0018

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

Michael O. Leavitt
Governor

Ted Stewart
Executive Director

James W. Carter
Division Director

355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
801-538-5340
801-359-3940 (Fax)
801-538-5319 (TDD)

February 5, 1997

John Pappas, Sr. Environmental Engineer
Cyprus Plateau Mining Corporation
P. O. Drawer PMC
Price, Utah 84501

Re: Review of Revised Mining and Reclamation Plan, September 27, 1996 , Cyprus Plateau Mining Corporation, Star Point Mine, ACT/007/006-96C, Folder #3, Carbon County, Utah

Dear Mr. Pappas:

The Division has reviewed your revised Mining and Reclamation Plan (MRP) which was submitted on September 27, 1996. You should recall from our October 17, 1996, letter that the Division was handling this action separate from the permit renewal process even though it was submitted as part of the renewal.

The results of the review are enclosed in the form of a Technical Analysis (TA) which discusses how the MRP has met or not met the minimum regulatory requirements. You will quickly note under the "Findings" sections that a number of deficiencies exist in your plan. Cyprus is required to correct these deficiencies by submitting a response that completely addresses them and is insertable to the MRP. In order to keep this project in the review loop, a complete response should be submitted no later than May 5, 1997. Only after the revised MRP has been reviewed and approved will it be accepted as your plan.

Thank you for your help in completing the permitting process. Please call if you have any questions.

Sincerely,

Daron R. Haddock

Daron R. Haddock
Permit Supervisor

blb
Enclosure
cc: M. Wright
P. Grubaugh-Littig
J. Helfrich
R. Davidson
S. White
J. Kelley
S. Johnson
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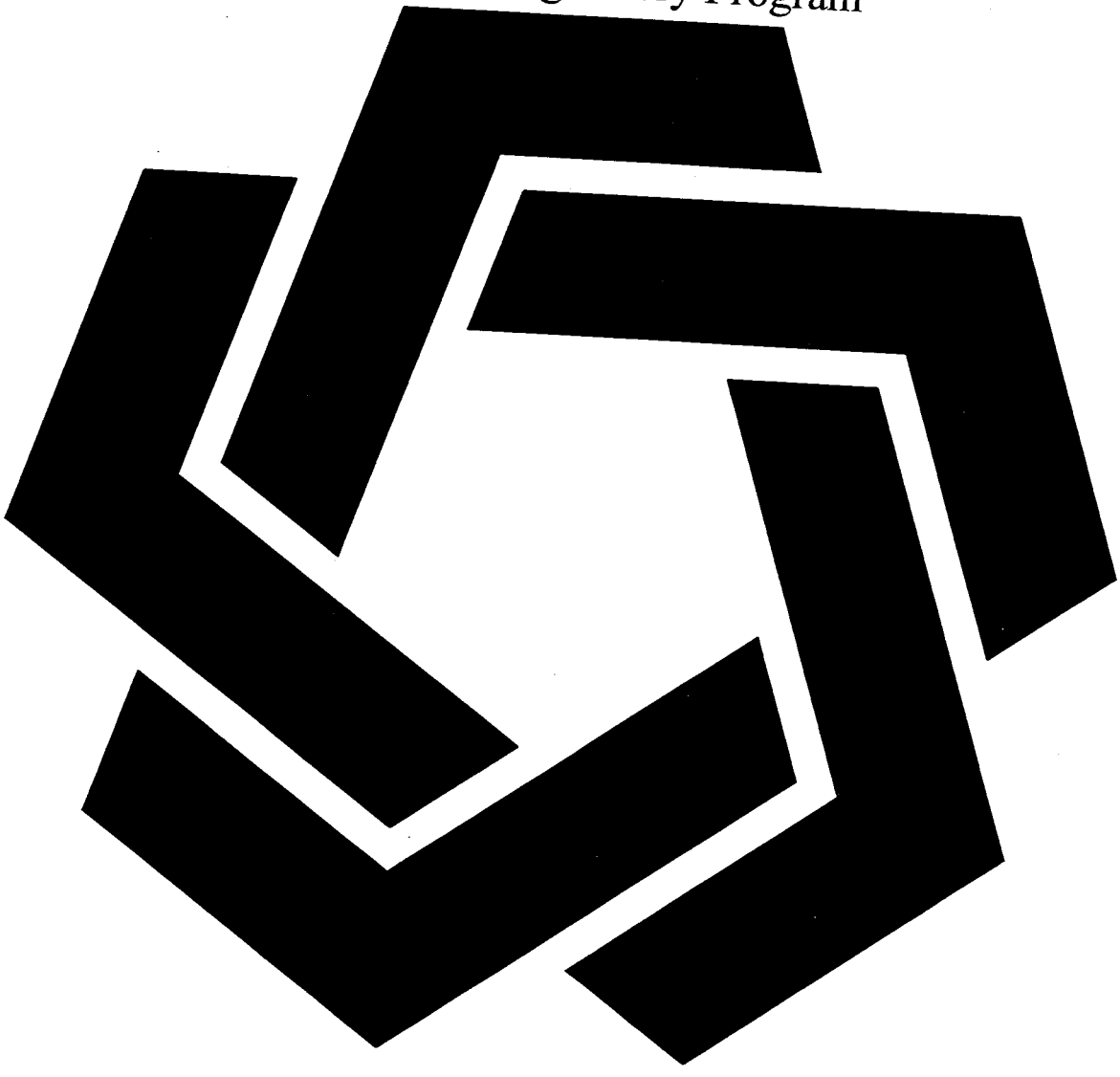
State of Utah
Division of Oil, Gas and Mining
Utah Coal Regulatory Program



Star Point Mines

Analysis and Findings

February 5, 1997

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SUMMARY OF DEFICIENCIES:

R645-100-430, R645-301-512.100, R645-301-512.230, R645-301-553.250, and R645-301-542.730. Identify and describe all miscellaneous coal and coal waste materials. Identify these areas on pre- and post-mining land maps. An appropriate standard needs to be identified for placing these materials in a controlled manner to ensure that final disposal will be suitable for reclamation and post-mining land use. These areas include, but are not limited to, all stray coal piles, wind blown coal fines, coal waste piles and downcast coal materials. The Existing Structure Exemption does not apply to existing and new coal mine waste disposal facilities. 50

R645-300-133. With respect to acid and toxic forming characteristics, the application must present information that is complete and accurate. 17

R645-301-114.100. Obtain authorization which allows the permittee to leave coal waste in areas under different ownership and for areas which will not be regraded or cuts refilled. 44

R645-301-120 and R645-301-130. All survey information needs to be current, reported clearly and concisely, and be presented in a manner that provides the necessary information to construct cut/fill and soil mass balances. 15

R645-301-120 and R645-301-242. Provide soil reclamation information in a table detailing soil redistribution by location, acreage, needed volumes, average soil thickness, soil source and location. 50

R645-301-120. Numerous repeated paragraphs were found on Pages 300-106 thru 300-114. Exhibit 342.100a could not be found in the 1991 MRP submittal, the permittee must provide a clear copy to include in the MRP. 29

R645-301-121.100. The MRP must contain current information: (1) Acreage figures in Table 321.100a and 321.100b must be current. (2) Undeveloped surface facilities (Little Park Canyon Fan Site) must be deleted from all maps or text be prefaced with some type of designation which shows the area as proposed. 11

R645-301-121.100. Section 411.130, Existing Land Uses, of the MRP must be updated to include current land uses of the area. Logging within the disturbed area or permit area may now be economically feasible as evidenced by the many areas in Carbon County which are now being logged. Coal bed methane is now a very important resource in Carbon County and this resource and land use must be discussed. 18

R645-301-121.100. The MRP must contain current information concerning the status and presence of threatened and endangered species within or adjacent to the permit area. All important wildlife habitat within and adjacent to the permit area must be identified and updated. Table 322.200f must be updated to include current information on raptors. Section 322.220 must be updated to include current aquatic resource information. 13

R645-301-130. The investigation and determination for the presence or absence of threatened and endangered species within or adjacent to the permit area must be preformed by a qualified person. The qualified persons name and date of finding must be included with the determination. 13

R645-301-140. Maps must designate pre-SMCRA areas which have not been used since 1977, pre-SMCRA areas which have been continuously used, and post-SMCRA disturbed areas. 12

R645-301-142. The permittee must expand the plan to include documentation of when the various cut slopes and highwalls were created in order to establish that they are, indeed, pre-SMCRA and that they constitute, therefore, continuously mined areas (CMAs) to which the highwall elimination and approximate original contour (AOC) restoration requirements of R645-301-553.110 and R645-301-553.120 do not apply. 45

R645-301-200. (1) Badland-Rubble Complex derived soils and the reclamation using these soils are protected under SMCRA. These soils will be returned, the disturbed areas reclaimed, and the soils stabilized and revegetated. The reclamation section should give consideration to the special treatment of these highly erosive soils for stabilization. (2) Provide operation and reclamation information concerning the Subsoil Stockpile area. Information should include cross sections of the subsoil pile, removal methods, protection of the native soils beneath the subsoil during removal, soil stabilization, revegetation, and hydrological issues concerning drainage. (3) If soil borrow is needed, the borrow site must be adequately described. Descriptions need to be provided for the soil resource, salvage operations, and reclamation procedures for the borrow area. 50

R645-301-220. Provide on-site soil surveys of the lower disturbance area with the detail and specificity necessary to describe adequately the soils and fills as for depth, volume, and quality. The detailed soil profile descriptions should include field notes correlated with soil pit locations and soil map delineations differentiating individual soil types. The purpose of this exercise is to clearly document the soil resource and provide the assessment of soil quality, quantity, and volumes for locating any recoverable substitute soils and fills to be used during reclamation. The Division requests notification for the location, sample density, and analytical procedures before CPMC conducts any additional soil surveys. 15

R645-301-232 and R645-301-120. Show topsoil mass balances that include the following: (1) Provide a soil salvage table detailing salvage volumes, salvage and stockpile locations, disturbed acreage, salvage depths, and dates salvaged. (2) Correlate soil salvage and stockpile locations on a soils map. 30

R645-301-232.720. All in-situ substitute topsoil resources must be identified and utilized prior to using borrow materials. Determine the following: (1) Determine reclamation cut and fill mass balances with succinct information identifying material types, cut and fill volumes, and catalog any deficit and excess fill amounts by area. (2) Coordinate reclamation cut and fill mass balances with topsoil mass balances to utilize any excess fill materials as a substitute topsoil supplement. (3) Based on mass balance results, determine if soil needs to borrowed to help supplement the four feet cover requirement for the refuse pile. If soil needs to be borrowed, then identify a soil-borrow area using a 1st Order soil survey, along with operation and reclamation details. 30

R645-301-244. Suitable mulch and other soil stabilizing practices will be used on all areas that have been regraded and covered by topsoil and substitute topsoil. Within the regraded and topsoiled areas, rills and gullies which either disrupt the postmining land

use or vegetation reestablishment, or pollute receiving streams will be filled, regraded, or otherwise stabilized; topsoil will be replaced; and the areas will be reseeded or replanted. 50

R645-301-330. The MRP must contain a brief summary of the color infrared monitoring of the vegetation as related to subsidence since 1980. 31

R645-301-330. The MRP must contain and/or provide the following: (1) A brief summary of what occurred during monitoring and mitigation of the golden eagles and nests which were impacted by subsidence (Exhibit 342.100a). The MRP must also describe any further mitigation, if any, which was required of the permittee as a result of the impacts. (2) A discussion detailing the effects of the mining and reclamation activities on the raptor population and reproduction based on data collected since 1981. (3) A discussion and summary based on collected data which document the impacts of mining and reclamation activities on the aquatic resources. 29

R645-301-331. A general interim seed mixture must be provided in the MRP; the topsoil interim seed mixture may be specified for general use. 31

R645-301-341. The seed mixtures for the lower Wattis area must be amended to include larger amounts of Squirreltail. The areas in which cheatgrass dominate (i.e. topsoil stockpile) must be seeded with an interim seed mixture to reduce the amounts of weed seed available in final reclamation. 60

R645-301-341.100. A detailed schedule and timetable for the completion of each major step in the revegetation plan must be included in the MRP. 60

R645-301-341.300. The permittee must demonstrate that the methods used in the MRP to reclaim the Mancos Shale, Unit Train Loadout Area, is feasible or a new method of revegetation can be proposed. 60

R645-301-342.100. The MRP must detail the wildlife enhancement plans for the reclaimed areas, such as the sediment ponds. 45

R645-301-352. The MRP must describe any and all potential opportunities to begin contemporaneous reclamation. 57

R645-301-353.120. Seeding of annual grains with the permanent seed mixture in areas of less then 15 inches annual precipitation is not approved and must be removed from the MRP. 61

R645-301-353.120. The vegetative cover, thus the seed mixtures, must be revised to exclude all introduced species for the postmining land uses of forestry, recreation, wildlife and grazing. Sufficient native species exist to meet the approved postmining land use. 61

R645-301-353.140. The MRP must describe the methods used to achieve the performance standard which requires long term surface stabilization for the refuse pile. 61

R645-301-354. The permittee must commit to seeding only during optimal seeding periods. A discussion on timing must include time between topsoiling and seeding, emergency interim seeding of topsoiled areas, and seeding during wet soil conditions. 61

R645-301-355. The permittee must provide maps of the post disturbance topography which allow sufficient information and detail to review mulching and other soil stabilizing practices proposed for reclamation. 61

R645-301-356.100. The MRP must include the revegetation success standards required of other agencies (i.e. Forest Service) to meet the postmining land use in addition to those required by R645-301-350. 61

R645-301-356.110. The MRP must discuss methods to be used for measuring revegetation success while recognizing that the methods used in the original reference area sampling are not approved for use to demonstrate revegetation success. Prior to approval, the MRP must describe in detail the areas to be averaged when using a weighted average for community type overlap. 61

R645-301-357.300. The MRP must meet the requirements of new regulation requirements concerning husbandry practices. 61

R645-301-358.100. The MRP must contain a commitment that the permittee will promptly report to the Division any state or federally-listed threatened or endangered species within or adjacent to the permit area. 29

R645-301-411.140. The MRP must include the following items: Cultural or historic information for areas adjacent to and within the upper and lower disturbed area. Referenced maps and studies on historic or cultural resources. Determination of the historic and cultural recourse for the remaining old town of Wattis. 10

R645-301-412.100. Table 412.100a. contains conflicting information between the land use in relation to mine features and land use in relation to physical features. The MRP must clearly distinguish the postmining land use for all areas within the area of bond liability. 44

R645-301-412.110. The MRP must demonstrate that the reclaimed refuse pile will be able to meet the post mining landuse of wildlife and grazing. 44

R645-301-412.130. Any land uses which are different than the premining land use (i.e. roads) must meet the requirements of R645-301-413.100 through R645-301-413.334 prior to approval. 44

R645-301-412.200. Comments from land owners supporting the postmining land use must be provided in the MRP. No documentation could be found to request the powerline road be left and who will accept the road liability and be responsible for any maintenance. No comments could be found in the MRP from the county which supports the leaving of the Lions Deck access road and commitments for future maintenance of this road. The MRP claims that this road is currently the county road, however, no documentation could be found supporting this claim. Clarification is needed in the MRP that the permittee retains the bond liability for the road until the Division has released the mine of the bond liability. 44

R645-301-521.111. Map 116.100c--Mine Plan Wattis Seam must be certified by a qualified, registered, professional engineer or land surveyor. 24

R645-301-522. The permittee must include in the plan documentation that the appropriate agencies have approved the present Resource Recovery and Protection Plan. 27

R645-301-524.300. The plan states that there are no dwellings or other structures within one half mile of the permit area and that a preblasting survey is, therefore, not required. However, a Carbon County TV translator is located within the permit area. Therefore, the permittee must demonstrate compliance with the preblasting survey requirements of this subsection of the regulations. 41

R645-301-534. The permittee must revise the plan to include proper documentation for the retention of the access road which goes from County Road No. 290 to Treatment Facility No. 1. 51

R645-301-542.200. The permittee must expand the plan to include cross sections, located on the postmining topography maps and laid out at intervals not greater than 100 feet, of the postmining topography of the entire disturbed area. The plan must also include an earthwork volume analysis based upon these cross sections which shows how much material will be moved and demonstrates that there is sufficient material to accomplish the backfilling and grading of the site as it is planned. 48

R645-301-542.300. The permittee must expand the plan to include cross sections, located on the postmining topography maps and laid out at intervals not greater than 100 feet, of the postmining topography, including the cut slopes and highwalls which are to be retained after final reclamation. 46

R645-301-542.800 and R645-301-830.140. The permittee must revise the reclamation cost estimate to 1) take into account the revision of the earthwork volume estimates required under **BACKFILLING AND GRADING**, and 2) reflect the use of only those unit earthwork cost figures which are approved by the Division. 64

R645-301-551. The permittee must revise the plan to provide for the complete filling of drill holes with concrete slurry or other suitable material at final reclamation. 48

R645-301-553.252. Following final grading of the refuse pile, the coal mine waste will be covered with a minimum of four feet of the best available, nontoxic and noncombustible material. Amend the MRP for the coal refuse pile providing 4 feet of cover. 50

R645-301-553.600. The permittee must revise the plan to include a demonstration that the volume of all reasonably available spoil is insufficient to completely backfill the cut slopes and highwalls which are found to be exempt from the highwall elimination restoration requirements of R645-301-553.110 and R645-301-553.120. 46

R645-301-624.110. The applicant should submit a map showing the location of adjacent mines in the vicinity of the mine plan area. The applicant should identify the coal seams associated with Maps 521.121e, 521.121f, 521.121g, 521.121g1 and 521.121g2. 20

R645-301-624.330. The applicant should identify the handling and storage of acid or toxic forming materials from roof, and floor rock. 20

R645-301-632. The applicant should outline the subsidence control plan and identify subsidence measures and monitoring locations for the areas on Maps 521.121g1 and 521.121g2. 20

R645-301-742.110. CPMC must design, using the best technology currently available, sediment control measures for road outslopes and all other reclamation areas that prevents, to the extent possible, additional contributions of sediment to stream flow or to runoff outside the permit area. 55

R645-301-742.110. CPMC must show which sediment controls will be used between initial reclamation activities and establishment of vegetation for all reclamation areas. 55

R645-301-764. CPMC must show the timetable for removal of sediment control structures that treat the refuse pile, road cuts, pad outslopes, and all other reclamation areas. 55

ENVIRONMENTAL RESOURCE INFORMATION

PERMIT AREA

Regulatory Requirements: R645-301-521.

Analysis:

The permit area is described on pages 100-7 through 100-13 and is shown graphically on Map 112.500a--Surface Ownership and Map 112.500b--Coal Ownership.

Findings:

The plan fulfills the requirements of this section.

HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION

Regulatory Reference: R645-301-411.

Analysis:

No cultural and historic resource information could be found for the Lion Deck facilities area and the lower facilities. No historic reporting could be found for the town of Wattis. Most reports and maps discussed in Section 411.140. thru 411.135 could not be found or had no historic resource information. The Division currently requested information from State History concerning sites eligible for nomination to the National Register of Historic Places within or adjacent to the disturbed area. State History inferred that there are sites of historic value which should be designated adjacent to disturbed areas.

Findings:

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

R645-301-411.140. The MRP must include the following items: Cultural or historic information for areas adjacent to and within the upper and lower disturbed area. Referenced maps and studies on historic or cultural resources. Determination of the historic and cultural recourse for the remaining old town of Wattis.

VEGETATION RESOURCE INFORMATION

Regulatory Reference: R645-301-320.

Analysis:

Plant communities within and adjacent to CPMC's permit area are shown on Map 321.100a. Maps 321.100b thru 321.100f delineate the vegetation types in greater detail. Map 321.100e shows the Little Park Canyon Fan Site. This fan site is only proposed and is not designated as proposed on maps or throughout the text. To avoid confusion the operator must either delete all reference to the fan site or if there is still a likelihood of developing the site all references throughout the MRP must be prefaced by "proposed" or some other designation. These maps must contain information which allows the Division to determine the date of disturbance (i.e. pre-SMCRA and never been touched, pre-SMCRA and continuously used , and post-SMCRA), disturbed area boundaries, and post mining land use. It is very important to designate all areas which CPMC does not claim as there responsibility both adjacent to and within the disturbed area.

Nine vegetation types are described within the permit area. They are a Douglas Fir, Aspen, Mountain Grassland, Mountain Shrub, Spruce/Fir, Sagebrush, Pinyon-Juniper, Saltbush, and Barren. Acreage of vegetation types within the permit area and disturbed area are provided in Table 321.100a and 321.100b. These acreage figures differ from the Division's current figures which list the permit area as 9060 acres and the disturbed area as 173.76 acres. The correct acreage figure is probably most important for the disturbed area which will be used for ordering revegetation and reclamation supplies. The largest disturbed area given in the Table is the mountain Shrub community. The Pinyon-Juniper and Sagebrush Communities have been disturbed extensively also. These areas are known to be of great importance to deer and elk as winter range. The Saltbush Community has been disturbed to a lesser extent, however this area will most likely be the hardest to revegetate and to control erosion due to the poor soils.

The productivity of the land in terms of range condition and forage production is discussed in Section 321.200.

In 1981, the reference area for the Mountain Shrub, Douglas Fir, Mountain Grassland and Sagebrush areas were established. The reference area sampling for the Saltbush, Pinyon-Juniper and the Aspen Community was conducted in 1982. Reference Areas were selected and sampled using approved Division procedures at the time of sampling. Reference area sampling during the period of extended responsibility and at bond release will need to follow current Division procedures. Currently, the Division requires cover sampling to be based on total cover of 100 percent and to include all tree and shrub canopy cover. Including all vegetation cover within the 100 percent standard will likely result in a higher cover value for some community types, however, the Saltbush Community will likely be unchanged. Reference areas and predisturbed areas were compared using the t-test and McArthur Index of Similarity (Table 321.100i).

Findings:

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

R645-301-121.100. The MRP must contain current information: (1) Acreage figures in Table 321.100a and 321.100b must be current. (2) Undeveloped surface facilities (Little Park Canyon Fan Site) must be deleted from all maps or text be prefaced with some type of designation which shows the area as proposed.

R645-301-140. Maps must designate pre-SMCRA areas which have not been used since 1977, pre-SMCRA areas which have been continuously used, and post-SMCRA disturbed areas.

FISH AND WILDLIFE RESOURCE INFORMATION

Regulatory Reference: R645-301-322.

Analysis:

In 1982 site specific sampling of various vegetative communities were conducted to determine occurrence and animals per unit area. Other methods such as literature research and personal contacts were used to evaluate the wildlife resources within the area. Table 322.200a provides a list of mammals, Table 322.200b birds, and Table 322.200c reptiles and amphibians which are likely to occur within the CPMC's permit area. Deer and elk are a major concern to the management agencies. Elk utilize the permit area on a seasonal basis. High elevation fan portals in the aspen and mountain brush areas are likely to be used as summer range and possibly calving areas for elk. The areas surrounding the main mine site are most likely used from early November until mid May. Mule deer on the CPMC permit area are considered part of herd unit 33. Deer generally use the permit area as do the elk, on a seasonal basis. The Division is currently checking the status of critical habitat with the UDWR. Mitigation measures have been conducted by enhancing winter range. Enhancement has mostly focused on providing water sources for the winter range. Other high value mammal species are discussed in this section of the MRP. The impacts of mining on high interest mammals is shown in Table 322.200e and rated on a scale of 0 to 10. The operator felt that only the Desert Cottontail, elk and deer had a potential for impact and the impact was 1, 1, and 3, respectively. The Division is unable to concur with this assessment at this time (1997), however the disturbance has already occurred, and the point is moot.

Raptor inventories have been conducted yearly in the permit area since 1981 in conjunction with UDWR and USFWS. According to published UDWR information the mine permit area is represented by the Transition and Canadian Life zones. UDWR states that there is a potential for 172 bird species in the area. The statement is made that two endangered species of birds, the bald eagle and the peregrine falcon, may be present within the permit area. The information contained in the MRP concerning these birds is outdated (although the revision date indicates the information is current as of 9/27/96). The MRP must include the current status of these birds and reference the nesting of peregrines adjacent to the permit area. The continued monitoring of these birds should document if any impacts occur. Table 322.200f, Raptor Nest Sites Activity (revised; 9/27/96), reports the information from the raptor inventories, however, the table only reports data to 1986 and no key is given for the symbols used. Ten additional years of information and analysis should be available. The table suggests that mining has had a negative impact on the bird since limited nesting success was observed.

Section 322.210, Threatened or Endangered Species, states that no threatened or endangered species occur in the permit area or that will be affected outside the permit area. No date is given on this statement and the statement is not referenced as to which qualified persons made this determination. The USFWS considers the "no findings" statements only valid for six

months. The Division requires a new statement by qualified persons every five years or sooner if conditions change or new activity occurs (i.e. reclamation activities).

The aquatic resources are considered important wildlife habitat areas. Section 322.220 thru 230 state that the permit area includes the headwaters of two small perennial streams, Miller Creek and Tie Fork. Nuck Woodward Creek as an important aquatic resource must be discussed in Section 322.220. Numerous macroinvertebrate sampling studies have been and continue to be conducted to document mining impacts on the aquatic resources within and adjacent to the permit area. Sampling of Tie Fork Creek and Wild Cattle Hollow were initiated in 1981. Miller Creek has been studied since 1976. No conclusions, inferences, or discussions of this sampling has been provided in the MRP since 1982. A short summary to update the impacts of mining operations on this resource must be presented in the MRP text. A schedule of future aquatic resource sampling is presented in Table 322.220b.

Findings:

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

R645-301-121.100. The MRP must contain current information concerning the status and presence of threatened and endangered species within or adjacent to the permit area. All important wildlife habitat within and adjacent to the permit area must be identified and updated. Table 322.200f must be updated to include current information on raptors. Section 322.220 must be updated to include current aquatic resource information.

R645-301-130. The investigation and determination for the presence or absence of threatened and endangered species within or adjacent to the permit area must be preformed by a qualified person. The qualified persons name and date of finding must be included with the determination.

SOILS RESOURCE INFORMATION

Regulatory Reference: R645-301-411, -301-220.

Soil Survey and Soil Characterization

Analysis:

In 1980, Cyprus Plateau Mining Corporation (CPMC) commissioned Endangered Plant Studies, Inc. (EPS) of Orem, Utah to conduct a detailed 1st Order survey of areas adjacent to the Refuse Pile Expansion Area, the Unit Train Loadout Site and the Gentry Mountain Shaft Site. However, detailed soil profile descriptions and field notes are not found in the MRP. Soil pit locations are difficult to locate in the text body and correlate with the soil maps. Confusion exits between soil survey pits and other soil sampling points found on the soil maps. Soil maps for these areas, lack the specificity of 1st Order soil surveys showing individual soils. In fact, the entire lower disturbance area soil maps are 3rd Order conservation maps which only include information for soil associations and complexes, not

individual soil consociations. First Order soil surveys always include actual on-site soil pit excavations along with specific field data, detailed profiles descriptions, and appropriate map delineations.

First Order soil surveys are provided for both Corner Canyon and Little Park Canyon fan sites, and for the Gentry Mountain air shaft site. Efforts have been made to correlate these 1st Order soil surveys with the 3rd Order soil surveys published by National Resource Conservation Service (NRCS). Correlated information aids in the delineation, clarification and interpretation of soils data for the purpose of identifying on-site soils. However, for all soil profile descriptions listed in Exhibit 222.300a, not a single referenced soil survey pit is located within Star Point's permit boundaries. Exhibit 222.300a contains no specificity concerning the actual on-site 1st Order soil profile descriptions. Soil maps lack the specificity of 1st Order soil surveys. The information and specificity of the 1st Order surveys would allow the assessment of soil quality, quantity, and volumes and determination for recoverable soils, substitute soils and fill materials.

Any pre-SMCRA and continously mined area with disturbed soils should also be included in the soil survey. NRCS defines soils as "the collection of natural bodies in the earth's surface, in place modified or even made by man of earthy materials, containing living matter and supporting or capable of supporting plants out-of-doors." In fact, soil taxonomy provides nomenclature and taxonomic identification for soils with little or no profile development as Entisols. Therefore, pre-SMCRA areas containing disturbed soils should be included in the soil surveys, classified by depth and taxonomically identified. This specificity will allow the delineation of salvageable substitute soils and fill materials for reclamation purposes.

In conclusion, the current environmental resource section for the surface disturbance areas has insufficient information to determine accurately if additional quantities of appropriate, excess substitute soils exist to help supplement the present stockpiled soils. CPMC must provide soil surveys that adequately assesses the soil resources, complete with actual on-site soil profile descriptions, field notes, sampling documentation, and appropriate soil map delineations differentiating individual soil types. Survey information needs to be current, reported clearly and concisely, and be presented in a manner that provides the necessary information to construct cut/fill and soil mass balances for identifying any possible deficit and excess soils and substitute soils. Accordingly, the soil survey will supply the necessary information to project cut and fill mass balances for reclamation. From these mass balance calculations, excess fills and substitute soils may be located to help provide the required four feet of cover for the refuse pile. The Division requests notification for the location, sample density, and analytical procedures before CPMC conducts any additional surveys.

Findings:

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

R645-301-220. Provide on-site soil surveys of the lower disturbance area with the detail and specificity necessary to describe adequately the soils and fills as for depth, volume, and quality. The detailed soil profile descriptions should include field notes correlated with soil pit locations and soil map delineations differentiating individual soil types. The purpose of this exercise is to clearly document the soil resource and provide the assessment of soil quality, quantity, and volumes for locating any recoverable substitute soils and fills to be used during reclamation. The Division requests notification for the location, sample density, and analytical procedures before CPMC conducts any additional soil surveys.

R645-301-120 and R645-301-130. All survey information needs to be current, reported clearly and concisely, and be presented in a manner that provides the necessary information to construct cut/fill and soil mass balances.

Toxic and Acid Forming Materials

Analysis:

Exhibit 231.200a, "An Evaluation of the Toxic and Acid Forming Properties of Overburden and Coal Refuse Materials" by Kent Crofts, IME, evaluates soils and refuse with respect to reclamation suitability. In the report, CPMC requested that the Division provide documentation on how the requested information relates to the determination of the reclamation suitability or protection of the environmental resources of the area. The report actually provides a suitable response for this request with the following statement: "Examination of the cited Tables documents the overburden is a 'cleaner' plant growth medium than is the native topsoil with respect to pH, EC, texture and percent clay, and equal to topsoil in suitability with respect to SP and SAR. Only with respect to the parameters of sand, selenium, boron and acid base potential does the overburden possess a lower reclamation suitability than the 'control' native soils."

With respect to selenium, the 1987 evaluation showed 15 percent of the refuse samples were classified as unsuitable and exceeded the 0.10 mg/Kg standard. During 1989, 18 percent of the refuse samples were classified unsuitable. As the 1987 report states, the potential for elevated selenium values to exceed the recommended standard exists within the refuse material. The Division concurs with this statement and is the basis for maintaining the four feet cover minimum requirement.

A complete evaluation of the 1989 selenium data is given in a report submitted to CPMC on February 26, 1992 entitled "An Evaluation of Plant and Soil Selenium Concentrations in Coal Refuse and Undisturbed Soils" by Kent Crofts, IME. The literature review is an excellent source of information on selenium with the report discussion focusing on many notable and relevant points. Based on the literature review and data analysis, several significant factors were presented in this report:

- Strong statistical correlations between selenium and other soil properties were shown to be critical considerations when determining potential plant selenium toxicity. Factors other than selenium should be considered when determining

potential plant selenium toxicities. New standards need to be shown and substantiated by data.

- Salinity and sulfate levels dramatically influence plant selenium uptake. Numerous studies document an inverse relationship of plant selenium levels with increasing levels of sulfate. Since sulfur and selenium chemistries are similar, plants will uptake available selenium if sulfates are low. Likewise, if sulfates are abundant, even in the presence of high selenium, plant selenium uptake will likely be lower.. High levels of sulfate in seleniferous soils and waters should be considered when determining the availability and selenium phytotoxicity.

- 1989 data analysis conclude that elevated selenium occurs at the surface layer of refuse exposed to the atmosphere. The distribution of selenium in the experimental refuse plots show that uniform levels of elevated selenium occur at the zone that was originally the uppermost refuse layer prior to topsoil placement. Before topsoil placement, the oxidization of selenium in the surface refuse exposed to the atmosphere is probably the critical factor for finding elevated levels of extractable selenium within the refuse surface.

Plant selenium concentrations were statistically compared between native plants and plants grown on the refuse research plots. Conclusions showed that no statistical difference exists between native and refuse grown plants. However, these conclusions are not accurate for several reasons:

- Statistical comparisons and conclusions using less than values are not only inappropriate but invalid. A striking observation is the data comparison of native and refuse affected plots. Excluding the Prince's Plume samples, virtually all of the plant selenium concentrations for the undisturbed native sites were below the analytical detection limits. On the Refuse affected plots, data show that many of the plants contained detectable selenium, although none of the refuse plants produced forage with selenium levels exceeding the toxic 5 ppm level.

- Conclusions were made on data sets containing different plant species and distribution between the native and reclaimed soils. Such data is biased and negates the statistical assumption of unbiased data. Unpaired data cannot be used with T-test comparisons.

Based on the 1989 report, CPMC submits that the existing regulatory selenium standard of 0.1 mg/Kg is unsupported by scientific literature and that this lack of support results in gross exaggeration. The Division submits that selenium issues are not easily rectified because the selenium cycle is a highly dynamic system involving biological, chemical and physical pathways which add to the complexity to the system. These issues need clarification before a new standard is adopted by regulatory agencies. The ubiquitous presence of selenium found in overburden waste and coal refuse therefore makes these selenium issues highly pertinent and relevant for protecting the environment. It appears that the lack of available four feet of cover for the refuse pile is the justification for preparing the reports and the motivation for conclusions reached. Justification for DOGM's selenium standard is protecting the environment from mining induced problems of selenium solubilization, leaching and toxicity. Therefore, before DOGM alters the

current selenium standard to allow less than four feet of cover, CPMC needs to show by data and scientific research that a different standard value is substantiated.

The MRP concludes that based on examination of sampling data, no toxic or acid forming materials have ever been found at CPMC's mine site. This statement is inaccurate because not all sample sets include data for toxic/acid forming characteristics. In addition, several samples show toxic and acid forming characteristics. Toxic levels of selenium and boron are both discussed and shown in several overburden and refuse samples. Acid-base potential values based on sulfide material show several overburden and refuse samples having acid forming potentials. Specifically, the Wattis Split (Boney) sample substantiates the resulting acid forming potential (-40 tons $CaCO_3$/1000 tons) by having a 4.4 pH value.

Findings:

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

R645-300-133. With respect to acid and toxic forming characteristics, the application must present information that is complete and accurate.

LAND-USE RESOURCE INFORMATION

Regulatory Reference: R645-301-411.

Analysis:

Premining land use is livestock, timber, and wildlife habitat. The MRP states that mining has continued in the area for several decades with only minor effects on vegetation, wildlife, hydrology, and vegetation. Oil and gas were produced in limited quantities from 1924 to 1976. The MRP states that the field is now abandoned with no producing wells near by. The MRP must be updated to describe the current activities and proposed activities associated with the coal bed methane development in the area. The statement is also made that no timbering has occurred as a recent land use. This condition has changed in the Price area and the potential of the land for merchantable timber must be reassessed. A discussion of timbering potential should discuss productivity in terms of board feet.

Existing land use also consists of hunting, camping, picnicking, mountain biking and other recreational uses. The mancos shale area of the train loadout is designated as used by livestock and wildlife however due to the low productivity of the Mancos Shale the contribution of this area as a grazing resource is limited. A discussion of land productivity is found in Section 411.120.

Findings:

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

R645-301-121.100. Section 411.130, Existing Land Uses, of the MRP must be updated to include current land uses of the area. Logging within the disturbed area or permit area may now be economically feasible as evidenced by the many areas in Carbon County which are now being logged. Coal bed methane is now a very important resource in Carbon County and this resource and land use must be discussed.

GEOLOGIC RESOURCE INFORMATION

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

The applicant is required to provide geologic information to meet the requirements of R614-301-601. Characterization of the lithology and structure in the adjacent and mine plan area provides the basis for analyzing the groundwater quality and groundwater movement, coal reserves and surface subsidence.

Stratigraphy

Analysis:

The applicant presents a geologic description of the mine plan area in Section 600 of the Star Point MRP, Volume II. A generalized stratigraphic column in Figure 624.100a illustrates the stratigraphic sequence and the General Surface Map, Sheet No. 624.110a outlines the lateral extent of surface geologic surface features, including topographic features, faults and stratigraphic units (formations). The site is characterized by Cretaceous and Tertiary formations deposited along the western edge of an ocean basin.

The Blackhawk Formation is the only formation in the area that contains coal bearing units. There are three coal beds of interest to CPMC, the lowest minable bed in sequence is the Hiawatha seam, the middle bed is the Third seam and upper minable bed is the Wattis seam. The Tank seam appears above the Wattis, but is only identified in the MRP in crossection and borehole logs. The extent and thickness is not presented.

The applicant has provided interburden, overburden and isopach Maps 624.110Ho, 624.110Hi and 624.110 H for all minable coal seams. Coal outcrops are depicted on the same maps.

Drill hole lithologic information was submitted in Volume VIII. This information is held in confidence. The information provides pertinent information on drill hole depth, lithologic facies and lithologic elevations.

Findings:

The information is adequate to meet the requirements of the regulations.

Structure

Analysis:

The minesite is dissected by several faults exhibiting two dominate directions. The faults are shown in several of the geologic maps and depict the known a inferred fault areas. The major fault pattern trends north-south and is caused by tensile forces acting during the quaternary period. These fault patterns developed on the eastern extent of the Basin and Range section during the Quaternary Period. Three major faults are identified on the maps as the Pleasant Valley Fault, the Trail Canyon Fault and Bear Canyon Fault. These faults, all running on the western half of the permit area, are associated with graben systems and steeply dipping normal faults. Cross-section a-a' identify the north-south faulted areas and show the graben areas and the amount offset. Another set of faults trend east-west on the northern half of the permit area; these faults are shown in Map 624.110a and cross-sections 624.110xc-xd.1

Structure contour Maps 624.110 Ts-Ws and Hs portray the upper surface structure of the mined coal beds.

Findings:

The information is adequate to meet the requirements of the regulations.

Cross-Sections

Analysis:

The applicant submitted geologic cross-sections, Plates Map 624.110xa-xd and cross-sections to project the vertical and horizontal extent of the lithologic layers and relationships between drill holes, faults and outcrops.

Findings:

The information is adequate to meet the requirements of the regulations.

Subsidence Monitoring Information

Analysis:

The applicant has submitted a subsidence control plan in Section 525. The Operation Plan and production mine schedule is shown in Table 523a; Table 526.111a denotes existing structures. Land ownership, Map 112.500a and coal ownership, Map 112.500b are depicted in maps under Section 100.

Maps identifying mined and planned mining area are also shown in Section 100, in Map 116.100a. Hiawatha seam; Third seam, Map 116.100b and Map 116.100c, Wattis seam. Subsidence monitoring Maps 521.121e, 521.121f, 521.121g, 521.121g1 and 521.121g2 are located in the Map section of Section 500 identify the locations of subsidence monitoring stations.

The applicant has submitted a subsidence monitoring schedule and presented subsidence data for monitoring sites, page 500-21.

Findings:

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

R645-301-624.110. The applicant should submit a map showing the location of adjacent mines in the vicinity of the mine plan area. The applicant should identify the coal seams associated with Maps 521.121e, 521.121f, 521.121g, 521.121g1 and 521.121g2.

R645-301-632. The applicant should outline the subsidence control plan and identify subsidence measures and monitoring locations for the areas on Maps 521.121g1 and 521.121g2.

Acid and Toxic Forming Materials

Analysis:

Acid and toxic forming materials were addressed by the applicant in Exhibit 231.200a. Analyses were performed on a variety of roof, parting and floor core samples from the Hiawatha, Third and Wattis Coal Seams. A review of the roof, floor and coal seam data presented anomalous levels of pyritic sulfur, pH, selenium and boron. The cause for these levels is a concern for handling purposes in the event that this material is stored in coal refuse. The applicant should discuss how this material will be handled. Also, see soils resource section concerning acid and toxic forming issues.

Findings:

R645-301-624.330. The applicant should identify the handling and storage of acid or toxic forming materials from roof, and floor rock.

HYDROLOGIC RESOURCE INFORMATION

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

Sampling and Analysis

Analysis:

Sampling and analysis is covered on page 700-34. The MRP describes procedures that are acceptable under the coal mining regulations.

Findings:

The sampling and analysis procedures are adequate to meet the requirements of the regulations.

Baseline Information

Analysis:

Baseline information begins on page 700-35. It is separated into groundwater information, surface-water information, geologic information and climatological information. These are individually addressed in corresponding sections of this TA.

Findings:

CPMC has provided complete and accurate baseline information.

Ground-water information

Analysis:

Groundwater baseline information is found on pages 700-35 through 700-41. Water rights and water quality begins on pages 700-35 and 700-38, respectively.

Findings:

The groundwater information is complete and accurate.

Surface-water Information

Analysis:

Surface-water baseline information is found in section 724.200 beginning on page 700-42. Surface-water quality information begins on page 700-47 and quantity (rights) information is found on pages 700-42 through 700-47.

Findings:

The surface-water baseline information is complete and accurate.

Climatological Information

Analysis:

Climatological baseline information is found on pages 700-51 through 700-52.

Findings:

The climatological information is complete and accurate.

Modeling

Analysis:

Page 700-53 says that no computer modeling has been completed for this MRP.

Findings:

N/A

Alternative Water Source Information

Analysis:

Alternative water source information is found on pages 700-53 and 700-54 in section 727.

Findings:

The provided information on alternative water sources is complete and accurate.

Probable Hydrologic Consequences Determination

Analysis:

The probable hydrologic consequences (PHC) determination is found on pages 700-54 through 700-93. The PHC is included in Section 728 through 728.400. On page 700-93 the CPMC gives reference to section 200 for information on acid and toxic-forming materials. CPMC indicates that there is no acid or toxic-forming potential in the Star Point Mine; however, greater analysis regarding this topic is addressed in the Soils Environmental Resource and Geologic Resource Information sections of this TA. New information about sampling in the Nuck Woodward drainage is provided on page 700-68.

Findings:

The PHC is complete and accurate; however, discussion on acid- and toxic-forming materials is subject to findings under the Soils Resource and Geologic Resource sections of this TA.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

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

Analysis:

Affected Area Boundary Maps

The permit area and adjacent area are described on pages 100-7 through 100-13 and are shown graphically on Map 112.500a--Surface Ownership and Map 112.500b--Coal Ownership. The disturbed area within the permit area is shown on Maps 521.121a through 521.121b, all of which are entitled "Surface Facilities."

All of the maps listed here were certified by David E. Hansen, a professional engineer registered in the state of Utah.

Coal Resource and Geologic Information Maps

The coal resource and geologic information required by this section is shown on 9 maps and 4 cross sections, all of which are designated "Map 624.110." These maps are found in the confidential volume of the mine plan. On each map, the main designation is followed by a two-letter postscript which indicates the seam to which that map applies and the information shown on the map.

The Hiawatha seam is shown on Map 624.110Ho--Hiawatha Overburden/Interburden Isopach, Map 624.110Hs--Hiawatha Structure, and Map 624.110Hi--Hiawatha Isopach. Likewise, the Third seam is shown on Map 624.110To--Third Overburden/Interburden Isopach, Map 624.110Ts--Third Structure, and Map 624.110Ti--Third Isopach, and the Wattis seam is shown on Map 624.110Wo--Wattis Overburden/Interburden Isopach, Map 624.110Ws--Wattis Structure, and Map 624.110Wi--Wattis Isopach. Coal geology is shown in cross section on Maps 624.110a through 624.110d.

All of the maps and cross sections listed here were certified by Barry J. Barnum, a professional engineer registered in the state of Utah.

Existing Structures and Facilities Maps

The locations and dimensions of all existing structures and facilities are shown on Maps 521.121a through 521.121d, all of which are designated "Surface Facilities." All of these maps were certified by David E. Hansen, a professional engineer registered in the state of Utah.

Existing Surface Configuration Maps

The existing surface configuration of the permit area and the adjacent area is shown on Maps 521.121a through 521.121d, all of which are designated "Surface Facilities." All of these maps were certified by David E. Hansen, a professional engineer registered in the state of Utah.

Mine Workings Maps

The location and extent of known mine workings, along with anticipated mine workings, are shown on Map 116.100a--Mine Plan Hiawatha Seam, Map 116.100b--Mine

Plan Third Seam, and Map 116.100c--Mine Plan Wattis Seam. The location and extent of known, prelaw mine workings are shown on Map 142.100a--Pre-Law Mining Activity Hiawatha Seam, Map 142.100b--Pre-Law Mining Activity Third Seam, and Map 142.100c--Pre-Law Mining Activity Wattis Seam.

Maps 116.100a and 116.100b were certified by David E. Hansen, a professional engineer registered in the state of Utah. Maps 142.100a through 142.100c were certified by Daniel Thomas Hurst, a professional engineer registered in the state of Utah. Only Map 116.100c lacks the necessary certification; it was properly certified in 1986, but revisions have since been made to it which require recertification.

Permit Area Boundary Maps

The permit area is shown on Map 112.500a--Surface Ownership and Map 112.500b--Coal Ownership. These maps were certified by David E. Hansen, a professional engineer registered in the state of Utah.

Surface and Subsurface Manmade Features Maps

The locations of all surface and subsurface manmade features are shown on Maps 521.121a through 521.121d, all of which are designated "Surface Facilities." All of these maps were certified by David E. Hansen, a professional engineer registered in the state of Utah.

Surface and Subsurface Ownership Maps

All land boundaries and present owners' names of record for those lands within and adjacent to the permit area are shown on Map 112.500a--Surface Ownership. Coal ownership within and adjacent to the permit area is shown on Map 112.500b--Coal Ownership. These maps were certified by David E. Hansen, a professional engineer registered in the state of Utah.

Findings:

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

R645-301-521.111. Map 116.100c--Mine Plan Wattis Seam must be certified by a qualified, registered, professional engineer or land surveyor.

OPERATION PLAN

MINING OPERATIONS AND FACILITIES

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

Analysis:

General

A general description of the mining operation is found on page 500-8 of the plan.

This operation is comprised of two underground mines: the Star Point No. 1 Mine and the Star Point No. 2 Mine. The Star Point No. 1 Mine has ceased operations and the portal area is being reclaimed.

The Star Point No. 2 mine uses both longwall and room-and-pillar methods to extract coal. This mine produced approximately 3 million raw tons of coal in 1996. Production is expected to be approximately 3 million tons in 1997, drop to approximately 2 million tons in 1998, and drop to approximately 700,000 tons per year through the year 2008. It is then expected to drop to 570,000 tons in 2009 and 230,000 tons in 2010, after which the mine is expected to cease operations.

Type and Method of Mining Operations

The mining operation is detailed on pages 500-8 through 500-12 of the plan and is shown on Maps 116.100a, 116.100b, and 116.100c.

As mentioned in the preceding section, coal is extracted by longwall and room-and-pillar methods, with entry development being done exclusively by continuous mining machinery. There are four sets of active portals: the main Lion Deck portals, which provide access to all areas of the mine, one set of three ventilation portals in Corner Canyon, one set of four ventilation portals in Mudwater Canyon, and one set of two portals north and west of Mudwater Canyon in an unnamed side canyon. Three additional portals, to provide ventilation and an emergency escapeway, may be constructed in Little Park Canyon.

Three minable seams occur in this mine: the Wattis Seam, the Third Seam, and the Hiawatha Seam. The drift openings from the main Lion Deck area extend westward approximately 4,600 feet through the older Wattis Seam workings to two rock slopes which ramp down to the Third Seam. A ventilation shaft also connects these two seams at this location. At the bottom of the rock slopes, the main entries fork. A north fork goes to the Mudwater area (Federal Lease U-37045), which is a room-and-pillar standby area. A west fork is designated "Main West" and is a main access to Federal Lease SL-031286. The Wattis and Third Seams have been mined in this lease area using longwall methods; the Hiawatha Seam will be mined, where possible, by room-and-pillar methods.

In the Wattis Seam, from the top of the rock slopes which descend to the Third Seam, 1st Main South has been developed 5,000 feet to where it intersects the 2nd West Mains. The 2nd West Mains extend 4,300 feet westward from this area to where they encounter the Bear Canyon Graben. Development from this point is westward, through rock, into Federal Lease U-13097 on the west of the graben. A set of three entries will extend westward through Lease U-13097.

From where the rock tunnels enter the coal on the west side of the Bear Canyon Graben, one set of five entries will be driven northward 14,000 feet into Federal Lease UTU-64263, while another set of five entries will be driven southward 9,000 feet into Federal Lease U-13097. Longwall panels will be developed to the west off these five-entry mains.

Facilities and Structures

The locations of all facilities and structures are shown on Maps 521.121a, 521.121b, 521.121c and 521.121d. Each facility and structure is listed, along with its type and date of construction, in Table 526.111a (pages 500-42 through 500-44) of the plan. Exhibit 525.100a contains photographs of all facilities and structures.

Findings:

The plan fulfills the requirements of this section.

EXISTING STRUCTURES

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

Analysis:

All existing structures, as defined in this section, are listed in Table 526.111a (pages 500-42 through 500-44) of the plan. Table 526.111a also describes the type of construction and the date of construction of each existing structure. The existing structures are located on Maps 521.121a, 521.121b, and 521.121c and photographs of them are found in Exhibit 525.100a.

Findings:

The plan fulfills the requirements of this section.

RELOCATION OR USE OF PUBLIC ROADS

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

Analysis:

The permittee does not plan to relocate any public road.

Mining operations are conducted within 100 feet of the right-of-way line of Carbon County Road 290, which provides access to Gentry Mountain. In order to protect the interests of the public and landowners and provide safe access to Gentry Mountain, the permittee allows public use of the No. 1 Mine access road, which is no longer used for mining, as an alternate route through the mine area. This arrangement has the agreement of Carbon County.

As required by Division Order DO-92A, a meeting was scheduled for April 28, 1992 wherein public objection to the proximity of the mining operation to Carbon County Road 290 might be heard. Public notice of this meeting, a copy of which is found in Exhibit 521.133a, was published in the *Sun Advocate* newspaper on April 14, 1992. The meeting was subsequently canceled for lack of interest.

In a letter to the permittee dated June 16, 1992, the Division found that the permittee had complied with the requirements of the division order and, thus, with the requirements of R645-301-521.133 that the interests of the public and affected landowners be protected. A copy of this letter is found in Exhibit 521.133a.

Findings:

The plan fulfills the requirements of this section.

COAL RECOVERY

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

Analysis:

A description of the measures used by the permittee to maximize the use and conservation of the coal resource is found on pages 500-7 to 500-8 of the plan.

The permittee commits to using sound engineering practices to recover the highest percentage of the coal resource possible. Longwall methods, which at present achieve the highest possible recovery rate, are used to extract coal. Room-and-pillar methods are used where longwall methods are not feasible and the permittee practices full pillar recovery where possible.

Page 500-8 of the plan states that Exhibit 522a contains copies of approval letters from both USGS and MMS of the Resource Recovery and Protection Plan. However, Exhibit 522a contains no such thing. Moreover, the documents found in Exhibit 522a are from the 1980s and the projected mine plan has changed significantly since then. Therefore, the permittee must include in the plan documentation that the appropriate agencies have approved the present Resource Recovery and Protection Plan.

Findings:

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

R645-301-522. The permittee must include in the plan documentation that the appropriate agencies have approved the present Resource Recovery and Protection Plan.

SLIDES AND OTHER DAMAGE

Regulatory Reference: 30 CFR Sec. 817.99; R645-301-515.

Analysis:

A description of procedures for reporting and mitigating slides and impoundment hazards is found on page 500-2 of the plan.

At any time a slide occurs which may have a potential adverse effect on public, property, health, safety, or the environment, the permittee will notify the Division by the fastest available means and comply with any remedial measures required by the Division.

In the case of an impoundment hazard, the permittee will notify the Division of the finding and of the emergency procedures formulated for public protection and remedial action.

Findings:

The plan fulfills the requirements of this section.

FISH AND WILDLIFE INFORMATION

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

Analysis:

Protection And Enhancement Plan

The Technical Analysis prepared by the Division in 1987 found that the applicant was in compliance with this section of the regulations. The reasoning is as follow:

"Much of the Star Point Mine's facilities were in existence before passage of SMCRA or Utah's Rules. Wildlife has adapted to some extent to the presence of the mine as evidenced by big game use of sediment ponds and wildlife sightings in the mine facilities area. The applicant has tried to minimize impacts on wildlife from existing facilities and to design new facilities to take wildlife into consideration, including raptor-proof power lines and conveyors constructed to allow deer crossing (Section 330). The permittee has committed to notify the Division of the use of pesticides and fires and to fence, cover or buffer hazard areas.

Mitigation of impacts and enhancement of wildlife resources include employee education, deer winter range vegetation enhancement and a guzzler to compensate for the Unit Train Loadout and refuse expansion areas, availability of sediment ponds for deer use and interim final revegetation planned to maximize benefit to wildlife."

Numerous inventories and studies gathering resource information have been conducted since the late 1970's and early 1980's (see Fish and Wildlife Resource Information in this Technical Analysis). Studies and inventories were designed to assess impacts of mining and reclamation activities on the raptor and macroinvertebrates populations. Studies and inventory data continue to be collected. Data collected form these studies designed to assess mining impacts have not been presented or discussed in the MRP.

Endangered and Threatened Species

See Wildlife Resource section. The permittee must commit to promptly report to the Division any state or federally-listed threatened or endangered species within the permit area (R645-301-358.100).

Bald and Golden Eagles

The MRP reports (Section 330) that subsidence may impact two golden eagle nests on a cliff face in Section 18, T15S., T8E. The golden eagles nesting activity, and cliff movement as a result of mining will be monitored and mitigated according to Exhibit 342.100a. The permittee must briefly summarize in the MRP the results of the monitoring and mitigation of these nests. Exhibit 342.100a could not be found in the 1991 MRP submittal, the permittee must provide a clear copy to include in the MRP.

Wetlands and Habitats of Unusually High Value for Fish and Wildlife

The MRP states under the Mitigation and Management Plans (Section 330) that subsidence impacts to Miller Creek and Tie Fork Creek will be monitored and mitigated if required. Both of these areas have been monitored for macroinvertebrates. Miller Creek has subsided and mining has ceased in the area of Tie Fork Creek. The MRP must briefly summarize the results of the monitoring and mitigation for these area and the impacts to fish and wildlife from subsidence.

Findings:

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

R645-301-120. Numerous repeated paragraphs were found on Pages 300-106 thru 300-114. Exhibit 342.100a could not be found in the 1991 MRP submittal, the permittee must provide a clear copy to include in the MRP.

R645-301-330. The MRP must contain and/or provide the following: (1) A brief summary of what occurred during monitoring and mitigation of the golden eagles and nests which were impacted by subsidence (Exhibit 342.100a). The MRP must also describe any further mitigation, if any, which was required of the permittee as a result of the impacts. (2) A discussion detailing the effects of the mining and reclamation activities on the raptor population and reproduction based on data collected since 1981. (3) A discussion and summary based on collected data which document the impacts of mining and reclamation activities on the aquatic resources.

R645-301-358.100. The MRP must contain a commitment that the permittee will promptly report to the Division any state or federally-listed threatened or endangered species within or adjacent to the permit area.

TOPSOIL AND SUBSOIL

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

Analysis:

Stipulation 817.24-(1)-(DD) from the 1987 Technical Analysis (TA)was never submitted by the October 31, 1987 deadline providing mass balance information for all areas to be topsoiled. Accurate assessment of the topsoil mass balances requires clarification of salvaged soils, their location and volumes. Although areas of soil salvage are discussed, the operation section needs to clearly outline and collectively assemble soil salvage information by providing a soil salvage table correlated with soil map delineations.

As explained earlier, the current environmental resource section has insufficient information to determine accurately if additional quantities of appropriate, excess substitute soils and fill materials exist to help supplement the present stockpiled soils. Based on adequate soil survey information, the MRP needs to project cut and fill mass balances for reclamation. As explained in the Mine Reclamation Plan (MRP) soils section, fill materials in the lower disturbance area consists of substitute topsoil materials. From these mass balance calculations, excess fills and substitute soils may be located to help offset and lessen the impact on soil borrow needed to provide the required four feet of cover for the refuse pile.

Findings:

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

R645-301-232 and R645-301-120. Show topsoil mass balances that include the following: (1) Provide a soil salvage table detailing salvage volumes, salvage and stockpile locations, disturbed acreage, salvage depths, and dates salvaged. (2) Correlate soil salvage and stockpile locations on a soils map.

R645-301-232.720. All in-situ substitute topsoil resources must be identified and utilized prior to using borrow materials. Determine the following: (1) Determine reclamation cut and fill mass balances with succinct information identifying material types, cut and fill volumes, and catalog any deficit and excess fill amounts by area. (2) Coordinate reclamation cut and fill mass balances with topsoil mass balances to utilize any excess fill materials as a substitute topsoil supplement. (3) Based on mass balance results, determine if soil needs to borrowed to help supplement the four feet cover requirement for the refuse pile. If soil needs to be borrowed, then identify a soil-borrow area using a 1st Order soil survey, along with operation and reclamation details.

VEGETATION

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

Analysis:

The MRP states that vegetation monitoring on U.S. Forest Service property will be monitored by color infrared photography and by visual observations (Section 332.). Monitoring is conducted to document changes in vegetation communities as a result of subsidence affects. This monitoring has been conducted several times since 1980 (Section 525.100). A commitment is given to provide the Division with reports in the annual report. No report could be found for 1993. The permittee must review this commitment and provide the 1993 report. Additionally, a brief summary of the monitoring since 1980 should be provided in the MRP.

Wildlife mitigation confirms that during operations, disturbed areas not in use will be seeded with an interim seed mixture. A general interim seed mixture could not be found in the MRP.

Findings:

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

R645-301-330. The MRP must contain a brief summary of the color infrared monitoring of the vegetation as related to subsidence since 1980.

R645-301-331. A general interim seed mixture must be provided in the MRP; the topsoil interim seed mixture may be specified for general use.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 784.24, 817.150, 817.151; R645-301-521, -301-527, -301-534, -301-732.

Analysis:

Road Systems

Roads are listed in Table 534.200a and described on pages 500-46 to 500-47 and 500-69 to 500-71 of the plan. They are located and shown in plan view on Maps 521.121a through 521.121d and are shown in profile on Maps 534.100a through 534.100d. Maps 121.121a through 521.121d were certified by David E. Hansen, a professional engineer registered in the state of Utah. The road profiles shown on Maps 534.100a through 534.100d were certified by W. John Borla, also a professional engineer registered in the state of Utah.

There are 11 roads, designated 'A' through 'K'. Four roads--Road A (Mine Access Road), Road B (No. 1 Mine Access Road), Road J (Silo Access Road), and K (Transfer Tower Access Road), are primary roads. The other seven roads--C, D, E, F, G, H, and I--are ancillary roads.

Only two roads--Road A (Mine Access Road) and Road B (No. 1 Mine Access Road)--have embankments which must have the static safety factor of at least 1.3 required by R645-301-534.130. The stability of these embankments was analyzed in 1989 by the consulting firm of Rollins, Brown and Gunnell, Inc. of Provo, Utah. The results of this analysis are contained in Exhibit 553.130a. They show that Road A has a static safety factor of approximately 1.4 and that Road B has a static safety factor of between 1.3 and 4.1.

Other Transportation Facilities

Coal handling and processing facilities are described on pages 500-48 through 500-51 of the plan and are shown on Maps 521.121a through 521.121d. More detailed designs and photographs of these facilities are found in Exhibit 528.100a and Exhibit 525.100a, respectively.

Coal leaves the main Lion Deck portal and spills into a 55-foot-diameter, 200-foot-deep rock slope just outside the portal. From the slope, it is carried by an 800-foot-long underground conveyor to a crusher. From the crusher, it is carried by a 42-inch, 4,400-foot-long covered conveyor and discharges through a stacking tube into to a 15,000-ton-capacity raw coal stockpile near the junction of Roads A and B. A 42-inch, 1,400-foot-long conveyor carries it from the raw coal stockpile to the washing plant where it is screened and washed.

Three conveyors radiate from the washing plant: the stoker coal conveyor, the refuse conveyor, and the main coal conveyor. The stoker coal conveyor is 36 inches wide and 100 feet long and carries stoker coal to a 5,000-ton-capacity stockpile north of the washing plant. From this stockpile, the stoker coal is loaded into trucks or train cars by front-end loader.

The refuse conveyor is 36 inches in width and 235 feet in length. It carries refuse from the washing plant to a 100-ton-capacity refuse bin to the south of the washing plant. The refuse is carried by truck from the refuse bin to the large refuse pile to the east.

The main coal conveyor is 42 inches wide and approximately 250 feet long and carries the main coal product stream from the washing plant to a stacking tube to the east of the washing plant. Here, it is emptied into a 60,000-ton-capacity stockpile.

From the 60,000-ton-capacity clean coal stockpile, the coal is carried by an overland conveyor to a sampling and transfer building approximately 1,000 feet to the east. Here it is transferred to another overland conveyor which carries it south 800 feet and then east again 400 feet to a 10,500-ton-capacity concrete loading silo. The coal is loaded from the concrete silo into train cars.

Approximately 350 feet west of the sampling and transfer building, the coal handling system has the capacity for emergency stockpiling of coal. This capacity is provided by a belt plow which, when activated, pushes the coal from the overland conveyor onto a 42-inch, 150-foot-long radial stacking conveyor which in turn discharges it into a pile. Coal from this pile can then be pushed into a hopper by front-end loader and loaded onto a 42-inch, 150-foot-long reclaim conveyor which discharges it back onto the overland conveyor.

Findings:

The plan fulfills the requirements of this section.

SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

Analysis:

Disposal Of Noncoal Waste

The handling and disposal of spoil and waste material is discussed on pages 500-48 through 500-56 and in Exhibits 528.322a, 528.322b, and 528.322d of the plan. The refuse pile area where coal mine waste will be disposed of is shown on Map 521.121c.

Disposal of noncoal waste

Noncoal waste is collected from various sources, transported to a central collection area, and removed from time to time by a contracted disposal service.

Coal mine waste

Coal mine waste, by regulatory definition, includes underground development waste and coal processing waste (see R645-100-200).

Relatively small quantities of underground development waste are generated at this mine. Underground development wastes are generated as dikes, grabens, faults, and other rock structures are encountered. Some of this material is disposed of underground. Most of it is hauled out with the coal, removed in the washing process, and disposed of in the refuse pile along with coal processing waste.

On the other hand, this operation produces prodigious quantities of coal processing waste. A 36-inch, 235-foot-long conveyor carries coal processing waste from the washing plant to a 100-ton-capacity refuse bin to the south. This waste material is then taken to the refuse pile to the east by truck. The refuse pile is shown on Map 521.121c. Refuse is spread in lifts 2 feet thick or less and compacted by trucks and rubber-tired machinery.

Refuse piles

The refuse pile is shown on Map 521.121c. It is located approximately 600 feet southeast of the washing plant.

The original plan, which is found in Exhibit 528.322a, was to construct the refuse pile in three phases. However, the construction of Sediment Pond No. 9 above the refuse pile

eliminated the need for this three-phase plan. Exhibit 528.322a is kept in the plan for background and because it contains information regarding the operation and monitoring of the refuse pile. An even earlier plan, done by Vaughan Hansen Associates, is found in Exhibit 528.322b. Exhibit 528.322b is kept in the plan only for background information.

The refuse pile plan was modified in 1995 by Hansen, Allen and Luce, Inc. to decrease the outslopes and provide for better erosion prevention. This plan, which is the present plan, is found in Exhibit 528.322d.

The outslopes of the refuse pile will be flattened to a slope of 3h:1v. Terraces will be constructed every 40 vertical feet and will be 15 feet in width. This configuration will break up the long outslopes and thus make for much better erosion prevention.

At its maximum volume, the refuse pile would be up to 150 feet high, cover 64 acres, and contain 8,500,000 tons of refuse. As of August, 1996, the refuse pile contained approximately 5,264,000 tons and thus had a remaining capacity of approximately 3,236,000 tons. Anticipated waste production from 1995 through cessation of operations is 1,590,000 tons. This makes for approximately 1,646,000 tons of unused capacity. Thus, the ultimate size of the refuse pile may be scaled down, depending upon future refuse production.

Inspections will be conducted by a qualified, registered professional engineer or other person authorized by the permittee.

In 1990, at the request of Hansen, Allen and Luce, Inc., Applied Geotechnical Engineering Consultants, Inc. (AGEC) did a stability analysis of several proposed refuse pile configurations. This analysis took into account outslopes of 2h:1v, 2.5h:1v and 3h:1v with maximum heights of 400 feet, 330 feet and 283 feet, respectively, and 10-foot-wide terraces placed every 50 vertical feet. The refuse was assumed to have a friction angle of 32° and a cohesion of 300 psf. Two conditions were analyzed for the upper 40 feet of subgrade: the first, cohesive soil with a friction angle of 25° and a cohesion of 600 psf; the second, cohesionless soil with a friction angle of 35°. The subgrade below 40 feet was assumed to have a friction angle of 25° and a cohesion of 1,000 psf. For each slope and upper subgrade condition, two procedures were followed: first, the water level was varied until a safety factor of 1.5 was obtained, and second, the safety factor was computed assuming the water level to be at the subgrade surface.

In all cases where the water level was assumed to be at the subgrade surface, the safety factor was 1.5 or greater and the critical surface went from at or near the top of the slope to beyond the toe of the slope. In the cases where the water level was varied until a safety factor of 1.5 was achieved, the critical surfaces were confined to the saturated toe of the slope whilet the pile height was insignificant. This indicates that the anticipated pile configuration set forth in Exhibit 522.322d would have *at least* the required safety factor of 1.5, but that the safety factor would very probably be much higher.

Impounding structures

There will be no impounding structures constructed of coal mine waste.

Burning and burned waste utilization

Coal mine waste fires will be extinguished only by persons who understand the procedure and are authorized by the permittee. No burned or burning waste will be removed from the disposal area.

Return of coal processing waste to abandoned underground workings

No coal processing waste will be returned to underground workings; all will be disposed of in the refuse pile.

Excess spoil

There will be no disposal as such of excess spoil. All available spoil will be used in reclamation to achieve the postmining contour.

Findings:

The plan fulfills the requirements of this section.

HYDROLOGIC OPERATIONAL INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Ground-water Monitoring

Analysis:

The groundwater monitoring program is addressed beginning on page 700-101 in section 731.210. In this section beginning on page 700-102, CPMC proposes to cease monitoring of several springs. The reason for each spring's removal from the monitoring plan is provided in this section. Predominantly the reason given for removing monitoring sites is redundancy, insignificance of past data collected, and extremely poor production rates. Redundancy means that there are one or more springs within a short distance from the deleted spring that samples the same water supply. Some sites produced only one or two samples over years of attempting to make collection.

In total there are nine sites proposed for discontinuation. Despite the large number of sampling locations that will no longer produce data, there will still be enough data to analyze water quantity and water quality. The number of stations needed for a triangulation was taken into account for each discontinued station.

Findings:

All springs proposed for discontinuation from the groundwater monitoring plan are not critical for detecting mining effects on the hydrologic balance; therefore, removing them is reasonable. The new plan is complete and adequate.

Surface-water Monitoring

Analysis:

The surface-water monitoring plan, Section 731.221, begins on page 700-116. Table 731.221a lists the monitoring sites and the duration of monitoring is on page 700-117.

Findings:

The surface-water monitoring plan is complete and accurate.

Acid And Toxic-forming Materials

Analysis:

Page 700-118 says that acid- and toxic-forming material are discussed in Sections 200 and 300 of the MRP. This section further states that acid- and toxic-forming materials are not believed to be a problem.

Findings:

The hydrology discussion on acid- and toxic-forming materials is adequate and does not require any further information. However, further findings found under the Soil Resource and Geologic Resource sections of this TA require additional information regarding handling and cover needs.

Transfer Of Wells

Analysis:

On page 700-118, CPMC states that transfers of wells will all be approved by the Division.

Findings:

The transfer of wells plan is complete.

Discharges Into An Underground Mine

Analysis:

CPMC states on page 700-118 that they do not plan to discharge water into the mine, but if a need were to arise, the Division would be notified. All in-mine diversions are addressed in Sections 731.100, 731.522 and 731.800.

Findings:

The information on discharging into the mines is complete and accurate.

Gravity Discharges

Analysis:

Gravity discharges are located on page 700-118. Section 731.520 and 731.522 say that gravitational discharges from the mine are not likely possible because of the gradient of the geology.

Findings:

The information on gravitational discharges from the mines is complete and accurate.

Water Quality Standards And Effluent Limitations

Analysis:

Water quality standards and effluent limitations are addressed on page 700-185. Briefly, CPMC says that they will meet all limits.

Findings:

Water-quality standards and effluent limitation are adequately addressed.

Diversions

Analysis:

Diversion design generalities are discussed in Section 742.300 beginning on page 700-171. The methodologies are the predominant subject of this chapter. Channel specific designs are located in Exhibits 732.300a through 761a. Specific summaries are given in Tables 742a through 742f on pages 700-128 through 700-136.

Findings:

Operational diversion designs are complete and accurate.

Stream Buffer Zones

Analysis:

Stream buffer zone information is provided on page 700-116. The Corner Canyon Fan Breakout is the only facility considered to be in a stream buffer zone according to the MRP. This area is not near any "aquatic resource," but CPMC has marked the buffer zone anyway.

Findings:

Stream buffer zone information is complete and accurate.

Sediment Control Measures

Analysis:

Sediment control information for the Star Point plan is provided on pages 700-126 through 700-170. In Section 742.120, on page 700-149, CPMC has provided the most specific information about the types of measures used. This section includes information on eleven alternate sediment control areas (page 700-149 and Table 742g, page 700-150). There are a number of alternate measures used according to this section. The ASCAs appear on Maps 731.720b, 542.200g, 542.200h, 731.729a, and 542.200i.

Findings:

The sediment control designs and information is complete and accurate. All sediment control areas are designed using the best technology currently available (BTCA).

Siltation Structures and Sedimentation Ponds

Analysis:

Siltation structures and sediment pond information is found on page 700-151 and is analyzed under the sedimentation pond section of this TA. The sediment pond designs are located in Exhibit 525a. There is a total of eight sediment ponds and one other treatment facility that are discussed in this section. Further information is found on pages 700-124 through 700-125.

Findings:

The sediment pond designs and information is complete and accurate.

Exemptions For Siltation Structures

Analysis:

Page 742.240 says that there are no small exemption areas within the permit area.

Findings:

The small area exemption information is complete and accurate.

Discharge Structures

Analysis:

Discharge structures are discussed on page 700-182 and in the sediment pond sections. This information is predominately included along with each individual pond design.

Findings:

The discharge structure information is complete and accurate.

Impoundments

Analysis:

Impoundments are discussed in Section 733, page 700-123 and in the sediment pond section of the MRP and TA. All impoundments are part of the sediment control plan and discussed in the Sediment Pond section of this TA.

Findings:

The impoundment information is complete and accurate.

Casing And Sealing Of Wells

Analysis:

Casing and sealing of wells is addressed on page 700-186 in Section 755.

Findings:

Casing and sealing of wells is addressed completely and accurately.

SUPPORT FACILITIES AND UTILITY INSTALLATIONS

Regulatory Reference: 30 CFR Sec. 784.30, 817.180, 817.181; R645-301-526.

Analysis:

The only utility in the area not controlled by the permittee is the Carbon County TV translator and the powerline which goes to it.

Findings:

The plan fulfills the requirements of this section.

SIGNS AND MARKERS

Regulatory Reference: 30 CFR Sec. 817.11; R645-301-521.

Analysis:

Information regarding signs and markers is found on page 500-7 of the plan.

Signs and markers will be posted, maintained, and removed by the permittee. They will be made of a durable material and will be of a uniform design.

Identification signs showing the permittee's name, address, telephone number, and permit number are posted at points of public access to surface operations and facilities. These signs will be maintained until after final bond release.

Perimeter markers are placed to mark the perimeter of the surface facilities area.

Buffer zone markers are placed along streams to prevent disturbance within 100 feet, or in specifically authorized areas closer to or through streams, in accordance with R645-310-731.610.

Topsoil stockpile signs are posted on all topsoil stockpiles.

Findings:

The plan fulfills the requirements of this section.

USE OF EXPLOSIVES

Regulatory Reference: 30 CFR Sec. 817.61, 817.62, 817.64, 817.66, 817.67, 817.68; R645-301-524.

Analysis:

Blasting procedures are described on pages 500-13 through 500-17 of the plan.

The permittee will comply with all applicable state and Federal laws in the use of explosives. The permittee does surface blasting rarely and only for splitting boulders, clearing chutes, clearing trenches, and other such maintenance purposes.

Persons conducting blasting will be properly certified and certification will be carried by those doing the blasting or will be on file at the mine office. A certified blaster and at least one other person will be present at the firing of all blasts. The person responsible for blasting will be familiar with the blasting plan and site-specific performance standards and will give on-the-job training to uncertified persons who will assist in the use of explosives.

A blasting record will be completed and submitted to the Division for approval prior to any blast, including those which are to take place within 500 feet of an active or underground mine. A sample blasting record is found on pages 500-14 and 500-15 of the plan. A copy of the blasting record will be filed at the minesite for at least three years.

Page 500-16 states that there are no dwellings or other structures within one half mile of the permit area and that neither a preblasting survey nor a blasting schedule is, therefore, required. However, a Carbon County TV translator is located within the permit area. While damage to this structure from surface blasting is highly unlikely, the permittee must, even so, demonstrate compliance with the preblasting survey requirements of R645-301-524.300.

Blasting signs will be posted in the vicinity of blasting operations. Warning signs will be posted at points of public access to the blasting area. Warning and all-clear signals of different character or pattern, audible within a range of one half mile from the blast, will be given. All persons in the permit area or who regularly work within one half mile of the permit area will be notified of the meaning of the signals.

Airblast will not exceed the limits set forth in R645-301-524.621 at any dwelling, public building, church, school, or community or institutional building outside the permit area. Flyrock will be prevented from traveling in the air or along the ground more than one half the distance to the nearest dwelling or other occupied structure or beyond the permit area.

Ground vibration will not exceed the limits set forth in R645-301-524.642 at any dwelling, public building, school, church, or community or institutional building outside the permit area.

If necessary, the permittee will use the scaled distance equation found in R645-301-524.651 to determine the allowable charge weight to be detonated in any eight-millisecond period. If the scaled distance equation is used, a seismographic record of that blast will not be required, as stipulated by R645-301-524.651.

Findings:

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

R645-301-524.300. The plan states that there are no dwellings or other structures within one half mile of the permit area and that a preblasting survey is, therefore, not required. However, a Carbon County TV translator is located within the permit area. Therefore, the permittee must demonstrate compliance with the preblasting survey requirements of this subsection of the regulations.

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

Analysis:

Affected Area Maps

The permit area and adjacent area are shown on Map 112.500a--Surface Ownership and Map 112.500b--Coal Ownership. The disturbed area within the permit area is shown on Maps 521.121a through 521.121d, all of which are entitled "Surface Facilities."

Mining facilities maps

The locations of all mining facilities are shown on Maps 521.121a, 521.121b, 521.121c and 521.121d, all of which are entitled "Surface Facilities." Each mining facility is listed, along with its type and date of construction, in Table 526.111a (pages 500-42 through 500-44) of the plan. This list is keyed to the surface facilities maps so that each of the mining facilities in the list is numbered and that same number is shown by the location of the facility on the surface facilities maps.

Mine workings maps

The location and extent of known mine workings, along with anticipated mine workings, are shown on Map 116.100a--Mine Plan Hiawatha Seam, Map 116.100b--Mine Plan Third Seam, and Map 116.100c--Mine Plan Wattis Seam. The location and extent of known, prelaw mine workings are shown on Map 142.100a--Pre-Law Mining Activity Hiawatha Seam, Map 142.100b--Pre-Law Mining Activity Third Seam, and Map 142.100c--Pre-Law Mining Activity Wattis Seam.

There are no existing or previously surface-mined areas within the proposed permit area.

Certification requirements

All of the maps listed in this section have been properly certified.

Maps 112.500a, 112.500b, 116.100a, 116.100b, 521.121a, 521.121b, 521.121c and 521.121d were certified by David E. Hansen, a professional engineer registered in the state of Utah. Map 116.100c lacks the necessary certification; it was properly certified in 1986, but revisions have since been made to it which require recertification (see deficiency R645-301-521.111 under **MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION** above.) Maps 142.100a through 142.100c were certified by Daniel Thomas Hurst, a professional engineer registered in the state of Utah.

Findings:

The plan fulfills the requirements of this section.

RECLAMATION PLAN

POSTMINING LAND USES

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

Analysis:

The MRP states that the access road to the Power line by Treatment facility #1 will remain after reclamation for the post mining land use. No documentation could be found to request the road be left and who will accept the road liability and be responsible for any maintenance.

The postmining land use will include leaving the road which is designated as County Road No.290 for access to Gentry Mountain and Castle Valley Ridge, no documentation could be found which supports this road as having a premining land use. Also, no comments could be found in the MRP from the county which supports leaving this road or a commitment for future maintenance of this road. The MRP claims that this road is currently the county road, however no documentation could be found documenting that claim. Clarification is needed in the MRP that the permittee retains the bond liability for the road until the Division has release the mine of the bond liability..

The postmining land use for each area of mine use is described in Table 412.100a. The land use in relation to physical features is also described in this table. The land uses consist of road, wildlife, grazing, recreation, and forestry. The two components of the table seem to conflict; to clarify, a map would be appropriate. This issue is especially important in reclamation for future bond release. For example, if an area did not support grazing prior to mining then this land use should be deleted from the postmining land use and productivity will not be a component of the vegetation measurement for bond release. If an area will be used as a road right-of-way, then at minimum the vegetation should be adequate to control erosion prior to bond release.

The postmining land use for the refuse pile is grazing and wildlife. Selenium is suspected to be at levels that may not support the postmining land use for grazing and wildlife. The MRP must discuss and demonstrate that the postmining land use can be met. Resolution of the deficiency stated in the soils section of R645-301-553.252 will only partially satisfy the post mining land use requirement. Even if 4 feet of material is used, we know that shrub roots extend beyond 4 feet and may uptake selenium. Perhaps changing the postmining land use and establishing plant species which are known to be unpalatable to wildlife and domestic livestock may satisfy the regulations.

Copies of letters sent to surface owners concerning the post mining land use are found in Exhibit 412.200a. However, no comments from the land owners could be found which supports the postmining land use. No descriptions of the permittee's legal right to conduct reclamation activities from the Special Use or Right of Way Agreements could be found. No

authorization could be found which allows the permittee to leave coal waste within these areas, not to regrade, or not to refill cut slopes and highwalls.

Findings:

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

R645-301-114.100. Obtain authorization which allows the permittee to leave coal waste in areas under different ownership and for areas which will not be regraded or cuts refilled.

R645-301-412.100. Table 412.100a. contains conflicting information between the land use in relation to mine features and land use in relation to physical features. The MRP must clearly distinguish the postmining land use for all areas within the area of bond liability.

R645-301-412.110. The MRP must demonstrate that the reclaimed refuse pile will be able to meet the post mining landuse of wildlife and grazing.

R645-301-412.130. Any land uses which are different than the premining land use (i.e. roads) must meet the requirements of R645-301-413.100 through R645-301-413.334 prior to approval.

R645-301-412.200. Comments from land owners supporting the postmining land use must be provided in the MRP. No documentation could be found to request the powerline road be left and who will accept the road liability and be responsible for any maintenance. No comments could be found in the MRP from the county which supports the leaving of the Lions Deck access road and commitments for future maintenance of this road. The MRP claims that this road is currently the county road, however, no documentation could be found supporting this claim. Clarification is needed in the MRP that the permittee retains the bond liability for the road until the Division has released the mine of the bond liability.

PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES

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

Analysis:

The postmining land use consists of wildlife, grazing, recreation and forestry. The applicant proposes to meet the wildlife land use by planting species which are known to be of value to wildlife for food and cover. Transplants will be used in the reclamation of several community types which may result in accelerated community establishment. The DWR has

been asked, by the Division to suggest additional wildlife enhancement measures that could be conducted at the site at the time of reclamation. The MRP states that sediment ponds may be left for the postmining land use. No details of this has been provided in this section or the hydrology section. Ponds that remain for the express purpose of enhancing the area will require approval from DWR.

Findings:

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

R645-301-342.100. The MRP must detail the wildlife enhancement plans for the reclaimed areas, such as the sediment ponds.

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:

Table 542.100a (page 500-72) is a reclamation timetable and also gives a brief description of all reclamation activities. A note to Table 542.100a (page 500-73) says that all areas will be restored to their approximate original contour "where possible."

Page 500-79 of the plan says that there are several pre-SMCRA cut slopes that will be retained following final reclamation and that these cut slopes are shown on Maps 542.200a through 542.200c. Maps 542.200a through 542.200c show the general postmining topography. They also show, by symbol, the locations of cut slopes and highwalls that will be retained. These maps, however, are not detailed enough to show the height of the retained cut slopes and highwalls or the extent to which they will be backfilled and there are no cross sections to show this detail. Moreover, the plan declares that all of the retained cut slopes and highwalls are pre-SMCRA, but there is no documentation of when they were created and no demonstration that the volume of all reasonably available spoil is insufficient to completely reclaim them.

Findings:

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

R645-301-142. The permittee must expand the plan to include documentation of when the various cut slopes and highwalls were created in order to establish that they are, indeed, pre-SMCRA and that they constitute, therefore, continuously mined areas (CMAs) to which the highwall elimination and approximate original contour (AOC) restoration requirements of R645-301-553.110 and R645-301-553.120 do not apply.

R645-301-542.300. The permittee must expand the plan to include cross sections, located on the postmining topography maps and laid out at intervals not greater than 100 feet, of the postmining topography, including the cut slopes and highwalls which are to be retained after final reclamation.

R645-301-553.600. The permittee must revise the plan to include a demonstration that the volume of all reasonably available spoil is insufficient to completely backfill the cut slopes and highwalls which are found to be exempt from the highwall elimination restoration requirements of R645-301-553.110 and R645-301-553.120.

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:

The backfilling and grading plan is found on pages 500-72 through 500-79 of the plan and is shown graphically on Maps 542.200a through 542.200i.

Table 542.100a (page 500-72) is a reclamation timetable and contains backfilling and grading information as well. Table 542.100a divides the reclamation area into 16 subareas, gives their acreage, and tells what reclamation activities will be carried out in them. The 16 subareas are:

Area 1-Lower Operations Area, including ponds 5, 6, 7 and 9
Area 2-No. 1 Mine, including pond 3
Area 3-No. 2 Mine
Area 4-Lion Portal
Area 5-Mudwater Canyon Fan
Area 6-Corner Canyon Fan
Area 7-Conveyor Belt
Area 8-Road to No. 1 Mine
Area 9-Main Channel
Area 10-Rock Tunnel Road
Area 11-Exploration Road
Area 12-Old Tram Road
Area 13-Borrow Pit
Area 14-Unit Train
Area 15-Little Park Canyon Breakout
Area 16-Gentry Mountain Air Shaft

Area 2, 5, 6, 8, 10, 12, 15 and 16 will be reclaimed in year 1 of the reclamation period. All facilities will be removed, including pond 3, and the areas will be recontoured. The final topography of Areas 10 and 12 is shown on Map 542.200a, of Areas 2 and 8 on Map 542.200b, of Area 14 on Map 542.200d, of Area 5 on Map 542.200g, of Area 6 on Map 542.200h, and of Area 15 on Map 542.200i.

Areas 3, 4 and 7 will be reclaimed in years 2-3 of the reclamation period. All facilities, including pond 1, will be removed and the area will be recontoured. The final topography of Areas 3, 4 and 7 is shown on Map 542.200a.

Areas 1, 9, 13 and 14 will be reclaimed in years 4-5 of the reclamation period. All facilities, including ponds 2, 4, 5, 6, 7, 8 and 9, will be removed and the area will be recontoured. The final topography of Areas 1, 13 and 14 is shown on Map 542.200c. The final topography of Area 9, is shown on Maps 542.200a through 542.200c.

Sidehill cuts will be reduced by dragging fill material from the outslope of the operations benches and placing it at the toe of the cuts. Road surfacing material will be broken up and buried at the toe of the cut under at least two feet of material. Entrances to reclaimed roads will be blocked to vehicle access by native rock barriers or earthen berms.

Roads will be reclaimed by pulling material back from the outslope and placing it in the cuts. The replaced fill material will be shaped to conform to the adjacent topography and replace the natural drainage patterns. Natural drainages will be reestablished and erosion protection provided. Culverts will be removed and water bars and cross drains will be constructed where necessary to minimize erosion.

The refuse pile will be configured for the duration of the operation period as described under **SPOIL AND WASTE MATERIALS** above. Following the completion of mining and the sampling program described on pages 500-54 to 500-55, the pile will be graded and then ripped and scarified to insure good contact between the refuse and the cover material. After placement of the cover material, the surface will be gouged to produce a rough surface which will minimize runoff and enhance plant growth.

A stability analysis of the reclaimed slopes was done by the consulting firm of Rollins, Brown and Gunnel, Inc. Of Provo, Utah. The results of this analysis are found in Exhibit 553.130a. The analysis was based on fill material characteristics determined from five samples and used a computer model based on the Modified Bishop's Method. It showed that, for an ultimate slope of 1.5h:1v, the backfill material has a minimum static stability safety factor of approximately 1.4.

The backfilling and grading plan is not adequate for the purposes of the Division. It does not include enough cross sections to depict the postmining topography (see also **APPROXIMATE ORIGINAL CONTOUR RESTORATION** above) and, consequently, it does not contain an adequate and verifiable earthwork volume analysis. Without such an analysis, it is impossible for the permittee or the Division to come to any reasonable conclusions regarding the feasibility of the reclamation plan or to make any reasonable reclamation cost estimates.

Findings:

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

R645-301-542.200. The permittee must expand the plan to include cross sections, located on the postmining topography maps and laid out at intervals not greater than 100 feet, of the postmining topography of the entire disturbed area. The plan must also include an earthwork volume analysis based upon these cross sections which shows how much material will be moved and demonstrates that there is sufficient material to accomplish the backfilling and grading of the site as it is planned.

MINE OPENINGS

Regulatory Reference: 30 CFR Sec. 817.13, 817.14, 817.15; R645-301-513, -301-529, -301-551, -301-631, -301-748, -301-765, -301-748.

Analysis:

The plan for the reclamation of mine openings is found on pages 500-78 to 500-79 and in Figure 551a of the plan.

All drill holes are to be partially filled with a slurry, the consistency of which is approximately 5.5 gallons of water to 1 bag of cement. The bottom 200 feet of each hole is to be filled and the rest of the hole is to be plugged by 200-foot-long plugs of slurry spaced at 200-foot intervals. This procedure, however, is not acceptable to the Division. In the reclamation of drill holes, the Division follows the USGS guidelines, which require that drill holes be filled with concrete slurry or some other suitable material from bottom to collar in order to prevent the migration of water between strata within the hole.

The Gentry Mountain air shaft will be reclaimed following the cessation of underground mining operations. The shaft casing will be cut off four feet below the surface of the ground. The shaft will be completely filled with either concrete or else a bentonite mixture specifically designed for well plugging. The barbed wire fence will then be removed and the area will be graded and revegetated.

Portals will be sealed and backfilled. Seals will consist of double rows of solid concrete block set on a concrete footing. The footing will be keyed into the floor at least 12 inches. The block seal will be keyed into the ribs at least 16 inches. The backfill will extend at least 25 feet from the seal to the surface and will be graded to conform to the postmining contour. A typical portal seal is shown in Figure 551a of the plan.

Findings:

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

R645-301-551. The permittee must revise the plan to provide for the complete filling of drill holes with concrete slurry or other suitable material at final reclamation.

TOPSOIL AND SUBSOIL

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

Analysis:

Stipulation 817.24-(1)-(DD) from the 1987 Technical Analysis (TA)was never submitted by the October 31, 1987 deadline providing topsoiled areas mass balance of all areas to be topsoiled. Although nearly a decade late, fulfillment of this stipulation will provide the necessary information for accurately assessing the reclamation plan. This topsoil mass balance with the cut and fill mass balance information will help determine if any borrow material is needed to supply the soil requirements for reclamation.

In general, the MRP does not address suitable mulch and other soil stabilizing practices. Within the regraded and topsoiled areas, maintenance needs to be addressed for rills and gullies which either disrupt the postmining land use or vegetation reestablishment, or pollute receiving streams.

Specific reclamation issues that need to be addressed and corrected include the refuse pile cover, coal mine waste, mancos soils reclamation, and subsoil stockpile area reclamation. The following addresses each of these issues:

- Cyprus Plateau Mining Company (CPMC) has failed to demonstrate adequately that less than four feet of cover over the selenium contaminated refuse is sufficient. Therefore, based on R645-301-553.252 and the potential for toxic levels of selenium being released into the environment, CPMC must provide four feet of cover for the refuse pile. They have sufficient soil resources for 17 inches of cover. Additional best available, nontoxic and noncombustible material as appropriate fill and/or soil material needs to be identified to satisfy the requirement for the four-feet of cover.

- Within the disturbance areas, all coal mine wastes encountered need to be identified and placed in a controlled manner to ensure that final disposal will be suitable for reclamation and is compatible with the natural surroundings and post-mining land use. Primary and secondary coal mine waste disposal areas need to described and located on pre- and post-reclamation maps. These areas include, but are not limited to, all stray coal piles, coal waste piles and downcast coal material within the disturbed area boundaries. The Existing Structure Exemption does not apply to existing and new coal mine waste disposal facilities. Disposal needs to be described for all miscellaneous and unanticipated coal mine wastes encountered before and during reclamation, respectively.

- Badland-Rubble Complex based soils were addressed under soil redistribution with the following statement: "...that for many areas to be reclaimed, it is nothing more than a matter of academic interest to state how much topsoil will be returned to these areas." CPMC further states that: "The concept of topsoil supplements or substitutes does not apply to these areas because in the reclamation of these areas, CPMC will be restoring a site to the same state that existed prior to being disturbed. For such areas, since little or no topsoil

existed prior to disturbance, none can reasonably be returned." Again, the Division refers to the NRCS definition for soils. Under that definition, even these "non-topsoil" materials are defined as soil and must be surveyed, salvaged, protected, and reclaimed. In other words, these soils and the reclamation using these soils are protected under SMCRA. These soils will be returned, the area reclaimed, and the soils stabilized and revegetated. The reclamation section should give consideration to the special treatment of these highly erosive soils for stabilization.

- There is no discussion concerning reclamation of the Subsoil Stockpile area after the subsoil is removed. This discussion should include cross sections of the subsoil pile, removal methods, protection of the native soils beneath the subsoil during removal, soil stabilization, revegetation, and hydrological issues concerning drainage.

Findings:

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

R645-301-120 and R645-301-242. Provide soil reclamation information in a table detailing soil redistribution by location, acreage, needed volumes, average soil thickness, soil source and location.

R645-301-244. Suitable mulch and other soil stabilizing practices will be used on all areas that have been regraded and covered by topsoil and substitute topsoil. Within the regraded and topsoiled areas, rills and gullies which either disrupt the postmining land use or vegetation reestablishment, or pollute receiving streams will be filled, regraded, or otherwise stabilized; topsoil will be replaced; and the areas will be reseeded or replanted.

R645-301-553.252. Following final grading of the refuse pile, the coal mine waste will be covered with a minimum of four feet of the best available, nontoxic and noncombustible material. Amend the MRP for the coal refuse pile providing 4 feet of cover.

R645-100-430, R645-301-512.100, R645-301-512.230, R645-301-553.250, and R645-301-542.730. Identify and describe all miscellaneous coal and coal waste materials. Identify these areas on pre- and post-mining land maps. An appropriate standard needs to be identified for placing these materials in a controlled manner to ensure that final disposal will be suitable for reclamation and post-mining land use. These areas include, but are not limited to, all stray coal piles, wind blown coal fines, coal waste piles and downcast coal materials. The Existing Structure Exemption does not apply to existing and new coal mine waste disposal facilities.

R645-301-200. (1) Badland-Rubble Complex derived soils and the reclamation using these soils are protected under SMCRA. These soils will be returned, the

disturbed areas reclaimed, and the soils stabilized and revegetated. The reclamation section should give consideration to the special treatment of these highly erosive soils for stabilization. (2) Provide operation and reclamation information concerning the Subsoil Stockpile area. Information should include cross sections of the subsoil pile, removal methods, protection of the native soils beneath the subsoil during removal, soil stabilization, revegetation, and hydrological issues concerning drainage. (3) If soil borrow is needed, the borrow site must be adequately described. Descriptions need to be provided for the soil resource, salvage operations, and reclamation procedures for the borrow area.

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:

Information regarding the reclamation of roads is found on pages 500-73 through 500-75 of the plan and shown on Maps 542.200a through 542.200i.

Roads will be reclaimed as discussed under **BACKFILLING AND GRADING** above. Material will be pulled back from the outslope and placed in the cuts. The replaced fill material will be shaped to conform to the adjacent topography and replace the natural drainage patterns. Natural drainages will be reestablished and erosion protection provided. Culverts will be removed and water bars and cross drains will be constructed where necessary to minimize erosion.

County Road No. 290, which is the main portal access road that crosses the Lion Deck area, is owned by Carbon County. This road will remain as a permanent feature as part of the postmining land use.

The short access road between County Road No. 290 and Treatment Facility No. 1 will also remain as part of the postmining land use. This road will be used for powerline access. The plan does not, however, contain the necessary documentation for the permanent retention of this road. There is no agreement with the utility company for the retention of the road nor any indication on the part of the utility company that it intends to keep the road and powerline.

Findings:

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

R645-301-534. The permittee must revise the plan to include proper documentation for the retention of the access road which goes from County Road No. 290 to Treatment Facility No. 1.

HYDROLOGIC RECLAMATION INFORMATION

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Ground-water Monitoring

Analysis:

Groundwater monitoring is the same during mining and after. This information is addressed in the operational section of this TA.

Findings:

The groundwater monitoring plan is complete and accurate.

Surface-water Monitoring

Analysis:

Surface-water monitoring is the same during mining and after. This information is addressed in the operational section of this TA.

Findings:

The surface-water monitoring plan is complete and accurate.

Acid And Toxic-forming Materials

Analysis:

Page 700-118 says that acid- and toxic-forming material are discussed in Sections 200 and 300 of the MRP. This section further states that acid- and toxic-forming materials are not believed to be a problem.

Findings:

The hydrology discussion on acid- and toxic-forming materials is adequate and does not require any further information. However, further findings found under the Soil Resource and Geologic Resource sections of this TA require additional information regarding handling and cover needs.

Transfer Of Wells

Analysis:

On page 700-118, CPMC states that transfers of wells will all be approved by the Division.

Findings:

The plan for transferring of wells is complete. CPMC will not transfer any well without prior approval by the Division.

Discharges Into An Underground Mine

Analysis:

CPMC states on page 700-118 that they do not plan to discharge water into the mine. However, if a need were to arise the Division would be notified. All in-mine diversions are addressed in Sections 731.100, 731.522 and 731.800.

Findings:

The information on discharging into the mines is complete and accurate.

Gravity Discharges

Analysis:

Gravity discharges are located on page 700-118. Section 731.520 and 731.522 say that gravitational discharges from the mine are not likely possible from the mine because of the gradient of the geology.

Findings:

The information on gravitational discharges from the mines is complete and accurate.

Water Quality Standards And Effluent Limitations

Analysis:

Water quality standards and effluent limitations are addressed on page 700-185. Briefly, CPMC says that they will meet all limits.

Findings:

Water-quality standards and effluent limitation are adequately addressed.

Diversions

Analysis:

The reclamation diversion plans are located beginning on page 700-187. Maps 761a through 761g show the reclamation drainage and designs for the mine. Page 700-188 says that reclaimed channel designs are in Exhibit 761a.

Findings:

The reclamation diversion plans are complete and accurate.

Stream Buffer Zones

Analysis:

Stream buffer zone information is provided on page 700-116. The Corner Canyon Fan Breakout is the only facility considered to be in a stream buffer zone according to the MRP. This area is not near any "aquatic resource," however, CPMC has marked the buffer zone anyway.

Findings:

Stream buffer zone information is complete and accurate.

Sediment Control Measures

Analysis:

CPMC has requested some reclamation design changes for the refuse pile, road cuts and pad outslopes in this package. These changes are in Chapter 5, Exhibit 522.322d. Two maps from this exhibit have been included at the end of the Engineering map volumes as large scale copies.

Page 11 of this report lists five items that will be used for sediment control in reclamation of the refuse pile. They are listed below:

- Existing sedimentation structures
- 3 to 1, terraced side slopes
- Hay mulch
- Extremely roughened (pocked) slopes
- Revegetation

This five-step method is "best technology currently available" for preventing additional contributions of sediment to streamflow or to runoff outside the permit area during reclamation. However, CPMC has not clearly shown which existing sediment control measures will be used before establishment of vegetation, nor identified any criteria for removing the existing sediment control measures.

Page 11 and 12 of the report discuss five measures to be used on road cuts and outslope pads. They are listed below:

- Shaping, ripping and scarifying of the outslopes
- Placement of suitable cover material
- Addition of soil amendments
- Application of mulch at a rate of 1 ton/acre
- Revegetation

Reclamation of this area will not include the extreme surface roughing that is included in the refuse pile reclamation. These outslopes are extremely steep in places and will be highly erodible. Mulch alone will not be sufficient to control sediment until vegetation is satisfactorily reestablished. Additional sediment control measures must be designed for these areas.

Findings:

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

R645-301-742.110. CPMC must show which sediment controls will be used between initial reclamation activities and establishment of vegetation for all reclamation areas.

R645-301-742.110. CPMC must design, using the best technology currently available, sediment control measures for road outslopes and all other reclamation areas that prevents, to the extent possible, additional contributions of sediment to stream flow or to runoff outside the permit area.

R645-301-764. CPMC must show the timetable for removal of sediment control structures that treat the refuse pile, road cuts, pad outslopes, and all other reclamation areas.

Siltation Structures and Sedimentation Ponds

Analysis:

The reclamation plan for the Star Point mine does not include designs for siltation structures and sediment ponds. The current maps do not clearly show which, if any, sediment ponds will be retained through the reclamation and there is no timetable for removing any of the sediment ponds.

Findings:

Siltation structures and sediment pond designs and timetables are missing and incomplete. Deficiencies on these items are listed under the reclamation sediment control section of this TA.

Exemptions For Siltation Structures

Analysis:

The MRP does not clearly state if there are any planned exemptions for reclamation of the mine site. Presumably, all areas will be treated by either sediment ponds or alternate sediment control measures. Clarifying the reclamation timetable and sediment control treatments as requested under the reclamation sediment control section of this TA will benefit the MRP in showing areas planned for exemption.

Findings:

Deficiencies for this section are listed under the reclamation sediment control section of this TA.

Discharge Structures

Analysis:

There is no information on discharge structures that is specific to reclamation.

Findings:

Deficiencies for this section are listed under the reclamation sediment control section of this TA.

Casing And Sealing Of Wells

Analysis:

Casing and sealing of wells is addressed on page 700-186 in Section 755.

Findings:

Casing and sealing of wells is addressed completely and accurately.

CONTEMPORANEOUS RECLAMATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.100; R645-301-352, -301-553, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

The permittee has committed to reclaim the Exploration Road found in Area 11 and the No. 2 Mine found in Area 3. An explanation concerning why contemporaneous reclamation could not occur in Mine Area #1 is unclear since a county road exists for entrance above the mine. The refuse pile covers a large area. The potential exists for some areas to be regraded and reclaimed without affecting the active operations.

Findings:

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

R645-301-352. The MRP must describe any and all potential opportunities to begin contemporaneous reclamation.

REVEGETATION

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

General Requirements

Analysis:

A detailed schedule and timetable for the completion of each major step in the revegetation plan could not be found in the MRP. At a minimum, this detailed schedule should include dates of material procurement, including adequate lead times for growing transplants and collecting seed, expected times for seeding, fertilizing and mulching if necessary and any follow-up activities.

Seed mixtures have been designed to correspond to the different plant communities found in the areas disturbed. If the areas are drill seeded, they will be seeded at a rate of one-half that given in the seed mixture tables. On areas too steep to be drill seeded, these sites will be broadcast seeded. Areas to be broadcast seeded will be seeded at the rates given in the specific discussions for each specific area (Section 341.210). Four seed mixtures (Tables 341.210a through 341.210d) will be used for final reclamation seeding these are:

Name of Mixture	Table Number	Areas of Use
Fan Site	341.210a	Corner Canyon Fan, Mudwater Canyon Breakout
Unit Train Loadout	341.210b	Unit train loadout area (saltbush type)
Mountain Grassland & Douglas Fir	341.210c	Star Point No. 1 Mine Area, Lion Deck Portal Area
Disturbed Areas	341.210d	Refuse Pile, Topsoil Stockpile, Lower Office, Wash Plant, Conveyor, Lion Deck Portal, Access Roads

These areas are also shown on Maps 341.100a thru 341.100d. The old road which runs up the south facing side of the canyon near the bottom as shown on Map 521.121a is not shown on Map 341.100b. The seed mixture to be used for revegetation must be shown.

The seed mixtures contain several introduced species. In this area, numerous native species are available and are known to support the postmining land uses. The mixtures must

be revised to eliminate all introduced species. If the postmining land use is changed for the refuse pile, aggressive introduced species will be allowed. Seeding rates are low and the permittee is advised to increase these rates.

The lower Wattis area is known to be heavily infested with cheatgrass. Cheatgrass is a very aggressive winter annual which may inhibit revegetation success. Squirreltail has been used successfully in the intermountain area to compete with Cheatgrass. The seed mixtures must be revised to exclude introduced species and include species which will successfully compete with Cheatgrass, such as Squirreltail. In order to enhance revegetation success, the permittee should reduce the amounts of Cheatgrass now in the area though aggressive control actions. Also the permittee should read the Utah Coal Mining Rules at R645-301-357.320 which will allow limited weed control activities into year two of the bond liability period.

The saltbush community type associated with the Badlands' Mancos Shale based soils, is probably the most difficult community to reclaim. The permittee does not propose any soil amendments or special treatments of any kind for this area. Soil chemistry, crusting and erosiveness all inhibit seed germination. PacificCorp at the Des Bee Dove Mine have established several revegetation test plots on flat and sloped areas within the Mancos Shale. Some of the most successful treatments included excelsior blanket topped with a surface treatment of coal waste and sandstone rocks. The MRP must discuss Plateau's success with interim seeding of this area and soil treatments to be used in revegetation.

Drill seeding on completely flat surfaces should be successful. The Division's experience with drill seeding is that the furrow openers reduce any surface roughness provided by the scarification. In fact, surface roughness has been shown to greatly enhance the rate of revegetation success and protection from erosion.

Timing

The MRP briefly discusses the timing of seeding (Section 353.250). Normal seeding for the area is August thru November in the higher areas and October thru December in the lower elevation areas. Normally spring seeding is not done in final reclamation due to seed dormancy requirements and sporadic spring moisture. The MRP must discuss time between topsoiling and seeding, committing to permanent seeding only in the fall, and emergency interim seeding when final seeding cannot be conducted within the seeding window.

Mulching and Other Soil Stabilizing Practices

Section 340 states that Corner Canyon Fan site may use water bars or contour terraces to minimize erosion. This statement must be removed. The Division's experience indicates that surface roughening is sufficient in small disturbance areas. If all reclamation activities are preformed from within the mine, then no maintenance of these structures for stability can be preformed. Also, since access is limited, the Division must be notified of reclamation activities to verify compliance.

Insufficient map detail is provided to ascertain the slope gradients in final reclamation. Generally, any slope at all requires some type of erosion protection. Slopes less than 3:1 may

only require deep surface roughening for stabilization until seed has germinated. Slopes greater than 3:1 usually require deep surface roughening and some type of mulch applied while slopes 2:1 and steeper require a high quality erosion control matting. Mancos Shale on any gradient requires erosion protection and soil surface modification for seed germination. A site specific mulching and soil stabilization plan must be provided, either by area or slope gradient. Until adequate maps are provided, the mulching discussion in Section 341.230 of the MRP will not be discussed.

Seeding of annual grains with the permanent seed mixture is not approved in areas which receive less than 15 inches of annual precipitation. Cover crops competing with the permanent seed mixture can inhibit revegetation success in these arid areas. The MRP must be modified to include this restriction.

Standards for Success

Revegetation success determination will be based on the community type reference area, stocking rates, the postmining land use (see deficiency under postmining land use), and other standards as described in R645-301-353 such as a diverse, effective, and permanent. Forest Service requirements for success are required as part of the postmining land use but are only added to the requirements of R645-301 and are not used instead of R645-301 as eluded to in Section 356.200. The vegetation cover requirement for Mud Water Canyon must also be based on the vegetative cover adjacent to the disturbance.

Reference areas were originally sampled early in the division program. Reference area sampling and sampling of revegetated areas for success must use current Division standards. The Division requires cover sampling to be based on total cover of 100 percent and to include all tree and shrub canopy cover in that 100 percent. Sampling areas such as the Douglas Fir will have a much greater cover value then the described 15 percent in Table 321.100d, however, the Saltbush Community will likely be unchanged. The permittee may want to reconsider using the Douglas Fir community as a standard since early revegetation (first 10 years) will likely never be similar to a mature Douglas Fir stand. The permittee must describe the anticipated sampling methods for each community; the same methods used in the reference area must be used on the reclaimed area.. The comment on maximum sample size must be deleted. OSM has found that maximum sample numbers are not in compliance with the program and that statistical sample adequacy must be met.

Revegetated areas will be compared to the reference area of the corresponding vegetation types based on the Maps 341.100a thru 341.100d. Section 356.200 proposes that when sampling for success in the reclaimed areas, a weighted average will be used when community types and reference areas overlap. The MRP must specify the sampling scheme prior to approval of this method. The Division will work with the permittee, if desired, to approve a sampling design which can minimize community and land use overlap. Since the Lion Deck portal access road will not be redisturbed for Phase III bond release, the permittee could begin sampling the seeded right-of-way. The bond release demonstration requires meeting the approved success standard the last two years of the responsibility period. The success standard for a road right-of-way probably requires the permittee to meet a vegetative ground cover standard (R645-301-356.240) and the County to accept all liability for the road.

The permittee has been sampling reference areas to determine range condition (Section 356.100). A request is usually made to the National Resource Conservation Service (formally SCS) to access range condition. However, the sampling done by the permittee is acceptable.

One of the requirements for success is that the plant cover will be capable of stabilizing the soil surface from erosion (long term stabilization). This success requirement is part of the determination for Phase II bond release. Stabilization usually takes into consideration back ground levels of erosion. However, for Phase II bond release on the refuse pile, soil stabilization will be determined successful if no refuse is exposed or can expect to be exposed. Reference area vegetation cover in the sagebrush community was 34 percent with gnerally flat slopes. The refuse pile will be contoured to approximately 3:1 slopes. With this type of slope and vegetative ground cover at 34 percent, long term stabilization by vegetation may not occur. The MRP must describe other measures of long term surface stabilization such as rock cover or flattened slopes.

The MRP states (Section 341.220) that managed grazing will be used as the primary means to supplement transplanted and seeded shrub densities. This is not an approved husbandry practice. Utah's husbandry rules (R645-301-357.300) allow for limited reseeding, transplanting, and irrigation of shrubs if approved in the MRP.

The MRP should state which husbandry practices may be anticipated during the liability period because permit approval is required prior to implementation (Section 357). The Revegetation Monitoring Schedule (Table 356.100a) may need to be revised to allow for sampling during the periods specifically mentioned in R645-301-357.300. The schedule may also be revised to reflect the sampling for Phase II bond release. Phase II bond release (vegetation establishment) at other mines in the area have shown success four years after revegetation. Quantitative sampling of the temporary or interim vegetation is shown in this table and is not a requirement of the Division but may be useful in determining revegetation techniques.

Findings:

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

R645-301-341. The seed mixtures for the lower Wattis area must be amended to include larger amounts of Squirreltail. The areas in which cheatgrass dominate (i.e. topsoil stockpile) must be seeded with an interim seed mixture to reduce the amounts of weed seed available in final reclamation.

R645-301-341.100. A detailed schedule and timetable for the completion of each major step in the revegetation plan must be included in the MRP.

R645-301-341.300. The permittee must demonstrate that the methods used in the MRP to reclaim the Mancos Shale, Unit Train Loadout Area, is feasible or a new method of revegetation can be proposed.

R645-301-353.120. The vegetative cover, thus the seed mixtures, must be revised to exclude all introduced species for the postmining land uses of forestry, recreation, wildlife and grazing. Sufficient native species exist to meet the approved postmining land use.

R645-301-353.120. Seeding of annual grains with the permanent seed mixture in areas of less then 15 inches annual precipitation is not approved and must be removed from the MRP.

R645-301-353.140. The MRP must describe the methods used to achieve the performance standard which requires long term surface stabilization for the refuse pile.

R645-301-354. The permittee must commit to seeding only during optimal seeding periods. A discussion on timing must include time between topsoiling and seeding, emergency interim seeding of topsoiled areas, and seeding during wet soil conditions.

R645-301-355. The permittee must provide maps of the post disturbance topography which allow sufficient information and detail to review mulching and other soil stabilizing practices proposed for reclamation.

R645-301-356.100. The MRP must include the revegetation success standards required of other agencies (i.e. Forest Service) to meet the postmining land use in addition to those required by R645-301-350.

R645-301-356.110. The MRP must discuss methods to be used for measuring revegetation success while recognizing that the methods used in the original reference area sampling are not approved for use to demonstrate revegetation success. Prior to approval, the MRP must describe in detail the areas to be averaged when using a weighted average for community type overlap.

R645-301-357.300. The MRP must meet the requirements of new regulation requirements concerning husbandry practices.

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.

Affected Area Boundary Maps

Analysis:

The permit area and adjacent area are shown on Map 112.500a--Surface Ownership and Map 112.500b--Coal Ownership.

These maps were certified by David E. Hansen, a professional engineer registered in the state of Utah.

Bonded area map

The disturbed area within the permit area is shown on Maps 521.121a through 521.121b, all of which are entitled "Surface Facilities."

These maps were certified by David E. Hansen, a professional engineer registered in the state of Utah.

Reclamation backfilling and grading maps

The final backfilled and graded surface configuration is shown on Maps 542.200a through 542.200i. Reclamation backfilling and grading maps and cross sections are not adequate for the purposes of the Division. A finding of deficiency is made and requirements for achieving compliance are set forth under **BACKFILLING AND GRADING** above.

Maps 542.200a, 542.200b, 542.200c, 542.200e, 542.200f and 542.200i were certified by David E. Hansen, a professional engineer registered in the state of Utah. Map 542.200d was certified by W. John Borla, a professional engineer registered in the state of Utah. Maps 542.200g and 542.200h were certified by Daniel Thomas Hurst, a professional engineer registered in the state of Utah.

Reclamation facilities maps

There will be only two permanent features at this site: County Road No. 290 and the access road that goes from County Road No. 290 to Treatment Facility No. 1. These are shown on maps 542.200a through 542.200c.

These maps were certified by David E. Hansen, a professional engineer registered in the state of Utah.

Final surface configuration maps

The final surface configuration is shown on Maps 542.200a through 542.200i.

Maps 542.200a, 542.200b, 542.200c, 542.200e, 542.200f and 542.200i were certified by David E. Hansen, a professional engineer registered in the state of Utah. Map 542.200d was certified by W. John Borla, a professional engineer registered in the state of Utah. Maps 542.200g and 542.200h were certified by Daniel Thomas Hurst, a professional engineer registered in the state of Utah.

Findings:

The plan fulfills the requirements of this section.

BONDING AND INSURANCENTS

Regulatory Reference: 30 CFR Sec. 800; R645-3

Form Of Bond (Reclamation A

Analysis:

A copy of the bonding form is found in

At present (January, 1997) the permittee d with Aetna Casualty and Surety Company. The bond is for the amount o d covers 173 acres of disturbed land.

Determination of bond amount

As discussed under **BACKFILLING AN** ove, the earthwork volume estimates are not adequate. This means, of cours ation cost estimate, a large part of which is based on these volume estimates, rate. Moreover, the Division and the permittee are now negotiating a the bond because it is based on earthwork unit cost figures that are not accepta on. Thus, the reclamation cost estimate must be revised to take into account ces that result from the revision of the earthwork volume estimates require **FILLING AND GRADING** above as well as those that result from the use of a st figures.

Terms and conditions for liability

A copy of the certificate of liability insuranc xhibit 117.100a.

The permittee holds general liability insuran al Union Fire Insurance Company. The policy number is RMGL1437605. s originally issued July 1, 1991, but its current effective period is from June 1, 1, 1997.

The policy specifically includes explosives, a R645-301-890.100. It has a general aggregate liability limit of $6,000,000 and a 00,000 for each occurrence, which exceed the respective minimums of $500,000 required by R645-301-890.100. As required by R645-301-890.3 y includes a rider, dated July 3, 1991, which states that National Union Fire Insura y will notify the Division, by certified mail, of any change or cancellation of the po 45 days of the change or cancellation.

Findings:

The applicant must provide the following, prio l, in accordance with the requirements of:

R645-301-542.800 and R645-301-830.140. The permittee must revise the reclamation cost estimate to 1) take into account the revision of the earthwork volume estimates required under **BACKFILLING AND GRADING**, and 2) reflect the use of only those unit earthwork cost figures which are approved by the Division.

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