

0070013



State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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January 31, 1996

*Please put this
TA in the
permit binder
(make copy for PFO)*

William W. Engels
Intermountain Power Agency
Department of Water and Power
City of Los Angeles
111 North Hope Street, Room 1107
P. O. Box 111
Los Angeles, California 90051

Re: Approval of Division Order Responses, Intermountain Power Agency, Horse Canyon Mine, ACT/007/013-DO94A, Folder #3, Carbon County, Utah

Dear Mr. Engels:

The Division has completed a review of your latest revised plans for the reclamation of the Horse Canyon Mine Area. While your plans are not 100% complete, they are acceptable and adequate for incorporating into the Horse Canyon Reclamation Plan and are hereby approved. The approved plans include your submittals made on March 17, 1995, August 28, 1995 and December 29, 1995. Since some of your submittals build on and replace parts of other submittals, it is suggested that you or your consultant meet with us to ensure that the incorporation of all plans is consistent. Please contact us if this is not possible.

Even though we have approved your plans, there are still some remaining deficiencies which need to be corrected. Enclosed is the Division's Analysis which discusses the items needing further attention. Please review it and respond to the deficiencies (summarized at the beginning of the document).

Because of the outstanding deficiencies, Division Order DO94A is still in effect and you are still under the obligation to complete the requirements. Please provide the required response by March 1, 1995.

Sincerely,

Gene W. Kelley

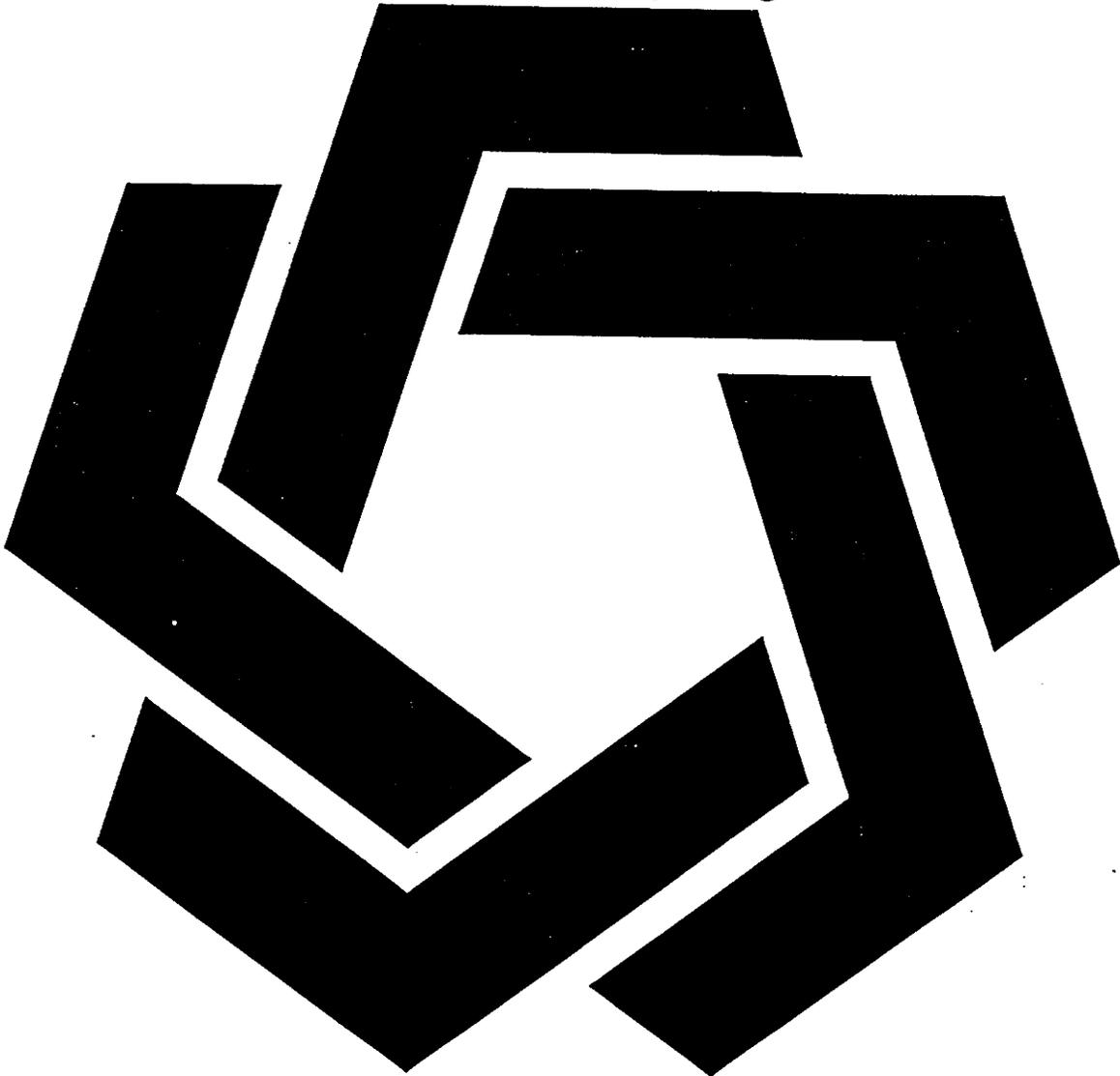
for Daron R. Haddock
Permit Supervisor

Enclosures

cc: P. Grubaugh-Littig
J. Kelley
P. Hess
ENGELS.IPA

Post-it® Fax Note	7671	Date	2/5/96	# of pages	14
To	Bill Engels	From	Pam		
Co./Dept.	IPAWP	Co.	DOGDM		
Phone #		Phone #			
Fax #	213-267-0269	Fax #			

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



ACT/007/013
Horse Canyon Mine
Technical Analysis and Findings
January 30, 1996

INTRODUCTION

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

Often the first technical review of an application finds that the application contains some deficiencies. The deficiencies are discussed in the body of the TA and are identified by a regulatory reference which describes the minimum requirements. In this Draft Technical Analysis we have summarized the deficiencies at the beginning of the document to aid you in responding to them. Once all of the deficiencies have been adequately addressed, the TA will be made final.

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

SUMMARY OF OUTSTANDING DEFICIENCIES

The permittee must address the deficiencies found in this Draft Technical Analysis and provide the following, prior to approval, in accordance with the requirements of:

1) **R645-301-526, R645-301-541.300**

The permittee must revise the plan to provide for the removal of the building foundations from the main facilities pad and the disposal of the resulting rubble at the base of the highwall and embankment fills.

2) **R645-103-234**

Since the Horse Canyon road will be a public road at the time of final reclamation, and since the final reclamation of the main facilities pad will involve the relocation of the road, the permittee must demonstrate that the reclamation plan complies with the requirements of this section. In particular, the permittee must 1) obtain approval from Emery County for the relocation of the road, and 2) provide an opportunity for a public hearing regarding the relocation of the road.

3) **R645-301-527**

The permittee is in the process of deeding the road, including the culverts, to Emery County and the maintenance of the culverts will thus become the responsibility of Emery County in its maintenance of the road. However, the agreement between the permittee and Emery County regarding the road is not yet final and so the Division cannot approve the final disposition of the road. The permittee must thus submit a copy of the final agreement with Emery County so that the Division can actually assess the agreement for compliance with the Utah Coal Program.

*Taken Care of
by Emery Co.
Takes Road*
R645-301-542.320

In Figure 1-6E, the road right-of-way must be extended to include the inlet to the culvert at the upper end of the main facilities pad, as agreed by the permittee and the Division.

R645-301-542.800

The permittee must check the overall reclamation cost estimate to see whether or not it includes the costs of demolishing the foundations on the main facilities pad and removing them. If the overall reclamation cost estimate does not include these costs, then the permittee must revise it to include them.

ANALYSIS

SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.21, 817.200 °

Analysis:

Excavation of the test pits was in the area between the county road and the barb wire fence that parallels the road. The outslope of the facilities' pad drops sharply away from the road downward toward Horse Canyon Creek on the northwest side of the fence. Pit excavations were located inside of the fence and oriented parallel to the shoulder of the road. Natural vegetation cover in the excavation area was moderate at TP-1 grading to poor moving from TP-3 to TP-5. Most of the soils in the excavation area had been disturbed and probably resulted from past construction of the facilities' pad. All test pits contained occasional coal, concrete, and brick fragments.

Generally, the sampled soils met acceptable criteria for substitute topsoil. Fertilizer recommendations determined by Utah State University Soils Laboratory were based on the soil analyses and sample results from the test pits. Nitrogen requirements were set at 40-70 lbs/A, P_2O_5 ranged from 35-55 to 50-70 lbs/A, and K_2O ranged from zero to 140-180 lbs/A.

Although soil texture ranged from loam to silt-loam, the available water holding capacity and saturation percent of all soils barely met criteria on the low end. IPA recommended adding an organic mulch during final reclamation to help correct the water holding capacity.

Test pits TP-3 and TP-4 contained between 20 and 30 percent subangular to subrounded sandstone gravel/cobbles with some boulders in TP-4. Recommendations included segregating the material for optimal use of available topsoil, mixing of material to reduce overall percentage of coarse fragments, and using soils with excessive rockiness (>30%) as uncontaminated fill over demolition debris in the pad area. Large boulders and cobbles would be removed from the soils and placed with demolition debris. Soil with lower percentage of rockiness would be used as the final one foot topsoil cover.

The potential exists for coaly soil and refuse material to be present in the subsurface outslope area. IPA recommends that when refuse or coal is found, that it be

excavated and buried in the facilities pad area under at least four feet of uncontaminated fill and topsoil.

EarthFax Engineering reports that enough substitute topsoil is stored in the outslope to adequately reclaim the facilities' pad area, without importing additional material from the existing borrow pit. Using the material from the outslope to reclaim the facilities' pad will reduce the amount of material to be excavated from the existing borrow area for final reclamation from approximately 50,000 cubic yards to approximately 17,000 cubic yards. The 17,000 cubic yards from the existing borrow area will be used for final reclamation of the main and manway portal area, the powder magazine area, and the water storage tank area.

Findings:

The discrepancy in the substitute topsoil handling plan has been successfully corrected and explained. Clarification of material handling from the facilities' outslope area and existing borrow pit area was made for the final reclamation plan. The material from the outslope area was shown to be a suitable substitute topsoil material by evaluating the inherent physical and chemical properties of the soil, assessing its low acid-forming potential, and determining that it would support vegetation as outlined by the DOGM's "Guidelines for Management of Topsoil and Overburden."

OPERATION PLAN

MINING OPERATIONS AND FACILITIES

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

Analysis:

Facilities and Structures

In an August 28, 1995 submittal made pursuant to Division Order DO-94A, the permittee states that the foundations of the buildings on the main facilities pad will not be demolished, but will be covered with 4 feet of fill material. However, the Utah regulations require that these foundations be removed and the original plan and Technical Analysis (TA) commit the permittee to remove them.

R645-301-526 says, "The permit application will include a narrative explaining the construction, modification, use, maintenance *and removal* of [mine structures and facilities] (unless retention of such facility is necessary for the postmining land use) [*italics added*]." R645-301-541.300 is even more specific when it says "For the purposes of UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES, all surface equipment, structures, or other facilities not required for continued underground mining activities and monitoring, unless approved by the Division as suitable for the postmining land use or environmental monitoring *will be removed* and the affected lands reclaimed [*italics added*]."

Page III-5 of the plan says, "All remaining surface facilities with the exception of the Lila Canyon portals *will be demolished and the debris disposed of in the highwall backfills* or removed from the property [*italics added*]." Page III-6 of the plan also indicates that the foundations will be removed when it says, "The bench area remaining *after the main buildings have been removed* will be backfilled with 4 feet of uncontaminated material including at least 1 foot of topsoil, recontoured, the access road relocated as shown on Plate III-1D, and the area revegetated [*italics added*]." And finally, page 17 of the original TA, dated May 6, 1991, says, "[During the reclamation plan period] [the remaining structures will be demolished and removed. Their foundations will be broken up and the debris placed at the base of the highwall backfill (see page III-5)." This was the Division's understanding of the plan, particularly the commitment on page III-5, and apparently the permittee agreed with that interpretation.

Findings:

The plan does not fulfill the requirements of this section.

The permittee must provide the following, prior to approval, in accordance with the requirements of:

R645-301-526, R645-301-541.300

The permittee must revise the plan to provide for the removal of the building foundations from the main facilities pad and the disposal of the resulting rubble at the base of the highwall and embankment fills.

RELOCATION OR USE OF PUBLIC ROADS

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

Analysis:

A March 17, 1995 letter from permittee representative Michael Nosanov states that the permittee will deed the Horse Canyon road to Emery County, but that the terms of that agreement have not yet been finalized. Since the Horse Canyon road will thus be a public road at the time of final reclamation, and since the final reclamation of the main facilities pad will involve the relocation of the road, the requirements of R645-103-234, as referenced by R645-301-521.133, must be met. An August 28, 1995 letter to the permittee from EarthFax, the permittee's consultant, states that the road agreement has still not been finalized.

Findings:

The plan does not fulfill the requirements of this section.

The permittee must provide the following, prior to approval, in accordance with the requirements of:

R645-103-234

Since the Horse Canyon road will be a public road at the time of final reclamation, and since the final reclamation of the main facilities pad will involve the relocation of the road, the permittee must demonstrate that the reclamation plan complies with the requirements of this section. In particular, the permittee must 1) obtain approval from Emery County for the relocation of the road, and 2) provide an opportunity for a public hearing regarding the relocation of the road.

RECLAMATION PLAN

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-270, -301-271, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

Analysis:

Sediment Ponds # 1 and #2 will be completely reclaimed when they are no longer needed for sediment and runoff control, as explained in Appendix VI-4. The ponds will first be breached and drained and their embankments and foundations allowed to dry. The ponds will then be filled in with material from their embankments and will be recontoured to blend into the topography of the surrounding area, as shown on Drawings III-1B-1 and III-1C-1 and in the cross sections of Appendix VI-4.

The main facilities pad will be regraded and restored to its Approximate Original Contour, as outlined on pages III-6 and IV-12 and as shown on Drawing III-1D-1 and in the cross sections of Drawing IV-1R. Material will be pulled back from Horse Canyon Creek and placed against the embankment and the main road will be relocated toward the embankment. The entire area will be covered with 4 feet of suitable material, including at least 1 foot of topsoil.

Findings:

The plan fulfills the requirements of this section.

BACKFILLING AND GRADING

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

Analysis:

Sediment Ponds # 1 and #2 will be completely reclaimed when they are no longer needed for sediment and runoff control, as explained in Appendix VI-4. The ponds will first be breached and drained and their embankments and foundations allowed to dry. The ponds will then be filled in with material from their embankments and will be

recontoured to blend into the topography of the surrounding area, as shown on Drawings III-1B-1 and III-1C-1 and in the cross sections of Appendix VI-4.

The main facilities pad area occupies what was, even before the construction of the pad and buildings there, a natural alluvial terrace which sloped mildly toward the channel of Horse Canyon Creek. This is evidenced by 3 things. First, such terraces are present in the surrounding area. Second, the main facilities pad is on the inside of a bend in Horse Canyon Creek, which is where such terraces form because of the slowing of the creek flow and the resulting deposition of suspended material. And third, Plate X-1, which is a reproduction of a 1905 map of the area and is included in the plan, shows a terrace at the location of the main facilities pad. This area will be regraded and restored to its Approximate Original Contour, as outlined on pages III-6 and IV-12 and as shown on Drawing III-1D-1 and in the cross sections of Drawing IV-1R. Material will be pulled back from Horse Canyon Creek, placed against the embankment, and sloped toward the creek channel to approximate the configuration of the original terrace. The main road will be relocated toward the embankment. The entire area will be covered with 4 feet of material, including at least 1 foot of topsoil.

Appendix IV-5 contains volume estimates for the backfilling of the main facilities pad. These estimates show that this earthwork will require approximately 12,102 cubic yards of fill material and that approximately 12,373 cubic yards of cut material are available. This means that all the material necessary for the reclamation of the main facilities pad is available in the pad and no additional material will have to be removed from the borrow area.

The large culvert which enters the main channel of Horse Canyon Creek in Area 30 (the landfill area) will be removed. The drainage channel of which it is the last segment will be restored and receive rip rap and will thus become like the rest of the channel above it. This earthwork will require the removal of approximately 240 cubic yards of material and the re-placement of approximately 26 cubic yards. The surplus of 214 cubic yards will be hauled to the site of Sediment Pond #1 and used to recontour that area.

There are 7 road culverts, as shown in Figures I-6A through I-6F: 2 adjacent to the landfill area, 1 adjacent to the old tipple area, downstream from Sediment Pond #1, 2 between the old tipple area and the bridge over Horse Canyon Creek, 1 immediately below the main facilities pad and 1 immediately above it. All of these culverts will be retained after final reclamation to carry runoff beneath the road, which will also remain as a public (Emery County) road.

Four of the road culverts--namely, the culvert adjacent to the old tipple area, the culvert down canyon from the bridge, and the 2 adjacent to the main facilities pad--extend for several yards beyond the road embankments. These extensions, however, will not be removed. To remove them would create unnecessary additional disturbed areas and would jeopardize the stability of the road. The permittee is in the process of deeding the road, including the culverts, to Emery County and the maintenance of the culverts will thus become the responsibility of Emery County in its maintenance of the road. However, the agreement between the permittee and Emery County regarding the road is not yet final and so the final disposition of the road cannot be approved until the Division can actually assess the agreement for compliance with the Utah Coal Program.

Findings:

The plan does not fulfill the requirements of this section.

The permittee must provide the following, prior to approval, in accordance with the requirements of:

R645-301-527

The permittee is in the process of deeding the road, including the culverts, to Emery County and the maintenance of the culverts will thus become the responsibility of Emery County in its maintenance of the road. However, the agreement between the permittee and Emery County regarding the road is not yet final and so the Division cannot approve the final disposition of the road. The permittee must thus submit a copy of the final agreement with Emery County so that the Division can actually assess the agreement for compliance with the Utah Coal Program.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 701.5, 784.24, 817.150, 817.151; R645-100-200, -301-513, -301-521, -301-527, -301-534, -301-537, -301-732.

Analysis:

See **BACKFILLING AND GRADING** above.

MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

Analysis:

Reclamation backfilling and grading maps.

Pursuant to Division Order DO-94A, Drawings III-1A-1, III-1B-1, III-1C-1, III-1D-1, and IV-1R were added to the plan in 1995 to show the backfilling and grading to be done in the landfill area, in the areas of the sediment ponds, and in the main facilities pad area. Drawing IV-1R shows cross sections of the final configuration of the main facilities pad area and these cross sections are located on Drawing III-1D-1.

Reclamation facilities maps.

Pursuant to Division Order DO-94A, Figures I-6A through I-6F were added to the plan in 1995 to show the proposed road right-of-way which was deeded to Emery County. These figures show the right-of-way correctly except Figure I-6E. In this figure, the right-of-way has not been extended to include the inlet to the culvert at the upper end of the main facilities pad.

Final surface configuration maps.

Pursuant to Division Order DO-94A, Drawings III-1A-1, III-1B-1, III-1C-1, III-1D-1, and IV-1R were added to the plan in 1995 to show the final surface configuration of the landfill area, of the areas of the sediment ponds, and of the main facilities pad area. Drawing IV-1R shows cross sections of the final configuration of the main facilities pad area and these cross sections are located on Drawing III-1D-1.

Findings:

The plan does not fulfill the requirements of this section.

The permittee must provide the following, prior to approval, in accordance with the requirements of:

R645-301-542.320

In Figure 1-6E, the road right-of-way must be extended to include the inlet to the culvert at the upper end of the main facilities pad, as agreed by the permittee and the Division.

BONDING AND INSURANCE REQUIREMENTS

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

Analysis:

Determination of Bond Amount

The costs of reclaiming the main facilities pad and sediment ponds and of removing the culvert from the landfill area were estimated using the earthwork volume estimates cited in **BACKFILLING AND GRADING** above. These costs are much less than the original estimates because the original estimates were based on the hauling of material the long distance from the borrow area. Under the revised plan for the main facilities pad, however, all the necessary material will come from the edge of the facilities pad itself. The cost estimation procedure is found in Appendix IV-4.

The permittee used a cost estimate of \$2.96 per cubic yard for cutting and hauling and \$2.43 per cubic yard for spreading and compacting. Both costs come from *Means[®] Site Work and Landscape Cost Data 1995*. Using the total volume estimate of 17,568 cubic yards, the estimated earthwork costs are thus \$52,001 for cutting and hauling and \$42,690 for placement, or a total of \$94,691 for all the earthwork.

The costs of sediment control at the main facilities pad were then calculated. Using Kaiser Engineering's cost estimate of \$414.26 per acre for the 4.43 acres in the pad area, the cost for sediment control totals \$1,835.

The revegetation costs for the main facilities pad, the sediment pond areas, and the removal of the culvert in the landfill area were then calculated. Using Kaiser Engineering's cost estimate of \$3,779 per acre for the combined 12.14 acres of these areas, the total revegetation cost comes out to be \$45,877.

The earthwork and sediment control costs associated with the main facilities pad area, the earthwork costs associated with the reclamation of the sediment ponds and the removal of the landfill culvert, and the revegetation costs of all of these additional areas

were then added together and a 20% contingency was also added on. The total reclamation cost thus arrived at is \$170,884. Since this sum is less than the original sum of \$178,000 allocated for this work, it does not appear that the bond need to be revised. However, as discussed under **MINING OPERATIONS AND FACILITIES** above, the permittee contends that the original plan did not provide for the removal of the building foundations from the main facilities pad. It is, therefore, unclear whether or not the overall reclamation cost estimate includes the costs of demolishing and removing these foundations. The permittee must check this. If the overall reclamation cost estimate does not include these costs, then it will have to be revised to include them. Thus, the reclamation cost estimate is not verifiable and the Division cannot approve it.

Findings:

The plan does not fulfill the requirements of this section.

The permittee must provide the following, prior to approval, in accordance with the requirements of:

R645-301-542.800

The permittee must check the overall reclamation cost estimate to see whether or not it includes the costs of demolishing the foundations on the main facilities pad and removing them. If the overall reclamation cost estimate does not include these costs, then the permittee must revise it to include them.

HCTADO94A.PAR

**HORSE CANYON MINE
INTERMOUNTAIN POWER AGENCY
TECHNICAL ANALYSIS
ACT/007/013**

**Carbon County, Utah
May 6, 1991**

R614-301-100 GENERAL CONTENTS (SW)

112. Identification of Interests. The permit applicant and operator for the Horse Canyon Mine is the Intermountain Power Agency (IPA). IPA is a political subdivision of the State of Utah. Denise Dragoo with Fabian and Clendenin is the resident agent who will accept service of process (page I-11). The name and address of IPA officers and directors are on page I-12. The applicant has not previously operated any coal mining operations within the five years preceding date of application. The owners of surface lands are listed on page I-8, contiguous surface owners on page I-13 and coal ownership on page I-9. The holder of a leasehold interest is shown on page I-10. The Horse Canyon Mine MSHA number is given on page I-14. There are no outstanding interests for lands contiguous to the permit area.

113. Violation Information. The applicant nor any affiliate has neither a permit revoked nor forfeited any mining bond (page I-16). A list of violations descriptions and status are on page I-16.

114. Right-of-Entry Information. A copy of the Deed and Assignment upon which the applicant bases the right-of-entry is found in Appendix I-5.

115. Status of Unsuitable Claims. The Horse Canyon Permit area is not within an area which has been designated as unsuitable for mining. There are public roads within 100 feet of the permit area.

116. through 150. Permit Terms, Insurance and Maps. The permit application is for a five-year permit term. The Certificate of Liability Insurance is carried by Associated Electric & Gas Insurance Services Limited (Appendix I-3).

The Permit Application Package (PAP) is clear, concise and filed in a format which is acceptable to the Division. A notarized signature by the coal supply managers stating that all information in the permit is true and correct is found on the first page of the permit application.

All maps and plans are of an appropriate scale, and all applicable maps and plans distinguish between operations which occurred prior to August 3, 1977.

COMPLIANCE

The applicant is in compliance with all sections of R614-301-100.

R614-301-200 SOILS (HS)

210. Introduction. The applicant has proposed the reclamation of approximately 53 acres, during the mining phase of operations (pages VIII-17 through VIII-36). An additional 12.61 acres of disturbance will be reclaimed at a later date, during the reclamation phase of operations (page VIII-36). The Lila Canyon portals (0.8 acres of disturbance) will not be reclaimed, however, the portals have been sealed and mine equipment has been removed from the area (page II-14). All surface disturbance occurred prior to PL 95-87 (i.e., pre-law) (page II-4). Therefore, topsoil was not salvaged prior to surface disturbance and the applicant has proposed the use of substitutes topsoil material for reclamation (page II-16). The borrow area disturbance will be approximately 10 acres during the mining (8 acres) and reclamation phases (1.6 acres) (page VII-18). A complete discussion of the borrow area topsoil material proposed as substitute topsoil may be located in Section 7.4.2. A small topsoil stock pile (30 cubic yds) located adjacent to the Road Junction Refuse Pile, will be used to cover portions of the refuse pile (VIII-18).

220. Environmental Description. The soils of the Horse Canyon Mine permit area are highly variable. Therefore, the forthcoming discussion will be limited to the soils in the vicinity of the disturbance and the soils of the proposed borrow area.

The soils of the Horse Canyon Mine are primarily colluvium, alluvium, and glacial outwash derived primarily from sandstone and shale. The soils tend to be coarse-loamy to loamy mixed (calcareous) mesic throughout the profile.

An aridic to ustic moisture regime with a mesic temperature regime prevails.

Average annual precipitation is between 8-14 inches with the mean annual soil temperature higher than 7°C, but lower than 10°C. The topography of the area is gently sloping to steep, ranging from 1 to 50 percent slope. The aspect ranges from north to south. The soil capability classification ranges from III to VIII-S non-irrigated.

Under native vegetation erosion hazards associated with these soils are moderate to high. The erosion hazard for disturbed soils is high to sevier. These soils are generally well drained and range in texture from fine sandy loam to very bouldery loam. The pH of the surface horizon ranges from neutral to highly alkaline (>9.0). The electrical conductivity is generally low (<4 mmhos/cm at 25°C). The depths of reported A horizon range from 4 to 8 inches.

The Horse Canyon Mine soil resource is surveyed at the Order II scale. Correlation of site map units with currently recognized soil series or map units are as follows: Gerst-Badland-Rubbleland Complex 15-50% slope; Glenberg fine sandy loam

1-3% slope; Strych very bouldery loam 15-45% slope; Strych very stony loam 5-15% slope. The soils in the vicinity of the disturbance are coarse-loamy to loamy, mixed (calcareous), mesic, shallow ustic torrifluvents to torriorthents. The soils within the proposed topsoil borrow area are loamy-skeletal, mixed (calcareous), mesic ustollic calciorthids. Soil profile depths generally range from 20 to greater than 60 inches.

The major limiting factors for the soils in the vicinity of the disturbance is low organic matter content and the high percentage of rock fragments. Thus the available water capacity is low and the erosion hazard is high.

The major limiting factor for the soils within the proposed topsoil borrow area are high pH, high alkalinity (calcic horizon) and suspect high sodium absorption ratio. Hence, the soils are low in nutrient availability and have poor physical conditions which deter water movement and root penetration.

221. Prime Farmland Investigation. An investigation was conducted to determine if prime farmland exists within the permit area. Francis T. Holt, State Soil Conservationist (1983) for the U.S. Soil Conservation Service, determined that the soils within the permit area do not meet the requirements for prime farmland (Appendix VII-6).

230. Operations Plan. The disturbance associated with the Horse Canyon Mine occurred pre-law. Therefore, topsoil was not salvaged from the disturbed area. The applicant has proposed utilizing substitute topsoil as a plant growth medium for final reclamation. Substitute topsoil material will be derived from a borrow area south of the Road Junction Refuse Pile. The dimensions of the borrow area are depicted on DWGS No. II-3G and III-1G. Approximately 88,000 cubic yds of topsoil will be required during the mining phase of operations (page II-17). Approximately 52,000 cubic yds of topsoil will be required during the reclamation phase of operations (page VIII-18). Topsoil from the borrow area will be removed from the eastern side of the pit during the mining phase and be contoured to act as its own sedimentation pond (page II-18). Topsoil will be excavated by front-end loaders, trucks, scrapers and dozers (page VI-18). Small tree branches and shrubby vegetation will be removed as part of the soil removal process (page VII-19). Large stones and boulders will be selectively removed and placed in the excavated borrow area to provide small mammal habitat or used as fill material in highwalls. During excavation of the borrow area soils, an experienced soil technician will periodically sample soil material as they are exposed (page VII-19). This procedure will identify and separate the highly alkaline (pH greater than 9.0 SI) calcic horizon (refer to section R614-301-233) from the suitable soil material above and below the calcic horizons. Heavy machinery operators will then be instructed to separate the calcic horizon. The soil material within the calcic horizon will be placed at the bottom of the reclaimed soil profile, in direct contact with the

regraded spoils/refuse. The soil material below the calcic horizon (lithic-paralithic contact) will then be redistributed and finally the topsoil material above the calcic horizon will be redistributed as a top dressing (i.e., topsoil). Material will be tested on sight for the following constituents: pH and electrical conductivity. The Division guidelines for Management of Topsoil and Overburden, Table 2 will be utilized as the basis for topsoil suitability (pages VII-19, 19A & 19B). The sideslopes of the borrow pit will not exceed 3 horizontal: 1 vertical (page VIII-18). Sufficient quantities of topsoil will be left in the bottom of the borrow area and will be permanently reclaimed according to the procedures discussed in Section 7.5 and 8.4.2.

233. Topsoil Substitutes and Supplements. Borrow area soil map unit descriptions and soil pedon descriptions are located in Appendices VII-1 and VII-2 respectively. Borrow area design dimensions and soils map may be located on DWGS II-3G, III-1G and Plate VII-1A respectively. Physiochemical data of the disturbed landfill, coal refuse and borrow area soils are located in Appendices VII-4 and VII-7.

The proposed design and location of the topsoil borrow area has been revised as of April 29, 1991. On this date, Henry Straw (Kaiser Engineers) met with Division staff to discuss laboratory results and borrow area locations. In this meeting, Division staff expressed concern as to the continued erroneous sodium absorption ration (SAR) results and the high pH readings. Division staff ascertain that the SAR's were based on total calcium, magnesium, and sodium instead of water soluble concentrations. Additionally, the new borrow area configuration includes areas which have not been fully characterized.

A calcic soil horizon exists within the borrow area profile. A calcic horizon is a horizon of accumulation of calcium carbonate or of calcium and magnesium carbonate (U.S.D.A Agriculture Handbook No. 436). The horizon is located at depths between approximately 14 to 60 inches. The horizon tends to be light yellowish brown in color and cobbly sandy loam in texture. The soil within this horizon is highly alkaline and, therefore, a poor quality plant growth medium. Additionally, there may be elevated exchangeable sodium levels within the calcic horizon which may further diminish the quality of this horizon.

The applicant will be in compliance with this section when the following stipulation is adequately addressed.

Stipulation R614-301-233. (HS) (1) Within 30 days of permit approval, the applicant must depict the new dimensions of the borrow area to include sample site locations #7, #8, and #15. Sample sites must be fully characterized down to the planned excavation depth including the soil material which will remain and act as the plant growth medium for reclamation of the borrow area. Laboratory analysis must

follow the suggested methodologies outlined in the Divisions Guidelines for Management of Topsoil and Overburden (Table 1).

Additionally, the applicant must include a specific description of the soil handling plan for the excavation of the borrow area soil and its redistribution upon the regraded disturbed area.

240. Reclamation Plan. Coal refuse material (see R614-301-731.300 Acid- and Toxic-Forming Material) concrete rubble, pavement, and shale will be covered with four feet of uncontaminated substitute topsoil or removed and placed adjacent to highwall material (pages VII-21, VII-23, II-17, VIII-17 through VIII-36). The Hillside Refuse Pile and the outer slopes of the Road Junction Refuse Pile (Plates VII-4A & B) are pre-law and hence will not be reclaimed (page II-15). Coal refuse material, in the past, was utilized as pad base and fill for the main facilities area. Approximately 75 feet of the Horse Canyon Creek stream channel is comprised of coal refuse and will be pulled back and compacted against an adjacent highwall (page IV-8). This material will be covered as described above.

Some disturbed areas will not receive topsoil (page VII-23). The clean soil surface will be tested for parameters listed in Section 7.2.3, ripped, mulched, fertilized and seeded according to the procedures outlined in Section 8.5.

All regraded areas will be scarified to a depth of 18" prior to redistribution of topsoil or seedbed preparation. All roadbeds and certain highly compacted areas will be scarified twice. If soils become compacted during redistribution, then the soil surface will also be scarified (pages II-19 & VIII-12). Topsoil (see R614-301-230) will then be redistributed upon the regraded spoil/refuse. Topsoil will be unevenly end-dumped on the regraded spoils (pages II-19 & VII-22). This will provide a roughened soil surface and provide variability in the microclimate which will promote a diverse vegetative community.

Fertilizer will be applied in the fall and spring in accordance with laboratory results and procedures outlined in Section 7.6.

In all areas receiving topsoil, three tons/acre of alfalfa or grass hay will be incorporated into the top 4 to 6 inches by the action of the drill seeder. In areas that are too steep for machinery operations seed will be hand broadcast and mulch will be incorporated by raking or backdragging chains (pages II-25, VIII-13, VIII-15, VII-22). On steep slopes (greater than 2.5h:1v), erosion control matting will be installed. These slopes will also be gouged from 6 to 12 inches deep on 20-30% of the slope surface (pages VII-22 & VIII-15).

Specific areas will receive various combinations of the reclamations procedures described above. Details for each reclaim area may be located on pages VIII-17 through VIII-36.

COMPLIANCE

The applicant is in compliance with all sections of R614-301-200, except for the stipulation in section R614-301-233.

R614-301-300 BIOLOGY (SW)

320. Environmental Description. The only major vegetation type identified within the Horse Canyon permit area is the Pinyon-Juniper Woodland. The Soil Conservation Service has determined the area to be capable of producing approximately 750 lbs/Acre air-dry forage per year. The permit area is rated as high priority deer winter range (page IX-5). Wildlife use is restricted in the area due to lack of water. A raptor survey was conducted on June 25, 1990. Nests were found in the permit area, however, none within the Division of Wildlife Resources (DWR) half mile radius disturbance buffer zone (Appendix IX-5). The permit area is within the range of the black-footed ferret, the bald eagle and peregrine falcon, however, no sitings have occurred (page IX-7). Two plant species which are currently Category 2 candidates for listing are potentially within the permit area, however, no observations have been made (page VIII-6).

The reference area is designated on the vegetation map (Plate VIII-1A and 1B). Raptor nest locations are shown on a map in Appendix IX-4.

330. Operation Plan. The applicant has committed to interim revegetation during the mining phase (pages VIII-9 & 10). These areas are expected to be small since a large portion of the disturbed area is being reclaimed. Potential impacts to wildlife during operation are road kills, poaching and some habitat destruction for small mammal or reptiles (page IX-8). Impacts will be minimized by informing workers as to the wildlife in the area (page IX-9). The sediment ponds on the disturbed area may provide additional water for wildlife.

Potential impacts of subsidence are listed on page V-11. The greatest potential impact of subsidence to vegetation or wildlife would be disruption of the hydrologic resources. Subsidence studies at the Horse Canyon Mine have shown that subsidence is probably completed within 2 years of mining (page V-14). The mine has not been in operation since 1982, therefore, no subsidence is expected.

340. Reclamation Plan. A detailed schedule for revegetation is given on page VIII-31. The schedule plans for 250 days from permit approval to completion of all activities including fencing. The seed mixture for permanent revegetation (page VIII-38) contains species adapted to the site and known to be palatable to most wildlife species. Procedures for seeding is to rip, topsoil, mulch and fertilize, and then drill seed. Alfalfa hay will be applied at three tons per acre. The hay will be incorporated into the soil by the action of the seed drill. Steeper slopes will be hand broadcast, mulched and then covered with erosion control netting. Some areas which will not be regraded have existing vegetation dominated primary by Rabbitbrush. On these sites, the seed will be broadcast and a tracked vehicle will run over the site in two directions to reduce the Rabbitbrush crown (Chapter VIII).

All areas will be fenced to exclude livestock grazing. Wildlife enhancement measures are a part of the reclamation plan. Some sites will be planted with #1 size shrub stock to augment the existing community. Also, any small pinyon pine and juniper trees removed from the topsoil borrow area will be replanted in the disturbed area to provide wildlife cover (page VIII-16). Rock piles will also be placed on the regraded areas to provide cover and shelter for small mammals.

350. Performance Standards. The vegetative cover produced from the revegetation is designed to meet the performance standards for success. All seed species except two legumes are native to the area. The two legumes are included for nitrogen fixing capabilities and are not aggressive invading species (page VIII-39). All seed will be tested by a certified seed analyst. The seed will not contain any noxious weed seed. Seeding will be done after October 1st and prior to December 1st. This is the regionally accepted seeding window.

The postmining land use is for wildlife habitat. Therefore, the applicant's vegetative success standard is to meet cover and shrub density requirements. The cover requirements will be at least 90% of the reference area vegetative cover (page VIII-42). The shrub density will meet the goal of 3000 stems/acre (page VIII-45). Statistically valid sampling techniques for measuring success as outlined by the Division will be used to determine revegetation success. Horse Canyon receives less than 26 inches annual precipitation, therefore, the period of extended responsibility will be not less than 10 full years. Quantitative monitoring of the reclaimed site will occur in years 2, 3, 5, 9, and 10 (page VIII-45). Qualitative sampling will occur annually. Quantitative sampling will be partitioned into reclamation treatment areas (VIII-2A through VIII-3G). This partitioning will reduce sample numbers and assure that all areas meet the performance standards. Diversity standard will compare with the reference area. The revegetated community will have at least 5 shrub species of which none will comprise more than 50% of the total number of shrub plants.

Shrub diversity may be the most difficult performance standard to meet. Observations from onsite and surrounding disturbances show that Rabbitbrush invades the areas in high numbers. Mechanical treatment may be needed in subsequent years to encourage shrub diversity.

The U.S. Fish and Wildlife Service has determined that the powerlines to the mine are not a hazard to raptors (Appendix IX-3). The fence design for excluding livestock has a smooth top wire as directed by DWR. All hazardous and toxic-forming materials have been removed from site.

COMPLIANCE

The applicant is in compliance with all sections of R614-301-300.

R614-301-400 LAND USE AND AIR QUALITY (SW)

411. Environmental Description. The current locally designated land use for the area is industrial/commercial. Mining has occurred in Horse Canyon since the early 1900's, therefore, premining land capability is not available. However, vegetative studies from similar areas adjacent to the canyon suggest that the land is capable of producing 750 pounds/acre forage a year. Premining land use was probably wildlife forage and big game winter range (page X-14). Cattle grazing only occurred while trailing the animals to and from summer range.

There are no known cemeteries, burial grounds, or other cultural resources listed in the National Register of Historic Places. The tree with the inscription "1878 Sam Gilson By God" is posted by the Utah Historical Society. While this site is not on the National Register, it does have future potential listing significance. Reclamation activities should have no effect on this site. The applicant stresses avoidance as a protective measure. Surveys for cultural resources have been conducted by BLM and a consultant (Appendix X-1 and X-2). The State Historic Preservation Officer concurs with the consultants findings of no eligible sites (June 20, 1990, Appendix X-3). The Horse Canyon mine was mined from the early 1900's until 1982. Room and pillar mining followed by extensive retreat mining was employed. Underground working are shown on Plate II-2.

413. Performance Standards. The surface owner is the applicant and states that the planned postmining land use will be for wildlife habitat (page X-15). Land use for more intensive purposes are not justified. Water seems to be the limiting factor in more intensive land use. Wildlife habitat will be restored by returning the area to

approximate original contour, planting species which are palatable to wildlife, providing cover, and sediment pond depression will provide some extended water.

COMPLIANCE

The applicant is in compliance with all sections of R614-301-400.

R614-301-500 ENGINEERING (JK)

512. Certifications. All maps, plans, and engineering designs which require certification have been certified by a qualified, registered, professional engineer.

513. Compliance with MSHA Regulations and MSHA Approvals. There are no impoundments or sedimentation ponds at this site which meet the size or capacity criteria of MSHA, 30 CFR 77.216(a).

The only refuse pile on the property is the Road Junction Refuse Pile. Outslopes of this refuse pile are outside the area of postlaw disturbance and only the top of the pile will be reclaimed (see page IV-4). The pile has been demonstrated to have a static safety factor of more than 1.5 (see Appendix IV-1). If additional material is added to the pile, it will be compacted in 24-inch lifts and covered with at least four feet of substitute soil material. The refuse pile will be inspected quarterly by a qualified person for stability, seepage, or other problems which might degrade its integrity (see pages IV-4 to IV-9).

There are 12 underground openings and two drill holes, the locations of which are shown on Plates II-1A and II-1B, "Facilities Map." All underground openings were sealed during the third quarter of 1986 with solid block walls. All openings except the main portal (south) and the manway portal will be backfilled during the mining plan period with no less than 25 feet of inert, non-combustible fill material, in accordance with MSHA, 30 CFR 75.1711, and as shown in Figure 4.6.2-1 (see page IV-17). The main portal (south) and the manway portal will be backfilled in the same manner during the reclamation plan period (see pages IV-15 to IV-17).

Both drill holes have been temporarily plugged. They will be maintained in this temporarily plugged condition through the mining plan period. During the reclamation plan period, they will be filled with concrete from bottom to collar (see pages IV-15 and Appendix IV-3). This plan for permanently plugging the drill holes is sound engineering practice and is in accordance with United States Geological Survey (USGS) stipulations for surface drilling programs.

514. Inspections. The Road Junction Refuse Pile will be inspected quarterly by a qualified person for stability, seepage, or other problems which might degrade its integrity. The results of these inspections will be recorded by the Applicant. If problems are found, they will be reported to the Division (see page IV-5).

515. Reporting and Emergency Procedures. The Applicant will report any slide or impoundment hazard to the Division and comply with any remedial measures which the Division may require (see page II-35).

521.100 Operation Plan. Cross Sections and Maps.

521.110 Previously Mined Areas. Plate, II-2, "Underground Development Map," shows the location and extent of known workings of active, inactive, and abandoned underground mines within the permit and adjacent areas.

521.120 Existing Surface and Subsurface Facilities and Features. Plates II-1A and II-1B, "Facilities Map," show all buildings, manmade features, roads, refuse areas, impoundments, embankments, etc. within and adjacent to the permit area.

521.130 Landowners and Right of Entry and Public Interest Maps. Plates I-1, "Surface Ownership," and I-2, "Coal Ownership," show the boundaries of all lands and present owners of those lands, both surface and subsurface, included in or contiguous to the permit area.

521.140 Mine Maps and Permit Area Maps. Plates II-1A and II-1B, "Facilities Map," and II-2, "Underground Development Map," show the boundaries of all areas proposed to be affected over the total life of the coal mining and reclamation operations. The disturbed area boundaries are shown correctly and are those that were set jointly by the Division and the Applicant during a March 6, 1991 onsite consultation. A planimeter check of the total disturbed area, as shown on these maps, verifies it to be approximately 63.6 acres as the Applicant maintains.

521.150 Land Surface Configuration Maps. Plates II-3A through II-3G, "Mining Plan-Grading and Drainage," and III-1A through III-1G, "Reclamation Plan-Grading and Drainage," adequately represent the present and anticipated future land surface configuration.

521.160 Maps and Cross Sections of the Proposed Features for the Proposed Permit Area. Plates II-1A and II-1B, "Facilities Map," IV-1A through IV-1K, "Cross Sections-Mining Plan," and IV-1L through IV-1P, "Cross Sections-Reclamation Plan," show facilities, land areas, storage areas, and all other features required to be shown in this part. A planimeter check and topographic map comparison of all cross sections shows that they are consistent with the mining plan and reclamation plan

maps (Plates II-3A through II-3G and III-1A through III-1G, respectively) and with the Reclamation Cost Estimate (Appendix IV-4), which is based upon them.

521.170 Transportation Facilities Maps. All maps show the roads within and adjacent to the permit area, roads being the only remaining transportation facility.

521.200 Signs and Markers Specifications. Mine and permit identification signs, perimeter markers, and buffer zone markers will be made of rigid material and will be maintained throughout the life of the permit (see page II-5). Mine identification signs will show the main name, the Applicant's name, the Applicant's address and telephone number, and the mine permit number. Identification signs will be placed at six points of access to the property (see Appendix II-2).

522. Coal Recovery. This section is not applicable because the mine is inactive.

523. Mining Method(s). This section is not applicable because the mine is inactive.

524. Blasting and Explosives. This section is not applicable as explosives will not be used during the mining plan or reclamation plan periods (see page IV-3).

525. Subsidence. The Applicant will not maintain any subsidence monitoring program during either the mining plan period or the reclamation plan period. Since mining ceased in October of 1982, all subsidence, under the conditions which prevail at this mine, can be expected to have occurred by 1986, if not sooner [see Subsidence Engineers' Handbook, Second (revised) Edition, National Coal Board, London, 1975, Subsidence-Time Estimation Nomogram, page 43]. For this reason, subsidence monitoring would serve no useful purpose.

Instead of subsidence monitoring, the Applicant will perform a one-time walking reconnaissance of the surface above the mined out area. This reconnaissance will serve to locate and qualitatively describe any surface subsidence effects such as fissures, slope instability, surface and/or groundwater disruption, and vegetation damage. The reconnaissance will be performed during the first field season of the reclamation plan period (see page V-15).

526. Mine Facilities. Appendix II-1 contains a full description of all mine facilities. The locations of all mine facilities are also shown on Plates II-1A and II-1B, "Facilities Map." Most surface facilities have been demolished and removed. The following facilities remain and will remain throughout the mining plan period. Each facility is listed with the number which identifies it on the map:

- (i) Mine Office - #23
- (ii) Warehouse - #25
- (iii) Bath House - #21
- (iv) Machine Shop - #27
- (v) Powder and Cap Magazines - #32
- (vi) Main Intake Portal (South) - #54
- (vii) Manway Portal - #55
- (viii) Metal Water Storage Tank - #28
- (ix) Plant Well Pump House - #43

527. Transportation Facilities. Only one primary road, the main road, will remain open to traffic during the mining plan period. The access roads north of Horse Canyon Creek will be eliminated completely during recontouring. The access roads south of Horse Canyon Creek will be closed to traffic and used as runoff diversions (see pages II-11 to II-12, II-15, and IV-10 to IV-12).

The main road is owned and maintained by the Applicant. It provides access to the Book Cliffs/Range Creek area for local, state and federal government personnel, ranchers, and recreationists. It will follow its present route except where it now crosses the main surface facilities pad, where it will be relocated approximately 100 feet to the south to allow for recontouring of the pad away from Horse Canyon Creek (see pages IV-10 to IV-12 and Plates II-3B through II-3F, "Mining Plan-Grading and Drainage").

The bridge over which the main road crosses Horse Canyon Creek will be left in place with some modifications. On the upstream side, the metal supports will be cut back level with the ground surface. On the downstream side, the metal supports will be cut back level with the top of the concrete abutment (see page IV-11A). These modifications will improve the stability of the soil and the filtration structure which will be installed during the mining plan period.

528. Handling and Disposal of Coal, Overburden, Excess Spoil, and Coal Mine Waste. When the mine started in the 1940s, there was no attempt to save topsoil or to segregate spoil, coal mine waste, and development waste. These materials were all intermixed and used in the present facility pads.

A small portion of the main road will be regraded where the road will be relocated. This will be in the area of the main building pad, as shown on Plates II-3D and II-3E, "Mining Plan-Grading and Drainage." The top of the landfill will also be regraded in order to cover debris which now protrudes from its surface. Material from the borrow area will be used for this purpose (see page IV-8).

Refuse material in fills facing Horse Canyon Creek will be pulled back 75 feet from the channel and the new slope will be brought to 2h:1v. The material removed from the edges of pads and fills will be compacted against the base of an adjacent highwall. Clean fill from recontouring and from the borrow area will be used to cover any exposed refuse material to a depth of at least four feet. Plates II-3A through II-3F, "Mining Plan-Grading and Drainage," show the postmining topography and the areas which will be covered with substitute soil material. Cross sections of the existing and final configurations are shown on Plates IV-1A through IV-1K, "Cross Sections-Mining Plan" (see pages IV-8 to IV-9).

529. Management of Mine Openings. There are 12 underground openings and two drill holes, the locations of which are shown on Plates II-1A and II-1B, "Facilities Map." All underground openings were sealed during the third quarter of 1986 with solid block walls. All openings except the main portal (south) and the manway portal will be backfilled during the mining plan period with no less than 25 feet of inert, non-combustible fill material, in accordance with MSHA, 30 CFR 75.1711, and as shown in Figure 4.6.2-1 (see page IV-17). The main portal (south) and the manway portal will be backfilled in the same manner during the reclamation plan period (see pages IV-15 to IV-17).

Both drill holes have been temporarily plugged. They will be maintained in this temporarily plugged condition through the mining plan period. During the reclamation plan period, they will be filled with concrete from bottom to collar (see pages IV-15 and Appendix IV-3). This plan for permanently plugging the drill holes is sound engineering practice and is in accordance with United States Geological Survey (USGS) stipulations for surface drilling programs.

530. Operational Design Criteria and Plans.

532. Sediment Control. For both the disturbed area and for those undisturbed areas which cannot be made to bypass the disturbed area, silt fences and sediment ponds will be used for sediment control during the mining plan period. Silt fences will be used to control sedimentation from topographically isolated areas and from temporarily or permanently reclaimed areas. These silt fences, combined with berms, will insure that drainage from such areas is treated.

Two sediment ponds will be used to treat runoff from most of the disturbed areas. Each has been designed to completely contain a 10-year, 24-hour storm as well as three years of sediment accumulation. The spillway structure of each pond is also designed to safely pass the peak flow of a 25-year, 6-hour storm (see pages II-29 to II-30 and VI-22 through VI-26).

533. Impoundments. Pond designs have been analyzed for stability using a standard rotational failure model. Sedimentation Pond #1 has a static safety factor of 5.8 and a seismic safety factor of 4.2 while Pond #2 has a static safety factor of 5.7 and a seismic safety factor of 4.2. These values are more than triple the respective required values of 1.5 and 1.2 (see Appendix IV-2).

The sedimentation ponds have been designed to completely contain a 10-year, 24-hour storm as well as three years of sediment accumulation. The spillway structure of each pond is designed to safely pass the peak flow of a 25-year, 6-hour storm.

Construction of the ponds will be done under the supervision of a professional engineer. During the mining plan period, both ponds will be inspected monthly by a qualified person designated by the Applicant (see pages II-31 and IV-25).

534. Roads. Only the main road will remain open to traffic during the Mining Plan period. The access roads north of Horse Canyon Creek will be eliminated completely during recontouring. The access roads south of Horse Canyon Creek will be closed to traffic and used as runoff diversions (see pages II-11 to II-12, II-15, and IV-10 to IV-12).

The main road will remain a primary road. It will be approximately 20 feet wide and will slope away from both sides of the crest at a 2% slope. Its surface will consist of 10 inches of aggregate above a compacted subgrade (see pages IV-10 through IV-13 and Figure IV-2). These design parameters constitute good standard engineering design practice. An analysis of this design using a standard rotational failure model shows that the road outslopes will achieve a static safety factor of at least the required 1.3 (see Appendix IV-2).

The main road is owned and maintained by the Applicant. It provides access to the Book Cliffs/Range Creek area for local state and federal government personnel, ranchers, and recreationists. It will follow its present route except where it now crosses the main surface facilities pad, where it will be relocated approximately 100 feet to the south to allow for recontouring of the pad away from Horse Canyon Creek (see pages IV-10 to IV-12 and Plates II-3B through II-3F, "Mining Plan-Grading and Drainage").

535. Spoil. See section 528, Handling and Disposal of Coal, Overburden, Excess Spoil, and Coal Mine Waste, above.

536. Coal Mine Waste. See section 528, Handling and Disposal of Coal, Overburden, Excess Spoil, and Coal Mine Waste, above.

537. Regraded Slopes. A small portion of the main road will be regraded where the road will be relocated. This will be in the area of the main building pad, as shown on Plates II-3D and II-3E, "Mining Plan-Grading and Drainage." The top of the landfill will also be regraded in order to cover debris which now protrudes from its surface. Material from the borrow area will be used for this purpose (see page IV-8).

Refuse material in fills facing Horse Canyon Creek will be pulled back 75 feet from the channel and the new slope will be brought to 2h:1v. The material thus removed from the edges of pads and fills will be compacted against the base of an adjacent highwall. Clean fill from recontouring and from the borrow area will be used to cover any exposed refuse material to a depth of at least four feet. Plates II-3A through II-3F, "Mining Plan-Grading and Drainage," show the postmining topography and the areas which will be covered with substitute soil material. Cross sections of the existing and final configurations are shown on Plates IV-1A through IV-1K, "Cross Sections-Mining Plan" (see pages IV-8 to IV-9). A stability analysis of the steepest regraded slopes, using a standard rotational failure model, shows the safety factor to be at least 1.3 at the fill surface, with the safety factor increasing with depth (see Appendix IV-2).

542. Reclamation Plan. Narratives, Maps and Plans.

542.100 Reclamation Timetable. The Applicant has included a reclamation schedule in the plan. It includes seven categories of reclamation activities: Bid Preparation, Demolition Bidding, Contract Awarding, Demolition, Reclamation Bidding, Contract Awarding, and Reclamation (see page II-36). The Applicant has included a plan for backfilling and grading. It includes final removal of structures, regrading, and covering of coal mine waste material and acid- and toxic-forming material with at least four feet of clean, inert substitute soil material (see pages II-36, III-4, III-6, Plates III-1A through III-1G, "Reclamation Plan-Grading and Drainage," and Plates IV-1A through IV-1K, "Cross Sections").

542.300 Surface Configuration Maps. The Applicant has included a complete and detailed set of maps and cross sections which depict the final surface configuration (see Plates III-1A through III-1G, "Reclamation Plan-Grading and Drainage," and Plates IV-1A through IV-1K, "Cross Section").

542.400 Removal of Temporary Structures. All sedimentation ponds will be regraded or breached when vegetation and water quality standards are met for the reclaimed areas. Runoff that was treated by ponds will then be directed to silt fences (see pages VI-26 to VI-27).

542.600 Roads. The main road which crosses the surface facilities area and the road bridge across Horse Canyon Creek will be removed during the reclamation

plan period unless title is transferred to a public entity (see page II-15). If the road is retained as a permanent feature, it will follow its present route, except in the area of the main facilities pad, where it will be rerouted through the area now occupied by the warehouse and machine shop (see Plate III-1D, "Reclamation Plan-Grading and Drainage").

542.700 Final Abandonment of Mine Openings and Disposal Areas. There are 12 underground openings and two drill holes, the locations of which are shown on Plates II-1A and II-1B, "Facilities Map." All underground openings were sealed during the third quarter of 1986 with solid block walls. All openings except the main portal (south) and the manway portal will be backfilled during the mining plan period with no less than 25 feet of inert, non-combustible fill material, in accordance with MSHA, 30 CFR 75.1711, and as shown in Figure 4.6.2-1 (see page IV-17). The main portal (south) and the manway portal will be backfilled in the same manner during the reclamation plan period (see pages IV-15 to IV-17).

Both drill holes have been temporarily plugged. They will be maintained in this temporarily plugged condition through the mining plan period. During the reclamation plan period, they will be filled with concrete from bottom to collar (see pages IV-15 and Appendix IV-3). This plan for permanently plugging the drill holes is sound engineering practice and is in accordance with United States Geological Survey (USGS) stipulations for surface drilling programs.

Excess spoil and coal mine waste will be disposed of as described in 528, Handling and disposal of Coal, Overburden, Excess Spoil, and Coal Mine Waste, above.

542.800 Reclamation Cost Estimate is \$1,950,002 in 1991 dollars (see page IV-18 and Appendix IV-4).

550. Reclamation Design Criteria and Plans.

551. Casing and Sealing of Underground Openings. There are 12 underground openings and two drill holes, the locations of which are shown on Plates II-1A and II-1B, "Facilities Map." All underground openings were sealed during the third quarter of 1986 with solid block walls. All openings except the main portal (south) and the manway portal will be backfilled during the mining plan period with no less than 25 feet of inert, non-combustible fill material, in accordance with MSHA, 30 CFR 75.1711, and as shown in Figure 4.6.2-1 (see page IV-17). The main portal (south) and the manway portal will be backfilled in the same manner during the reclamation plan period (see pages IV-15 to IV-17).

Both drill holes have been temporarily plugged. They will be maintained in this temporarily plugged condition through the mining plan period. During the reclamation plan period, they will be filled with concrete from bottom to collar (see pages IV-15 and Appendix IV-3). This plan for permanently plugging the drill holes is sound engineering practice and is in accordance with United States Geological Survey (USGS) stipulations for surface drilling programs.

552. Permanent Features. All impoundments will be removed and filled. The borrow area will be contoured during topsoil removal and revegetated and will be left as a small depression (see page III-6).

553. Backfilling and Grading. Most backfilling and grading will be accomplished during the mining plan period. Consequently, the final surface configuration will be almost identical to the surface configuration achieved during the mining plan period. All disturbed areas will be backfilled and graded to achieve approximate original contour and all highwalls will be eliminated. Hence, no variances from the approximate original contour restoration requirements set forth in R614-302-270, as cited in R614-305-553.600, will be or need be approved by the Division.

During the reclamation plan period, then, the following will be accomplished to bring the site to its permanent configuration (see page III-6):

- 1) The remaining structures will be demolished and removed. Their foundations will be broken up and the debris placed at the base of the highwall backfill (see page III-5).
- 2) The area previously occupied by the large metal water tank will be recontoured and the runoff controlled by a berm and silt fence (see Plate III-1F, "Reclamation Plan-Grading and Drainage").
- 3) The area around the powder and cap magazines will be recontoured and the runoff controlled by a berm and silt fence (see Plates III-1E and III-1F, "Reclamation Plan-Grading and Drainage").
- 4) The area around the main portal (south) and the manway portal will be backfilled, recontoured, and revegetated. Runoff from this area will be directed, by ditch, to sedimentation pond #2 (see Plate III-1E, "Reclamation Plan-Grading and Drainage").
- 5) The bench area remaining after the main buildings have been removed will be backfilled with four feet of uncontaminated material (including at

least 1 foot of topsoil from the borrow area), recontoured, the main road relocated (if title is transferred to public entity), and the area revegetated. Runoff from the area will be controlled by a berm and directed, by ditch, to sedimentation pond #2 (see Plate III-1D, "Reclamation Plan-Grading and Drainage").

- 6) The borrow area used during the Reclamation plan period will be contoured during soil and subsoil removal, left as a small depression, and revegetated when the required material has been removed. A berm will direct undisturbed runoff around and away from the disturbed area (see Plate III-1G, "Reclamation Plan-Borrow Area").

The steepest postmining slope, as a worst case, was analyzed for stability using a standard rotational failure model. It was found to have a static safety factor of at least the required 1.3. Thus, the planned postmining surface configuration meets the stability requirement of R614-301-553.130.

COMPLIANCE

The Applicant is in compliance with all sections of R614-301-500.

R614-301-700 HYDROLOGY (TM)

710. Introduction. Description of the existing hydrologic resources are found in Sections 6.2 and 6.3 of the PAP. The Probable Hydrologic Consequences are stated in Section 6.7. Diversion designs for the site are included in Section 6.5 of the PAP. Section 6.6 illustrates adequate silt fence and sediment pond designs.

713. Inspection. Inspection of all sediment ponds will be conducted quarterly by a professional engineer (page VI-25) meeting the requirements of R614-301-514.300 - Impoundments.

720. Environmental Description. The results of the 1985 spring and seep survey conducted in the Horse Canyon Area is found on page VI-7. Groundwater encountered in the mine is described on page VI-9. The rate of inflow into the mine is unknown although approximately 2 CFS was discharged from the mine intermittently while the mine was operating.

724.100. Groundwater Information. Figure 6.2.2.1-1 is a graph of the flow of the four mine inflow monitoring points. No variations in flow can be attributed to seasonal influences. In 1986, Kaiser reentered the mine and found water in the area

of the rotary car dump at an elevation 5800 feet, assumed to be the potentiometric surface elevation in the rest of the mine (page VI-10).

Two wells are located within the alluvium of lower Horse Creek as shown on Plate VI-1.

Appendix VI-1 presents water quality data collected from springs sampled during the 1985 spring and seep survey. Renton Spring is sampled monthly for baseline parameters, but was only sampled for nine months in 1989. Data is submitted to the Division on a quarterly basis.

724.200. Surface Water Information. All surface water data is collected above the mine on the right or left forks of Horse Creek or below the mine on Horse Creek. U. S. Steel Water Quality Data spanning the years 1981 - 1983 is found in Appendix VI-1. U.S.G.S. Data summary for station 09314374 is found in Appendix VI-1 from August 1978 through September 1979. Data is currently collected monthly from Renton Spring, the only site with flow on any consistent basis.

724.300. Geologic Information. Regional groundwater resources are discussed on pages VI-4 through VI-9 of the PAP. The PAP discusses the stratigraphy and structure in Chapter V in a general nature. The last known data collected on groundwater levels within the mine was in 1986 when Kaiser Coal reentered the mine. At this time, water levels in the mine had changed little since operations ceased. All springs of known occurrences within or adjacent to disturbed areas are being sampled. The mine is sealed and as such, no additional sampling of groundwater levels or quality within the mine can occur. Springs outside the disturbed area or adjacent to it are not being sampled due to reclamation only status of the site.

There are no indications of any impacts to the quality and quantity of surface or ground water in the permit area or adjacent areas. All disturbed areas are treated with adequate sediment control measures and any additional disturbance to the permit area will involve reclamation only.

724.400. Climatological Information. The Division does not require a statement of climatological factors, although does suggest that the operator install a rain gauge to document precipitation data in the area during reclamation.

724.600. Survey of Renewable Resources Land. The applicant states on page VI-6A of the PAP that a visual inspection of the area showed no diminution of reasonably foreseeable use of aquifers. Since mining ceased in 1983, most

subsidence should have occurred and any subsidence impacts associated with mining would have most likely occurred within two years of the end of mining.

724.700. Alluvial Valley Floors. The operator provided sufficient data to demonstrate the absence of alluvial valley floors (page XI-3).

725. Baseline Cumulative Impact Area Information. The operator submitted the necessary hydrologic and geologic information to assess the probable cumulative hydrologic impacts.

727. Alternative Water Source Information. The Applicant lists all water rights within the area and states that any effects from subsidence has already occurred. Therefore, there is little potential for adverse effect to any water resources or water rights in the area (Page VI-14, PAP). The Division agrees with this statement due to the fact that reclamation will be the only impact during this permit term. The operator has submitted documentation of the 1.3 CFS of water rights currently in place, its source and availability in Appendix VI-6.

728. Probable Hydrologic Consequences (PHC) Determination. The Applicant provided documentation of previous water levels in the Columbia Mine, closed since 1960's, and compared those water levels with the mine water levels obtained in 1986. The water level has not changed since mining activities ceased. The Applicant provided adequate geologic and hydrologic information to support this conclusion.

In regards to reclamation and surface water impacts, the Applicant is providing sediment controls to control all runoff in a systematic and comprehensive plan using temporary and permanent controls. All controls are sized and designed as shown in Appendices VI-2 and VI-3 and Sections 6.5 and 6.6 of the PAP.

All springs and seeps have been surveyed and no documented diminution has occurred to quantity or quality to date.

The Probable Hydrologic Consequences statement states that the interruption, contamination, or diminution of any water resource would not likely occur within the permit area for the following reasons.

- 1) Surface water flows only a limited part of the year and will be protected by the use of extensive sediment control devices.
- 2) Springs are located upstream of the permit area or are in areas where subsidence resulting from post-1977 mining is not documented. No

known depletion of flow and quality of surveyed springs in the permit area exists.

- 3) Sediment control structures and erosion protection measures will upgrade during reclamation, a prime factor in maintaining the hydrologic balance within the mine permit area.

The Probable Hydrologic Consequences statement is found in Section 6.7.

730. Operation Plan. Diversion designs for the Horse Canyon Mine Site are discussed on pages VI-15 through VI-21 and the sediment control plan on pages VI-22 through VI-27.

The Applicant provided documentation regarding the location of silt fence installations and sediment ponds on Plates II-3 A-F and in Table 6.6.1-1.

All areas which do not drain to sediment ponds and are treated by silt fences or other alternative controls have the following information provided for each area:

- 1) Drainage area for each structure shaded or delineated.
- 2) Type of control and location of each control on a plate and in a table.
- 3) Volume of runoff for each treatment area using the 10 year - 24 hour storm event.
- 4) The total Best Technology Currently Available (BTCA) area versus total disturbed area.
- 5) A commitment to monitor drainage for state and federal limitations (if possible).

This information is assembled in a tabular form and presented in the PAP in Section 6.6.

731.210. Ground Water Monitoring. The only ground water station currently being monitored for the Horse Canyon Mine is Renton Spring. Baseline samples according to parameters listed in Division Guidelines, are being sampled on a monthly basis. This site is shown on Page VI-1, monitoring is included in Appendix VI-5.

731.220. Surface Water Monitoring. The Applicant's current sediment control plan includes two sediment ponds and as a result, the NPDES permit for the site was

revised and approved on April 4, 1991, General Permit No. UT6040000. Other sites monitored on Horse Creek are shown on Page VI-1.

A monitoring section discussing sampling site location, frequency sampled, and parameters sampled is included in Appendix VI-5.

731.300 Acid- and Toxic-Forming Materials (HS)

As indicated by the soils and coal refuse data in Appendix VII-7 and Appendix VII-4 and descriptions of the type of samples taken (coal and/or soil), it is reasonable to assume that the elevated hot water soluble selenium concentrations (>0.1 mg/kg Table 2, Division Guidelines for the Management of Topsoil and Overburden) are associated with coal and coal refuse at the Horse Canyon Mine. The applicant has committed to cover all coal refuse with four feet of uncontaminated substitute topsoil or remove coal refuse and placed it against an adjacent highwall (pages VII-21, VII-23, II-17, VII-17 through VIII-36).

731.400. Transfer of Wells. Two wells currently exist within the alluvium of lower Horse Canyon Creek. The location of these wells is shown on Page VI-1.

The Applicant discusses the intent for these wells and the fact they will be sealed during reclamation is found on pages VI-6 and VI-6A of the PAP. The wells must be sealed according to the criteria spelled out by the Division of Water Rights, State Engineer's Office.

731.600. Stream Buffer Zones. Due to the nature of the reclamation project and the impacts from past mining operations adjacent to Horse Creek, lands within 100 feet of Horse Creek will be disturbed, structures will be removed and areas reclaimed.

The operator is implementing the use of alternative sediment controls below any disturbance in Horse Creek, per recommendations made during a field visit by Division Hydrologist on 9/6/90 at the Horse Canyon site.

All permanent stream channel diversions have been designed according to the criteria required by R614-301-742.300.

Stream Buffer Zones will be marked according to the requirements specified in R614-301-521.260.

731.700. Cross Sections and Maps. All diversions and typical cross sections are presented on Plates II-3 A-F and V1-3.

All locations and elevations of each station to be used for water monitoring are shown on Plate VI-7.

All sediment ponds and silt fences are shown on Plates II-3A-F.

All plates required for this section are certified.

731.800. Water Rights and Replacement. All water rights within the immediate vicinity are listed on page VI-14. Intermountain Power Agency currently owns four water rights: 91-148, 91-149, 91-150 and 91-183. Documentation of these rights are found in Appendix VI-6.

742. Sediment Control Measures. All alternative sediment control devices are described on page VI-22 and Table 6.6 1-I. The controls will prevent additional contributions of sediment to Horse Creek and runoff outside the permit area, as well as minimize erosion and retain sediment within the disturbed area.

742.220. Sedimentation Ponds. The designs for all sediment ponds are contained in Appendix VI-4. Plate VI-4 shows the topography and cross sections of the redesigned sediment ponds. Table 6.6.1-3 presents the pond configuration and design details. Each pond will have the capacity to contain the 10-year, 24-hour runoff volume and three year accumulated sediment volume (page VI-24, PAP). All spillways are sized to adequately handle the 25-year, 6-hour storm event.

742.300. Diversions. All diversions are designed to pass the 10-year, 6-hour storm or greater and permanent diversions are designed using the 100-year, 6-hour storm peak flow. Channel depths were determined based upon the depth at the reach with the gentlest slope; velocities were determined based upon the reach with the steepest slope (page VI-15, PAP).

751. The operator has provided documentation of current NPDES permits for proposed ponds 1 and 2. The new UPDES permit No. is UT6040000.

755. Casing and Sealing of Wells. All wells, when properly identified regarding ownership, will be managed to comply with R614-301-748 and R614-301-765. Proper documentation of ownership and liability is discussed on pages VI-6 and VI-6A.

COMPLIANCE

The applicant is in compliance with all sections of R614-301-700.

ADMINISTRATIVE OVERVIEW

Intermountain Power Agency Horse Canyon Mine ACT/007/013

**Carbon and Emery Counties, Utah
May 6, 1991**

Horse Canyon Mine is an inactive underground coal mine located in Emery and Carbon Counties, Utah, within the Book Cliffs Coal Field, about 120 miles southeast of Salt Lake City. The mine was initially opened by the Defense Plant Corporation in 1942 as the source of metallurgical grade coal for the Geneva Steel Works in Orem, Utah. The mine was sold to U.S. Steel in 1946, who operated the mine until January 1984, when all mining was permanently suspended.

U.S. Steel submitted a permanent program mining and reclamation plan permit application on March 17, 1981 for the operations existing at that time consisting of 3,120 acres of underground mine workings and approximately 87 acres of surface disturbances. On October 15, 1982, U.S. Steel informed the Division of Oil, Gas and Mining (Division) that it was temporarily suspending mining operations at the Horse Canyon (Geneva) Mine. U.S. Steel informed the Division of its plans to permanently suspend mining operations in January 1984.

On November 11, 1984, Kaiser Steel Corporation purchased the Horse Canyon Mine property from U.S. Steel, submitted a permanent program reclamation bond in the amount of \$918,649, and indicated to the Division that it would maintain the operations in a temporary suspension status pending further corporate decisions as to the future use of the facilities.

However, On February 13, 1987, Kaiser Coal (successor in interest to Kaiser Steel) filed a petition for bankruptcy under Chapter 11, Title 11, of the U.S. Bankruptcy Code. Revised reclamation plans submitted by Kaiser Coal's bankruptcy estate on February 24, 1987 and May 29, 1987 were determined by the Division to be incomplete. On February 2, 1990, Kaiser Coal's bankruptcy estate submitted a revised application which was accepted by the Division as a complete maintenance and reclamation plan with certain technical deficiencies. On April 5, 1990, Intermountain Power Agency acquired the Horse Canyon Mine and on April 6, 1990, Intermountain Power Agency submitted an application with the Division to assign Kaiser Coal's permit rights and pending application. The Division conditionally approved transfer to Intermountain Power Agency upon posting a bond or other surety to secure reclamation obligations. Intermountain Power Agency submitted a letter of credit in the amount of \$1,359,000 on July 2, 1990 to secure reclamation obligations at Horse Canyon Mine.

Page 2
Administrative Overview
ACT/007/013
May 6, 1991

On July 6, 1990, the Division and Intermountain Power Agency agreed to a schedule of permitting and reclamation activities at the Horse Canyon Mine. This schedule was approved by the Office of Surface Mining (OSM) by letter dated July 27, 1990. In a letter dated August 10, 1990, the Division approved transfer of Kaiser Coal's permit rights to Intermountain Power Agency.

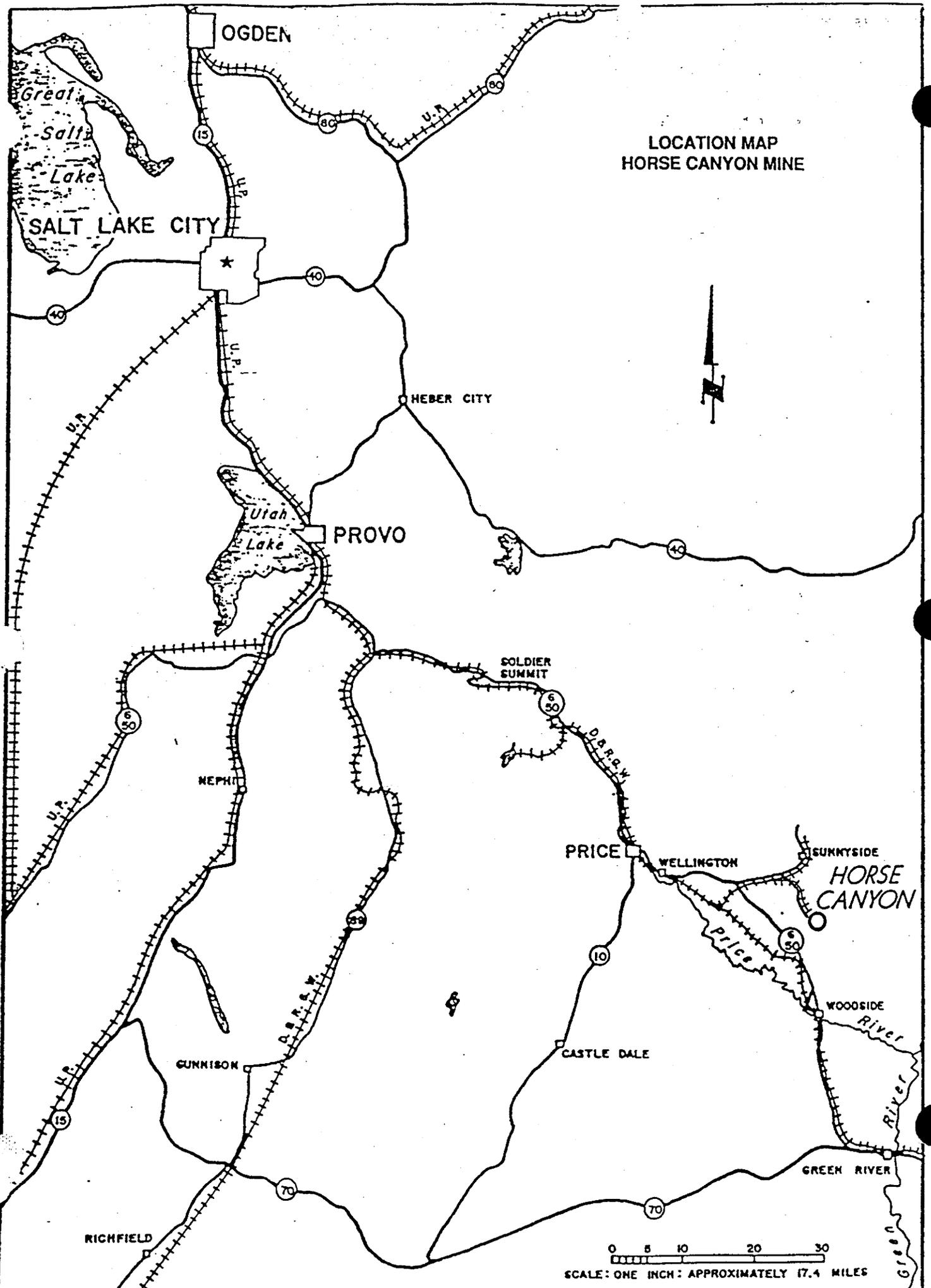
The applicant published notice for the permanent program permit for four consecutive weeks, ending on November 27, 1990. No comments were received.

Recommendation for Approval

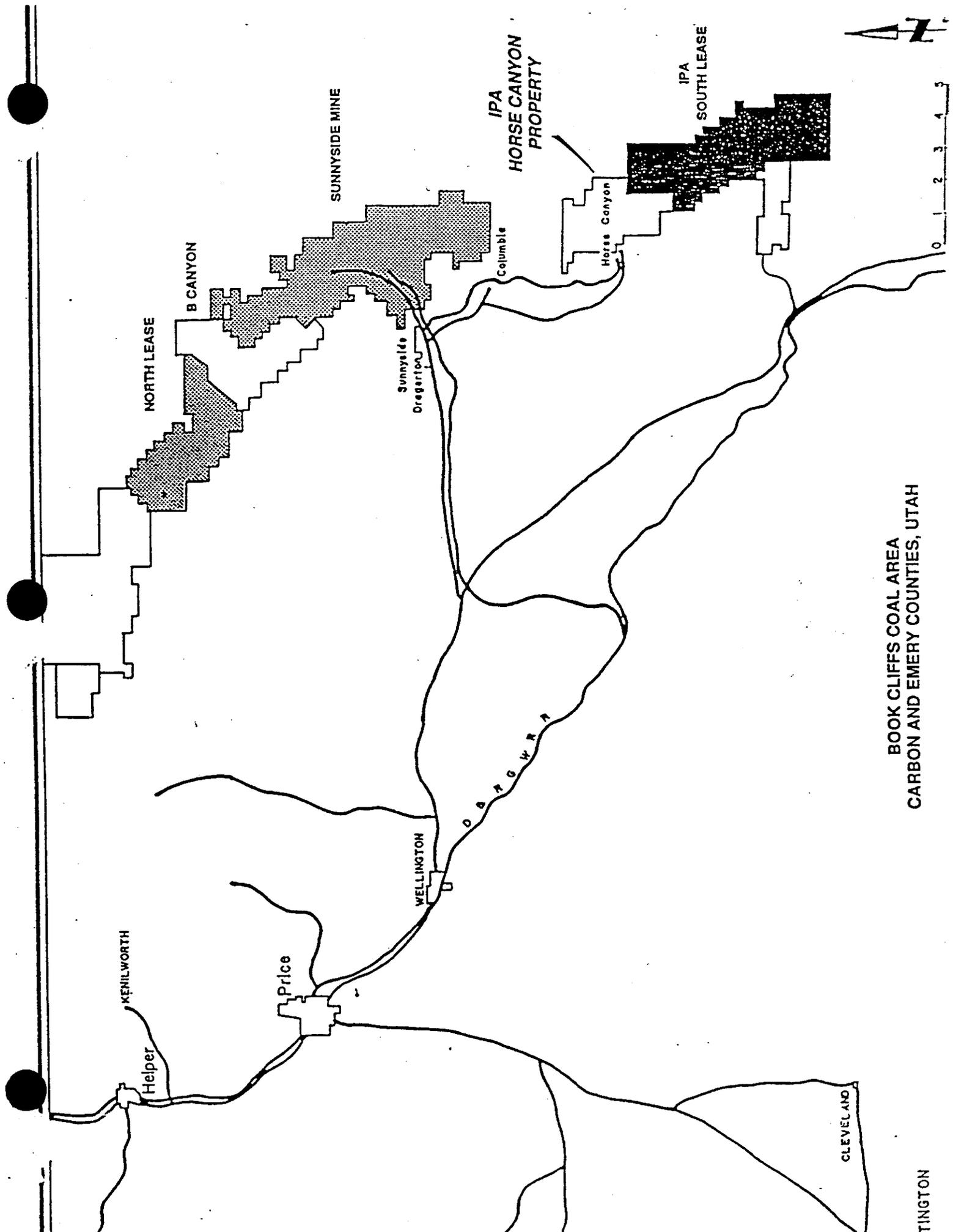
Approval of the permanent program permit is recommended based upon the review of the Permit Application Package.

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LOCATION MAP
HORSE CANYON MINE



0 5 10 20 30
SCALE: ONE INCH: APPROXIMATELY 17.4 MILES



BOOK CLIFFS COAL AREA
CARBON AND EMERY COUNTIES, UTAH

UNTINGTON

CLEVELAND

KENILWORTH

Helper

Price

WELLINGTON

D A M S R I V E R

Sunnyside Oregonia

Columbie

Horse Canyon

IPA
HORSE CANYON
PROPERTY

SUNNYSIDE MINE

B CANYON

NORTH LEASE

IPA
SOUTH LEASE

0 1 2 3 4 5

