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

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April 30, 1998

TO: File

THRU: Joe Helfrich, Permit Supervisor *JH*

THRU: Daron Haddock, Permit Supervisor *DH*

FROM: Susan White, Senior Reclamation Biologist *SW*

RE: Draft Technical Analysis, Cyprus Plateau Mining Corporation, Star Point Mine, ACT/007/006-96C, Folder #2, Carbon County, Utah

SUMMARY

Cyprus Plateau Mining Corporation (CPMC) submitted a new permit for the Star Point Mine in September 1996. A Draft Technical Analysis was developed by the Division and sent to the Operator. The Operator responded June 1997 and the Division responded to that revision September 1997. Round III was submitted in November 1997 and February 1998. The below technical analysis is a review of the November 1997 and February 1998 revision.

TECHNICAL ANALYSIS

VEGETATION RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.19; 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 Sit, this fan site is only proposed at this time (1997). Maps 321.100g thru 321.100i classify each disturbed area according to date of disturbance such as pre-SMRCA and never been touched, pre-SMRCA and continuously used, and post-SMRCA. However, no disturbed area boundary designation was provided on these maps or Maps 542.200a thru 542.200f.

Nine vegetation types are described within the permit area. They are Douglas Fir, Aspen, Mountain Grassland, Mountain Shrub, Spruce/Fir, Sagebrush, Pinyon-Juniper, Saltbush, and Barren. Acreage of vegetation types within the permit area are provided in Table 321.100a. The permit area is 9060 acres and the disturbed area is 173.76 acres. The largest disturbed area given in the Table is the Sagebrush community. The Mountain shrub and Pinyon-Juniper 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 discuss 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 reference areas were 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 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). In 1998 the Operator simplified the reference areas and eliminated the Doug Fir, Pinyon-Juniper and Aspen reference areas.

Findings:

Information provided meets the minimum regulatory requirements of this section.

FISH AND WILDLIFE RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 784.21; R645-301-322.

Analysis:

In 1982, site specific sampling of various vegetative communities for wildlife 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 as do the elk, on a seasonal basis. 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 permit. The impacts of mining on high interest mammals is shown in Table 322.200e and rated on a scale of 0 to 10 (0 being no impact). 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 mute.

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. It is likely that two endangered species of birds, the bald eagle and the peregrine falcon are present within the permit area. The bald eagle as a winter visitor and the peregrine falcon has been observed in 1996 and 1997 adjacent to the permit area. The continued monitoring of these birds should document any impacts. Table 322.200f, Raptor Nest Sites Activity, reports the results of the raptor monitoring for the permit area from 1982 to 1997. A total of 44 nests have been observed in the 15 years of monitoring and 23 young in the nests have been observed during this time.

Section 322.210, Threatened or Endangered Species, states that the only threatened or endangered species present within or adjacent to the permit area is the peregrine falcon and bald eagle and these species are likely not to be affected by any mining impacts. It is recommended that prior to any site disturbing reclamation activities a threatened and endangered plant and animal assessment be made.

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 is also an important aquatic resource. 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. It appears that the studies have not all been from the same stations or samplers. Macroinvertebrate sampling in Wild Cattle Hollow, Gentry Hollow/Tie Fork, and Nuck Woodward Creek continues till 2001. The permit states that no impacts to the streams from mining have been observed to date. However a reach of Miller Creek has been lost to subsidence. A schedule of future aquatic resource sampling is presented in Table 322.220b.

Findings:

The permit meets the minimum requirements of this section.

HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.12; R645-301-411.

Coal mining started in the area in 1917. The Lion Coal Company operated Wattis No. 1 and 2 Mines until the end of 1963. Limited cultural and historic resource information could be found for the area of Lion Deck facilities and the lower facilities, most all reports are for areas to be disturbed after 1980. Limited historic reporting could be found for the town of Wattis. The permit states that the town of Wattis was allowed to deteriorate between the end of World War II and the mid 1950's. The town of Wattis was covered with the lower facilities area and the refuse pile. All mine structures or ruins older than 50 years (i.e. the old tipple) within the disturbed area must be evaluated for potential nomination to the Historic Register.

As stated above the lower facilities area and refuse pile covers the old town site of Wattis. During reclamation activities it is anticipated that additional substitute growth medium may be recovered from the lower facilities area. When the mine structures are evaluated by the Historian, the Historian should also evaluate the potential for uncovering historic artifacts in this area during reclamation. A

recommendation should be given on how to proceed with the soil removal if significant artifacts are encountered.

Findings:

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

R645-301-411.140 no cultural or historic information could be found in the permit for structures within the disturbed area greater than 50 years old. A survey performed by a permitted archeologist or historian must be conducted (the Division will provide a list of permitted people if desired).

LAND-USE RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.22; R645-301-411.

Analysis:

Premining land use is livestock, timber, and wildlife habitat. The permit 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. In the mid 1990's gas development was again important on lands adjacent to the permit area. During this development period River Gas Corporation intends to develop their oil and gas leases in the area adjacent to the mine facilities and contemplates using the pre-existing roads in the area. Carbon County's communication and relay facilities are located on the ridge above the mine facilities. Timbering in the Price area has increase in recent years however, land owner(s) in the permit area have no interest in this resource as yet.

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 permit meets the minimum regulatory requirements of this section.

OPERATION PLAN

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 Permittee 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 SMACRA 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 Permittee 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 from these studies designed to assess mining impacts can be used to document impacts should they occur.

Endangered and Threatened Species.

See Wildlife Resource section. The permittee has committed to promptly report to the Division any state or federally-listed threatened or endangered species within the permit area (Section 358.100).

Bald and Golden Eagles.

The permit reports (Section 330) that subsidence could have impacted two golden eagle nests on a cliff face in Section 18, T15S, T8E during initial permitting. In 1987 a Nest Taking Permit was issued by the U.S. Fish and Wildlife for two golden eagle nests that had potential to be impacted by mining. The two nests were fenced with chain link to prevent the golden eagle pair from nesting. The area was monitored from 1988 till 1991. Subsidence movement was detected during this time but the nests were not lost. The eagle pair produced young in 1991. During the time of the survey, 1988 to 1991 the

eagle pair remained in the territory and used alternate nest sites (Exhibit 342.100a).

Wetlands and Habitats of Unusually High Value for Fish and Wildlife.

The permit 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. Exhibit 322.220b describe macro invertebrate monitoring which shows that no effects have been seen from subsidence (1982). As stated Exhibit 322.220c, Hydrologic Response to Land Subsidence Caused by Underground Coal Mining, Miller Creek Drainage, Carbon County, Utah is found in Exhibit 731.11A. However, Exhibit 731.11A is simply a proposal to monitor the Miller Creek subsidence and does not report the results. This reviewer will assume the a Division Hydrologist has reviewed this subsidence caused effects.

Findings:

The permittee meets the minimum regulatory requirements of this section.

VEGETATION

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

Analysis:

The permit 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. The changes were evaluated by comparing the photo's from 1980 and 1993 by the Operators consultant. Possible changes in vegetation were observed in 11 locations of which none were greater than 4 acres. Changes could be due to insect damage, disease, subsidence, groundwater alterations, and/or weather conditions. Two surveys are only adequate to suggest a change but no conclusion can be made. The monitoring will continue.

As wildlife mitigation during operations disturbed areas not in use will be seeded with an interim seed mixture. A general interim seed mixture is specified in Table 341.220k.

Findings:

The permit meets the minimum regulatory 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 permit states that the access road to the power line by Treatment facility #1 will remain after reclamation for the post mining land use as granted by ROW 1262 (Exhibit 412.200a). This is a ROW from the State of Utah to Utah Power and Light. This document does not appear to address the access road to be left and who will accept the road liability and be responsible for any maintenance.

No discussion is provided in the permit concerning the disposition of the railroad spur and access road, of which the entire length was permitted and included in the disturbed area. The post mining land use and any right of ways must be included and discussed in the permit.

The post mining land use will include leaving the road which is designated as County Road No.290 for access to Gentry Mountain and Castle Valley Ridge. The County is currently in the process of finalizing easements and maintenance agreements for County Road 290 (Exhibit 412.200a). Currently the road is within the disturbed area of the mine.

The post mining land use for each area of the mine is described in Table 412.100a. The land use in relation to ownership and seeded area is described. The stated land use is wildlife habitat and grazing. No mention of the above described road land uses are discussed.

The post mining land use for the refuse pile is grazing and wildlife. The Division is concerned about a grazing post mining land use in this area. Four feet of plant growth material will be placed on top of the refuse material. Often shrub roots extend well beyond 4 feet and a potential exists for plant uptake of selenium from the refuse material.

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 post mining land use. At minimum land owner letters are required from those entities found in Section 112.500.

Findings:

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

R645-301-412, comments from land owners identified in Section 112.500 supporting the post mining land use must be provided in the permit. No documentation could be found to request the power line road be left and who will accept the road liability and be responsible for any maintenance. Documentation for the railroad spur and spur road land use must be provided.

PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES

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

Analysis:

The post mining land use consists of wildlife and grazing. The Permittee 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.

Probably the best enhancement for all types of wildlife, not just big game is providing as great as diversity as possible in the reclamation. Diversity in topography, aspect, food, and cover is of great value for habitat development. Section 340 commits to achieving varied topographic features.

Findings:

The permit meets the minimum regulatory requirements of this section.

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 DIVISION HAS NO DEFINITION OF CONTEMPORANEOUS RECLAMATION AT THIS TIME

The permittee has committed to reclaim the Exploration Road found in Area 11 and the No. 2 Mine found in Area 3 in 1997.

Findings:

No regulatory requirements.

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.

Analysis:

General Requirements

A detailed schedule and time table for the completion of each major step in the revegetation plan is provided in Table 341.100a. This detailed schedule includes a time line for material procurement, including adequate lead times for growing transplants and collecting seed, expected time to seed, fertilize and mulch 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. But most all areas will be broadcast seeded to maintain the surface roughness. Areas to be broadcast seeded will be seeded at the rates given in the specific discussions for each specific area (Section 341.210). Five seed mixtures (Tables 341.220a through 341.220i) will be used for final reclamation seeding these are:

<u>Name of Mixture</u>	<u>Table No.</u>	<u>Areas of Use</u>
Forest Service Areas	341.220g and h 341.220i and j	Gentry Mtn Shaft Mudwater Canyon Breakout Corner Canyon Fan
Unit Train Loadout	341.220a and b	Unit train loadout area (saltbush type)
Mountain Grassland	341.220c and f	Star Point No. 1 Mine Area Lion Deck Portal Area
Sagebrush Area	341.220c and d	Refuse Pile, Topsoil Stockpile, Lower Office, Wash Plant, Conveyor, Lion Deck Portal Access Road

These areas are also shown on Maps 341.100g thru 341.100i.

The seed mixtures contain a few introduced species. Because of the cheatgrass in the lower Wattis area it is thought that these species may compete with the cheatgrass. Yellow sweetclover and Alfalfa have been added to the lower elevation seed mixtures. This reviewer feels that these species will persist and are not necessarily desirable. However, other professionals will argue the desirability of these species and therefore they will be allowed to remain in the mixture.

The lower Wattis area has considerable amounts of cheatgrass. Cheatgrass is a very aggressive winter annual which may inhibit revegetation success. Squirreltail has been used successfully in some

instances in the Intermountain area to compete with Cheatgrass. Squirreltail has been included in the seed mixture. The permittee should make every effort now to reduce the amounts of weeds within the disturbed area prior to final reclamation. 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 Mancos Shale, Badlands, is probably the most difficult community to reclaim. The permittee propose organic soil amendments as treatment for this area. Soil chemistry, crusting and erosiveness all inhibit seed germination. The organic amendments may help reduce the surface crusting for 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. Soil surface erosion is of the greatest concern to the Division on this soil type for establishing vegetation.

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 or gouging. In fact surface roughness has been shown to greatly enhance the rate of revegetation success and protection from erosion.

Timing

Seeding will occur after September 15, in the fall. Seeding will occur as contemporaneously as practicable with topsoil distribution (Section 354). 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.

Mulching and Other Soil Stabilizing Practices

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 and 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.

Two tons per acre hay or straw mulch will be incorporated into the soil prior to seeding. Incorporation will likely take place during surface roughening. An additional 1.5 to 2 tons per acre will be spread on the surface after seeding and held in place by crimping or tackifier.

Standards for Success.

Revegetation success determination will be based on the community type reference area, stocking rates, the post mining 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 post mining land use and not the vegetation success standard. A diversity standard has been established for bond release. The Operator has proposed using the MacArthur Diversity Index.

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. Reference areas were consolidated for simplicity and practicality in 1998. The current reference areas are the sagebrush, mountain grass, and saltbrush.

The revegetation success standard for the Forest Service Fan Site must be based on a cover and production standard meeting 90 percent of the undisturbed. The permit states that the success standard for these areas is Forest Service approval.

Revegetated areas will be compared to the reference area of the corresponding vegetation types based on the Maps 341.100g thru 341.100i. Table 356.200a summarizes the success standards for the revegetation areas at the Star Point Mines.

Woody plant density requirements were previously approved at 900 plants per acre on all south and west facing slopes and 2,200 stems per acre on all north and east facing slopes. This standard has now been changed to 2000 stems (plants) per acre on all reclaimed areas.

Section 356.100 of the permit states that considerable areas were disturbed without topsoil salvage between 1917 and 1980. CPMC, as well as the Division, does not expect to have difficulty in meeting the success standards which have been committed to. However, the permit does state that if problems do exist then CPMC will readdress the revegetation success criteria for these previously disturbed areas. The Operator has designated these areas of previous disturbance on Maps 341.100g thru 341.100i.

The permittee has been sampling reference areas to determine range condition (Section 356.100). Usually a request is made to the National Resource Conservation Service (formally SCS) to assess range condition. The permit was changed in 1998 to have the NRCS performing the range condition analysis.

One of the requirements for success is that the plant cover will be capable of stabilizing the soil surface from erosion (long term stabilization) and is part of the determination for Phase II bond release. Stabilization usually takes into consideration back ground level 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 and slopes were generally flat. The refuse pile will be contoured to approximately 3:1 slopes. With this type of slope and vegetative ground cover of 34 percent long term stabilization by vegetation alone may occur, if grazing use of the area is properly managed. An observation of the test plot on the refuse pile which was established in 1982 show erosion reduced after 15 years of vegetation establishment. This reviewer expresses concern with using the proposed contour furrows on the refuse pile. Breached contour furrows could become a maintenance problem, which could lead to an extended liability period.

Findings:

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

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R645-301-356, the revegetation success standard for the Forest Service Fan Site must be based on a cover and production standard meeting 90 percent of the undisturbed. The permit states that the success standard for these areas is Forest Service approval. Forest Service approval is an additional requirement.

RECOMMENDATION:

Prior to approval, the above noted requirements of R645-301 must be provided as outlined above.

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