

## PERMIT CHANGE TRACKING FORM

DATE RECEIVED	8/23/93	PERMIT NUMBER	#271015/025
Title of Proposal:	Bond Calculations	PERMIT CHANGE #	93 J
Description:	Bond Calculations - Redone (Mid-Rem Review)	PERMITTEE	Co-Op Mining Company
		MINE NAME	Bea Canyon

DO-93A <input type="checkbox"/> 15 DAY INITIAL RESPONSE TO PERMIT CHANGE APPLICATION <input type="checkbox"/> Notice of Review Status of proposed permit change sent to the Permittee. <input type="checkbox"/> Request additional review copies prior to Division/Other Agency review. <input type="checkbox"/> Notice of Approval of Publication. (If change is a Significant Revision.) <input type="checkbox"/> Notice of request to modify proposed permit change prior to approval.	DATE DUE	DATE DONE	RESULT
			<input checked="" type="checkbox"/> ACCEPTED <input type="checkbox"/> REJECTED
			Permit Change Classification <input type="checkbox"/> Significant Permit Revision <input type="checkbox"/> Permit Amendment <input type="checkbox"/> Incidental Boundary Change

REVIEW TRACKING	INITIAL REVIEW		MODIFIED REVIEW		FINAL REVIEW AND FINDINGS	
DOGM REVIEWER	DUE	DONE	DUE	DONE	DUE	DONE
<input type="checkbox"/> Administrative _____						
<input type="checkbox"/> Biology _____						
<input checked="" type="checkbox"/> Engineering <u>JK</u>						
<input type="checkbox"/> Geology _____						
<input type="checkbox"/> Soils _____						
<input type="checkbox"/> Hydrology _____						
<input type="checkbox"/> Bonding _____						
<input type="checkbox"/> AVS Check _____						

COORDINATED REVIEWS	DUE	DONE	DUE	DONE	DUE	DONE
<input type="checkbox"/> OSMRE						
<input type="checkbox"/> US Forest Service						
<input type="checkbox"/> Bureau of Land Management						
<input type="checkbox"/> US Fish and Wildlife Service						
<input type="checkbox"/> US National Parks Service						
<input type="checkbox"/> UT Environmental Quality						
<input type="checkbox"/> UT Water Resources						
<input type="checkbox"/> UT Water Rights						
<input type="checkbox"/> UT Wildlife Resources						
<input type="checkbox"/> UT State History						
<input type="checkbox"/> Other						

<input type="checkbox"/> Public Notice/Comment/Hearing Complete (If the permit change is a Significant Revision) <input type="checkbox"/> Copies of permit change marked and ready for MRP. <input type="checkbox"/> Special Conditions/Supulations written for approval. <input type="checkbox"/> TA and CHIA modified as required. <input type="checkbox"/> Permit Change Approval Form ready for approval.	<input type="checkbox"/> Permit Change Approval Form signed and approved effective as of this date. <input type="checkbox"/> Permit Change Denied. <input type="checkbox"/> Notice of <input type="checkbox"/> Approval <input type="checkbox"/> Denial to Permittee. <input type="checkbox"/> Copy of Approved Permit Change to File. <input type="checkbox"/> Copy of Approved Permit Change to Permittee. <input type="checkbox"/> Copies to Other Agencies and Price Field Office.
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## PERMIT AMENDMENT APPROVAL

Title: BOND CALCULATIONS	PERMIT NUMBER: ACT/015/025
Description: BOND CALCULATIONS - REDONE (MID-TERM REVIEW) DO-93A	PERMIT CHANGE #: 93J
	MINE: BEAR CANYON MINE
	PERMITTEE: CO-OP MINING

### WRITTEN FINDINGS FOR PERMIT APPLICATION APPROVAL

YES, NO or N/A

1.	The application is complete and accurate and the applicant has complied with all the requirements of the State Program.	
2.	The proposed permit area is not within an area under study or administrative proceedings under a petition, filed pursuant to R645-103-400 or 30 CFR 769, to have an area designated as unsuitable for coal mining and reclamation operations, unless:  A. The applicant has demonstrated that before January 4, 1977, substantial legal and financial commitments were made in relation to the operation covered by the permit application, or  B. The applicant has demonstrated that the proposed permit area is not within an area designated as unsuitable for mining pursuant to R645-103-300 and R645-103-400 or 30 CFR 769 or subject to the prohibitions or limitations of R645-103-230.	
3.	For coal mining and reclamation operations where the private mineral estate to be mined has been severed from the private surface estate, the applicant has submitted to the Division the documentation required under R645-301-114.200.	
4.	The Division has made an assessment of the probable cumulative impacts of all anticipated coal mining and reclamation operations on the hydrologic balance in the cumulative impact area and has determined that the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area.	
5.	The operation would not affect the continued existence of endangered or threatened species or result in destruction or adverse modification of their critical habitats, as determined under the Endangered Species Act of 1973 (16 U.S.C. 1531 et.seq.).	
6.	The Division has taken into account the effect of the proposed permitting action on properties listed on and eligible for listing on the National Register of Historic Places. This finding may be supported in part by inclusion of appropriate permit conditions or changes in the operation plan protecting historic resources, or a documented decision that the Division has determined that no additional protection measures are necessary.	
7.	The Applicant has demonstrated that reclamation as required by the State Program can be accomplished according to information given in the permit application.	
8.	The Applicant has demonstrated that any existing structure will comply with the applicable performance standards of R645-301 and R645-302.	
9.	The Applicant has paid all reclamation fees from previous and existing coal mining and reclamation operations as required by 30 CFR Part 870.	
10.	The Applicant has satisfied the applicable requirements of R645-302.	
11.	The Applicant has, if applicable, satisfied the requirements for approval of a long-term, intensive agricultural postmining land use, in accordance with the requirements of R645-301-353.400.	

### SPECIAL CONDITIONS OR STIPULATIONS TO THE PERMIT AMENDMENT APPROVAL

YES    NO

1.	Are there any variances associated with this permit amendment approval? If yes, attach.		
2.	Are there any special conditions associated with this permit amendment approval? If yes, attach.		
3.	Are there any stipulations associated with this permit amendment approval? If yes, attach.		

The Division hereby grants approval for Permit Amendment to the Existing Permit by incorporation of the proposed changes described herein and effective the date signed below. All other terms and conditions of the Existing Permit shall be maintained and in effect except as superseded by this Permit Amendment.

Signed \_\_\_\_\_

Director, Division of Oil, Gas and Mining

EFFECTIVE DATE \_\_\_\_\_

# APPLICATION FOR PERMIT CHANGE

Title of Change:

Revised Bond Calculations

Permit Number: ACEL 015-025

Mine: Bear Canyon

Permittee: Co Op Mining Co

Description, include reason for change and timing required to implement:

Change as a result of Division Order

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	1. Change in the size of the Permit Area? _____ acres <input type="checkbox"/> increase <input type="checkbox"/> decrease.
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	2. Change in the size of the Disturbed Area? _____ acres <input type="checkbox"/> increase <input type="checkbox"/> decrease.
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<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	4. Will permit change include operations in hydrologic basins other than currently approved?
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	5. Does permit change result from cancellation, reduction or increase of insurance or reclamation bond?
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	6. Does permit change require or include public notice publication?
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	7. Permit change as a result of a Violation? Violation # _____
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	8. Permit change as a result of a Division Order? D.O.# <u>DO-934</u>
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	9. Permit change as a result of other laws or regulations? Explain: _____
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	10. Does permit change require or include ownership, control, right-of-entry, or compliance information?
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	11. Does the permit change affect the surface landowner or change the post mining land use?
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<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	16. Does permit change require or include construction, modification, or removal of surface facilities?
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<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	22. Is permit change within 100 feet of a public road or perennial stream or 500 feet of an occupied dwelling?
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	23. Is this permit change coal exploration activity <input type="checkbox"/> inside <input type="checkbox"/> outside of the permit area?

Attach 3 complete copies of proposed permit change as it would be incorporated into the Mining and Reclamation Plan.

I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments, undertakings, and obligations, herein.

Signed - Name - Position - Date

*Wendell Brown* 8-23-93

Subscribed and sworn to before me this 23 day of August

Notary Public



Notary Public  
LEANNE STONE  
P.O. Box 300  
Huntington, Utah 84528  
My Commission Expires  
June 18, 1997  
State of Utah

My Commission Expires:  
STATE OF \_\_\_\_\_  
COUNTY OF \_\_\_\_\_

Received by Oil, Gas & Mining

ASSIGNED PERMIT CHANGE NUMBER





State of Utah  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt  
Governor

Ted Stewart  
Executive Director

James W. Carter  
Division Director

355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203  
801-538-5340  
801-359-3940 (Fax)  
801-538-5319 (TDD)

December 9, 1993

Mr. Wendell Owen  
Co-Op Mining Company  
P.O. Box 1245  
Huntington, Utah 84528

Re: Approval of Reclamation Cost Revision Ordered by Division Order DO-93A and Midterm Review, Co-Op Mining Company, Bear Canyon Mine, ACT/015/021-93J, Folder #3, Emery County, Utah

Dear Mr. Owen:

The latest submission relative to this Division Order, received November 17, 1993 has been reviewed and the reclamation cost revision is approved. The reclamation cost is now estimated at \$340,282 in 1995 dollars. The current amount posted by Co-Op Mining Company is \$290,000 in the form of an Irrevocable Letter of Credit with Capital City Bank (#1055).

Please increase the Irrevocable Letter of Credit by \$50,282 to \$340,282 by January 14, 1993. If you have any questions, please call me.

Sincerely,



Pamela Grubaugh-Littig  
Permit Supervisor

pgl  
cc: Susan White





State of Utah  
 DEPARTMENT OF NATURAL RESOURCES  
 DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt  
 Governor  
 Ted Stewart  
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 Huntington, Utah 84528

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Dear Mr. Owen:

The latest submission relative to ACT/015/021-93J, Folder #3, Emery County, Utah, dated 12/17, 1993 has been received. The amount posted on the Irrevocable Letter of Intent is \$1,000,000.

*Perm: ACT/015/021 is not Bear Canyon it is Trail Canyon by*

Please in  
 January 14, 1994

*Pamela Grubaugh-Littig*  
 Pamela Grubaugh-Littig  
 Permit Supervisor

pgl  
 cc: Susan White





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Co-Op Mining Company  
P.O. Box 1245  
Huntington, Utah 84528

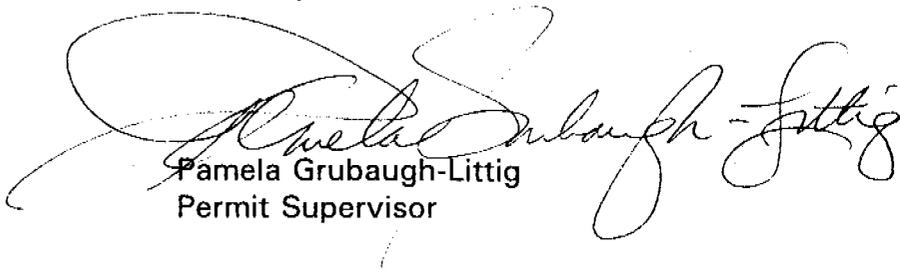
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Co-Op Mining Company  
P.O. Box 1245  
Huntington, Utah 84528

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Sincerely,

Pamela Grubaugh-Littig  
Permit Supervisor

pgl





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801-359-3940 (Fax)  
801-538-5319 (TDD)

December 7, 1993

TO: Pamela Grubaugh-Littig, Permit Supervisor

FROM: Jess Kelley, Reclamation Engineer *JK*

RE: Approval of Reclamation Cost Estimate Revision Ordered by Division Order DO-93A, Co-Op Mining Company, Bear Canyon Mine, ACT/015/025-93J, Folder #2, Emery County, Utah

SYNOPSIS

The Division issued Division Order DO-93A in July of 1993 in order to correct inadequacies in the reclamation cost estimate for this site. On August 23, 1993, the permittee submitted a revised and enlarged reclamation cost estimate for Division approval. This submittal was rejected because the cost of installing excelsior matting on reclaimed slopes steeper than 2h:1v had not been included in the overall cost estimate. The permittee then included the missing information in the reclamation cost estimate and resubmitted it on November 17, 1993.

ANALYSIS

I have reviewed the revised reclamation cost estimate. Division hydrologist Thomas Munson has reviewed the rip rap calculations and Division Biologist Susan White has reviewed the costs associated with installation of excelsior matting. The revised reclamation cost estimate is complete and adequate in every respect.

As a result of this amendment, the estimated reclamation cost has risen from \$282,512 to \$340,282, in 1995 dollars. As the present bond amount is \$290,000, the bond will have to be increased.



## RECOMMENDATIONS

It is recommended that this amendment be approved and that the reclamation bond be increased to cover the revised reclamation cost estimate.

# CO-OP MINING COMPANY

P.O. Box 1245  
Huntington, Utah 84528



(801) 381-5238  
Coal Sales (801) 381-5777

November 16, 1993

Pamela Grubaugh-Littig  
Permit Supervisor  
Utah Division of Oil, Gas & Mining  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203



NOV 17 1993

Ms. Grubaugh-Littig,

DIVISION OF  
OIL, GAS & MINING

Re: Bond Calculations Update, Co-Op Mining Company, Bear Canyon Mine, ACT/015/025-93J, Emery County, Utah

Enclosed are three copies of pages 3-86, 3-105 and 9-25. These pages have been updated to include the cost of placing excelsior matting on slopes greater the 2H:1V. Please replace the previously submitted pages with the enclosed pages. Also enclosed is the detailed change form, which has been updated to include page 9-25.

Upon approval, three finalized copies will be sent to the Division. If you have any questions, please call Charles Reynolds at (801) 381-2450.

Thank You,



Wendell Owen,  
Resident Agent

Enclosure(s)



# CO-OP MINING COMPANY

P.O. Box 1245  
Huntington, Utah 84528



(801) 381-5238  
Coal Sales (801) 381-5777

August 23, 1993

Pamela Grubaugh-Littig  
Permit Supervisor  
Utah Division of Oil, Gas & Mining  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203

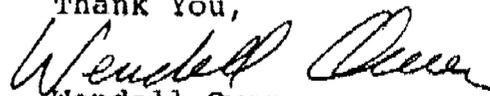
Ms. Grubaugh-Littig,

Re: Division Order DO-93A, Co-Op Mining Company, Bear Canyon Mine,  
ACT/015/025, Emery County, Utah

Enclosed are three copies of the revised bond calculations and information for the Bear Canyon Mine, as required by Division Order DO-93A. The proposal includes detailed estimates and the sources for the estimates. These pages replace the previously approved pages in Chapter 3. Additional cross sections have also been added to Appendix 3-L to give a more accurate determination of recontoured material volumes.

Upon approval, finalized copies will be sent to the Division. If you have any questions, please call Charles Reynolds at (801) 381-2450.

Thank You,

  
Wendell Owen,  
Resident Agent

WJO/cr  
Enclosure(s)

**RECEIVED**

AUG 23 1993

DIVISION OF  
OIL, GAS & MINING

# APPLICATION FOR PERMIT CHANGE

Title of Change: *Revised Bond Calculations*

Permit Number: *ACF1 0151 025*  
 Mine: *Bear Canyon*  
 Permittee: *Co Op Mining Co*

Description, include amount for change and timing required to implement:  
*Change as a result of Division Order*

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 1. Change in the size of the Permit Area? _____ acres <input type="checkbox"/> increase <input type="checkbox"/> decrease.               |
| <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No | 2. Change in the size of the Disturbed Area? _____ acres <input type="checkbox"/> increase <input type="checkbox"/> decrease.            |
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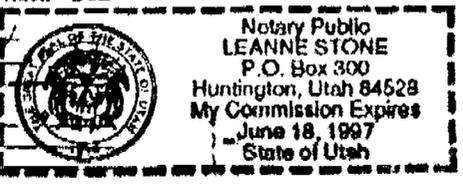
Attach 3 complete copies of proposed permit change as it would be incorporated into the Mining and Reclamation Plan.

I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments, undertakings, and obligations, herein.

*Wendell Brown* 8-23-93  
 Signed - Name - Position - Date

Subscribed and sworn to before me this *23* day of *August*  
*Leanne Stone*  
 Notary Public

My Commission Expires: \_\_\_\_\_  
 Attest: STATE OF \_\_\_\_\_  
 COUNTY OF \_\_\_\_\_



Received by Oil, Gas & Mining

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ASSIGNED PERMIT CHANGE NUMBER



TABLE OF CONTENTS (cont)

3.6	RECLAMATION PLAN . . . . .	59
3.6.1	<u>Contemporaneous Reclamation</u> . . . . .	61
3.6.2	<u>Soil Removal and Storage</u> . . . . .	61
3.6.3	<u>Final Abandonment</u> . . . . .	61
3.6.3.1	Sealing of Mine Openings. Drill Holes, Wells, etc.	
3.6.3.2	Removal of Surface Structures	
3.6.3.3	Disposition of Dams, Ponds and Diversions	
3.6.4	<u>Backfilling and Grading Plans</u> . . . . .	68
3.6.4.1	Recontouring	
3.6.4.2	Removal of Highwall	
3.6.4.3	Terracing and Erosion Control	
3.6.4.4	Soil Redistribution and Stabilization	
3.6.4.5	Coal Fine Impacted Areas	
3.6.5	<u>Revegetation Plan</u> . . . . .	77
3.6.5.1	Mulching	
3.6.5.2	Irrigation	
3.6.5.3	Management	
3.6.5.4	Vegetative Monitoring	
3.6.6	<u>Schedule of Reclamation</u> . . . . .	80
3.6.7	<u>Reclamation Monitoring</u> . . . . .	81
3.6.8	<u>Reclamation Bonding</u> . . . . .	83
3.6.8.1	Detailed Timetable for Completion of Major Reclamation Processes	
3.6.8.2	Reclamation Cost and Bonding	
3.6.9	<u>Alluvial Valley Floor Determination R614-302- 320</u> . . . . .	
3.6.10	<u>Temporary Cessation</u> . . . . .	106
3.6.10.1	Temporary Portal Seals	107

3.6.8 Reclamation Bonding

BOND

CO-OP MINING COMPANY

BEAR CANYON MINE

ACT/015/025, EMERY COUNTY UTAH

3.6.8.1 Detailed Timetable for Completion of Major Reclamation Processes

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

	<u>Accumulated Time</u>
a. Seal Portals - 1 week	1 week
b. Remove Structures - 7.8 weeks	8.8 weeks
c. Soil Replacement and Ripping - 4.7 weeks	13.5 weeks
d. Channel Restoration - 2.2 weeks	15.7 weeks
e. Revegetation - 1 week	16.7 weeks

The above reclamation tasks can, therefore, be completed within 16.7 weeks following the start of reclamation activities.

### 3.6.8.2 Reclamation Cost and Bonding

Labor - Hourly Rates from 1990 Means Site Work Cost Data, Including Utah Adjustment Cost Factor . (Cost Factor = 0.923)

Equipment Operator	<sup>24.10</sup>	= \$22.10 x 0.923 = \$20.40
Truck Driver	17.25	= \$18.10 x 0.923 = \$16.71
Laborer	13.55	= \$17.15 x 0.923 = \$15.83
Labor Foreman	20.55	= \$19.15 x 0.923 = \$17.68
Crane Operator	24.95	= \$22.90 x 0.923 = \$21.14

Equipment - Hourly rates from 1990 Means Site Work Cost Date  
(Rate includes monthly rental, operating cost, and Utah adjustment cost factor)

a.	Loader - Cat 980 (6 cu yd bucket) \$653.66/day Operator	\$ 81.71 <u>20.40</u> \$ 102.11
b.	Crane - Insley 30 T \$456.86/day Operator	\$ 57.11 <u>21.14</u> \$ 78.25
c.	Cat - D9 - \$788.59/day Operator	\$ 98.57 <u>20.40</u> \$ 118.97
	Ripper - three shanks \$49.95/day	\$ 6.24
d.	Backhoe (Cat 235) - \$672.38/day Operator	\$ 84.05 <u>20.40</u> \$ 104.45
e.	Lowboy Trailer - \$102.21/day Truck (Tractor) - \$243.19/day Operator	\$ 12.78 30.40 <u>16.71</u> \$ 59.89
f.	Truck (Tractor) - \$243.19/day Operator	\$ 30.40 <u>16.71</u> \$ 47.11
g.	Dump Truck (10 yd) - \$212.72/day Operator	\$ 26.59 <u>16.71</u> \$ 43.30

Backhoe (BH) Cycle Time Estimates - 235 Backhoe (From Cat Performance Handbook)

Average

Load Bucket	6.5 Sec
Swing Bucket	6.0 Sec
Dump Bucket	2.5 Sec
Swing Empty Bucket	<u>5.0 Sec</u>
	20.0 Sec - 2.0 cu yd

Medium to hard digging (hard packed soil with up to 50 pct rock content) depth to 70 pct of machine's capability.

$$(3 \text{ cycles/min})(2.0 \text{ cu yd})(60) = \text{production/hr} = 360 \text{ cu yd/hr (180 cycles/hr)}$$

Efficiency - 55 min/hr

$$(360 \text{ cu yd/hr})(55 \text{ min}/60 \text{ min}) = \underline{330 \text{ cu yd/hr (165 cycles/hr)}}$$

Crawler Tractor (D9) Production Estimates (From Cat Performance Handbook)

D9 Average dozing distance - 200 ft

Average Blade Load of 18.8 cu yd

From Production Chart, Production = 700 cu yd/hr

- |    |                                     |      |
|----|-------------------------------------|------|
| a. | Hard-packed or hard to cut material | 0.80 |
| b. | Job efficiency (55 min/60 min)      | 0.92 |

$$\text{Dozing Production} = (700 \text{ cu yd/hr})(0.80)(0.92) = \underline{515 \text{ cu yd/hr}}$$

Ripping:

From production chart for seismic velocity = 3.5

Production = 1,750 cu yd/hr

Efficiency - 55 min/hr

$$\text{Ripping Production} = (1,750 \text{ cu yd/hr})(0.92) = \underline{1,610 \text{ cu yd/hr}}$$

980 Loader Cycle Time (From Cat Performance Handbook)

- |    |                            |                 |
|----|----------------------------|-----------------|
| a. | 3/4 inch to 6 inch         | 0.55 min        |
| b. | Pile (10 ft or less)       | + 0.00 min      |
| c. | Common ownership of trucks | - 0.01 min      |
|    |                            | <u>0.04 min</u> |
|    |                            | 0.52 min        |

$$(60 \text{ min/hr})/(0.52 \text{ min/cycle}) = 115.4 \text{ cycles/hr}$$

Efficiency 55 min/hr

$$(115.4 \text{ cycles/hr})(6 \text{ cu yd/cycle})(55 \text{ min}/60 \text{ min}) = \underline{635 \text{ cu yd/hr (106 cycles/hr)}}$$

Summary of Reclamation Cost Estimate

a.	Seal Portals and Backfill	\$ 24,500.00
b.	Removal of Structures	\$ 61,205.53
c.	Soil Placement and Ripping	\$ 30,016.84
d.	Channel Restoration	\$ 50,682.23
e.	Revegetation	\$ 32,790.63
f.	Monitor Well Plugging	\$ 114.32
g.	Maintenance and Monitoring of Subsidence, Vegetation and Erosion (10 yr bond liability period)	\$ 39,143.20
h.	Hydrology Monitoring (10 yr bond liability period)	\$ 29,630.00
i.	Supervision (16.7 Weeks)	\$ 11,810.24
j.	Mobilization and Demobilization	<u>\$ 2,500.00</u>
		\$ 282,392.99
	10 pct contingency	<u>\$ 28,239.30</u>
	(1990 dollars)	\$ 310,632.29

<u>Escalated Values</u>	<u>Escalation Factor</u>
1991 - \$316,348	1.84 % (actual)
1992 - \$322,169	1.84 % (est)
1993 - \$328,097	1.84 % (est)
1994 - \$334,134	1.84 % (est)
1995 - \$340,282	1.84 % (est)

Bond will be posted in accordance with R645-301-820.

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## Reclamation Costs

### a. Seal and Backfill Portals

AMR Costs - \$3,500/seal including  
backfill x 7 seals \$ 24,500.00

### b. Removal of Structures

All estimates with 10 digit numbers are from 1990 Means Site Work Cost Data. Utah adjustment factor = 0.923. Most of the steel and equipment will be salvaged for scrap or reuse. M & P Enterprises in Huntington, Utah will pick up and pay \$40.00/ton for scrap iron & equipment if placed in 30 cu yd (8 ft wide x 20 ft long x 5 ft high) dumpsters or loaded with crane on their trucks.

#### Sales - Receiving - Scale House Complex

020-604-0700 (Wood Building, includes disposal)

Volume = (40 ft)(80 ft)(20 ft) = 64,000 cu ft

Cost = (0.923)(0.16/cu ft)(64,000 cu ft) = \$9,451.52

Time = 64,000 cu ft/(14,800 cu ft/day) = 4.32 days

Cost Subtotal \$ 9,451.52  
Time Subtotal 4.32 days

#### Shower House

020-604-0700 (Wood Portion, includes disposal)

Volume = (92 ft)(50 ft)(8 ft) = 36,800 cu ft

Cost = (0.923)(0.16/cu ft)(36,800 cu ft) = \$5,434.62

Time = 36,800 cu ft/(14,800 cu ft/day) = 2.49 days

020-604-0650 (Masonry Portion, includes disposal)

Volume = (92 ft)(50 ft)(8 ft) = 36,800 cu ft

Cost = (0.923)(0.16/cu ft)(36,800 cu ft) = \$5,434.62

Time = 36,800 cu ft/(14,800 cu ft/day) = 2.49 days

Cost Subtotal \$ 10,869.24  
Time Subtotal 4.98 days

#### Shop

020-604-0500 (Steel Building, includes disposal)

Volume = (40 ft)(93 ft)(18 ft) = 66,960 cu ft

Cost = (0.923)(0.16/cu ft)(66,960 cu ft) = \$9,888.65

Time = 66,960 cu ft/(14,800 cu ft/day) = 4.52 days

Cost Subtotal \$ 9,888.65  
Time Subtotal 4.52 days

### Machine Shop

020-604-0500 (Steel Building, includes disposal)

Volume = (30 ft)(40 ft)(12 ft) = 14,400 cu ft

Cost = (0.923)(0.16/cu ft)(14,400 cu ft) = \$2,126.59

Time = 14,400 cu ft/(14,800 cu ft/day) = 0.97 days

Cost Subtotal \$ 2,126.59  
Time Subtotal 0.97 days

### Portal Trailer

Trailer House 36 ft x 10 ft x 8 ft high

Load with crane and haul off. Assume:

Labor = (1 man)(2 hrs)(\$15.83/hr) \$ 31.66

Crane + operator = (2 hrs)(\$78.25/hr) \$ 156.50

Lowboy + operator = (4 hrs)(\$59.89/hr) \$ 239.56

\$ 427.72

Time = 4 hrs (Some time concurrent)

Cost Subtotal \$ 427.72  
Time Subtotal 0.50 days

### Lamp House

Semi-Trailer 40 ft x 8 ft x 8 ft

Hook up and haul off. Assume:

Truck (Tractor) + operator = (3 hrs)(\$47.11/hr) \$ 141.33

Cost Subtotal \$ 141.33  
Time Subtotal 0.38 days

### Mobile Electric Trailer

Similar to Lamphouse

Cost Subtotal \$ 141.33  
Time Subtotal 0.38 days

### Coal Processing/Crusher Facility (Tipple)

27 ft x 52 ft Approx. - 25% is 25 ft high, 50% is 17 ft high, and 25% is 8 ft high.

020-604-0500 (Steel Building, includes disposal)

Volume = (27 ft)(52 ft)[(.25)(25 ft) + (.50)(17 ft) + (.25)(8 ft)] = 23,517 cu ft

Cost = (0.923)(0.16/cu ft)(23,517 cu ft) = \$3,472.99

Time = 23,517 cu ft/(14,800 cu ft/day) = 1.59 days

020-604-0700 (Control House, Wood, includes disposal)

Volume = (12 ft)(20 ft)(10 ft) = 2,400 cu ft

Cost = (0.923)(0.16/cu ft)(2,400 cu ft) = \$354.43

Time = 2,400 cu ft/(14,800 cu ft/day) = 0.16 days

Cost Subtotal \$ 3,827.42  
Time Subtotal 1.75 days

### Substation Power Transformer

- (4) Steel I-columns spaced 16 ft apart, (2) 12 in x 5.5 in x 32 ft columns and
- (2) 7 in x 4.5 in x 32 ft columns.
- (9) 7 in x 4.5 in x 16 ft I-beams.

Average beam/column thickness approx. 3/8 in. Cut each column and beam twice.

$$\text{Cut length} = 2 \text{ cuts} [(2 \text{ members})(12 \text{ in} + 11 \text{ in}) + (11 \text{ members})(7 \text{ in} + 9 \text{ in})] = 444 \text{ in} = 37 \text{ ft.}$$

Assume 1/2 in plate can be cut twice as fast as 1 in plate, etc.

#### 020-730-0010 (Torch Cutting, 1 in Plate)

$$\text{Equivalent length (for 1 in plate)} = (3/8)(37 \text{ ft}) = 13.9 \text{ ft}$$

$$\text{Cutting Cost} = (0.923)(2.65/\text{ft})(13.9 \text{ ft}) = \$34.00$$

$$\text{Cutting Time} = 13.9 \text{ ft}/(95 \text{ ft/day}) = 0.15 \text{ days}$$

#### 020-554-5000 (Plain Concrete)

$$\text{Slab Volume} = (19 \text{ ft})(19 \text{ ft})(6/12) = 180.5 \text{ cu ft}/27 = 6.69 \text{ cu yd}$$

$$\text{Cost} = (0.923)(47.80/\text{cu yd})(6.69 \text{ cu yd}) = \$295.16$$

$$\text{Time} = 6.69 \text{ cu yd}/(45 \text{ cu yd/day}) = 0.15 \text{ days}$$

#### 020-554-0755 (Chain Link Fence)

$$\text{Length} = 157 \text{ ft}$$

$$\text{Cost} = (1.20/\text{ft})(157 \text{ ft}) = \$188.40$$

$$\text{Time} = 157 \text{ ft}/(520 \text{ ft/day}) = 0.30 \text{ days}$$

#### 020-554-5550 (Concrete Disposal on Site)

$$\text{Volume} = 6.69 \text{ cu yd}$$

$$\text{Cost} = (0.923)(4.64/\text{cu yd})(6.69 \text{ cu yd}) = \$28.65$$

$$\text{Time} = 6.69 \text{ cu yd}/(232 \text{ cu yd/day}) = 0.03 \text{ days}$$

Transformers, etc.

1 Transformer - Approx. 9 ft x 5 ft x 6 ft

1 Transformer - Approx. 8 in diam. x 1 1/2 ft

1 Transformer & Oil Canister - Approx. 9 ft x 5 ft x 6 ft (Combined)

Assume each beam takes 10 min average and each transformer, etc. takes 20 min average to load with crane.

$$\text{Crane time} = (13 \text{ pieces})(10 \text{ min}) + (4 \text{ pieces})(20 \text{ min}) = 3.5 \text{ hrs}$$

$$\text{Labor} = (1 \text{ man})(3.5 \text{ hrs})(\$15.83/\text{hr}) \quad \$ 55.41$$

$$\text{Crane + operator} = (3.5 \text{ hrs})(\$78.25/\text{hr}) \quad \$ 273.88$$

$$\$ 329.29$$

$$\text{Time} = 0.44 \text{ days}$$

Estimated steel weight (beams/columns) = (20 plf)(272 ft) = 5,440 lbs.

Transformers, etc. not included.

Cost Subtotal      \$ 875.50

Time Subtotal      1.07 days

### Hiawatha Bin

Approx. 20 ft x 20 ft x 20 ft high bin (1/2 in plate with stiffeners, tapers down at bottom) with (4) 12 in I-beams (30 ft legs) and angles for cross bracing.

Cut into pieces and load in dumpster. Assume average thickness of bin w/stiffeners, etc. equal to 5/8 in plate.

Cut each side 3 places and each leg twice.

Approx cut length = (3 cuts)(4 sides)(20 ft) + (2 cuts)(4 legs)(32 in/12) = 261.3 ft

020-730-0010 (Torch Cutting, 1 in Plate)

Equivalent length (For 1 in plate) = (5/8)(261.3 ft) = 163.3 ft

Cutting cost = (0.923)(2.65/ft)(163.3 ft) = \$399.42

Cutting time = 163.3 ft/(95 ft/day) = 1.72 days/3 crews = 0.57 days

Assume each piece takes 10 min. average to load in dumpster with crane after cutting.

Number of pieces = 12 plates + 4 legs = 16 pieces

Crane Time = 16(.17 hr) = 2.72 hrs

Labor = (2 men)(2.72 hrs)(\$15.83/hr)      \$ 86.12

Crane + operator = (2.72 hrs)(\$78.25/hr)      \$ 212.84

\$ 298.96

Time = 0.34 days

020-554-5200 (Reinforced Concrete)

Wall Volume = (60 ft)(6 ft)(1 ft) = 360 cu ft

Footing Volume = (4)(3 ft)(3 ft)(1 ft) = 33 cu ft

Volume = 360 + 33 = 393 cu ft/27 = 14.56 cu yd

Cost = (0.923)(86.00/cu yd)(14.56 cu yd) = \$1,155.74

Time = 14.56 cu yd/(25 cu yd/day) = 0.58 days

020-554-5000 (Plain Concrete)

Slab Volume = (30 ft)(30 ft)(8/12) = 600 cu ft/27 = 22.22 cu yd

Cost = (0.923)(47.80/cu yd)(22.22 cu yd) = \$980.33

Time = 22.22 cu yd/(45 cu yd/day) = 0.49 days

020-554-5550 (Concrete Disposal on Site)

Volume = 14.56 + 22.22 = 36.78 cu yd

Cost = (0.923)(4.64/ cu yd)(36.78 cu yd) = \$157.52

Time = 36.78 cu yd/(232 cu yd/day) = 0.16 days

Cost Subtotal      \$ 2,991.97

Time Subtotal      2.14 days

### Lump Coal Bin

Approx. 30 ft x 36 ft x 20 ft high bin (1/2 in plate with leg/stiffeners around out side, tapers down at bottom). Cut into pieces and load in dumpster. Assume average thickness of bin with stiffeners, etc. equal to 5/8 in plates.

Cut 2 sides 4 places and 2 sides 5 places.

Approx. cut length = (4 cuts)(2 sides)(20 ft) + (5 cuts)(2 sides)(20 ft) = 360 ft

020-730-0010 (Torch Cutting, 1 in Plate)

Equivalent length (for 1 in plate) =  $(5/8)(360 \text{ ft}) = 225 \text{ ft}$

Cutting cost =  $(0.923)(2.65/\text{ft})(225 \text{ ft}) = \$550.34$

Cutting time =  $225 \text{ ft}/(95 \text{ ft}/\text{day}) = 2.37 \text{ days}/3 \text{ crews} = 0.79 \text{ days}$

Assume each piece takes 10 min. average to load in dumpster with crane after cutting.

Number of pieces = 18 plates + 8 legs = 26 pieces

Crane Time =  $26(0.17 \text{ hrs}) = 4.42 \text{ hrs}$

Labor =  $(2 \text{ men})(4.42 \text{ hrs})(\$15.83/\text{hr}) = \$ 139.94$

Crane + operator =  $(4.42 \text{ hrs})(\$78.25/\text{hr}) = \$ 345.87$

\$ 485.81

Time = 0.55 days

020-554-5200 (Reinforced Concrete)

Footing Volume =  $[2(36 \text{ ft}) + 30 \text{ ft}](2 \text{ ft})(1 \text{ ft}) = 204 \text{ cu ft}/27 = 7.56 \text{ cu yd}$

Cost =  $(0.923)(86.00/\text{cu yd})(7.56 \text{ cu yd}) = \$600.10$

Time =  $7.56 \text{ cu yd}/(25 \text{ ft}/\text{day}) = 0.30 \text{ days}$

020-554-5550 (Concrete Disposal on Site)

Volume = 7.56 cu yd

Cost =  $(0.923)(4.64/\text{cu yd})(7.56 \text{ cu yd}) = \$32.38$

Time =  $7.56 \text{ cu yd}/(232 \text{ cu yd}/\text{day}) = 0.03 \text{ days}$

Cost Subtotal \$ 1,668.63

Time Subtotal 1.67 days

### Coal Recovery Bin

Approx. Dimensions:

Down Hill Side = 40 ft x 30 ft high

Two Other Sides = 60 ft x 35 ft (Average, Sloped)

1/2 in plate w/stiffeners

Assume average thickness w/stiffeners equal to 5/8 in plate.

Cut into pieces and load in dumpster.

Cut down hill side (5 + 1) places and other sides (8 + 1) places.

Approx. Cut length:

Down hill side =  $(5 \text{ cuts})(30 \text{ ft}) + (1 \text{ cut})(40 \text{ ft}) = 190 \text{ ft}$

Two other sides =  $2 \text{ sides}[(8 \text{ cuts})(35 \text{ ft}) + (1 \text{ cut})(60 \text{ ft})] = 680 \text{ ft}$

Total =  $190 \text{ ft} + 680 \text{ ft} = 870 \text{ ft}$

020-730-0010 (Torch Cutting, 1 in Plate)

Equivalent length (for 1 in plate) =  $5/8(870 \text{ ft}) = 544 \text{ ft}$

Cutting Cost =  $(0.923)(2.65/\text{ft})(544 \text{ ft}) = \$1,330.60$

Cutting Time =  $544 \text{ ft}/(95 \text{ ft}/\text{day}) = 5.73 \text{ days}/3 \text{ crews} = 1.91 \text{ days}$

Assume ea. piece takes 10 min. average to load in dumpster with crane after cutting.

Number of pieces =  $(2)(5 \text{ plates}) + (2 \text{ sides})(2)(8 \text{ plates}) = 42 \text{ pieces}$

Crane Time =  $42(0.17 \text{ hr}) = 7.14 \text{ hrs}$

Labor =  $(2 \text{ men})(7.14 \text{ hrs})(\$15.83/\text{hr}) = \$ 226.05$

Crane + operator =  $(7.14 \text{ hrs})(\$78.25/\text{hr}) = \$ 558.71$

\$ 784.76

Time = 0.89 days

020-554-5200 (Reinforced Concrete)

Footing Volume = (2.5 ft)(1 ft)[40 ft + 2(60 ft)] = 400 cu ft/27 = 14.8 cu yd

Cost = (0.923)(86.00/cu yd)(14.8 cu yd) = \$1,174.79

Time = 14.8 cu yd/(25 cu yd/day) = 0.59 days

020-554-5550 (Concrete Disposal on Site)

Volume = 14.8 cu yd

Cost = (0.923)(4.64/cu yd)(14.8 cu yd) = \$63.38

Time = 14.8 cu yd/(232 cu yd/day) = 0.06 days

Cost Subtotal      \$ 3,353.53  
Time Subtotal      3.45 days

Slack Bin

Approx. 12 ft x 12 ft x 12 ft high bin (1/2 in plate with stiffeners, tapers down at bottom) with (4) 8 in I-beams X 30 ft legs and angle cross bracing.

Cut legs off at bottom and load on truck.

Assume average thickness of legs, etc. equal to 3/8 in plate.

Approx. cut length = (4 legs)(24 in) = 8 ft

020-730-0010 (Torch Cutting, 1 in Plate)

Equivalent length (for 1 in plate) = (3/8)(8 ft) = 3 ft

Cutting Cost = (0.923)(2.65/ft)(3 ft) = \$7.34

Cutting Time = 3 ft/(95 ft/day) = 0.03 days

Assume it takes 1 hr to load the bin on truck with crane after cutting legs.

Labor = (2 men)(1 hrs)(\$15.83/hr) =      \$ 31.66

Crane + operator = (1 hrs)(\$78.25/hr) =      \$ 78.25

\$ 109.91

Time = 0.13 days

020-554-5200 (Reinforced Concrete)

Footing Volume = 4(2.5 ft)(2.5 ft)(1 ft) = 25 cu ft/27 = 0.93 cu yd

Cost = (0.923)(86.00/cu yd)(0.93 cu yd) = \$73.82

Time = 0.93 cu yd/(25 cu yd/day) = 0.04 days

020-554-5000 (Plain Concrete)

Slab Volume = (12 ft)(16 ft)(4/12) = 64 cu ft/27 = 2.37 cu yd

Cost = (0.923)(47.80/cu yd)(2.37 cu yd) = \$104.56

Time = 2.37 cu yd/(45 cu yd/day) = 0.05 days

020-554-5550 (Concrete Disposal on Site)

Volume = 0.93 + 2.37 = 3.3 cu yd

Cost = (0.923)(4.64/cu yd)(3.3 cu yd) = \$14.13

Time = 3.3 cu yd/(232 cu yd/day) = 0.01 days

Cost Subtotal      \$ 309.76  
Time Subtotal      0.26 days

Lump Coal Storage Pad

020-554-5200 (Reinforced Concrete)

$$\text{Wall Volume} = (38 \text{ ft})(4 \text{ ft})(1 \text{ ft}) + (80 \text{ ft})(4 \text{ ft})(1 \text{ ft}) = 472 \text{ cu ft}/27 = 17.48 \text{ cu yd}$$

$$\text{Cost} = (0.923)(86.00/\text{cu yd})(17.48 \text{ cu yd}) = \$1,387.53$$

$$\text{Time} = 17.48 \text{ cu yd}/(25 \text{ cu yd/day}) = 0.70 \text{ days}$$

020-554-5000 (Plain Concrete)

$$\text{Slab Volume} = (38 \text{ ft})(80 \text{ ft})(8/12) = 2,027 \text{ ft}^3/27 = 75.1 \text{ cu yd}$$

$$\text{Cost} = (0.923)(47.80/\text{cu yd})(75.1 \text{ cu yd}) = \$3,313.37$$

$$\text{Time} = 75.1 \text{ cu yd}/(45 \text{ cu yd/day}) = 1.67 \text{ days}$$

020-554-5550 (Concrete Disposal on Site)

$$\text{Volume} = 17.48 + 75.1 = 92.58 \text{ cu yd}$$

$$\text{Cost} = (0.923)(4.64/\text{cu yd})(92.58 \text{ cu yd}) = \$396.49$$

$$\text{Time} = 92.58 \text{ cu yd}/(232 \text{ cu yd/day}) = 0.40 \text{ days}$$

$$\text{Cost Subtotal} = \$5,097.39$$

$$\text{Time Subtotal} = 2.77 \text{ days}$$

Equipment Wash Pad

020-554-5000 (Plain Concrete)

$$\text{Volume} = (25 \text{ ft})(40 \text{ ft})(6/12) = 500 \text{ cu ft}/27 = 18.52 \text{ cu yd}$$

$$\text{Cost} = (0.923)(47.80/\text{cu yd})(18.52 \text{ cu yd}) = \$817.09$$

$$\text{Time} = 18.52 \text{ cu yd}/(45 \text{ cu yd/day}) = 0.41 \text{ days}$$

020-554-5550 (Concrete Disposal on Site)

$$\text{Volume} = 18.52 \text{ cu yd}$$

$$\text{Cost} = (0.923)(4.64/\text{cu yd})(18.52 \text{ cu yd}) = \$79.31$$

$$\text{Time} = 18.52 \text{ cu yd}/(232 \text{ cu yd/day}) = 0.08 \text{ days}$$

$$\text{Cost Subtotal} = \$896.40$$

$$\text{Time Subtotal} = 0.49 \text{ days}$$

(New) Transformer Pad by Shop

020-554-5000 (Plain Concrete)

$$\text{Volume} = (9 \text{ ft})(11 \text{ ft})(6/12) = 49.5 \text{ cu ft}/27 = 1.83 \text{ cu yd}$$

$$\text{Cost} = (0.923)(47.80/\text{cu yd})(1.83 \text{ cu yd}) = \$80.74$$

$$\text{Time} = 1.83 \text{ cu yd}/(45 \text{ cu yd/day}) = 0.04 \text{ days}$$

020-554-5550 (Concrete Disposal on Site)

$$\text{Volume} = 1.83 \text{ cu yd}$$

$$\text{Cost} = (0.923)(4.64/\text{cu yd})(1.83 \text{ cu yd}) = \$7.84$$

$$\text{Time} = 1.83 \text{ cu yd}/(232 \text{ cu yd/day}) = 0.01 \text{ days}$$

$$\text{Cost Subtotal} = \$88.58$$

$$\text{Time Subtotal} = 0.05 \text{ days}$$

### Water Tanks

Two tanks approx. 14 ft diam. x 10 ft high with average 3 in diam. x 1/4 in pipe top and bottom.

Cut pipes top & bottom, load on truck.

Approx. cut length = (2 tanks)(2 pipes) (pi)(3 in) = 3.1 ft

020-730-0010 (Torch cutting, 1 in plate)

Equivalent length (for 1 in plate) = (0.25)(3.1 ft) = 0.8 ft

Cutting Cost = (0.923)(2.65/ft)(0.8 ft) = \$1.96

Cutting Time = 0.8 ft/(95 ft/day) = 0.01 days

Assume each tank takes 1 hr to load.

Labor = (2 men)(2 hrs)(\$15.83/hr) = \$ 63.32

Crane + operator = (2 hrs)(\$78.25/hr) = \$ 156.50

\$ 219.82

Time = 0.25 days

Cost Subtotal	\$ 221.78
Time Subtotal	0.26 days

### Fuel Storage and Stoker Oil Tanks

(2) Tanks approx. 13.5 ft diam. x 10 ft high

(1) Tank approx. 11.5 ft diam. x 23 ft high

(2) Tanks approx 9 ft diam. x 19 ft high

(1) Tank approx 4 ft diam. x 11 ft long

(6) Tanks - Total

Similar to water tanks.

Approx pipe cutting length = (6 tanks)(2 pipes)(pi)(3 in) = 9.42 ft

020-730-0010 (Torch Cutting, 1 in Plate)

Equivalent length (for 1 in plate) = 0.25(9.42 ft) = 2.4 ft

Cutting Cost = (0.923)(2.65/ft)(2.4 ft) = \$5.87

Cutting Time = 2.4 ft/(95 ft/day) = 0.03 days

Assume each tank takes 1 hr to load.

Labor = (2 men)(6 tanks)(1 hr)(\$15.83/hr) = \$ 189.96

Crane + operator = (6 hrs)(\$78.25/hr) = \$ 469.50

\$ 659.46

Time = 0.75 days

Cost Subtotal	\$ 665.33
Time Subtotal	0.78 days

## Fan

2 Fans; below are approx. dimensions for both fans.

Fan enclosure and explosion doors, 1/8 in steel plate welded

Approx. dimensions:

(4) 10.5 ft x 10.5 ft plate

(2) 11 ft x 5 ft plate

(1) 7.5 ft x 13 ft plate

(1) 4 ft x 9 ft diam. fan

(1) 15 ft long x 10 ft diam., tapers to 9 ft diam x 3/4 in horn (3, 5 ft sections bolted)

(1) 4 ft x 9 ft diam. x 3/4 in ring between fan and horn

Torch cut plates, and bolts (assumed jammed)

Approx. cut length = (2)(4)(10.5 ft) + (2)(2)(11 ft) + (2)(1)(13 ft) = 154 ft (2 cuts per plate)

020-730-0010 (Torch Cutting, 1 in Plate)

Equivalent length (for 1 in plate) = (1/8)(154 ft) = 19.3 ft

Cutting Cost = (0.923)(2.65/ft)(19.3 ft) = (\$47.21)(2 fans) = \$94.41

Cutting Time = 19.3 ft/(95 ft/day) = 0.20 days(2 fans) = 0.40 days/2 crews = 0.20 days

Horn sections and ring bolted together with 3/4 in diam. bolts at 1 ft spacing.

Number of bolts = (3 Seems)[(pi)(10 ft)] = 95 bolts

020-730-0040 (Torch Cutting, 1 in Diam. Bar)

Equivalent bolts (for 1 in diam.) = (.75)(95 bolts) = 72 bolts

Cutting Cost = (0.923)(1.20/bolt)(72 bolts) = (\$79.75)(2 fans) = \$159.49

Cutting Time = 72 bolts/(210 bolts/day) = 0.34 days(2 fans) = 0.68 days/2 crews = 0.34 days

Assume each piece takes 10 min. average to load with crane after cutting.

Number of pieces = 2 fans[7 plates + 1 fan + 3 horn sections + 1 ring] = 24 pieces

Time = 24(0.17 hr) = 4.1 hrs

Labor = (2 men)(4.1 hrs)(\$15.83/hr)           \$ 129.81

Crane + operator = (4.1 hrs)(\$78.25/hr)       \$ 320.83

\$ 450.64

Time = 0.51 days

020-554-5000 (Plain Concrete)

Footing Volume = 2(2ft)(7.5 ft)(8/12)](2 fans) = 40 cu ft

Slab Volume = (13 ft)(16 ft)(8/12)(2 fans) = 277.3 cu ft

Volume = 40 + 277.3 = 317.3 cu ft/27 = 11.75 cu yd

Cost = (0.923)(47.80/cu yd)(11.75 cu yd) = \$518.40

Time = 11.75 cu yd/(45 cu yd/day) = 0.26 days

020-554-5550 (Concrete Disposal on Site)

Volume = 11.75 cu yd

Cost = (0.923)(4.64/cu yd)(11.75 cu yd) = \$50.32

Time = 11.75 cu yd/(232 cu yd/day) = 0.05 days

Cost Subtotal = \$ 1,273.26

Time Subtotal = 1.36 days

## Structures and Conveyors (Including Loadouts)

Below are approx. average dimensions used to estimate all conveyors and support towers.

Typical conveyor truss approx. 5 ft x 5 ft x 40 ft long sections with angles at corners and bar or angle cross members with 2 ft wide walk way.

Cut trusses into 40 ft lengths for reuse or salvage and load on truck.

Trusses:

Conveyor length = 1,600 ft

Number of cuts =  $1,600 \text{ ft} / 40 \text{ ft} = 40 \text{ cuts}$

For each cut, assume (10)(L4 x 4 x 1/2) (conservative)

Truss cut length =  $(10)(8 \text{ in})(40 \text{ cuts}) = 267 \text{ ft}$

(Truss) equivalent cut length for 1 in plate =  $(0.50)(267 \text{ ft}) = 133.5 \text{ ft}$

Typical conveyor tower.

(4) 8 in diam. x 1/4 in pipe x 60 ft high legs (average)

Spaced 8 ft apart with 6 in diam. x 1/4 in pipe cross members at approx. 45° angle.

Cut towers into 20 ft lengths and load in dumpster.

Towers:

Number of towers = 11

Cut into 12 pieces/tower

Number of cuts/tower for 8 in pipe = 3 cuts(4 legs) = 12 cuts

Number of cuts/tower for 6 in pipe = 4 cuts(12 cross members) = 48 cuts

Length of cut for each 8 in pipe =  $\pi(8 \text{ in}) = 2.09 \text{ ft}$

Length of cut for each 6 in pipe =  $\pi(6 \text{ in}) = 1.57 \text{ ft}$

Tower cut length =  $(11 \text{ towers})[(12 \text{ cuts})(2.09 \text{ ft}) + (48 \text{ cuts})(1.57 \text{ ft})] = 1,104.8 \text{ ft}$

(Tower) equivalent cut length for 1 in plate =  $(0.25)(1,104.8 \text{ ft}) = 276.2 \text{ ft}$

020-730-0010 (Torch Cutting, 1 in Plate)

Equivalent cut length =  $133.5 \text{ ft} + 276.2 \text{ ft} = 409.7 \text{ ft}$

Cost =  $(0.923)(2.65/\text{ft})(409.7 \text{ ft}) = \$1,002.11$

Time =  $409.7 \text{ ft} / (95 \text{ ft/day}) = 4.31 \text{ days} / 4 \text{ crews} = 1.08 \text{ days}$

Assume each truss section takes 30 min. average and each tower piece 10 min. average to load.

Crane Time =  $(40 \text{ trusses})(.50 \text{ hr}) + (12 \text{ pieces})(11 \text{ towers})(0.17 \text{ hr}) = 42.4 \text{ hrs}$

Labor =  $(2 \text{ men})(42.4 \text{ hrs})(\$15.83/\text{hr}) = \$1,342.38$

Crane + operator =  $(42.4 \text{ hrs})(\$78.25) = \$3,317.80$

\$ 4,660.18

Time = 5.3 days

020-554-5200 (Reinforced Concrete)

Volume =  $(11 \text{ towers})(4)(3 \text{ ft})(3 \text{ ft})(1 \text{ ft}) = 396 \text{ cu ft} / 27 = 14.67 \text{ cu yd}$

Cost =  $(0.923)(86.00/\text{cu yd})(14.67 \text{ cu yd}) = \$1,164.48$

Time =  $14.67 \text{ cu yd} / (25 \text{ cu yd/day}) = 0.59 \text{ days}$

020-554-5550 (Concrete Disposal on Site)

Volume = 14.67 cu yd

Cost =  $(0.923)(4.64/\text{cu yd})(14.67 \text{ cu yd}) = \$62.83$

Time =  $14.67 \text{ cu yd} / (232 \text{ cu yd/day}) = 0.06 \text{ days}$

Cost Subtotal \$ 6,889.60  
Time Subtotal 7.03 days

Remove Structures Cost Total = \$ 61,205.53  
Remove Structures Time Total = 39.13 days

**c. Soil Placement and Ripping**

**Soil Placement Volume Summary**

**Upper Storage Pad**

See Appendix 3-L, Cross Sections C-C, D-D, and J-J.

Section C-C	Cut (250 sq ft) x (130 ft) = 32,500 cu ft =	1,204 cu yds
	Fill (250 sq ft) x (130 ft) = 32,500 cu ft =	1,204 cu yds
Section D-D	Cut (513 sq ft) x (120 ft) = 61,560 cu ft =	2,280 cu yds
	Fill (513 sq ft) x (120 ft) = 61,560 cu ft =	2,280 cu yds
Section J-J	Cut (250 sq ft) x (320 ft) = 80,000 cu ft =	2,963 cu yds
	Fill (388 sq ft) x (320 ft) = 124,160 cu ft =	4,599 cu yds
	Cut Subtotal =	6,447 cu yds
	Fill Subtotal =	8,083 cu yds

**Portal Pad Area & Road**

See Appendix 3-L, Cross Sections E-E and F-F.

Section E-E	Cut (250 sq ft) x (340 ft) = 85,000 cu ft =	3,148 cu yds
	Fill (350 sq ft) x (340 ft) = 119,000 cu ft =	4,408 cu yds
Section F-F	Cut (450 sq ft) x (210 ft) = 94,500 cu ft =	3,500 cu yds
	Fill (450 sq ft) x (210 ft) = 94,500 cu ft =	3,500 cu yds
	Cut Subtotal =	6,648 cu yds
	Fill Subtotal =	7,908 cu yds

**Portal Access Road**

See Appendix 3-L, Cross Section H-H.

Section H-H	Cut (140 sq ft) x (1,500 ft) = 210,000 cu ft =	7,778 cu yds
	Fill (165 sq ft) x (1,500 ft) = 247,500 cu ft =	9,167 cu yds

**Lower Road to Switchback**

See Appendix 3-L, Cross Section K-K.

Section K-K	Cut (75 sq ft) x (1,450 ft) = 108,750 cu ft =	4,028 cu yds
	Fill (75 sq ft) x (1,450 ft) = 108,750 cu ft =	4,028 cu yds

**Tipple Access Road**

See Appendix 3-L, Cross Section G-G.

Section G-G	Cut (63 sq ft) x (500 ft) = 31,500 cu ft =	1,167 cu yds
	Fill (63 sq ft) x (500 ft) = 31,500 cu ft =	1,167 cu yds

### Coal Storage Pad

See Appendix 3-L, Table 3L-2, Cross Sections 1-1 through 7-7.

Cut Subtotal	23,573 cu yds
Fill Subtotal	19,453 cu yds

### Scale House

After removal of the scale house, there will be 711 cu yds of fill needed.  
[(40 ft wide x 80 ft long x 6 ft deep) = 19,200 cu ft/27 = 711 cu yds]

There is adequate material in the area to provide for this and some additional fill if required.

Cut Subtotal	711 cu yds
Fill Subtotal	711 cu yds

### Sediment Pond "A"

See Appendix 3-L, Cross Section B-B.

Section B-B	Cut (350 sq ft) x (120 ft) = 42,000 cu ft =	1,556 cu yds
	Fill (350 sq ft) x (120 ft) = 42,000 cu ft =	1,556 cu yds

### Sediment Pond "B"

See Appendix 3-L, Cross Section A-A.

Section A-A	Cut (225 sq ft) x (140 ft) = 31,500 cu ft =	1,167 cu yds
	Fill (225 sq ft) x (140 ft) = 31,500 cu ft =	1,167 cu yds

### Sediment Pond "C"

See Appendix 3-L, Cross Section L-L.

Section L-L	Cut (175 sq ft) x (50 ft) = 8,750 cu ft =	324 cu yds
	Fill (175 sq ft) x (50 ft) = 8,750 cu ft =	324 cu yds

### Shower House

See Appendix 3-L, Cross Section M-M.

Section M-M	Cut (500 sq ft) x (185 ft) = 92,500 cu ft =	3,426 cu yds
	Fill (500 sq ft) x (185 ft) = 92,500 cu ft =	3,426 cu yds

Cut Total =	56,825 cu yds
Fill Total =	56,990 cu yds

SOIL PLACEMENT

Areas	Earth Moved	Cu Yds	Equipment Used	Cost/hr	Time	Cost
Upper Storage Pad	Cut Fill	6,447 8,083	BH-235	\$104.45	24.49 hrs	\$ 2,557.98
Portal Pad Area & Road	Cut Fill	6,648 7,908	BH-235	\$104.45	23.96 hrs	\$ 2,502.62
Portal Access Road	Cut Fill	7,778 9,167	BH-235	\$104.45	27.78 hrs	\$ 2,901.62
Lower Road to Switchback	Cut Fill	4,028 4,028	BH-235	\$104.45	12.21 hrs	\$ 1,275.33
Tipple Access Road	Cut Fill	1,167 1,167	BH-235	\$104.45	3.54 hrs	\$ 369.75
Coal Storage Pad	Cut Fill	19,453 19,453	BH-235	\$104.45	58.95 hrs	\$ 6,157.33
Excess Fill	Excess Cut	4,120 *	D9 Cat	\$118.97	3.45 hrs	\$ 488.50
Scale House	Cut Fill	711 711	D9 Cat	\$118.97	1.38 hrs	\$ 164.18
Sediment Pond "A"	Cut Fill	1,556 1,556	D9 Cat	\$118.97	3.02 hrs	\$ 359.29
Sediment Pond "B"	Cut Fill	1,167 1,167	D9 Cat	\$118.97	2.27 hrs	\$ 270.06
Sediment Pond "C"	Cut Fill	324 324	D9 Cat	\$118.97	0.63 hrs	\$ 74.95
Shower House	Cut Fill	3,426 3,426	D9 Cat	\$118.97	6.65 hrs	\$ 791.15
Totals	Cut Fill	56,825 56,990			164.88 (20.61 days)	\$17,424.26

\* Excess Cut will be hauled from the Coal Storage Pad to the Upper Storage Pad, Portal Pad Area & Road, and Portal Access Road, as discussed in Appendix 3-L.

Hauling Excess Cut to Upper Areas

Round trip time for 1 truck load:

980 Loader Time = 2 cycles/(106 cycles/hr) = 1.13 min. to load  
Average Distance = .7 miles @ average speed of 7 MPH = 6.00 min. to haul  
Average time to dump = 4.75 min. to unload  
6.00 min. back down  
17.88 min. (avg. time)

Soil to be hauled = 4,120 cu yds  
Number of loads using 10 yd dump trucks = 412 loads  
Hauling time = (17.88 min.)(hr/60 min)(412 loads) = 123 hrs/3 trucks = 41 hrs

980 loader cost = (102.11/hr)(41 hrs) = \$ 4,186.51  
Dump Truck cost = (43.30/hr)(41 hrs)(3 trucks) = \$ 5,325.90  
\$ 9,512.41

Time = 5.13 days (concurrent with soil placement)

Ripping (Cat - D9)

Rip top 14 in of soil to prepare for revegetation.  
Area to be ripped (See table 8.9-1) = 22.34 - 1.27 (ball park) = 21.07 acres

Volume = (21.07 acres)(43,560 sq ft/acre)(14/12)(cu yd/27 cu ft) = 39,658 cu yd  
Time = 39,658 cu yd/(1,610 cu yd/hr) = 24.6 hrs = 3.08 days  
Cost = (24.6 hrs)(\$125.21/hr) = \$3,080.17

Soil Placement Cost Subtotal = \$ 17,424.26  
Hauling Excess Cut Cost Subtotal = \$ 9,512.41  
Ripping Cost Subtotal = \$ 3,080.17

Cost Total \$ 30,016.84  
Time Total 23.69 days

d. Channel Restoration

EXCAVATION OF RECLAIMED CHANNELS

Channel	Channel Length <sup>1</sup> (ft)	Channel Area <sup>2</sup> (sq ft)	Channel Volume (cu yd)	Average Culvert Diam. (in)	Culvert Length (ft)	Culvert Area (sq ft)	Culvert Volume (cu yd)	Excavated Volume (cu yd)
RC1	As built - adequate for reclamation.							
RC2	640	64.5	1,529	24	300	3.14	35	1,494
RC3	1,030	64.5	2,461	16.5	530	1.49	29	2,432
RC4	160	48	284	12	170	0.79	5	279
RC5	165	40	244	12	170	0.79	5	239
RC6	25	48	44	--	--	--	--	44
RC7	30	27	30	24	30	3.14	3	27
RC8	120	27	120	18	120	1.77	8	112
RC9	190	44	310	--	--	--	--	310
RC10	190	255	<u>1,794</u>	60	140	19.63	<u>102</u>	<u>1,692</u>
Totals			6,816				187	6,629

Notes: 1 See plates 7-8A, 7-8B.  
2 See appendix 7-H.

Excavation BH (235)

Volume = 6,816 cu yds - 187 cu yds = 6,629 cu yds  
 Time = 6,629 cu yds / (330 cu yd/hr) = 20.09 hrs = 2.51 days  
 Cost = (20.09 hrs)(\$104.45/hr) = \$2,098.40

Pulling of Culverts

CMP Culverts:

Assume it takes an average of 10 min/20 ft length to load culverts with crane.

Number of Section = 1,320 ft / 20 ft = 66

Crane time = 66(0.17) = 11 hrs

Labor = (2 men)(11 hrs)(\$15.83/hr) = \$ 348.26

Crane + operator = (11 hrs)(\$78.25/hr) = 860.75

\$ 1,209.01

Time = 1.38 days

RCP Culverts:

020-554-5200 (Reinforced Concrete)

Volume =  $\pi(5 \text{ ft})(4/12)(140 \text{ ft}) = 733 \text{ cu ft}/27 = 27.15 \text{ cu yd}$

Cost =  $(0.923)(86.00/\text{cu yd})(27.15 \text{ cu yd}) = \$2,155.11$

Time =  $27.15 \text{ cu yd}/(25 \text{ cu yd/day}) = 1.09 \text{ days}$

020-554-5550 (Concrete Disposal on Site)

Volume = 27.15 cu yd

Cost =  $(0.923)(4.64/\text{cu yd})(27.15 \text{ cu yd}) = \$116.28$

Time =  $27.15 \text{ cu yd}/(232 \text{ cu yd/day}) = 0.12 \text{ days}$

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### RIP RAP VOLUME SUMMARY

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Reclaimed Channel	Reclaimed Length <sup>1</sup> (ft)	Rip Rap Area <sup>2</sup> (sq ft)	Rip Rap Volume (cu yd)
RC1	As built - adequate for reclamation.		
RC2	640	50.5	1,197
RC3	1,030	50.5	1,926
RC4	160	32	190
RC5	165	28	171
RC6	25	32	30
RC7	30	13	14
RC8	120	13	58
RC9	190	30	211
RC10	190	165	<u>1,161</u>
Total			4,958

---

Notes:      1    See plates 7-8A, 7-8B.  
              2    See appendix 7-H.

### Placing & Shaping of Rip Rap

Assume an additional 40 sec/cycle is added to the Backhoe (235) cycle time for the shaping of the rip rap.

New cycle time = 40 + 20 = 60 sec = 1 min

Production = (2 cu yd/cycle)(60 cycles/hr) = 120 cu yd/hr (60 cycles/hr)

Efficiency - 55 min/hr

Production = (120 cu yd/hr)(55 min/60 min) = 110 cu yd/hr (55 cycles/hr)

Volume = 4,958 cu yd

Time = 4,958 cu yd/(110 cu yd/hr) = 45.1 hrs = 5.64 days

Cost = (45.1 hrs)(\$104.45/hr) = \$4,710.70

### Rip Rap Material Cost

From 1990 Means Site Work Cost Data, with Utah site work material adjustment factor = 0.846.

Cost = (.846)(9.63/cu yd)(4,958 cu yd) = \$40,392.73

Excavation of Channels Cost Subtotal =	\$ 2,098.40
Pulling Culverts Cost Subtotal =	\$ 3,480.40
Rip Rap Cost Subtotal =	<u>\$45,103.43</u>

Cost Total	\$ 50,682.23
Time Total	10.74 days

**e. Revegetation**

Drill Seeding (Section 9.5) 16 acres x \$891.00/acre	\$ 14,256.00
Hydroseeding (Section 9.5) 7 acres x \$1,667.00/acre	\$ 11,669.00
Riparian Area Planting (Section 9.5) 1 acre x \$2,210.00/acre	\$ 2,210.00
Install Matting(Section 9.5) 1.5 acres x \$3103.75/acre	<u>\$ 4,655.63</u>
Cost Total	\$ 32,790.63

**f. Monitor Well Plugging**

Approx. 4 in diam x 40 ft deep 1 yds cement @ \$51.00/yd	\$ 51.00
4 hrs labor @ \$15.83/hr	<u>\$ 63.32</u>
Cost Total	\$ 114.32

**g. Maintenance and/or Monitoring for Vegetation, Erosion, and Subsidence  
(Bond for 10-year bond liability period)**

Vegetation - field survey, sampling, analysis and report writing @ \$1,000.00/day + \$80.00/day vehicle expense (Mt. Nebo Scientific), 3 days/yr	\$ 3,240.00/yr
Erosion - 1 day to field check 8 hrs @ \$17.68/hr	141.44/yr
Subsidence 2 day field survey @ \$141.44/day 1 day certified surveyor @ \$250/day	<u>532.88/yr</u>
Subtotal	\$ 3,914.32/yr
Cost Total	10 yrs x \$3,914.32 = \$ 39,143.20

**h. Hydrology Monitoring, Quarterly**

Labor - 4 days annually @ \$126.64/day	\$ 506.56/yr
Laboratory work - per Commercial Testing and Engineering Co. Huntington, Utah (\$87.73/sample)(7 samples) - \$614.11/quarter x 4	<u>2,456.44/yr</u>
Subtotal	\$ 2,963.00/yr
Cost Total	10 yrs x \$2,963.00 = \$ 29,630.00

**i. Supervision - 16.7 weeks @ \$707.20/week** \$ 11,810.24

**j. Mobilization and Demobilization of 5 pieces of  
equipment @ \$500 each** \$ 2,500.00

The above listed costs include reclamation costs added between 1985 and the latest modification.

3.6.9 Alluvial Valley Floor Determination R645-302-320

Co-Op contends there are no alluvial valley floors within the permit area. This opinion is based on the following evidence:

- a. The soils are of such a nature that both the water holding capacity and the rocky nature preclude any but the sparsest of vegetation cover (Chapter 8).
- b. The area receives less than 14 in. annual precipitation and has no evidence of subterranean irrigation.
- c. Water quality of the perennial Bear Creek is marginal and the flows are tied to precipitation event rather than ground water interaction.
- d. The area has no history of agriculture attempts and the terrain is such as to preclude any but the min of level areas of small size to facilitate USX.

Co-Op requests the Division to evaluate the site-specific conditions and render a judgement in this regard.

### **3.6.10 Temporary Cessation**

In the event of a temporary cessation of operation for a period of 30 days or more, Co-Op will submit a notice to the Division as soon as it is known that the temporary cessation will extend beyond 30 days or more. This notice will include: a statement of the exact number of surface acres and the horizontal and vertical extent of sub-surface strata which have been in the permit area prior to cessation or abandonment, the extent and kind of surface reclamation of surface area which will have been accomplished, and identification of the backfilling, regrading, revegetation, environmental monitoring, underground opening closures and water treatment activities that will continue during temporary cessation.

#### **3.6.10.1 Temporary Portal Seals**

Co-Op will seal portals which are not to be utilized for mine inspection or access during temporary cessation of operation. 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.

Each mine entry which is temporarily inactive, but has a further projected useful service under the approved permit application, shall be protected by barricades or other covering devices, fenced, and posted with signs, to prevent access into the entry and to identify the hazardous nature of the opening, These devices shall be periodically inspected and maintained in good operation condition by the person who conducts the underground coal mining activities.

Co-Op is committed to sealing all portals in the prescribed manner which are temporarily inactive in course of normal mining activities.

## DISCUSSION OF REPRESENTATIVE CROSS SECTIONS

### Sediment Ponds "A", "B", and "C".

Sediment pond sections show adequate volume of material available for recovery. See Section A-A for sediment pond "B", Section B-B for sediment pond "A", Section L-L for sediment pond "C".

### Upper Storage Pad.

Sections C-C, D-D, and J-J (upper storage pad area) indicate enough material to recover approx. twenty ft. of highwall. The cut and fill areas of sections C-C and D-D are basically balanced. As seen in section J-J some additional material will need to be hauled from below for complete highwall recovery.

Additional material required from below (Coal Storage Pad):  
 $(388 \text{ sq ft} - 250 \text{ sq ft}) \times (320 \text{ ft}) = 44,160 \text{ cu ft} = 1636 \text{ cu yd}$

### Portal Pad Area and Road.

Sections E-E and F-F (portal pad area & road) show enough material for approx. twenty five ft. of recovery. Section F-F is basically balanced. As seen in section E-E some additional material will need to be hauled from below for complete highwall recovery.

Additional material required from below (Coal Storage Pad):  
 $(350 \text{ sq ft} - 250 \text{ sq ft}) \times (340 \text{ ft}) = 34,000 \text{ cu ft} = 1260 \text{ cu yd}$

### Portal Access Road, Tipple Access Road, and Lower Road to Switchback.

Sections G-G and H-H (typical road profiles) show enough material to recover approximately ten ft. of high wall. Sections G-G and K-K are basically balanced. In the area of section H-H the highwall varies from 0 to 35 ft with an average of 16 ft as shown on page 3L-23. Section H-H shows typical recovery of a 16 ft (average) highwall.

Additional material required from below (Coal Storage Pad):  
 $(165 \text{ sq ft} - 140 \text{ sq ft}) \times (1500 \text{ ft}) = 37,500 \text{ cu ft} = 1389 \text{ cu yd}$

### Shower House.

Section M-M is basically balanced.

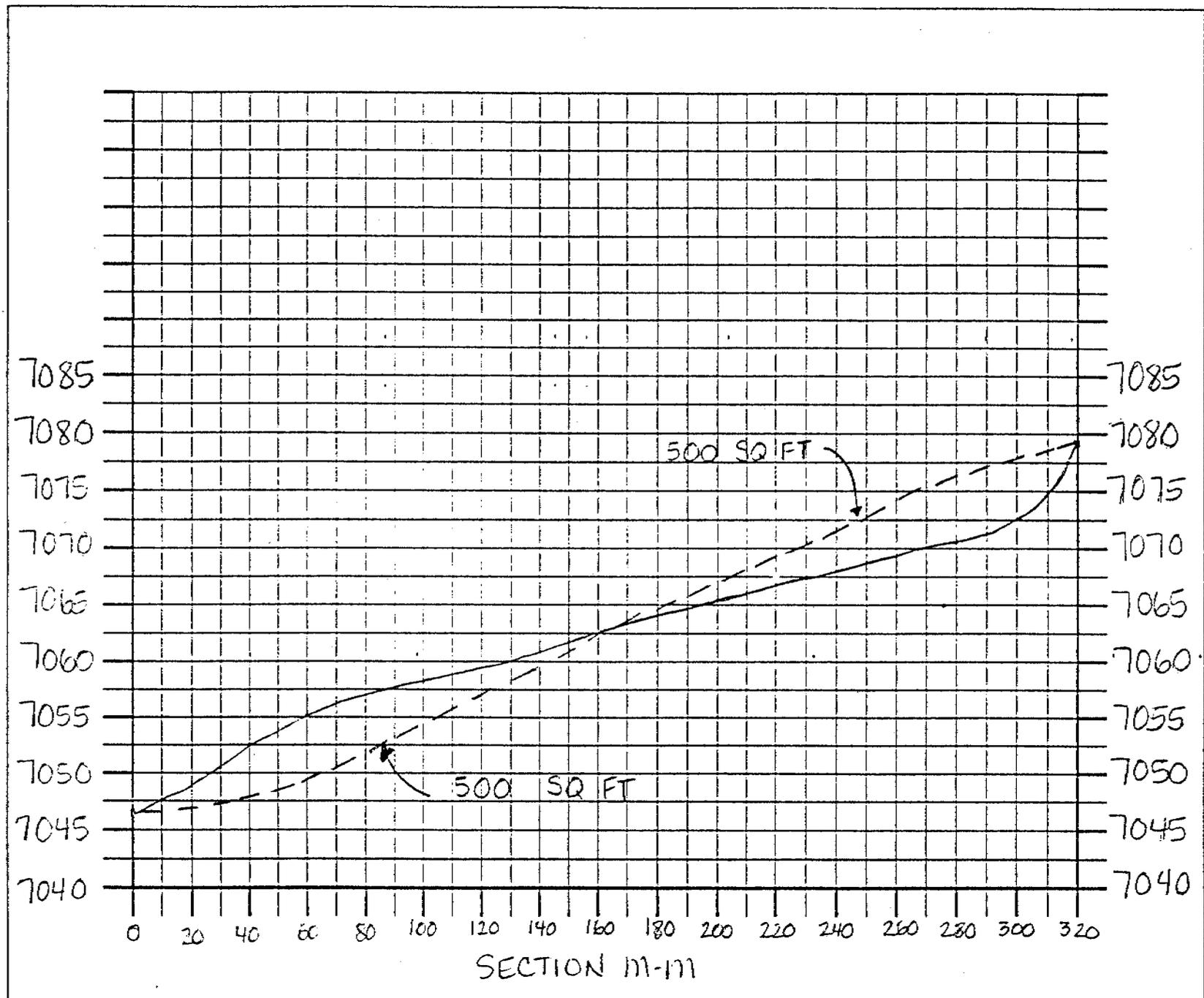
### Total volume required from Coal Storage Pad:

$$1636 + 1260 + 1389 = 4285 \text{ cu yd}$$

Mass balance calculations of sections 1-1 through 7-7 show excess material available from Coal Storage Pad is equal to 4,120 cu yd (see table 3L-2 page 3L-5) which is approx. equal to that required above. The cut and fill angles can be varied slightly to provide the required material for highwall recovery above.

3L-27

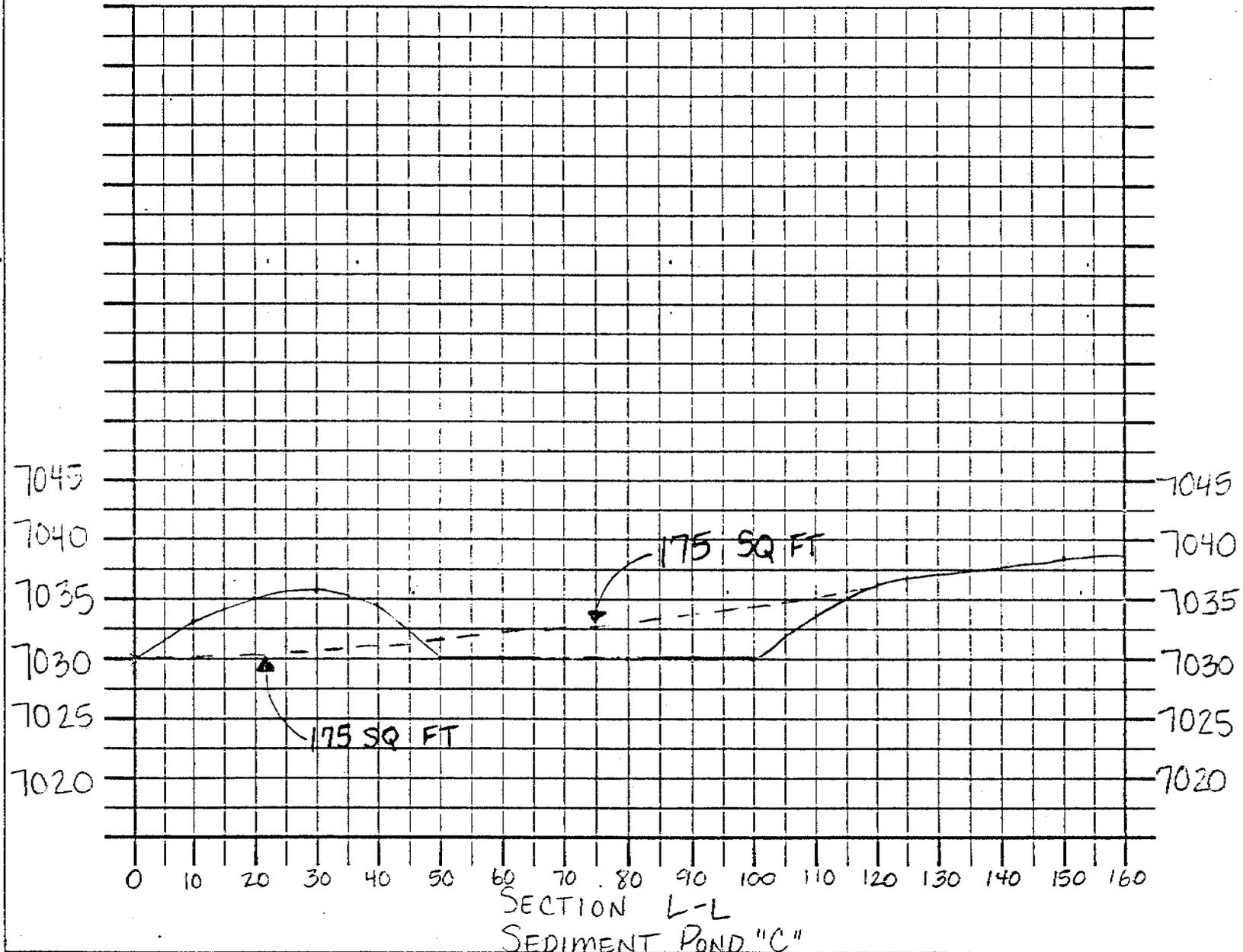
8/29/93



1. 2/20/93

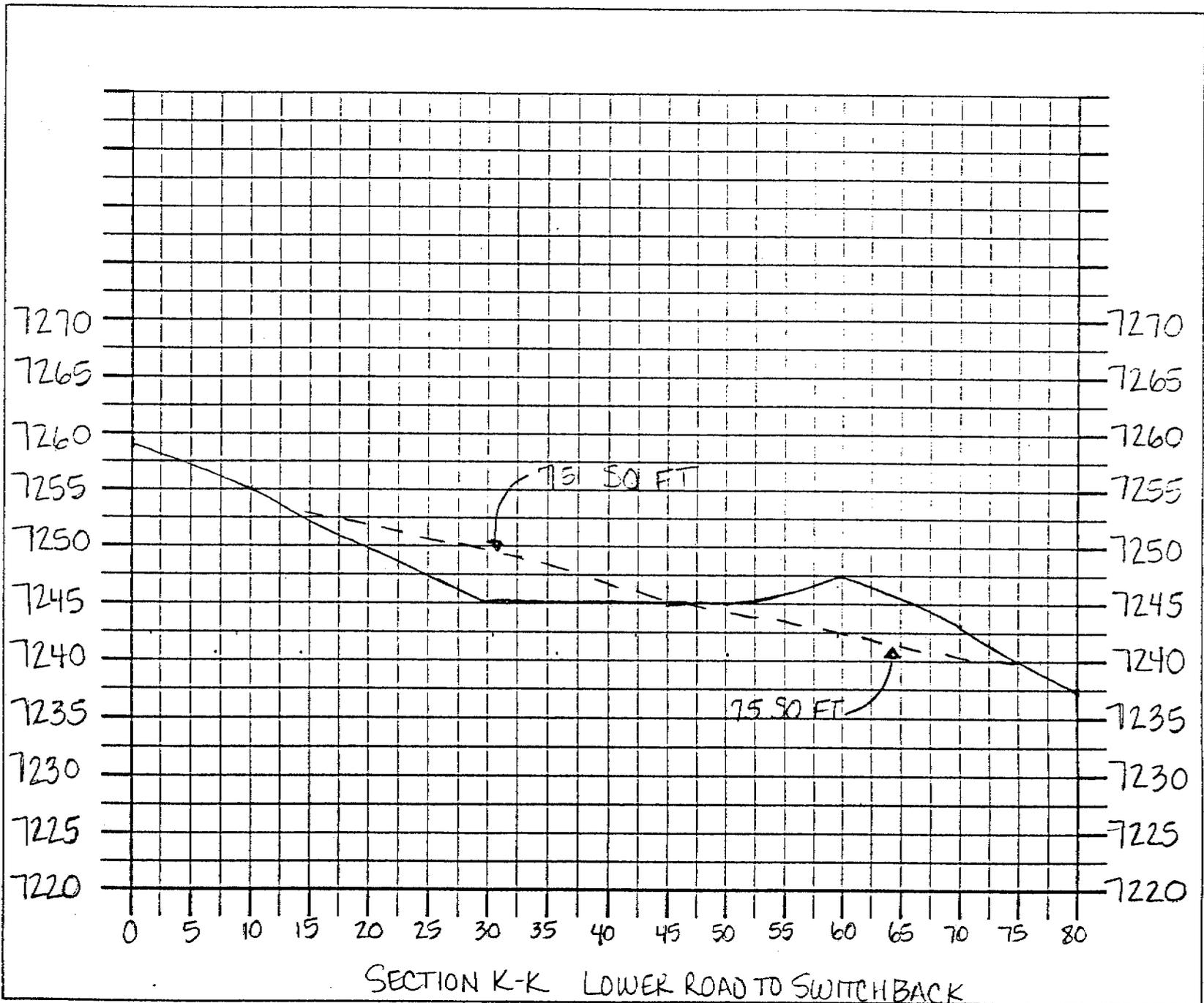
3L-26

8/20/93



3L-25

8/20/93



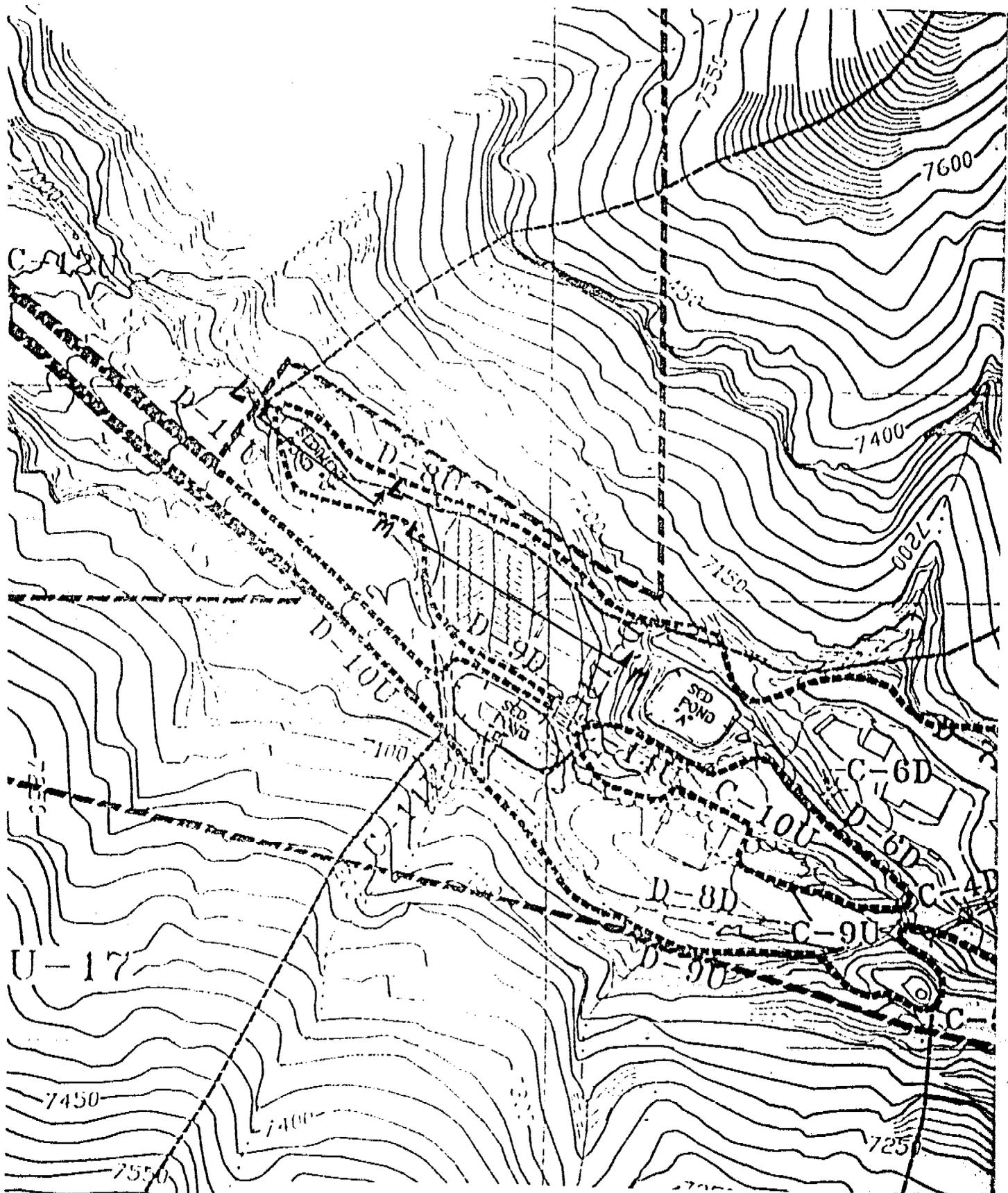


Figure 3L-1 (Cont.) Cut and Fill Reference Map

1" = 200'

3L-6A

8-20-93

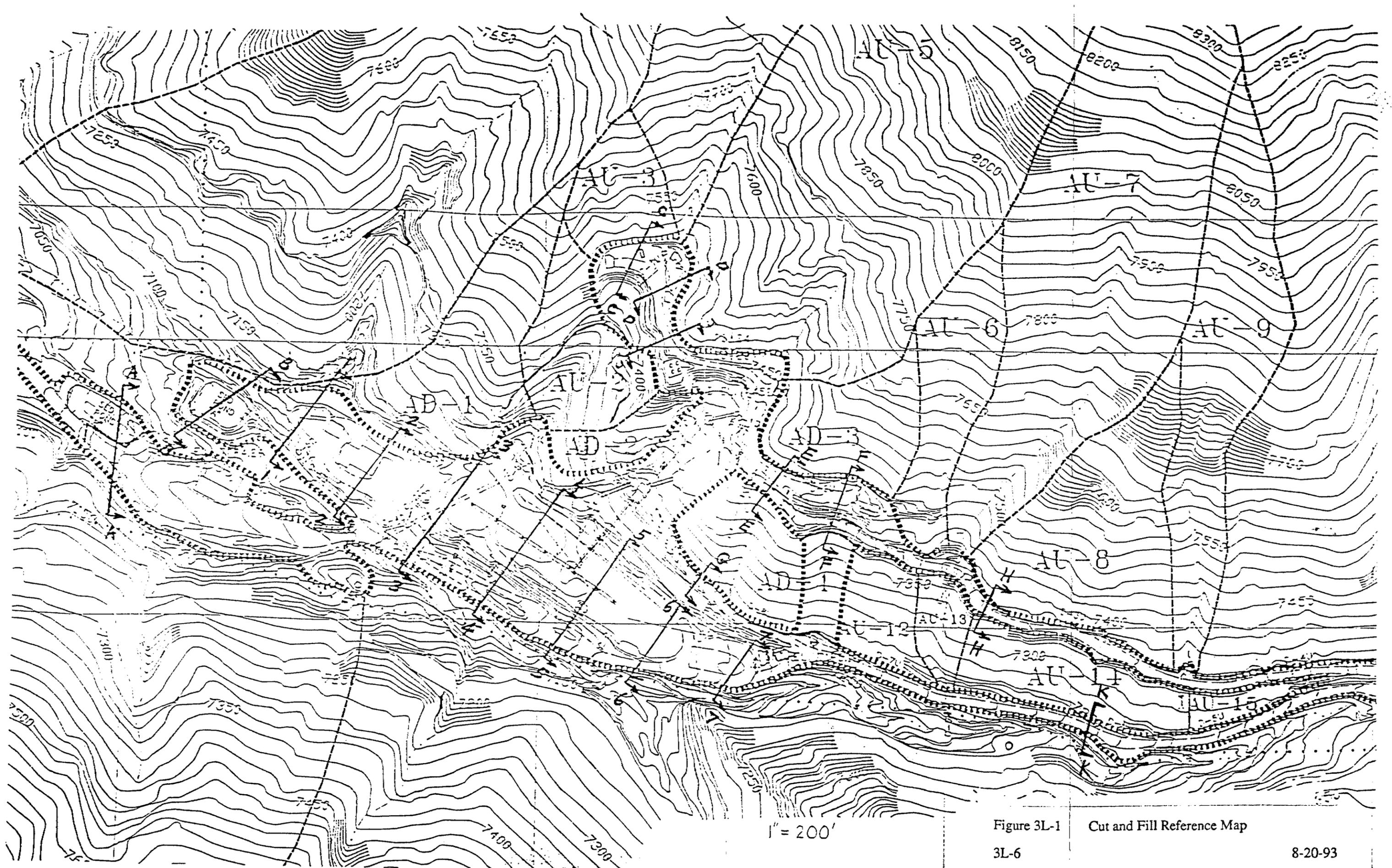


Figure 3L-1 Cut and Fill Reference Map

3L-6

8-20-93



State of Utah  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt  
Governor  
Ted Stewart  
Executive Director  
James W. Carter  
Division Director

355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203  
801-538-5340  
801-359-3940 (Fax)  
801-538-5319 (TDD)

October 26, 1993

Mr. Wendell Owen  
Co-Op Mining Company  
P.O. Box 1245  
Huntington, Utah 84528

Re: Reclamation Cost Estimate, Co-Op Mining Company, Bear Canyon Mine,  
ACT/015/025-DO-93A, Folder #2, Emery County, Utah

Dear Mr. Owen:

The Division has reviewed the reclamation cost estimate submittal and determined that one item must be added to the estimate. Installing excelsior matting on reclaimed slopes steeper than 2H:1V must be included in the estimate. Please submit the additional cost and the finalized cost for the bond estimate by November 18, 1993.

If you have any questions, please call me.

Sincerely,

A handwritten signature in cursive script, reading 'Pamela Grubaugh-Littig'.  
Pamela Grubaugh-Littig  
Permit Supervisor

pgl





State of Utah  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

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801-538-5319 (TDD)

October 25, 1993

TO: Pamela Grubaugh-Littig, Permit Supervisor

FROM: Jess Kelley, Reclamation Engineer *JK*

RE: Reclamation Cost Estimates Submitted in Response to  
Division Order DO-93A, Co-Op Mining Company, Bear  
Canyon Mine, ACT/015/025-DO-93A, Folder #2, Emery  
County, Utah

SYNOPSIS

The Division issued Division Order DO-93A in July of 1993 in order to correct inadequacies in the reclamation cost estimate for this site. On August 23, 1993, the permittee submitted a revised and enlarged reclamation cost estimate for Division approval. I have reviewed this cost estimate, as have Division Hydrologist Tom Munson and Division Biologist Susan White.

ANALYSIS

The revised reclamation cost estimate is complete and adequate in every respect save one. Susan White has informed me that the sizeable cost of installing excelsior matting on reclaimed slopes steeper than 2h:1v has not been included in the overall cost estimate.

RECOMMENDATIONS

It is recommended that the permittee include the cost of excelsior matting in the reclamation cost estimate before it can be approved.



CO-OP MINING COMPANY

P.O. Box 1245  
Huntington, Utah 84528



(801) 381-5238  
Coal Sales (801) 381-5777

August 23, 1993

Pamela Grubaugh-Littig  
Permit Supervisor  
Utah Division of Oil, Gas & Mining  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203

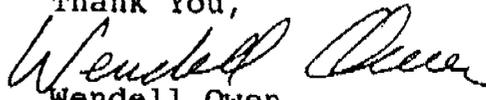
Ms. Grubaugh-Littig,

Re: Division Order DO-93A, Co-Op Mining Company, Bear Canyon Mine,  
ACT/015/025, Emery County, Utah

Enclosed are three copies of the revised bond calculations and information for the Bear Canyon Mine, as required by Division Order DO-93A. The proposal includes detailed estimates and the sources for the estimates. These pages replace the previously approved pages in Chapter 3. Additional cross sections have also been added to Appendix 3-L to give a more accurate determination of recontoured material volumes.

Upon approval, finalized copies will be sent to the Division. If you have any questions, please call Charles Reynolds at (801) 381-2450.

Thank You,

  
Wendell Owen,  
Resident Agent

WJO/cr  
Enclosure(s)

RECEIVED

AUG 23 1993

DIVISION OF  
OIL, GAS & MINING