

Glen A. Zumwalt  
Vice President and  
General Manager



**Utah Fuel  
Company**

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Subsidiary of  
Coastal States  
Energy Company

November 16, 1983

Mr. James W. Smith  
Coordinator of Mined Land Development  
UTAH DIVISION OF OIL, GAS & MINING  
4241 State Office Building  
Salt Lake City, UT 84114

Re: Scofield Rock Waste Disposal Site

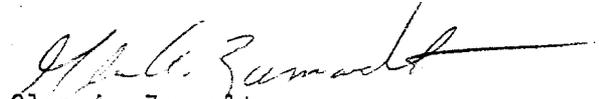
Dear Mr. Smith:

Enclosed herewith please find 13 copies of the amended permit application for the Scofield Rock Waste Disposal Site. The amended application incorporates our responses to the questions and requests for additional information in your letter of July 2, 1982. The responses to each point in the July 2 letter are also submitted as an attachment to permit application.

We appreciate the considerable effort expended by your staff in our arriving at this amended permit application. We feel that the disposal site will be a model facility which can ultimately only improve the considerably-disturbed area.

Though the construction season is nearly over, we would appreciate a speedy review of the submittal.

Sincerely,

  
Glen A. Zumwalt  
Vice President & General Manager

GAZ:jsg

Enclosure

**RECEIVED**  
NOV 16 1983

**DIVISION OF  
OIL, GAS & MINING**

3

A P P L I C A T I O N

SCOFIELD ROCK WASTE DISPOSAL SITE

COASTAL STATES ENERGY COMPANY  
GETTY MINING COMPANY

**RECEIVED**

NOV 16 1983

**DIVISION OF  
OIL, GAS & MINING**

November 1982

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PLAN FOR DISPOSAL OF ROCK WASTE  
SKYLINE MINE

I. INTRODUCTION

Coastal States Energy Company ("Coastal") proposes to develop a rock waste disposal site at a location southeast of Scofield, Utah and approximately 3.6 air miles from the Skyline mine site (Map 1). The proposed rock waste disposal site is an abandoned strip mine pit which is accessed by an existing road which will be upgraded (see Maps 1 and 2). The facility is required for the disposal of rock wastes to be generated from the Skyline Mines during the mines' developmental and operational phases. Coastal believes that the proposed site is the best available for disposal of these wastes because of the pre-existing condition of the site, the potential for enhancing a previously degraded area and the availability of adequate space for such disposal.

Coastal proposes to haul the rock wastes by truck from the Skyline mine site (portal area) and the unit train loadout facility to the waste disposal area. An operation plan has been developed as part of this application in order to establish proper techniques for disposal of the rock waste. A reclamation plan is also incorporated to provide satisfactory final reclamation. The disposal site has been designed to facilitate proper management and operation of the overall disposal process as well as successful reclamation and revegetation. No sanitary waste will be disposed of at the site.

The proposed rock disposal site and access road are located upon land owned by the Estate of George Telonis. The legal right of access and use of the lands for the disposal of rock waste has been granted to Coastal by the heirs of the Estate in a lease effective January 1, 1982 and expiring,

unless renewed, on December 31, 2011 (photocopy of lease attached as Exhibit 1). The lands referred to in the lease include a 7.00 acre right-of-way for the disposal site access road and a 17.83 area tract of land containing the proposed rock waste disposal site. The legal description of the leased lands is:

A. Access Road

A right-of-way for the purpose of maintaining a road over a strip of land 100 feet wide over a portion of the East half of Section 5, Township 13 South, Range 7 East, and a portion of the West half of Section 4, Township 13 South, Range 7 East, Salt Lake Base and Meridian, in the County of Carbon, State of Utah, the center line of which is described as follows:

Commencing at the found stone of the Northeast corner of Section 5; thence South 582.76 feet and West 1228.10 feet to the point of beginning; thence North 37° 25' 46" East 350.00 feet; thence North 79° 06' 42" East 100.00 feet; thence South 16° 40' 44" East 100.00 feet; thence South 40° 19' 44" East 500.00 feet; thence South 29° 23' 14" East 600.00 feet; thence South 14° 29' 44" East 100.00 feet; thence South 39° 11' 14" East 311.76 feet; thence South 84° 53' 29" East 100.00 feet; thence North 79° 55' 31" East 500.00 feet. The side lines of said right-of-way to be prolonged or shortened to meet at angle-point intersections and at the East line of Section 5.

The bearings in the above description are based on the Utah State Plane Coordinate System, Central Zone.

B. Disposal Site

A tract of land located in Section 4, Township 13 South, Range 7 East, Salt Lake Base and Meridian, Carbon County, Utah, being further described as follows:

Commencing at the Northwest corner of said section; thence South 0° 00' 04" East (basis of bearing taken from Utah State Plane Coordinate System) a distance of 1603.39 feet along the West line of said section to the Northerly Right-of-Way line of a road; thence South 39° 22' 14" East a distance of 337.81 feet along said North Right-of-Way line to the point of beginning; thence North 79° 18' 09" East a distance of 320.00 feet; thence South 41° 33' 38" West a distance of 1273.99 feet; thence North 19° 32' West a distance of 1060.85 feet to the Southerly Right-of-Way line of said road; thence the following 6 coarses along said Right-of-Way line, South 84° 53' 29" East a distance of 127.64 feet; thence North 79° 55' 31" East a distance of 506.66 feet; thence North 10° 04' 29" West a distance of 100.00 feet; thence South 79° 55' 31" West a distance of 493.34 feet; thence North 39° 22' 14" West a distance of 13.76 feet to the point of beginning.

The proposed site and access road are part of a larger area previously disturbed by surface and underground mining and never reclaimed. Coastal believes that a properly designed and operated facility will not further degradate the environmental state of the area, but, rather, will by way of backfilling the abandoned strip pit, grading, seeding and other reclamation techniques greatly improve a portion of the previously-disturbed area.

Reports have been prepared for Coastal (presented in Appendix 2) detailing the existing vegetation and soils of the area to be affected by the proposed disposal. The premining land use of the disposal site area is assumed to have been for native rangeland. Since the previous mining activity left the area in very poor condition, the existing baseline information is of little use in establishing reclamation goals for determining the success of reclamation efforts. Portions of the surface to be affected have been used for grazing after abandonment of the strip pit, although the pre-existing conditions (lack of reclamation and underground coal fires) have greatly reduced the area's potential for grazing or for any other use.

Investigations as to potential cultural resources within the area to be affected and the adjacent areas have been conducted. Results of these investigations are presented as Appendix 3. Results of the cultural resource investigation were transmitted to the State of Utah Historical Preservation Office (SHPO) concurrently with a request for approval, which was granted on November 12, 1981 (Appendix 3).

No aquatic resource inventories have been prepared due to the intermittent flows of water in the study area. Water is present only for the very brief periods during and immediately following precipitation events and/or during spring runoff.

The climate of the study area is similar to that described for the lower elevations of the Skyline permit area. No additional monitoring is proposed.

Two previously drilled exploratory holes in the general area of the proposed disposal site provide the basis of the available geological information (see Appendix 4). Map 1 presents the location of the exploratory holes in relation to the area to be affected.

## II. DESCRIPTION OF SITE

The general location of the waste disposal site is shown on the USGS 7-1/2 minute Scofield quadrangle map (Map 1). The land to be affected by the disposal of rock waste is located in the SW $\frac{1}{4}$  of the NW $\frac{1}{4}$  of Section 4, Township 13 South, Range 7 East, Carbon County, Utah. The Estate of George Telonis owns the surface of the lands to be affected and the Western Reserve Coal Company owns the minerals in the subject lands and adjacent areas. Mining in the coal seams beneath and adjacent to the abandoned strip pit is extremely unlikely due to variable seam thickness, seam pinchouts, and coal fires in one of the abandoned underground mines adjacent to the site. In addition, the coal seams are terminated to the East by large displacement faulting and terminated to the West by faulting and erosion. The above factors effectively sterilize any unmined coal beneath or adjacent to the proposed site.

The Applicant plans to use the rock disposal site to dispose of underground rock waste produced during mining operations which cannot be permanently stored underground due to either the lack of adequate storage room or the content of coal exceeding the limits specified in 30 CFR:75.400 through 30 CRF:75.403 which require that combustible content of the dust on the roof, ribs or floor of an underground coal mine not exceed 35 percent in intake air and 20 percent in return air. The volume of material which must be disposed of at a surface disposal site will be limited to a very small fraction of the total rock waste produced because of the large volume of potential underground rock waste storage areas which result from mining

coal. The economics of loading, hauling, and disposing of rock waste at any point other than underground effectively mitigate against the extensive use of a surface rock waste storage site.

The most likely sources of rock which might be disposed of at the proposed site include rock produced during fault crossing and igneous dike rock encountered during mining. Portal face-up work is essentially completed and would not be a likely source of material to be stored at the proposed site. Ancient stream channels are infrequently of sufficient magnitude that they cannot be stored underground adjacent to the place they are encountered.

The roof and floor rock for the three mineable Skyline coal seams is estimated to be comprised of 60 percent sandstone, 30 percent shale, and 10 percent claystone. The igneous dike rock varies in composition but is essentially comprised of 100 percent ferromagnesian minerals. The majority of dike rock which would require surface disposal appears very similar to basalt and is very durable being extremely resistant to weathering. The volumetric swell factor for the igneous and sedimentary rock is estimated to be 30 percent.

The proposed site is estimated to have a storage volume of 131,000 cubic yards which the Applicant considers adequate to contain the rock waste requiring outside disposal during the life of the operation. Alternate storage sites have not been considered.

The Applicant estimates that approximately 1600 tons or 1,077 cubic yards (at 110 lb./cubic ft. density) per year of rock will be disposed of at the proposed site.

The proposed rock waste disposal site is unique in that it is an abandoned strip pit which, as can be seen in Map No. 3, has a narrower entrance than the main body of the pit. The configuration of the pit and

the requirements of 30 CFR:77.215(h) which require that refuse be disposed of in compacted layers not exceeding two feet in thickness will, in combination with the operational necessity of operating heavy vehicles on the fill, lead to a very stable fill.

General Geology of the Proposed Rock Disposal Site

The coal-bearing Blackhawk Formation makes up the surface of the proposed rock disposal site. This formation consists of alternating, laterally discontinuous layers of sandstone, siltstone, shale and coal. Only occasional sandstone ledges are exposed at the surface of the proposed site, with the remaining surface being covered with up to 20 feet of soil and weathered rock debris.

Two mineable coal seams occur beneath the site, including the Upper and Lower O'Connor seams. The pertinent data for these coal beds is as follows:

<u>Coal Bed</u>	<u>Thickness</u>	<u>Depth Below Surface</u>
Upper O'Connor	8.0'	45'
Lower O'Connor	18.0'	130'

Four faults of undetermined displacement have been mapped near the proposed site. These faults are generally north-south trending and have acted as local barriers to mining in coal mines near the site.

Conversations with Mr. Frank Helsten of Scofield, Utah, on September 17, 1981, and May 17, 1982, revealed that the strip mining work was done from 1948 to 1950. Mr. Helsten was the shot hole driller and indicated that no abandoned underground workings were intercepted when drilling the seam lying 45 feet beneath the floor of the pit. Mining of the below-lying seam was planned but not accomplished due to economic conditions at the time.

No hydrologic information is available for the quality and quantity of the ground water of the area due to the existence of coal fires. Coastal believes that the proper sealing of the rock waste containment area, as

outlined in the Development and Operations Plan, will prevent the communication of any accidental ignitions of the rock/coal waste into the adjacent coal seams, thereby eliminating degradation of the ground water resources beyond the effects of the existing underground coal fires.

No surface water information is presented herein due to the intermittent surface water flows in the disposal site area. Coastal proposes to redirect any surface runoff waters around the site (see Development and Operations Plan) into the original pre-strip mining drainage system in order to prevent contamination of the surface runoff by the disposal activities. Coastal will also contain all runoff water from within the area to be affected in a catchment basin. Therefore, no surface water will discharge from within the disposal site.

### III. DEVELOPMENT AND OPERATIONS PLAN

#### Site Development

The development of the proposed rock disposal site will require upgrading the existing unpaved access road to the abandoned pit as well as the development work required to convert the abandoned strip pit into a disposal site.

##### A. Access Road

The access road to the proposed disposal site will follow the alignment of the existing unimproved access road shown on Map 2. Approximately 3,158 feet of the unimproved pre-existing road will be upgraded to comply with the standards set forth for Class II roads in UMC 817.160 to 817.164, inclusive. The gravelled surface road will be approximately 16 feet wide, upon completion of the road. A temporary gravelled road will be developed using a bulldozer and grader. The temporary road will comply with all standards of UMC 817.160 to 818.167, including 817.162(c) as to temporary erosion control. A cross section of the upgraded road is presented in Figure 1. Following grading, sufficient

locally-derived gravel will be spread uniformly to provide a layer four inches thick.

Near-surface portions of the UP coal seams which were mined and then burned have subsided at the intersection of entries. Other areas have developed subsidence cracks which transfer the coal fire combustion products to the surface, generally leaving coal-like condensates which are readily apparent in field examinations. No evidence of subsidence or of coal fires has been observed under or within ten or more feet from either side of the existing road. The anticipated infrequent need to use the rock waste disposal site once there is sufficient underground development for the material to be permanently stored underground will minimize the potential for subsidence due to truck traffic over the road. Truck drivers will be trained to look for the surface evidence of subsidence and, should subsidence occur, good engineering practices will be employed in backfilling depressions and compacting the subsided area. A subsidence monitoring program is not needed due to the absence of current mining and the inferred low density of underground development beneath the access road alignment.

B. Disposal Site

The preparation of the proposed disposal site will entail:

1. Emplacement of drainage controls to redirect surface waters around the site and into the original, pre-strip mining drainage system.
2. The emplacement of non-combustible fill material to form a barrier across the floor and along the walls of the abandoned strip pit where coal seams were exposed during prior mining activities.
3. The construction of a fence and gate to control access to the disposal site.

The present course of the drainage from the canyon to the east of the abandoned strip pit will be re-routed around the abandoned strip pit in order to redirect the flow into the original stream course, and, therefore, around rather than into the proposed disposal site. An open channel and dip will be used to redirect the water flow (Maps 2 and 3).

The dip to redirect the drainage across the access road and into the original stream channel will be rip-rapped with a blanket of reasonably well-graded, hard, durable native rock, approximately 4" x 4" or larger in size, compacted in a layer approximately two feet deep and no less than 30 feet wide. The surface of the rip-rap blanket will be graded such that water will be directed into the original stream channel to the south of the road.

Calculations of the 10-year 24-hour precipitation event flow and the design of the channel are presented in Appendix 5.

The compacted non-combustible fill will be emplaced along the floor and walls of the pit in order to isolate the coal seams in the highwall from the material to be disposed of in the pit. Approximately two feet of compacted material will be placed on the floor and three feet along the wall, where required. The material to isolate exposed coal seams along the walls will be built up and compacted in lifts during normal rock disposal operations after an initial 3 to 4 feet high barrier is constructed. Drainage onto the floor of the pit will be directed to a pre-existing sump at the east end of the abandoned strip pit (Map 3). Cross sections through the pit and sump are shown in Maps 4 and 5. A fence and gate will be installed in order to prevent unauthorized access to the rock disposal site (Map 3).

There are two locations in the pit where coal is exposed. These exposures of the coal seam are shown in Map 3. The exposure in the west end of the pit will require sealing before any dumping of waste is undertaken. The initial 3 to 4 feet high barrier will be built-up of incombustible

material and will be obtained from the slope detritus along the highwall. The material will be dumped alongside and on top of the coal and compacted to form the barrier between the exposed coal and material to be dumped.

The second location where coal is exposed is in the extreme east end of the pit in the highwall. This location will probably never require sealing since the pit will not reach the location upon attaining final fill configuration (Map 6).

### Operations Plan

#### A. Access Road

During operations the access road will be maintained using a road grader and any other equipment which may be necessary to ensure compliance with the requirements of UMC 817.165. Drainage ditches and dips will be maintained to ensure proper functioning. Additional gravel will be selectively placed as required to ensure approximately four inches of road base gravel on the road.

Accidental spillage of rock waste during haulage from the minesite to the disposal site will be minimized by not overloading the haulage trucks. Accidental spills, if they occur, will be cleaned up by shoveling the material into a truck and transporting the materials to the disposal site within 24 hours after the accidental spill occurred.

#### B. Disposal Site

The underground development waste rock and excess fill material from the unit train loadout area will be emplaced and compacted in layers not exceeding two feet in thickness. A bulldozer will be used to level, grade and compact the material. As layers of compacted material are added to the floor of the pit, the three-foot thick non-combustible barrier where required to isolate any exposed coal seams, will be added.

The compacted layers of fill will be sloped at an angle 2 - 3% to the east in order to direct any drainage from the pit floor into the sump at the east end of the pit. The sump will be pumped out if filled and the water will be hauled to the loadout sedimentation pond.

#### IV. RECLAMATION PLAN

Reclamation activities will be conducted on portions of the affected areas as those portions are filled to design capacity. The final contours of the rock disposal site are presented in Map 6. The disturbed area affected by the disposal operation will, at the request of the property owner's representative, be leveled off and reclaimed to native rangeland for subsequent use as a corral (Exhibit 2). A revegetation plan has been prepared for Coastal by Stanley T. Welsh of Endangered Plant Studies, Inc., and is presented as Appendix 1.

Coastal proposes to perform the revegetation of the waste disposal area in successive stages with a stage representing the portions of the site that have been filled to design capacity. When a stage is completely full, that area will be graded and topsoil will be placed over the waste rock. At least one foot of topsoil derived from aspen or sagebrush vegetative type areas will be placed on the fill area. The soil will be brought into the disposal site from other areas, e.g. unit train loadout or mine site stockpiles, since previous mining activity has rendered none available at the site.

Topsoil will be applied to the final layer of moderately-compacted rock waste material. Typically, the rock waste which will be disposed of in the pit consists of 36.0 percent less than 1/4 x 0 inch material and 28.6 percent between 1 x 1/2 and 1/2 x 1/2 inch (Exhibit 3). Therefore, the loss of topsoil into the pore space of the fill should not be a problem. The

moderately-compacted final layer of fill should not, on the other hand, be an impermeable barrier which will redirect drainage.

The results of revegetation work at the Skyline Mine suggests that 12 inches of topsoil will be adequate for the proposed rock waste disposal site.

The soil will be spread in a manner to provide a roughened surface so that seed and mulch can remain during germination and initial growth of the seedlings. Raking the surface prior to planting seeds will provide the necessary roughened surface.

Revegetation will be accomplished by the orderly placement, scarification of the topsoil, and seeding during the late fall.

The potential for upward migration of salts is unknown. The Applicant will analyze for electrical conductivity, sodium content, and sodium absorption ratio prior to revegetation efforts. Fertilizer will be applied at the rate of 100 pounds of available nitrogen per acre.

Fertilizer rates may change after the soils analyses of the topsoil are completed. The consultant has recommended that wood fiber mulch be used; hence, nitrogen consumption due to microbial breakdown has not been considered. The Applicant's consultant has stated that phosphorous and potassium concentration based upon Skyline's data, should be adequate in the aspen soils and, therefore, since the topsoil will be an aspen type, no potassium or phosphorous is recommended. The Applicant plans to test the topsoil before it is seeded to determine the type and amount of fertilizer or neutrilizer required. The soils analyses will determine the following components: (a) micro-nutrients, (b) potassium, (c) calcium (d) magnesium, (e) phosphorus, (f) nitrogen, (g) soil pH and salinity, and (h) soil texture.

Handwritten note: \* complete w/ proposal 20 (150 lbs)

The species to be planted and the rates per acre are as follows:

<u>Species</u>	<u>lbs./acre</u>
Bluebunch wheatgrass ( <u>Agropyron spicatum</u> )	3

Kentucky bluegrass ( <u>Poa pratensis</u> )	1
Western wheatgrass ( <u>Agropyron smithii</u> )	4
Mountain brome ( <u>Bromus carinatus</u> )	3
Blue penstemon ( <u>Penstemon strictus</u> )	1/4
Blue flax ( <u>Linum perenne</u> )	1/4
Cicer milkvetch ( <u>Astragalus cicer</u> )	1/4
Alfalfa ( <u>Medicago sativa</u> )	1
Yellow sweetclover ( <u>Melilotus officianalis</u> )	1
Yarrow ( <u>Achillea millefolium</u> )	1/4
Rubber rabbitbrush ( <u>Chrysothamnus nauseosus</u> )	2
Big sagebrush ( <u>Artemisia tridentata</u> )	2
Total	18

(Pounds per acre are in pure live seed)

The seeds will be sown by hand (broadcast) and a fiber mulch will be placed atop the seeded surface at a rate of 1000 pounds per acre. No fiber matting will be used since all slopes are expected to be either flat or less than 1.5h:1v. Revegetation success will be evaluated by the procedures described in the addendum to Appendix 1. Grazing management and weed control practices are described in the addendum to Appendix 1. All ditches and retaining walls will be maintained until the vegetation success standards of UMC 817.111 - 817.117 are met. No reclamation is planned for the access roadway at the request of the property owner's representative (Exhibit 2).

#### V. RECLAMATION BOND

There will be a total of 5.0 acres directly affected or disturbed by the upgraded access road and proposed rock waste disposal site. The total of 5.0 acres include 2.7 acres for the access road and 2.3 acres for the disposal site.

These acreages are an estimate of the lands to be disturbed or otherwise affected by the road, including cut and fill slopes and the disposal site including the drainage diversion area. These are a total of 24.83 acres leased by Coastal including 7.0 acres for the access road and 17.83

acres for the site.

The property owner's representative requested (Exhibit 2) that the access road not be reclaimed and, therefore, the Applicant will bond only for the reclamation of the 2.3 acres of land to be affected at the disposal site.

Calculation of the Amount of the Bond

The disturbed acreage to be reclaimed will be approximately 2.3 acres. The calculation of the bond amount in 1979 dollars is as follows:

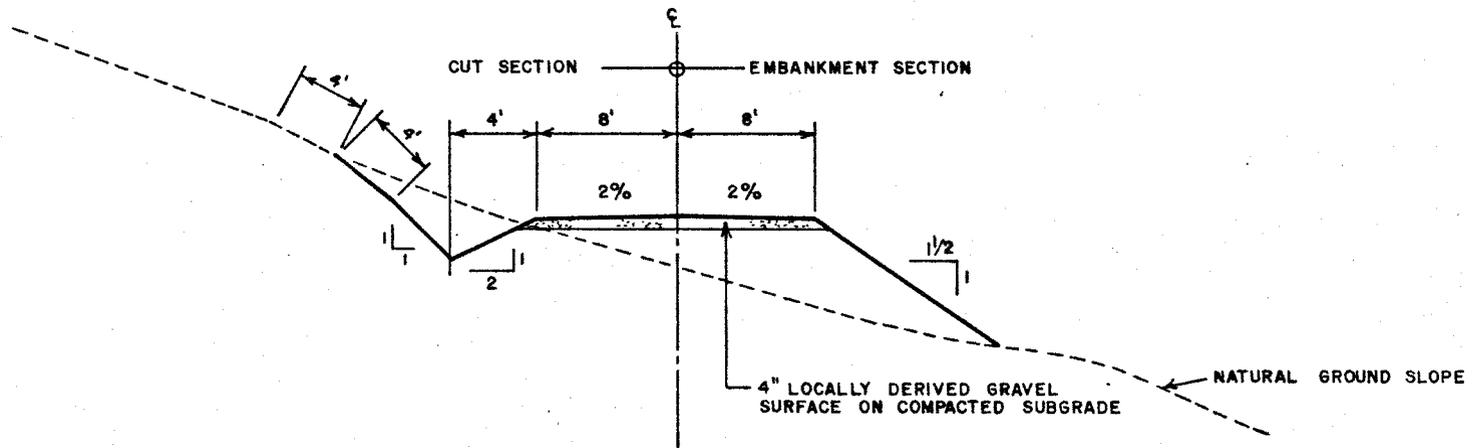
Ripping	2.3 acres x \$2,000 per acre	\$4,600
Topsoil Addition	2.3 acres x \$2,200 per acre	5,060
Fertilization	2.3 acres x \$300 per acre	690
Seeding	2.3 acres x \$500 per acre	1,150
Moisture Retention	2.3 acres x \$1,000 per acre	2,300
Maintenance and Monitoring	2.3 acres x \$1,000 per acre	<u>2,300</u>
	Total	\$16,100

An inflation factor of 8 percent is assumed. The inflated cost of reclamation when the rock disposal site permit is renewed in 1988 is, therefore, approximately \$32,200 ( $1.08^9 \times 16,100 = \$32,184$ ).

The inflated cost of reclamation at the time of permit renewal in 1988 is \$32,200. A bond in this amount will be obtained upon notification of conditional approval of the permit application.

Coastal's obligation is to cover reclamation responsibilities in relation to the areas to be affected at the rock waste disposal site. Coastal's obligations, however, are not to include liabilities arising from the pre-existing conditions of the property, e.g. the effects of the coal fires upon the affected or adjacent lands, or the lack of the reclamation of the highwalls at adjacent disturbed areas left by previous surface mining which may remain following completion of Coastal's rock waste disposal activities.

ACCESS ROAD - TYPICAL SECTION



ROCK DISPOSAL SITE ACCESS ROAD  
TYPICAL SECTION

UTAH FUEL CO.		
ROAD TYPICAL SECTION		
DESIGNED BY: G. KENZY	DATE: 5 - 82	CI4A002
DRAWN BY: G. R. PETERSON	SCALE: 1" = 8'	FIGURE #1

Exhibit 1

LEASE AGREEMENT

This Lease ("Lease") made and entered into this 10th day of June, 1982, but effective as of January 1, 1982, by and among FOTINI TELONIS, ANGELO G. TELONIS, THOMAS G. TELONIS and JOHN G. TELONIS, by and through their attorneys-in-fact, ANGELO GEORGEDES, STEVE J. DIAMANTI and LUKE G. PAPPAS, P. O. Box AD, Price, Utah 84501 ("Lessors"), and COASTAL STATES ENERGY COMPANY ("Coastal"), a Texas corporation, with offices at Nine Greenway Plaza, Houston, Texas 77046, and GETTY MINING COMPANY ("Getty"), a Delaware corporation with offices at 5250 South 300 West, Salt Lake City, Utah 84107, as tenants in common (Coastal and Getty are the "Lessee"),

WITNESSETH:

1. GRANT. Lessors for and in consideration of the rents, covenants, and promises hereinafter mentioned and reserved to be paid, kept and performed by Lessee, its successors and assigns, have demised, leased and let, and by these presents do hereby demise, lease and let unto Lessee, and Lessee does hereby rent and accept from Lessors, all those certain premises ("the leased premises") situate, lying and being in the County of Carbon, State of Utah, designated and particularly described on Schedule A hereunto attached and by this reference made a part hereof. Reserving, however, unto the Lessors, all of the oil, gas and other minerals, in and under the leased premises, but releasing and waiving all rights of ingress and egress over and upon the leased premises for the purpose of exploring, developing, mining, drilling or extracting the same.

2. TERM. This Lease shall be for a term of thirty (30) consecutive years from January 1, 1982 through December 31, 2011, and continuing for each year thereafter so long as Lessee, or its assigns, has need for use of the leased premises.

3. RENTAL. Lessee agrees to pay to Lessors as rental for the use and occupancy of the leased premises the sum of Two Thousand Dollars (\$2,000.00) per year, the payment for the first year upon execution of this Lease by Lessors, and thereafter payable annually in advance. All rents herein reserved shall be tendered to Angelo Georgeades at the address set forth in Section 18, or at any other place designated by Lessors pursuant to Section 18 and tender of payment to Angelo Georgeades shall constitute full payment of rent hereunder and relieve Lessee of any liability for ownership or distribution of such rental among Lessors.

4. ESCALATION. On January 1, 1985, and each two (2) years thereafter that this Lease is in effect, the annual rental rate specified herein shall be adjusted in the same proportion that the "Consumer Price Index", as published by the United States Department of Labor (1967 = 100), has changed for the month of September in the previous calendar year from such index for the month of January, 1982, which latter index is the "Base Index", and such adjusted rental rate shall apply for the following two (2) years; provided, however, that the rental rate specified herein shall never be less than \$2,000.00 per year.

5. USE OF PREMISES. Lessee shall have the right to use the leased premises for the purpose of disposing of rock, materials, ordinary trash and any other waste or refuse by landfill or any other disposal methods. Lessee agrees to dispose of all such waste and refuse in accordance with applicable rules and regulations imposed by county, state and federal regulatory agencies.

6. LESSEE MAY FENCE. Lessee may fence the leased premises and construct gates or, at Lessee's option, may install cattleguards where necessary for crossing fenced land in connection with Lessee's operations conducted thereon and shall thereafter keep such gates, fences and/or cattleguards in good repair and all gates closed at all times. The cost and expense of constructing and maintaining the fence, gates and/or cattleguards shall be borne by Lessee.

7. QUIET ENJOYMENT. Lessors covenant and agree that Lessee, on paying the rent and other charges herein reserved and upon observing and keeping the covenants, conditions and terms of this Lease on Lessee's part to be kept or performed, shall lawfully and quietly hold, occupy and enjoy the leased premises during the term of this Lease without hindrance or molestation of Lessors or any persons claiming by or under Lessors, except such portion of the leased premises, if any, as may, in the future, be taken under the power of eminent domain.

8. ACCESS ROAD. Lessors grant unto Lessee a right-of-way for purposes of ingress and egress to and from the leased premises across the lands described in Schedule B hereunto attached and by this reference made a part hereof. Lessee shall have the right, at all times hereunder, to construct, maintain and use access roads on the right-of-way as required to travel to and from the leased premises.

9. SURRENDER OF PREMISES. Lessee shall, at the termination of this Lease, for whatever cause, vacate the leased premises in a reasonably good condition and state of repair, except for reasonable use and wear thereof, acts of God, or damage by casualty beyond the control of Lessee. All rock, materials, waste and refuse deposited on the leased premises

shall remain on the leased premises. Lessors hereby agree to accept the leased premises with such rock, materials, waste and refuse and hereby grant Lessee rights of ingress and egress and such other rights as Lessee may need after termination of this Lease to satisfy its reclamation obligations arising before or after termination of this Lease under its applicable federal, state or local permits.

10. LIMIT ON LIABILITY. Lessee shall have no obligation, responsibility or liability with respect to the existing highwall or with respect to fires in or upon the leased premises. Upon termination of this Lease, Lessee shall have no further duty to make annual rental payments to Lessors.

11. DEFAULT. If the rent herein reserved, or any part thereof, is not paid when due and shall remain unpaid for a period of thirty (30) consecutive days after notice thereof in writing, or if Lessee shall fail, in good faith, to promptly perform any other covenant, condition or agreement by it to be performed hereunder and such failure shall continue for a period of ninety (90) consecutive days after such notice in writing, specifying the nature of such failure, or if Lessee abandons the leased premises, then, in any such event, Lessee shall be deemed to be in default, and Lessors, without further notice, may, at their option, re-enter and take possession of the leased premises and pursue all remedies available to them under the law, including the re-letting thereof, and Lessee shall be responsible for and pay any deficiency.

12. RIGHT TO TERMINATE. Lessors, in addition to their rights under paragraph 11, may terminate on December 31, 2011, or on any December 31 thereafter upon the giving of not less than twelve (12) months prior written notice. Lessee may terminate on December 31, 2011, or on any December 31 thereafter, or at such earlier time as the leased premises have been used and reclaimed to the extent allowed by governmental permits issued with respect to Lessee's use of the leased premises, or at such time as Lessee permanently terminates its mining operations at its Skyline Mine, provided that Lessee gives Lessors not less than twelve (12) months prior written notice. Lessee, at its option, shall also have the right to terminate this Lease at any time prior to June 30, 1983, unless prior to such time it has received all permits from governmental agencies necessary for it to use the leased premises for the purposes above set forth in paragraph 5, provided however, that all rental theretofore paid to Lessors shall be retained by Lessors.

13. AMENDMENTS TO BE IN WRITING. This Lease may be modified or amended only by a writing duly authorized and executed by Lessors and Lessee and may not be amended or modified by oral agreements or understandings between the parties.

14. LEASE BINDING ON SUCCESSORS AND ASSIGNS. The covenants and agreements contained in this Lease shall be binding on the parties hereto and on their respective heirs, successors, executors, administrators and assigns, provided, however, that no assignment by Lessee of its interests hereunder shall operate to relieve Lessee from its primary obligations to Lessors hereunder unless Lessors shall, in writing, expressly release Lessee from its obligations and covenants hereunder.

15. ASSIGNMENT. Either party hereto shall have the right to assign this Lease in whole or in part, subject however the provisions of paragraph 14.

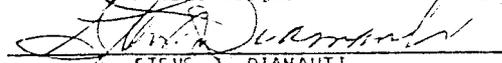
16. APPLICABLE LAW. Utah law shall be used in interpreting this Lease and in determining the rights of the respective parties hereto.

17. HEADINGS FOR CONVENIENCE ONLY. The headings used herein are for convenience and shall not be resorted to for purposes of interpretation or construction hereof.

18. PAYMENTS AND NOTICES. Lessors hereby designate Angelo Georgedes as their representative hereunder, and Lessee hereby designates Coastal as its representative hereunder, for all purposes including, but not limited to, the giving and receiving of notices and payments hereunder. The address of Lessors' representative is P.O. Box AD, Price, Utah 84501, and the address of Lessee's representative is Nine Greenway Plaza, Houston, Texas 77046. Lessors may change their representative by notice to Lessee signed by all of the persons or their legal representatives and Lessee may change its representative by notice to Lessors signed by Coastal and Getty. Notwithstanding the death of any of Lessors and/or their representative, the tender of payment and/or notices to Lessors' representative shall be binding upon the successors, heirs, devisees, executors, and administrators of such persons. Changes in addresses and/or representatives shall not become effective until fifteen (15) days after the party to be notified receives such notice. All notices shall be in writing and shall be either personally delivered or sent by certified mail, postage prepaid, return receipt requested.

19. ENTIRE AGREEMENT. This Lease constitutes the entire agreement between the parties and supersedes any other written or oral agreements or understanding between the parties concerning the subject matter hereof.

LESSORS:  
By their attorneys-in-fact

  
ANGELO GEORGE DES  
  
STEVE J. DIAMANTI  
  
LUKE G. PAPPAS

ATTEST:

Robert Klumpp  
Asst. Secretary

ATTEST:

\_\_\_\_\_

D/83-S/4

LESSEE:

COASTAL STATES ENERGY COMPANY

BY Louis A. Williams  
Vice President



GETTY MINING COMPANY

BY [Signature]

THE STATE OF UTAH :

COUNTY OF CARBON :

On the 27<sup>th</sup> day of July, A.D., 1982, personally appeared before me ANGELO GEORGEDES, and LUKE G. PAPPAS, two of the signers of the above instrument, who duly acknowledged to me that they executed the same as attorneys-in-fact.

My Commission Expires:

10-19-83

[Signature]  
Notary Public  
Residing at [Address]

THE STATE OF ARIZONA :

COUNTY OF COCONINO:

On the 30 day of July, A.D., 1982, personally appeared before me STEVE J. DIAMANTI, the signer of the above instrument, who duly acknowledged to me that he executed the same as attorney-in-fact.

My Commission Expires:

My Commission Expires Jan. 5, 1986

[Signature]  
Notary Public  
Residing at [Address]

THE STATE OF TEXAS :

COUNTY OF HARRIS :

On the 17<sup>th</sup> day of August, A.D., 1982, personally appeared before me [Signature], who being by me duly sworn, did say that he is Vice President of COASTAL STATES ENERGY COMPANY, and that above instrument was signed in behalf of the corporation by authority of its Board of Directors, and he further acknowledged to me that the corporation executed the same.

Witness my hand and official seal.

[Signature]  
Notary Public for the State of Texas  
Residing at: [Address]  
My commission expires: \_\_\_\_\_

[Signature]  
My Commission Expires  
July 17, 1985

THE STATE OF UTAH :

COUNTY OF SALT LAKE :

On the 27<sup>th</sup> day of September, A.D., 1982, personally appeared before me [Signature], who being by me duly sworn, did say that he is [Signature] of GETTY MINING COMPANY, a Delaware corporation, and that the above instrument was signed in behalf of the corporation by authority of its Board of Directors, and he further acknowledged to me that the corporation executed the same.

Witness my hand and official seal.

[Signature]  
Notary Public for the State of Utah  
Residing at: [Address]  
My commission expires: [Date]

SCHEDULE "A"

---

A tract of land located in Section 4, Township 13 South, Range 7 East, Salt Lake Base and Meridian, Carbon County, Utah, being further described as follows: Commencing at the Northwest corner of said section;

thence South 0 degrees 00' 4" East (basis of bearing taken from Utah State Plane Coordinate System), a distance of 1603.39 feet along the West line of said section to the Northerly right-of-way line of a road;

thence South 39 degrees 22' 14" East a distance of 337.81 feet along said North right-of-way line to the point of beginning;

thence North 79 degrees 55' 31" East a distance of 834.50 feet;

thence South 76 degrees 16' 09" East a distance of 320.00 feet;

thence South 6 degrees 30' 20" East a distance of 224.51 feet;

thence South 41 degrees 33' 38" West a distance of 1273.99 feet;

thence North 19 degrees 32' West a distance of 1060.85 feet to the Southerly right-of-way line of said road;

thence the following 6 courses along said right-of-way line South 84 degrees 53' 29" East a distance of 127.64 feet;

thence North 79 derees 55' 31" East a distance of 506.66 feet;

thence North 10 degrees 04' 29" West of a distance of 100.00 feet;

thence South 79 degrees 55' 31" West a distance of 493.34 feet;

thence North 84 degrees 53' 29" West a distance of 72.36 feet;

thence North 39 degrees 22' 14" West a distance of 13.76 feet to the point of beginning, containing 17.83

acres.

SCHEDULE "B"

A right-of-way for the purpose of maintaining a road over a strip of land 100 feet wide over a portion of the East half of Section 5, Township 13 South, Range 7 East and a portion of the West half of Section 4, Township 13 South, Range 7 East, Salt Lake Base and Meridian, in the County of Carbon, State of Utah, the center line which is described as follows:

Commencing at the found stone of the Northeast corner of Section 5:

thence South 582.76 feet and West 1228.10 feet to the point of beginning;

thence North 37 degrees 15' 46" East 350.00 feet;

thence North 7° degrees 06' 31" East 100.00 feet;

thence South 16 degrees 40' 44" East 100.00 feet;

thence South 40 degrees 19' 44" East 500.00 feet;

thence South 29 degrees 23' 14" East 600.00 feet;

thence South 14 degrees 29' 44" East 100.00 feet;

thence South 39 degrees 22' 14" East 388.24 feet to a point on the East line of Section 5 from which

point the Northeast corner of said Section bears North 0 degrees 00' 04" West 1682.02 feet;

thence South 39 degrees 22' 14" East 311.76 feet;

thence South 84 degrees 53' 29" East 100 feet;

thence North 7° degrees 55' 31" East 500 feet. The

side lines of said right-of-way to be prolonged or shortened to meet at angle-point intersections, and at the East line of Section 5.

Contains 7.00 acres.

Exhibit 2

August 27, 1982

Mr. Vernal J. Mortensen  
Vice President  
Coastal States Energy Co.  
411 West 7200 South  
Midvale, Utah 84047

Dear Mr. Mortensen:

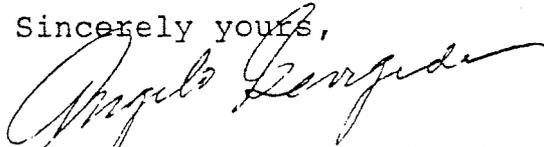
I understand your firm needs clarification on the future use of the "strip pit" area you have under lease from the Telonis estate, to use as a mine rock waste dump site.

The land surrounding the "strip pit" area will continue to be used for grazing in the future and, as such, I would prefer the reclaimed dump site to be leveled off so it could be used for corrals and a livestock containment area if we so desire.

The improved road leading to the waste dump site should not be reclaimed, since we would need the road to allow for easier access to the dump site when working with livestock in the area.

Thank you for your consideration in this matter.

Sincerely yours,



Angelo Georgedes, Administrator  
for the Telonis Estate

# COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • (312) 953-9300

DAVE SELDON  
MANAGER  
SOUTHWEST DIVISION



PLEASE ADDRESS ALL CORRESPONDENCE TO:  
224 S. CARBON AVE., PRICE, UT 84501  
OFFICE TEL. (801) 637-7540

UTAH FUEL CO.  
P.O. Box 719  
Helper, Utah 84526

June 28, 1983

Sample identification  
by Utah Fuel Co.

Road Base Sample

Kind of sample  
reported to us Coal

Sample taken at Skyline

Sample taken by Utah Fuel Co.

Date sampled ~~XXXX~~

Date received 6-27-83

Analysis report no. 57-13174

### SCREEN ANALYSIS

	<u>PERCENT</u>	<u>ACCUMULATIVE PERCENT</u>
RETAINED ON 8" ROUND, PASSING - - -	0.6	0.6
RETAINED ON 6" ROUND, PASSING 8" ROUND	0.7	1.3
RETAINED ON 4" ROUND, PASSING 6" ROUND	2.8	4.1
RETAINED ON 2" ROUND, PASSING 4" ROUND	11.4	15.5
RETAINED ON 1" ROUND, PASSING 2" ROUND	19.9	35.4
RETAINED ON 1/2" ROUND, PASSING 1" ROUND	12.0	47.4
RETAINED ON 1/4" ROUND, PASSING 1/2" ROUND	16.6	64.0
RETAINED ON 8 MESH, PASSING 1/4" ROUND	18.1	82.1
RETAINED ON - - -, PASSING 8 MESH	17.9	100.0

JB/dt

Respectfully submitted,  
COMMERCIAL TESTING & ENGINEERING CO.

Manager, Price Laboratory



Original Copy Watermarked  
For Your Protection

LAB NO. 57-13174

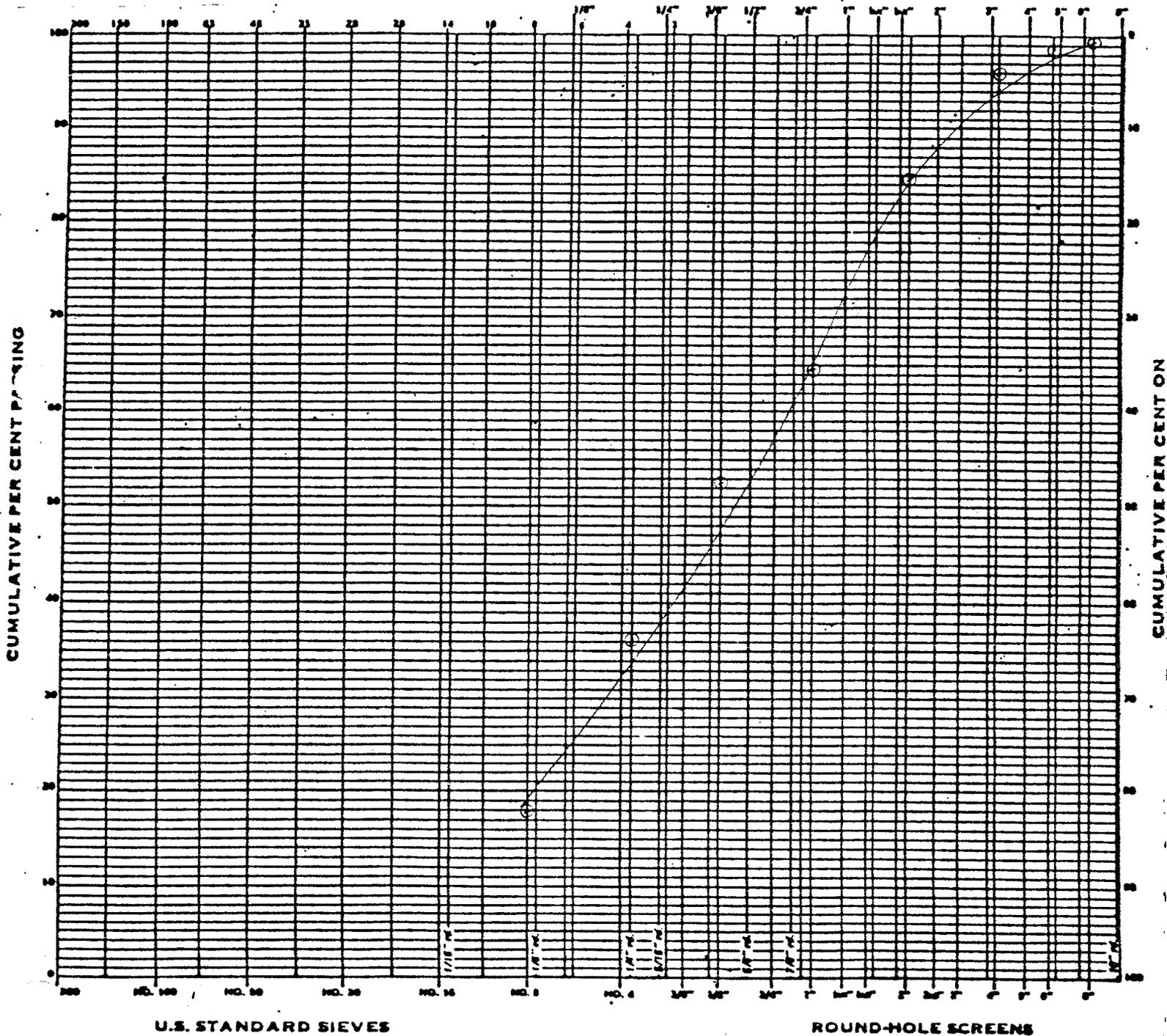
IDENTIFICATION Utah Fuel Company  
Road Base Sample

TOTAL WEIGHT OF SAMPLE 490.5 Pounds

### SCREEN ANALYSIS CURVE

TYLER STANDARD SIEVES — MESH

OTHER SQUARE OPENINGS



NOTE: SCREEN OPENINGS ON LOGARITHMIC SCALE WITH IN. NO. 1.25 NO. 50

APPENDIX 1

REVEGETATION PLAN -  
WASTE ROCK DISPOSAL AREA, SKYLINE MINE  
(T13S, R7E, SEC 4)  
CARBON COUNTY, UTAH

Prepared for -  
Coastal States Energy Company  
411 West 7200 South  
Suite 200  
Midvale, Utah 84047

Prepared by -  
Stanley L. Welsh, Ph.D.  
Endangered Plant Studies, Inc.  
129 North 1000 East  
Orem, Utah 84057  
(801) 225-7085 or 378-2289

23 November 1981

## REVEGETATION PLAN

Introduction.- The proposed waste rock disposal site for the Skyline Mine of Coastal States Energy Company is situated in the southwest quarter of the northwest quarter of Section 4, T13S, R7E. The site is in a small canyon approximately one-half mile southeast of Scofield, Carbon County, Utah. The actual disposal site is approximately two acres in size, but is situated within a disturbance area of an abandoned strip mine and more ancient underground workings. The current vegetation in the abandoned workings and environs consists of cheatgrass and rubber rabbitbrush. The modified vegetative type is the result of the strip mining and underground mining. The underground mine is burning, and products of combustion are vented to the surface. Subsidence has occurred, producing cone-shaped depressions on the slope to the north of the strip-mine quarry. The area which has been affected is marked by the perimeter of cheatgrass. Evidence indicates that the strip-mine area previously supported a sagebrush community on the southwest slope, and a mixed aspen and white fir community on the north-facing slope. The total area to be reclaimed awaits final decisions on extent of the fill and dimensions of the access road leading into the canyon lateral which supports the disposal site. Total area involved will not exceed 12 acres.

Revegetation plan and schedule.- It is proposed that the revegetation of the waste rock disposal area be undertaken in successive stages. If it is possible to fill the strip mine cut from one end, bringing that end to contour with the previous slope angle, then topsoil

could be placed and planting completed as the cut was filled. Revegetation should be attempted as soon as possible following placement of topsoil over the waste rock. Revegetation can be successfully accomplished in spring, summer, or autumn. The actual timing will await the orderly completion of filling with waste rock and placement of topsoil. The life of the fill area is expected to last for the entire period of mine operation.

Since the profile of the fill slope will trend in a westerly direction, it is recommended that revegetation should involve mainly shrub, grass, and forb species. The species to be planted and the rate per acre is presented in the following table:

Grass species	lbs/acre
Bluebunch wheatgrass ( <u>Agropyron spicatum</u> )	3
Kentucky bluegrass ( <u>Poa pratensis</u> )	1
Western wheatgrass ( <u>Agropyron smithii</u> )	4
Mountain brome ( <u>Bromus carinatus</u> )	3
Forb species	lbs/acre
Blue penstemon ( <u>Penstemon strictus</u> )	1/4
Blue flax ( <u>Linum perenne</u> )	1/4
Cicer milkvetch ( <u>Astragalus cicer</u> )	1/4
Alfalfa ( <u>Medicago sativa</u> )	1
Yellow sweetclover ( <u>Melilotus officinalis</u> )	1
Yarrow ( <u>Achillea millefolium</u> )	1/4
Shrub species	lbs/acre
Rubber rabbitbrush ( <u>Chrysothamnus nauseosus</u> )	2
Big sagebrush ( <u>Artemisia tridentata</u> )	2

(pounds per acre are in pure live seed)

The surface of the topsoil overlay should be scarified by raking prior to planting of seed. The seeds should be sown by hand, since the area to be treated is small, and a straw or fiber mulch should be placed atop the seeded and scarified surface. Slopes are not anticipated to be as steep as 1.5h:1v, and fiber matting is not recommended. Supplemental

irrigation is not thought to be necessary either, but can be used during the drier portion of the first season following planting. This will assure the establishment, and prevent occupation of the newly contoured surface by cheatgrass.

Fertilizer should be applied at the rate of 150 lbs of available nitrogen per acre. This will assure sufficient nitrogen for successful establishment, and the leguminous forbs in the seed mix will continue to supply nitrogen following the establishment of grasses and non-leguminous forbs and shrubs.

The forb species proposed above are a mixture of native species (blue penstemon, yarrow, and blue flax) and acclimatized species (cicer milkvetck, alfalfa, and yellow sweetclover). The use of acclimatized species is to provide reasonable diversity of species that are expected to thrive in this region. Native forb seed is difficult to obtain in most years, and has been impossible to obtain in sufficient quantity to satisfy requirements. Many native forb species in the region adjacent to disturbance sites will move quickly onto the fill slopes, and it is expected that they will ultimately replace the species included in initial plantings.

It is recommended that at least one foot of topsoil derived from aspen or sagebrush vegetative types be placed on all fill areas. Adequate soil can be brought from stockpiles in other portions of the project area, since there is none available in the strip-mine storage site. The soil should be spread in such a manner as to provide a roughened surface. This will allow places where seed and mulch can remain during germination and initial growth of the seedlings.

Addendum to Appendix 1

UMC 784.13

The following seed list is recommended for the waste rock disposal site.

<u>Species</u>	<u>lbs./acre</u>
Bluebunch wheatgrass ( <u>Agropyron spicatum</u> )	3
Kentucky bluegrass ( <u>Poa pratensis</u> )	1
Western wheatgrass ( <u>Agropyron smithii</u> )	4
Mountain brome ( <u>Bromus carinatus</u> )	3
Blue penstemon ( <u>Penstemon strictus</u> )	1/4
Blue flax ( <u>Linum perenne</u> )	1/4
Cicer milkvetch ( <u>Astragalus cicer</u> )	1/4
Alfalfa ( <u>Medicago sativa</u> )	1
Yellow sweetclover ( <u>Melilotus officinalis</u> )	1
Yarrow ( <u>Achillea millefolium</u> )	1/4
Rubber rabbitbrush ( <u>Chrysothamnus nauseosus</u> )	2
Big sagebrush ( <u>Artemisia tridentata</u> )	2
TOTAL	18

The division recommends that the broadcast seeding rates be double those for drill seeding. However, since the area to be reseeded is flat the proposed seeding rate of 18 lbs. per acre seems adequate. Experience with reseeding attempts in the Skyline area show that these broadcast seeding rates provide good revegetation success. This seed should be

broadcast in the late fall immediately following topsoil replacement. Cyclone-type seed spreaders will be used in all reseeding attempts.

Wet fiber mulch will be applied at the rate of 1000 lbs. per acre. Since the area to be revegetated is flat or essentially so, no method of anchoring the mulch is proposed.

Revegetation success and stabilization will be evaluated during the height of each growing season. Statistically acceptable techniques will be used in determination of percent cover, woody plant density, and productivity. Reference areas will be utilized by comparing total cover of shrub, grass, and forb with the disturbed area. Cover in the revegetated area will correspond with the mean herbaceous and shrub cover of the reference areas. Parameters (cover, shrub density, productivity) that reach the 80 percent similarity before five years will not be remeasured until bond release. It is doubtful that the shrub density will reach the 80 percent level in the first five years, therefore, a site index will be developed from the mature reference areas which will be used in determining rate of success. Diversity of species will be evaluated by requiring that the presence of at least 35 percent of the number of species occurring in the reference areas be present in the revegetated area.

The revegetated area will be monitored for grazing effects. If grazing causes adverse effects in the disturbed area, a temporary fence will be constructed to protect the revegetation effort.

Weed control, if necessary, will be accomplished by hand. Weed control will only be necessary if, during normal revegetation measurements, noxious weeds are found to comprise 30 percent of the vegetative cover, or if the weeds are proving harmful to revegetation success.

APPENDIX 2

REPORT OF VEGETATION AND SOILS,  
PROPOSED WASTE ROCK DISPOSAL SITE,  
SKYLINE MINE

November 1981

Prepared for  
COASTAL STATES ENERGY COMPANY  
411 West 7200 South  
Midvale, Utah 84047

Attn: Mr. Keith Welsh

Prepared by  
Dr. Stanley L. Welsh and Dr. Joseph R. Murdock  
ENDANGERED PLANT STUDIES, INC.  
129 North 1000 East  
Orem, Utah 84057

## INTRODUCTION

The area proposed for a waste rock disposal site lies in a small canyon east of Scofield. Burning coal beds beneath the surface have caused slumping to occur throughout the area. The south-facing side of the canyon supports a cheatgrass (Bromus tectorum) community, apparently the only vegetation compatible with the increased soil temperatures and disturbance caused by subsidence. The north-facing side of the canyon has been previously disturbed by strip mining activities. A substantial coal seam has been exploited and large quantities of substrate have been removed from the hillside creating a high vertical cliff face. It is this area that is proposed for the disposal site, and waste rock will be dumped into the abandoned workings.

It is assumed that reclamation plans will be based on adjacent natural vegetation. If the purpose of revegetation efforts is only to return the area to its present disturbed condition, very little reclamation will be required. The area is presently in poor condition and use of this site for disposal will cause very little, if any, new disturbance. With this in mind studies have been initiated in adjacent sites to determine reclamation standards to be used at the completion of operations.

## SOILS

When final reclamation of the area takes place, adequate topsoil may be brought from the mine site. If additional soil is required, soil belonging to the Brycan series, which is located in local drainage areas, could be used.

Soils were correlated with aspen, fir and sagebrush communities at the top of the vertical cliff. The major soil in the area has been correlated to the Croydon series. This is the soil which now supports both the aspen and fir communities. The small section of sagebrush community has been correlated to the Trag series. Correlation was done by the Soil Conservation Service. Soils were examined on-site to verify the correlation. The soils remained, in all cases, within the range of characteristics established for the series.

Croydon Series. The Croydon series consists of deep, well drained soils that formed in residuum and alluvium weathered from sandstone. These soils are on north-facing mountain slopes. Slopes range from 30 to 60 percent. The soils have slow runoff, permeability is moderately slow and the available water capacity is 7 to 8.5 inches. The taxonomic classification is fine-loamy, mixed Argic Cryoborolls. A typical pedon is as follows.

01—0 to 1 inches. Leaves and other plant material.

A11—0 to 4 inches. Very dark grayish brown (10YR3/2) loam, very dark brown (10YR2/2) moist; weak thick platy structure that parts to moderate fine granular; soft, friable; slightly acidic; clear smooth boundary (3 to 16 inches thick).

A12—4 to 16 inches. Very dark grayish brown (10YR3/2) loam, very dark (10YR2/2) moist; moderate medium granular structure; soft, very friable; slightly acidic; abrupt broken boundary (0 to 13 inches thick).

A2—16 to 22 inches. Pale brown (10YR6/3) heavy loam, brown (10YR4/3) moist; weak coarse subangular blocky structure; slightly hard, very friable; 20 percent gravel; slightly acidic; clear wavy boundary (3 to 11 inches thick).

B21t—22 to 28 inches; pale olive (5Y6/3) sandy clay loam, light olive brown (2.5Y5/4) moist; moderate medium subangular blocky structure; very hard, firm; common thin and many moderately thick clay films on facis of peds; slightly acidic; clear smooth boundary (3 to 10 inches thick).

B22t—28 to 40 inches. Pale olive (5Y6/3) sandy clay loam, light olive brown (2.5Y5/4) moist; moderate coarse subangular blocky structure that parts to moderate fine subangular blocky; very hard, firm; continuous thin clay films on ped facis; slightly acidic; clear smooth boundary (6 to 31 inches thick).

C—40 to 48 inches. Pale olive (5Y6/3) sandy loam, light olive brown (2.5Y5/4) moist; weak medium subangular blocky structure; hard, friable; slightly acidic; abrupt smooth boundary (0 to 22 inches thick).

R—48 inches. Weathered sandstone bedrock.

Trag Series. The Trag series consists of deep, well-drained soils that formed in material weathered from sandstone. Trag soils are on mountains and sideslopes. Slopes range from 3 to 30 percent. The soils have medium to rapid runoff, permeability is moderate, and the available water capacity is 8.5 to 10.5 inches to a depth of 60 inches. Taxonomic classification is fine-loamy, mixed Typic Argiborolls. A typical pedon is as follows.

A1—0 to 9 inches. Dark grayish brown (10YR4/2) sandy loam, very dark brown (10YR2/2) moist; weak medium subangular blocks that part to moderate fine granular structure; soft, very friable; slightly acidic; clear wavy boundary (5 to 12 inches thick).

B1—9 to 16 inches; Brown (10YR5/3) light clay loam, dark brown (10YR3/3) moist; weak medium prisms that part to moderate medium

subangular blocky structure; hard, firm; thin patchy clay films; neutral; clear wavy boundary (6 to 11 inches thick).

B2t—16 to 35 inches. Brown (7/5YR5/4) clay loam, dark brown (7.5YR4/4) moist; moderate medium prisms that part to moderate medium subangular blocky structure; very hard, firm; thin nearly continuous clay films; neutral; clear smooth boundary (13 to 23 inches thick).

C—35 to 60 inches. Brown (7.5YR5/4) sandy clay loam, dark brown (7.5YR4.4) moist; weak medium subangular blocky structure; very hard, friable; neutral.

#### VEGETATION

On the slopes above the vertical cliff three community types, aspen, fir and sagebrush, exist in an area approximately two hundred yards long. Because of seasonal and time constraints only measurements for tree density were taken. Other needed measurements (cover, species composition, and productivity) should be taken in the spring of 1982 during the growing season.

Two parallel transects were randomly located to traverse all three community types and measurements were taken with the point-quarter method. Tree species encountered during the sampling procedures were Populus tremuloides, Prunus virginiana, and Abies concolor.

Measurements were taken at 23 points along the transects. Adequacy of sampling was checked statistically after returning to the lab using the following formula:

$$n(\text{min}) = \frac{t^2 s^2}{d^2}$$

where  $t$  is a constant (for shrubland or tree communities 1.282),  $s$  is standard deviation, and  $d$  is one-tenth of the sample mean. Calculations

showed that 24 points needed to be sampled in order to characterize the community at the 80 percent confidence level. The mean distance between trees was 6.6 feet. Standard deviation was 2.56.

Density or the number of individuals per acre was calculated by dividing the square of the mean distance into 43,560 (the number of square feet in one acre). The data obtained from transect measurements indicated a total of 1,000 trees per acre in these communities. Populus tremuloides accounted for 83 percent of the total, or 830 trees/acre. Abies concolor accounted for 16 percent of the total, or 160 trees/acre. Prunus virginiana accounted for 1 percent of the total, or 10 trees/acre.

#### SUMMARY

Soils and vegetation of the proposed waste rock disposal area have been discussed. Existing condition of the area is poor, and characterizations have been obtained from adjacent areas. The soils information was correlated by the Soil Conservation Service at a level sufficient for this study. Vegetation information is preliminary and consists only of tree density measurements. A revegetation and reclamation plan will be included in a later submittal.

Addendum to Appendix 2

UMC 783.19 Vegetation Information

It was recommended that the Division be furnished with a vegetation map which depicts the previously disturbed sites to be affected and the adjacent vegetation communities, particularly if a reference area is selected and sampled within the adjacent community. A reference area was sampled near the proposed site and a map indicating the vegetation communities of the area is included in this report as Figure 1.

The waste rock disposal area is to be reclaimed as native rangeland, and a reference site was chosen in a sagebrush community adjacent to the disturbed area. Quantitative data pertaining to cover, woody plant density, and productivity were taken. All plots were randomly chosen by throwing a hoop or quadrat frame within the community type. Also, all tests for sample adequacy were run using the formula given in the April 1982 DOGM vegetation guidelines.

Cover was determined using the ocular estimation method. A 2 x 5 decimeter plot was used, and cover was estimated to the nearest percent. The reference area was determined to have a living plant cover of 73.6%; bare ground of 12.4%, litter 7.75%, and rock 6.25%. The two species contributing the most cover are Agropyron spicatum (15.8%) and Artemisia tridentata (10.65%). The sample adequacy test was run after twenty plots were read. The test showed that only four plots were needed ( $s=11.34$ ,  $d=7.36$ ,  $t=1,282$ ). The diversity and composition figures can be seen in table one.

Shrub density in the reference area was measured using twenty belt transects one foot wide and forty feet long. After the twenty plots were read the sample adequacy test showed that only nine plots were required ( $s=4.8$ ,  $d=2.1$ ,  $t=1.282$ ). There was an average of twenty-one stems per belt transect. The sampling showed that the reference area supports 22,651 stem per acre with little rabbitbrush and sagebrush being the dominant shrubs. The number of stems per acre was obtained by dividing the total area sampled (800 sq. ft.) into the area of an acre (43,560 sq. ft.) and by then multiplying the total number of stems counted (416) with the quotient (54.45) obtained from the division problem. For a complete breakdown of numbers of shrubs by species and size class see Table 2.

The reference area was also sampled for productivity. Sample adequacy was obtained even though the Division did not require it for this report. A 9.6 square foot hoop was used for the sampling, and 13 plots were clipped of the current years' growth. Sample adequacy tests were run on both wet and dry weights with the following results: wet measurement,  $s=110$ ,  $d=39.9$ ,  $t=1.282$ ,  $n(\text{min})=14$ ; dry measurement,  $s=32.55$ ,  $d=12.8$ ,  $t=1.282$ ,  $n(\text{min})=11$ . The field samples were separated into life forms before measurement and weights determined were to the nearest gram. The samples were then transported to the laboratory and oven dried and remeasured to the nearest one tenth of a gram. The total dry weight productivity for the reference area is 128 lbs. per acre. For a complete breakdown of the productivity measurements see Table 3.

APPENDIX  
OF  
FIGURE AND TABLES

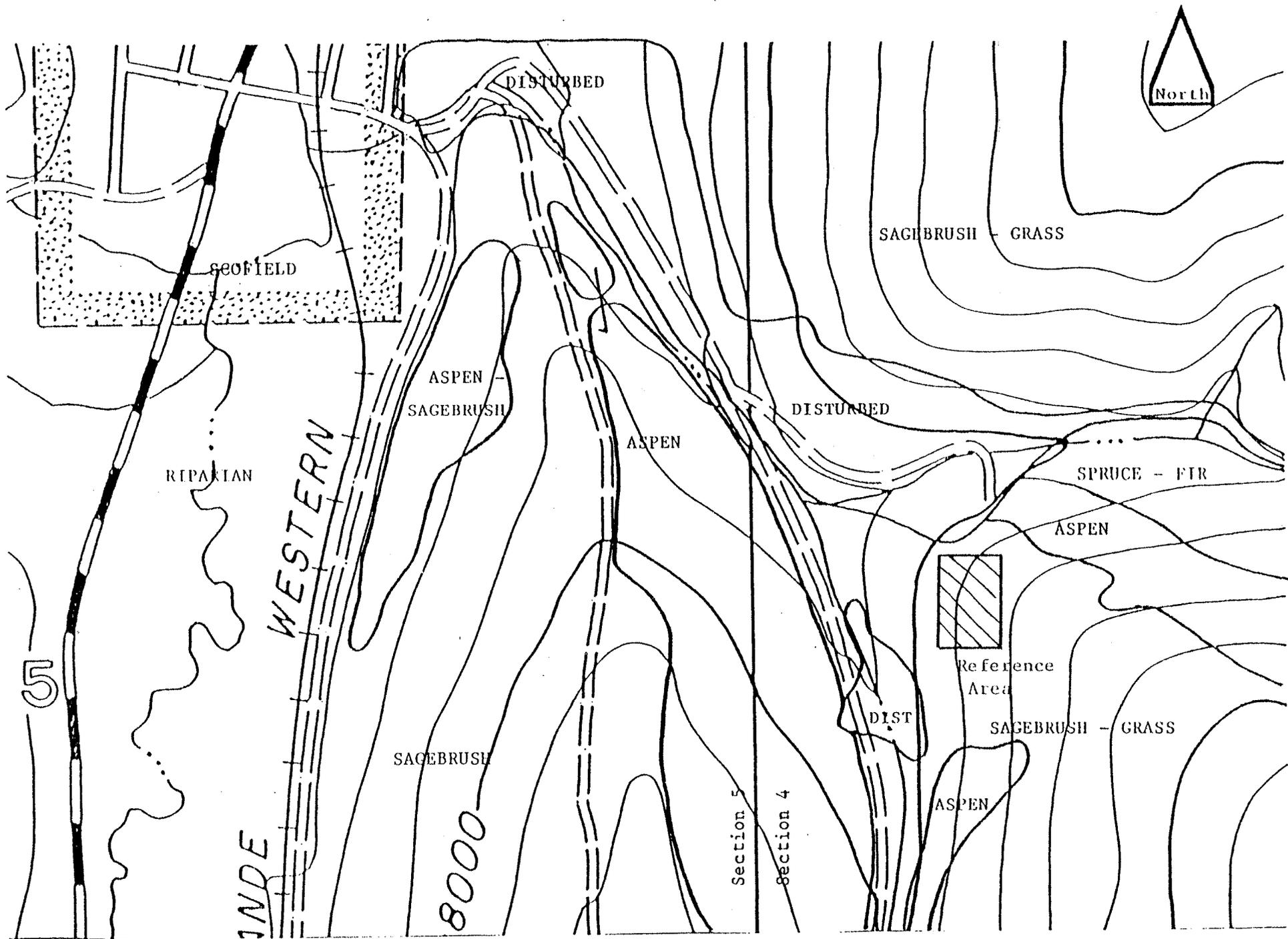


Figure 1. Vegetation Communities of Proposed Waste Rock Disposal Area (T13S, R7E). SCALE: 1" = 500'

Table 1

## Waste Rock Sagebrush Reference

29 July 1982

Cover measurements  $s = 11.34^*$   
 Method: ocular estimation  $t = 1.282$   
 Plot size: 2 by 5 decimeter  $n = 20$   
 Sample mean: 73.6  $n(\text{min}) = 4$

SPECIES	PERCENT COVER	SPECIES DIVERSITY
<u>Grasses</u>		
Poa secunda	3.35	.2029
Agropyron spicatum	15.80	.4765
Stipa lettermannii	1.65	.1228
Koeleria macrantha	1.65	.1228
<u>Forbs</u>		
Balsamorhiza saggitata	5.80	.2889
Lupinus sericeus	3.45	.2070
Antennaria parvifolia	0.65	.0603
Hedysarum boreale	5.25	.2717
Eriogonum subalpinum	3.55	.2110
Penstemon watsonii	6.15	.2992
Penstemon stricta	1.75	.1283
Orthocarpus tolmei	3.50	.2090
Calochortus nuttallii	0.40	.0409
<u>Shrubs</u>		
Artemisia tridentata	10.65	.4036
Chrysothamnus viscidiflorus	6.00	.2948
Purshia tridentata	0.70	.0639
Amelanchier utahensis	0.35	.0367
Symphoricarpos oreophilus	2.70	.1749
Ribes cereum	0.25	.0279
TOTAL	73.60	3.6430
BARE GROUND	12.40	
LITTER	7.75	
ROCK	6.25	

\* All sample adequacy tests were run using the formula given in the DOGM vegetation guidelines of April 12, 1982.

TABLE 2  
WASTE ROCK SAGEBUSH REFERENCE

29 July 1982

Woody plant density measurements  $\bar{m} = 4.8^*$   
 Method: Belt transect  $\tau = 1.262$   
 Plot size: 1 ft. by 40 ft.  $n = 20$   
 Sample mean: 21  $n(\text{min}) = 9$

Transect Totals	Stem Size Classes				Totals
	0-1/2"	1/2-1"	1-2"	2"-	
Chrysothamnus viscidiflorus	205	3	-	-	208
Artemisia tridentata	9	17	42	53	121
Symphoricarpos oreophilus	37	-	-	-	37
Amelanchier utahensis	20	2	-	-	22
Purshia tridentata	4	3	7	6	20
Ceratoides lanata	8	-	-	-	8
TOTALS	283	25	49	59	416
Total stems per acre by species and size class					
Chrysothamnus viscidiflorus	11,162	163	0	0	11,325
Artemisia tridentata	490	926	2,287	2,886	6,589
Symphoricarpos oreophilus	2,014	-	-	-	2,014
Amelanchier utahensis	1,089	109	-	-	1,198
Purshia tridentata	218	163	381	327	1,089
Ceratoides lanata	436	-	-	-	436
TOTALS	15,509	1,361	2,668	3,213	22,651
Average Height (in decimeters)					
Chrysothamnus viscidiflorus	1.5	3.3	-	-	2.4
Artemisia tridentata	1.4	2.8	4.5	5.4	3.5
Symphoricarpos oreophilus	2.6	-	-	-	2.6
Amelanchier utahensis	1.6	2.0	-	-	1.8
Purshia tridentata	1.5	2.0	3.3	3.2	2.5
Ceratoides lanata	1.8	-	-	-	1.8
Average shrub height					2.4

\*All sample adequacy tests were run using the formula given in the DOGM vegetation guidelines of April 12, 1982.

Table 3  
Waste Rock Sagebrush Reference

29 July 1982

Production measurements

Method: Clipping	Green	Dry
Plot Size: 9.6 sq. ft. hoop	s= 110	s= 32.55 *
Sample mean (green)= 379	t= 1.282	t= 1.282
Sample mean (dry) = 128	n= 13	n= 13
	n(min)= 14	n(min)= 11

Life Form	Average Green Wt.	Average Dry Wt.
Shrubs	227g	78.8g
Forbs	88g	23.1g
Grass and grasslike	64g	26.1g
TOTALS	379g	128g
Productivity per acre	379 lbs	128 lbs

\* All sample adequacy tests were run using the formula given in the DOGM vegetation guidelines of April 12, 1982.

APPENDIX 3



# ARCHEOLOGICAL - ENVIRONMENTAL RESEARCH CORPORATION

588 West 800 South Bountiful, Utah 84010  
Tel: (801) 292-7061 or 292-9668

September 22, 1981

Subject: Cultural Resource Evaluations in the U. P.  
Canyon Locality of Carbon County, Utah

Project: Coastal States Energy Company - Utah Fuels  
Company Proposed Rock Dump Zone in U. P.  
Canyon

Project No.: CSEC-81-6

Permit: NA, Private Land

To: Mr. Keith Welch, Coastal States Energy Company,  
411 West 7200 South, Midvale, Utah 84047

Info: Mr. James Dykman, State Historic Preservation  
Office, 300 Rio Grande, Salt Lake City, Utah  
84101

GENERAL INFORMATION:

On September 17 and 21, 1981, AERC personnel conducted a cultural resource evaluation of portions of U. P. Canyon situated east of Scofield, Utah. The purpose of the survey was to determine the location, significance, and potential for adverse affect on cultural resources by the development of a refuse rock dump zone placed on private land within the canyon. Mr. Keith Welch of Coastal States Energy Company requested that an evaluation be conducted of the access route through the canyon and the immediate surfaces around the existing open-pit mine. The existing road to be upgraded extends from Scofield up the canyon and along the south slope where a new road will terminate above the open pit.

The project location is situated on private land in the SW $\frac{1}{4}$  of the NW $\frac{1}{4}$  of Section 4 and in the adjacent E $\frac{1}{2}$  of NE $\frac{1}{4}$  of Section 5, Township 13 South, Range 7 East.

Methodology:

On September 17, AERC personnel, working under the direction of Dennis G. Weder, conducted intensive surveys of the canyon floors and all the areas around the open-pit. The survey extended some 200 meters to the east and above the pit, including the drainage and slopes where the new road will cross the dry stream channel to terminate above the large pit. Team members walked a series of 20 meter wide transects across all surfaces where disturbance or surface modification will occur. Cultural features, when observed, were noted, photographed, and located on the appropriate topographic map.

A more detailed examination of the cultural features was conducted on September 21, under the direction

of F. R. Hauck, Principal Investigator for AERC. The purpose of this second phase of evaluation was to assess resource significance and to determine potential for adverse affect that the proposed dump project might have for the cultural resources situated within the canyon.

#### RESULTS:

Surface survey in U. P. Canyon established the location and cultural significance of two separate sites. The historic Union Pacific Mine (AERC 627R/1) was found to be situated within the canyon, comprising a number of distinct cultural loci. This site has been given the permanent site number 42Cb333. Cultural loci for the mine site include railroad beds, ore car rail beds, railroad car scale pits and associated weigh booths (2), portals (2), tower bases (2), a series of loading trestle bases, collapsed tunnels, slag and refuse piles, trash middens, and various collapsed structures. The large pit situated above the main fork of U. P. Canyon is also part of the historic site complex. It was evidently an open-pit coal mine where the thick coal seam, situated near the earth's surface, was strip mined, probably during the 1910 to 1930 period.

Basic information on the mine has been provided by Doelling, who relates the following:

"The Scofield mine, better known as the Union Pacific Mine, was one of the more successful mines of Pleasant Valley area. It was intermittently active from 1884 to 1936 in coal to 30 feet thick. A lower mine operated on the thick U. P. bed and an upper mine probably on the Castlegate 'A.' Total production is estimated just short of two million tons."

(See H. H. Doelling, 1972 Central Utah Coal Fields. Utah Geological and Mineralogical Survey, Monograph Series No. 3, Salt Lake City, page 223.)

The second site discovered during the survey consists of a large prehistoric extended campsite (AERC 627R/2) situated at the mouth of U. P. Canyon and immediately south and west of the U. P. Canyon creek. Artifacts and cultural materials on the locus indicate that the site had Archaic period and Numa occupations. The site has multiple hearth zones and contains detritus, including fragments of grinding stones. The site is relatively shallow, ranging from ten to 25 centimeters in depth. This significant cultural resource has been given the permanent designation of 42Cb334.

Site reports and a copy of this report will be forwarded to the Utah State Division of History for filing.

#### CONCLUSION AND RECOMMENDATIONS:

The National Register of Historic Places has been consulted and no registered sites will be affected by this project. The Scofield Cemetery, which lies about 250 meters north of the prehistoric site, is on the Utah Register of Historic Sites. The cemetery is sufficiently distant from the refuse rock-haul road and will not be adversely affected by the proposed development in U. P. Canyon.

The historic Scofield Mine site (42Cb333) is presently bisected by a dirt road which connects the ridge roads to the east and southeast above the canyon. The majority of cultural loci on this site appears to be sufficiently dispersed and outside the new road corridor and, therefore, will be preserved from direct adverse affect during road construction. Indirect impact of these features, e. g., vandalism, can be controlled by restricting access into the canyon. Two cultural features on this site will be affected by the road development and refuse dumping. These features involve the earlier railroad coal car scale-pit location, which is situated immediately adjacent on the east

side of the existing road. This locus consists of a ground level, concrete-reinforced, rectangular pit with railroad ties situated in the two ends of the pit at ground level. A loosely laid stone wall and fragments of the weigh booth are visible opposite the pit against the slope of the hill. AERC recommends that this feature be avoided during road construction. If avoidance is not practical, then the pit and adjacent wall and booth locations could possibly be buried under the new road. Burial of the locus would be preferable to removal. However, if the site cannot be buried or avoided, then careful photographic coverage and measurements of the locus should be conducted prior to its removal.

The second feature of the historic Scofield Mine which will be affected by the refuse dumping will be the large open-pit mine which is situated above the junction in the canyon. This locus is not considered culturally significant for it contains no structures or occupational debris. The pit measures about 100 to 120 meters in length by 40 to 60 meters in width, and is about 20 to 30 meters deep on the downhill side. Subsurface fires burning in the remnant coal seams are venting into the pit. These noxious fumes curtail human activity within the locality.

Should all traffic into the dump zone and into U. P. Canyon be confined to the existing road, the prehistoric site (42Cb334) will not be affected by the development as it is across the creek from the road. Should the access into the mouth of the canyon be routed to the south in order to avoid traffic on the Scofield City streets, then such a route will have direct adverse affect upon this significant resource site. If rerouting the road across the site becomes necessary, salvage excavation of the disturbance corridor should be conducted to insure preservation of important site materials and scientific data on the site.

With avoidance of the weigh pit on historic site 42Cb333 and avoidance of the prehistoric site (42Cb334), AERC considers the proposed development and operational phases of the dumping project to have no adverse affect for the significant cultural resources situated in the locality and recommends clearance for development. Such clearance should be based upon the recommendations made above and adherence to the following stipulations:

1. All vehicular traffic, personnel movement, and construction be confined to the locations examined and to access roads leading into these locations.

2. All personnel refrain from collecting individual artifacts or from disturbing any cultural resources in the area.

3. A qualified archeologist be consulted should cultural remains from subsurface deposits be exposed during construction work or if the need arises to relocate or otherwise alter the construction area.



---

F. R. Hauck, Ph.D.  
President





**Coastal States  
Energy Company**

411 West 7200 South  
Midvale, Utah 84047  
(801) 566-7111

Subsidiary of  
The Coastal  
Corporation

November 4, 1981

Mr. Melvin T. Smith  
Director and State Historic Preservation Officer  
Utah State Historical Society  
350 Rio Grande  
Salt Lake City, Utah 84101

Dear Mr. Smith:

Coastal States Energy Company is in the process of constructing an underground coal mine in Eccles Canyon near Scofield, Utah. Clearances from your office have previously been sought and obtained for those facilities located in Eccles Canyon proper.

Negotiations with various state and federal agencies have now made it necessary to propose a waste rock disposal site located outside of the area cleared by your office. This proposed site, located in Union Pacific Canyon near Scofield has been surveyed by our archaeological consultant, AERC. For your convenience, a copy of Dr. Hauck's report is attached.

It is our request that you review this report, along with other data which you may have, and, if justifiable, that you provide this office with the necessary clearance documentation.

Your continuing cooperation is appreciated.

Sincerely,

A handwritten signature in cursive script that reads "Keith W. Welch".

Keith W. Welch  
Environmental Coordinator

KWW:jb

Attachment



SCOTT M. MATHESON  
GOVERNOR



STATE OF UTAH  
DEPARTMENT OF COMMUNITY AND  
ECONOMIC DEVELOPMENT

Division of  
State History  
(UTAH STATE HISTORICAL SOCIETY)

MELVIN T. SMITH, DIRECTOR  
300 RIO GRANDE  
SALT LAKE CITY, UTAH 84101  
TELEPHONE 801/533-5755

November 12, 1981

Division of Oil Gas, & Mining  
1588 West North Temple  
Salt Lake City, Utah 84116

Re: Eccles Canyon Coal Mine, Waste Rock Disposal Site, Eccles  
Canyon, Near Scofield, Utah

To Whom It May Concern:

The staff of the Utah State Historic Preservation Officer received a letter from Coastal States Energy dated November 4, 1981, attaching a report of an archeological survey that took place for Coastal States Energy in relation to the development of a waste rock disposal site outside the present survey areas. The site itself is located in the Union Pacific Canyon near Scofield and was surveyed by AERC.

Our staff has reviewed the archeological document and concurs with the recommendations and the determinations of eligibility contained within the document. Therefore, our office would recommend to the Division of Oil, Gas, and Mining that if stipulations are followed the company may consider the development of this waste rock disposal site located outside the main mine plan area as adequately protecting cultural resources.

If you have any questions or concerns, please contact this office at 533-7039.

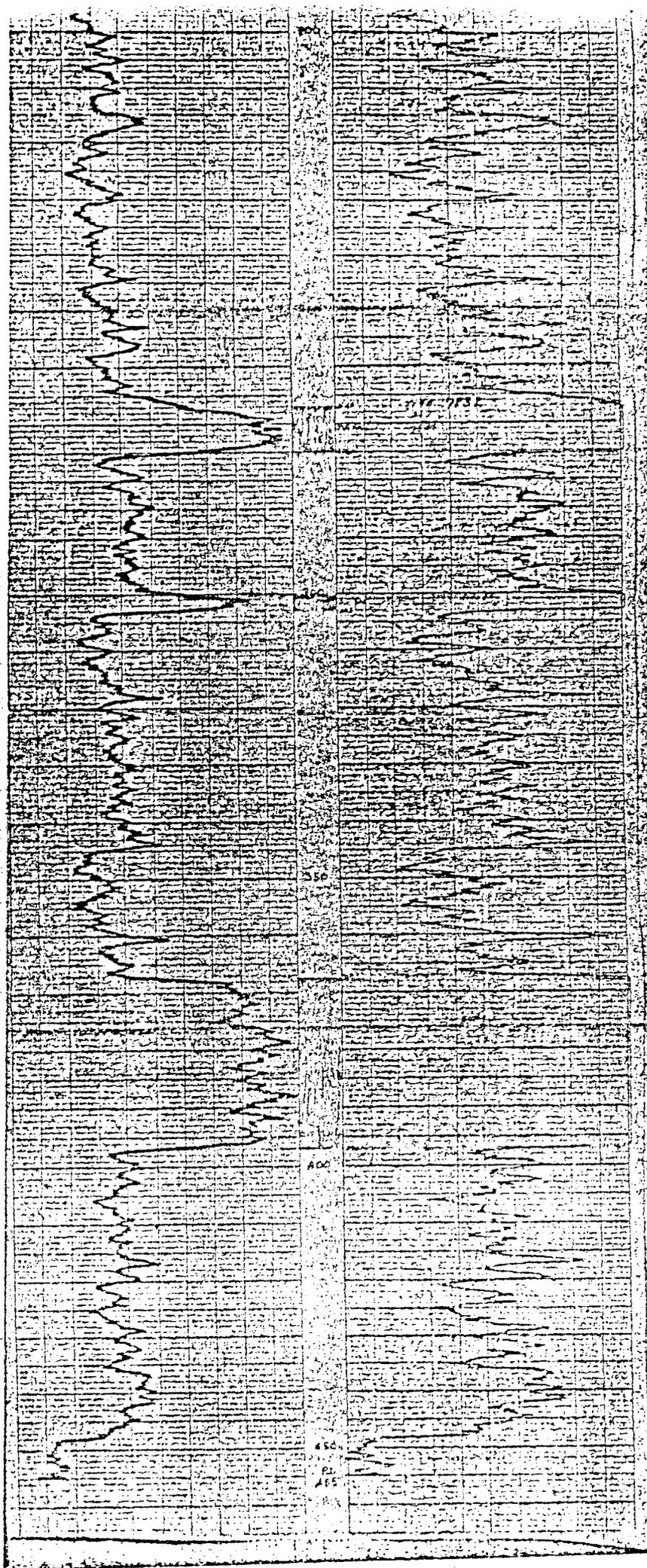
Sincerely,

Melvin T. Smith  
Director and  
State Historic Preservation Officer

JLD:lo C588/1238c

APPENDIX 4





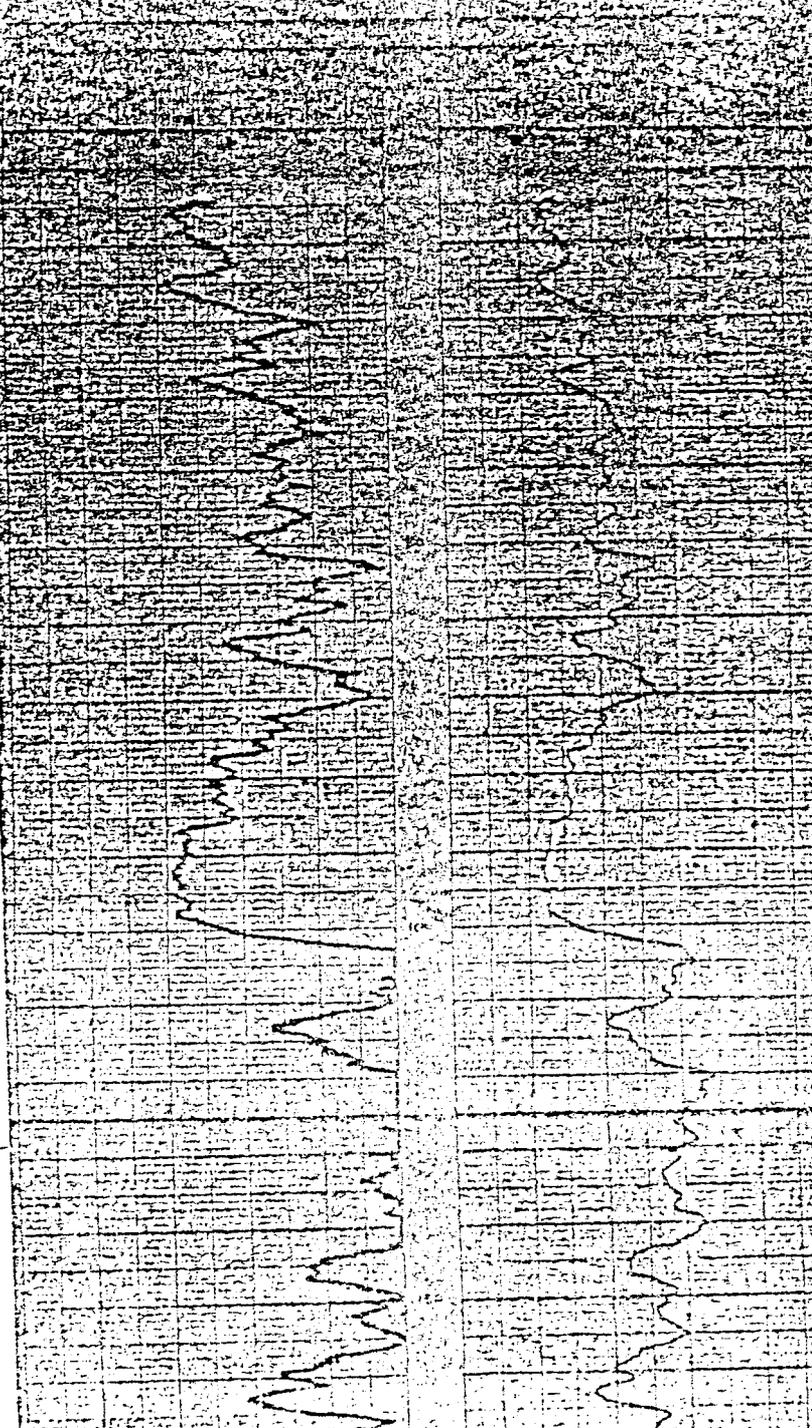
DIVISION OF OIL AND GAS  
 DEPARTMENT OF THE INTERIOR  
 WASHINGTON, D. C.  
 FIELD OFFICE  
 ST. LOUIS, MISSOURI  
 FIELD NO. 480

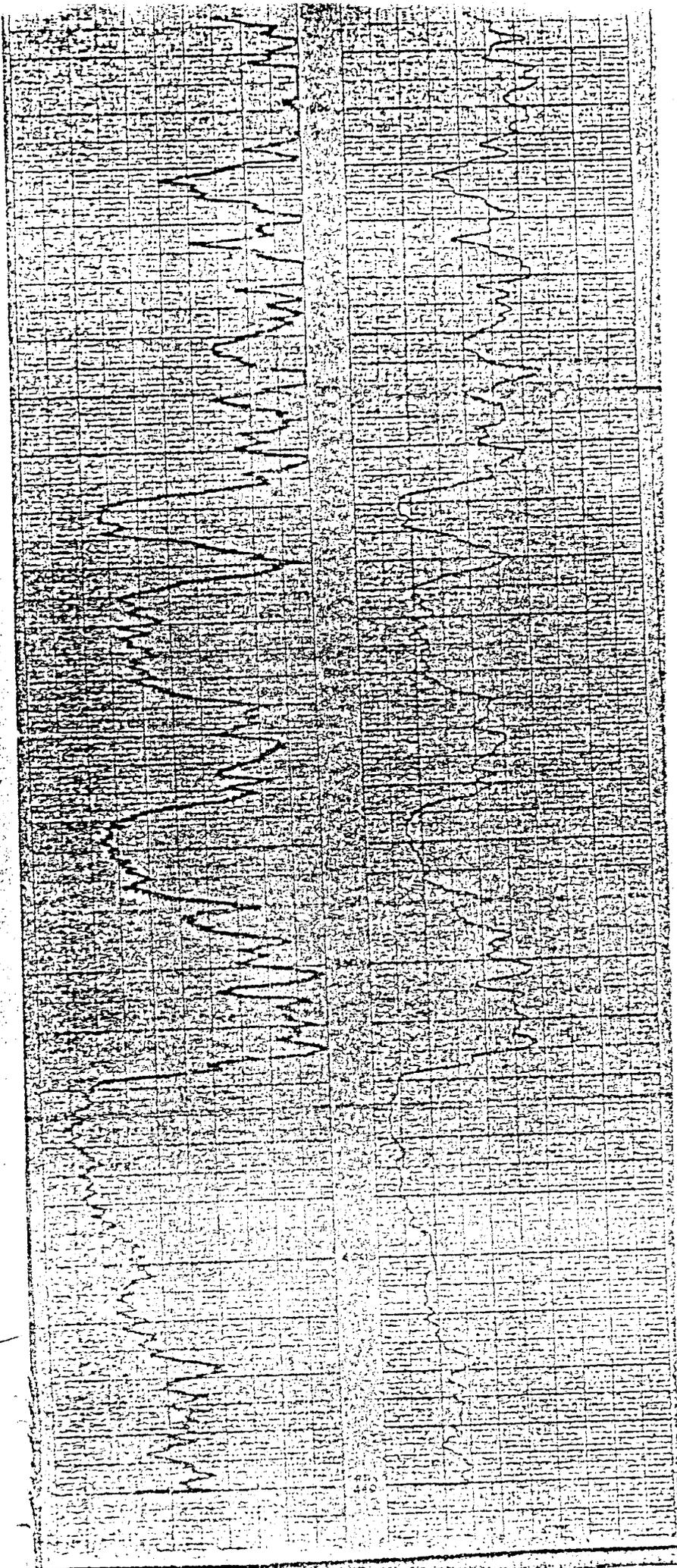
DIVISION OF NATURAL GAS  
 DEPARTMENT OF THE INTERIOR  
 WASHINGTON, D. C.  
 FIELD OFFICE  
 ST. LOUIS, MISSOURI  
 FIELD NO. 480

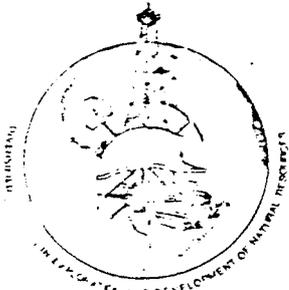
**URINCO**

DIVISION OF NATURAL GAS  
 DEPARTMENT OF THE INTERIOR  
 WASHINGTON, D. C.  
 FIELD OFFICE  
 ST. LOUIS, MISSOURI  
 FIELD NO. 480

DIVISION OF NATURAL GAS  
 DEPARTMENT OF THE INTERIOR  
 WASHINGTON, D. C.  
 FIELD OFFICE  
 ST. LOUIS, MISSOURI  
 FIELD NO. 480







# Sanders Associates, Inc.

10 WEST CENTER STREET • KAYSVILLE, UTAH 84037 • (801) 376-9762 531-8131

## DRILL HOLE REPORT

### SURVEYING DATA

DRILL HOLE NUMBER 5-4 DATE SURVEYED 11-1-76  
 NORTH CO-ORDINATE 26,928.23 FIELD BOOK NR-13  
 EAST CO-ORDINATE 2,041.42 PAGE \_\_\_\_\_  
 ELEVATION 8107

TRAVERSE POINT LOCATED FROM I-17  
 SURVEY CREW MEMBERS Moore  
Robins  
Russell

CLIENT \_\_\_\_\_

PROJECT NUMBER \_\_\_\_\_

### STANDARD SECTION

	•		

LOCATION •  
 TOWNSHIP 135 RANGE 7E SECTION 4  
 GEOLOGIST REQUESTING WORK \_\_\_\_\_

NUMBER: 76-23 STATE: Utah COUNTY: Carbon SEC. 4 T. 12S. R. 7E

CLIENT: Ite1 Resources PROJECT/AREA: 3016/Colombine

CONTRACTOR: XI DRILLER: Doug

PLUGGING RECORD:

CASING/DEPTH: MEDIUM: H2O/Mud

ELEVATION: est. 8122 TOTAL DEPTH DRILLED: 267

CO-ORDINATES N. est. 24214 E. est. 1344 (offset of G-1)

CORED INTERVALS:	DEPTH		DEPTH	
	from	to	from	to
	Continuous	Core		

LOGGING RECORD:	TYPE	DEPTH	
		from	to
	No/Log		

LITHOLOGY PENETRATED:	TYPE	DEPTH	
		from	to
	Kinney Seam	239.2	246.6
	Coal	249.2	251.7

COMPLETION DATE: 11-20-76



















































APPENDIX 5

## 1. DRAINAGE BASIN CHARACTERISTICS

AREA: 260 AC (BY PLANIMETRY OF SCOFFIELD  
7 1/2' TOPO MAP)  
HORIZONTAL LENGTH: 4200 FEET  
HEIGHT: 995 FEET  
SLOPE: 0.24  
 $\angle$ : 13.3°

## 2. DRAINAGE BASIN DISCHARGE

THE RATIONAL METHOD WILL BE USED TO DETERMINE  
 $Q$ , THE DRAINAGE BASIN DISCHARGE.

FROM  $Q = CIA$ , WHERE

$Q$  = DISCHARGE, IN CFS  
 $C$  = RUNOFF COEFFICIENT  
 $I$  = INTENSITY, IN INCH/HOUR,  
SELECTED FROM "RAINFALL  
INTENSITY DURATION CURVES"  
 $A$  = AREA, IN ACRES

ALSO  $T_c = \frac{1.8(1.1 - C)(D)^{1/2}}{(S)^{1/3}}$ , WHERE

$T_c$  = TIME OF CONCENTRATION, IN MIN.  
 $D = (L^2 + H^2)^{1/2}$ ;  $L$  = LENGTH, IN FT.  
 $H$  = HEIGHT, IN FT  
 $S$  = SLOPE OF TRIBUTARY AREA, IN FT/FT

3. CALCULATE  $T_c$  *approx 41, 30*

ASSUME  $C = 0.1$  FOR TRACIC SERIES SOIL  
 $\angle$   $D = (4200^2 + 995^2)^{1/2} = 4316.25$

$$\begin{aligned} \text{NOW } T_c &= \frac{1.8(1.1 - 0.1)(4,316.25)^{1/2}}{(0.24)^{1/3}} \\ &= 40.997 \approx 41 \text{ MIN} \end{aligned}$$

4. CALCULATE Q

FROM CHART, USING  $T_c = 41$  MIN. & A 10-YEAR 24-HOUR PRECIPITATION EVENT  $i = 1$  INCH/HOUR

$$\begin{aligned}
 \phi Q &= C i A \\
 &= (0.1)(1.0)(260) \\
 &= 26.0 \text{ CFS}
 \end{aligned}$$

5. EVALUATION OF OPEN CHANNEL DESIGN

5.1 METHOD USED

MANNING'S AND CHEZY'S EQUATIONS WILL BE USED TO CALCULATE V AND Q.

FROM  $V = \frac{1.486}{n} R^{2/3} S^{1/2}$ , WHERE

V = VELOCITY IN FPS

n = COEFFICIENT OF ROUGHNESS

R = HYDRAULIC RADIUS, IN FT

$$R = A/WP$$

S = SLOPE IN FT/FT

ALSO  $Q = AV$

5.2 CALCULATION

ASSUME  $n = 0.035$

CALC.  $R = A/WP$ ,  $A = \frac{1}{2} (2.1 \times 12) = 12.6 \text{ ft}^2$

$WP = 2.1 + 12 = 14.1 \text{ ft}$

$$\begin{aligned}
 \therefore R &= 12.6/14.1 \\
 &= 0.894
 \end{aligned}$$

NOW  $V = \frac{1.486}{0.035} (0.894)^{2/3} (0.03)^{1/2}$

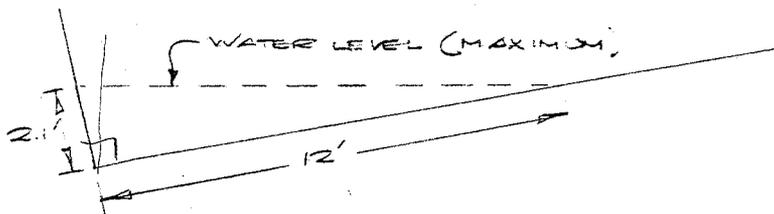
$$= 6.824$$

$$\therefore Q = (12.6)(6.824) = 85.983 \text{ CFS}$$

6. CONCLUSION

THE OPEN CHANNEL DESIGN IS ADEQUATE TO CARRY A 10-YEAR 24-HOUR FLOOD EVENT

7. DESIGN CROSS-SECTION



SKYLINE MINES PROJECT  
ROCK WASTE DISPOSAL SITE

RESPONSES TO THE UTAH DIVISION OF OIL, GAS & MINING  
LETTER DATED JULY 2, 1982

---

Item No.	UMC No.	Title
1	782.13	Identification of Interests

It is stated in the plan that Western Coal Reserve owns the minerals in and adjacent to the proposed disposal site. Conversations with Skyline representatives indicate that due to seam pinchouts to the south and the coal fires adjacent to and under the road, mining of the underlying seams is not plausible. The plan should include a statement to this effect, along with a letter of confirmation from Western Reserve Coal. This will assure that no future mining is planned which may be adversely affected by the currently-proposed use of the surface.

Response

The Applicant has included a statement in the plan regarding the coal and the potential for future mining. A letter from Western Reserve Coal is not included. The Applicant is not aware of any mining exploration or mining development activity in the area and there are no mine plans submitted which have been tendered for regulatory authority review and approved.

Text

Mining in the coal seams beneath the abandoned strip pit is extremely unlikely due to variable seam thicknesses, seam pinchouts, and fires in one of the abandoned underground mines adjacent to the site. In addition, the coal seams are terminated to the east by large displacement faulting and terminated to the west by erosion and faulting. The fires in one or more of the seams effectively sterilizes any unmined coal in and adjacent to the mines.

Item No.	UMC No.	Title
2	782.15	Right of Entry and Operation Information

The Applicant should provide description of, or documents which verify, the right of access and use of affected lands. Identify the type and date of execution, the specific lands the documents pertain to, and the legal rights claimed by the Applicant.

Has the problem regarding the access to the Telonis' property gate been cleared up? Please provide like documentation.

Response

The Applicant has included a photocopy of the property lease in the application as Exhibit 1.

The Applicant has legal access to the leased property. Third parties have wanted to use the gate to gain access to other property.

Text

The proposed rock disposal site and access road are located upon land owned by the Estate of George Telonis. The legal right of access and use of the lands for the disposal of rock waste has been granted to Coastal by the heirs of the Estate in a lease effective January 1, 1982 and expiring, unless renewed, on December 31, 2011 (photocopy of lease attached as Exhibit 1). The lands referred to in the lease include a 7.00 acre right-of-way for the disposal site access road and a 17.83 area tract of land containing the proposed rock waste disposal site. The legal description of the leased lands is:

(See permit application)

Item No.	UMC No.	Title
3	783.19	Vegetation Information

The Division recognizes that the proposed waste rock disposal area is an unreclaimed, previously mined, area whose vegetative community is comprised almost exclusively of species characteristic of disturbed sites. Therefore, a baseline vegetation survey of the disposal area is not warranted. However, it is recommended that the Division be furnished with a vegetation map which depicts the previously-disturbed sites to be affected and the adjacent vegetation communities, particularly a reference area is selected and sampled within the adjacent community.

If the area is to be reclaimed to native rangeland and a new reference area is selected to serve as a standard for revegetation success, statistically adequate, quantitative data pertaining to cover and woody plant density, as well as a statement of productivity, should be supplied by the Applicant. It should be noted that the tree density survey contained in the Application is questionable in that the need for tree density data is dubious if the area will be reclaimed to a shrub/grassland type or improved pastureland. It is also inadequate in that transects were not placed so as to restrict specific sampling units to individual vegetation types, but were placed so as to cross all three communities. This yields an overall estimate for the area surrounding the proposed disposal site, but very little information about any given vegetation type. In addition, the Applicant has defined the sampling points along the transect as the sampling units, whereas the transects, and not the points along the transect, are the sampling units, thus sampling adequacy computed incorrectly.

If the area is to be reclaimed to native rangeland, a reference area or areas from the main mine site can be used to establish the success standards for the disposal site if similarities can be demonstrated (climatological and elevational similarities, similarity of slope and exposure). This would eliminate the need for additional quantitative vegetation sampling if the operator can demonstrate adequacy of sampling in established reference area(s).

#### Response

The Applicant has included a consultant's response to the vegetation information questions with Appendix 2.

The response includes a vegetation map and quantitative data pertaining to cover and woody plant (shrub) density as well as a statement on productivity.

#### Text

See Appendix 2

Item No.	UMC No.	Title
4	784.13	Reclamation Plan: General Requirements

Depending upon the designated post mining land use, the Applicant should reconsider the seed mix and seeding rates submitted in the Application. (It should be noted that the seed mix in Section IV, Reclamation Plan of the Application differs from that in Appendix 1 of the application).

The Applicant states that a broadcast seeding method will be used. The seeding rate for grasses and forbs should be double the rate which is recommended for drill seeding. Broadcast seeding of the disposal site is an approvable method for reseeding. Please revise seeding rates to reflect this concern.

Skyline may wish to employ a cyclone spreader which can accommodate native seed for broadcast seeding since this implement allows for significantly increased uniformity of seed application as well as benefit with regard to operational ease.

The Applicant should commit to either spring or fall seeding, thus eliminating seeding attempts during the summer months. The Division recommends late fall seeding, immediately following topsoil replacement.

The Applicant should specify the rates to be used for applying straw or wood-fiber mulch and the method of anchoring mulch into the soil.

The Applicant should state how revegetation success will be evaluated. In Section IV, Reclamation Plan, it is stated that "reclamation activities will continue until new vegetation has established itself to a level equal to that on adjacent, undisturbed sagebrush and bunchgrass covered lands." This statement implies that the adjacent sagebrush type will, in some way, be utilized as a standard for revegetation success but the point needs clarification. In addition, a revegetation monitoring plan should be discussed, preferably including the collection of cover (total and by species) and density parameters during two or three of the first five years of the bond liability period.

Grazing management practices (e.g. fencing, monitoring) that will be used for the reclaimed and reference (if appropriate) areas should be discussed.

The Applicant should discuss weed control practices to be employed when necessary including how the necessity for weed control will be determined. This request is made due to the condition of the proposed site and adjacent disturbed areas which are dominated by weedy species.

#### Resonse

The Applicant has included a consultant's response to the reclamation plan

questions with Appendix 1.

The Applicant will use the seed mix shown in Appendix 1. The text has been changed to be consistent with Appendix 1.

Text

See Appendix 1.

Item No.	UMC No.	Title
5	784.15	Reclamation Plan: Postmining Land Uses

The Applicant should state the general use of the land prior to disturbance by mining. It is assumed that this use was native rangeland, but it should be so stated. Concurrently, the postmining land use must be designated. For example, if the affected area is to be reclaimed to native rangeland, this should be discussed and appropriate standards for revegetation success should be established. If improved pastureland or hayland is to be the postmining land use objective, the Applicant should comply with the land use change regulatory requirements, (see UMC 817.133 comments) assuming the disposal site was native rangeland prior to being disturbed by any mining. The Applicant should also supply documentation from the landowner/manager as to justify not reclaiming the access road, e.g. a letter stating the landowner's wish that the road remain as is for easier access to the area.

#### Response

The Applicant has included a statement in the text regarding the assumed premining land use and has included a letter from the property owner's representative stating the disposal pit area postmining land use and a request that the access road not be reclaimed.

#### Text

The assumed premining land use was native rangeland. The pit area will be reclaimed to native rangeland per the reclamation plan. The access road will not be reclaimed.

Item No.	UMC No.	Title
6	784.20	Underground Development Waste

The plan mentions the coal fires and resulting subsidence on the hillside north of the access road and disposal site. The road does not now appear to be heavily traveled but the increased traffic from heavy trucks may increase the instability of the underlying burned areas. What precautions will be taken to protect the road and/or what mitigation is planned in case of subsidence? Will there be a monitoring program?

Response

The Applicant has included a statement in the text.

Text

Near-surface portions of the UP coal seam which were mined and then burned have subsided at the intersection of entries. Other areas have developed subsidence cracks which transfer the coal fire combustion products to the surface generally leaving coal-like condensates which are readily apparent in field examinations. No evidence of subsidence or of coal fires have been observed under or within ten or more feet from either side of the existing road. The anticipated infrequent need to use the rock waste disposal site once there is sufficient underground development for the material to be permanently stored underground will minimize the potential for subsidence due to truck traffic over the road. Truck drivers will be trained to look for the surface evidence of subsidence and, should subsidence occur, good engineering practices will be employed in backfilling and compacting the subsided area. A subsidence monitoring program is not needed due to the absence of current mining and the inferred low density of underground development beneath the access road alignment.

Item No.	UMC No.	Title
7	805.11	Determination of Bond Amount

The Applicant should submit a proposed bond breakdown addressing grading and contouring, stabilization, labor (per hour cost, man hours for labor), equipment costs including mobilization and de-mobilization, topsoil addition, fertilization, seeding, mulch, maintenance and monitoring as well as an inflation factor.

Response

The Applicant has included the calculations of the amount of the reclamation bond in the application.

Text

There will be a total of 5.0 acres directly affected or disturbed by the upgraded access road and proposed rock waste disposal site. The total of 5.0 acres includes 2.7 acres for the access road and 2.3 acres for the disposal site.

These acreages are an estimate of the lands to be disturbed or otherwise affected by the road, including cut and fill slopes and the disposal site including the drainage diversion area. There is a total of 24.83 acres leased by Coastal including 7.0 acres for the access road and 17.83 acres for the site.

The property owner's representative requested (Exhibit 1) that the access road not be reclaimed and, therefore, the Applicant will bond for the reclamation of the 2.3 acres of land to be affected at the disposal site.

Calculation of the Amount of the Bond

The disturbed acreage to be reclaimed will be approximately 2.3 acres. The calculation of the bond amount in 1979 dollars is as follows:

Ripping	2.3 acres x \$2,000 per acre	\$4,600
Topsoil Addition	2.3 acres x \$2,200 per acre	5,060
Fertilization	2.3 acres x \$300 per acre	690

Seeding	2.3 acres x \$500 per acre	\$1,150
Moisture Retention	2.3 acres x \$1,000 per acre	2,300
Maintenance and Monitoring	2.3 acres x \$1,000 per acre	<u>2,300</u>
	Total	\$16,100

An inflation factor of 8 percent is assumed. The inflated cost of reclamation when the rock disposal site permit is renewed in 1988 is, therefore, approximately \$32,200 ( $1.08^9 \times 16,100 = \$32,184$ ).

The inflated cost of reclamation at the time of permit renewal in 1988 is \$32,200. A bond in this amount will be obtained upon notification of conditional approval of the permit application.

Item No.	UMC No.	Title
8	805.14	Adjustments of Amounts

Due to the decrease in acreage resulting from the deletion of the UDOT road, the Applicant may wish to consider a bond adjustment to reflect the difference between the required bond for the Rock Waste Disposal Area and the surplus bond resulting from the exclusion of the mine access road.

In the Revegetation Plan Appendix I to the Plan for Disposal of Rock Waste, a total area of 12 acres is indicated. Please clarify this statement. Also, in IV Reclamation Plan a 15-acre figure is used. Division analysis indicates that 16.9 acres accounts for the area of the access road. Please clarify.

#### Response

No adjustment of the approved Skyline Mining and Reclamation Permit bond is planned at this time.

#### Text

The Applicant's consultant stated in Appendix 1 that "the total area to be reclaimed will not exceed 12 acres." The consultant's report was prepared prior to the completion of the planning for the pit. The actual amount of land to be reclaimed will be the area bounded by the crest of the walls of the existing pit along the north edge and the 7990 contour to the south. It has been determined by planimetry that the disturbed area to be reclaimed by the Applicant will not exceed 2.3 acres. The 15-acre figure refers to the acreage bonded for the UDOT highway and not the rock waste disposal site or access road.

Item No.	UMC No.	Title
9	817.22	Topsoil Removal

(e) Topsoil substitutes and supplements.

In the Soils portion of the Vegetation and Soils report, it is stated that additional soil, if required, could be obtained from a borrow in a local drainage area. Given the volume of stockpiled topsoil at the loadout, why would any topsoil supplements be needed?

Response

The Applicant's statements in the text of the permit application are correct and the consultant's statement in Appendix 2 should be disregarded. Topsoil from either the loadout or Skyline minesite will be used, if required.

Item No.	UMC No.	Title
11	817.25	Topsoil: Nutrients and Soil Amendments

What is the potential for upward migration of salts from the waste rock into the surface soil? Might this have an adverse effect on revegetation? Analysis of this material prior to the initiation of reclamation activities is necessary. A commitment to analyze for electrical conductivity (soluble salts), Sodium Content (expressed as PPM) and Sodium Absorption Ratio (SAR) is needed prior to revegetation efforts.

The Applicant states in IV Reclamation Plan that 150 pounds per acre of available nitrogen will be applied. What nitrogen compound will be applied to achieve the desired rate of available nitrogen? Also, if straw mulch is employed, the Applicant should consider what microbial breakdown uses a substantial amount of nitrogen. Has this been compensated for in the proposed rate of application?

Will soil tests be done prior to revegetation efforts to identify any nutrient deficiencies? The Applicant does not mention the application of phosphorous or potassium amendments will not be required?

#### Response

The Applicant has included statements in the text.

#### Text

The potential for upward migration of salts is unknown. The Applicant commits to analyze for electrical conductivity sodium content and sodium absorption ratio prior to revegetation efforts.

Fertilizer rates may change after the soil's analyses of the topsoil are completed. The Applicant plans at this point to apply 100 lbs. per acre of available nitrogen rather than 150 lbs. as stated. The consultant has recommended that wood fiber mulch be used; hence, nitrogen consumption due to microbial breakdown has not been considered. The Applicant's consultant has stated that phosphorous and potassium concentration based upon Skyline's data should be adequate in the aspen soils, and, therefore, since the topsoil will be an aspen type, no potassium or phosphorous is recommended. The Applicant plans to test the topsoil before it is seeded to determine the type and amount of fertilizer or neutralizer required. The soil's analyses will

determine the following components: (a) micro-nutrients, (b) potassium, (c) calcium, (d) magnesium, (e) phosphorus, (f) nitrogen; (g) soil pH and salinity, and (h) soil texture.

Item No.	UMC No.	Title
12	817.42	Hydraulic Balance: Water Quality Standards and Effluent Limitation

The Applicant states in IV Reclamation Plan that "all ditches and retaining walls will be reclaimed just following the final storage of rock waste." UMC 817.42(2) requires that sedimentation ponds and treatment facilities be maintained until the vegetation success standards of UMC 817.111-817.117 are met.

In light of this, the Applicant should commit to maintaining all treatment facilities until the success standards are met.

#### Response

The text has been edited to state that all ditches and retaining walls will not be reclaimed until the vegetation success standards are met.

#### Text

All ditches and retaining walls will be maintained until the vegetation success standards of UMC 817.111-817.117 are met.

Item No.	UMC No.	Title
13	817.43	Hydrologic Balance: Diversions and Conveyance of Overland Flow

In Appendix 5 the Applicant provides calculations intended to demonstrate that the diversion design is adequate to meet a 10-year 24-hour event. This cannot be verified by staff calculations. However, it has been verified that the design is adequate to meet the required 10-year 24-hour event. Please clarify this discrepancy.

*original  
letter?*

Response

The Applicant has revised Appendix 5 and acknowledges that the diversion design is adequate to meet the required 10-year 24-hour event.

Item No.	UMC No.	Title
14	817.71	Disposal of Underground Development Waste and Excess Spoil and Non-acid and Non-toxic-forming Coal Processing Waste: General Requirements

Since all underground development waste will be hauled to the disposal area (located in excess of 4 miles from the permit area proper), the potential for some accidental spillage of such materials exists. In the event that spills occur, how will they be cleaned up? Please indicate a procedure along with a time frame addressing this concern.

(a) More detail is needed to describe the source and nature (including swell factor) of underground development waste material to be stored in the proposed underground waste disposal site. Will this material arise from portal face-up work, igneous dikes, faults, old stream channel, etc? What will be the approximate storage volume available at this proposed site? Is this storage volume adequate based on the volume of underground development waste anticipated to be generated during the life of this operation?

In the event that the operation generates a quantity of such materials which exceeds the storage capacity of this storage site, how will this material be handled? Are alternate sites available? Are these sites on or off the permit area?

(b) The Applicant should submit designs prepared by a registered professional engineer addressing the method and placement of underground development waste, stability analysis, and mass stability.

What parameters will be utilized in the stability analysis? Please provide the applicable calculations used, the field observation and results of laboratory tests, etc. used by the registered professional engineer to make his or her determination.

#### Response

The Applicant has developed responses regarding accidental spillage and the nature of the material to be disposed of in the pit which are included in the text.

The requirements of UMC 817.71(f) are very similar to those in 30 CFR:77.215(h); however, both regulations appear to address rock fills built-up upon a surface resulting in a mound-like or ridge-like final shape. The stability concerns addressed in UMC 817.71 and 817.74, therefore, would not appear to apply to the unique situation of the Applicant's proposed use of the abandoned strip pit.

Text

Accidental spillage of rock waste during haulage from the minesite to the disposal site will be minimized by not overloading the haulage trucks. Accidental spills, if they occur, will be cleaned up by shoveling the material into a truck and transporting the material to the disposal site within 24 hours after the accidental spill.

The Applicant plans to use the rock disposal site to dispose of underground rock waste produced during mining operations which cannot be permanently stored underground due to either the lack of adequate storage room or the content of coal exceeding the limits specified in 30 CFR:75.400 through 30 CFR:75.403 which require that combustible coal content of the rock dust on the roof, ribs or floor of an underground coal mine not exceed 35 percent in intake air and 20 percent in return air. The volume of material which must be disposed of at a surface disposal site will be limited to a very small fraction of the total rock waste storage areas which result from mining coal. The economics of loading, hauling, and disposing of rock waste at any point other than underground effectively mitigate the extensive use of a surface rock waste storage site.

The most likely sources of rock which might be disposed of at the proposed site include rock produced during fault crossing and igneous dike rock encountered during mining. Portal face-up work is essentially completed and would not be a likely source of material to be stored at the proposed site. Ancient stream channels are infrequently of sufficient magnitude that they cannot be stored underground adjacent to the place they are encountered.

The roof and floor rock for the three mineable Skyline coal seams is estimated to be comprised of 60 percent sandstone, 30 percent shale, and 10 percent claystone. The igneous dike rock varies in composition but is essentially comprised of 100 percent ferromagnesian minerals. The majority of dike rock which would require surface disposal appears very similar to basalt and is very durable being extremely resistant to weathering. The volumetric swell factor for the igneous and sedimentary rock is estimated to be 30 percent.

The proposed site is estimated to have a storage volume of 131,000 cubic yards which the Applicant considers adequate to contain the rock waste requiring outside disposal during the life of the operation. Alternate storage sites have not been considered.

The Applicant estimates that approximately 1600 tons or 1,077 cubic yards (at 110 lb/cubic ft. density) per year of rock will be disposed of at the proposed site.

The proposed rock waste disposal site is unique in that it is an abandoned strip pit which, as can be seen in Map Number 3, has a narrower entrance than the main body of the pit. The configuration of the pit and the requirements of 30 CFR:77.215(h) which require that refuse be disposed of in compacted layers not exceeding two feet in thickness will, in combination with the operational necessity of operating heavy vehicles on the fill, lead to a very stable fill.

Item No.	UMC No.	Title
10	817.24	Topsoil: Redistribution

How will the Applicant ensure that soil applied on the surface of waste rock does not escape into the pore space of the fill?

On the other hand, if the rock waste material is compacted, what affect will this have on the drainage? If the compacted material presents an impermeable barrier restricting drainage, moisture problems or stability problems could occur.

How will these concerns be mitigated? Will the operator reduce the compaction in the final layer? Will some type of fill material be utilized to prevent soil loss into pore space? Please provide additional detail to address either or both of these concerns aimed at portraying a clearer concept of what the field reality of topsoil redistribution will entail.

Is one foot of topsoil adequate to provide a suitable rooting volume considering the species selected for revegetation? Please provide information to justify this intended depth of replacement.

#### Response

The Applicant has included statements in the text regarding the low probability of the topsoil loss into the pore space in the fill and the thickness of topsoil to be emplaced.

#### Text

Topsoil will be applied to the final layer of moderately-compacted rock waste material. Typically, the rock waste which will be disposed of in the pit, consists of 36.0 percent less than  $1/4 \times 0$  inch material and 28.6 percent between  $1 \times \frac{1}{2}$  and  $\frac{1}{2} \times \frac{1}{2}$  inch (Exhibit 3). Therefore, the loss of topsoil into the pore space of the fill should not be a problem. The moderately-compacted final layer of fill should not, on the other hand, be an impermeable barrier which will restrict drainage.

The results of revegetation work at the Skyline Mine suggests that 12 inches of topsoil will be adequate for the proposed rock waste disposal site.

Item No.	UMC No.	Title
15	817.74	Disposal of Underground Development Waste and Excess Spoil: Durable Rock Fills

Please outline which test will be utilized by the professional engineer to ensure that no more than 20 percent of the volume of the fill will be materials other than hard rock waste as defined in UMC 817.74. How will results of these tests which occur on materials generated later in the life of the mine be reported?

The Applicant states in III Development and Operations Plan that "an initial 3-4 feet high barrier" will be constructed in order to "isolate exposed coal seam along the walls." Please provide additional detail showing where in the pit activities aimed at isolating the coal seam will occur and the sequence of activities required to achieve this. Where is the 3-4 foot high barrier to be located?

Please provide the results of the Slake index and Slake durability test to establish the durability of underground development waste material.

Are there any known seeps or springs in the immediate area which might have an adverse effect on the stability of the fill?

### Response

There is a statement in the text following addressing the materials testing.

Statements regarding the construction of the barrier to isolate exposed coal in the pit, springs or seeps are included in the text.

### Text

The materials properties requirements referenced in UMC 817.74 appear, as in UMC 817.71 to address concerns of the stability of rock fills built-up on a surface rather than the filling of an abandoned strip pit. The Applicant's long-term use of the proposed disposal site and the operation of heavy vehicles upon each lift of fill which will not exceed two feet in thickness would appear adequate to ensure the continued compaction of the fill and ultimately, the long-term stability of the fill.

There are two locations in the pit where coal is exposed. These exposures of the coal seam are shown in Map 4. The exposure in the west end of the pit will require sealing before any dumping of waste is undertaken. The initial

3-4 feet high barrier will be built-up of incombustible material and will be obtained from the slope detritus along the highwall. The material will be dumped alongside and on top of the exposed coal and compacted to form the barrier between the exposed coal and material to be dumped.

The second location where coal is exposed is in the extreme east end of the pit in the highwall. This location will probably never require sealing since the pit will not reach the location upon attaining final fill configuration (Map 3).

The reference to the slake index and durability test in UMC 817.74 again appears to apply to fills built-up upon a surface rather than the Applicant's proposed use of the abandoned strip pit.

There are no known seeps or springs in the immediate area which might have an adverse effect on the stability of the fill.

Item No.	UMC No.	Title
16	817.133	Postmining Land Use

The Applicant is advised to assess the postmining land use of the waste rock disposal area on the basis of Sections (b)(1) and (c)(1) of this performance standard. Postmining land use of the site should be judged on the basis of land uses in surrounding areas which have received proper management, i.e. the postmining land use should be compatible with that on adjacent lands. As the area in question is fee property, the Applicant should supply a written statement from the landowner/manager outlining the intended use of the area after reclamation if it is desired to return the land to a use other than native rangeland which is the assumed land use in areas surrounding the site.

#### Response

The Applicant has included a letter (Exhibit 2) from the property owner's representative regarding the postmining land use.

The pit area will be filled and leveled for subsequent use as a stock containment area or corral.

#### Text

The representative of the owners of the leased property have, through a letter (Exhibit 2) to the Applicant, stated that the land around the proposed disposal site will be used for grazing once the abandoned strip pit is filled.

The owner's representative requests that the pit fill be leveled off so that it can be used for corrals. The leveled-off fill will be reclaimed to native rangeland per the Reclamation Plan.

Item No.	UMC No.	Title
17	817.163	Roads: Class II Drainage

In one location of the access road, drainage carried in the diversion ditch crosses the road. Because of this, an increasing potential for erosion is evident. Please submit a statement regarding the erosion protection necessary at this location. Will rip-rap be employed? If so, what size rock will be used?

Response

A statement has been included in the text.

Text

The dip to redirect the drainage across the access road and into the original stream channel will be rip-rapped with a blanket of reasonably well-graded, hard, durable native rock, approximately 4" x 4" or larger in size, compacted in a layer approximately two feet deep and no less than 30 feet wide. The surface of the rip-rap blanket will be graded that water will be directed into the original stream channel to the south of the road.

Glen A. Zumwalt  
Vice President and  
General Manager



**Utah Fuel  
Company**

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(801) 637-7925 or  
Salt Lake (801) 566-7111

Subsidiary of  
Coastal States  
Energy Company

June 5, 1984

**RECEIVED**

**JUN 6 1984**

**DIVISION OF OIL  
GAS & MINING**

Mr. James W. Smith  
Coordinator of Mined Land Development  
UTAH DIVISION OF OIL, GAS & MINING  
4241 State Office Building  
Salt Lake City, UT 84114

Re: Scofield Rock Waste Disposal Site - Responses to Technical  
Review Letter of May 22, 1984

Dear Mr. Smith:

Enclosed herewith please find 13 copies of the responses to your  
technical review letter on our permit application for the Scofield Rock  
Waste Disposal Site.

If there remains any questions or information needed to grant an ap-  
proval for us to begin construction of the site, please contact me as soon  
as possible as we would like to begin construction this month.

Sincerely,

Glen A. Zumwalt  
Vice President & General Manager

GAZ:GK:jsg

Enclosure

sc: Wayne Hedburg, UDGOM

Item No.	UMC No.	Title
1	782.13	Identification of Interests

Exhibit # 2 letter from the landowner (Mr. Telonis) must be notarized or witnessed. This will assure protection for both the landowner and the mine operator.

Response

The letter from the landowner (Exhibit 2) has been notarized and is included herewith.

Item No.	UMC No.	Title
2	784.14	Protection of Hydrologic Balance

The surface water monitoring proposal commits to establishing four monitoring points, the locations of which will not be established until after snow melt in the spring of 1984.

Surface water sampling should be undertaken during the snowmelt period this year (spring 1984) to set some baseline data.

A map of the location of the sampling sites (UMC 783.25) should be forwarded to the Division no later than June 6, 1984.

#### Response

The Applicant went into the area during the snow melt to take water samples. At that time there was no runoff and there was no evidence that runoff had occurred earlier. No water samples have been obtained to date. The Applicant will continue to monitor the area and will take samples at the first opportunity.

A revised Map 1 showing the location of the four sampling sites is included herewith.

Item No.	UMC No.	Title
3	784.24	Transportation Facilities

The applicant has committed to scarifying and revegetating cut and fill slopes on the access road (page 123 of March 28, 1984 submittal), but gives no specification on how revegetation will be accomplished. What will constitute successful revegetation which is adequate to provide sediment control? This needs to be specified.

The applicant commits to spacing cross drains for the access road based on UMC 817.163(c) (2) (6). This should be UMC 817.163(c) (2) (i) for clarity.

#### Response

The Applicant will reseed the road cut and fill slopes by broadcasting with a cyclone seeder at a rate of 18 pounds per acre using the same seed mix that will be used to reclaim the disposal site (see page 13 and 14 of the text). Revegetation efforts will be surveyed after three growing seasons. If at least 50% ground cover on newly disturbed areas is not achieved by that time, additional revegetation efforts will be undertaken to improve the ground cover density. The exact additional effort will be mutually determined at that time. The corrected reference to the spacing of cross drains is noted.

Item No.	UMC No.	Title
4	817.24	Topsoil Redistribution

The applicant persists in failing to demonstrate that one foot of soil is adequate rooting volume. In Appendix 2, the applicant states that local soils are correlated to the Croydon series (B horizon extends to 40 inch depth). Rather than justifying the depth by on-site success, the company dropped references to such success. The problem still remains, since to emulate the natural condition more soil depth may be required. Further, some of the species chosen are deeply rooted and as such the potential for their utilization of the waste rock zone should be considered.

From figures supplied by the applicant, adequate surplus soil is available to cover the waste rock to a three foot volume if deemed necessary.

The applicant should provide data on soil depth from the reference area to establish the requirements of the native community for comparison.

While the applicant has indicated that the loss of soil into voids is not probable, measures to preclude impaired drainage and provide for good material contact at the soil-rock waste interface should be further elucidated. Measures such as ripping or scarification to adequate depth in the waste rock zone to facilitate good contact and enhance drainage should be proposed.

The applicant must indicate the implements to be employed in soil redistribution and scarification/ripping activities.

### Response

The Applicant has examined the soil profile in two soil pits within the reference area. In the first soil pit the topsoil ("A" horizon) depth was 7.5" and the "B" horizon was 4.75" thick. In the second soil pit the topsoil was 5.25" deep and the "B" horizon was 4" thick. Other than a few tap roots, very few hair roots were observed beyond the "B" horizon. This information corroborates our consultant recommendation that 12 inches of topsoil will be adequate for reclaiming the disposal site.

The Applicant does commit to scarifying the surface of the disposal site prior to putting the topsoil on by ripping to a minimum depth of 6". A D-3 or equivalent tractor with rippers will be used to scarify the surface of the disposal site.

Item No.	UMC No.	Title
5	817.24	Topsoil: Nutrients and Soil Amendments

Nitrogen utilization by microorganisms engaged in decomposition of organics is related to the C:N ratio (the wider the ratio of the material in question the greater the potential for N depletion). Given this, why does the applicant state (page 13) that "nitrogen consumption due to microbial breakdown has not been considered?" Wood mulch has a wide C:N ratio. Please provide rationale.

As per our discussion in the DOGM office on May 10, 1984, the applicant should provide both the rate of Nitrogen to be provided and the quantity of the fertilizer necessary to provide the proposed amount of N.

#### Response

The nitrogen consumption due to microbial breakdown has not been considered because: 1) the amount of nitrogen that has been applied (150 pounds available per acre) is the maximum that can safely be applied without causing injury to the germinating seedlings, 2) wood fiber mulch has a wide C:N ratio, however, when used as a mulch a very minimal amount is actually incorporated into the soil mantle and therefore, has a minimal effect on the soil C:N ratio, and 3) wood fiber, when used as a mulch, is used to help retain soil moisture which in turn improves microbial action.

Current formulations of ammonium nitrate contain 34% nitrogen, therefore 442 pounds of ammonium nitrate will be needed to obtain 150 pounds of available nitrogen. The Applicant will therefore apply 442 pounds of ammonium nitrate fertilizer containing 35% available nitrogen in order to attain the 150 pounds of available nitrogen per acre. The quantity of fertilizer applied per acre may change if the available nitrogen content changes however, the Applicant does commit to maintain the application rate of 150 pounds of available nitrogen per acre.

Item No.	UMC No.	Title
6	817.111-.117	Revegetation

The applicant has indicated that seeds will be sown by hand and a wet fiber mulch placed atop the surface. It is suggested that the seedbed be lightly dragged to cover the seeds with soil before mulching. This will help prevent seed from attaching to the wet mulch and being pulled away from the soil surface upon drying.

Response

The Applicant commits to lightly dragging the surface to cover the seeds before mulching.

Glen A. Zumwalt  
Vice President and  
General Manager

copy 3 of 6



**Utah Fuel  
Company**

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Salt Lake (801) 566-7111

Subsidiary of  
Coastal States  
Energy Company

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JUL 18 1984

DIVISION OF OIL  
GAS & MINING

July 17, 1984

Ms. Dianne R. Nielson, Director  
State of Utah  
Natural Resource and Energy  
DIVISION OF OIL, GAS & MINING  
4241 State Office Building  
Salt Lake City, Utah 84114

Re: Scofield Rock Waste Disposal Site Findings Deficiencies  
Letter of July 16, 1984

Dear Ms. Nielson:

Enclosed herewith please find 13 copies of the responses to your findings deficiencies letter regarding our Scofield Rock Waste Disposal Site permit application.

We have verbally reviewed the responses to item 1, 2, and 3 with Tom Portle and understand that they are acceptable in principal, however please notify us should any questions remain.

Sincerely,

Glen A. Zumwalt  
Vice President and General Manager

GAZ/kj  
enclosures

Item No.

1

Utah Fuel Company must provide supporting documentation to address the specific origin and ownership of all the topsoil currently stockpiled at the Skyline unit-train loadout area. This soil is proposed for ultimate reclamation of that site disturbance and the rock waste disposal site.

Apparently there is some confusion as to whether the topsoil stockpiled at the loadout site was generated solely from the disturbance of fee property (eg., unit-train/loadout area) or from a combination of disturbances from fee and federal properties. This required documentation should resolve this question to the satisfaction of all concerned parties.

#### Applicant's Response

The topsoil contained in the topsoil stockpile at the unit-train loadout site was derived solely from excavation work on fee simple property. The Applicant made no calculations of topsoil to be stripped and maintained no records of topsoil volumes excavated during topsoil stripping activities. The Applicant did comply with all appropriate regulations regarding the stripping and stockpiling of topsoil material.

Item No.

2

The specific volume and depth of soil required (as previously approved) for reclamation of the unit-train/loadout site and the volume of soil (excess) which will be available for final reclamation of the rock waste disposal site.

Applicant's Response

The minimum specific volume of topsoil required for the reclamation of the unit-train loadout site has been calculated to be 9,519 cubic yards. This calculation is based upon data in a report entitled, "Response to Request for Soils Information Concerning Special Stipulation on Topsoil," which is contained in Volume A-8 of the approved Skyline Mining and Reclamation Plan (SMRP). The data used in obtaining the above volume of topsoil required to reclaim the loadout site are found on pages 2 and 4 of the above document. The loadout site encompasses a total of 9 acres of surface area of which 7.8 acres are in the Grass/Forb vegetation designation and 1.2 acres in the Spruce/Fir vegetation designation. There will be 6 inches of topsoil applied in the Grass/Forb areas and 20 inches of topsoil applied in the Spruce/Fir areas per page 4 of the above report, hence the calculated required topsoil volumes of 6,292 cubic yards in the Grass/Forb areas at 3,227 cubic yards in the Spruce/Fir areas for a total of 9,519 cubic yards of required topsoil.

There are 22,090 cubic yards of topsoil contained in the loadout topsoil stockpile (letter to J.W. Smith dated 10-17-1983). The 12 inches of topsoil to be applied to the 2.3 acres of surface area at the rock waste disposal site will require 3,711 cubic yards of topsoil material from the loadout topsoil stockpile. Therefore there will be required a total of 13,230 cubic yards of topsoil to reclaim both sites which will result in a net excess of 8,860 cubic yards of topsoil.

Item No.

3

Utah Fuel Company must provide a sufficient depth of rooting medium to allow for a reasonable potential to achieve productivity, based in accord with the plant community in the nearby reference area and based on pertinent research.

In order to accomplish this, Utah Fuel Company may either commit to:

- A. An 18 inch topsoil replacement, or
- B. Ripping the subsurface material to a 12-inch depth. This will afford a 24-inch depth of soil and soil-like underground development waste for reclamation.

Should Utah Fuel Company elect to rip to 12 inches into the underground development waste, a plan to provide appropriate fertilizer amendments to the underground development waste must be included as part of the final reclamation plan for the disposal site.

#### Applicant's Response

The Applicant elects to commit to the procedures described in option B of the above. The Applicant will therefore rip the subsurface material to a 12-inch depth and will provide appropriate amounts of fertilizer to the subsurface material after performing soil analyses as described on page 13 of the permit application. The Applicant will attain a minimum of 150 pounds per acre rate of available nitrogen.

The Applicant will then apply and distribute 3,711 cubic yards of topsoil material to be obtained from the train loadout topsoil stockpile in order to attain 12 inches of topsoil replacement.

Item No.

4

A commitment to the conditions outlined in the attached draft technical analysis (TA) as discussed on page 7, Stipulation 817.42-(1)-JW, and page 15, Stipulation 817.163-(1)-JW must be provided as well.

Applicant's Response

The Applicant will respond to stipulations UMC 817.52-(1)-JW and UMC 817.163-(1)-JW within 30 days of permit approval and will supply all required maps, data, and information within the stipulated 30 days.