted in the field, including lithologic and structural controls and the geologic formation from which the seepage issued. Signs of usage were also noted. The flow rate was visually estimated and a sample of the water was collected if sufficient water was present. The temperature of the water issuing from the spring was measured at the site. All samples were analyzed on the day of collection for pH and specific conductance.

A discussion of regional ground water conditions is provided in Chapter 7, Book 6 of the original Sunnyside Mines PAP. From the discussion provided in that document, it is concluded that important regional aquifers do exist near the permit revision area.

Results of the seep and spring inventory conducted in the mine plan and adjacent areas are contained in Table 1, Results of Seep and Spring Inventory. Locations of these sources are noted on the Hydrology and Geology Map (Map 3).

The seep and spring locations, shown on the Hydrology and Geology Map (Map 3), supercede locations submitted previously with the Sunnyside and B Canyon Mine PAP's. Specifically, a spring is shown on Plate VII-3 of the Sunnyside Mine PAP in B Canyon within the permit revision area. An additional spring is shown on Plate VI-1 of the B Canyon PAP located in C Canyon approximately one (1) mile west of the permit revision.

The referenced spring, shown on the Sunnyside Mine PAP was reported by a local stockman, but not verified in the field by Kaiser personnel. The subsequent seep and spring survey conducted in conjunction with this permit revision application showed no signs of a spring or seep in the location shown in the Sunnyside Mine PAP.

Data presented with the B Canyon Mine PAP indicated that the referenced spring in C Canyon consisted of ponded water issuing from landslide debris that had blocked the stream channel. The water was reported to be cloudy with a flow rate of approximately one (1) gallon per hour, suggesting that the source of water was surface runoff that had ponded behind the landslide debris rather than subsurface seepage. Again, no sign of this spring was found during the most recent seep and spring inventory.

No springs or seeps were noted during the inventory that issued from the permit revision area or adjacent areas. As shown on the Hydrology and Geology Map (Map 3), only three (3) springs (K-26, K-39, and K-40) were found issuing from the same side of the ridge as the permit revision area.

Table 1
RESULTS OF SEEP AND SPRING INVENTORY - Part 1

Site Number	Flow (gpm)	pH (units)	Specific Conductivity (a)	Temp. (°C)	Geology	Use
K-1	<1	6.41	1,176	12	From sandstone/shale interface in roadcut in North Horn Formation	Wildlife
K-2	6	6.32	426	7	From sandstone/shale interface in the Green River Formation	Wildlife
K-3	7	6.57	554	7	From head scarp of landslide at Green River/Colton Formations contact	Wildlife
K-4	0	(b)	(b)	(b)	From landslide at contact of Green River and Colton Formations	None
K-5	2	6.94	554	6	From sandstone bedding plane in Colton Formation	Wildlife
K-6	1	7.58	370	4	From near toe of landslide in Colton Formation	None
K-7	5	7.45	1,610	8	Colluvium over sandstone in the North Horn Formation	Wildlife, Livestock
K-8	0	(b)	(b)	(b)	Colluvium over sandstone in the Colton Formation	None
K-9	0	(b)	(b)	(b)	From landslide underlain by Colton Formation	None
K-10	5	6.70	470	7	From sandstone/shale interface at base of Green River Formation	Wildlife, Livestock
K-11	3	6.69	582	5	From fractured sandstone in the Colton Formation	Wildlife, Livestock

Table 1
RESULTS OF SEEP AND SPRING INVENTORY - Part 2

Site Number	Flow (gpm)	pH (units)	Specific Conductivity	Temp. (°C) (a)	Geology	Use
K-12	4	7.04	1,015	7	From sandstone/shale interface in the Colton Formation	Wildlife, Livestock
K-13	5	7.02	1,318	7	From sandstone/shale interface near Green River/Colton contact	Wildlife, Livestock
K-14	2	7.22	1,253	9	From landslides sandstone/shale interface of the North Horn Formation	Wildlife, Livestock
K-15	<1	7.50	1,501	12	From landslide in sandstone of the North Horn Formation	Wildlife, Livestock
K-16	3	7.70	535	7	From fractured sandstone in the Colton Formation	None
K-17	4	7.11	650	8	From colluvium over sandstone of the North Horn Formation	Wildlife, Livestock
K-18	<1	6.98	859	8	From alluvium in stream channel over North Horn Formation	Wildlife, Livestock
K-19	1	6.91	784	9	From alluvium in stream channel over North Horn Formation	None
K-20	1	6.92	1,781	10	From sandstone/shale interface in the North Horn Formation	Livestock
K-21	2	7.22	495	5	From fractured sandstone in the Colton Formation	Wildlife
K-22	<1	(b)	(b)	(b)	From sandstone bedding plant in the Colton Formation	None

Table 1
RESULTS OF SEEP AND SPRING INVENTORY - Part 3

Site Number	Flow (gpm)	pH (units)	Specific Conductivity (a)	Temp. (°C)	Geology	Use
K-23	<1	(b)	(b)	(b)	From fractured sandstone in the Colton Formation	None
K-24	2	7.06	784	8	From colluvium over sandstone of the Colton Formation	Wildlife
K-25	1	7.06	770	7	From colluvium over sandstone of the Colton Formation	Wildlife
K-26	<1	7.20	546	11	From fractured sandstone in the Blackhawk Formation	None
K-27	2	7.27	899	7	From colluvium over sandstone/shale of the Colton Formation	Wildlife
K-28	0	(b)	(b)	12	From alluvium in stream channel over the Colton Formation	None
K-29	4	7.60	638	10	From sandstone/shale interface in the Colton Formation	None
K-30	<1	7.70	927	8	From slide block over shale in the Colton Formation	Wildlife
K-31	<1	(b)	(b)	(b)	From landslide over sandstone/shale unit in the Colton Formation	Wildlife
K-32	<1	(b)	(b)	(b)	From colluvium at contact of the Green River and Colton Formations	Wildlife, Livestock
K-33	<1	(b)	(b)	(b)	From colluvium at contact of the Green River and Colton Formations	Wildlife

Table 1
RESULTS OF SEEP AND SPRING INVENTORY - Part 4

Site Number	Flow (gpm)	pH (units)	Specific Conductivity (a)	Temp. (°C)	Geology	Use
K-34	<1	(b)	(b)	(b)	From colluvium at contact of the Green River and Colton Formations	Wildlife
K-35	2	7.61	885	6	From colluvium over sandstone of the Colton Formation	Wildlife
K-36	4	8.42	570	9	From small stream fed by seeps at site K-32	Wildlife
K-37	2	8.01	818	6	From debris flow over sandstone of the Colton Formation	Wildlife
K-38	7	8.50	560	5	From headscarp at base of sandstone cliff in Colton Formation	Wildlife
K-39	2	7.60	1,590	8	From colluvium over sandstone of the Price River Formation	Wildlife
K-40	1	7.90	586	10	From colluvium near sandstone/shale interface in Colton Formation	Wildlife

(a) In umhos/cm at 25°C

(b) Insufficient water to sample

As shown on Table 1, Results of Seep and Spring Inventory, over 50 percent of the seeps and springs inventoried issue from the Colton Formation. Estimated flow rates in these springs varied from four (4) gallons per minute (gpm) to minimal seepage, with most springs falling in the one (1) to two (2) gpm category. Seepage from this formation was noted primarily from fractured sandstone, from unfractured sandstone overlying less permeable shale layers, or from colluvium/alluvium overlying bedrock.

Nearly equal numbers of seeps and springs were found issuing from the North Horn and Green River Formations. These sources issue predominantly from bedding planes or from landslides. Only one (1) spring each was found issuing from the coal-bearing Blackhawk Formation and the overlying Price River Formation.

The data collected during the most recent seep and spring inventory indicate that ground water occurs in most geologic formations. However, none of the units appear to be saturated over large areas.

Springs with measurable flow rates are generally used for watering by deer and cattle. No signs of use for human consumption were noted. As would be expected, usage tends to be most abundant where flow rates are highest.

Data contained in Table 1, Results of Seep and Spring Inventory, indicate that the specific conductance of water issuing from springs in the study area is generally highest in the North Horn Formation. With decreasing stratigraphic depth, the specific conductance also decreases. Springs issuing from the upper-most Green River Formation typically had a specific conductance that varied from about 420 to 550 umhos/cm at 25°C while those issuing from the North Horn Formation had a specific conductance varying from approximately 800 to 1,600 umhos/cm at 25°C. Insufficient springs were found issuing from the Blackhawk and Price River Formations to determine trends in these units.

The pH of water sampled from springs in the area varied from 6.3 to 8.5, with no apparent trends within or between formations. Most springs tend to be slightly alkaline.

Based on the results of the seep and spring inventory, it is apparent that recharge to ground water within the study area occurs primarily through the Colton Formation, followed in importance by the Green River and North Horn Formations. Water apparently infiltrates into the interbedded sandstone, siltstone, and shale of the Colton Formation and flows to the northeast along the dip of the beds. Evidence of this is seen in the fact that all but three (3) of the springs found during the inventory occur in Whitmore Canyon northeast of the main ridge.

The western exposure of the Book Cliffs prevents significant accumulations of snow in the permit revision area. In addition, the steepness of the west-facing portion of the Book Cliffs leads to a short residence time during rainfall and snowmelt runoff events. This precludes significant infiltration and encourages runoff. Hence, recharge in the area occurs primarily in the flatter areas to the northeast along the main ridge.

Water flow into the old works adjacent to the permit revision area is currently estimated to be three (3) gpm. This information is based on Kaiser pumping data. Kaiser presently pumps the water from sump areas on an as-needed basis. The water finds its way into the mine by means of numerous small seeps in the coal and along the contact between the roof and rib. There are no areas exhibiting flow rates large enough to sample. Water in the sump was sampled and analyzed according to the baseline parameters list in the UDOGM Guidelines for Establishment of Surface and Ground Water Monitoring Programs. The results of the water analysis can be found in Exhibit 5, Ground Water Quality Data.

UMC 783.16 - SURFACE WATER INFORMATION

This section presents a discussion of surface water conditions in the vicinity of the permit revision area. Conclusions drawn herein are based upon a field reconnaissance and the information presented in Chapter 7, Book 6 of the Sunnyside Mines PAP.

The permit revision area is located in the Price River Basin. A discussion of surface water resources in the region surrounding the permit revision area is provided in the Sunnyside Mines PAP.

Two (2) ephemeral watersheds are found in the permit revision area over the planned underground mining, as shown on the Hydrology and Geology Map (Map 3). These watersheds flow only in the event of snowmelt runoff or rainfall runoff.

Grassy Trail Creek is the only perennial stream in the general vicinity of the permit revision area; however, this stream is located over one (1) mile northeast of the permit revision area boundary even at the closest point. Characteristics of this stream are previously discussed in the Sunnyside Mines PAP.

UMC 783.19 - VEGETATION INFORMATION

Information on the vegetation within the permit revision area boundaries can be found Book 7, Chapter 9 of the Sunnyside Mines PAP.

UMC 783.20 - FISH AND WILDLIFE RESOURCES INFORMATION

The wildlife resources found in the permit revision area are, for the most part, described in Chapter 10, Book 8 of the Sunnyside Mines PAP. As part of on-going efforts by Kaiser, a wildlife field study was conducted during the 1985 field season in the affected area and several other areas. The results of these field studies are shown in Exhibit 6, Summary of Wildlife Field Studies. An active golden eagle's nest is located over 2,500 feet from the potential subsidence line for the permit revision area and 3,000 from the permit revision area boundary. The location of the active golden eagle's nest is shown on the Subsidence Area Map (Map 5). No impact to this nest is anticipated as a result of the underground mining operations in the permit revision area.

Information given in Exhibit 6, Summary of Wildlife Field Studies, pertains not only to the permit revision area, but also to areas outside the permit revision area. This summary of the wildlife field study is presented in Exhibit 6 for information purposes only.

UMC 783.22 - LAND-USE INFORMATION

The land use in the permit revision area is the same as the land use of the adjacent Sunnyside Mines permit area. The land use in the adjacent Sunnyside Mines permit area is described in Chapter 4, Book 5 of the Sunnyside Mines PAP.

The Land Use Map (Map 6) shows the land use within the permit revision area. The land use designations on this map are identical to the land use designations found in the Sunnyside Mines PAP.

UMC 783.27 - PRIME FARMLAND INVESTIGATION

There are no prime farmlands present in the permit revision area. Soils found in the permit revision area are identical to soils found within the Sunnyside Mines permit boundary. The negative determination of prime farmlands for the Sunnyside Mines permit can be found in Figure 4-1, Prime Farmland Determination, Book 5 of the Sunnyside Mines PAP.

UMC 784.14 - RECLAMATION PLAN: PROTECTION OF HYDROLOGIC BALANCE

Mining in the permit revision area will have an effect on ground water similar to the effects of the current Sunnyside Mines. These impacts are discussed in Chapter 7, Book 6 of the Sunnyside Mines PAP.

As shown on the Hydrology and Geology Map (Map 3), no seeps or springs were found in the area of potential subsidence surrounding the permit revision area. Hence, no springs or seeps of importance will be impacted due to mining in the new area.

Since existing surface facilities will be used during mining in the permit revision area, and the revision area is only 150 acres, no hydrologic impacts are anticipated beyond those described in the Sunnyside Mines PAP.

Due to the similar nature of the geology and hydrology throughout the Sunnyside Mines area and the permit revision area, the probable hydrologic consequences of mining in the permit revision area are the same as the hydrologic consequences of mining in the Sunnyside Mines permit area. Since only two (2) ephemeral streams are found in this permit revision area above the planned mining, no additional hydrologic consequences to surface water are anticipated in the permit revision area.

The probable impacts on the ground water hydrologic regime are outlined in Chapter 3, Section 3.4.3.1, Projected Impacts of Mining on Hydrologic Balance, Book 1 of the Sunnyside Mines PAP.

UMC 784.20 - SUBSIDENCE CONTROL PLAN

Kaiser Coal Corporation has surveyed the area of the mine permit revision. The information gathered by Kaiser personnel indicates that there are no renewable resource lands within the proposed permit revision area. There are no known man made structures within the proposed permit revision area. As mentioned in Section 783.15, Ground Water Information, there is very little potential for significant ground water recharge on the west side of the Book Cliffs.

The subsidence area shown on the Subsidence Area Map (Map 5) represents an area within a 20° angle of draw from the edge of the longwall panel. The 20° angle of draw was estimated based on limited data from the existing Sunnyside Mines subsidence net and experience with subsidence in the same geologic regime.

UMC 784.21 - FISH AND WILDLIFE PLAN

Information given under Section UMC 783.20, Fish and Wildlife Resources Information, of this permit revision application, indicate that there exists only one (1) wildlife resource in or near the area. The wildlife resource referred to is the active golden eagle's nest. Since the active golden eagle's nest falls far outside the potential subsidence line, as shown on the Subsidence Area Map (Map 5), no impact to this nest will occur as a result of mining in the permit revision area.

UMC 784.24 - TRANSPORTATION FACILITIES

There will be no new surface transportation facilities associated with the permit revision.

The only transportation facilities associated with the permit revision area will be the use of an underground coal conveyor system. The underground coal conveyor system will be located primarily in the existing Sunnyside permit area and will be comprised of several primary features. These features are:

- Belt loading station
- Conveyor belts
- Conveyor drives
- Transfer points

BELT LOADING STATION

The configuration of the belt loading station will change depending upon the phase of development of the underground mine in the area. During the development phase of mining, the belt loading station will consist of a feeder breaker or a ratio feeder type of belt loading device. This belt loading device is semi-portable and is designed to be moved up with the advancing workings.

During the extraction or longwall phase of operations, the belt loading station will consist of a transfer point which may or may not include a ratio feeder. The transfer point will receive coal from the longwall face conveyor and load it onto the section belt for transportation out of the section.

CONVEYOR BELTS

The conveyor belts constitute the most visible portion of the transportation system used in this area. The belts will be either nylon or steel core belts, depending upon availability and operating

characteristics required. The belt core will be covered with a rubber or neoprene wear surface. The width of the belts will be dictated by equipment currently available at the Sunnyside Mines operations and expected coal production from the mine area. The conveyor belts will be supported on approximately five foot (5') centers on the carrying side with troughing idlers and ten foot (10') centers on the belt return side. Conveyor belts will be supported either by floor mounted frames or hanging type idler supports, depending on which is available at the time of installation of the belt.

CONVEYOR DRIVES

Conveyor drives will be semi-portable electric powered conveyor drive units. The drives will be appropriately sized to the expected coal load and belt length. The various conveyor drives used in the transportation system will be interlocked so that if any downstream belt stops, all upstream belts will stop. This interlocking function prevents the spilling and piling up of coal at transfer points.

TRANSFER POINTS

Transfer points will consist primarily of chutes, baffles, and deflector plates constructed at the mine site. Experienced mine personnel will design and construct the chutes, deflectors, and baffle plates at each point of transfer of coal from one belt to another.

These conveyor components will comprise the coal transportation system. The entire coal transportation system will be comprised of one belt loading station in the production area and several conveyor belts, drives, and transfer points. Since conveyor belts can only be operated in a relatively straight line, a separate belt, drive, and transfer point is required at each turn in the mine entry system. The conveyor belt system in the permit revision area will ultimately transfer to the conveyor belt system within the existing Sunnyside Mines permit boundary. The coal will be transported through the existing Sunnyside Mines permit area on conveyor belts to the surface.

During the initial development phase of the permit revision area, coal will be transported out through the existing Sunnyside Mines workings on a rail transport system. This rail transport system will not extend within the boundaries of the permit revision area.

UMC 784.25 - RETURN OF COAL PROCESSING WASTE TO
ABANDONED UNDERGROUND WORKINGS

No coal processing waste will be returned to abandoned underground workings within this permit revision area. Coal processing waste generated from the coal mined and processed from the permit revision area will be handled in the existing Sunnyside facilities.

UMC 817.41 - HYDROLOGIC BALANCE: GENERAL REQUIREMENTS

As stated in Section UMC 783.15, Ground Water Information and Section UMC 783.16, Surface Water Information, there are no known seeps and springs within the mine permit revision area. Surface water drainage channels within the mine surface area are all ephemeral channels depending on snowmelt runoff events or rainfall runoff events for flow. This minimal hydrologic resources in the area combined with the fact that there will be no surface disturbance within the mine permit revision area, leads to the conclusion that the mining activities will result in little, if any, change to the hydrologic balance in the permit revision area. Since effects on the hydrologic balance in the permit revision area are minimal, no mitigation or control plans will be taken other than the mitigation and control plans outlined in Chapter 3, Book 1 of the Sunnyside Mines PAP.

Kaiser will sample water inflows to the old works near the permit revision area. Samples will be taken on a quarterly basis over the course of the next two (2) years. A total of seven (7) quarterly samples will be taken. The samples will be tested according to the following parameters list:

<u>Field Measurements:</u>	<u>Laboratory Measurements: (mg/l)</u>		
Water Levels or Flow	Tot. Dissolved Solids	Fluoride	Phosphate
pH	Tot. Hardness	Dissolved Iron	Selenium
Specific Conductivity	Aluminum	Lead	Sodium
Temperature	Arsenic	Magnesium	Sulfate
	Barium	Manganese	Sulfide
	Boron	Mercury	Zinc
	Carbonate	Molybdenum	
	Bicarbonate	Nickel	
	Cadmium	Nitrogen:	
	Calcium	Ammonia	
	Chloride	Nitrite	
	Chromium	Nitrate	
	Copper	Potassium	

OLD

UMC 817.41 - HYDROLOGIC BALANCE: GENERAL REQUIREMENTS

As stated in Section UMC 783.15, Ground Water Information and Section UMC 783.16, Surface Water Information, there are no known seeps and springs within the mine permit revision area. Surface water drainage channels within the mine surface area are all ephemeral channels depending on snowmelt runoff events or rainfall runoff events for flow. This minimal hydrologic resources in the area combined with the fact that there will be no surface disturbance within the mine permit revision area, leads to the conclusion that the mining activities will result in little, if any, change to the hydrologic balance in the permit revision area. Since effects on the hydrologic balance in the permit revision area are minimal, no mitigation or control plans will be taken other than the mitigation and control plans outlined in Chapter 3, Book 1 of the Sunnyside Mines PAP.

UMC 817.48 - HYDROLOGIC BALANCE: ACID-FORMING AND
TOXIC-FORMING MATERIALS

Sufficient data does not currently exist to predict whether underground development waste which may be encountered in the permit revision area is acid-forming or toxic-forming material. Kaiser has taken some samples in the existing Sunnyside Mines and tested those samples for acid-forming and toxic-forming potential. The results of those tests are shown in Table 6.2, Chemical Analysis of Strata Above, Between, and Below Coal Seams Mined, and Table 6.3, Bookcliffs Commercial Laboratories Overburden Analysis Report. Both of these tables can be found as exhibits to Chapter 6, Book 6 of the Sunnyside Mines PAP.

Locations of these drill holes within the Sunnyside Mines permit area is shown on Plate 3-4, Underground Hydrology and Geology Description, in the Sunnyside Mines PAP. An examination of the data found in these tables indicates that the acid-forming and toxic-forming potential of the materials in and around the coal seam is highly variable.

Due to the variability of the acid-forming and toxic-forming potential of the underground waste materials, Kaiser will adopt the Underground Development Waste Disposal Plan found in the Sunnyside Mines PAP for the permit revision area. The Underground Development Waste Disposal Plan can be found in Section 3.4.9 of Chapter 3, Book 1 of the Sunnyside Mines PAP.

UMC 817.50 - HYDROLOGIC BALANCE: UNDERGROUND MINE ENTRY
AND ACCESS DISCHARGES

There will be no surface entries or accesses located within the limits of the permit revision area. Any water encountered in the underground workings will be disposed of in accordance with the plans set forth in Section 3.4.3, Protection of Hydrologic Balance of Chapter 3, Book 1 of the Sunnyside Mines PAP.

UMC 817.52 - HYDROLOGIC BALANCE: SURFACE AND GROUND WATER
MONITORING

Surface and ground water monitoring in the permit revision area will be conducted in conformance with the monitoring procedures outlined in Section 3.4.3.3 of Chapter 3, Book 1 of the Sunnyside Mines PAP.

Since there are no known perennial streams or springs within the permit revision area, the monitoring procedures for perennial streams and springs do not apply to the permit revision area.

Underground waters encountered during the course of mining the permit revision area will be monitored provided that they constitute a flow of greater than three (3) gpm. This is in accordance with the ground water monitoring plan found in Section 3.4.3.3 of Chapter 3, Book 1 of the Sunnyside Mines PAP.

UMC 817.59 - COAL RECOVERY

Coal mining within the permit revision area will be conducted in the same manner as coal mining throughout the Sunnyside Mines permit area. Coal recovery will be by means of continuous miner, room and pillar development mining with longwall retreat mining. The longwall mining methods to be used in the permit revision area represent the state of the art in underground coal mining technology. When utilizing longwall mining methods, the only coal that is left in the ground is a minimal amount of coal left in chain pillars in the headgate and tailgate entries, and coal required to be left as barrier pillars around long-term service entries.

Environmental integrity of the area will be best maintained through the use of longwall mining techniques. Longwall mining techniques allow for an overall areal subsidence to take place. Areal subsidence results in a minimum potential long-term damage to surface features. Surface damage is minimized by the consistent and relatively slow lowering of the surface over the mined out area. This is in contrast to the rat-hole or sink hole type subsidence often found over room and pillar type mining operations.

Kaiser is constantly engaged in improving their operations methods with the goals of increasing coal recovery thereby maximizing the value of the coal resource to Kaiser. Kaiser also seeks continual improvement in their mining operations in order to enhance the protection of the existing resources in the mine area. Assuring the maintenance of resources in the mine area has a direct economic benefit to Kaiser in that it minimizes the required expenditures for reclamation at the cessation of mining operations.

UMC 817.71 - DISPOSAL OF EXCESS SPOIL AND UNDERGROUND
DEVELOPMENT WASTE: GENERAL REQUIREMENTS

As noted under Section UMC 817.48, Hydrologic Balance: Acid-Forming and Toxic-Forming Materials, underground waste will be disposed of in accordance with the plan outlined in Section 3.4.9, Waste Disposal Plan, of Chapter 3, Book 1 of the Sunnyside Mines PAP.

It should be noted that the rate at which underground development waste, coarse refuse, and fine refuse is generated, will decrease as a result of moving production from the existing Sunnyside Mines area to the permit revision area. This reduction will come about as a result of transferring coal production from an area that is currently experiencing approximately 40 percent reject from the coal mined. The expected reject ratio in the permit revision area is approximately ten (10) percent. The reduction in rock mined with the coal will serve to reduce some of the pressures on the Sunnyside Mines surface disposal facilities.

The estimate of preparation plant reject from the permit revision area is based on geologic information on the coal in the revision area, past production from adjacent areas and knowledge of preparation plant efficiency. Geologic information gained through a reconnaissance of the old workings adjacent to the revision area and an examination of past production records indicate that there are no rock splits in the coal in the revision area. With no in-seam dilution, the only source of dilution is rock from the roof and floor. Past mining practice at Sunnyside indicates that roof and floor dilution will be negligible. Preparation plant efficiency is currently running at about 90 percent. This combination of factors leads to the conclusion that reject from the preparation plant will be approximately ten (10) percent.

UMC 817.88 - COAL PROCESSING WASTE: RETURN TO
UNDERGROUND WORKINGS

Coal processing waste will not be returned to the underground workings within the permit revision area. Coal processing waste generated from the coal mined and processed in the permit revision area will be handled in the existing Sunnyside facilities.

UMC 817.97 - PROTECTION OF FISH, WILDLIFE, AND
RELATED ENVIRONMENTAL VALUES

The only surface disturbance within the permit revision area will be subsidence. The lack of surface disturbance assures the protection of wildlife and related environmental values in the area. As mentioned in Sections UMC 784.21, Fish and Wildlife Plan, and UMC 783.20, Fish and Wildlife Resources Information, no wildlife resources will be affected by subsidence in the permit revision area. A golden eagle's nest is located over 3,000 feet from the permit revision area and will not be impacted by the mining in the permit revision area. There is one (1) inactive raven nest within the permit revision area. The location of the two (2) nests are shown on the Subsidence Area Map (Map 5).

Kaiser will monitor wildlife in the area according to the recommendations in Exhibit 6, Summary of Wildlife Field Studies. Should the monitoring activities, undertaken as a result of these recommendations, lead to the discovery within the permit area of any critical habitats, Kaiser will promptly report the discovery to UDOGM.

Kaiser's subsidence monitoring program will serve to indicate if damage occurs to the deer winter range in the permit revision area as a result of subsidence. If an adverse impact on the deer winter range in the permit revision area is noted as a result of subsidence monitoring, Kaiser will consult with the Division of Oil, Gas and Mining and the Division of Wildlife Resources to develop and implement a mitigation plan.

OLD

UMC 817.97 - PROTECTION OF FISH, WILDLIFE, AND
RELATED ENVIRONMENTAL VALUES

The only surface disturbance within the permit revision area will be subsidence. The lack of surface disturbance assures the protection of wildlife and related environmental values in the area. As mentioned in Sections UMC 784.21, Fish and Wildlife Plan, and UMC 783.20, Fish and Wildlife Resources Information, no wildlife resources will be affected by subsidence in the permit revision area. A golden eagle's nest is located over 3,000 feet from the permit revision area and will not be impacted by the mining in the permit revision area. There is one (1) inactive raven nest within the permit revision area. The location of the two (2) nests are shown on the Subsidence Area Map (Map 5).

Kaiser will monitor wildlife in the area according to the recommendations in Exhibit 6, Summary of Wildlife Field Studies. Should the monitoring activities, undertaken as a result of these recommendations, lead to the discovery within the permit area of any critical habitats, Kaiser will promptly report the discovery to UDOGM.

UMC 817.121 - SUBSIDENCE CONTROL: GENERAL REQUIREMENT

Surface subsidence will take place over the entire permit revision area. As shown on the Subsidence Area Map (Map 5), subsidence is expected to extend for some distance beyond the boundaries of the permit revision area. Subsidence within this boundary will be of the type generally associated with longwall mining.

Kaiser will establish a two-point subsidence monitoring net over the permit revision area. The subsidence monitoring points to be established over the panel are shown on the Subsidence Area Map (Map 5). The subsidence monitoring points will be field located and may vary slightly from the location shown on the Subsidence Area Map (Map 5).

The elevations of the subsidence monitoring points will be established prior to any longwall mining in the area. The subsidence monitoring net will be measured annually after the initial installation of the points until such time it is determined that subsidence in the area has ceased.

Kaiser will conform with the guidelines established for subsidence control in Section 3.4.8, Chapter 3, Book 1 of the Sunnyside Mines PAP.

UMC 817.122 - SUBSIDENCE CONTROL: PUBLIC NOTICE

Kaiser Coal Corporation will provide the required notice to landowners of record for areas over the permit revision area. The notification will be in accordance with the subsidence control plan found in Section 3.4.8 of Chapter 3, Book 1 of the Sunnyside Mines PAP.

UMC 817.124 - SUBSIDENCE CONTROL: SURFACE OWNER PROTECTION

There are no known man made structures, pipelines, powerlines, or renewable resource lands above the permit revision area. Kaiser Coal Corporation expects, therefore, that no material damage will occur which might reduce the value or reasonably foreseeable use of the surface lands.

UMC 817.126 - SUBSIDENCE CONTROL: BUFFER ZONES

There are no perennial streams, impoundments, or underground aquifers that serve as significant sources of water supply or any known man made structures above the permit revision area. The golden eagle's nest shown on the Subsidence Area Map (Map 5) will not be impacted. Therefore, since there are no sensitive features within the expected subsidence area, no buffer zones are planned around the permit revision area.

EXHIBIT 1

PERMIT APPLICATION FEE RECEIPT

EXHIBIT 1
PERMIT APPLICATION FEE RECEIPT

The attached receipt is a copy of the receipt given to Kaiser Coal Corporation upon filing this permit revision application with the Utah Division of Oil, Gas and Mining.

No. 57 November 4, 1985

Received from Kaiser Coal Corporation
Summerville Mines 5.⁰⁰ Dollars
Permit Revision 100

\$ 5.⁰⁰ Betty B

EXHIBIT 2

VERIFICATION OF APPLICATION

EXHIBIT 3

NEWSPAPER ADVERTISEMENT AND PROOF OF PUBLICATION

AFFIDAVIT OF PUBLICATION

STATE OF UTAH }
County of Carbon, } ss.

I, Dan Stockburger, on oath, say that I am
the General Manager of The Sun-Advocate,
a 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 Five (5)
consecutive issues, and that the first publication was on the
6th day of November, 19 85 and that the
last publication of such notice was in the issue of such newspaper
dated the 4th day of December, 19 85

Dan Stockburger

Subscribed and sworn to before me this

4th day of December, 19 85

Hally J. Baker
Notary Public.

NOTICE OF PERMIT REVISION APPLICATION

Pursuant to Utah Mining Code Part UMC 786, notice is hereby given that Kaiser Coal Corporation, 102 South Tejon, Suite 800, Colorado Springs, Colorado 80903 has submitted a complete permit revision application to the Utah Division of Oil, Gas and Mining and to the Office of Surface Mining, Reclamation and Enforcement, U.S. Department of the Interior.

The Sunnyside Mines Permit Revision Area is located near the town of Sunnyside, Utah, approximately twenty-five (25) miles east of Price, Utah via U.S. Highway 6 and State Highway 123. The following is the legal description of the Permit Revision Area:

Federal Coal Lease Number SL-066754. Areas within both the lease and the permit revision area are described as follows:

T14S, R13E, SLB&M, Utah
Section 13: Portions of: NW $\frac{1}{4}$, SW $\frac{1}{4}$, SE $\frac{1}{4}$ which are described as follows: Beginning at a point which bears 3,560 ft S 89° 51' E from the SW corner of Section 13: thence N 42° 30' W, 1,450 ft; thence S 47° 30' W, 109 ft; thence N 42° 30' W, 3,730 ft; thence N, 1,505 ft; thence S 42° 30' E, 6,490.9 ft; thence S 39° 25' W, 609.2 ft; thence N 89° 50' W, 424.5 ft to the point of beginning.

Section 14: Portions of the NE $\frac{1}{4}$ which are described as follows: Beginning at a point which bears 23.6 ft S from the NE corner of Section 14: thence S, 1,505 ft; thence N 42° 30' W, 1,150 ft; thence N 47° 30' E, 1,020 ft; thence E, 15.1 ft; thence S 42° 30' E, 30.9 ft to the point of beginning.

Section 24: Portions of the NE $\frac{1}{4}$ which are described as follows: Beginning at a point which bears 1,219.4 ft, N 89° 50' W from the NE corner of Section 24: thence S 39° 25' W, 359.3 ft; thence N 42° 30' W, 400 ft; thence S 89° 50' E, 523 ft to the point of beginning.

The described areas are contained on the 7 $\frac{1}{2}$ minute U.S. Geological Survey Quadrangle Map entitled Sunnyside, Utah.

A copy of the revision is available for public inspection at the Office of the County Clerk of Carbon County, Carbon County Court House, Price, Utah 84501. Written comments, objections or requests for informal conferences may be made to the Utah Division of Oil, Gas and Mining, 355 West North Temple, 3 Triad Center, Suite 350, Salt Lake City, Utah 84180-1203 (Attention D.R. Nielson) and to the Office of Surface Mining, Reclamation and Enforcement, Brooks Towers, 1020 15th Street, Denver, Colorado 80202.

Published in the Sun Advocate November 8, 13, 20, 27 and December 4, 1985.

My Commission expires My Commission Expires October 22, 1986, 19

Publication fee, \$ 135.00

Hole Log B-1
WESTERN DISTRICT, COAL
DRILL HOLE LOG

NAME OF PROPERTY

B-CANYON
(LT. FORK-A CANYON)

File No. B.C. 0061

HOLE No. B-1

LOCATION:

ANGLE _____ BEARING _____

STATE UTAH

COLLAR ELEVATION 7457.00

COUNTY CARBON

BOTTOM ELEVATION 6593.00

DISTRICT _____

DEPTH:

Overburden _____

Bedrock _____

Total Depth 864

Section 13 T 14 S R 13 E
NW-SE

Coordinates: 33,828.00 N
13,796.00 W

SCALE 1" = 50'

Date Started 6-24-52

Completed 7-2-52

Company or Driller Jones Core Drilling Co.
Dallas, Texas

Type(s) of Rig(s) _____

Type(s) of Bit(s) 2 1/8"

CASING RECORD _____

CEMENT RECORD _____

REMARKS Hole Cored from 690 ft. to 864 ft.

DEPTH		CORE RECOVERED	DESCRIPTION	LITHO	PROXIMATE				ULTIMATE				
FROM	TO				V. M.	F. C.	As h	S	C	H ₂	N ₂	O ₂	
0	18	18	Alluvium	100									
18	22	4	Gr SS										
22	57	35	Gr SS w Sh Stks										
57	68	11	Gr SS										
68	68.3	0.3	Coal										
68.3	71	2.7	Sh										
71	112	41	Gr SS										
112	124	12	Sandy Sh										
124	135	11	Gr SS										
135	141	6	Sandy Sh										
141	153	12	Gr SS										
153	159	6	Black Sh										
159	163	4	Gr SS										
163	195	32	Gr Sandy Sh	200									
195	199	4	Black Sh										
199	202	3	Gr Sandy Sh										
202	220	18	Gr SS										
220	220.5	0.5	Coal										
220.5	230	9.5	Black Sh										
230	238	8	Gr SS										
238	261	23	Gr SS w Sh Stks										
261	298	37	Sandy Sh w SS bands	300									
298	306	8	Black Sh										
306	316	10	Gr SS										
316	318	2	Black Sh										
318	345	27	Gr SS										

Hole Log B-1
 (Cont.)

Hole Log B-2

WESTERN DISTRICT, COAL DRILL HOLE LOG

NAME OF PROPERTY B-CANYON
(B-CANYON)

File No. B.C. 0062

HOLE No. B-2

LOCATION:

ANGLE _____ BEARING _____

STATE UTAH

COLLAR ELEVATION 7271.2

COUNTY CARBON

BOTTOM ELEVATION 6698.1

DISTRICT _____

DEPTH:

Overburden _____

Bedrock _____

Section 14 T 14 S R 13 E

NE-NE

Coordinates: 36,144.07 N

16,904.82 W

Total Depth 573.1

SCALE 1" = 50'

Date Started 6-16-52

Completed 6-21-52

Company or Driller Jones Core Drilling Co.
Dallas, Texas

Type(s) of Rig(s) _____

Type(s) of Bit(s) 2 1/8"

CASING RECORD _____

CEMENT RECORD _____

REMARKS Hole Cored from 400 ft. to 573.1 ft.

Logged by _____

EXHIBIT 4

GEOLOGIC INFORMATION

A N A L Y S E S

DEPTH		CORE RECOVERED	DESCRIPTION	LITHO	PROXIMATE				ULTIMATE					
FROM	TO				V. M.	F. C.	As h	S	C	H ₂	N ₂	O ₂		
0	16	16	Alluvium	100										
16	26	10	Gr SS											
26	28.5	2.5	Sandy Sh											
28.5	28.8	0.3	Coal											
28.8	39	10.2	Black Sh											
39	55	16	Sandy Sh											
55	60	5	Black Sh											
60	68	8	Gr SS											
68	72	4	Black Sh											
72	74.5	2.5	Gr SS											
74.5	74.8	0.3	Coal											
74.8	83	8.2	Gr SS											
83	86	3	Black Sh											
86	103.5	17.5	SS - Grayish Black											
103.5	108	4.5	Black Sh											
108	108.5	0.5	Coal											
108.5	176	67.5	Gr SS w Sh Stks											
76	194.5	18.5	Sandy Sh	200										
94.5	198.8	4.3	Coal											
98.8	203	4.2	Sh											
203	217	14	Gr SS											
217	229	12	Gr SS w Sh Stks											
229														
29	265	36	Gr SS											
265														
35	293	28	Gr SS w Sh Stks	300										

Hole Log B-2
(Cont.)

Hole Log B-4
WESTERN DISTRICT, COAL
DRILL HOLE LOG

NAME OF PROPERTY B - CANYON

File No. B.C. 0064

HOLE No. B-4

(RT. FORK - C CANYON)

LOCATION:

ANGLE _____ BEARING _____

STATE UTAH

COLLAR ELEVATION 7224.2

COUNTY CARBON

BOTTOM ELEVATION _____

DISTRICT _____

DEPTH:

Overburden _____

Bedrock _____

Section 11 , T 14S , R 13E
NE-SE

Coordinates: 39,572.04N
19,023.76W

Total Depth 634.3

SCALE 1" = 50'

Date Started 7-18-52

Completed 7-22-52

Company or Driller Jones Core Drilling Co.
Dallas, Texas

Type (s) of Rig (s) _____

Type(s) of Bit (s) 2 1/8"

CASING RECORD _____

CEMENT RECORD _____

REMARKS _____

Table 4-1
ROOF AND FLOOR ANALYSIS

Sample No.	pH ¹	E.C. ¹ mmhos/cm	Saturation %	Calcium ¹ meg/l	Magnesium ¹ meg/l	Sodium ¹ meg/l	SAR	Boron ² ppm
RF 1								
Roof	6.2	5.0	35	27.5	54.5	6.35	0.99	0.75
Floor	5.1	5.0	49	26.2	43.8	15.8	2.67	2.30
RF 2								
Roof	6.9	6.7	33	28.4	85.6	1.31	0.17	0.70
Floor	5.9	3.8	45	30.2	38.1	1.78	0.30	1.40

Sample No.	Total Sulfur %	Sulfate ³ Sulfur %	Acid Potential ⁴	Carbonates (as CaCO ₃) %	Acid-Base Potential	Sand %	Silt %	Clay %
RF 1								
Roof	0.48	0.06	13	0.5	-8	69	29	2
Floor	0.62	0.04	18	0.4	-14	*	*	*
RF 2								
Roof	1.67	0.22	45	14.7	102	65	30	5
Floor	0.72	0.09	20	<0.1	-20	*	*	*

¹ Saturated Paste Extracation
² Hot Water Extraction

³ Acid Extraction
⁴ Tons CaCO₃/1,000 Tons

* Test not performed due to large amounts of coal in sample

Table 4-2
COAL QUALITY DATA

Sample	Btu/lb	% Ash	% Moisture	Sulfur			Total
				% Pyritic	% Sulfate	% Organic	
BC-3	12,954	6.69	5.05	0.25	0.09	0.89	1.23
BC-4	12,875	6.81	5.18	0.22	0.10	0.70	1.02

EXHIBIT 5

GROUND WATER QUALITY DATA

Client : Kaiser Coal Company

Address : Sunnyside Mine

 Sunnyside, Utah 84539

Attn. : Mr. Doug Pearce

P.O. No.: 280873

Sample ID: B CANYON, X-CUT

Sample Date Time: 11/04/85 10:57

Lab No.: 85-WI/07241

Date Received: 11/06/85

Parameters

Bicarbonate as CaCO3	246.	mg/l
Boron, dissolved	1.40	mg/l
Calcium, dissolved	310.	mg/l
Carbonate as CaCO3	0	mg/l
Chloride	79.	mg/l
Fluoride	1.68	mg/l
Hardness as CaCO3	3686.	mg/l
Magnesium, dissolved	710.	mg/l
Nitrogen, ammonia	.12	mg/l
Nitrogen, nitrate	4.22	mg/l
Nitrogen, nitrite	.01	mg/l
Phosphorus, ortho	.03	mg/l
Potassium, dissolved	49.	mg/l
Sodium, dissolved	453.	mg/l
Sulfate	4155.	mg/l
Sulfide as S	.2	mg/l
Cations (sum)	94.93	meq/l
Anions (sum)	94.39	meq/l
Cation-Anion Balance	.29	%
Solids, total dissolved	5930.	mg/l
Aluminum, total recov.	-.05	mg/l
Arsenic, total recov.	-.001	mg/l
Barium, total recov.	.01	mg/l
Cadmium, total recov.	-.005	mg/l
Chromium, total recov.	-.01	mg/l
Copper, total recov.	-.02	mg/l
Iron, total	.17	mg/l
Lead, total recov.	-.02	mg/l
Manganese, total	.02	mg/l
Mercury, total recov.	-.0002	mg/l
Molybdenum, total recov.	-.05	mg/l
Nickel, total recov.	-.02	mg/l
Selenium, total recov.	-.002	mg/l
Zinc, total recov.	.02	mg/l

Remarks: EXPEDITE

Ralph V. Poulsen

Ralph V. Poulsen, Director

EXHIBIT 6

SUMMARY OF WILDLIFE FIELD STUDIES

**1985 Summary of Wildlife Field Studies
For B, C and Horse Canyon Areas,
Sunnyside Mines**

**Kaiser Coal Corporation
Mine Office: Sunnyside, Utah
Corporate Office: Colorado Springs, Colorado**

September 5, 1985

INTRODUCTION

Kaiser Coal Corporation (formerly Kaiser Steel) initiated a wildlife program for the B Canyon area starting with agency consultation visits in November 1983 and February 1984. Agency recommendations were received in January and March and were used to develop the B Canyon wildlife program. Field studies were conducted by Curt Jansen, Wildlife Ecologist in the spring of 1984 and results summarized in a report dated June 15, 1984.

The proposed B Canyon activities were significantly scaled down from plans discussed during the consultation meetings. Coal will be accessed through the adjacent Sunnyside Mine thus obviating the previously proposed surface disturbance. A permit application for B Canyon was submitted in May 1985.

The surface disturbance originally planned for B Canyon may now be a part of the plan for the C Canyon area which is the adjacent canyon to the north. Because C Canyon was discussed during the B Canyon consultation, a letter requesting waiver of the consultation requirement was sent from Mr. Doug Pearce, Mine Engineer for Kaiser Coal, to Mr. Steve Cox, Reclamation Biologist with DOGM. The waiver was granted in a letter to Mr. Pearce from Mr. Cox (May 20, 1985).

Raptor nest surveys were conducted during April 22-27 and June 4-8, 1985, as part of the ongoing program recommended in the June 15, 1984 report. The results are summarized below.

RAPTOR NEST SURVEY RESULTS

Searches were conducted with the aid of 7x binoculars and a 25x spotting scope from vantage points along the base of the cliffs. Cliffs were searched from the parked vehicle and during hikes on canyon roads. Search boundaries

were the cliff complex between the NE 1/4, section 23, R13E, T14S and the NE 1/4, section 15, R13E, T14S. B and C Canyons were searched most of their length.

The golden eagle nest located in the NW 1/4, section 23, R13E, T14S that was active in 1984 was active again in 1985. An adult and fledgling were observed on April 23 at the nest site. The only activity observed in the vicinity in June was a soaring immature.

A pair of vultures was observed at the head of C Canyon on April 23. A pair of falcons was observed on the same day near the mouth of B Canyon.

The ferruginous hawk nest located in NW 1/4, section 32, R13E, T14S that was active in 1984 was inactive this year. There appeared to be some new nest construction in April but no birds were observed on either trip.

Observations were not made from the cliff top as recommended in last year's June 15 report. Late snow again prohibited access from Bull Ridge. To gain a view point a route was hiked that went to the head of B Canyon, over the ridge to the head of C Canyon and down to the mouth of C Canyon. The major cliff habitat is found at the mouths of the canyons where erosional forces are most active. Except for this hike, most of the observation time was from the base of the cliffs at the confluence of B and C Canyons.

Recommendations

- Continue monitoring nests and nesting activity
- When possible observe nests from above the Bookcliffs

MIGRATORY BIRDS OF HIGH FEDERAL INTEREST

Birds observed during field trips are being documented in a permanent record. The golden eagle, ferruginous hawk and prairie falcon are the only

species on the List for the Uinta-Southwestern Utah Coal Production Region that have been observed.

Recommendation

- Continue to record observations on an incidental basis, i.e., no formal surveys will be conducted.

PRAIRIE DOG TOWNS

There are three prairie dog towns in the vicinity of facilities which could be constructed for the C Canyon area as reported last year. The U.S. Fish and Wildlife Service recommends that surveys for black-footed ferrets be conducted not more than 1 year before construction begins.

Recommendation

Construction start-up is scheduled for 1988 or 1989.

- Surveys should be conducted not more than 1 year before construction begins.

BIG GAME

No surveys specific to big game were conducted and none are planned. Incidental sightings are recorded and located on the field map.

Recommendation

- Utah Division of Wildlife Resources must be informed about construction plans so they can evaluate potential impacts and make their recommendations accordingly.
- Contact UDWR for updates on data pertaining to big game habitat use, migratory patterns and population status.

- Existing BLM pellet plot transect data be referenced for big game use of chained areas.

HORSE CANYON

Reconnaissance surveys were conducted at the mouth of Horse Canyon and from the road that borders the Cove at the base of the cliffs. A pair of eagles and a pair of prairie falcons were observed above the cliff at the center of section 9, R14E, T16S. No nesting activity was observed but the prairie falcons in particular exhibited strong courtship behavior. BLM records indicate a prairie falcon scrape in the vicinity of the falcon observation.