ACT/015/017
FILE # 15

EMERY MINING CORPORATION

A SAVAGE BROTHERS COMPANY

December 7, 1984

RECEIVED
DEC 10 1984
DIVISION OF
OIL, GAS & MINING

Mr. Wayne Hedburg
Division of Oil, Gas & Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Dear Mr. Hedburg:

Regarding: Des-Bee Sediment Storage Plan

As committed to in our original submittal, the data from the three additional samples are being transmitted to you for your information.

Rollins, Brown and Gunnell Inc. was contracted to conduct direct shear tests on the three samples. The results of their analysis are summarized as follows:

Test #1

Location: Station 1+00 20' down fill slope
Internal Friction Angle: 31.6°
Cohesion: 288 psf

Test #2

Location: Station 1+44 70' down fill slope
Internal Friction Angle: 30.8°
Cohesion: 288 psf

Test #3

Location: Station 2+00 10' down fill slope
Internal Friction Angle: 31°
Cohesion: 144 psf

These results are more in line with what could be expected from this type of material.

P.O. Box 310 • Huntington, Utah 84528 • (801) 687-9821

Therefore using an internal friction angle of 31° and cohesion of 144 psf the simplied Bishop's Method was used to calculate safety factors for the fill slope. The lowest factor of safety was found to be 1.77.

Therefore, our original statement is substantiated and the fill is stable and the factor of safety is above the 1.5 requirement by the regulations.

Should you have any questions please let us know.

Sincerely,

Larry J. Guymon, P.E.
Construction Manager

cc: Bill Zeller
Jim Hamlin
Morgan Moon
Chris Shingleton

ROLLINS, BROWN AND GUNNELL, INC.
PROFESSIONAL ENGINEERS

November 28, 1984

Emery Mining Corporation
P.O. Box 310
Huntington, Utah 84528

Gentlemen:

Transmitted herewith are the results of three direct shear tests performed on material received from your office. The samples were densified as specified by your organization, afterwhich they were saturated and subjected to shear stresses under drained conditions. It will be observed that friction angles of 30.8°, 31°, and 31.6° were obtained. This work was performed in accordance with P.O. #RM-38354.

If there are any questions relative to the test results, please advise us.

Yours truly,

ROLLINS, BROWN AND GUNNELL, INC.

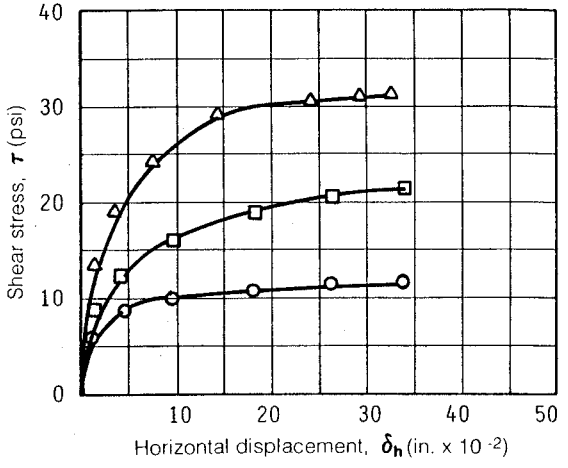
Ralph L Rollins /jbt

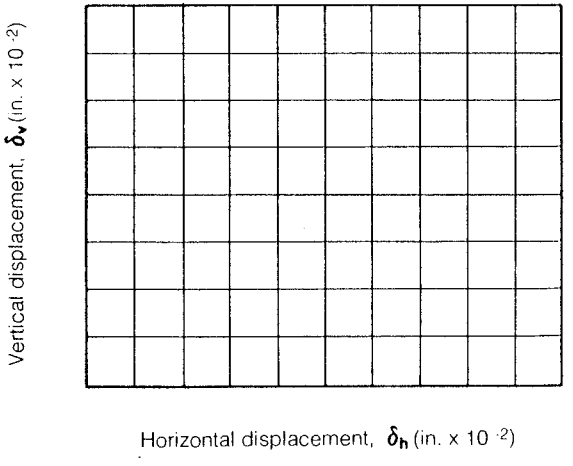
Ralph L. Rollins

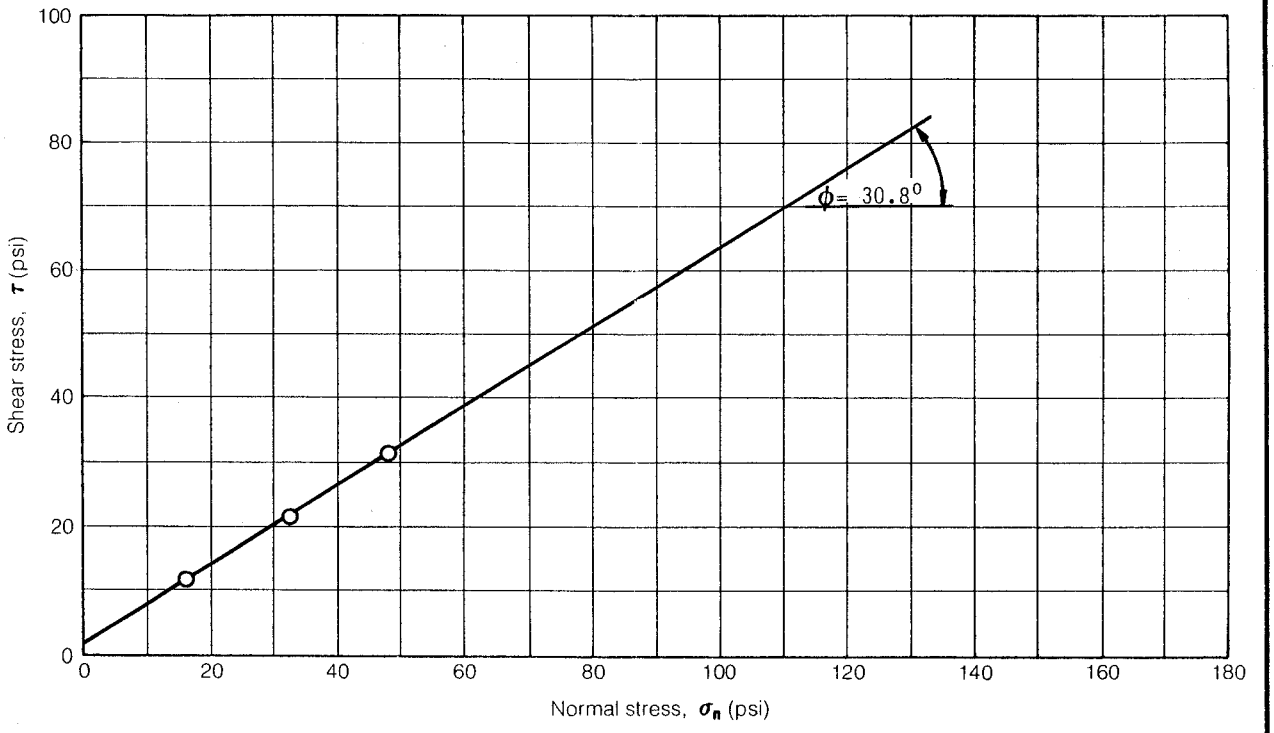
RLR/jbt

Enclosures

1435 West 820 North, P.O. Box 711 • Provo, Utah 84603 • (801) 374-5771







Test no. or symbol	Sample size (inches)	Sample data: Dry density (pcf)	Sample data: Moisture content (%)	Degree of saturation (%)	Normal stress σ_n (psi)	Maximum shear stress τ (psi)	Strain rate (inches / minute)	Shear strength parameters: Friction angle ϕ (degrees)	Shear strength parameters: Cohesion (c / psi)
o	2.5	112.9	11.3	100	16.3	11.3	0.0024	30.8	2.0
□	2.5	112.9	11.3	100	32.6	21.1	0.0024		
△	2.5	112.9	11.3	100	48.7	31.9	0.0024		

ROLLINS, BROWN AND GUNNELL, INC.
PROFESSIONAL ENGINEERS

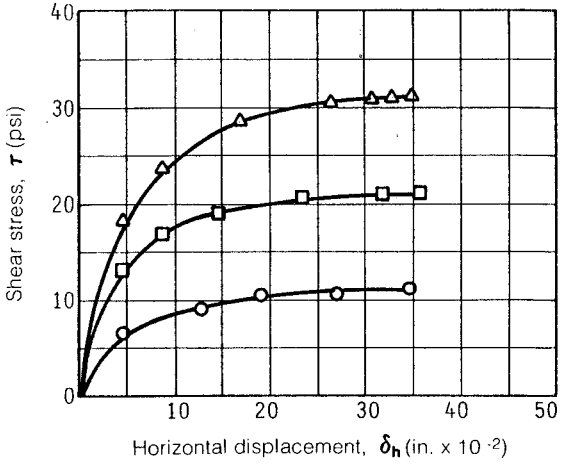
DIRECT SHEAR TEST

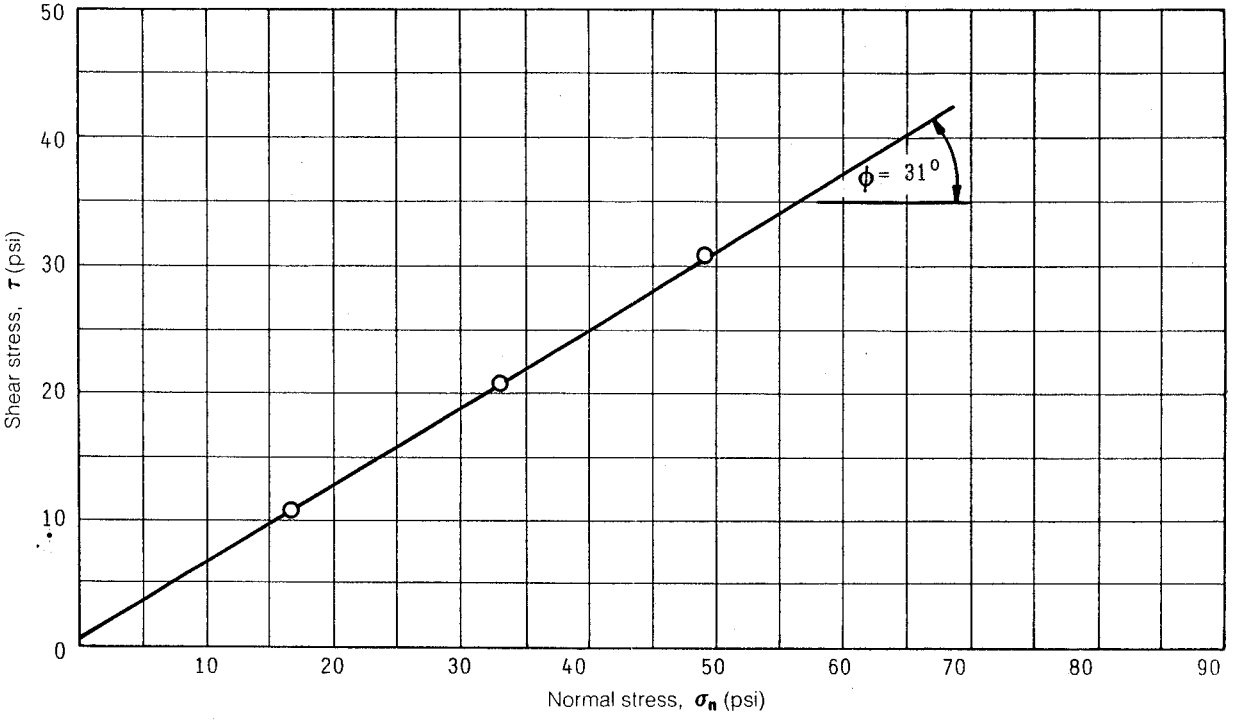
Project: Emergy Mining

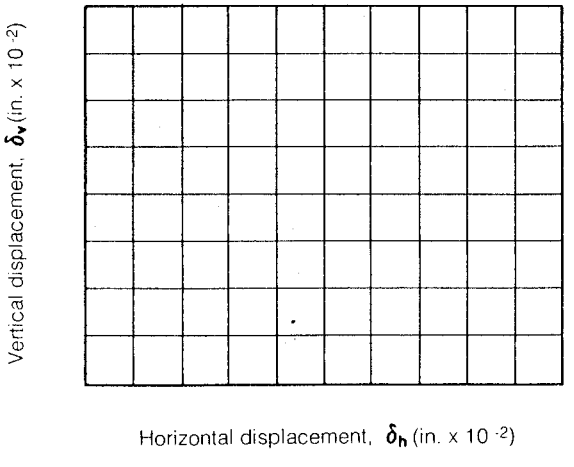
HOLE NO. 2

DEPTH:

FIGURE NO.







Test no. or symbol	Sample size (inches)	Sample data		Degree of saturation (%)	Normal stress σ_n (psi)	Maximum shear stress τ (psi)	Strain rate (inches / minute)	Shear strength parameters	
		Dry density (pcf)	Moisture content (%)					Friction angle ϕ (degrees)	Cohesion (c / psi)
○	2.5	112.0	11.9	100	16.4	11.3	0.0024	31°	1.0
□	2.5	112.0	11.9	100	32.9	20.9	0.0024		
△	2.5	112.0	11.9	100	49.1	30.7	0.0024		

ROLLINS, BROWN AND GUNNELL, INC.
PROFESSIONAL ENGINEERS

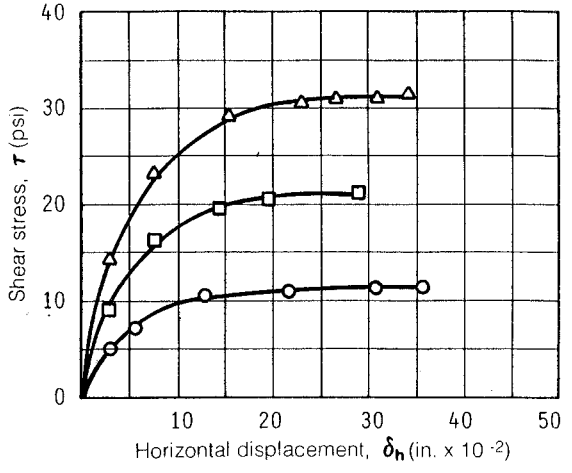
DIRECT SHEAR TEST

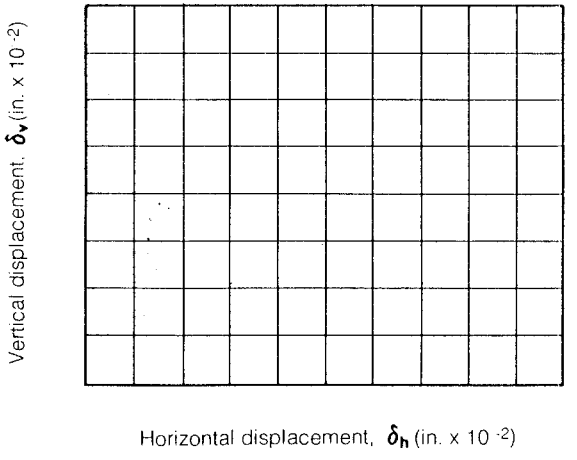
Project: Emery Mining

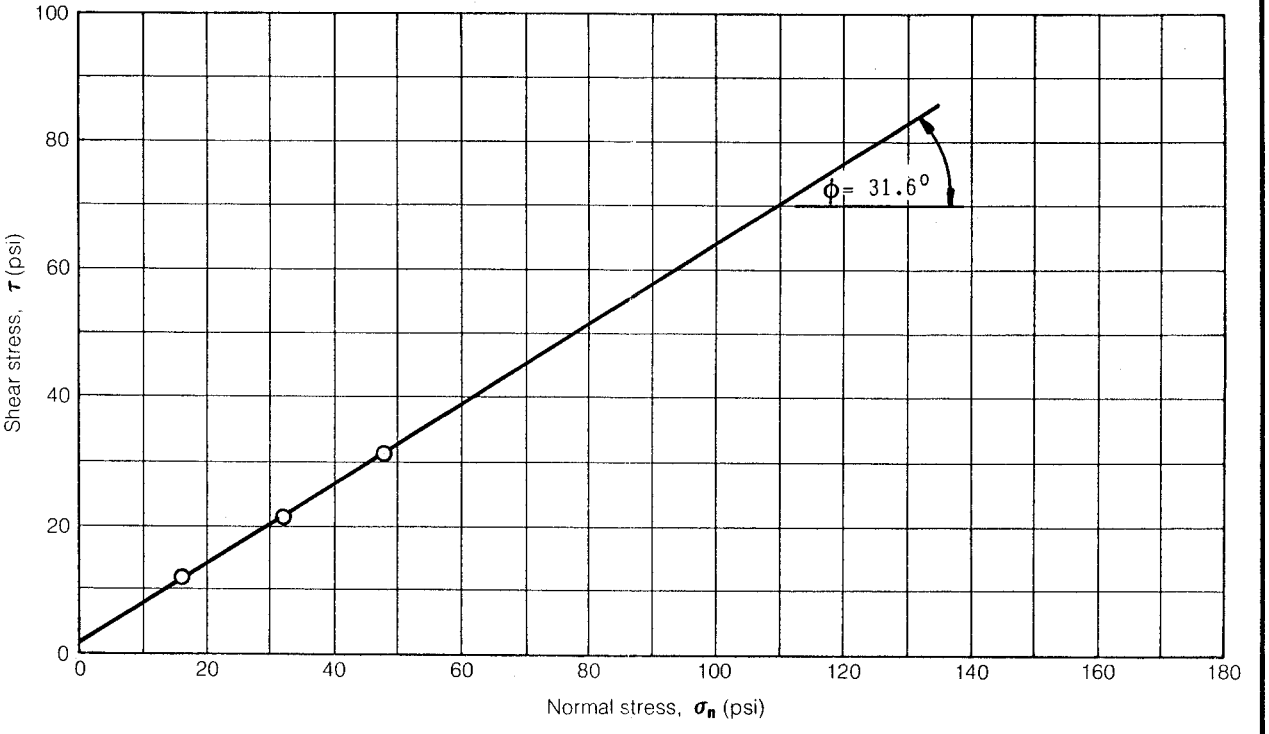
HOLE NO. 3

DEPTH:

FIGURE NO.







Test no. or symbol	Sample size (inches)	Sample data		Degree of saturation (%)	Normal stress σ_n (psi)	Maximum shear stress τ (psi)	Strain rate (inches / minute)	Shear strength parameters	
		Dry density (pcf)	Moisture content (%)					Friction angle ϕ (degrees)	Cohesion (c / psi)
○	2.5	112.4	11.2	100	16.4	11.9	0.002	31.6°	2.0
□	2.5	112.4	11.2	100	31.9	21.5	0.002		
△	2.5	112.4	11.2	100	48.9	31.4	0.002		

ROLLINS, BROWN AND GUNNELL, INC.
PROFESSIONAL ENGINEERS

DIRECT SHEAR TEST

Project: Emery Mining

HOLE NO. 1

DEPTH:

FIGURE NO.

Wayne

United States Department of the Interior

OFFICE OF SURFACE MINING
Reclamation and Enforcement
BROOKS TOWERS
1020 15TH STREET
DENVER, COLORADO 80202

RECEIVED
NOV 21 1984
NOV 23 1984
DIVISION OF
OIL, GAS & MINING

Mr. D. Wayne Hedberg
Permit Supervisor/Reclamation Hydrologist
Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Dear Mr. Hedberg:

We have received your transmittal of Utah Power and Light Company's sediment storage plans for the Des-Bee-Dove Mine, dated November 8, 1984. Based upon our meeting the same date between the Division of Oil, Gas and Mining and Office of Surface Mining staffs held in Salt Lake City, it was agreed that we will include the sediment storage area and haul road in our review of the Des-Bee-Dove permit application package.

If you have any questions, please feel free to contact Mark Humphrey or Walter Swain at (303) 844-3806.

Sincerely,

William Kovacic

William Kovacic
Branch Chief
Mine Plan Review Branch

cc: Dianne Nielson, DOGM
Robert Hagen, OSM - Albuquerque

File: ACT/015/019 #3,7 & 15(w/maps)

RECEIVED

SEP 25 1984

DIVISION OF OIL GAS & MINING

To Wayne
File
ACT/015/019
Folder 7,3
cc: Joe, Ken

JIM

SEP 26 1984

EMERY MINING CORPORATION

A SAVAGE BROTHERS COMPANY

September 21, 1984

Mr. Jim Smith
Division of Oil, Gas & Mining
Natural Resources & Energy
State of Utah
4241 State Office Building
Salt Lake City, Utah 84114

Dear Mr. Smith:

REGARDING: NOV 84-7-10-1 Abatement Plans

Transmitted herewith are abatement measures as required to abate this violation. These plans also constitute a minor modification to the surface drainage system.

AREA #1

This area constitutes approximately 0.124 acres associated with the truck load out facility. To provide more positive control and treatment of the runoff from this area a concrete drop inlet and culvert will be installed down the haul road approximately 180'. This drainage structure will divert all drainage accumulation at this point into the north sediment pond for treatment. (See hydrologic section for analysis and design.)

AREA #2

This area constitutes the coal truck loop road west of the sediment ponds and that portion of the access road below area #1. This area consists mainly of asphalt paved roadways and associated bar ditches along the dirt berms surrounding the sediment ponds. The major source of sediments (that are of concern to the inspector) result from erosion of these berms and bar ditches. Therefore, to eliminate this source our proposal is to construct asphalt ditches

and curbs on both sides of the ponds adjacent to the dirt berms. The area where they join, at the "Y", will also be paved. The existing drop inlet and culvert will be repaired and used as is presently done to transfer water from the "Y" area to the west bar ditch. (See hydrologic section for analysis and design).

Should you require further information contact myself or Tom Faucheux.

Sincerely,

Larry J. Guymon

Larry J. Guymon, P.E.
Construction Manager

cc: Bill Zeller
Jim Hamlin
Morgan Moon
Carl Pollastro
Tom Faucheux
Chris Shingleton

HYDROLOGIC ANALYSIS FOR TRUCK LOAD OUT AREA AT WILBERG MINE

This analysis covers two areas adjacent to the truck load out facility at the Wilberg Mine. Area one consists of the paved area immediately below the truck load out structure which drains down the access road. This area is considered affected and runoff from this area will be diverted into the sediment pond for treatment. Area two consists of the main access road below the diversion just described and the coal truck loop road west of the sediment ponds down to the convergence of these two roads. This area is not affected and this runoff will be routed to the drainage ditch along the main road below the mine.

The method used to calculate the runoff volumes will be the Rational method, which use is justified by the small size of each area and the fact that both are paved, making the selection of the runoff coefficient easy. The Rational formula is:

$$Q = C\ i\ A$$

Where Q = flow rate, acre inches per hour (or cubic feet per second)

C = Runoff coefficient, dimensionless

i = intensity of rainfall, inches per hour, for a rainfall event with duration equal to the time of concentration, t_c, of the watershed.

A = area of watershed, acres.

Because both areas are paved the runoff coefficient value is 1.0. The watershed areas are 0.124 and 0.667 acres for Areas one and two, respectively.

The rainfall intensity values must be interpolated from data gathered from outside sources. The time of concentration for each area is determined by calculating the time required for water to flow from the most distant point of the area to the outlet. The velocity of flow is taken from Figure 2.34 of Applied Hydrology and Sedimentology for Disturbed Areas, Oklahoma Technical Press, 1981. For sheet flow over paved areas the velocity for area one with an average slope of 5% is 4.5 feet per second, area two slope is 12.5% and the velocity is 7 feet per second. The time of concentration equals the travel distance divided by the velocity. The lengths are 180 feet and 660 feet, giving to values of 40 and 94 seconds for areas one and two respectively.

The recurrance interval for design is 10 years. The determination of the intensity for the 10 year rainfall event comes from the Precipitation - Frequency Atlas of the Western United States, Volume VI - Utah, National Oceanic and Atmospheric Administration, 1973, Pages 15 and 16.

The following table gives the rainfall values for the Wilberg Mine site:

FREQUENCY	DURATION	RAINFALL INCHES	METHOD OF DETERMINATION
2 Yr	6 Hr	1.0	Fig 19
2 Yr	24 Hr	1.4	Fig 25
100 Yr	6 Hr	2.2	Fig 24
100 Yr	24 Hr	3.4	Fig 30
2 Yr	1 Hr	.66	Table 11
100 Yr	1 Hr	1.57	Table 11
10 Yr	1 Hr	1.05	Figure 6
10 Yr	5 Min	.305	Table 12
10 Yr	10 Min	.473	Table 12
10 Yr	15 Min	.599	Table 12
10 Yr	30 Min	.830	Table 12

The intensity values for the short duration rainfall events needed for areas one and two are determined by curve fitting techniques and the relationship between duration and rainfall:

$$Y = AX^B$$

$$\text{or } \log Y = \log A + B \log X$$

where Y = rainfall, inches

X = duration, minutes

A, B = constants

Using the method of least squares for the 5, 10, 15 and 30 minute data points, the values for the constants are found to be 0.128 and 0.558 for A and B, respectively.

The intensities for the two areas in question are given by the following equation:

$$\text{Intensity} = 0.128\ (tc)^{0.558} \times \frac{60}{TC}$$

and tabulated as follows:

	tc minutes	Intensity Inches/Hour
Area 1	.667	9.18
Area 2	1.57	6.29

Using this data in the rational formula gives the following table:

Area	Intensity	Surface Area	Flow
1	9.18 in/hr	.124 acres	1.14 cfs
2	6.29 in/hr	.667 acres	4.19 cfs

The minimum slope of the culvert is 2% so the minimum diameter can be determined with the Manning Equation:

$$Q = \frac{1.49}{n} A R^{2/3} S^{1/2}$$

Solving for Diameter:

$$D = \left(\frac{n \quad Q}{.4644 \sqrt{S}} \right)^{.3750}$$

The = minimum diameters are 7 and 12 inches for areas one and two respectively.

WILBERG COAL MINE
FOURTH EAST CONVEYOR
TEMPORARY SPUR ROAD

The Wilberg Mine permit contains plans for the installation of an overhead open belt conveyor from the Fourth East portal to the existing silo. Subsequent to the permit approval we have determined that a totally enclosed conveyor at this location would be more environmentally suitable by eliminating falling coal fines from the truck loadout area.

The installation of the 12 foot diameter tube to house the conveyor system and geotechnical studies for the bent foundation will require the construction of a temporary 12 foot wide, 220 foot long access road and a 20 foot x 25 foot pad to locate a 20-ton crane in position to facilitate installation of the conveyor and support.

This road will be bladed by a D-8 tractor along the west slope of the lower pad at approximately a 10% grade following as closely as possible to the natural contours. The road will not surfaced. Drainage control will be provided by a berm along the outside of the road which will divert drainage into the existing disturbed drainage system at the point where this road intercepts the pad. The additional acreage disturbed for the road and pad will approximate .07 acres.

The grade, location and surfacing are designed to meet the requirements of a Class III road.

The estimated period of use will be one year after which the disturbed area will be returned to its previous condition and revegetated using the techniques for interim revegetation in the approved permit.

WCM:bb

12-10-84

EMERY MINING CORPORATION

A SAVAGE BROTHERS COMPANY

RECEIVED
SEP 11 1984
DIVISION OF OIL
GAS & MINING

September 5, 1984

ACT/015/019
Mod. Folder

Mr. Lynn M. Kunzler
Reclamation Biologist
State of Utah
Natural Resources & Energy
Oil, Gas and Mines
Salt Lake City, Utah 84114

Dear Mr. Kunzler:

The following seed mixes are presented in the MRP's for Interim Revegetation at the various mine sites (Wilberg, Deer Creek, Des-Bee-Dove).

GRASSES		PLS lbs./acre
Thickspike Wheatgrass	Agropyron dasystachyum	5
Western Wheatgrass	A. smithii	6
Salina Wildrye	Elymus salina	2
Indian Ricegrass	Oryzopsis hymenoides	4
Squirreltail	Sitanion hystrix	3
FORBS		
Pacific Aster	Aster chilensis	0.2
Northern Sweetvetch	Hedysarum boreale	10
Yellow Sweetclover	Melilotus officinalis	2
Alfalfa	Medicago sativa	2
Eaton Penstemon	Penstemon eatoni	1

P.O. Box 310 • Huntington, Utah 84528 • (801) 687-9821

It is proposed that the seed mixes be modified as follows:

(1) Reduce Salina Wildrye to 1 lb/acre PLS.

(2) Add Great Basin Wildrye, Elymus cinereus at 3 lbs/acre PLS.

(3) Reduce Northern Sweetvetch to 1 lb/acre PLS.

(4) Reduce Yellow Sweetclover and Alfalfa to 1 lb/acre PLS each.

All other species and rates remain as originally specified.

The modifications are proposed due to the limited availability of some species and the cost related to planting these species at the rates originally specified.

Application of the modified seed mixes at the rates indicated will result in approximately 76 grass seeds per square foot and approximately 36 forb seeds per square foot. These rates should be adequate for the sites and application methods identified in the MRP's.

Your consideration and assistance in this matter is greatly appreciated.

Sincerely,

Larry Guymon, P.E.
Construction Manager

cc: Bill Zeller
Jim Hamlin
Morgan Moon
Val Payne
Chris Shingleton

Mod. Folder

STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

Scott M. Matheson, Governor
Temple A. Reynolds, Executive Director
Dianne R. Nielson, Ph.D., Division Director

4241 State Office Building • Salt Lake City, UT 84114 • 801-533-5771

September 7, 1984

Mr. Larry J. Guymon, PE
Construction Manager
Emery Mining Corporation
P. O. Box 310
Huntington, Utah 84528

Dear Mr. Guymon:

RE: Notice of Violation N84-7-7-1 Abatement Plan, Utah Power & Light Company, Wilberg Mine, ACT/015/019, Emery County, Utah

The abatement plans submitted August 17, 1984 for Notice of Violation (NOV) N84-7-7-1 have been reviewed by Division Hydrologist, John Whitehead. The plans are approved as submitted. The following additional measures must be incorporated during reconstruction of the ponds:

1. The temporary sediment basin must be inspected daily to assure that it is functioning properly.

2. Sediment accumulations in the temporary sediment basin must be cleaned when levels reach the bottom of the straw bales.

3. After the upper pond is completed, effluent from the temporary sediment basin must be routed into the upper pond until the water level reaches the maximum storage level. Once maximum storage is achieved in the upper pond, effluent from the temporary sediment basin can be routed back into the 90-inch bypass culvert.

It is suggested that prior to pumping water from pond #2 back into the completed upper pond, any water which will meet effluent requirements be decanted rather than pumped back into the upper pond. This will hopefully maximize available storage in the upper pond which can receive effluent from the temporary sediment basin.

Please assure that you receive approval from the Department of Health prior to initiating construction.

Thank you for your cooperation in this matter. Please feel free to contact myself or John Whitehead if you should have any questions.

Sincerely,

D. Wayne Hedberg
Permit Supervisor/
Reclamation Hydrologist

JJW/btb
cc: Allen Klein
Steve McNeal
Chris Shingleton
Jim Smith
Mary Boucek
Joe Helfrich
John Whitehead
Ken Wyatt
92940-11 & 12

MRP REVISION/NOV TRACKING FORM

Type of Proposal: X COAL ___ NONCOAL

___ Exploration
X NOV Abatement, NOV # 84-7-7-1, Abatement Deadline _____
___ MRP Revision
___ MRP Amendment

Issuing Inspector R. Wyatt

Title of Proposal: Wilberg Mine Sediment Ponds

Company name: Utah Power + Light Project/ Mine Name: Wilberg Mine Sediment Pond Sealing

File # (PRO/ACT): ACT/015/019 Acreage (Fed/State/Fee): ___/___/___
(CEP/EXP)

Assigned Reviewers:	Review Time (hrs):
(Hydrology) X John Whitehead	2 hrs 9-5-84
(Wildlife/Veg.)	
(Engineering) X	1/2 hr.
(Soils)	
(Geology)	

DATES:

(a) Initial Plan Received 8/22/84
Tech Review Due 9/5/84
Tech Review Complete _____

(b) Operator Resubmission _____
Tech Review Due _____
Tech Review Complete _____

(c) Conditional Approval _____
Stipulations Due _____
Stipulations Received _____
Final Approval _____

(d) NOV Termination _____

(e) Bond Revision _____
Amount ($) _____

COMMENTS: _____

NOTE (INSPECTORS): Please attach a copy of the NOV issued to the abatement plan when received from the operator.

NOTE (REVIEWERS): Please prepare review comments in a format referencing the appropriate regulation or statute. State the deficiency as well as minimum requirement necessary to demonstrate compliance (when possible). Also fill in the number of hours spent in review by discipline. Return the revision/NOV abatement to the Special Permits Supervisor when review is complete.

75660

RECEIVED
AUG 2 2 1984
DIVISION OF OIL
GAS & MINING

EMERY MINING CORPORATION

A SAVAGE BROTHERS COMPANY

August 17, 1984

Mr. Ken Wyatt
Division of Oil, Gas & Mining
Natural Resources & Energy
State of Utah
4241 State Office Building
Salt Lake City, Utah 84114

Regarding: NOV 84-7-7-1

Dear Mr. Wyatt:

Please find transmitted herewith plans required for the Wilberg Sediment Ponds.

As stated in the Engineer's Statement, soil and water samples are being taken to properly evaluate the permeability of the betonite-soil mixture.

As required a copy of this plan is being sent to the Bureau of Water Pollution.

Should you have any questions, contact myself or Tom Faucheux.

Sincerely,

Larry J. Guymon

Larry J. Guymon, P.E.
Construction Manager

cc: Bill Zeller
Jim Hamlin
Morgan Moon
Dave Bocook
Carl Pollastro
Chris Shingleton
Calvin K. Sudweeks

P.O. Box 310 • Huntington, Utah 84528 • (801) 687-9821

EMERY MINING CORPORATION

A SAVAGE BROTHERS COMPANY

RECEIVED

AUG 2 2 1984

DIVISION OF OIL
GAS & MINING

August 17, 1984

Mr. Calvin K. Sudweeks
Executive Secretary
Utah Water Pollution Control Committee
State of Utah
Department of Health
150 West North Temple
P. O. Box 2500
Salt Lake City, Utah 84110 - 2500

Dear Mr. Sudweeks:

Transmitted herewith are construction plans for lining our Wilberg Mine sediment ponds. This action is required to abate a Notice of Violation #NOV 84-7-7-1, issued by the Division of Oil, Gas and Mining.

Your attention to this matter is appreciated.

Sincerely,

Larry J. Guymon

Larry J. Guymon, P.E.
Construction Manager

Enclosure

P.O. Box 310 • Huntington, Utah 84528 • (801) 687-9821

SUBJECT: SEDIMENT PONDS AT WILBERG MINE

The sediment ponds at Wilberg Mine in Grimes Wash Canyon, Emery County, Utah, are designed to retain surface water runoff from the disturbed areas associated with the underground coal mining activities conducted by Emery Mining Corporation, for the owner, Utah Power and Light.

The ponds are located in the narrow canyon below the mine facilities and are bordered by roads which form the haul loop used by the coal trucks. Due to the width restrictions and the gradient down the canyon, the two ponds operate in series, with all water being initially discharged into the upper, or North pond. Both ponds are constructed on a rock fill including large boulders produced by the construction of the mine facilities. The design of the ponds includes a clay liner three feet thick to seal the bottom and sides of the ponds. This clay liner has not functioned the way it was intended because on several occasions the impounded water has breeched the lining material and entered the rock fill. The holes in the pond are caused by piping through the clay/soil mixture and loss of fine grained soil particles into the large voids between the rocks below the ponds. A more adequate method of sealing the ponds and preventing accidental loss of impounded water is proposed to solve this problem.

In order to provide positive control of the collected water a bentonite seal will be used in combination with a layer of filter fabric to prevent loss to soil particles (Drawing WS715C). Because of the

high total dissolved solids (TDS) levels in the sediment ponds, a special contaminant resistant bentonite is required to ensure that the material will retain its characteristic swelling capacity. PLS-50 from American Colloids Company, Skokie, Illinois, is a polymer treated bentonite product, designed for use in sealing ponds containing up to 10,000 mg/l TDS. The application rate is typically three pounds per square foot but the actual required rate is determined by tests using actual samples of both soil and water from the ponds. The permeability tests require a considerable time to conduct and the test results will not be available for several weeks. This submittal is based on 3 lbs/sq ft. but will be adjusted to insure that a permeability rate of not more than 1×10^{-17} cm/sec is achieved. The methods described herein agrees with the Soil Conservation Service National Handbook of Conservation Practices Standard Number 521-C for Pond Sealing or Lining with Bentonite Sealant (copy enclosed).

A layer of non-woven filter fabric will be used to retain the soil which lines the ponds. MIRAFI 140N is a filter fabric designed for use in drainage applications and manufactured by Mirafi Incorporated, Charlotte, North Carolina. This fabric has an equivalent opening size (EOS) of a number 100 U.S. Sieve (0.149 mm) and will retain soil which has at least 15% of its particles larger than 0.075 mm. ($EOS \div D85 < 2$ Design Guidelines for Subsurface DRAINAGE STRUCTURES, Mirafi, Inc., 1983)

The actual construction to make the proposed revisions will require diverting the normal flow into the ponds and passing it through a temporary holding basin. The basin will discharge through a filter of straw bales and into the 90 inch bypass culvert(drawing WS 715C). As construction begins in the first pond, the water already in the pond will be pumped into the second pond and retained. The dewatering pipes on the overflow will be capped. If there is not sufficient available volume to hold this water in the second pond, it will be disposed of in cell #6 of the waste rock site. Then when construction begins on the second pond, the impounded water will be pumped back into the first pond. The soil for construction of the base for the filter fabric and the protective layer will come from the excavation of the ponds themselves if there is sufficient material and if it is not too soft or wet to be placed and compacted. If this material is not adequate, it will be disposed of in the waste rock site and additional material will be brought in for this purpose. The source of this barrow material will be the excess from the construction of cell numbers three and six of the waste rock site.

Construction Schedule:

North Pond 15 Days

South Pond 15 Days

Pond Sealing or Lining (No.)

Bentonite Sealant

Definition

Installing a fixed lining of impervious material or treating the soil in a pond mechanically or chemically to impede or prevent excessive water loss.

Scope

This standard pertains to the sealing of ponds with bentonite or similar high swell clay materials.

Purpose

To reduce seepage losses in ponds to an acceptable level.

Conditions where practice applies

This practice applies where water loss from a pond through leakage is or will be of such proportion as to prevent the pond from fulfilling its planned purpose or where leakage will damage land and crops or cause waste of water or environmental problems.

Design criteria

Ponds to be sealed shall be constructed to meet SCS standards for irrigation pits or regulating reservoirs (552), irrigation storage reservoirs (436), ponds (378), waste treatment lagoons (359), waste storage ponds (425), or wildlife watering facilities (648), as appropriate.

Soil properties. Sealing with bentonite or similar materials is more applicable on coarse-grained soils where more than half of the soil material is larger than that passing the No. 200 sieve size.

Rate of application. The rate of application shall be based on laboratory tests unless sufficient data are available on the field performance of previously tested soils that are similar in texture and chemical properties to the soils to be sealed.

In the absence of laboratory tests or field performance data on the soils to be sealed, the minimum application shall be:

Pervious soil	Application method	Application rate
		lb/ft²
Clay	Mixed layer	1.0—1.5
Sandy silt	Mixed layer	1.0—1.5
Silty sand	Mixed layer	1.5—2.0
Clean sand	Mixed layer	2.0—2.5
Open rock or gravel	Clay or sand mixed layer	2.5—3.0

Thickness of treated blanket. The minimum thickness of the finished treated blanket shall be 4 in. for water depths up to 8 ft. Additional thickness shall be provided for greater water depths and for areas subject to wave action.

Plans and specifications

Plans and specifications for sealing ponds with bentonite shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

Pond Sealing or Lining

Bentonite Sealant Specifications

Application shall be as follows:

1. The area to be treated shall be drained and dried.
2. All vegetation, trash, stones, and other objects large enough to interfere with the operation shall be removed.
3. Holes shall be filled.
4. Sealing material shall be distributed evenly over the surface.
5. For mixed layers, the material shall be thoroughly mixed to the specified depth with disk, rototiller, or similar equipment.
6. Each treated layer shall be compacted to a dry density of 90 percent or more of maximum standard Proctor with soil at optimum moisture content.
7. Treated areas shall be protected from puncture by livestock trampling. Areas near the waterline and at points of concentrated surface flow into the pond shall be protected against erosion.

Applications shall be carried out in such a manner that erosion and air and water pollution are minimized. The completed job shall present a workmanlike finish.

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS & MINING

1588 West North Temple
Salt Lake City, Utah 84116
Telephone: (801) 533-5771

NOTICE OF VIOLATION NO.N 84-7-7-1

From the STATE OF UTAH
To the Following Permittee or Operator:

NAME Utah Power and Light
MINE WILBERG MINE ☐ SURFACE ☐ UNDERGROUND ☐ OTHER
CATEGORY OF OWNERSHIP: ☐ STATE ☒ FEDERAL ☐ FEE ☐ MIXED
OSM MINE NO. STATE PERMIT NO. ACT/015/019 MSHA I.D. NO.
COUNTY AND STATE EMERY Co UTAH TELEPHONE 687-9821
MAILING ADDRESS: P.O. Box 899 SLC UT 84110
DATE OF INSPECTION JUNE 7, 19 84.
TIME OF INSPECTION: FROM 9:30 ☒ a.m. to 200 ☐ a.m.
☐ p.m. to ☒ p.m.
NAME OF OPERATOR (if other than permittee) Emery Mining Corporation
MAILING ADDRESS: P.O Box 310 HUNTINGTON UT 84528

Under the authority of the Utah Coal Mining and Reclamation Act of 1979 (Sec. 40-10-1 et seq., Utah Code Annotated, 1953), the undersigned authorized representative of the Director and the Division of Oil, Gas & Mining has conducted an inspection of the above mine on the above date and has found violation(s) of the Act, the regulations or required permit condition(s) listed in the attachment(s). This Notice constitutes a separate Notice of Violation for each violation listed.

You must abate each of these violations within the designated abatement time. You are responsible for doing all work in a safe and workmanlike manner.

The undersigned representative finds that cessation of mining is ☐ is not ☒ expressly or in practical effect required by this Notice. For this purpose "Mining" means extracting coal from the earth or a waste pile and transporting it within or from the minesite.

This Notice shall remain in effect until it expires as provided on the reverse or is modified, terminated or vacated by written notice of an authorized representative of the Director of the Division of Oil, Gas & Mining. The time for abatement may be extended by the authorized representative for good cause, if a request is made within a reasonable time before the end of the abatement period.

Date of Service JUNE 7 1984 Kenneth W. Wyatt
SIGNATURE OF AUTHORIZED REPRESENTATIVE

Time of Service 1:55 ☐ a.m. ☒ p.m. KENNETH W. Wyatt #7
NAME AND I. D. NO.

Person Servied with Notice Larry Guymon Construction Manager
PRINT NAME AND TITLE

Signature Larry J. Guymon 6-7-84

IMPORTANT — PLEASE READ REVERSE OF THIS PAGE

STATE OF UTAH

Notice of Violation No. N 84-7-7-1

Violation No. 1 of 1

Nature of the Violation

Failure to maintain sediment control facilities to treat any water discharged from the disturbed area so that it complies with all State and Federal water quality laws and regulations. Failure to maintain sediment ponds to prevent short circuiting to the extent possible. Failure to meet effluent limitations

Provision(s) of the Regulations, Act, or Permit Violated

UCA 1953 40-10-18 (2)(i)(ii)
UMC 817.42 (a)(1)
UMC 817.42 (c)
UMC 817.45(ii)
UMC 817.46(e)
UMC 817.46(f)

Portion of the Operation to which Notice Applies

Lowermost sediment pond embankment; breached on North side

Remedial Action Required (including interim steps, if any)

A. Maintain sediment pond to prevent short circuiting and to comply with applicable state and federal effluent limitations
B. Develop and submit to the Division for approval, adequate plans to repair these sediment ponds to prevent to the extent possible, future breaches of this nature; implement these plans upon approval

Time for Abatement (including time for interim steps, if any)

A. 10 days; No later than 800 am June 18, 1984
B. 30 days No later than July 7, 1984

INSPECTOR 3196

UTAH POWER & LIGHT COMPANY
DEER CREEK & DESERET MINES
REVEGETATION
PLAN

File ACT/015/017

UTAH POWER & LIGHT COMPANY

LEGAL OFFICES
SIDNEY G. BAUCOM
SENIOR VICE PRESIDENT
AND
GENERAL COUNSEL

ROBERT GORDON
350-3214

THOMAS W. FORSGREN
350-3213

VERL R. TOPHAM
350-3650

P. O. BOX 899
SALT LAKE CITY, UTAH 84110

SAM F. CHAMBERLAIN
350-3825

ROSEMARY RICHARDSON
350-3796

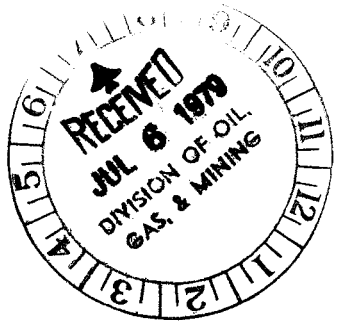
RALPH L. JERMAN
350-3726

HELEN J. EDWARDS
350-4875

MARY STIRK
LEGAL ASSISTANT
350-3217

STEVE D. WHITE
CLAIMS SPECIALIST
350-4864

July 6, 1979



Division of Oil, Gas and Mining
1588 West North Temple
Salt Lake City, UT 84116

Attn: Mr. K. Michael Thompson

Re: Utah Power & Light Company
Church Mine ACT/015/017
Deer Creek Mine ACT/015/018-A

Gentlemen:

In order to satisfy the requirements of your letters of May 7, 1979, we are submitting a revegetation plan prepared for Utah Power & Light Company by Endangered Plant Studies, Inc., of Orem, Utah. The plan is submitted to comply with Violation No. 2 for the Church Mine and Violation No. 4 for the Deer Creek Mine.

If anything further is required or if you have any questions, please let us know.

Very truly yours,

Ralph L. Jerman

RLJ:p

Enclosure

cc: Office of Surface Mining

UTAH POWER AND LIGHT COMPANY
REVEGETATION RECOMMENDATIONS FOR
DESERET AND DEER CREEK MINES FILL SLOPES,
EMERY COUNTY, UTAH

Prepared for:

Utah Power and Light Company
P.O. Box 899
Salt Lake City, Utah 84110

Submitted by:

Endangered Plant Studies, Inc.
129 North 1000 East
Orem, Utah 84057

Date: 2 July 1979

TABLE OF CONTENTS

SUMMARY

On site inspections of fill slopes at Deseret and Deer Creek mines in Emery County, Utah were conducted on June 22, 1979. Because of slope and aspect, the fill slopes and adjacent naturally vegetated slopes at the Deseret Mine are arid. It is recommended that those slopes be seeded with a mixture of crested wheatgrasses, intermediate wheatgrass and small burnet.

The Deer Creek Mine is in a protected narrow canyon, where evaporation is less and water more available. Plants recommended for the Deer Creek Mine fill slopes include Timothy, hairy wheatgrass, yellow sweet clover, and alfalfa. These recommendations are in keeping with OSM and Utah state regulations regarding use of acclimated species in initial stabilazation of fill slopes.

DESCRIPTION OF PROPOSED ACTION

Fill slopes of exposed parent materials and of waste generated in mining of coal are proposed for revegetation. The Deseret Mine has been mined for a long period of time and besides fill slopes associated with development of parking and of access roads a waste dump below the lower portal has accumulated to a large size. All of the fill slopes are scheduled for revegetation.

Fill slopes at the Deer Creek Mine constitute the areas to be revegetated. The mine has been in operation for a relatively short time, and no waste dump is apparent.

DESCRIPTION OF EXISTING ENVIRONMENT

Potential for revegetation is a function of substrate, slope, aspect, and amount of water available to the plants. Substrates in the mine areas vary from saline sand to sandy silts and clays. Coal residue and rock dust added to the substrate along with various extraneous substances and residues tend to complicate revegetation attempts.

Slope at or near the angle of repose, induce rapid runoff of water and reduce the total moisture available for plant growth. Aspect is likewise important because of the angle of incidence of light and energy received per unit area affects evaporation rates and, hence, the availability of moisture.

Deseret Mine - The Deseret Mine is situated in reentry whose axis trends in a southeasterly direction (Fig. 1). Insolation is high along fill slopes which persist at or near angle of repose. Six slopes are scheduled for revegetation. These have been designated as areas A through F and are discussed separately.

Area A is a curved slope below the upper portal (Fig. 2). It is held by chain link fencing and is covered with a layer of rock dust (limestone) which issues from the mine. Areas B, C,D, and E, (Figs. 3 and 4) are slope fill areas of relatively small size which have resulted from construction of access

roads, parking, equipment, and building construction sites. Area F is the historical main dump area (Fig. 5). A portion of the dump has been covered by a layer of detritus taken from surrounding slopes. The western side has been buried with more recent carbonaceous waste materials. Total area of the fill slopes is estimated as approximately 1.5 acres.

Areas surrounding the fill slopes are clothed by natural vegetation, including pinyon and juniper, green ephedra, serviceberry, and the bull grass, Elymus salina (Fig. 4). Russian thistle is the main invading species on the fill slope areas.

Deer Creek Mine - The elevation of the Deer Creek Mine area is from approximately 7,200 to 7,600 feet in elevation, averaging about 200 feet lower than the Deseret Mine area. The axis of the canyon in which the Deer Creek Mine is situated trends almost in an easterly direction (Fig. 6). The canyon is deeply entrenched. Insolation is reduced by the high canyon walls which provide shade for a portion of each day. Springs and seeps provide water in a perennial stream which issues from the canyon.

Seven fill slopes (designated A-6 on the map) are scheduled for revegetation (Figs. 7-10). Totaling about four acres in extent, the fill areas are estimated to be more readily revegetated than those at the Deseret Mine. Carbonaceous materials and rock dust are less apparent as contaminats in fill materials. Colluvium and parent materials in the slopes appear to be less harsh for establishment of plants. This observation is supported by the natural regrowth of plants of bull grass (Elymus salinus), glaucous aster, and yellow sweet clover on the slopes. Russian thistle is also present in the fill areas.

RECOMMENDATIONS FOR REVEGETATION

Regulations as prescribed by OSM and by Utah State indicate that plant species which are acclimated (naturalized) to the particular region, including introduced plants, and native species will serve as candidates for revegetation.

Available in the seed trade on a regular basis are the following naturalized species which are herein recommended for initial revegetation attempts:

Deseret Mine - All of the arid slopes should be seeded with a mixture of crested wheatgrass, intermediate wheatgrass, hairy wheatgrass, yellow sweet clover, and small burnet, at a rate of some ~~12 pounds per acre in~~ total mixture.

Suggested proportions are as follows:

crested wheatgrass	4-1 lbs/acre
intermediate wheatgrass	2-3 lbs/acre
hairy wheatgrass	1-2 lbs/acre
yellow sweet clover	1-2 lbs/acre
small burnet	1-2 lbs/acre

Use of the native bull grass from the slopes surrounding the mine is recommended. Seed can be gathered by hand as the crop matures and can be planted with the other seeds as indicated above. Two to four pounds per acre is recommended.

Seed bed should be roughened by hand raking, where possible.

Seeding should be attempted in late summer or early autumn, preferably prior to or during a storm. Seeding too early will provide a winters cache for rodents.

Deer Creek Mine - Because of the more mesic sites available, the fill slopes at the Deer Creek Mine should be seeded with a mixture consisting of smooth brome, timothy, intermediate wheatgrass, alfalfa and yellow sweet clover at a rate of 12 lbs. per acre.

Proportions suggested are as follows:

smooth brome (lincoln)	3-4 lbs/acre
timothy	1-2 lbs/acre
intermediate wheatgrass	2-3 lbs/acre
alfalfa (Ladak or Nomad)	1-2 lbs/acre
yellow sweet clover	1-2 lbs/acre

Use of native bull grass (Elymus salinus) from the adjacent slopes is recommended. Plants and seeds of glaucous aster can aid in recovery of disturbed areas. This aster is noted occupying slopes A and B at the present time. A few plants of bull grass are established also.

Seeding should be attempted in early autumn, preferably prior to a storm or following artificial wetting of the slopes.

Planting methods - Combinations of hydro-mulch, cyclone seeding, broadcasting by hand will provide best possibilities for establishment of a permanent cover. Use of native and naturalized species have proven to be successful in road cut areas in Fairview, Ephriam, and Salina canyons. Large tracts of land in nearby areas have been successfully revegetated.

NATURAL REVEGETATION POTENTIAL

Establishment of the species as proposed above should modify the harsh barren slopes sufficiently as to allow for natural revegetation. Native species produce quantities of seed which cascade annually down slope. They are not readily adapted to colonization of bare slopes due to successional factors. Most require preparation of the bare areas by other plants prior to their own successful invasion. The naturalized species recommended herein should serve as nurse plants. Native vegetation can be encouraged by use of hand set seedings of bull grass, green ephedra or shadscale. These can be grown by the company or can be purchased from selected nurseries.

RECOMMENDATIONS

Dumping of additional colluvial materials and wastes should be discouraged. Stability of a sort should be an established goal of reclamation. Plants will hold the steeper slopes to a limited extent only. Natural down-slope creep of slopes will remove plants and those areas will have to be seeded annually. Should initial attempts fail, the treatment as recommended will have to be repeated on an annual basis.

FIGURE 1 - AREA E · DESERET MINE

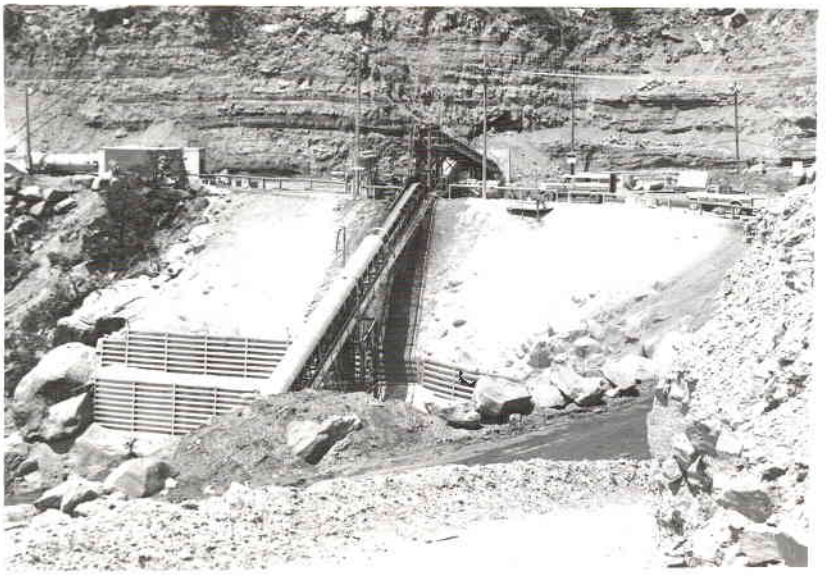


FIGURE 2 - AREA A · BEEHIVE PORTAL

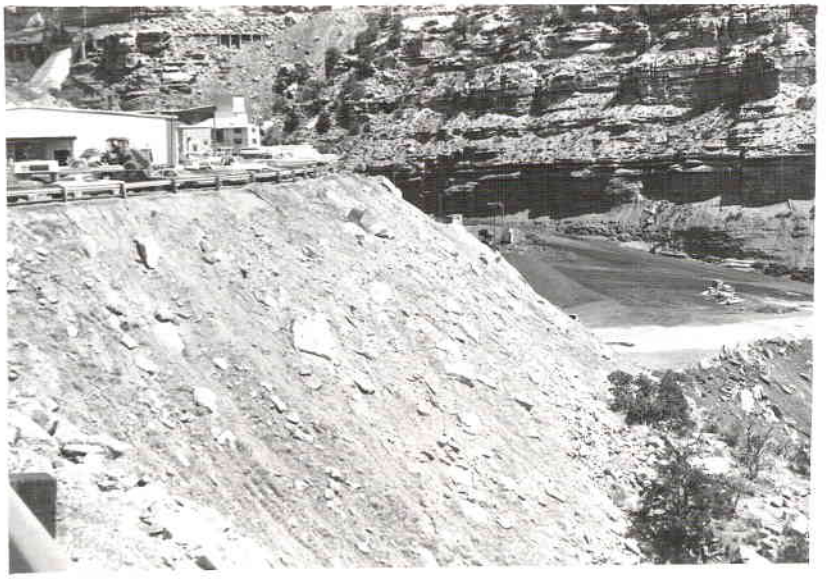


FIGURE 3 - AREA E · DESERET MINE

FIGURE 4 - AREA E · DESERET MINE

FIGURE 5 – AREA F · DESERET MINE

FIGURE 6 – AREAS C & E · DEER CREEK MINE

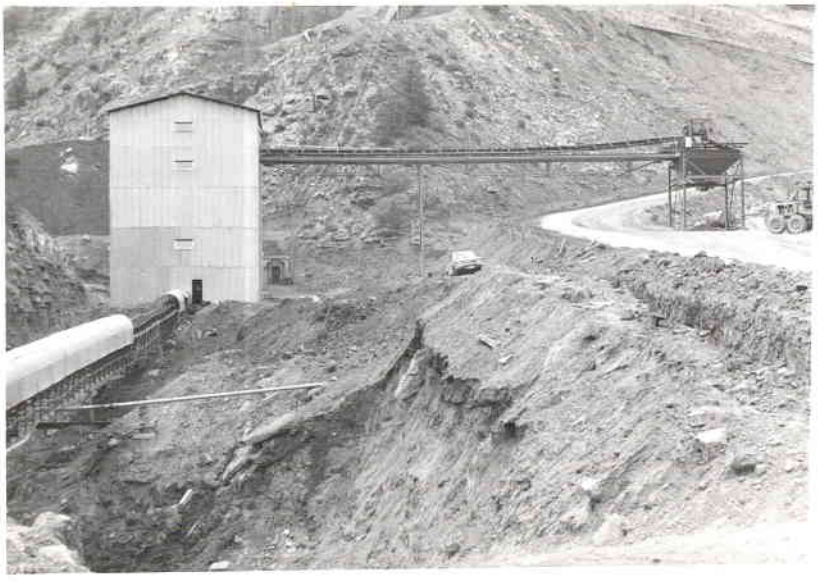


FIGURE 7 – AREA E · DEER CREEK MINE

FIGURE 8 — AREA A · DEER CREEK MINE

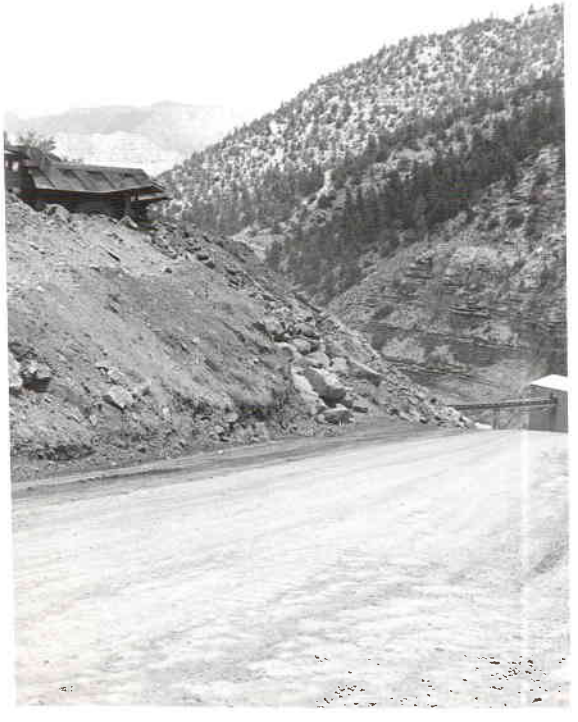


FIGURE 9 - AREA C · DEER CREEK MINE

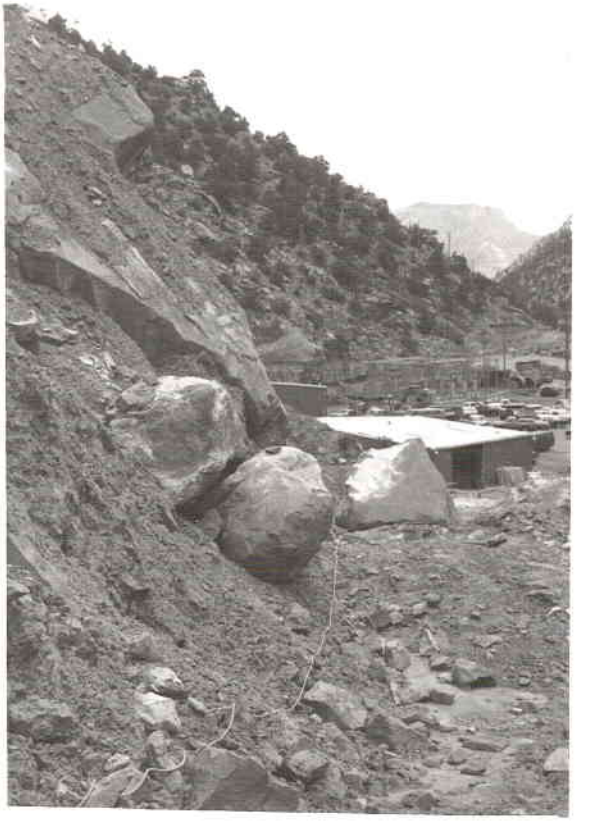


FIGURE 10 - AREA B · DEER CREEK MINE