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DIVISION OF
OIL, GAS & MINING

APPARENT COMPLETENESS REVIEW

KAISER STEEL CORPORATION
SUNNYSIDE MINES
SUNNYSIDE, UTAH

Submitted to

Utah Division of Oil, Gas and Mining
4241 State Office Building
Salt Lake City, Utah 84114

By

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June 13, 1983

INTRODUCTION

This Apparent Completeness Review (ACR) has been organized into a format typical of that used by the Division. Major headings of regulations governing the content of the permit application are listed with pertinent comments covering the material contained in the application provided beneath the headings. Some of the headings are further divided into subsections, i.e., (a)(2).

An effort has been made to provide the applicant with the chapter or section numbers within the permit application to which specific comments apply. This was not always possible because of the general nature of some comments or overlap between several sections within the permit application.

In the case of remanded or suspended regulations, comments have been omitted. However, for instances in which the remanded or suspended regulations request information that is vital to analyze the ability of the proposed reclamation or operation plan to meet performance standards, the performance standards are addressed.

During the review, it became evident that a large amount of material that should be included in the permit application has been supplied to the Division by the applicant. This includes, but is not limited to, plans and maps for modification of existing or construction for new facilities, baseline data collected since the March 1981 application, data from monitoring programs, reclamation within the Slaughter Canyon area, and revised hydrologic calculations. The applicant needs to incorporate this information into the permit application in order to make it a complete document which can stand by itself.

UMC 771.11 General Requirements for Permits - Operators

A statement should be provided by the applicant with regard to its current status pursuant to UMC 771.13(b). This could be incorporated in Chapter 1.

UMC 771.23 Permit Applications - General Requirements for Format and Contents

(b) Because of the time between the application's submittal and this review, a considerable amount of material is out of date or needs to be supplemented. The reviewers have pointed out specific areas in which additional material is known to exist and should be included in the application. Hydrology is the technical area where the largest amount of updated material is needed. This includes water quality and quantity data and alterations that have been made to the drainage system including sediment ponds, diversions and straw dikes.

There are several places in the application where statements are made concerning the impact of mining without supplying supporting data. The most significant areas where this occurs are in the discussions of subsidence and hydrologic impacts. The applicant needs to supply sufficient supporting arguments, backed up by referenced studies or data. If this cannot be done, the applicant needs to identify that the statements are opinion and not fact.

In the reclamation plan, the applicant should provide details on reclamation techniques to be used rather than just restating the regulations. The Division needs to be aware of reclamation techniques to be used so that their applicability and effectiveness can be evaluated.

(d) Adequate except for the possible need to add persons or agencies consulted in preparation of material used to update the MRP (Chapter 14).

(e)(1) Several maps are reproduced poorly and/or lacking adequate legends. These are noted in their specific section.

UMC 771.25 Permit Fees

Verification of the $5.00 fee is missing from the application. Even though it is on file at the Division, it must be included in the application.

UMC 771.27 Verification of Application

Verification of the application is missing from the application. Even though it is on file at the Division, it must be included in the application.

UMC 782.13 Identification of Interests (Chapter 2.2)

(a), (b), (c), (d), (e) and (g) An update of this information must be provided as necessary to reflect changes since the March 1981 application submittal.

UMC 782.14 Compliance Information (Chapter 2.3)

(a) & (b) An update of this information must be provided as necessary to reflect changes since the March 1981 application submittal.

(c) Review of the Division files showed numerous violations since the original submittal. Violations should be updated. In addition, further detail on compliance actions is needed.

UMC 782.15 Right of Entry (Chapter 2.4)

Adequate - Update if ownership of lands has changed.

UMC 782.17 Permit Term Information (Chapter 2.6)

(a) Actual dates need to be given for start and termination under the permit term applied for. An estimate of the life of the mine termination date should be defined based on assumed production rates given current reserves of coal recovery capabilities and any anticipated purchases or leases of additional coal.

(b) The applicant should make a statement to the effect that the information presented is for the life of the mine despite the permit term.

UMC 782.18 Personal Injury and Property Damage Insurance Information (Chapter 2.7)

The Certificate of Insurance submitted shows an expiration date of 4/1/81. The current certificate should be provided along with a statement that the policy will be maintained in full force during the life of the mine, including reclamation operations, as per UMC 806.14(b).

UMC 782.19 Identification of Other Licenses and Permits (Chapter 2.9)

All permits needed to conduct the underground mining operations should be included. The list in the application is incomplete. Permits or licenses that have been applied for but not issued are also required to be listed. A listing of permits and licenses required for a typical mining operation is presented in Appendix A.

UMC 782.20 Identification of Location of Public Office for Filing of Application (Chapter 2.10)

Adequate as long as ACR responses and other revisions are concurrently filed as indicated at the public office at the time of submittal to the Division as per UMC 786.11(d)

UMC 782.21 Newspaper Advertisement and Proof of Publication (Chapter 2.11)

A copy of the actual newspaper advertisement should be included in the application.

UMC 783.11 General Requirements

See specific comments on UMC 783.12 through 783.27.

UMC 783.12 General Environmental Resources Information (3.3.8)

(a) The map and narrative describing the size, sequence and timing of the mining operation for the total life of the mine are lacking from the application and should be submitted. The map shown is only for a proposed 15 year period which is not the expected life of the mine. In section 3.5.3.2, the life of the mine is estimated at 25 years.

UMC 783.13 Description of Hydrology and Geology: General Requirements

See comments for UMC 783.14 - 783.16

UMC 783.14 Geology Description (Chapter VI)

(a)(2) The geologic description of the coal seam(s) itself is not clearly given in section 6.4.2. Clarify the locations of coal beds where thicknesses were measured. Isopach maps are preferred for major seams.

(a)(2)(i) Include permit boundary. The USGS publication maps in Section 6.9.2 coverage of overburden thickness is not provided for the entire permit area. This must be corrected.

(a)(2)(ii) Include maps of overburden for entire permit area. Maps and plates in the permit application do not provide adequate coverage. Indicate if any sandstone channels occur in the permit area. These are common in the region, are highly variable spatially and may contain water or act as a recharge zone where they intersect the surface.

(a)(2)(iii) Include results of the studies referenced in Chapter 6.5.3.1 on the quality parameters of the refuse. If the chemical properties of the out-of-seam rock are adverse, additional detail on plans to control its disposal underground to prevent interaction with groundwater will be needed. Provide chemical analyses of clay content of overburden and underburden or estimate the percentage (by volume) of interbedded clay layers which were described in section 6.5.3.1. The applicant calls for variable roof rock. In what way, e.g., competence, bedding thickness? Designate the location of the layers, e.g., immediate overlying layer, interbedded layers between coal seams as illustrated in Figure 6-2, or immediate underlying layers (6.5.3.1).

(a)(2)(iv) Only three chemical analyses of coal samples are provided to assess pyrite and sulphur content of the coal seam. Additional samples should be provided in order to give a more meaningful assessment of these properties. Information should be provided on both the Upper and Lower Sunnyside seams. The percent heavy metals, percent sodium and any other elements which have potential for alkalinity or toxicity should be included.

UMC 783.15 Ground Water Information (Chapter 7.1)

The applicant makes a general statement that "there are no extensive permanent water tables or aquifers in the semiarid regions of the west." This statement is not true and should be removed from the permit. Although aquifers may be much more limited in size in this region than in other areas of the country, it is not justification for not providing sufficient information to properly assess the impact of mining on the local groundwater system. The fact that, on the average, the mine produces in excess of 700 gpm of water would indicate that there is a high probability that the mine is impacting some locally significant aquifers. The 700 gpm is equal to approximately 1.6 cfs or nearly one quarter of the 7 cfs average flow reported for Grassy Trail Creek during water year 1979.

There is information provided in the permit application that would indicate that recharge does occur. In section 7.1.3.2 it is mentioned that the required pumping rate of water from the No. 2 mine varies with the time of year and the amount of precipitation. This would indicate that there is surface connection and the potential for recharge of aquifers in the permit area. The high flow rate of water into the No. 1 Man Shaft indicates the presence of an aquifer. It is necessary to be able to evaluate the effects the mining activity will have on this aquifer.

The information presented in the permit is inadequate to determine whether additional measures need to be taken, both during and after mining, to prevent significant adverse impacts on the groundwater system within and adjacent to the permit area.

(a)(1) Provide the location of localized aquifers and indicate if they are within the interburden, overburden or underburden. The depth to water information from the logs in Appendix 6.9 and any additional information should be used to define any aquifers. An attempt should be made to define the piezometric surface of any aquifer over the permit area. The plan for groundwater monitoring in Section 7.1.6 should be updated to reflect the current program and the monitoring data gathered should be included in the application. Additional information that needs to be provided includes:

1. More detail on the location and quantity of groundwater inflows within the mine.

2. Water quality measurements from seeps and springs in the area.

3. Individual flow rate information for the various mine water discharge points so that occasional variation can be determined.

4. Information from the applicant's South Lease Mine that would assist in assessing regional groundwater characteristics.

(a)(2) Provide a description of lithology, thickness and estimated spatial distribution of water bearing strata. More information on the hydrologic characteristics of the hydrogeologic units in Plate VI-1 is needed.

The applicant needs to provide more information, where available, to identify trends in the fracture zones (section 6.6.3.1) and density of fault zones so that their importance to groundwater movement in future mining areas can be assessed.

(a)(3) More detailed information on water wells or uses of springs in the area needs to be presented. Information, if available, should include the quantity of use, water quality, and depth and formation name of aquifer.

(a)(4) The applicant should update the groundwater quality information in Table VII-1. The information is useful in a general sense, e.g., assess toxicity levels; however it is necessary to provide more detailed information to determine seasonal variations and the variation in water quality from the individual measurement points. Effluent discharge quality must comply with UMC 817.42B(7). A suggested format would be to graphically display the data on a monthly basis for each of the measurement points. Flow rates at the time of measurement should be given, if available.

(b) Locations of water producing faults intersected by mining would be helpful to assess whether the mining activities could possibly result in communication perched of aquifers that were previously isolated and provide a better understanding of the existing lateral continuity between aquifers coal seams or the surface recharge areas. Water quality samples from seeps, springs and drill holes would provide additional understanding of the regional groundwater system through comparison of the various water quality parameters. This type of information should be provided to the extent available.

<u>UMC 783.16 Surface Water Information</u> (Chapter 7.2)

(a) The drainage are (in square miles) of Grassy Trail Creek should be given for both areas above the permit and within the permit. A portion of the permit area does not drain directly into Grassy Trail Creek within Whitmore Canyon. This area should also be identified, measured and discussed. This area is mainly along the west boundary of the permit. Except for the Fan Canyon area, there does not appear to be disturbed areas within this western drainage from the permit. The applicant should discuss this fact and whether any future disturbance is planned in the portion of the permit area that does not drain into Grassy Trail Creek within Whitmore Canyon.

Review of the Sunnyside Mine file at the Division showed that a large amount of water quality data has been collected since the original permit submittal. This information should be provided to update the permit. Table VII-2 should be updated to include this data. However, it is also necessary to show seasonal variation which Table VII-2 is insufficient to achieve. The applicant should provide monthly information on the results of water quality monitoring; graphical representation is preferred.

Since the USGS gaging station #0931430 record is the only available discharge measurement site on Grassy Trail Creek, the data from this station should be provided in a format sufficient to assess seasonal variations in flow rates.

Several seeps were noted within the permit area during the site visit in May 1983. This contradicts the statement in 7.2.3.2 of the applicant which says no springs or seeps are located in the area. This point needs to be further discussed by the applicant.

7.2.3.2 also discusses the Slaughter Canyon sediment pond. This discussion needs to be updated to reflect the current status of the reclamation of the sediment pond. Plate III-1 and VII-1 should also be updated.

In general, information on Plate III-1 is hard to utilize due to the lack of a complete legend of symbols, lines and abbreviations. The location of all mine water discharge points should be clearly identified on the map. These deficiencies need to be corrected.

Since the original permit application, the applicant has made a significant effort to improve the surface water drainage system including the construction of sediment ponds, diversions, and a water treatment facility for seepage from the coarse refuse disposal. These new features and any others that control surface water runoff should be included in Plate VII-1.

UMC 783.18 Climatological Information (Chapter XI)

Rather than general statements, specific data should be presented in section 11.3.1 regarding average monthly accumulated snow (if available). Such information is helpful for the assessment of impacts to wildlife.

The nearest NOAA station with similar climatic conditions should be contacted to obtain 30 year averages for precipitation and presented in the application. This information should also be compared to the site specific data presented in Table XI-1.

Table XI-1 should be updated to include 1981 and 1982 data. Monthly summaries should also be presented; bar graph form is preferred. Such information is required to access the validity of the revegetation plan.

NOAA 30 year averages should be presented in section 11.3.2 as well. Discussion of site specific parameters must include the average beginning and ending dates of the frost free (growing) season.

Identify in section 11.3.3 sources of potential evaporation rates indicated in the application.

In section 11.3.5, the applicant should provide accurate site specific wind data such as is typically presented in a "wind rose." Such data should describe the average velocity and direction of winds both annually and monthly.

The location of the meteorological station should be identified on the operational mine plan map.

UMC 783.19 Vegetation Information (Chapter IX)

Please identify the individuals or consultants responsible for the vegetation survey and analysis within the vegetation section (section 9.1).

The first paragraph in section 9.2, page IX-6 states that "all areas within and contiguous to the permit area" appear on Plate IX-1. In fact, Plate IX-1 does not present mapping of vegetation communities contiguous to the permit area pursuant to UMC 783.19(b). Mapping of a one-half mile strip external and adjacent to the permit area boundary should be sufficient. In addition, mapping should comply with UMC 771.23(e) and UMC 783.24 with regard to scale, format, etc.

Plate IX-2 is missing; please provide.

The second paragraph (section 9.2) states that "all vegetation types were examined for threatened or endangered species according to Welsh (1977)." This "examination" should be fully explained with regard to methodology used. If the publication (Welsh 1977) was merely consulted for known species, the effort is not adequate. A site-specific survey encompassing areas around disturbance zones should be completed by a recognized botanist thoroughly familiar with Utah's threatened or endangered plants. Such a survey should only take one to three days. Section 9.4 identifies one threatened species found in "a side canyon adjacent to Whitmore Canyon." Please provide discussion identifying methods used to locate this species, and plot its exact location on a map such that the Division can make the determination whether or not the population will be threatened by any future disturbance, or whether additional study is required.

The fourth paragraph (section 9.2) identifies use of "point-line" transects. How many potential points occurred along the transect - 60? Rationale should be expanded as to why lengths of transects were extended and in which communities this occurred.

In the first paragraph of page IX-7 why was herbaceous cover estimated within the riparian community? How many quadrats occurred along each transect?

Third paragraph (page IX-7) - Use of two distinct sampling methods for shrub density with the split of 12 inches in height is very poor sampling design, probably invalidating results. Please provide additional rationale for this technique. Define the reasoning behind variable plot sizes among different communities (e.g., 0.002 ha, 0.06 ha, etc.). The last sentence in the paragraph makes no sense from a statistical standpoint as plots in and of themselves introduce very significant variation which clouds natural variation both within and between independent communities. Additional explanation must be provided.

Fourth paragraph (page IX-7) - see comments for third paragraph.

Fifth paragraph (page IX-7) - Figure IX-1 does not indicate the range condition or relative level of precipitation (normal, etc.) for the estimates taken. The applicant would be strongly advised to obtain and indicate these qualifiers for future revegetation success determination and commensurate bond release.

General comment (page IX-8) - The mixture of techniques presented in the applicant's methodology (quadrats, point hit, and line intercept) and size of plots (for density) for determination of given vegetation parameters is very poor sampling design. The assumption of statistical independence between sampling methodologies appears to have been violated on several counts. (The technical analysis will shed more light on this apparent problem). If this in fact is the situation, the utility of this data for revegetation purposes will be suspect and may in fact be detrimental to the applicant's revegetation success determination and commensurate bond release. The applicant should request much more detailed explanation of sampling methods from its consultant including the statistical assumptions used, proposed data combinations, and any information in defense of these methods (e.g., approval letters or memoranda of understanding from the Division).

Raw vegetation data should be appended (in readable form) to the application to facilitate checks of sampling adequacy.

The statement in section 9.3.2.6, page IX-60 is inconsistent with the permit area acreage identified in the mine plan (14,300 acres). Please correct the discrepancy.

The discussion in section 9.3.2.8, page IX-60 with regard to the applicant's use of reference areas is too brief. Please elaborate as to <u>how</u> reference areas will be used for determination of revegetation success (explain full methodology). In addition, a detailed explanation of how reference areas were chosen, and their characteristics, should be provided. (The original vegetation section provided this information for proposed reference areas; similar data should be provided for established reference areas.) If these areas have been checked by the Division, a letter of approval should be obtained and presented in the application; if not, approval must be obtained.

Methodologies presented for sampling design, reference area comparison and any other identified activity must be explained in sufficient length

and detail that an independent individual familiar with vegetation analysis could reconstruct the methodology and obtain results similar to those presented in the application. Methodologies not explained in such a manner will continue to trigger deficiency comments (section 9.3 - General Comment).

UMC 783.20 Fish and Wildlife Resources Information

All sections of 783.20 have been remanded; however, a certain level of baseline information is necessary to determine the applicant's compliance with UMC 784.21 and UMC 817.97, which have not been remanded.

The applicant needs to supply documentation of correspondence with the Division (and UDWR) regarding the extent of fish and wildlife baseline information required to determine compliance with UMC 784.21 and 817.97. At a minimum, baseline information should be of sufficient detail to enable the applicant to devise impact control measures, management techniques, and monitoring methods to protect or enhance federally listed threatened or endangered species; other species that have high federal or state interest; and habitats of unusually high value for fish and wildlife. Consultation with the Division and the UDWR would aid the applicant in determining which species and habitats require special protective measures pursuant to UMC 784.21.

Chapter X lists but fails to discuss most species of vertebrate wildlife that have high federal and state interest.

Very little site-specific information regarding the extent and timing of mule deer use of winter range in the permit area is provided. Also more detailed information needs to be provided on the extent of mule deer winter range within the canyon.

No site-specific information on raptor nesting use of cliff areas within the permit area, particularly in the vicinity of the proposed disturbance sites in Pasture and Water Canyons, is provided. The applicant should include the results of the U.S. Fish and Wildlife Service's raptor surveys on the permit area in this section. Plans showing the exact nature and location of the proposed developments also need to be provided.

The report of Winget (1980), "Aquatic Resource Analysis of Grassy Trail Creek, Carbon County, Utah," should be included as an appendix to this section.

783.21 Soil Resource Information (Chapter VIII)

(a) Given the current status of this section of the regulations, the soils baseline information presented is essentially complete for areas included in the permit which were disturbed prior to the time of application. The applicant should, however, detail the results of studies conducted by Cook (1980) and, if they apply, studies by Jensen and Cook (1980), Kreitler and Barlow (1976), and Cervantez and Kiel (1975) as cited in this section to accurately describe the condition of the soil resource. This need not be an extended discussion of methodologies, etc., but should identify objectives,

pertinent data, and results applicable in meeting the requirements of sections 817.21-817.25.

For all future areas to be disturbed, additional site-specific information is necessary to meet the requirements of the regulations as stated in sections 817.21-817.25. Site-specific data should be provided concerning soil depth and chemical and physical characteristics sufficient to determine availability and handling requirements for reclamation purposes. Methodologies suggested in "Guidelines for Management of Soils" prepared by the Division could be used to develop this information. Areas for which these analyses need be conducted include, but are not limited to, the proposed ventilation shafts, upgrade roads, future borrow area extensions, and any sites required for the development of erosion control systems identified in this ACR. This is particularly important regarding the statement in the application (8.2), "Barring the presence of endangered species, toxic soils...a third order soil survey is sufficient for relating small areas disturbed by the surface effects of underground coal mining." Toxic soils could potentially exist and should be eliminated from salvage, given the apparent limited soil resources available.

The mapping unit description for the Beenom Loam SDD2 unit needs to be provided.

(a.4) Potential productivities of selected soils are given (Table VIII-4). Potential productivities for unlisted soils should be included. This information may have been developed by the SCS since the time of submittal. Present productivities are not included in this section and need be submitted.

(b) The applicant states in section 3.5.3.2c that a soil other than topsoil could be used on preparation plant reject and industrial waste disposal facilities. The applicant should clarify whether this is a soil material (and its potential source) or an alternate material.

Files at the Division contain discussions concerning a revegetation test plot to be constructed with the aid of the Soil Conservation Service (SCS). Does such a test plot exist? If so, update the application to include its description and results of testing.

UMC 783.22 Land Use Information (Chapter IV)

Plate II-1, Surface Ownership Plot, should be redrafted to more accurately exhibit the proposed permit boundary, and all lands adjacent to the permit boundary should exhibit the owners of record (e.g., Section 13, T145, R13E). This same problem occurs with the subsurface ownership in section 4.3.2.1.

In section 4.3.1.2, identify the owners and legal description of the "three parcels of land . . . held by private interests other than Kaiser Steel."

Update section 4.3.1.7 as necessary

The applicant must supply a map in section 4.4.2 (consistent with UMC 771.23(e) and UMC 283.24) and supporting narrative of the land uses existing within the permit area at the time of the filing of the application. An example of an acceptable map format is provided in Appendix B. Such a map and discussion of concurrent land uses will mitigate requirements for "pre-mining" information.

The applicant should make reference to the letter from Theron Hutchings regarding the prime farmland negative declaration.

UMC 783.25 Cross Sections, Maps and Plans

(a) Elevations of test borings are not discernable on Plate III-4.

(b) Monitoring stations for water quality are not clearly indicated on any plate. Plate III-1 has some monitoring stations but the illustration and legend are inadequate and the map does not include the entire permit area.

(d) Maps C-50 and I-582 do not include coal bed strike and dip data for the entire permit area. This information should be provided on a consistent set of maps for the entire permit area.

(f) Provide location maps of subsurface water encountered in the mines and indicate the depth to these waters. Information in Appendix 6.9 should be incorporated into this map.

(g) Update Plate III-1 or make a separate map which provides the location of all sediment ponds, diversions, springs, seeps, and ditches within the mine and adjacent areas.

UMC 783.27 Prime Farmland Investigation (Chapter VIII)

A negative determination has been made by the SCS and a letter to this effect is included in the application.

UMC 784.11 Operation Plan: General Requirements (Chapter III)

(b)(1) Provide a description of the distribution system for the water from Grassy Trail Reservoir within the permit area (section 3.7.6).

(b)(6) Include the information required for the water treatment measures installed for the seepage from the coarse refuse pile. The discussion of sediment ponds in section 3.2.9 should be updated to reflect current sediment ponds. Maintenance and sediment removal programs should also be addressed.

UMC 784.13 Reclamation Plan: General Requirements (Section 3.5)

(a) It is unclear, given the statements in the application concerning revegetation techniques proposed, which disturbances the applicant deems Kaiser Steel Corporation (KSC) responsible for under the provisions of the current regulations. KSC is responsible for reclaiming all areas disturbed or used during the course of the life

of the mine regardless of when the initial disturbance occurred. It is suggested that a table be developed like Table III-1 showing the facilities, portals, etc. which are proposed to be disturbed or used during the course of the life of the mine versus such facilities which will not be affected and are not included in the bonding. This will help clarify the level of revegetation activities required.

(b.1) The specific timing of reclamation associated with the contemporaneous reclamation activities under 3.5.1 should be clarified. Will any additional areas of disturbances quality for contemporaneous reclamation (UMC 817.100) during the five year permit term? If so, such areas should be identified or a negative statement made. In conjunction with this concern, the applicant is requested to provide a statement, table, or list of all disturbances (portals, roads, etc.) which will be reclaimed at the end of the five year permit term versus those to remain for future mining activities.

(b.2) See comments under UMC 805.11 Determination of Bond Amount in this document.

(b.3) Cross sections and interim and post-mining contour maps are not provided in the application. The applicant states contours are shown in Plate III-1; however, these are existing contours and some change will be required during reclamation.

It is stated that the upslopes of the ventilation shafts in Pole Canyon [3.5.1(c)] are stable. What evidence supports this?

In subsection 3.5.4.2, the applicant should identify which portal and shaft locations exhibit highwall requiring filling and contouring. Is this activity accounted for in the bond estimate?

(b.4 and b.5 vii) Throughout Chapter VIII the applicant states that "Topsoil will be handled and protected in accordance with requirements under UMC 817.21 to 817.25." More specific plans on a site-specific basis are needed on the methods of soil handling including timing and lift depths (UMC 817.22).

In addition, it is unclear how much topsoil is available for reclamation purposes. Is there sufficient soil material available to adequately reclaim the site? A showing is required from the applicant concerning soil volumes available, material sources, project distribution sites and final cover depth. One option for fulfilling this requirement is to construct a mass-balance table. The table would identify topsoil sources (existing stockpiles, areas to be disturbed, etc.), lift depths, and the material volumes of those sources. The table would also indicate the sites on which the topsoil will be redistributed, showing the disturbed acreages involved, and the projected depth of topsoil cover on each site. Soil materials which are to be used for reclamation but are unavailable for stockpiling or handling due to previous mining (i.e., soils beneath the coarse refuse pile, facilities sites, etc.) must also be

identified and included. The depth and quality of these materials must be assessed to determine available volumes. Such materials need only be identified as "in place" on the table since they would not be moved or rehandled unless needed for application on other areas. If such material are to be redistributed, a more detailed treatment would be required regarding redistribution volumes, etc. A companion table explaining the reasoning behind lift depth selection would also be helpful.

A more detailed plan for protecting stockpiles must also be included. The applicant's discussion (section 8.7) should be expanded to include seedbed preparation, fertilization, planting, and mulching techniques to be implemented. Revegetation equipment should be identified. A proposed seed mixture needs to be included.

The applicant states that (8.7) "Topsoil storage piles will be contoured to minimize erosion and seeded . . . if the pile will not be redistributed within a reasonable time." What climatic or operational conditions determine a "reasonable time?"

The applicant also needs to supply more detailed information concerning the methods to be used to redistribute and grade soil materials. The discussion should include an identification of equipment, timing and methodologies used to achieve each of the requirements stated in UMC 817.24 and 817.101-106.

The applicant states in section 8.9 that soil nutrients will be applied at rates indicated by chemical analysis. No indications are given as to sample locations, methodology, frequency, depth, timing or chemical analyses to be performed. A plan detailing these items needs to be included in the application. A separate section in Chapter III, devoted to this issue, would be preferable to statements inserted throughout the application.

(b.5ii-v) The reclamation plan under section 3.5 is not entirely consistent with that mentioned under 9.7. Confusion exists between different sources in the application as to what will happen and where. For example, fertilization is mentioned for use on some disturbed sites but not others. Specifications for most reclamation techniques are missing. It is not clear how most, if not all, revegetation techniques will be applied or conducted. These techniques include site preparation, seedbed preparation, fertilization, seeding, seedling planting, and mulching. The applicant needs to provide a detailed description of each revegetation technique to be used including: type of equipment, type and amounts of materials (where appropriate), method of application, and technique sequence. This applies to both temporary revegetation and permanent revegetation. It is assumed that differences in slope, seedbed materials and disturbance type will necessitate technique variations. Variations should be explained. Perhaps the easiest way to resolve this issue is an expansion of the discussions in section 3.5.5 in the application. The discussions in section 3.5 dealing with facilities reclamation could then be modified to specifically identify the revegetation techniques to be applied and the sequential timing

of techniques for each type of disturbance. It is likely that existing discussions, such as that in subsection 3.5.3.2, would require expansion due to the differences in disturbance types and therefore a difference in applicable revegetation techniques.

It is not clear where seed mixtures will be planted. The applicant needs to provide a showing, perhaps like Table III-1, which indicates the seed mixtures to be planted on each disturbed site along with an account of the acreage involved.

The applicant is requested to provide a more extensive rationale as to species selection (Tables III-5 to III-9) considering suspected soil characteristics, climatic conditions, test plot results, establishment potential and erosion control potential. This need not be an extensive discussion occupying several pages. A table showing species attributes keyed to the preceding characteristics with minimum verbage should suffice. Information sources should be documented.

The applicant may wish to consider revising the existing seed mixtures to include additional or substitute grass species exhibiting higher establishment and greater erosion control potential.

For introduced species in the seed mixtures, the applicant should address the requirements of UMC 817.112.

In subsection 3.5.5.3, the applicant states that "Within the limitations of the equipment, much of this rock will be placed, to act as a deterent to erosion." Is rock to be used in lieu of conventional mulches or in addition to them? To be effective, the rock would need to assume approximately 50 to 60 percent surface cover. Is this possible? The concept is acceptable, the success of application is in question.

Subsection 3.5.4.4 states that "Stabilization and initial erosion control <u>may</u> be accomplished by the introduction of quick growing grasses with revegetation of permanent ground cover to follow . . ." The applicant needs to state what <u>will</u> be accomplished.

The applicant states, in section 3.5.3.2, that areas such as the slurry ponds, coarse refuse disposal, etc. will be "dismantled, removed, sealed if necessary, and graded." Where will this material be disposed of? What are the plans for disposal - both engineering and reclamation? Is this activity accounted for in the bond calculations. Both the existing site and the disposal site must be considered.

In the same section the applicant states that preparation plant reject and industrial waste disposal facilities "will be scarified, covered with topsoil or a soil capable of supporting life, and revegetated." It is conceivable that such waste materials could exhibit properties which would inhibit or prevent plant establishment. The operator is requested to include in the application a plan for testing, and disposal if necessary, of such wastes. The

applicant must also commit to the surface cover requirements as stated in UMC 817.85 and 817.89.

Additional revegetation will be done in the spring of 1981 [3.5.1(e)]. Why is this necessary? Was the original a failure?

(b)(8) For this regulation include information on plugging holes and borings. Methods for sealing these holes are important in avoiding potential future pollution of fracture zones from surface water drainage, accidental spills, or faulty casing.

UMC 784.14 Reclamation Plan: Protection of Hydrologic Balance

The applicant has made a significant effort since the application submittal to implement measures to protect the hydrologic balance including additional sediment ponds, water treatment facilities and use of straw bales as filters. The mine plan should be updated to reflect these changes.

(a) In the presentation of mitigation measures in section 3.4.3.2 mention is made of diverting runoff, regulating channel velocities and sealing roads and berms. However, no details for implementing these measures were found in the mine plan. This information should be provided, e.g., maximum velocity criteria for designing diversions. A sentence in section 7.2.3.2 states that no diversions are planned. Please resolve this conflict.

(b) An update of the current water quality monitoring program should be provided including plans for monitoring the performance of sediment ponds. The two sampling points on Grassy Trail Creek above the mine and one below are not adequate to identify problem areas since there are a number of potential sources of pollution between these two sampling locations.

(c) The discussion of projected impacts of mining on the hydrologic balance provided in sections 3.4.3.1 and 7.1.4 and 7.2.4 does not address the requirements of UMC 784.14(c). Available water quality and quantity data along with analytical techniques to assess the impacts of mining on the surface and groundwater systems should be included. Areas of particular concern are whether ~~X~~ mining will alter the existing groundwater system and the water quality impact of disturbed area surface runoff and mine water discharge into Grassy Trail Creek. From the data provided in Tables VII-1 and VII-2, it appears that mine water discharge does increase the level of several of the pollutants including TDS, arsenic, total iron, and oil and grease. This is based on the increase in the average concentration of these pollutants between Upper and Lower Grassy Trail Creek sample points and the addition of mine water with higher measured concentrations of the pollutants between these points. This issue needs to be addressed by the applicant.

(d) Plans of permanent entry seals should be included along with appropriate rationale to justify anticipated hydraulic heads, if any, used in the design of the seals (section 3.5.3.1).

UMC 784.15 Post-Mining Land Uses (Chapter IV)

The applicant should emphatically state that post-mining land use will not differ from pre-mining land uses (assumed) and that reclamation activities are designed to return this proposed land use following mining.

UMC 784.16 Reclamation Plan: Ponds, Impoundments, Banks, Dams, and Embankments (Chapters III and VII)

(a)(1)(ii) The details of the sediment pond in Figure VII-1 is inadequate since it is not site specific. Individual plans for each sediment pond must be provided.

(a)(1)(iii) The design calculations in section 7.6.1 are incorrect in both the application of the methodologies and the values chosen for parameters. Review of the Division's files has shown updated calculations. These should be submitted for all sediment ponds existing and proposed.

(a)(1)(iv) Address the subject of subsidence under ponds, banks, etc. due to past underground mining. Indicate if any of the structures on Plates III-1 and III-5 are underlain by mined areas.

(a)(1)(v) Construction of several sediment ponds has taken place in the permit area without the approval of the Division. The applicant must comply with UMC 784.16(a).

(c) The applicant should provide justification as per UMC 817.49 to the Division for allowing any sedimentation ponds to be left as permanent structures after mining is completed. Since the applicant proposes the ponds to serve for wildlife and stock watering, it should be demonstrated that sufficient water will be available to the ponds to serve this purpose.

(e) Information on the slurry pond used to store the coarse refuse from the coal preparation plant should be provided as per UMC 784.16(e). The information should demonstrate the engineering feasibility and environmental soundness of the structure and site.

UMC 784.17 Protection of Public Parks and Historic Places

A plan or statement describing how the applicant will minimize or prevent impacts to identified historic sites and sites discovered in the future needs to be provided.

UMC 784.19 Underground Development Waste (Chapter III)

Update the sections in Chapter III with information and data recently submitted to the Division pertaining to modifications to coarse refuse

disposal site(s). This update should include, but not be restricted to, the following items:

1. Indices showing locations of refuse sites and associated ponds on geologic and structural maps submitted in the application.

2. Bore hole or test pit locations and actual data on subsurface geologic and hydrologic conditions.

3. Engineering specifications of rock toe buttresses, if these are required in performance specifications.

4. Characteristics of the floor of the sites to include joints, fractures, seeps, bedding plane orientation, etc.

5. Stability analysis, e.g., strength parameter, long-term seepage, etc.

6. Data explaining how the required capacity of the disposal site was determined and if the volume which was designed for is conservative, taking into account unanticipated waste development during the life of the mine due to such conditions as fracturing and collapse of overburden. If the design structure does not have sufficient capacity for the present proposed permit period, give additional design information on alternative structures.

7. Methods for compaction of wastes and maintenance of compacted site. Control of infiltration and runoff to prevent formation of acid or toxic waste water formation.

8. Cross sections of the future filled disposal sites. Present the section such that it corresponds to the plan view map. (Figure 2 does not correspond to Plate III-5.)

UMC 784.20 Subsidence Control Plan (Chapter III)

Present survey data to support the statements in the application (sections 1.2, 3.4.3.1, 12-4) that subsidence is not probable and damage or diminution of structures and renewable resource lands are not expected due to subsidence. The survey should address the items in sections (a) through (d) in 784.20. Also provide information on joint orientation since this often controls subsidence cracks and the effect, if any, of mining under or near Grassy Trail Reservoir considering that the third 5-year permit plans appears to be within several hundred feet of the reservoir. Section 3.4.8.1 states that the massive Castlegate sandstone occurs about 200 feet above the upper coal seam. Provide information varifying that this sandstone does not taper out or become thinner, thereby being somewhat more susceptible to collapse. Document the methods and calculations for substantiating subsidence or no subsidence.

UMC 784.21 Fish and Wildlife Plan (Chapter X)

This section is incomplete. The applicant provides very little information on how impact control measures, management techniques, and

monitoring methods will be utilized to protect or enhance high interest species and high value habitats (i.e., riparian areas or cliffs supporting raptor nesting) potentially affected by mining activities.

The applicant states that a management plan is being developed and is scheduled for completion in August 1981. This plan has not been included in the permit application.

To protect stream channels from sedimentation, the UDOGM requires, in most cases, that the applicant will maintain a 100-foot buffer zone between mining operations and all perennial and intermittent streams. A statement to this effect needs to be provided.

Examples of other mitigative or protective measures that could be provided in these sections are as follows:

1. Education and training programs for mine personnel to limit potential impacts that could result from harassment or unintentional disturbance of wildlife by mine employees while on the permit area.

2. Limiting haul road speeds to reduce the potential for vehicle-wildlife collisions. A reduction in haul road speed limits would be particularly valuable during the early morning and evening hours and during the winter when mule deer-vehicle collisions are likely to increase.

3. Where practical, adjust the timing of future development to reduce the potential for impacts to sensitive species. For example, development of the Pasture and Water Canyon sites should not coincide with any raptor nesting activity occurring within one kilometer of construction activities.

UMC 784.22 Diversions (Chapters III and VII)

No information on the application is provided concerning diversions in the permit area. If diversions do exist, such as ditches to convey runoff undisturbed area around disturbed areas, the appropriate information, as per UMC 784.22, must be provided. If no diversions exist, a statement to that effect should be provided.

UMC 784.23 Operation Plan: Maps and Plans (Chapter III)

(b)(1) If any utility corridors exist in the permit area, they should be shown on an appropriate map.

(b)(2) A map showing the sequence of reclamation should be included.

(b)(5) Cross sections for the proposed and existing topsoil storage areas must be included.

(b)(10) Sediment pond locations must be updated to reflect current condition along with any changes in the coal processing waste slurry disposal site.

(b)(13) Facilities that will remain on the proposed permit area as a permanent feature must be clearly shown and indicated as such.

UMC 784.24 Transportation Facilities (Chapter III)

The types of improvements to the roads mentioned in section 3.2.101 should be described.

(a) The application is lacking specifications for culverts (size, slope, length, material). Although the applicant states no new culverts are planned, the adequacy of existing culverts must be evaluated since an improper design can create significant erosion and runoff control problems. If any drainage ditches exit along the roads, they should be shown on plans and specifications provided. Drawings of road profiles and typical cross sections for all roads used in the permit area must be submitted with certification from a Registered Professional Engineer.

UMC 784.26 Air Pollution Control Plan (Chapter XI)

The applicant states that "climatological" monitoring is facilitated by the weather station at the mine; however, this instrumentation is not adequate for an Air Quality Monitoring Program, an Air Pollution Control Plan, or a Fugitive Dust Control Plan (as required under UMC 817.95). Appropriate plans must be developed by the applicant and presented in the application, or a copy of a letter from the Division releasing the applicant from these requirements must be presented.

The application does not identify all potential emissions sources at the project. A quantitative estimate of the emissions from each source is lacking. Control measures planned for each source should be explained, and an estimate of their effectiveness should be provided. A total estimate of the amount of emissions from the mine can be determined from this information and included in the plan.

The application does not provide a Utah Department of Health waiver of air quality monitoring. Any emissions permits or emission permit applications must be included with the plan (see UMC 782.19).

UMC 805.11 Determination of Bond Amount (Section 3.5.7)

Bonding calculations only consider 200 acres for grass seeds, 157 acres for trees and shrubs, and 178.5 acres for mulch and fertilizer. It is unclear how these acreages relate to the proposed revegetation plan.

The proposed bond for life of mine is $740,000 (400 acres of disturbance) and for the permit term is $29,540. The bond is inadequate for reclamation of the area, based on the following deficiencies:

- The application uses salvage values to cover the cost of facility removal. Salvage value cannot be allowed because the regulatory authority may not have first lien on properties.

- The value of the equipment should be reassessed and the calculations provided. Conceptual labor rates are based on the 1978 UMWA contract and should be based on 1983 costs.
- Final volumes are not provided.
- The costs to seal the portals are lacking.
- Roads are not included in the estimate. No agreement with the Division has been provided showing that such roads can remain after mining operations are completed.
- Costs for revegetation materials (i.e., mulches, fertilizers, seed, etc.) should be based on 1983 prices.
- Sediment ponds are not included in the estimate. No agreement with the Division has been presented showing that sediment ponds can remain after mining operations are completed.

Table III-13 should include reclamation/revegetation equipment information.

All costs should be adjusted to reflect costs to the Division. This includes equipment delivery to the site, etc. The Division would not have access to the applicant's machinery to complete reclamation/revegetation.

The applicant states that, during reclamation, materials from disposal areas (i.e., coarse refuse disposal area, slurry ponds, etc.) will be removed such that the disturbed areas can be revegetated. The cost of materials haulage, deposition, and reclamation/revegetation of secondary disposal areas must be included in the bond calculations for such facilities.

Is the entire rail line for which the applicant has reclamation responsibility included in bond calculations?

Supporting calculations are needed to adequately evaluate the bond necessary to be posted and to evaluate the potential success of reclamation. Calculations for each step in the reclamation plan for each type of disturbance should be included. Variations in reclamation/revegetation techniques with respect to site conditions (e.g., level versus 2:1 slopes) should be addressed. The following example format is one possible method of satisfying this requirement.

MULCHING-MAIN COMPLEX

A. Mulch Application

(Equipment cost/hr. x production rate/acre) +
(labor rate/hr. x production rate/acre) +
(materials cost/acre) = cost per acre

B. Mulch Crimping

(Equipment cost/hr. x production rate/acre) +
(labor rate/hr. x production rate/acre) =
cost per acre

Total: Total Cost/Acre

UMC 817.97(c) Protection of Fish, Wildlife, And Related Environmental Values

(c) A statement needs to be provided assuring that the proposed power transmission line from the Whitmore Canyon Substation to the Pasture Canyon site be designed and constructed in accordance with environmental guidelines set forth in manuals approved by the Division. This would also apply to all powerlines which will service the mine during the five-year permit period.

Sections 3.2.9, 3.2.10, 3.4.3.2, and 3.4.9
UMC 817.97

These sections do not discuss in detail the sediment control plan in relation to the coarse refuse material used on road systems within the permit area.

UMC 817.97

The applicant states that fish and wildlife habitat is to be a primary post-mining land use. If this is to be the case, then a statement outlining how plant groupings will be distributed to maximize benefits to fish and wildlife is needed in this section. Plants should be grouped and distributed in a manner which optimizes edge effect, cover, and other benefits for fish and wildlife.

UMC 822.11 Alluvial Valley Floors

The applicant has made a negative determination for alluvial valley floors (AVF's) because the area of concern is upland and associated with an alluvial fan, and the mine has been in operation for 80 years without any recorded impact to agriculture. Historical documentation of this record is required.

Historical and Cultural Resources (Chapter V)

Although the Division's regulations governing preservation of historical and cultural resources are currently suspended, the applicant still must comply with Executive Order 11543 "Protection and Enhancement of Cultural Environment," the Archaeological and Historical Data Preservation Act of 1974, National Historic Preservation Act of 1966 and Archaeological Resources Protection Act of 1974. Therefore, the historical and cultural resource chapter has been included in the review.

It is stated that field surveys were conducted during January 19-24 and February 27-31, 1981. What were snow cover conditions during these periods? If snow cover was present, it would hinder the identification of sites, particularly prehistoric, and the collection of artifacts.

A table giving the exact portions surveyed of the sections identified on page 5 should be provided (e.g., to the 1/4, 1/4, 1/4, 1/4 section).

Township and range information should be noted on Plates V-1, V-2 and V-3.

It appears that a page of text between pages 14 and 19 is missing.

Page 15 is a duplication of page 13 and should be deleted. Also pages 100 and 101 are duplicated - the first sheet should be removed since Table V-6 is inverted.

Copies of photographs provided are of poor quality and few details are discernible in most photos.

The historical review and survey of historic values of the lease area conducted by the Preservation Research Section of the Division of State History should be provided to OSM.

Is the Sunnyside Historic District a district (numerous sites) or one large site with many "components" (locations)? The report preparer may be confused about the definition of a District. The report portrays the District as a site. Is Sunnyside an official Historic District? If what is identified as a District is only a large site, then consideration should be given to a noncontiguous district with all historical resources included. Proper documentation must be provided for a district nomination or determination.

There is some confusion about the authors' use of the term "components". In this report "component" seems to mean "location". Clarify this terminology.

Page 56 (Figure V-12) should precede, not follow, page 57.

Locational information (Section, Range, Township, etc.) for Item 9 on the Site Form for site 42Cb247 is not filled in.

All necessary Site Forms are provided in Appendix 1. Review of these forms, however, would be facilitated by placing all forms and support information in numerical order and in the same sequence (i.e., first page first for each site, right-side-up, etc.).

Site Report: 42Cb232 map should be relocated to follow pg. 4.
42CB233 Pg. 1 and 2 mislocated after 234 and page reversed.
Pg. 3 and 4 mislocated after 234 and page reversed.
Repunch both sheets and locate after 232.
Pg. 5 map, relocate to follow pg. 4.
42Cb234 Pg. 1 and 2 reversed. Repunch. Pg. 5 mislocated after 235. Relocate after pg. 4
42Cb235 Pg. 1 and 2 reversed. Repunch.
42Cb242 Pg. 1 and 2 reversed. Repunch.
42Cb243 Pg. 1 and 2 reversed. Repunch.
42Cb244 Pg. 1 and 2 reversed. Repunch.
42Cb245 Pg. 1 and 2 reversed. Repunch.
42Cb247 Pg. 5 map upside down. Repunch.

Socioeconomics

While the following is not required for inclusion in the mining and reclamation plan, the information listed would aid in preparing an environmental assessment in compliance with the National Environmental Policy Act.

1. Any data the company can provide concerning tax revenue contributed to the local communities.

2. Any changes in the expected work force due to changes in production.

APPENDIX A

TYPICAL ADDITIONAL LICENSE AND PERMIT REQUIREMENTS

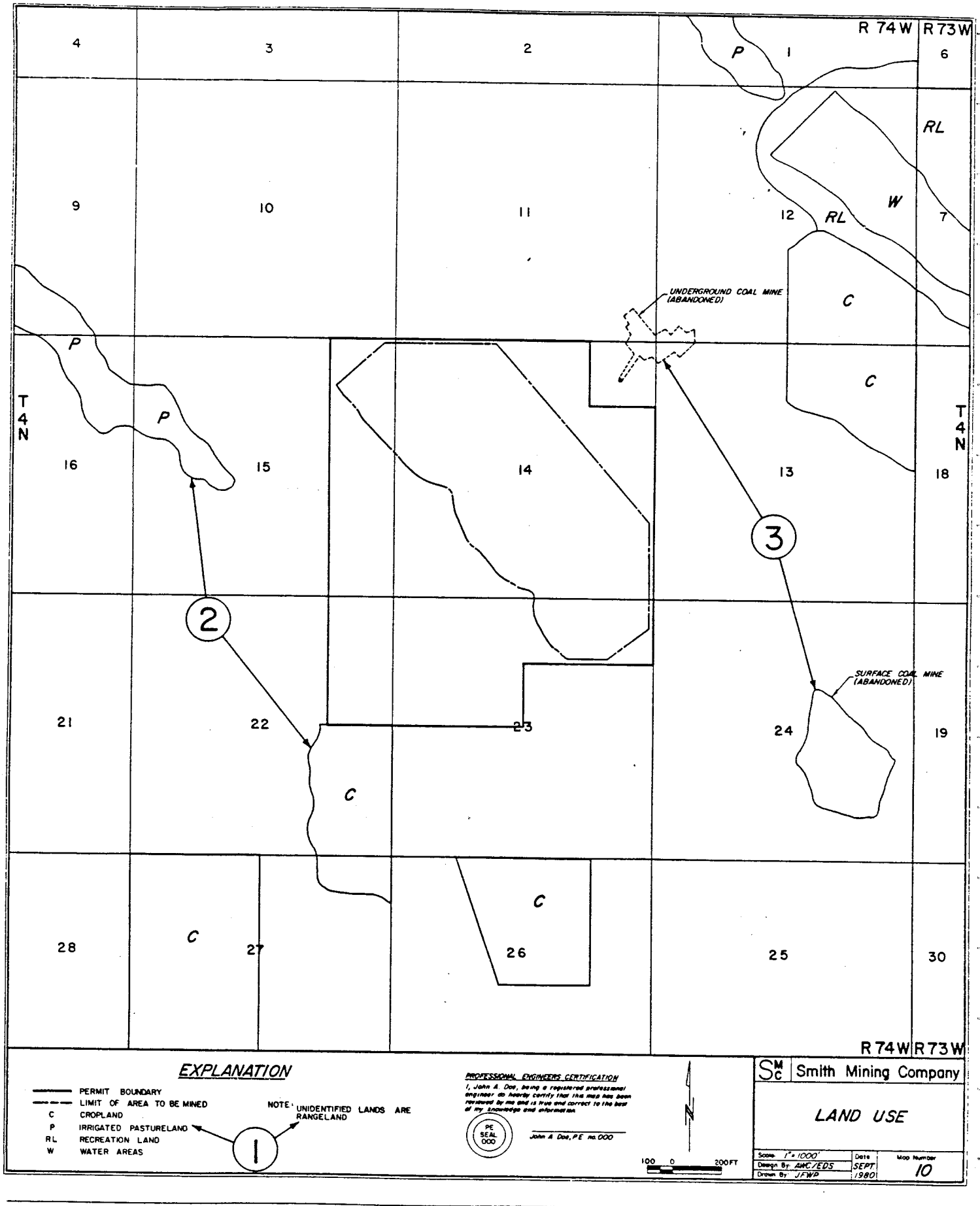
OTHER PERMITS AND LICENSES

Agency	Permit/License	Reference	Identification #	Date of Application	Date of Approval
Utah Division of Oil, Gas and Mining	Surface Mining Control and Reclamation Permit	Interim Permit	ACT/015/021		
U. S. Environmental Protection Agency	National Pollution Discharge Elimination System (NPDES	Federal Water Pollution Control Act	UT-0023612		
	Spill Prevention Control & Counter Measure Plan	Federal Water Pollution Control Act			
	Prevention of Significant Deterioration Permit (PSD)	Clean Air Act Amendments of 1977			
Utah Division of Water Rights	Approval Order Small Structures	Section 73-5-5 of Utah Water Code			
Dam Safety	Dam Design Review	Section 73-5-5 of Utah Water Code			
Utah Division of Environmental Health	Approval Order Air Quality	Utah Air Conservation Act			
	Approval Order-Culinary Water Wastewater & Solid Waste Disposal Site Facilities	Utah State Water Polluction Control Act			
	Construction Permit for Sedimentation Ponds				
	Driveway Permit for Each Location Where a Private Road Enters a County or State Road	Emery County			

Agency	Permit/License	Reference	Identification #	Date of Application	Date of Approval
Utah Division of Water Rights	Water Rights Appropriation of Record of Diversion				
Mine Safety & Health Administration	Mine Permit	Mine Safety & Health Act	42-00081-0		
Industrial Commission of Utah	Notice of Intent to Mine Coal	General Safety Orders Utah Coal Mines			
Bureau of Land Management	Right-of-Ways/ Special Use Permits	Federal Land Policy & Management Act of 1976			
Utah Division of State Lands	Right-of-Ways/ Special Use Permits				
U. S. Forest Service, etc.	Right-of-Ways/ Special Use Permits				
County Zoning Commission					

APPENDIX B

LAND USE MAP AND EXPLANATION



PERMIT MANUAL -

FIGURE 25

LAND USE MAP

Figure 25

Land Use Map

(1) Identification of Land Uses

The land uses within the proposed permit area and adjacent areas should be identified on the Land Use Map. Land uses graphically illustrated on the map should be those existing at the time of filing the permit application and usually identified as one of the following:

Cropland
Pasture Land
Rangeland
Forestry
Residential
Industrial or Commercial
Recreation
Fish & Wildlife Habitat
Developed Water Resources
Undeveloped Land

If the pre-mining use of the land changed within five years prior to the date the mine is proposed to begin the historic use of the land should also be described either on a separate map or within the text of the permit application.

(2) Land Use Boundary

The boundaries between the various land uses should be clearly marked on the Land Use Map.

(3) Previous Mining Operations

Any previous surface or underground mining operations and the extent of their disturbance should be indicated on the Land Use Map. The permit application must contain the information for previously mined-out areas as follows:

- The type and description of the mining method used.
- The coal seams or other strata mined.
- The extent of coal or other mineral removed.

Figure 25 (continued)

- The approximate dates of past mining.
- The uses of land preceeding mining.

The location and extent of acreage disturbed by previous coal mining and reclamation operations should be shown on the Land Use Map.

General Comments: The coal regulations of the Board require considerable information concerning the land use within the permit area and adjacent areas. Permit applications must contain information regarding the condition, the capability, and the productivity of the land within the permit area. The Division may be consulted regarding unique or troublesome areas regarding land use information and site description.

Regional land use information and information on the existance of Prime Farmlands may also be obtained from the U. S. Department of Agriculture, Soil Conservation Service.

A Land Use Map is required by the coal regulations of the Board; also, a Post-Mining Land Use Map is recommended.