

SUMMIT COUNTY STATE OF UTAH

CLERK - AUDITOR
REED D. PACE

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ROBERT H. WILLIAMS

RECORDER
ALAN SPRIGGS

P. O. BOX 128
COALVILLE, UTAH
84017

BOARD OF COMMISSIONERS
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ATTORNEY
ROBERT ADKINS

SHERIFF
FRED ELEY

ASSESSOR
LEO O. FRAZIER

November 13, 1984

To Whom It May Concern:

I hereby state that sometime between June 14, 1984 and July 14, 1984 I saw posted, on the bulletin board at the Summit County Courthouse, the Public Notice of Summit Coal Company, Inc. of which a copy is enclosed.

Leo O. Frazier
Summit County Assessor

Subscribed to and sworn before me, Aloma M. Richins
a Notary of Public, this 13th day of November 1984, the above
person Leo O. Frazier signed this said
document.

Commission Expires.
11-9-86

Notary Aloma M. Richins
Coalville, Utah

PUBLIC NOTICE

Public Notice is hereby given that SUMMIT COAL COMPANY, INC. has submitted to the UTAH DIVISION OF OIL, GAS AND MINING a COAL EXPLORATION PLAN FOR MORE THAN 250 TONS.. This plan was submitted to the division on February 29, 1984 with additional information submitted on April 20, 1984. Public comments regarding this plan can be submitted in writing for 30 days from the date below to:

Mr. Ron Daniels
Division of Oil, Gas, & Mining
4241 State Office Building
Salt Lake City, Utah 84114

SUMMIT COAL COMPANY, INC. plans to develop an exploration mine at a site approximately 11 mile east of the town of Coalville along the Chalk Creek road. The planned mine site is located in the northeast quarter of Section 36, Township 3 North, Range 6 East, SLM, with underground mining to occur in portions of Sections 25 and 36.

SUMMIT COAL COMPANY, INC.
P. O. Drawer 7
Coalville, Utah 84017

Dated June 14, 1984

cc: Summit County Courthouse
Coalville Post Office

#1 OF 3

To Wayne
SEP/09/002

JIM

SEP 10 1984

RECEIVED

SEP 7 1984

**DIVISION OF OIL
GAS & MINING**

September 7, 1984

Summit Coal Company
Leonard J. Maki
8347 So. Mesa Dr.
Sandy, Utah 84092

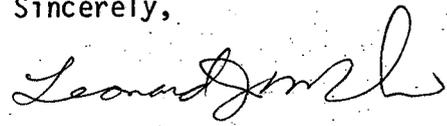
Utah Division of Oil, Gas & Mining
4241 State Office Building
Salt Lake City, Utah 84114

Mr. James W. Smith:

Attached is the additional information requested by the Division. The format is that of a question-answer. Each concern is stated in its entirety and the reply is addressed to each. Some of the data and maps is also contained in an appendix.

Your continued cooperation in expediting the permitting process for Summit Coal Company will be greatly appreciated.

Sincerely,



Leonard J. Maki

UMC 776.15(a)

The applicant must provide documentation that acceptable roof and floor and ventilation control plans have been approved by MSHA for the initial exploration phases (i.e., limited tonnage extraction).

Since this exploration plan entails mine development, the Division will require a reclamation bond to be submitted as a condition of approval. The following comments deal with specifics of establishing a reclamation bond and liability insurance.

The applicant should complete the attached certificate of liability insurance form to be on file at the Division (as per UMC 800.12 and 806.14).

Summit Reply:

PROVIDE NOW!

Summit Coal Co. will provide to DOGM, prior to the start of underground mining, an MSHA approved roof, floor and ventilation control plan.

Summit Coal Co. is aware of the requirement for a reclamation bond and plans to supply such a bond.

Summit Coal Co. will provide a completed certificate of liability insurance prior to the start of work on the Boyer Mine Exploration Mine.

UMC 815.15(c)

The applicant must demonstrate that the 24" road culvert is adequately sized to handle runoff.

The applicant must show the location of all road culverts and demonstrate that they are adequately sized.

Please describe the slope of all roads on a map.

The applicant must provide a letter indicating that either Summit County or Mr. Boyer is willing to accept responsibility for and provide maintenance on the road or provide a map showing the recontoured roads.

Summit Reply:

NOTHING ON ROADS PLATE 5-1

The rainfall in the Coalville area, historically, averages from 16 to 20 inches per year. In calculating the design of the culverts and ditches, the

100 year, 24 hour peak flow was used. This peak flow is, historically, slightly less than three inches, therefore, for ease of calculation three inches was used.

The location of all of the culverts is shown on Plate 3-1 in Appendix 8-S and denoted by a letter (e.g. A). Below is a list of all the culverts with their required volumes and capacities.

Culvert	Drainage Area Acres	Flow Volume CFS	Cross-Sectional Area Req. V=5 f/s	Planned Culvert Area
A	1.15	0.145	0.029 sf	3.142 sf (24")
B	230	28.99	5.798 sf	7.068 sf (36")
C	230	28.99	5.798 sf	7.068 sf (36")
D	4.82	0.608	0.122 sf	1.767 sf (18")
E	230	28.99	5.798 sf	7.068 sf (36")
F	1.15	0.145	0.029 sf	3.142 sf (24")
G	6.89	0.868	0.174 sf	1.767 sf (18")
H	0.689	0.087	0.017 sf	1.767 sf (18")
J	5.74	0.723	0.145 sf	1.767 sf (18")

UMC 815.15(g)

Demonstrate that the runoff diversion structures for the areas located above disturbed sites are adequately sized for the 25-year, 24-hour runoff peak flow.

Summit Reply:

Using a peak flow for a 100 year, 24 hour event the diversion structures would be designed as follows:

East Side Diversion Structure

Drainage Area Acres	Flow Volume CFS	Cross-Sectional Area Required	Structure Area
230	28.99	5.798 sf	15.0 sf

This structure would be constructed in a trapizoidal cross-section, two feet wide at the bottom, eight feet wide at the top and three feet deep.

West Side Diversion Structure

Drainage Area Acres	Flow Volume CFS	Cross-Sectional Area Required	Structure Area
10.44	1.316	0.263 sf	4.0 sf

This diversion structure would be constructed in a "V" cross-section, two feet wide and two feet deep.

UMC 815.15(j)

The applicant must demonstrate that the water treatment facility is adequately sized to handle the 10-year, 24-hour runoff volume and that the overflow structure is capable of passing the 25-year, 24-hour peak flow. Also, please demonstrate that discharges from the stored 10-year, 24-hour volume will meet a theoretical average effluent limitation.

Summit Reply:

Using a peak flow for a 100 year, 24 hour event the water treatment facility design comparison to flow is as follows:

Drainage Area Acres	Total Flow Volume Acre Feet	Facility Volume Acre Feet
4.82	1.205	1.6

With the volume of the water treatment facility more than 30 percent larger than the peak 100 year, 24 hour flow, no discharge from this facility is expected, thus meeting a theoretical average effluent limitation.

• UMC 815.15 (d)

The applicant must provide a letter from Mr. Boyer indicating that he accepts responsibility for and will maintain all pads, slopes and embankments associated with the exploration property, or provide a map showing the recontouring of all pads, excavation slopes and embankments following the exploration operation.

Summit Reply:

In order to expedite the permitting process and assure the Division of Summit's willingness to comply with the reclamation requirements, Summit Coal will assume full liability for all reclamation upon cessation of mining.

UMC 815.15 (e)

UMC 817.22 Topsoil: Removal

The applicant must sample by depth intervals, each soil unit. Data on the following parameters is necessary: pH, EC, SAR, percent organic matter, alkalinity, soil texture, saturation percentage, total nitrogen, available nitrogen, and phosphorous.

This data will be used in conjunction with soils descriptions to arrive at removal depths.

A map depicting the various soil types with sample locations shall be submitted. This map or another shall be used to generate a topsoil removal map which is to be submitted.

The exact acreages and removal depths will then be available allowing the applicant to provide the Division with the volume of soil to be removed.

Summit Reply:

Appendix 8-S (attached) contains the following soils data:

1. Sample procedures.
2. Laboratory results.
3. Map - shows sample sites, depth of soils and soil types.

4. A brief scenerio to be

UMC 817

A map of area(s) configurat

Summit Rep

Appendix 8-topsoil pile

Topsoil pile locations not shown on plate 8-1 see plate 3-1

page of pile

map, mation.

(DOGM) The applicant must provide the interim topsoil storage protection (prior to the establishment of a protective cover of vegetation). Straw mulch applied at a rate of 2000 pounds per acre is a typical and acceptable method.

Please cite the seed mix to be used for topsoil stockpile revegetation and stabilization.

Summit Reply:

Summit as to piles w of Terra applicati either na or by use with the mulching, ary straw run-off from

No seed mix described

nanner . The 40# This e of vel lch nd tempor- to contain all potential or the slope.

The short-term topsoil stockpile will be sprayed with a tackifying agent to retard wind and water erosion. The long-term soil stockpiles

4. A brief scenerio indicating the location(s) of soils to be removed and the approximate quantities.

UMC 817.23 Topsoil: Storage

A map showing the exact location and aerial extent of the storage area(s) must be provided. Cross-sections of anticipated stockpile configuration must be submitted. Outslopes must be less than 2.5:1.

Summit Reply:

Appendix 8-S, Plate 3-1 (cross section), and Plate 8-1 (soils map, topsoil pile locations) contain the above information.

(DOG M) The applicant must provide the interim topsoil storage protection (prior to the establishment of a protective cover of vegetation). Straw mulch applied at a rate of 2000 pounds per acre is a typical and acceptable method.

Please cite the seed mix to be used for topsoil stockpile revegetation and stabilization.

Summit Reply:

Summit Coal will construct topsoil storage piles in such a manner as to minimize erosion with slopes that will not exceed 2.5:1. The piles will be hydroseeded with the attached interim seed mix, 40# of Terra Tac AR/acre will be incorporated in the seed slurry. This application will be followed with the application of 2000#/acre of either native hay mulch which will be crimped in place with a shovel or by use of a mechanical crimper or 2000#/acre of wood fiber mulch with the addition of 60#/acre of Terra Tac AR. Upon seeding and mulching, an earthen berm will be constructed in place of the temporary straw berm. The berm will be designed to contain all potential run-off from the pile at the toe of the slope.

The short-term topsoil stockpile will be sprayed with a tackifying agent to retard wind and water erosion. The long-term soil stockpiles

will be further protected by the following operational steps:

A stable surface will be provided in an area outside the influence of active operations. As a stockpile is implemented, it will be left in a rough condition to minimize erosion.

Stockpiles will be situated out of drainages to prevent water erosion.

Signs will be posted to protect the stockpiles from accidental use as fill or from other inadvertent material contamination. The establishment of noxious plant species will be prevented.

The stockpiled topsoil will not be removed or otherwise disturbed until required for the redistribution operation on a prepared, regraded disturbed area.

UMC 817.24 Topsoil: Redistribution

The applicant must provide post-mining contours and cross-sections.

- * Will grading and regrading be along the contour?
- * Will soil redistribution depth be uniform?
- * Will the overburden be ripped or scarified prior to redistribution of topsoil? To what depth?
- * How will undue compaction be prevented during and after redistribution?
- * How will redistribution topsoil be protected prior to the establishment of vegetation? Will mulch be utilized?
- * What implements will be used to perform the above operations?

Summit Reply:

A post-mining contour map is included in Appendix 8-S, Plate 11-1.

PLANS FOR REDISTRIBUTION OF SOILS

Prior to topsoil redistribution, regraded land will be scarified by a ripper-equipped tractor. The ground surface will be ripped to a suitable depth (14") in order to reduce surface compaction, provide a roughened surface assuring topsoil adherence, and promote root penetration. Steep slope areas which must remain after abandonment will receive special ripping to create ledges, crevices, pockets and depressions. This will allow better soil retention and vegetation establishment.

Within a suitable time period prior to seeding, topsoil will be distributed on areas to be reclaimed. During this time, the topsoil will be allowed to settle and attain equilibrium with its natural environment. This procedure will be followed for areas in which facilities such as roadbeds, mine pads, and building sites are to be abandoned.

Topsoil redistribution procedures will ensure an approximate uniform thickness of 6" minimum. Topsoil will be redistributed at a time of the year suitable for establishment or permanent vegetation.

To minimize compaction of the topsoil following redistribution, travel on reclaimed areas will be limited. After topsoil has been applied, surface compaction will be reduced by using appropriate equipment running at a suitable depth (6"). This operation will also help prepare a proper seed bed and protect the redistributed topsoil from wind and water erosion.

Summit Coal will exercise care to guard against erosion during and after application of topsoil and will employ the necessary measures to ensure the stability of topsoil on graded slopes. An example of the soil stabilization methodology that might be used include the placement of crushed and heavier material at the toe of roadfill slopes, and the random placement of large rocks and boulders on

the surface. This procedure will enhance the microclimate as well as make the reclaimed area more aesthetically compatible with the undisturbed surroundings.

The redistributed topsoil will then be hydroseeded with 40#/acre of tacifying agents and 2000#/acre of wood fiber mulch which is fortified with 80# of tacifyer and appropriate fertilizers to ensure rapid vegetation establishment.

The redistribution of soil will be implemented by the use of conventional earth moving equipment as follows:

- D-6 Crawler tractor (or equivalent)
- 950 End loader (or equivalent)
- 10 yd. dump truck (or equivalent)
- 680 Case backhoe (or equivalent)

UMC 817.25 Topsoil: Nutrients and Soil Amendments

Describe the methods of soil sampling and soil analysis to be performed following soil redistribution.

- * What parameters will be sampled for?
- * How will soil amendment requirements be determined?
- * What implement(s) will be used to apply soil amendments?

Summit Reply: >

Grab samples will be taken on approximately a 300' grid on all reclaimed areas. These samples will be extracted using a core hand auger to a depth of 6". Samples will be consolidated into a single 5# sample per site or acre.

The samples will be analyzed for available Nitrogen, Phosphourus,

Potassium, pH and trace elements. All deficiencies will be addressed with commercially available fertilizers applied in the hydromulching application.

UMC 815.15(f)

The introduced species for reclamation should be replaced with Agropyron trachycaulum (replacing A. unilaterale) and Symphoricarpos oreophilus (replacing S. albus) at the same seeding rate.

Summit Reply:

The above noted species will be utilized as per DOGM recommendations.

UMC 815.15(h) (refer to UMC 817.13-.15)

The applicant should discuss measures to permanently and/or temporarily seal exposed underground openings in light of these regulations. Inclusion of measures to be taken during possible delays between the expiration of exploration activities and commencement of mining should be made.

Summit Reply:

TEMPORARY CESSATION

In the event of a temporary cessation of operation, Summit Coal will notify the Division within 48 hours of pending shutdown and will submit all information regarding exact number of surface acres and the horizontal and vertical extent of sub-surface strata in the permit area prior to cessation or abandonment, extent and kind of surface reclamation, and identification of backfilling, regrading, revegetation, environmental monitoring, underground opening closures and water treatment activities that will continue during temporary cessation.

Temporary Portal Seals

Summit will seal portals which are not to be utilized for mine inspection or access during temporary cessations of operations. These seals will be constructed of woven wire and securely attached to the portal entry so as to make trespass by men or animals prohibitive. All portals which are to be utilized will be posted with "No Trespassing" and "Keep Out" notices. Where doors exist such as fan entries, this will also be locked and signed accordingly.

• UMC 815.15(h & i)

The applicant must provide letter from Mr. Boyer that upon completion of exploration activities, he will take responsibility for maintenance and upkeep of mine entries, buildings, and other surface facilities associated with the exploration operation. If not, provide plans describing compliance with UMC 817.13-.15 and 815.15(i).

Summit Reply:

At this time, Summit Coal will commit to Restoration and Reclamation of associated disturbance with the Boyer Mine exploration. It is Summit's contention that Mr. Boyer must be made totally aware of all aspects of the regulations prior to committing to take responsibility. This option will be left open to Mr. Boyer and at the time of completion of exploration, he can determine whether he wishes to assume the associated liabilities.

Summit Coal is committed to the following restoration:

Building Removal

Office, shop, storage, scale, buildings and bath house:

Each structure will be removed.

Foundations will be removed if they are close to the surface. Deeper foundations will be fractured and covered with at least 3 feet of dirt.

Road Abandonment

The access road and small support roads will be reclaimed. Culverts and blacktop surfacing material will be removed. Reclamation would then include recontouring, ripping, adding cross drains, water bars, topsoil and seed.

Mine Operational System Removal

Systems such as domestic water will be phased out and removed or buried.

Area Cleanup

Solid waste generated in the abandonment operation will be collected and removed.

Disposition of Dams, Ponds and Diversions

After the disturbed areas are stabilized and runoff is comparable to the area's premining conditions without detention time, the site drainage system will be removed. The site drainage system areas will be backfilled and revegetated. All ponds will be drained and allowed to dry; thereafter they will be backfilled and revegetated.

Natural drainage patterns will be returned to a horizontal drainage pattern similar to the original.

Backfilling and Grading Plans and Revegetation

The objective of the proposed backfilling, soil stabilizing,

compacting, contouring and grading process is to achieve a reclaimed surface which will meet the vegetation standards as outlined by the Division of Oil, Gas & Mining, and will be aesthetically compatible with the surrounding landscape and conducive to the post mining land use.

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*what if?
then what?*

development
materials
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No toxic material to be encountered and no need for a waste disposal site.

Evaluation According to UMC 815.15

UMC 815.15 (b)

Observance of potential rockslides along the county road should be maintained and a commitment to mitigate any damage should it occur must be provided.

Summit Reply:

Summit Coal will mitigate any damage that could occur to the county road, due to the Boyer Mine exploration or associated activities.

compacting, contouring and grading process is to achieve a reclaimed surface which will meet the vegetation standards as outlined by the Division of Oil, Gas & Mining, and will be aesthetically compatible with the surrounding landscape and conducive to the post mining land use.

UMC 815.125(k)

During exploration portal development, will any development or waste rock be produced or will any acid or toxic materials be encountered? If so, comply with UMC 817.71-.74 (for waste) and UMC 817.48 & .103 (for acid and toxic material). Describe on a map the location of such a disposal site, if needed.

Summit Reply:

Due to the close proximity of the exposed coal seam and the non-acid or non-toxic nature of the coal Summit anticipates NO toxic material to be encountered and no need for a waste disposal site.

Evaluation According to UMC 815.15

UMC 815.15 (b)

Observance of potential rockslides along the county road should be maintained and a commitment to mitigate any damage should it occur must be provided.

Summit Reply:

Summit Coal will mitigate any damage that could occur to the county road, due to the Boyer Mine exploration or associated activities.

Determination of Bond Amount (see UMC 805.11)

The revised bond estimate indicates 160 hours for structural removal. It is difficult to ascertain which structures will be removed. The exact structures should be identified.

The total bond estimate should be consolidated. The seeding costs were \$900/acre (materials only from previous estimate). Please explain the \$12,420/amount.

What effect does the Boyer letter dated February 13, 1984, have on structure removal, if any?

The cost of the 235 Caterpillar Excavator	= \$247.95/hour
The cost of the D-4E Cat	= \$ 55.70/hour
Labor	= \$ 15.00/hour

Summit Reply:

Attached is a detailed estimate of associated reclamation costs. Summit will provide the necessary surity or bonding upon request from the Utah Division of Oil, Gas & Mining.

looks a bit
lean.

Detailed Timetable and Cost Estimate for Reclamation
of the Boyer Mine Exploration Mine

The following schedule of reclamation is proposed to be initiated within 90 days (weather permitting) of final abandonment of the mining operation:

	<u>Acc. Time</u>
1. Seal Portals- 1 week	1 week
2. Remove Structures - 2 weeks	3 weeks
3. Soil Placement (backfilling & grading)	
a. Upper Pad - 1 week	4 weeks
b. Middle Pad - 1 week	5 weeks
c. Lower Pad - 1 week	6 weeks
d. Parking Lot & Pond - 1 week	7 weeks
4. Seedbed Preparation - 1 week	8 weeks
5. Reseeding & Fertilizing - 1 week	9 weeks
6. Mulching - 1 week	10 weeks
7. Protective Fence - 2 weeks	12 weeks

The above reclamation tasks are therefore proposed to be completed within 12 weeks following the start of reclamation activities.

Summary Cost Estimate

1. Seal Portals	\$1,350.00
2. Remove Structures	8,191.00
3. Soil Placement	11,200.00
4. Seedbed Preparation	1,200.00
5. Reseeding & Fertilizing	9,625.00
6. Mulching	2,450.00
7. Protective Fencing	4,600.00
	<hr/>
	38,616.00
Maintenance & Monitoring	2,500.00
	<hr/>
1984 Dollars	\$41,116.00

Detailed Cost Estimate

Equipment Costs

1. Loader - Cat 950B-	\$75.50/hr
Operator	<u>15.00/hr</u>
	\$90.50/hr
2. Crane - Groves RT-580 (20 T)	\$62.50/hr
Operator	<u>15.00/hr</u>
	\$77.50/hr
3. Dozer - Cat D-6	\$60.00/hr
Operator	<u>15.00/hr</u>
	\$75.00/hr
4. Backhoe - Case 680	\$35.00/hr
Operator	<u>15.00/hr</u>
	\$50.00/hr
5. Truck - 10 yd	\$50.00/hr
Operator	<u>15.00/hr</u>
	\$65.00/hr

1. Seal Portals

Labor - 2 men X \$100/man day X 3 days	\$600.00
Materials - 200 blocks/seal X 3 seals X \$1.00/block	600.00
Mortar	<u>150.00</u>
	1,350.00

2. Remove Structures

Fan

Labor - 2 men X \$100./day X 1 day	\$200.00
Truck & Operator - 4 hrs X \$65/hr	260.00
Crane & Operator - 2 hrs X \$77.50/hr	<u>155.00</u>
	\$815.00

Shop

Labor - 3 men X \$100/day X 2 days	\$600.00
Truck & Operator - 16 hrs X \$65/hr	1,040.00
Crane & Operator - 16 hrs X \$ 77.50/hr	<u>1,240.00</u>
	\$2,880.00

Substation

Labor - 2 men X \$100/day X 1 day	200.00
Truck & Operator - 4 hrs X \$65/hr	260.00
Crane & Operator - 2 hrs X \$77.50/hr	<u>155.00</u>
	\$615.00

Office & Bathhouse Trailers

Labor - 2 men X \$100/day X 1 day	\$200.00
Truck & Operator - 8 hrs X \$65/hr	520.00
	<hr/>
	\$720.00

Water Tank & Water System

Labor - 2 men X \$100/day X 2 days	\$400.00
Truck & Operator - 16 hrs X \$65/hr	1,040.00
Crane & Operator - 8 hrs X \$77.50/hr	620.00
	<hr/>
	\$2,060.00

Clean-up

Labor - 2 men X \$100/day X 2 days	\$400.00
Truck & Operator - 8 hrs X \$65/hr	520.00
Loader & Operator - 2 hrs X \$90.50/hr	181.00
	<hr/>
	\$1,101.00

3. Soil Placement (Backfilling & Grading)

Upper Pad

Backhoe & Operator - 16 hrs X \$50/hr	\$800.00
Cat & Operator - 16 hrs X \$75/hr	1,200.00
	<hr/>
	\$2,000.00

Middle Pad

Backhoe & Operator - 24 hrs X \$50/hr	\$1,200.00
Cat & Operator - 24 hrs X \$75/hr	1,800.00
Labor - 2 men X \$100/day X 3 days	600.00
	<hr/>
	\$3,600.00

Lower Pad

Backhoe & Operator - 24 hrs X \$50/hr	\$1,200.00
Cat & Operator - 24 hrs X \$75/hr	1,800.00
Labor - 2 men X \$100/day X 3 days	600.00
	<hr/>
	\$3,600.00

Parking Lot & Pond

Backhoe & Operator - 16 hrs X \$50/hr	\$800.00
Cat & Operator - 16 hrs X \$75/hr	1,200.00
	<hr/>
	\$2,000.00

4. Seedbed Preparation		
Cat & Operator - 16 hrs X \$75/hr		\$1,200.00 ✓
5. Reseeding & Fertilizing (7 acres)		
Hydroseeder, Materials & Crew		\$9,625.00 ✓
6. Mulching (7 acres)		
Hydromulcher, Materials & Crew		\$2,450.00 → 7,000
7. Protective Fencing		
Six foot high X 2300 linear feet X \$2.00/foot		
	Installed	\$4,600.00
Maintenance & Monitoring		
Five years X \$500/year		\$2,500.00 ✓
		<hr/>
Total	(1984 Dollars)	\$41,116.00

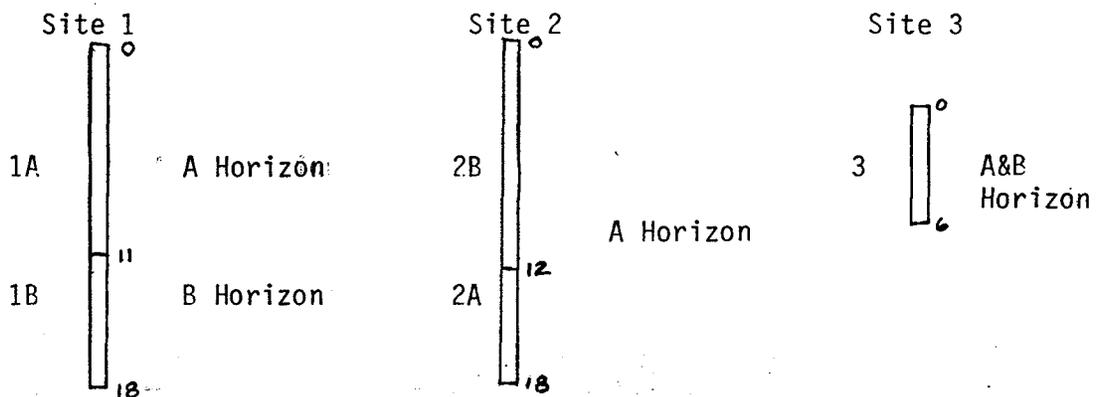
Summit coal Co. will deposit with the Division of Oil, Gas and Mining, a
a irrivocable bank letter of credit or bond upon approval of the bond amount.

APPENDIX 8-S

Soil Sampling Procedure

1. A hole was excavated by hand into the soil horizons as deep as possible to expose the soil horizons to visual examination.
2. After the soil horizons were determined, a uniform channel sample was cut vertically along the side of the hole of each soil horizon or over a maximum sample length of 12 inches.
3. The sample materials from each interval was then bagged separately in plastic bags and labeled for identification.
4. The soil samples were then sent for analysis.

Soil Depths



Out of 6 areas
why only 3 sites
sampled?

Each series was sampled.



417 Wakara Way
Salt Lake City, Utah 84108
(801) 582-0144
TELEX 820832NPISLC

August 10, 1984

Leonard J. Maki
Mining Consultants
8347 S. Mesa Drive
Sandy, UT 84092

Dear Sir:

Enclosed please find the results of the soil analysis for samples received August 6, 1984. Parameters measured, as requested, include: pH, EC, SAR, percent organic matter, alkalinity, soil texture, saturation percentage, total nitrogen, available nitrogen and phosphorus.

If you have any questions, or if we can help you in any way, please give me a call.

Sincerely,

A handwritten signature in cursive script that reads 'Von Isaman'. The signature is written in dark ink and is positioned above the typed name and title.

Von Isaman
Applied Ecology Lab

VI:jb

SUMMIT COAL CO.
August 3, 1984

Sample #	Water Soluable Cations			SAR	pH ¹	EC ² (mmhos)
	Ca(meg/l)	Mg(meg/l)	Na(meg/l)			
1A	1.85	1.43	.49	1	7.27	0.28
1B	2.63	4.25	1.04	1	7.23	0.27
2A	2.95	.94	.57	1	7.50	0.43
2B	3.57	1.11	.61	1	7.62	0.48
3	2.57	1.16	.55	1	7.91	0.31

Sample #	Particle Size Analysis				Texture	Percent Organic Carbon ³	Saturation Percent
	% Sand	% Clay	% Silt				
1A	41.3	33.6	25.1		Clay	1.48	44.7
1B	42.6	33.6	23.8		Clay	1.08	44.5
2A	47.8	31.6	20.6		Sandy clay loam	1.62	45.0
2B	49.8	23.6	26.6		Sandy clay loam	2.44	47.0
3	73.8	13.6	12.6		Sandy loam	1.02	42.2

Sample #	Total Nitrogen (%)	Nitrate-Nitrogen ⁴ (ppm)	Phosphorus(ppm)	Alkalinity ⁵
1A	.13	1.60	5.6	Normal
1B	.13	1.20	2.0	Normal
2A	.10	2.60	15.6	Normal
2B	.18	3.65	18.8	Normal
3	.07	1.45	4.0	Normal

1. Saturated paste
2. Saturated extract
3. Organic matter
4. "Available" nitrogen
5. "Normal"; not "alkaline", not "saline" and not "alkaline-saline" (USDA Handbook 60 definitions)

Planned Soil Removal

Area A

This area seems to have some of the best soil and it is planned that the entire "A" horizon will be removed. The "A" horizon, from soil sample 2, seems to be at least 18 inches deep in this area. This would require removal of approximately 4330 cubic yards on 1.79 acres which will be stored in the top soil storage area.

Area B

It is planned that the "A" horizon or the top six inches will be removed in this area. This would require the removal of approximately 1111 cubic yards on 1.38 acres which will be stored in the top soil storage area.

Area C

The soils in this area have been disturbed and mixed, therefore it is planned that no top soil will be removed from this area.

Area D

The soils in this area contain a large volume of cobbles and are on steep slopes which are difficult to remove properly and are poor reclamation materials. Therefore, it is planned to remove soil from this area only if an adequate volume is not obtained from areas A, B & F.

Area E

The soils in this area are very thin and poor. It is planned that no soil will be removed from this area.

Area F

It is planned

Area F

It is planned that the "A" horizon or the top six inches will be removed in this area. This would require removal of approximately 444 cubic yards on 0.55 acres which will be stored in the top soil storage area.

The total top soil to be removed is approximately 5885 cubic yards which will reclaim approximately 7.3 acres and is adequate to reclaim the planned 7 acres or less of disturbance.

Why only 6"
removed here
?

Tom,
when you finish
with Summit please
give all the comments
to Julie for typing.
Thanks, Sue

APPENDIX 2

Sediment Pond Specifications

1.	Drainage area to pond	4.82 acres
* 2.	100 yr./24 hour precipitation event	Use 3"
3.	Required capacity for 100 yr./24 hour event	1.205 ac. ft.
4.	Pond capacity at overflow	1.41 ac. ft.
5.	Pond depth at overflow	9.0 ft.
* 6.	10 yr./24 hour precipitation event	Use 2"
7.	Required capacity for 10 yr./24 event	0.803 ac. ft.
8.	Pond capacity at principal spillway	1.10 ac. ft.
9.	Pond depth at principal spillway	8.0 ft.
10.	Dam height 10 ft. Freeboard	1.0 ft.
11.	Excess capacity for 100 yr./24 hour event	0.205 ac. ft.
12.	Excess capacity for 10 yr./24 hour event	0.607 ac. ft.
13.	Planned sediment storage capacity	0.117 ac. ft.
14.	Overflow	(0.607 cfs)
	a. Required area	0.122 ft ²
	b. Actual area	3.0 ft ²
15.	Principal Spillway	(0.356 cfs)
	a. Required area	0.07 ft ²
	b. Actual area	3.14 ft ²
16.	Dewatering Device	
	a. 8 rows of $\frac{1}{4}$ " holes on 4" centers.	
	b. Drains to base of level for 10 yr./24 hour runoff storage.	
	c. Dewatering rate:	
**	(1) $Q = 19.636 Kd^2 h$; $K = .61$; $d = .25"$, $h = 2'$.	
	(2) $Q = 1.6 \text{ gpm}/\frac{1}{4}" \text{ hole} \times 96 \text{ holes} = 101.6 \text{ gpm}$; Use 100 gpm.	
	(3) Inflow from 10 yr/24 hour event - 261,749 gal.	

(4) Theoretical dewatering time

43.6 hrs.

17. Conclusions:

- a. Pond size is adequate to contain 100 yr/24 hour precipitation event.
- b. Pond size is adequate to contain 10 year/24 hour precipitation event between bottom of dewatering device and 1' below emergency spillway.
- c. Dewatering device will allow for theoretical 24 hour retention time.
- d. Pond sizing is adequate to allow for .117 ac. ft. of sediment storage (storage to 2.0' depth).
- e. Overflow and principal spillway are adequately sized to pass projected flows.

* N.O.A.A. - "Precipitation Frequency Atlas of Western U.S.", (1973).

** Cameron Hydraulic Data, 12th Edition, "Flow Through Orifices and Nozzles", p. 67.

SUMMIT COAL COMPANY REPLY TO
TECHNICAL DEFICIENCY REVIEW

OCTOBER 10, 1984

RECEIVED

NOV 14 1984

DIVISION OF OIL
GAS & MINING

UMC 776.12(b) Public Notice

A copy of the public notice which the applicant posted in the Summit County Courthouse must be submitted to the Division.

Summit Reply:

A notarized copy of the public notice is attached under document section end of reply.

UMC 805.13(b) Bonding

A 10 year maintenance program commitment and plan must be provided and indicated in the bond estimate.

Summit Reply:

See Appendix 1

UMC 805.14 Adjustment of Amount

The bond estimate does not detail quantities of work to be performed. The applicant must resubmit a reclamation cost estimate indicating estimated quantities of material (yd^3 , tons, etc.), equipment used, estimated productivity levels and sources used to obtain unit, labor and operating costs. The applicant must show mobilization/demobilization costs.

The Division shall then review and adjust the reclamation cost estimate for bonding under UMC 805.14. The bond must be submitted prior to the Division approving the exploration.

Summit Reply:

See Appendix 1

UMC 806.14 Liability Insurance

Proof of liability insurance as required by this section, must be submitted to the Division before exploration can be approved.

Summit Reply:

See Document Section end of Reply.

UMC 815.15(h) Underground Openings

Permanent closure of mine openings has not been addressed in the CEP deficiency response. The applicant must respond to sections UMC 817.13 - .15 as required. Temporary and permanent closures shall be equal or superior to those required under 30 CFR 75.1711.

Summit Reply:

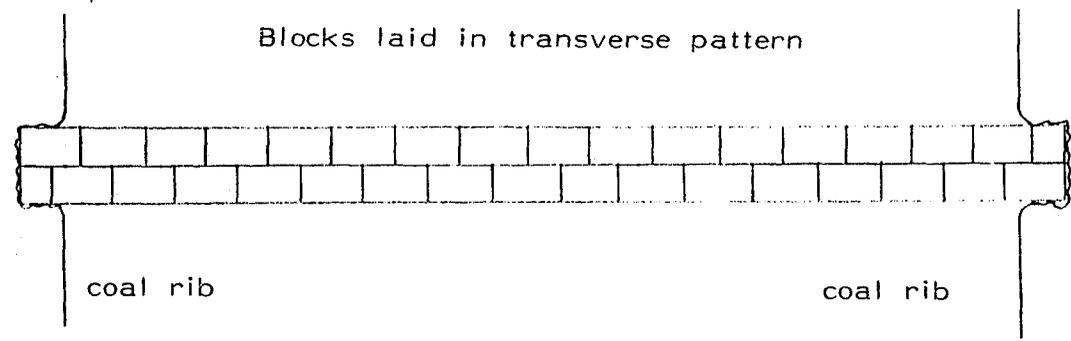
Sealing of Mine Openings

Permanent Seals

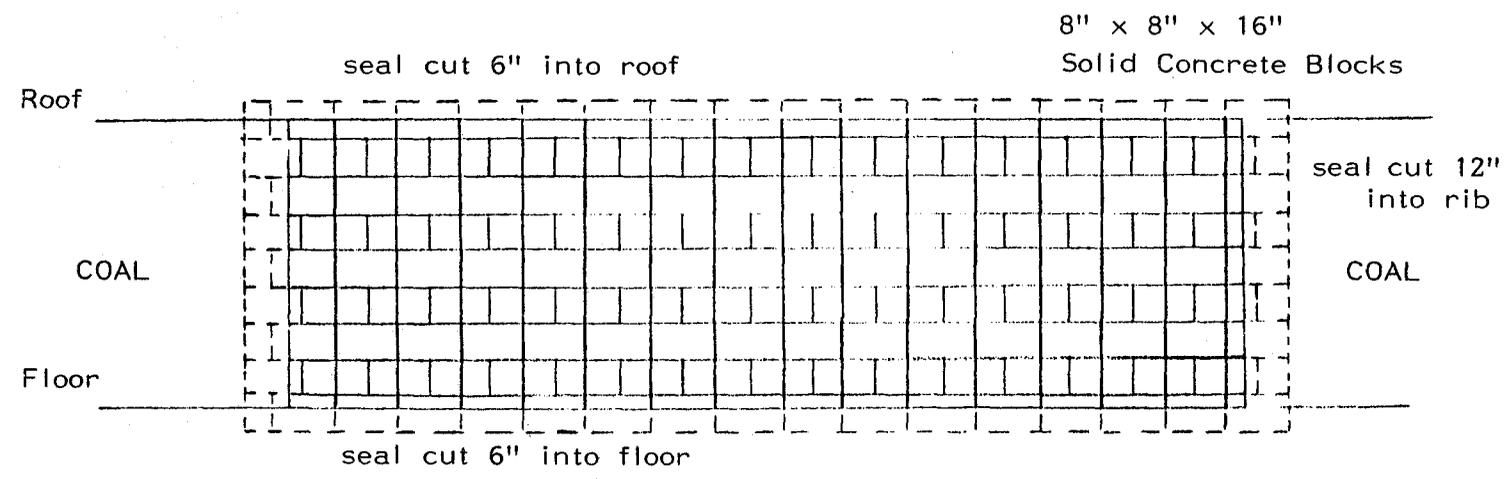
Upon completion of mining activities the portals will be permanently sealed as per 30 CFR 75.1711. The seals will consist of a double row of concrete blocks laid in a transverse pattern, placed 25' to 50' inby the portal. The area outby the portal will then be backfilled to minimize roof breakage in this area. Portal structures will then be removed and exposed coal seams, including portal areas, will be

covered with a minimum of 3' of incombustible material during reclamation of pad and highwall areas.

Based on hydraulic and geologic data from this area, mine drainage will not be a problem, and hydrologic seals are not required. Details of the seals are shown on the enclosed figures.



TOP VIEW

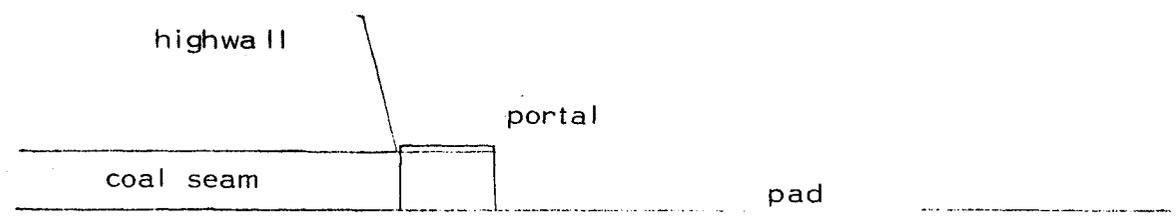


FRONT VIEW

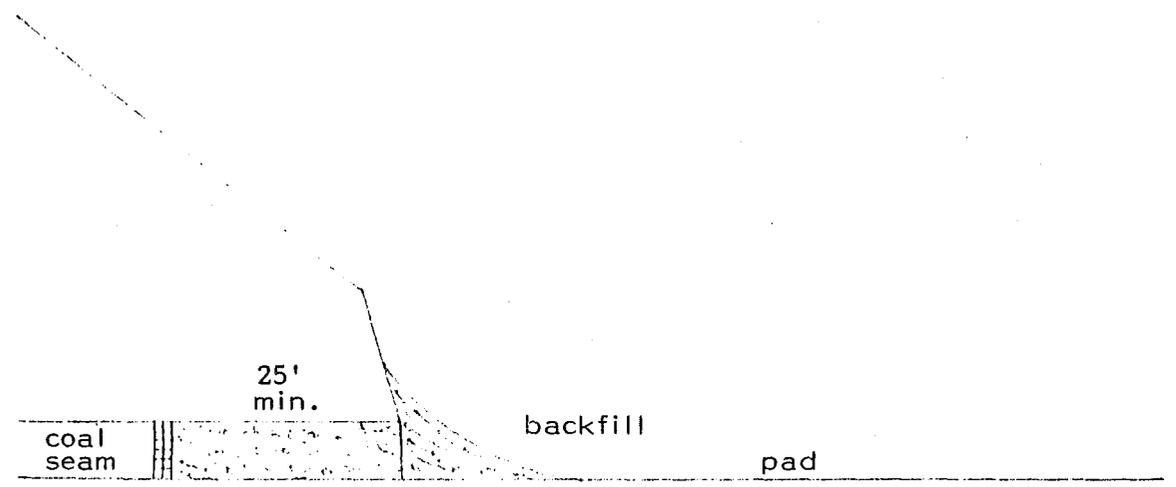
BY Dan GUY DATE 11/1/84
CHKD BY DATE

SUBJECT TYPICAL PORTAL SEALING
Scale - 1" = 20'

SHEET NO. OF
JOB NO.



TYPICAL CONSTRUCTION



TYPICAL RECLAMATION

-5-

UMC 815.15(j) Sediment Control Measures

Since the sediment pond has been sized to handle the flow from a 100 year-24 hour event, it is sized adequately to handle the flow and sediment produced during the 10 year-24 hour event.

However, the sediment pond must have a dewatering device, principal spillway, and emergency spillway. No plans or calculations have been submitted for these structures. Information for the dewatering device must demonstrate that the volume between the principal spillway and the dewatering device is capable of containing the 10 year-24 hour storage volume. This requires submission of the elevations of both the principal spillway and the dewatering device. The combined capacity of the principal spillway and the emergency spillway must be able to handle the 25 year-24 hour peak flow. The emergency spillway must be located at least one (1) foot higher than the principal spillway. (See UMC 817.46)

These plans must be submitted and approved before a permit for exploration can be granted.

Summit Reply:

See Appendix 2

UMC 817.22 Topsoil: Removal

The applicant must provide the exact acreage associated with Areas C and D.

The six-inch soil redistribution depth is not justified based on the soils data and descriptions provided and cannot be approved. Assuming a topsoil redistribution depth of 1 foot, a deficiency of 5,645 cubic yards exists; while for a 1.5 foot redistribution depth, an 11,290 cubic yard deficit exists (Figures based on those provided by the applicant in Appendix 8-5). Note: the soil volume in the existing stockpile, soil removal to a depth of 18 inches in the Moweba series (area F) and topsoil removal in areas D and E would appear to offset this deficit. It also, appears that a 1-foot topsoil redistribution depth coupled with a subsoil depth of at least 6 inches will be necessary for Division approval.

Please provide the volume of the existing topsoil stockpile.

A specific soil stripping map reflecting approved removal depths must be provided.

A map which includes the existing soil stockpile location must also be supplied. This stockpile is not shown on plate 3-1.

Summit Reply:

Plate 8-1a attached, indicates the volumes of usable soil associated with each area. Area "C" is less than .18 acres, area "D" is approximately .89 acres.

Summit is committed to reclaim all disturbed areas in a manner which will best ensure success. Since the Division feels that 12" of topsoil over 6" of subsoil is necessary, Summit will adhere to this recommendation. Plate 8-1a indicates the quantities of soil which are available on-site for reclamation. A large portion of the areas will not be disturbed until such time as reclamation commences. It is Summit's intent to protect these areas of soil reserves by maintaining the existing vegetation and safeguarding the integrity of the soils through corrective berming and posting as top soil storage areas.

The existing topsoil stock pile is in the process of being removed and redistributed as per the directive of Ms. Sandy Pruitt, July 2, 1984. (Certified Receipt # P492-430-084). Wherein this material is counted in the area of proposed disturbance, it's temporary location and quantity was considered irrelevant at this time.

UMC 817.23 Topsoil Protection

The specific seed mix to be utilized for topsoil stockpile protection must be provided. The interim seed mix referred to in the last submittal was not provided and must be submitted for review and approval.

The applicant must commit to a specific detailed plan for mulching; listing several options or possibilities is not acceptable. Mulching

should take place concurrently with seeding. The applicant must commit to seeding and mulching together on a daily basis. From the time table, it appears mulching will take place at least a week after seeding; this is unacceptable.

Summit Reply:

See Appendix 3

UMC 817.24 Topsoil: Redistribution

Specific methods to be performed by each piece of equipment described in the applicant's response to be employed in grading and soil redistribution must be provided. The applicant must demonstrate that grading will be done along the contour.

Summit Reply:

See Appendix 3 (Earth Moving)

UMC 817.25 Nutrients and Amendments

The applicant must commit to a sampling program following soil redistribution, to a depth of at least 18 inches with six inch increments. Subsoil must be sampled separately.

Please provide a listing of the trace elements to be sampled and describe why it is expected that this is necessary. How will fertilizer application rates be determined?

Any required fertilizer must be distributed uniformly in the root zone. It is not likely that this can be achieved using hydromulching

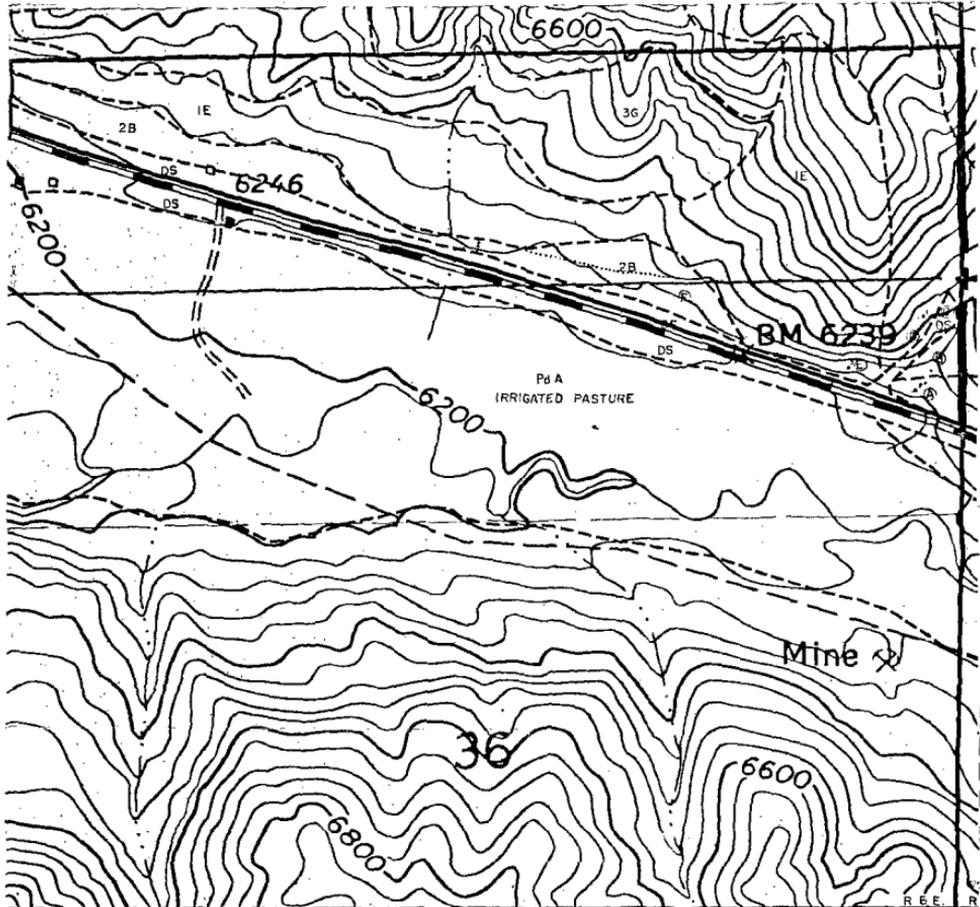
techniques. Please propose satisfactory methods which entail using equipment capable of incorporating the nutrients into the root zone.

Summit Reply:

Summit Coal will sample all in place subsoils prior to topsoil redistribution. The topsoil will be spread to the desired 12 inches in 6" lifts. Fertilizer will be applied on top of the first 6" lift at 3/4 the rate indicated by soil tests. The balance of the soil will be applied and the remaining $\frac{1}{4}$ application will be incorporated in the mulch application.

By ripping the soils prior to planting, the fertilizer should be dispersed through the root zone of the soil in such a manner as to enhance long term establishment. The surface application is a proven method to ensure rapid development of the germinating seed. A follow-up surface application the preceeding fall ensures establishment of the emergent vegetation.

The rates and types of fertilizers used will be based on SCS recommendation pending soil tests upon redistribution. A sample soils test is included in Appendix 3.



LEGEND

SOIL TYPES

1E	BEZZANT GRAVELLY LOAM - 25 TO 40% SLOPE
2B	MOWEBA GRAVELLY LOAM - 2 TO 5% SLOPE
3G	RICHVILLA GRAVELLY LOAM - 40 TO 70% SLOPE
DS	DISTURBED
SOIL BOUNDARIES	-----
SOIL SAMPLE SITE	1' 2' 3'

AREA

DEPTH

VOLUME

Ⓐ	18"	4,330 Cu. Yds.
Ⓑ	6"	1,111 Cu. Yds.
Ⓒ	12"	278 Cu. Yds.
Ⓓ	12"	1,445 Cu. Yds.
Ⓔ	-	-
Ⓕ	18"	10,500 Cu. Yds.

SUMMIT COAL COMPANY

SUMMIT COUNTY, UTAH

SOIL STRIPPING MAP

SCALE:

1" = 500'

DRAWN BY:

D. GUY

DATE:

11/1/84

BOYER MINE

PLATE 8-1a

APPENDIX 1

Detailed Timetable and Cost Estimate for
Reclamation of the Boyer Mine Exploration

The following schedule of reclamation is proposed to be initiated within 90 days (weather permitting) of final abandonment of the mining operation:

	<u>Acc. Time</u>
1. Seal Portals - 1 week	1 week
2. Remove Structures - 2 weeks	3 weeks
3. Soil Placement (backfilling and grading)	
a. Upper Pad - $\frac{1}{2}$ week	3 $\frac{1}{2}$ weeks
b. Middle Pad - 2 weeks	5 $\frac{1}{2}$ weeks
c. Lower Pad - 1 $\frac{1}{2}$ weeks	7 weeks
d. Parking Lot and Pond - 1 week	8 weeks
4. Seedbed Preparation - 1 week	9 weeks
5. Reseeding & Fertilization - 1 week	10 weeks
6. Mulching - 1 week	11 weeks
7. Protective Fence - 2 weeks	13 weeks

The above reclamation tasks are therefore proposed to be completed within 13 weeks following the start of reclamation activities.

Summary Cost Estimate

1. Seal Portals	\$ 1,350.00
2. Remove Structures	8,191.00
3. Soil Placement	16,100.00
4. Seedbed Preparation and Handling	7,376.00
5. Reseeding & Fertilizing	9,625.00
6. Mulching	2,450.00
7. Protective Fencing	4,600.00
	<hr/>
	\$49,692.00
Maintenance & Monitoring	2,500.00
Mobilization / Demobilization	2,500.00
Forman	7,800.00
	<hr/>
1984 Dollars	\$62,492.00

Detailed Cost Estimate

Equipment Costs

1. Loader - Cat 950B	\$75.50/hr
Operator	<u>15.00/hr</u>
	\$90.50/hr
2. Crane - Groves RT-580 (20 T)	\$62.50/hr
Operator	<u>15.00/hr</u>
	\$77.50/hr
3. Dozer - Cat D-6	\$60.00/hr
Operator	<u>15.00/hr</u>
	\$75.00/hr
4. Backhoe - Case 680	\$35.00/hr
Operator	<u>15.00/hr</u>
	\$50.00/hr
5. Truck - 10 yd	\$50.00/hr
Operator	<u>15.00/hr</u>
	\$65.00/hr

1. Seal Portals

Labor - 2 men X \$100/man day X 3 days	\$600.00
Materials - 200 blocks/seal X 3 seals X \$1.00/block	600.00
Mortar	<u>150.00</u>
	1,350.00

2. Remove Structures

Fan

Labor - 2 men X \$100./day X 1 day	\$200.00
Truck & Operator - 4 hrs X \$65/hr	260.00
Crane & Operator - 2 hrs X \$77.50/hr	<u>155.00</u>
	\$815.00

Shop

Labor - 3 men X \$100/day X 2 days	\$600.00
Truck & Operator - 16 hrs X \$65/hr	1,040.00
Crane & Operator - 16 hrs X \$ 77.50/hr	<u>1,240.00</u>
	\$2,880.00

Substation

Labor - 2 men X \$100/day X 1 day	200.00
Truck & Operator - 4 hrs X \$65/hr	260.00
Crane & Operator - 2 hrs X \$77.50/hr	<u>155.00</u>
	\$615.00

Office & Bathhouse Trailers

Labor - 2 men X \$100/day X 1 day	\$ 200.00
Truck & Operator - 8 hrs X \$65/hr	<u>520.00</u>
	\$ 720.00

Water Tank & Water System

Labor - 2 men X \$100/day X 2 days	400.00
Truck & Operator - 16 hrs X \$65/hr	1,040.00
Crane & Operator - 8 hrs X \$77.50/hr	<u>620.00</u>
	\$2,060.00

Clean-up

Labor - 2 men X \$100/day X 2 days	400
Truck & Operator - 8 hrs X \$65/hr	520.00
Loader & Operator - 2 hrs X \$90.50/hr	<u>181.00</u>
	\$1,101.00

3. Soil Placement (Backfilling & Grading)

Upper Pad (C-172 cu. yds; F-200 cu. yds.)

Backhoe & Operator - 4 hrs X \$50/hr	200.00
Cat & Operator - 4 hrs X \$75/hr	<u>300.00</u>
	\$500.00

Middle Pad (C-5108 cu. yds.; F-3719 cu. yds)

Backhoe & Operator - 85 hrs X \$50/hr	4,250.00
Cat & Operator - 37 hrs X \$75/hr	2,775.00
Labor - 2 men X \$100/day X 3 days	<u>600.00</u>
	\$7,625.00

Lower Pad (C-3600 cu. yds; F-2593 cu. yds.)

Backhoe & Operator - 60 hrs X \$50/hr	3,000.00
Cat & Operator - 26 hrs X \$75/hr	1,950.00
Labor - 2 men X \$100/day X 3 days	<u>600.00</u>
	\$5,550.00

Parking Lot & Pond (C-500 cu. yds.; F-2738 cu. yds.)

Backhoe & Operator - 8 hrs X \$50/hr	400.00
Cat & Operator - 27 hrs X \$75/hr	<u>2,025.00</u>
	\$2,425.00

APPENDIX 3

RECLAMATION PLAN

9.7 RECLAMATION PLAN

The following procedures are designed to revegetate and control erosion. They should, to a large degree, satisfy the commitments made by Summit Coal Company in their permit while also satisfying DOGM regulations as pertaining to interim reclamation and final reclamation for those areas which will be utilized after mining operations are concluded.

The areas in question are along and adjacent to the mine and powder storage access road and will be of an interim nature, to stabilize newly disturbed areas and a permanent nature upon abandonment.

The actual ground involved comprises approximately .7 acres of disturbed land primarily road and deck areas. The actual procedures involve a four phase program; (1) earthwork, (2) hydromulch the entire area to supplement revegetation and control run-off until stabilization is complete, (3) prepare a site which will be stable enough for a period of time to allow vegetation to become established, and (4) to plant seedlings to further stabilize the soil and to satisfy bond release requirements.

PHASE 1 - Earthwork - Original Contour

The roads and pads can be brought back to a reasonable configuration by implementation of a large backhoe unit in conjunction with a crawler tractor (JD450). The actual method will involve the pulling of material from approximately ten feet below the road cut up onto the road surface and spreading and compacting this material with the crawler tractor, at the same time pulling the leading edge of the high wall down to lessen the degree and angle of the high wall. All work done, both above and below the road, should take into consideration existing vegetation and all effort would be made to minimize disturbance where possible. When there is no alternative

other than disturbance, an effort can be made to relocate earth and maintain existing vegetation in place; attempting to relocate the vegetation in the proximity of the road disturbance. The material redistributed to regain original contour should be compacted to approximately 95% of the original or adjacent undisturbed soil. Upon completion of this step of spreading and compacting, the unconsolidated native material will approach the original configuration of the site prior to disturbance. The native topsoil which was removed from the area will be redistributed to a depth of 6 inches. Upon redistribution of the A horizon soil, all associated compaction resulting from spreading will be alleviated by ripping the entire area to a depth of 20 centimeters to enhance the revegetation effort.

PHASE 2 - Seeding and Mulching

The entire area of disturbance should be drilled and hydroseeded during the first Fall following the complete abandonment and earth work. (September thru November).

The largest portion of the recontoured site will facilitate drill seeding. In order to lessen compaction, a rangeland drill seeder pulled behind a small crawler tractor would be utilized. A tentative estimate of the area to drill seed is approximately 4.5 acres. The balance of the area would then be hydroseeded. The seed mix and rate of application is attached. [Appendix 9-1].

In combination with the seed, the following rates of tackifier should be utilized:

[Rates of Tac were developed with respect to velocity and erosive power of water which is proportional to the square root of the slope.]

An empirical factor was determined from laboratory and field studies to arrive at the minimum Tac fiber ratio. Thus, 60 pounds of Tac per ton of fiber is about minimum for slopes up to 20% and the empirical factor is determined as $60 - 25\% = 15$. A 25% slope is about

maximum for the minimum amount of Tac. For a 100% slope [1:1 or 45°] the ratio of Tac to Fiber is calculated as:

$$[100\%] [12] = 120 \text{ pounds}$$

SUGGESTED RATIOS OF TAC TO FIBER FOR HYDROSEEDING AND
HYDROMULCHING TO SERVE AS MULCH OR SOIL BINDER

<u>SLOPE ANGLE</u>	<u>SLOPE RATIO</u>	<u>PERCENT SLOPE</u>	<u>LBS. TAC PER TON FIBER</u>	<u>RATIO TAC TO FIBER</u>
	rise:run			
14	1 : 4	25%	60[minimum]*	1 : 30
26	1 : 2	50%	80	1 : 25
33	1 : 1½	66%	100	1 : 20
45	1 : 1	100%	120	1 : 16
57	1½ : 1	150%	140	1 : 14
64	2 : 1	200%	160[minimum]	1 : 12

* 60 pounds is suggested as a minimum to insure excellent stabilization; however, in many conditions 40 pounds of Tac per acre has given excellent results on a 1:4 or less slope.

Following the seeding effort the entire area of disturbance will be hydro-mulched and fertilized. The rate of application of the mulch is:

1,200 to 1,500 lbs/acre on 1:1 slopes
2,000 to 2,500 lbs/acre on 3:1 slopes

The mulch should also be fortified with Tac as previously indicated according to slope. Incorporated in the mulch slurry the following rate of fertilizer will be applied per acre:

80 lbs N/acre
100 lbs. P₂ O₅/acre
100 lbs. K₂ O₅/acre

Approximately 50% of the above application can be incorporated in the mulch and the balance be added as an over-spray the following Fall. Recommendation on fertilizer requirements is based on soils test.

PHASE 3 - Site Preparation

Site stability will be largely accomplished through the grading, compacting and the utilization of a tackifying agent. However, on those areas with slopes of more than 2:1, the following procedures will add an additional parameter of stability and enhance the revegetation efforts.

Site preparation is both general and specific in procedures. The sites and methods provide a multitude of purposes and to a large degree are residual for several years. First and foremost, they effectively decrease the angle of repose of the slope in question. In accomplishing this you effectively modify the site and change those conditions which preclude vegetation from becoming established. Second, you change the severity of erosion and, in fact, use those surface waters which heretofore were destructive in nature. This is accomplished by creating basins wherein the water has time to soak in and thus can be utilized by vegetation.

This, in turn, decreases the impact on adjacent watersheds and improves quality of surface waters. Those areas which are terraced provide a more favorable ecosystem than that of an equivalent slope. It facilitates better utilization of grasses and forage for grazing animals; to some degree it modifies climate in that severity of wind and weather is somewhat diminished. Also the cut face acts in much the same as a snow drift fence does in trapping and causing small areas of snow retention.

PHASE 4 - Planting

The planting of seedlings will be done within 2 years of the seeding effort in order to evaluate the number and species of seedlings necessary to insure both composition and stocking of woody species to maximize utilization by wildlife and domestic grazing.

The species and numbers of individual plants will be correlated to the Range Transects which were established during July of 1982.

Planting Procedure

Planting will be done utilizing a powered auger with a capability of drilling a 3 inch plus diameter hole to a depth of 16 inches. The roots of the seedling will be arranged in as near natural position as possible paying special attention not to "J" the root tips. (Fig. 9-1).

By holding the seedling at the root crown, soil should be compacted back around the roots being careful to leave no air pockets or loose dirt [which would constitute settling]. The tree should be firm when light pressure is exerted on the needles and standing in an erect position. Only hands shall be used to pack soil around the tree - the use of a stick or foot is strictly forbidden.

At all times the trees will be protected from direct sun light and special care will be exhibited when lifting the seedling from the planting bag to the prepared hole.

Field Storage

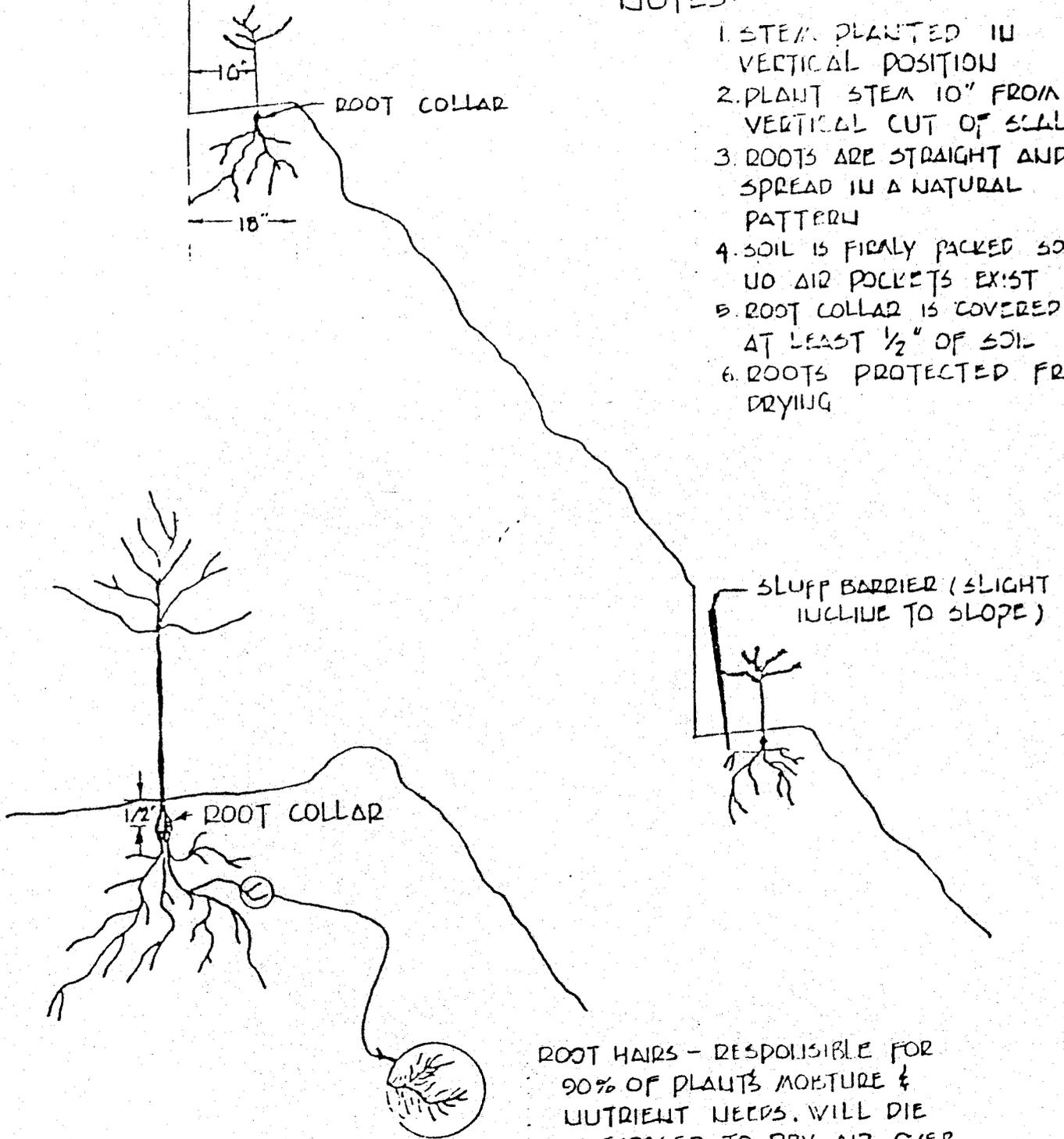
Field storage facilities are illustrated in (Fig. 9-2). In the event snow is not available, a similar cache can be constructed using wet burlap and damp straw.

PLANTING PROCEDURE

Figure 9-1

NOTES:

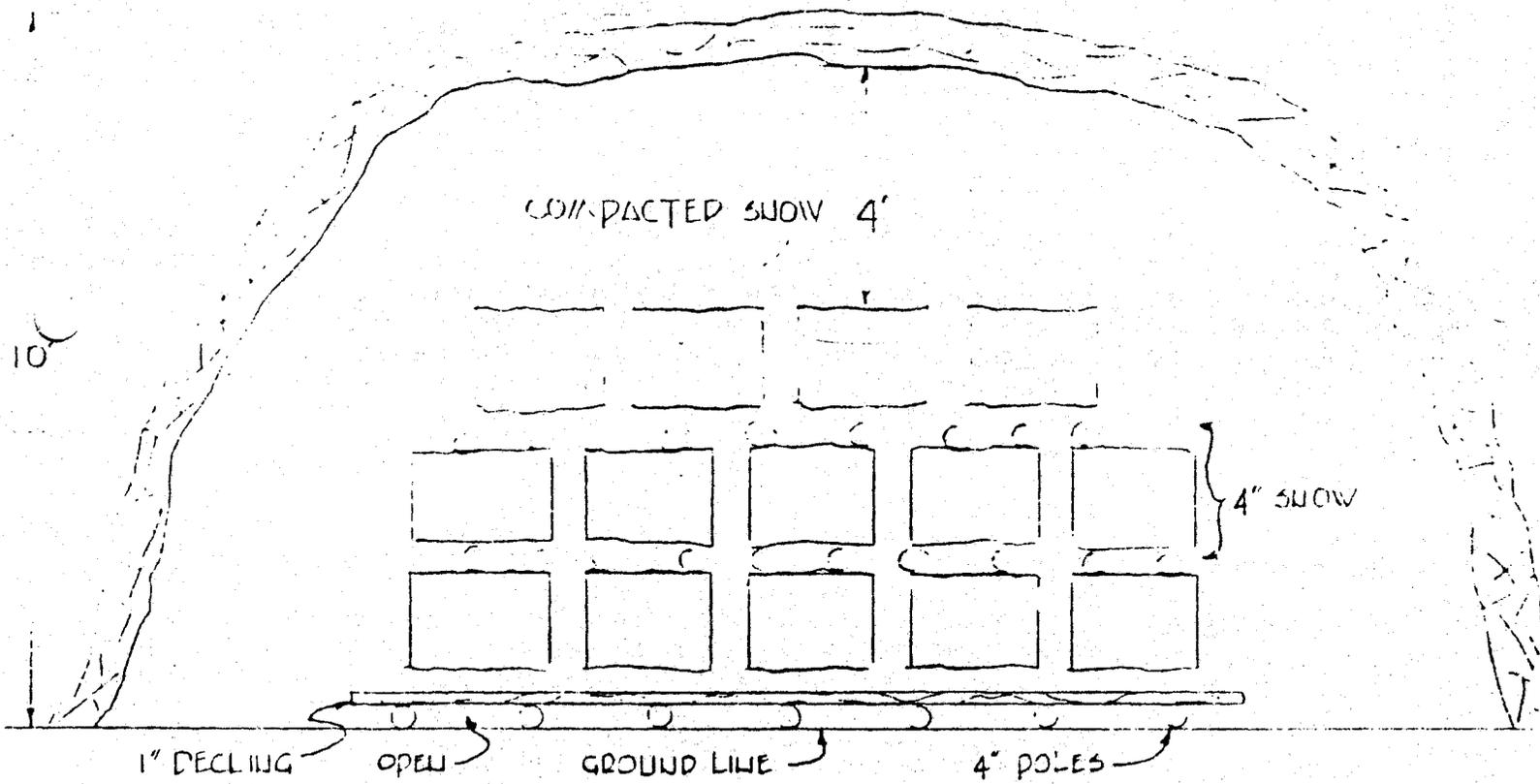
1. STEM PLANTED IN VERTICAL POSITION
2. PLANT STEM 10" FROM VERTICAL CUT OF SLOPE
3. ROOTS ARE STRAIGHT AND SPREAD IN A NATURAL PATTERN
4. SOIL IS FIRMLY PACKED SO NO AIR POCKETS EXIST
5. ROOT COLLAR IS COVERED BY AT LEAST 1/2" OF SOIL
6. ROOTS PROTECTED FROM DRYING



ROOT HAIRS - RESPONSIBLE FOR 90% OF PLANT'S MOISTURE & NUTRIENT NEEDS. WILL DIE IF EXPOSED TO DRY AIR OVER 15 SECONDS

SEEDLING STORAGE

Figure 9-2



SNOW CACHE WILL MAINTAIN SEEDLINGS AT 32°F AND RELATIVE HUMIDITY OF 100%. SEEDLINGS SHOULD BE PLACED IN A COOL SHADED AREA 24 HOURS PRIOR TO PLANTING.

The mine will have to maintain a sorting, packaging and storing tent at the cache site. A sorting table will need to be set up in one tent. Each seedling must be examined and all that do not have a 2 to 1 crown to root relationship or are damaged must be discarded. The seedlings then need to be dipped in a vermiculite slurry and then rolled in wet burlap and placed in canvas planting bags.

The trees can only be left in the bags for twenty-four hour periods and then must be repacked following the same procedure.

The field handling of packed trees requires the crowns be kept moist and the bags covered with insulated tarps and stored in shaded areas.

During breaks, lunch, etc., the crews planting bags must be placed in shaded areas. At the end of each operational day all bags must be unpacked and the trees redipped in vermiculite and rerolled in wet burlap and repackaged to be used first the succeeding day.

9.8 MONITORING

Upon completion, the reclaimed area will be monitored to determine when bond release parameters are achieved. If the monitoring indicates inadequacies, the area will be supplemented with additional efforts.

The monitoring procedures will be the same sampling methodologies which were incorporated in establishment of the range site determinations.

Appendix 9-1

RECOMMENDED SEED MIX
INTERIM AND PERMANENT RECLAMATION

<u>SPECIES</u>	<u>RATE* PER ACRE</u>
<u>GRASSES</u>	
<u>Agropyron unilaterale</u>	3
Bearded wheatgrass	
<u>A. spicatum</u>	8
Bluebunch wheatgrass	
<u>Elymus cinereus</u>	1.5
Basin wildrye	
<u>Oryzopsis hymenoides</u>	3
Indian ricegrass	
<u>Poa secunda</u>	1
Sandberg bluegrass	
<u>FORBS</u>	
<u>Achillea millifolium</u>	.15
Western yarrow	
<u>Aster chilensis</u>	.15
Pacific aster	
<u>Hedysarum boreale</u>	9
Northern sweetvetch	
<u>Lupinus sericeus</u>	.5
Silky sweetvetch	
<u>Penstemon palmeri</u>	
Palmer penstemon	
or	
<u>P. strictus</u>	.5
Rocky Mountain penstemon	
	26.8

* Rate is pure live seed to be broadcast and lightly covered.

Appendix 9-1 cont.

ADDITION FOR PERMANENT RECLAMATION MIX

SHRUBS

<u>Amelanchier utahensis</u>	4
Utah serviceberry	
<u>Artemisia tridentata ssp. vaseyana</u>	.15
Big sagebrush	
<u>Cercocarpus montanus</u>	6
Birchleaf mountain mahogany	
<u>Purshia tridentata</u>	.5
Antelope bitterbrush	
<u>Symphoricarpos albus</u>	.8
Common snowberry	_____
For hydroseeding	38.25 #/acre
$\frac{1}{2}$ application for drill seeded areas	19.13 #/acre

SUMMIT COAL CO.
August 3, 1984

Sample #	Water Soluble Cations			SAR	pH ¹	EC ² (mmhos)
	Ca(meg/l)	Mg(meg/l)	Na(meg/l)			
1A	1.85	1.43	.49	1	7.27	0.28
1B	2.63	4.25	1.04	1	7.23	0.27
2A	2.95	.94	.57	1	7.50	0.43
2B	3.57	1.11	.61	1	7.62	0.48
3	2.57	1.16	.55	1	7.91	0.31

Sample #	Particle Size Analysis				Texture	Percent Organic Carbon ³	Saturation Percent
	% Sand	% Clay	% Silt				
1A	41.3	33.6	25.1		Clay	1.48	44.7
1B	42.6	33.6	23.8		Clay	1.08	44.5
2A	47.8	31.6	20.6		Sandy clay loam	1.62	45.0
2B	49.8	23.6	26.6		Sandy clay loam	2.44	47.0
3	73.8	13.6	12.6		Sandy loam	1.02	42.2

Sample #	Total Nitrogen (%)	Nitrate-Nitrogen ⁴ (ppm)	Phosphorus(ppm)	Alkalinity ⁵
1A	.13	1.60	5.6	Normal
1B	.13	1.20	2.0	Normal
2A	.10	2.60	15.6	Normal
2B	.18	3.65	18.8	Normal
3	.07	1.45	4.0	Normal

1. Saturated paste

2. Saturated extract

3. Organic matter

4. "Available" nitrogen

5. "Normal"; not "alkaline", not "saline" and not "alkaline-saline" (USDA Handbook 60 definitions)

DOCUMENTS



STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

Norman H. Bangerter, Governor
Dee C. Hansen, Executive Director
Dianne R. Nielson, Ph.D., Division Director

355 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

May 20, 1985

Mr. Thomas M. Twedt
Bio/West, Inc.
P. O. Box 3226
Logan, Utah 84321

Dear Mr. Twedt:

RE: Small Operator Assistance Program Bid Proposal for Summit
Coal Company, Boyer Mine, PR0/043/008, Summit County, Utah

Thank you for submitting your proposal to perform hydrologic baseline data collection and overburden analysis under the Small Operator Assistance Program (SOAP) for Summit Coal Company. The Division has selected a consultant to perform the SOAP project.

Your firm will be considered for bids on future projects of this nature. Should you have questions, please contact me.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Dave Hooper'.

Dave Hooper
Reclamation Hydrologist

btb
0293R



STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

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Dee C. Hansen, Executive Director
Dianne R. Nielson, Ph.D., Division Director

355 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

May 20, 1985

Mr. Tom N. Hori
Resource Data Consultants
949 North 400 East
North Salt Lake, Utah 84054

Dear Mr. Hori:

RE: Small Operator Assistance Program Bid Proposal for Summit
Coal Company, Boyer Mine, PRO/043/008, Summit County, Utah

Thank you for submitting your proposal to perform hydrologic baseline data collection and overburden analysis under the Small Operator Assistance Program (SOAP) for Summit Coal Company. The Division has selected a consultant to perform the SOAP project.

Your firm will be considered for bids on future projects of this nature. Should you have questions, please contact me.

Sincerely,

A handwritten signature in cursive script, appearing to read "Dave Hooper".

Dave Hooper
Reclamation Hydrologist

btb
0293R



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355 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

May 20, 1985

Mr. James Burrell
Environmental Research and
Technology, Inc.
P. O. Box 2105
Fort Collins, Colorado 80522

Dear Mr. Burrell:

RE: Small Operator Assistance Program Bid Proposal for Summit
Coal Company, Boyer Mine, PRO/043/008, Summit County, Utah

Thank you for submitting your proposal to perform hydrologic baseline data collection and overburden analysis under the Small Operator Assistance Program (SOAP) for Summit Coal Company. The Division has selected a consultant to perform the SOAP project.

Your firm will be considered for bids on future projects of this nature. Should you have questions, please contact me.

Sincerely,

A handwritten signature in cursive script, appearing to read "Dave D. Hooper".

Dave Hooper
Reclamation Hydrologist

btb
0293R



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NATURAL RESOURCES
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355 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

May 20, 1985

Ms. Nancy Groves
Purchasing Agent
Division of Purchasing
147 State Capitol
Salt Lake City, Utah 84114

Dear Ms. Groves:

RE: Justification for Selection of Consultant for Contract
Work, Small Operator Assistance Program (SOAP),
Requisition No. 587504, Summit Coal Company, PR0/043/008,
Summit County, Utah

On May 15, 1985, the Division of Oil, Gas and Mining made a selection of the consultant to do the tasks outlined in the Request for Proposal under Requisition No. 587504 for the Small Operator's Assistance Program. Earthfax Engineering, Inc., was chosen from a group of nine applicants.

The two firms having the most technically adequate and most cost-effective bids were invited to a personal interview with five members of the technical mining staff at the Division. The other firm involved in the interview process was J. F. Sato and Associates, Inc., who came in at a low bid of \$35,358.00 (without the optional drilling cost). Even though Earthfax submitted the second lowest bid (\$36,960.00 without drilling costs), Earthfax was chosen for the SOAP contract for several reasons.

The Company has had extensive experience handling similar technical situations in the coal mining industry in Utah. The personnel of Earthfax have the best expertise needed to collect good baseline hydrologic data using cost-effective, state-of-the-art techniques and instrumentation. The firm has also worked a recent SOAP project in the state of Washington. The references contacted have excellent recommendations for the

Page 2
Ms. Nancy Groves
PRO/043/008
May 20, 1985

firm. Finally, the bid was one of the lowest because the firm is very small and, therefore, probably lacks the overhead that larger consulting firms may have. No other firm evaluated was rated so high on the combination of the above factors.

Please find enclosed a copy of Earthfax's proposal. Should you have questions, please contact me.

Sincerely,



Dave Hooper
Reclamation Hydrologist

btb
Enclosure
cc: Lowell Braxton
Wayne Hedberg
0338R-42 & 43



STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

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Dianne R. Nielson, Ph.D., Division Director

355 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

May 20, 1985

Mr. Jim Sato
J. F. Sato and Associates
5898 South Rapp Street
Littleton, Colorado 80120

Dear Mr. Sato:

RE: Small Operator Assistance Program, Summit Coal Company,
Boyer Mine, PRO/043/008, Summit County, Utah

Thank you for the opportunity to meet with you and discuss your task approach for the Small Operator Assistance Program (SOAP) project for the Summit Coal Company. As difficult a decision as it was, the Division has decided to select another consultant for the work.

The Division hopes to see your firm, with its high technical qualifications, in bidding processes on similar projects in the future. Enclosed please find copies of the two SOAP project reports given to our selection committee for review. If you have questions, feel free to contact me anytime.

Sincerely,

A handwritten signature in cursive script, appearing to read "Dave Hooper".

Dave Hooper
Reclamation Hydrologist

btt
Enclosures
cc: Dave Klein
Lowell Braxton
Wayne Hedberg
Tom Suchoski

0338R-44



STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

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Dianne R. Nielson, Ph.D., Division Director

355 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

May 20, 1985

Mr. Don Curran
Sergeant, Hauskins & Beckwith
4030 South 500 West, Suite 90
Salt Lake City, Utah 84123

Dear Mr. Curran:

RE: Small Operator Assistance Program Bid Proposal for Summit
Coal Company, Boyer Mine, PRO/043/008, Summit County, Utah

Thank you for submitting your proposal to perform hydrologic baseline data collection and overburden analysis under the Small Operator Assistance Program (SOAP) for Summit Coal Company. The Division has selected a consultant to perform the SOAP project.

Your firm will be considered for bids on future projects of this nature. Should you have questions, please contact me.

Sincerely,

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Dave Hooper
Reclamation Hydrologist

btb
0293R



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355 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

May 20, 1985

Mr. Ruh-Ming Li
Simons, Li & Associates, Inc.
P. O. Box 1816
Fort Collins, Colorado 80522

Dear Mr. Li:

RE: Small Operator Assistance Program Bid Proposal for Summit
Coal Company, Boyer Mine, PRO/043/008, Summit County, Utah

Thank you for submitting your proposal to perform hydrologic baseline data collection and overburden analysis under the Small Operator Assistance Program (SOAP) for Summit Coal Company. The Division has selected a consultant to perform the SOAP project.

Your firm will be considered for bids on future projects of this nature. Should you have questions, please contact me.

Sincerely,

A handwritten signature in cursive script, appearing to read "Dave Hooper".

Dave Hooper
Reclamation Hydrologist

btb
0293R



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Dianne R. Nielson, Ph.D., Division Director

355 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

May 20, 1985

Mr. Bob Ramsey
James M. Montgomery
Consulting Engineers, Inc.
624 North 300 West
Salt Lake City, Utah 84103

Dear Mr. Ramsey:

RE: Small Operator Assistance Program Bid Proposal for Summit
Coal Company, Boyer Mine, PR0/043/008, Summit County, Utah

Thank you for submitting your proposal to perform hydrologic baseline data collection and overburden analysis under the Small Operator Assistance Program (SOAP) for Summit Coal Company. The Division has selected a consultant to perform the SOAP project.

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Sincerely,

A handwritten signature in cursive script, appearing to read "Dave Hooper".

Dave Hooper
Reclamation Hydrologist

btt
0293R



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355 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

May 20, 1985

Mr. Marvin E. Allen, PE
Executive Vice President
Vaughn Hansen Associates
Waterbury Plaza, Suite A
5620 South 1475 East
Salt Lake City, Utah 84121

Dear Mr. Allen:

RE: Small Operator Assistance Program, Summit Coal Company,
Boyer Mine, PRO/043/008, Summit County, Utah

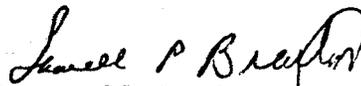
Thank you for taking the time to write the Division voicing your concerns with respect to the methodology used in the bid procedure (Request for Proposal) for the Summit Coal Company's Boyer Mine Small Operator Assistance Program.

Since the election to respond to a given bid proposal is an option of the company receiving the proposal, I feel that your suggestion to restrict the number of potential bidders carries a risk of unduly reducing competition--a ramification of the process most business persons would oppose should they not be on the selected list. Many aggressive business persons have a good feel for their competition without being given a written list of said competition attached to a bid proposal. From my personal perspective, announcing the bid participants carries the risk of reducing competition with concomitant higher costs to the Division. When this practice is followed in industry, management nearly always incurs the ire of either internal or external auditors for obvious reasons. To follow a similar practice in state government carries the risk that the issuing agency may be getting less than the lowest bid while in some cases possibly exposing the announced bidders to (albeit) unfair accusations of collusion.

Page 2
Mr. Marvin E. Allen, PE
PRO/043/008
May 20, 1985

If in evaluating your chances of success on the above-referenced bid you surmised only a 1:22 probability of success, I would suggest you made a wise business decision in not committing your resources to the bid response. I do appreciate your taking the time to voice your concerns to the Division and I hope that in a future bid proposal, you will feel moved to respond and we will have the opportunity of working with you.

Sincerely,



Lowell P. Braxton
Administrator
Mineral Resource Development
and Reclamation Program

btb

cc: Dave Hooper
0168R-31 & 32