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State of Utah

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DIVISION OF OIL, GAS AND MINING

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March 13, 1997

TO: File

THROUGH: Daron Haddock, Permit Supervisor

FROM: Paul Baker, Reclamation Biologist

Re: Waste Rock Disposal Site, Canyon Fuel Company, Soldier Canyon Mine,
ACT/007/018, Folder #2, Carbon County, Utah

SUMMARY:

In 1991, Soldier Creek Coal Company proposed a waste rock disposal facility a few miles south of its main mine operations in Soldier Canyon. The proposal was not approved at the time, but the permittee has now resubmitted the proposal.

Information in the proposal is not considered adequate to allow construction of the facility.

TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

LAND USE RESOURCE INFORMATION

Regulatory Reference: R645-301-411

Analysis:

Section 4.11 discusses current land uses in the area which include grazing, wildlife habitat, mining, and recreation. These uses are consistent with county zoning information contained in the plan.

Findings:

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

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HISTORIC AND ARCHAEOLOGICAL RESOURCE INFORMATION

Regulatory Reference: R645-301-411.140

Analysis:

Two surveys for cultural resources have been conducted in the general area of the proposed waste rock disposal area. Three small, isolated lithic scatters were found in the area that would be disturbed, but the applicant's consultant did not consider these sites to be significant. The study that located these three sites was done in part to satisfy Bureau of Land Management requirements for a land exchange. One other site was located near Andersen Reservoir in an area that would not be disturbed. This site was considered to meet eligibility requirements for listing in the National Register of Historic Places.

In 1991, Soldier Creek Coal Company first proposed the waste rock site, but the Division did not review the proposal. Comments made by the Division of State History at that time do not mention the expansion specifically, so it is not known if they examined the cultural resources information in the plan. For this reason, the Division should seek concurrence from State History. Because the sites that would be disturbed are not considered significant, the Division should recommend that State History give its approval for the waste rock disposal site.

Findings:

Information provided in the proposal is considered adequate to meet the requirements of this section of the regulations. The Division needs to receive concurrence for this project from the Division of State History. Based on the information in the mining and reclamation plan, the Division should recommend that State History give its approval.

VEGETATION RESOURCE INFORMATION

Regulatory Reference: R645-301-321

Analysis:

The current mining and reclamation plan includes results from vegetation studies done in 1990 and 1991. Several areas were sampled in these studies, including the proposed waste rock disposal site and two reference areas.

The proposed waste rock disposal site contains three vegetation communities, but they were sampled together. These communities are pinyon/juniper, black sagebrush/shadscale,

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and greasewood/galleta. The communities change primarily in response to changing soil conditions. About 70% of the vegetation cover was from shrubs, primarily black sage, greasewood, shadscale, and juniper. Grasses made up 29% of the cover, and broadleaf forbs only had 1%.

The two reference areas are in pinyon-juniper and sage-grass-juniper communities. Most cover in the pinyon-juniper area was from the overstory with only 12.63% ground cover from understory plants. No grasses were encountered in the sampling, and there was 0.71% cover from broadleaf forbs. Other than the cover from juniper, there was a total of 2.70% vegetative cover in the understory. The overstory had 31.63% cover, all from pinyon and juniper.

The sage-grass-juniper reference area had a total of 31.95% vegetative cover of which 65.52% was from shrubs, 31.25% from grasses, and 3.23% from broadleaf forbs. Dominant species were sagebrush and Indian ricegrass.

There is an area south of the topsoil storage site where the applicant intends to put an access road to the refuse pile. This road would cross a field that has been cultivated in the past. It would also cross an undisturbed area with grass-sage-juniper and pinyon-juniper communities. These two communities had vegetation very similar to the reference areas with the same designations. In the vegetation report, the area that has been used as an agricultural field was called a previously disturbed sage-grass-juniper community. The vegetation in this area was composed primarily of big sage and several weedy forbs.

In the vegetation reports, sample sizes were calculated according to the Division's guidelines in place at the time the samples were taken. However, the Division has recalculated the sample sizes according to current guidelines. The sample sizes were adequate for all areas except the pinyon-juniper reference area where 90 samples were needed for understory vegetation, and 138 samples were needed for the overstory. It is not necessary to achieve sample adequacy except when sampling for bond release or when a sample will be used as the revegetation success standard; therefore, the sample sizes are considered adequate.

The application is required to contain productivity information for the area proposed to be disturbed, and the Division requires that reference areas have a range condition of fair or better determined using Natural Resources Conservation Service (NRCS) methods. The current plan contains two letters from the Soil Conservation Service (SCS--now NRCS) showing the current and potential production and range conditions of various areas. It is difficult, based on the information in the plan, to decide to which areas these descriptions apply. This needs to be clarified or, alternately, the proposed disturbed and reference areas need to be reexamined for productivity and range condition.

Findings:

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

R645-301-321: The application contains some productivity information that apparently applies to the proposed reference areas and disturbed areas; however, the plan needs to clarify to which areas this productivity information applies.

FISH AND WILDLIFE RESOURCE INFORMATION

Regulatory Reference: R645-301-322

Analysis:

Wildlife Information

The current mining and reclamation plan contains wildlife inventories conducted in the early 1980's. These studies included at least part of the proposed waste rock site. The only habitat of unusually high value identified in the area is critical deer winter range. Wildlife Resources has confirmed that the area contains habitat that is heavily used during winter months.

The application includes an updated map showing raptor nests in and near the permit area. It also shows riparian areas and springs.

Threatened or Endangered Species

The application identifies three listed threatened or endangered species, bald eagles, peregrine falcons, and black-footed ferrets, that could inhabit the general area. There have been no recent confirmed sightings of black-footed ferrets in Carbon County although there was an unconfirmed sighting in East Carbon in 1980. Black-footed ferrets are closely associated with prairie dogs, and there are no known prairie dog colonies in the area.

In the raptor surveys conducted within and adjacent to the permit area, no peregrine falcon or bald eagle nests have been found. Bald eagles frequently roost in trees along the road to the mine and could roost near Andersen Reservoir. However, there are only a few small cottonwoods near Andersen Reservoir, so it would not be an important site for

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wintering birds.

There is no habitat for threatened or endangered plant species within the area proposed to be disturbed. Two candidate species, canyon sweetvetch and Creutzfeldt catseye, could be in the area, but the vegetation consultant searched for and did not find them.

Findings:

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

OPERATION PLAN

AIR QUALITY

Regulatory Reference: R645-301-420

Analysis:

The current mining and reclamation plan contains an approval order dated September 3, 1991, from the Division of Air Quality. This approval order includes the waste rock disposal facility and contains several stipulations on how operations are to be conducted.

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 current mining and reclamation plan includes a plan for interim reclamation. Generally, these areas would be revegetated using the same methods as for final reclamation; however, smaller areas would be fertilized, planted, and mulched by hand. The interim seed

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adding more seed of aggressive species that will establish quickly. The amount of intermediate wheatgrass could be increased by one or two pounds per acre, or some other species, like Hycrest crested wheatgrass or Russian wild rye, might be added.

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:

Section 3.33 contains commitments intended to minimize adverse effects to wildlife. Most of these relate to the underground mining operation. The applicant commits to operate and maintain all transportation systems and support facilities under their control in a manner that minimizes impacts to fish and wildlife. A wildlife awareness and protection training is included in the annual training curriculum for all employees, and the haulage contractor is required to include such training in its employee education program.

The area proposed to be disturbed is critical deer winter range, and it is heavily used during the winter. The Division and Wildlife Resources normally require mitigation at a rate of three acres of enhanced habitat for each acre of disturbance. However, the lower part of the proposed disturbed area where greasewood dominates the vegetation has limited forage or cover value. The portion of the proposed disturbed area not dominated by greasewood contains about 38 acres.

The mining and reclamation plan contains a copy of a letter from Wildlife Resources dated August 2, 1989, discussing payment of \$4752 to mitigate for a planned disturbance. At the time, the applicant had proposed another waste rock disposal site of about 26 acres, but this area was never disturbed. Since the applicant has already paid for mitigation for this area but since the area was never actually disturbed, the 1989 mitigation could partially fulfill the requirement to mitigate for currently-proposed project.

Findings:

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

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in accordance with:

R645-301-333: The applicant needs to mitigate for the loss of critical deer winter range that would be disturbed by the proposed waste rock disposal area.

RECLAMATION PLAN

REVEGETATION

Regulatory Reference: R645-301-340

Analysis:

Revegetation Plan

The current mining and reclamation plan includes several commitments concerning the quality of materials that will be used for reclamation and how these materials will be handled. These commitments are very desirable and should help to ensure revegetation success.

The revegetation plan is contained in Section 3.41. Gentle slopes would be graded and ripped two-feet deep on four-foot centers after which the soil material would be applied. After analyzing the soil for fertilizer needs, the fertilizer would be applied and incorporated with a disc. Grass and forb seed would then be drilled one-half inch deep, and shrub seed would be broadcast seeded. Straw, hay, or wood fiber mulch would then be applied at the rate of two tons per acre, and the mulch would be crimped.

Steep slopes would receive about the same treatments, but they would not be ripped if the slope was too steep. Seed would be broadcast instead of part of it being drilled. Dozer tracking would be used to incorporate the seed and fertilizer.

The Division has seen many areas where leaving the soil surface very rough appears to have greatly increased vegetation establishment. Dozer tracking would probably tend to decrease surface roughness, and it is not recommended.

The applicant needs to make some changes to the seed mix for the proposed waste rock disposal area, and other changes to the revegetation plan may be needed in the future. The waste rock area is unique because the soils are presently in a valley where they may have a tendency to accumulate further soil and salt deposits. When the area is reclaimed, the

soils will be elevated, and it is hard to predict what type of vegetation community they would best support. For this reason, the applicant needs to be willing to try some different revegetation techniques on the first reclaimed section of the waste rock pile and to change the revegetation plan for future sections.

There is plenty of pinyon-juniper woodland in areas adjacent to the proposed waste rock disposal area, so it is not necessary to establish this vegetation community. It would be much better to add diversity and greater forage production. For this reason, juniper should be eliminated from the seed mix.

Galleta is one of the dominant grasses in the undisturbed area, but galleta has not established from seedlings at other reclaimed coal mines in Utah. One reason may be that most galleta seed production is in Midwestern and Southwestern states, such as New Mexico and Texas, and the ecotypes from these areas may not be adapted to Utah. In the time between initial disturbance and initial reclamation, it is recommended that the applicant or a contractor for the applicant collect galleta seed from nearby areas and use this seed either to plant directly or to grow plugs for transplanting. This would be an experiment to see if galleta can be established using these methods, and it would not necessarily need to be extensive.

Fourwing saltbush was not included in the seed mixes for any areas at the mine. It is probably adapted to all but the riparian areas. For the waste rock disposal area, this species is adapted to both moderate to high soil salt contents and to upland areas. It is also a pioneer species that is highly palatable to wildlife, and it should be included in the seed mixture.

One of the few forb species found in the area was scarlet globemallow. Seed of this species is available commercially, and it should be included in the seed mixture.

Black sage grows in the areas proposed to be disturbed, but, since the topography will be changed, it is uncertain if black sage would grow on the reclaimed refuse pile. At least one of the big sage subspecies, most likely basin big sage, would probably grow on the refuse pile. The applicant may want to add seed of black sage and mountain, Wyoming, and basin big sage to see which species will grow.

A few years after the first section of the waste rock pile is reclaimed, it will be possible to see which species in the seed mix have been successful and should be used in the next sections. Species that did not grow could then be eliminated from the seed mixture.

Rather than broadcasting the seed of all shrubs, it would be better to only broadcast the seed of certain species, such as rabbitbrush, sagebrush, and winterfat. Other species, including bitterbrush, mountain mahogany, and serviceberry, should be drill seeded. It

would also be better to broadcast some species of forbs, including blue flax, yarrow, blueleaf aster, and Rocky Mountain penstemon.

Two tons per acre of straw or hay mulch appears, from various studies, to be the optimum rate, but two tons per acre of wood fiber hydromulch is excessive. If wood fiber hydromulch is used, the rate should be reduced to about one ton per acre.

Three sets of test plots were established near the mine and at the sewage lagoons, and they were monitored periodically through 1994. The plan does not need to contain results from monitoring these plots since those results are in annual reports. However, the plan currently shows the methods that were used to establish them. In the current application, the applicant has proposed to eliminate this information, but it needs to be retained for future reference. Otherwise, much of the information gained through conducting the field trials will be lost.

Revegetation Success Standards

The application says in Section 3.41.25 that three reference areas are described in Appendices 3-A and 3-B and that these reference areas are designed to facilitate the determination of successful revegetation and resultant final bond release. Actually, Appendices 3-A and 3-B describe four reference areas including two in the vicinity of the proposed waste rock disposal area. The text of the mining and reclamation plan application does not discuss to what areas these reference areas would be compared for judging successful revegetation; however, the consultant's reports indicate the sage-grass-juniper reference area would be used for the topsoil storage area and that the pinyon-juniper reference area would be used for the waste rock disposal site.

As discussed above, it is likely the vegetation of the waste rock disposal site will be altered because the topography will be changed. The consultant's report says the site will probably revert to a pinyon-juniper community since the area will be at the same elevation as adjacent pinyon-juniper areas. This may ultimately happen, but this is not the most desirable situation. Mature pinyon-juniper communities typically provide excellent cover for wildlife but very little forage. Because there are extensive areas of pinyon-juniper habitat in the immediate vicinity, it would be much more desirable to establish vegetation comprised of desirable grasses and shrubs rather than pinyon and juniper.

The proposed pinyon juniper reference area was apparently in poor range condition when it was evaluated in 1991 by George Cook of the (then) Soil Conservation Service. The Division's Vegetation Information Guidelines, referenced for revegetation success standards in the regulations, require that reference areas be in fair or better range condition. The vegetation report shows it only had 2.70% cover from species other than pinyon and juniper,

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and no grasses were encountered in the sampling. This is not an acceptable revegetation success standard.

The sage-grass-juniper reference area is on a strip of land parallel to the pinyon-juniper reference area. It contains a relatively good diversity of shrubs, grasses, and forbs, and it appears to have been in fair condition when it was evaluated by the SCS in 1990. (It is not clear this is the reference area Mr. Cook evaluated.) This reference area would be a much better revegetation success standard.

An area where the access road would be built has historically been used for cropland, but it is now used for wildlife habitat and grazing. This area is prime farmland, but the applicant does not propose to return it to the use of cropland. Since grazing and wildlife habitat is considered the premining land use, these can be considered acceptable postmining land uses. The revegetation success standard would be the sage-grass-juniper reference area.

The Division is required to consult with State wildlife agencies and establish woody plant density success standards. The proposed refuse pile area had 2956 woody plants per acre when it was sampled in 1990, and the proposed disturbed sagebrush-grass-juniper materials storage yard, as described in the vegetation report, had 3081 individuals per acre. Based on this information and considering that these areas still had reasonably good cover from grasses and forbs, a standard of 3000 woody plants per acre is considered a reasonable standard. This needs to be shown in the plan.

Wildlife Habitat

The primary goal of reclamation will be to establish productive and useful range and wildlife habitat and to create an aesthetically acceptable site. The revegetation plan is intended to accomplish these goals.

The Division and Wildlife Resources do not consider other wildlife habitat enhancement measures to be either necessary or desirable.

Findings:

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

R645-301-341.210: The seed mix for the proposed waste rock disposal area needs to be modified. Juniper needs to be taken out of the mix. The Division recommends adding certain other species and establishment methods. The

recommends adding certain other species and establishment methods. The species include, fourwing saltbush, black sage, big sage, scarlet globemallow and galleta.

R645-301-341.220: On gentle slopes, the applicant has proposed to broadcast seed shrubs and drill seed all other species. Some of the shrubs need to be drill seeded if they are to become established, and some of the forbs should be broadcast seeded.

R645-301-341.230: Where hydromulch is used, the applicant has proposed to apply two tons per acre. This rate is excessive and should be reduced to about one ton per acre.

R645-301-341.250: The proposed pinyon-juniper reference area is not an acceptable revegetation success standard. The applicant needs to propose another success standard, such as the sage-grass-juniper reference area.

R645-301-341.250: The application needs to include the woody plant density success standard of 3000 per acre established by the Division and Wildlife Resources.

R645-301-341.300: The current mining and reclamation plan contains information about the methods that were used to establish the test plots near the main mine site and at the sewage lagoons. The applicant has proposed to delete this information from the plan, but it needs to be retained.

LAND USE RECLAMATION PLAN

Regulatory Reference: R645-301-412

Analysis:

The applicant proposes to return the land to its premining land uses of rangeland, wildlife habitat, and recreational use. No alternative postmining land uses are proposed.

Findings:

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

RECOMMENDATIONS:

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Prior to approval, the applicant needs to meet the requirements discussed in this memorandum.