



State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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June 24, 1997

TO: Daron Haddock, Permit Supervisor *DH*

FROM: Paul Baker, Reclamation Biologist *PB*

Re: Proposal to Culvert Crandall Creek, Crandall Canyon Mine, Genwal Resources, Inc., ACT/015/032, Folder #2, Emery County, Utah

SUMMARY:

In a proposal received January 18, 1996, and revised several times since then, Genwal is proposing to expand its surface facilities and put about 1200 feet of Crandall Creek in a culvert. Most recently, Genwal submitted a completely revised plan on April 24, 1997. The disturbed area would be expanded from 5.55 to 10.2 acres. All of the expansion would be on private land surrounded by Forest Service land.

The Division of Wildlife Resources is very concerned about the proposal and feels mitigation is essential. Crandall Canyon has one of the best-developed riparian areas in the Huntington Canyon drainage, and Crandall Creek has the only know population of Colorado River cutthroat trout in the Wasatch Plateau.

This review is an attempt to update the technical analysis for the entire mining and reclamation plan, but it is also specific to the current proposal.

TECHNICAL ANALYSIS:

ADMINISTRATIVE INFORMATION

IDENTIFICATION OF INTERESTS

Regulatory Reference: R645-301-112

Analysis:

The applicant and operator are both Genwal Resources, Inc., a corporation incorporated under the laws of Utah. Gary Gray is identified as the resident agent. The Intermountain Power Agency (IPA) and Andalex Resources, Inc., will pay the abandoned mine reclamation fee. The application contains Genwal's employer identification number, address, and telephone number.

IPA and Andalex Resources, Inc., jointly own Genwal Resources, Inc. The application contains employer identification numbers and lists of officers and directors with dates they assumed their positions for all three of these entities. Andalex Resources, Inc., is 100% owned and controlled by Andalex Resources, B. V. This company is owned and controlled by, in ascending order, Andalex Resources, S. A., Andalex Holdings, Ltd., and the Andrew Trust. Appendix 1-9, Section A, shows the officers and directors of the companies that own and control Andalex Resources, Inc. Andalex Resources, B. V., Andalex Resources, S. A., Andalex Holdings, Ltd., and the Andrew Trust do not have employer identification numbers.

IPA is currently engaged in the reclamation of the Horse Canyon Mine in Emery County. A list of current and previous mining permits held by Andalex and its affiliates is included in Appendix 1-9, Appendix B. The Crandall Canyon Mine is the only coal mining and reclamation operation owned or controlled by Genwal Resources.

The legal owners of the area affected by surface operations and facilities are the United States and Genwal Resources, Inc. The U. S. Forest Service, the State of Utah, and Genwal Resources, Inc., are surface and coal owners within the permit area. Owners of surface and mineral property contiguous to the permit area are the United States and Genwal.

Findings:

Information provided in the proposal is considered adequate to meet the requirements of this section of the regulations.

VIOLATION INFORMATION

Regulatory Reference: R645-301-113

Analysis:

The application says neither the applicant nor any subsidiary, affiliate, or persons controlled by or under common control with the applicant has had a federal or state mining permit suspended or revoked in the last five years. They have not forfeited a mining bond or similar security deposited in lieu of bond. There are no unabated cessation orders or air and water quality violation notices received prior to the date of the application by any coal mining and reclamation operation owned or controlled by Genwal or by any person who owns or controls Genwal.

Findings:

Information provided in the proposal is considered adequate to meet the requirements of

this section of the regulations.

RIGHT OF ENTRY INFORMATION

Regulatory Reference: R645-301-114

Analysis:

The application says the applicant bases its legal right to enter and begin operations in the permit area on:

Federal coal lease U-54762 issued to Genwal Coal Co. December 1, 1986, and currently owned by Andalex and IPA.

Assignment of federal leases SL-062648 and SL-050655 from the heirs of John Sanders on July 11, 1991.

Assignment of federal coal lease UTU-68082 to the joint owners (NEICO and IPA) in March 1994.

Assignment of Utah State coal lease ML-21568 to the joint owners (NEICO and IPA) 3 July 11, 1991.

Assignment of Utah State coal lease ML-21569 to the joint owners (NEICO and IPA) July 11, 1991.

In addition to the leases, the Forest Service has issued four special use permits. These are for the Crandall Canyon road, the topsoil stockpiles, the sediment pond, and some surface facilities near the portals.

One of the special use permits is for an area of 0.10 acres for "snow storage and summer parking." The legal description in the permit is Township 16 South, Range 7 East, Section 6, SW ¼ NE ¼. This legal description appears to be in error. All of the disturbed and proposed disturbed areas are completely within Section 5. It appears this special use permit is for the Forest Service turnaround area. This is at least one-eighth mile from the nearest part of land described in the legal description. The application can be considered complete and accurate, but the Forest Service should correct the legal description in its permit.

Findings:

Information provided in the application is considered adequate to meet the requirements of this section of the regulations.

UNSUITABILITY CLAIMS

Analysis:

Available information does not show the area to be within an area designated as unsuitable for coal mining and reclamation activities. Operations are being conducted within 100 feet of a public road, and the application contains a copy of the Forest Service special use permit for the road.

There are no occupied dwellings within 300 feet of the permit area.

Findings:

Information provided in the proposal is considered adequate to meet the requirements of this section of the regulations.

PERMIT TERM, INSURANCE, PROOF OF PUBLICATION, FACILITIES OR STRUCTURES USED IN COMMON, FILING FEE, NOTARIZED SIGNATURE

Regulatory Reference: R645-301-116, -117, -118, and -120

Analysis:

The permit was issued May 13, 1993, for a period of five years.

A certificate of liability insurance is in Appendix 1-10. Insurance coverage is afforded by the Federal Insurance Company, and the producer is the Price Insurance Agency. The policy number is 3710-39-89. The general aggregate limit is \$2,000,000, and the limit for each occurrence is \$1,000,000. The policy includes XCU coverage. There is a \$1000 deductible for property damage. The State of Utah is named as the certificate holder. The certificate shows the mine name and number, and the cancellation clause has been changed in accordance with Division requirements.

The application contains a proof of publication for the required newspaper advertisement. The public notice mentioned that the construction would be within 100 feet of the Forest Service road and that there could be some disruption of public access during construction. The notice was published four consecutive weeks in August and September of 1996.

The application includes a statement signed by Gary Gray, the resident agent, that the information in the application is true and correct to the best of his information and belief.

Findings:

Information provided in the application is considered adequate to meet the requirements of this section of the regulations.

VEGETATION RESOURCE INFORMATION

Analysis:

Crandall Canyon contains ten vegetative communities. Six of these occurred in areas that have been disturbed. These communities were classified as cottonwood, sagebrush, mountain shrub/grassland, mixed mountain shrub/conifer/aspen, spruce/fir/aspen, and riparian. Also, portions of the disturbed area were previously disturbed. Appendix 3-1 contains details of the original vegetation sampling.

Genwal has committed to take aerial color infrared photographs every five years beginning in 1995 to monitor the effects of underground mining on vegetation.

The application contains a report from Environmental Industrial Services about the vegetation in the riparian area. Also included is a vegetation survey of north-facing slopes done in 1996 by Patrick Collins of Mt. Nebo Scientific

The current mining and reclamation plan contains vegetation information gathered in 1980 including the riparian area. One of the dominant grasses in the 1994 sampling of the riparian area was downy brome, but this grass was not present in any areas, including the previously disturbed area, before the mine was reopened. It is unlikely this grass would have invaded on its own without some disturbance.

A reference area has been established in a mountain shrub/grassland community on a south-facing slopes above the mine, and the applicant now proposes one in a spruce/fir/aspen community on the north-facing slope. The area proposed to be disturbed by the culvert installation is primarily in riparian and spruce/fir/aspen communities, and there are also some areas on the south of the stream that have been affected by natural disturbances, especially earth movement. These areas have less than half as much vegetative cover as adjacent areas.

Adequate numbers of samples were taken for the riparian and spruce/fir/aspen areas. However, the required sample size for the naturally-disturbed areas is 19.5 although only 12 samples were taken. Not meeting the minimum sample size is not a problem unless the applicant proposes to use the baseline information as a success standard for final bond release.

Since baseline information will be used as the revegetation success standard for the

riparian area, the application includes raw data for the riparian area sampling. This data is needed when comparing for final bond release to make a pooled standard deviation. Depending on the sampling distribution of the data, it might also be necessary to transform it, and the raw data would be needed for this purpose.

Woody plant density information is in reports from Mt. Nebo Scientific in Appendices 3-11 and 3-14. Measured woody plant densities were 11224 and 11989 per acre for the riparian and non-riparian areas respectively.

The application needs to contain productivity information for the different plan communities proposed to be disturbed and for the spruce/fir/aspen reference area. This information is commonly gathered using Natural Resources Conservation Service methods. The applicant has committed to gather this data, but it needs to be in the application.

The location of the spruce/fir/aspen reference area is shown on Plate 2-4.

Other information required by this section of the regulations is considered adequate.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section of the regulations. Prior to approval the applicant must provide the following in accordance with:

R645-301-321, The applicant has committed to gather required productivity information, and this needs to be in the application.

FISH AND WILDLIFE RESOURCE INFORMATION

Regulatory Reference: R645-301-322

Analysis:

Wildlife Information

Fish and wildlife information is presented in Section 3.22 and in Appendixes 3-2 and 3-3. The plan and application contain results from several studies, including macroinvertebrate studies done in 1980 and 1994; fish and stream investigations performed in 1982, 1983, 1994, and 1995; several raptor surveys; and a survey for all birds in the area of the proposed expansion.

The current and proposed disturbed areas contain some habitat for big game animals.

Primary summer ranges are on the plateaus, and most winter range areas are at lower elevations than the mine.

Most of the permit area does not contain good cliff nesting habitat, but there are a few areas with golden eagle nests. Most recently, a pair of eagles nested in a cliff above the mine in 1995. Raptor nests are shown on Plate 3-1A and on a map submitted as an addendum to Appendix 3-3. The map in the addendum contains results from the 1996 survey.

Appendix 3-3 contains a 1980 report that discusses accipiters in Crandall Canyon. The report has evidence of past nesting and hunting activity, but no birds have been found in more recent searches. However, Crandall Canyon and similar canyons in the Huntington Creek area should be considered good accipiter habitat.

A list of twenty-two bird species identified by the Fish and Wildlife Service as migratory birds of high federal interest is in Appendix 3-3. Section 3.22.21 lists seven of these species that have the potential of migrating within the region where the mine is located.

Table 5 in Appendix 3-3 has a list of reptile and amphibian species which may be found in the area according to published information. Reptiles are found throughout the permit area, but amphibians are only associated with water. The application says baseline studies in the spring of 1994 did not encounter any threatened or endangered reptiles or amphibians. More detail of this work is in an addendum to Appendix 3-2.

The application contains studies of macroinvertebrates and fish populations in Crandall Creek from 1994. In response to comments from the Forest Service, the applicant has committed to inventory macroinvertebrate populations in the creek every three years.

Appendix 3-2 and Section 3.22.1 discuss the importance of Crandall Creek as fish habitat. One of the recommendations in a 1982 report from Walter Donaldson, regional fish manager for the Division of Wildlife Resources, was to occasionally blow up beaver dams as they tend to accumulate silt and deter upstream trout movement. However, April 1, 1996, correspondence from the Forest Service says beaver dams are rarely barriers to fish passage. Cutthroat trout spawn during high water periods in the spring when they can swim over the dams. In March 8, 1996, correspondence to the Division, Wildlife Resources said, for its size, Crandall Creek contains a significant population of resident fish and provides a significant spawning ground/nursery.

In Section 3.33.300, the application says the culvert would be at the extreme upper end of the fisheries habitat, so no upstream habitat will be affected. In three years of surveys, the Division of Wildlife Resources has not found fish above a beaver pond just above the mine. However, the Forest Service in February 5, 1997, correspondence said the surveys done in 1995 were taken in late June and August and do not give any kind of picture of the function of the

higher reaches of the creek for the cutthroat population. The correspondence also says the culvert would cause a significant loss of habitat and will affect the population's ability to access headwaters.

Appendix 3-10 is a memorandum from Marvin Boyer and Pete Cavalli of the Division of Wildlife Resources concerning a fish population survey done in 1996 with some data from 1994 and 1995 surveys. This document says the data strongly suggest that the middle reach of Crandall Creek, the area near the mine, is an important spawning and nursery area. It also says preliminary results of sampling for genetic study indicate the fish are a pure strain of Colorado River cutthroat trout.

Threatened or Endangered Species

The application has a list of 13 threatened or endangered species identified in a February 1995 listing for Emery County. Of the 13 species, two, the bald eagle and peregrine falcon, could potentially occur in the permit area. However, the occurrence is most likely to be migration through the area rather than nesting or roosting. The application is correct that it is most likely that peregrine falcons would only be migrating through the area, but pairs have been found recently in the areas of the Trail Mountain and Star Point Mines. The pair near the Star Point Mine was nesting.

In addition to the species discussed in the application, there is also a potential to affect the threatened and endangered fish of the upper Colorado River basin through surface water depletion. However no additional surface water losses are expected with the expansion project.

The application contains a new addendum to Appendix 3-3 that has lists of threatened, endangered, proposed, candidate, and sensitive species for the State of Utah. Those species that may occur in Emery County are marked, and it contains a separate list of those species that are known or suspected of being in the Manti Lasal National Forest.

The application lists five sensitive species potentially present in the mine's area of influence. As discussed above, the Division of Wildlife Resources has recently (1997) preliminarily identified Colorado River cutthroat trout from Crandall Creek through genetic tests. However, the tests are not conclusive. If the fish in Crandall Creek are Colorado River cutthroats, it is very significant because this would be the only known population of Colorado River cutthroat trout in the Wasatch Plateau. It would indicate there is a barrier to fish passage that keeps Yellowstone cutthroats from coming up Crandall Creek from the Huntington River.

Another sensitive species, the goshawk, was found near the old portals in 1980. This information is contained in a wildlife inventory report for the original application. It is almost certain other goshawks nest in the permit area.

There are no threatened or endangered plant species known for the area according to information from Bob Thompson of the Forest Service, and no threatened or endangered plant species were encountered in the vegetation survey. However, at least two sensitive species have been found in the general vicinity. Canyon sweetvetch (*Hedysarum occidentale* var. *canone*) is present in Huntington Canyon near the turnoff to Crandall Canyon. Intermountain bitterweed (*Hymenoxys helenioides*) has been collected in Carbon and Emery Counties in mountain brush, sagebrush, aspen, and meadow communities between 8800 and 10,700 feet elevation. The permit area probably contains suitable habitat for this species, but it is unlikely to be adversely affected.

Findings:

Information provided in the proposal is considered adequate to meet the requirements of this section of the regulations.

INTERIM STABILIZATION

Regulatory Reference: R645-301-331

Analysis:

The applicant will ensure that the smallest area practicable will be disturbed. When an area is disturbed, revegetation measures will be implemented to establish and maintain the area and to minimize erosion.

All surface areas which are disturbed during construction and which will not be needed for mining operations will be revegetated in the fall of the year following completion of construction. The plan contains a seed mix to be used in these areas. Alfalfa would be added on steeper slopes to increase erosion protection.

Contemporaneously reclaimed areas within the disturbed area from which runoff reports to the sediment pond will achieve 80% cover on the slopes. Appendix 3-5 contains details of the irrigation plan to maintain 80% cover.

Findings:

Information provided in the proposal is considered adequate to meet the requirements of this section of the regulations.

SUBSIDENCE CONTROL

Regulatory Reference: R645-301-332

Analysis:

The subsidence control plan is contained in Chapter 5. Potential damage from subsidence includes disruption of water flows; creating cracks that could affect grazing, wildlife and recreational uses; and tree falls and cliff failures that could affect nesting birds, particularly raptors.

The land is used for domestic grazing on gentle slopes and for wildlife habitat and recreation over the total acreage. The vegetative resources should not be negatively affected by subsidence, so the current land use is expected to continue. According to the application, the Forest Service says there is no marketable timber in the area of potential subsidence. If subsidence affects grazing, the applicant will compensate the appropriate party by paying the fair market value for the loss.

If subsidence monitoring detects an area that is actively subsiding, the area will be surveyed for tree nesting raptors and measures implemented to protect any nest sites from destruction during the nesting season.

Springs within the potential subsidence limit are a significant resource to the local wildlife and may be affected. If documentation concludes that mining efforts at the Crandall Canyon Mine have eliminated the flow from the seeps and springs, then acceptable remedial action plans will be submitted for approval and subsequently installed.

Any loss of flow is likely to be detrimental to wildlife. Wildlife resources expects mitigation when flows are reduced 50% or more.

Findings:

Information provided in the proposal is considered adequate to meet the requirements of this section of the regulations.

FISH AND WILDLIFE RESOURCE PROTECTION

Regulatory Reference: R645-301-333

Analysis:

Potential impacts to fish and wildlife include elimination of 1200 feet of fisheries habitat during the mining operations, increased hunting pressure on big game, effects to small

vertebrates, temporary loss of critical riparian and other wildlife habitat within the disturbed area, increased sediment loading of Crandall Creek and other waters downstream, and possible disruption of water sources.

Crandall Creek is considered important fish habitat, and all riparian habitat is considered critical wildlife habitat. The application contains correspondence from the Division of Wildlife Resources discussing a wildlife protection and mitigation plan that has been developed through several months of negotiations between the applicant, Wildlife Resources, the Forest Service, Water Rights, and the Division. This plan is intended to protect the Colorado River cutthroat trout population and to mitigate for the loss of fisheries and riparian habitat.

Major points of the plan include:

1. Certain modifications would be made to Crandall Creek above the mine.
2. All the fish in the area of the culvert would be captured and transplanted to a secure and suitable temporary location. Some of these fish will be put back into Crandall Creek above the mine..
3. Alterations would be made to another stream to isolate it from other fish populations. This stream would be treated to eliminate all fish, and Colorado River cutthroats would be transplanted to it.
4. In Scad Valley, a sheep corral would be eliminated and two or three new corrals constructed. Some roads would be reclaimed to try to improve the quality of spawning habitat in this area.

Unfortunately, it is possible that moving the sheep corral and reclaiming certain roads may not result in improved stream habitat in Scad Valley Creek and would not fulfill the requirements of R645-301-333 and R645-301-358. The Forest Service and Wildlife Resources intend to monitor this section of stream to see if the project is successful.

In Section 3.23.3, the application contains several methods that would be used during the construction phase to protect water quality in Crandall Creek, including more frequent water monitoring and the use of straw bales and silt fences in and adjacent to the stream. The applicant commits to develop and implement appropriate mitigation plans with the regulatory authority should stream flow diminish significantly or water quality deteriorate. Other measures to be used to protect water quality are discussed in Chapter 7 and are reviewed in the hydrology sections of this analysis.

Findings:

Information provided in the proposal is considered adequate to meet the requirements of this section of the regulations.

REVEGETATION

Regulatory Reference: R645-301-341

Analysis:

Revegetation Plan

Topsoil will be redistributed within 30 days of completion of grading in late September or early October. Soil amendments will be applied if necessary before the end of October. Seeding will commence as soon as the seedbed is finished in the late fall. Tree planting will be done in conjunction with seeding or in the following spring as soon as the soil is workable.

The applicant commits to inoculating the soil with microorganisms prior to seeding. Some research indicates this is a necessary step for establishing certain species although there has been successful revegetation in some areas with essentially sterile soil and no attempt to inoculate. Hopefully, there will be further research on this subject before the site is actually reclaimed, and the applicant and the Division should look at current findings at that time to determine the best methods.

The application contains a seed/planting mix for riparian and one for non-riparian areas. The seed mix for non-riparian areas was developed primarily for the south-facing slope where existing disturbances are located. The north-facing slope has a very different vegetation community, but many of the species in the existing seed/planting mixture are appropriate for the north-facing slopes. Also, the application contains a plan to transplant woody plants of species more suited to the north-facing slopes.

The seed/planting mix for riparian areas includes a mixture of species suitable for both upland and riparian areas. Willows, dogwoods or roses would be planted at one-foot intervals along the stream. In response to comments from the Forest Service, the applicant has committed to plant horsetail plugs about every two feet. Additional trees and shrubs would be planted farther away from the creek.

The seeding and planting mixes in the plan fulfill regulatory requirements for introduced species, diversity, seasonality, and the postmining land use. Three introduced species are included, and they are all highly desirable. They should not be overly competitive or displace native species in the area. Small burnet and yellow sweet clover are fairly short-lived species that will probably not be present after the ten-year extended responsibility period. The seed and

planting mixes are expected to provide successful revegetation if proper reclamation methods are used.

The entire area of disturbance will be hydromulched with a long fiber wood mulch. Tackifying agents will be added to the hydromulch, and the application shows tackifier application rates for varying slopes.

The applicant and the Division investigated the use of various mulches, particularly for the steep north-facing hillside. There are many types of hydromulch available, and the applicant intends to use one with coarse, long fibers. This type of mulch is preferred over a mat because mats often have erosion under them.

It is anticipated that mulch technology will change over the next several years until the site is reclaimed. The applicant will need to use the best technology currently available to control erosion and sedimentation, particularly in the area near the stream.

No irrigation is anticipated. The applicant commits to avoid using persistent pesticides and to prevent personnel-caused fires. However, a contingency irrigation plan is recommended for transplants. Dry conditions could necessitate watering transplants for the first one or two summers.

Musk thistle is a very serious problem at mid- to high elevations in Utah. Although this noxious weed is not widespread in Huntington Canyon, it has been found at the Crandall Canyon Mine. Disturbed and newly seeded areas are very prone to noxious weed invasion. The applicant should plan now for noxious weed control during reclamation as it will almost certainly be necessary.

On January 1, 1994, the Forest Service issued a closure order for any straw or hay that is not certified to be free of noxious weeds. This includes transportation across Forest Service lands. The applicant is not planning to use straw or hay mulch in reclamation, but any straw or hay bales that are used for sediment control will need to be certified.

Revegetation Success Standards

A vegetation reference area has been established in the mountain shrub/grassland community above the mine portals for comparison with vegetation on reclaimed areas that had this community before mining. Another reference area has been established to compare to areas with spruce/fir/aspen communities. This reference area is south of the proposed expansion area.

Woody plant density standards have been established for three areas of the mine. For areas to be compared with the mountain shrub/grassland reference area, the standard for woody species density has been set at 1336 shrubs per acre. This is based on reference area data. The

standard for north-facing slopes has been set at 4000 per acre based on baseline information in the plan and consultation with Wildlife Resources. The riparian area has about 11,224 shrubs and trees per acre, and shrubs and trees will be planted in this area at the rate of about 3000 per acre. It is expected that these will multiply through the extended responsibility period, and the success standard has been set at 6000 per acre.

There are some differences between the proposed disturbed and reference area spruce/fir/aspen communities, but they are primarily in species composition rather than the total amount of cover. The proposed reference area has 75.25% total living cover, and the area proposed to be disturbed has 78.75%. These values are not statistically different at the 90% confidence level. The proposed disturbed area has statistically more overstory than the reference area, but understory cover values are statistically the same for both areas. Also, the woody species density is higher in the reference area.

Despite the differences between the proposed disturbed and reference areas, there are several similarities, including location, community type, soils, aspect, and total cover. The actual species present and the amount of cover from overstory vary, but these will vary even more significantly when comparing reclaimed and reference areas. Additionally, the woody plant density success standards are established in consultation with Wildlife Resources rather than being based strictly on baseline information in the plan. For these reasons, the reference area is considered an acceptable revegetation success standard for spruce/fir/aspen areas.

Portions of the north-facing slope have been affected by natural soil movement and have less vegetation than adjacent areas. The Division could accept a different revegetation success standard for these areas rather than comparing them to the spruce/fir/aspen reference area. However, the applicant has not proposed a separate standard in the application even though the report from the applicant's consultant discusses using another standard. A revegetation reference area was not proposed, and the number of samples taken in these areas is not sufficient to allow the baseline method to be used.

In order to meet the erosion control performance standards in the areas that have had soil movement, it will probably be necessary to establish nearly as much vegetation as in spruce/fir/aspen areas. The main question is whether establishing this much vegetation is feasible. The various revegetation and stabilization techniques that are planned should allow more vegetation to become established than currently exists. If, in the future, the applicant desires to propose a reference area revegetation success standard in a similar area, the Division could compare it to the area now proposed to be disturbed. If there is some possibility a different success standard may be proposed in the future, the areas with soil movement should be mapped now.

The application includes diversity standards for all current and proposed disturbed areas. The standards currently in the plan and proposed in the application are minimum and maximum

relative cover values for grasses, shrubs, and broadleaf forbs in the three major disturbed vegetation types. In addition, the application states that no one species will make up more than 60% of the cover in its respective vegetation class except that individual species of shrubs and trees will make up no more than 80% of the density for this class. The application gives a monitoring schedule and methodologies for checking success of revegetation.

In the proposed disturbed spruce/fir/aspen areas, the standard will be 3-15% relative cover from broadleaf forbs, at least 15% cover from trees and shrubs, and the balance from grasses. This leaves a lot of latitude between grasses and woody plants since woody plants are expected to eventually dominate the area. Until then, grasses are expected to dominate the cover.

The riparian area should be dominated by woody species. The standard is 5-10% relative cover from broadleaf forbs, 40-85% relative cover from trees and shrubs, and 10-50% relative cover from grasses and grasslike plants.

For both riparian and spruce/fir/aspen areas, as in the other areas, no one species will make up more than 60% of the cover in its respective vegetation class except that individual species of trees and shrubs will make up no more than 80% of the density for this class.

The diversity standards for south-facing slopes are based on Natural Resource Conservation Service range site potential plant community data. For riparian areas and north-facing slopes, the standards are based on professional judgment by a soil scientist and botanist with the Forest Service and a Division biologist. The standards allow some flexibility but ensure a reasonably diverse plant community.

R645-301-353.140 requires that the vegetative cover be capable of stabilizing the soil surface from erosion. The applicant proposes to use the Erosion Condition Classification System to compare reclaimed areas with adjacent undisturbed areas. This method was developed by the Office of Surface Mining, and, while it is a qualitative judgment, it provides a reasonably good estimate of how stable a site is. Even if vegetative cover is equal to that of the reference area, the reclaimed area may not be stable.

R645-301-356.250 says that for areas previously disturbed by mining that were not reclaimed and that are remined or redisturbed, at a minimum, the vegetative ground cover will be not less than the ground cover existing before redisturbance and will be adequate to control erosion. The vegetative ground cover existing before redisturbance was 50.3%. Relatively little of this cover was from plants that would be considered weeds. This figure has been established as the vegetative cover standard for success for the areas previously disturbed by mining.

Wildlife Habitat

High value habitats (pinyon-juniper, agricultural and riparian areas) will be restored; in many cases, they will be enhanced beyond their premining condition. The goals are to create a diversified cover and/or habitat that will support a wide range of species while restoring to a premining condition and, where feasible, enhancing habitat.

On September 21, 1993, representatives from Genwal, the Division, and Wildlife Resources met on-site to discuss wildlife habitat enhancement for reclamation. Subsequently, Wildlife Resources wrote Genwal a letter with enhancement suggestions. This letter has been incorporated in the plan, and Genwal commits to use the recommendations. They include making several rock piles and placing modified utility poles with attached nesting boxes near the perimeter of the disturbed area. These measures were felt by Wildlife Resources to be the most practical means of enhancing wildlife habitat in this area. Combined with the revegetation plan, these methods can be considered the best technology currently available.

Findings:

Information provided in the proposal is considered adequate to meet the requirements of this section of the regulations.

LAND USE RESOURCE INFORMATION

Regulatory Reference: R645-301-411

Analysis:

The premining uses of the land were non-developed recreation, native wildlife habitats, and dispersed cattle grazing. Because of the very steep topography, grazing is very limited on the side slopes.

The application includes a map showing grazing allotments in part of the permit area.

Emery County has zoned the area CE-1, critical environmental. This zoning designation does not preclude mining. The Manti-LaSal National Forest Land and Resource Management Plan includes the area in four different management units. These are the Leasable Minerals Area, General Big Game Winter Range, Range Forage Production, and the Riparian Management Unit.

The area was mined from 1939 to 1955. Approximately 35,000 tons of coal was removed from the Hiawatha seam by room and pillar methods.

Findings:

Information provided in the proposal is considered adequate to meet the requirements of this section of the regulations.

HISTORIC AND ARCHAEOLOGICAL RESOURCE INFORMATION

Regulatory Reference: R645-301-411.140

Analysis:

The cultural resources surveys revealed one site located near the junction of the Forest Service and Huntington Canyon roads that probably meets the criteria for inclusion in the National Register of Historic Places. The area is outside of Genwal's permit area, and it has been fenced. Within the permit area, there are no public parks, cemeteries, or lands within the National System of Trails or the Wild and Scenic Rivers System.

The area proposed to be disturbed by culverting Crandall Creek was also surveyed for cultural resources, but none were found. Based on this, the Division should recommend that the State Historic Preservation Officer give a clearance for the project to proceed.

Findings:

Information provided in the proposal is considered adequate to meet the requirements of this section of the regulations.

LAND USE RECLAMATION PLAN

Regulatory Reference: R645-301-412

Analysis:

The areas where surface disturbance resulted from mining operations will be restored to its premining usefulness as rangeland, wildlife habitat, and recreational use. No alternative land uses are proposed.

R645-301-412.200 requires that the application include a copy of comments concerning the proposed postmining land use from the legal or equitable owners of the surface of the permit area and Utah and local government agencies which would have to initiate, implement, approve, or authorize the use of the land following reclamation. The citations from the Manti-LaSal National Forest Land and Resource Management Plan can be considered as comments from the Forest Service for most of the disturbed area. The plan states that the road will be left in place

pursuant to the wishes of the Forest Service, the surface landowner. Appendix 1-2 contains correspondence from the Forest Service stating that the improved roadway is to be retained beyond the proposed life of the mine but that some reclamation will be required.

The portion of the disturbed area not managed by the Forest Service is owned by Genwal. The only other land owner within the permit area is the State of Utah, and this land will not be affected by surface operations.

Findings:

Information provided in the proposal is considered adequate to meet the requirements of this section of the regulations.

AIR QUALITY

Regulatory Reference: R645-301-420

Analysis:

The plan contains a copy of Genwal's Air Quality Approval Order which includes air quality monitoring and fugitive dust control plans. The Approval Order has been recently updated to show an increase in production.

The expanded surface facilities will necessitate changes to the Air Quality Approval Order. The applicant commits to receiving an amended and approved Approval Order before putting the new facilities in operation.

Findings:

Information provided in the proposal is considered adequate to meet the requirements of this section of the regulations. The applicant will need to receive approval from the Division of Air Quality before putting its new facilities into operation.

RECOMMENDATIONS

With one exception, the portions of the proposal to culvert Crandall Creek discussed in this memorandum are considered complete and accurate. The application still needs to contain plant productivity information for the areas proposed to be disturbed. According to the applicant's consultant, a representative of the Natural Resources Conservation Service has gathered the information he needs but has not yet issued his report. For this reason, it would be possible to stipulate that plant productivity information be included in the plan.

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