William Paul Goranson, P.E.
Manager, Radiation Safety
Regulatory Compliance and Licensing

Rio Algom Mining Corp.
6305 Waterford Boulevard
Suite 325, Oklahoma City 405.858.4807 tel
Oklahoma 73118 405.810.2860 fax

Rio Algom

June 30, 2000

Via Federal Express
Tracking Number: 810387424413

Mr. Philip Ting
Branch Chief
U.S. Nuclear Regulatory Commission
Fuel Cycle Licensing Branch
11545 Rockville Pike
Mail Stop T-7J8
Rockville MD 80852

Re: Smith Ranch Facility
SUA-1548, Docket 40-8964
Wyoming Department of Environmental Quality Bond - SBNC-049
License Condition 9.11, Annual Surety Update

Dear Mr. Ting:

Rio Algom Mining Corp. submits the following surety documents to support the 2000 annual surety update to the source material license referenced above. Rio Algom Mining Corp. has proposed a new surety bond $8.093 million as approved in Amendment 15 to the Source Material License.

Attached to this letter, pursuant to requirements in license condition 9.11, are the pertinent documents necessary to continue the Parent Company Guarantee in favor of the State of Wyoming. These include:

(1) Letter from the Chief Financial Officer of Rio Algom Limited

(2) Price Waterhouse Cooper, LLP (Auditor) Special Report and attached schedule

(3) Rio Algom Limited Parent Company Guarantee

If you have any questions in regards to this submittal, please contact me at (405) 858-4807.

Sincerely,

William Paul Goranson, P.E.

Attachments: As Stated
xc: M. Freeman - w/attachment (RAMC-OKC)
B. Ferdinand - w/attachment (RAMC - Smith Ranch)
J. Cash - w/attachment (RAMC - Smith Ranch)
D. Kavanagh - w/attachments (RAL - Toronto)
Division of Radiation Safety - (NRC/Arlington, Texas)
file

MMSSOI Public

APPENDIX A

RECLAMATION COST BREAK-DOWN

RIO ALGOM MINING CORP.
ANNUAL ADJUSTMENT OF RECLAMATION SURETY
2000-2001

Shown below is the 2000-2001 proposed annual surety adjustment for the Smith Ranch facility. The 2000-2001 annual surety adjustment continues to use the WDEQ and NRC approved reclamation surety basis for this year's revised surety.

This annual surety proposal is presented in two (2) sections. The first section, entitled "Part I - Surety Bond Summary", is a summary of the itemized reclamation costs. The second section which is labeled as "Appendix C - Surety Bond Detail", presents the detailed calculations of the summaries noted in Part I.

It should be noted that during the 1997-1998 annual surety review, Rio Algom was requested by the WDEQ to present the bond in 1997 dollars. Accordingly, Rio Algom will continue to use the August 4, 1997, review as its surety basis although there is no difference monetarily between the earlier surety reviews which were expressed in 1993 dollars and adjusted to present, constant dollars using the Consumer Price Index (CPI). The surety however, has been modified to reflect disturbances due to construction activities associated with the 1999 commercial operations along with the projected one (1) year forward commercial operation activities.

The adjustments to the proposed WDEQ 2000-2001 surety includes new disturbances resulting from commercial construction activities as shown in Table 1, along with the anticipated one year (1) forward reclamation costs associated with installation and operation of Wellfield #1, Wellfield #3, Wellfield #4 and Satellite #1 plant. Additionally, pursuant to discussions with WDEQ, Rio Algom is including the cost of bonding delineation holes within the permit area rather than including these reclamation bonding costs within the Company's exploration drilling Permit 236DN.

Accordingly, the surety recognizes these items and where applicable, utilizes the inflation rate of 1.3% from April 1997 (CPI 160.2) through April 2000 (CPI 171.2). The proposed 2000-2001 reclamation surety amount for the WDEQ is $8.093 million.

PART I - SURETY BOND SUMMARY

Presented below in Table 1, is the summary of the itemized bond calculations for the review period of 2000-2001. The proposed adjustment to the WDEQ surety existing disturbances and new disturbances from commercial construction activities which are presented in Table 2, and the scheduled operation of Wellfield #1, Wellfield #3 , Wellfield #4, and Satellite #1 plant. Rio Algom has also included within this surety update reclamation costs associated with the facility's fuel storage area, water wells and fencing at the facility and around the wellfields as requested by WDEQ.

Increased Disposal Capacity for Restoration Bonding Amount

In a letter dated May 8, 1998, to WDEQ/LQD, RAMC committed to increasing the bonding amount for Permit #633 to reflect the installation of additional disposal capacity required for restoration. This commitment is in response to the first round comments for TFN 3 6/142 dated October 22, 1997. The comment was 0.3(c) regarding the water balance through the plant to include 6000 gpm of production, the resulting bleed, and the ability to handle 1,000 gpm of restoration flow. The resulting water balance would be approximately 300 gpm of required wastewater disposal capacity. The current disposal well is permitted to accept a maximum average flow of 150 gpm. In 1999, RAMC constructed and successfully permitted a second disposal well that will meet the waste disposal capacity requirements from simultaneous production and restoration operations. Therefore, the line item setting aside $1,000,000 will be removed and closure costs for the new disposal well will be included in the reclamation costs.

Groundwater Restoration Cost Estimate

During the Reporting Period, RAMC performed additional modeling and evaluation of wellfield restoration plans and cost estimates for the commercial wellfields. That work used both Q-sand pilot restoration information as a calibration of the wellfield model and used that information to conduct both hydrological and geochemical modeling. Based on the results of that work, RAMC developed a new methodology for developing the size of the Affected Pore Volume, (Section 7).

Figure 7-1 is derived from Figure 3-16 in "Evaluation and Simulation of Wellfield Restoration at the RAMC Smith Ranch Facility" dated October 29, 1999. This document was submitted to the Wyoming DEQ - Land Quality Division with a letter dated December 13, 1999, for review. In that document, RAMC proposes a methodology developed through hydraulic and geochemical modeling that uses the geometry of the wellfield to estimate a Flare Factor. In this case, the number of perimeter injection wells are counted, the surface area of the wellfield pattern is measured using a CAD based map, a ratio is developed of the number of perimeter injection wells to the surface area of the wellfield patterns. That ratio is located on the horizontal axis of figure 7-1 (above). From that intercept, a vertical line is projected to intersect the curve. At that intersection, a horizontal line is projected to intercept the vertical axis. The estimated flare factor is derived from that intercept.

On May 11, 2000, RAMC met with LQD to discuss the review of the document and RAMC's proposed approach for estimating groundwater restoration costs. RAMC verified that the curve shown on Figure 7-1 had been validated using modeling for flare factors of 1.5 and higher, but it had not been verified for Flare Factors lower than 1.5. RAMC stated that for bonding purposes only, it would not use a Flare Factor lower than 1.5 for estimating the predicted costs for groundwater restoration.

The proposed groundwater restoration costs in Section 7 uses the new methodology with the constraints agreed to at the May 11, 2000 meeting between LQD and RAMC.

TABLE 1
RIO ALGOM MINING CORP. - SMITH RANCH FACILITY
2000-2001 PROPOSED WDEQ/LQD BOND

WORK UNIT	ONE YEAR FORWARD WDEQ/LQD & NRC 2000-2001 BOND AMOUNT
Ion Exchange Plant[1] (NRC Related Activity)	
Building	40,116
Tankage and Vessels	39,913
Piping	13,224
Pumps	6,094
Electrical	9,470
Foundations	48,588
Plant Site	2,058
Access Road	1,054
SUB-TOTAL	160,517
Central Processing Plant (NRC Related Activity)	
Buildings	57,548
Tankage and Vessels	60,246
Piping	10,846
Pumps	10,965
Electrical	19,682
Foundations	69,719
SUB-TOTAL	229,006
Dryer Area (NRC Related Activity)	
Buildings	16,222
Equipment	14,739
Foundations	16,802
SUB-TOTAL	47,763
Existing Facilities	
Buildings (NRC Related Activity)	95,635
Structures (NRC Related Activity)	14,067
Pilot Plant Equipment (NRC Related Activity)	21,266
Foundations (NRC Related Activity)	139,333
Site Reclamation[3]	124,677
O-Sand Pilot (NRC Related Activity)	41,435
Q-Sand Pilot (NRC Related Activity)	N/A
Mine Water Treatment Ponds	19,878
SUB-TOTAL	456,291

WORK UNIT	ONE YEAR FORWARD WDEQ/LQD & NRC 2000-2001 BOND AMOUNT
Unit Header Site & Wellfields[4] (NRC Related Activity)	
Buildings	78,534
Header Piping	138,664
Secondary Electrical	133,493
Wells-Totals	533,972
Monitor Wells-Total	73,515
Site Reclamation	51,663
SUB-TOTAL	1,009,842
Associated Structures	
#1 Trunkline (5,000 ft ea) (NRC Related Activity)	52,108
#2 Trunkline (10,000 ft ea) (NRC Related Activity)	104,216
Radium Settling Ponds (NRC Related Activity)	70,077
Plugging & Aband. Disposal Well #1 (NRC Related Activity)	77,735
Plugging & Aband. Disposal Well #2 (NRC Related Activity)	77,735
Sand Mining Area	13,173
Land Fill	1,500
Fire Protection System	23,326
SUB-TOTAL	419,871
Groundwater Reclamation & RO Units (NRC Related Activity)	
Restoration	3,467,261
Health Physics and Radiation Surveys (NRC Related Activity)	
Monitoring	168,470
Whole Trucking (Remaining Fractional Units) (NRC Related Activity)	
Contaminated Trucking	523
Non-contaminated Trucking	157
Delineation Hole Reclamation	96,852
SUB-TOTAL OF ALL ABOVE	6,056,553

WORK UNIT	ONE YEAR FORWARD WDEQ/LQD & NRC 2000-2001 BOND AMOUNT
Overhead and Profit at 10%	605,655
Contingency at 15%	908,483
SUB-TOTAL OF ALL ABOVE	7,570691
Inflation - 6.9% (4/97 CPI-160.2 through 4/00 CPI-171.2)	522,376
TOTAL (in 1999$)	8,093,069

(1) Incorporates additional surface disturbances (2.6 acres) from commercial construction activities along with new items including fencing, water wells, and fuel storage area.

APPENDIX B

SURETY DOCUMENTS

--Proposed-

September 30, 2000

Mr. Philip Ting
Branch Chief
U.S. Nuclear Regulatory Commission
Fuel Cycle Licensing Branch
11545 Rockville Pike
Mail Stop T-7J8
Rockville MD 80852

Re: Chief Financial Officer Letter
Parent Company Guarantee
Wyoming DEQ Bond - SBNC-049
Smith Ranch Facility, SUA-1548, Docket 40-8964

Dear Mr. Ting:

I am the Chief Financial Officer of Rio Algom Limited (Rio Algom), 120 Adelaide Street West, Suite 2600, Toronto, Ontario M5H 1W5, Canada, an Ontario Corporation. This letter is in support of Rio Algom's use of the financial test to demonstrate financial assurance, as specified in 10 CFR Part 40, Appendix A.

Rio Algom guarantees, through the parent guarantee submitted, to demonstrate compliance under 10 CFR Part 40, Appendix A, the decommissioning of the following facility owned by its subsidiary, Rio Algom Mining Corp. The current cost estimate for the reclamation, decommissioning, and surveillance of the facility is as follows:

NAME OF FACILITY	LOCATION OF FACILITY	CURRENT COST ESTIMATE
Rio Algom Mining Corp. Smith Ranch Facility NRC License SUA-1548 Docket No. 40-8964	Converse County Near Douglas, WY	$8.093 million

Rio Algom is required to file a Form 40-F with the Securities and Exchange Commission for the latest fiscal year. The fiscal year of Rio Algom ends on December 31. The figures for the items marked with an asterisk on the attached Alternative I summary are derived from Rio Algom's independently audited, year end financial statements and footnotes for the fiscal year that ended December 31, 1999.

I hereby certify that the content of this letter is true and correct to the best of my knowledge.

Sincerely,

Michael S. Parrett
VP & CFO
Attachments: As Stated

RIO ALGOM LIMITED
PARENT COMPANY GUARANTEE
FOR
RIO ALGOM MINING CORP. & QUIVIRA MINING COMPANY

ALTERNATIVE I

		Millions of Dollars	
		CDN $'s	U.S. $'s [1]
1.	Decommissioning cost estimate (includes Ambrosia Lake/SUA-1473, Lisbon/SUA-1119 & Smith Ranch/SUA-1548)	$ 39	$ 27
2.	Total Liabilities	$ 827 (*)	$ 574
3.	Tangible Net Worth (excluding Rio Algom Mining Corp. and its subsidiary Quivira Mining Company, at cost)	$ 1392	$ 966
4.	Net Worth	$ 1606 (*)	$ 1114
5.	Current Assets	$ 689 (*)	$ 478
6.	Current Liabilities	$ 359 (*)	$ 249
7.	Net Working Capital [line 5 minus line 6]	$ 330	$ 229
8.	Net income (before extraordinary items) plus depreciation and amortization	$ 30 (*)	$ 21
9.	Total assets in U.S.	$ 528 (*)	$ 366
		YES	NO
10.	Is line 3 at least $20 million?	X	
11.	Is line 3 at least 6 times line 1?	X	
12.	Is line 7 at least 6 times line 1?	X	
13.	Are at least 90 percent of the firm's assets located in the U.S.? If not, complete line 14.		X
14.	Is line 9 at least 6 times line 1?	X	
15.	Is line 2 divided by line 4 less that 2.0?	X	
16.	Is line 8 divided by line 2 greater than 0.1?	X	
17.	Is line 5 divided by line 6 greater than 1.5?	X	

(*) *Denotes figures derived from audited financial statement.*

[1] Year end exchange rate of $0.694 US$/CDN$

I hereby certify that the content of this letter is true and correct to the best of my knowledge.

MICHAEL S. PARRETT
Vice-President
Chief Financial Officer
September 30, 2000

PRICEWATERHOUSECOOPERS

--Proposed-

Mr. Philip Ting
Branch Chief
U.S. Nuclear Regulatory Commission
Fuel Cycle Licensing Branch
11545 Rockville Pike
Mail Stop T-7J8
Rockville MD 80852

September 30, 2000

Subject: **Auditor's Special Report**
Parent Company Guarantee
Smith Ranch Facility, SUA-1548, Docket 40-8964

Dear Mr. Ting:

We have audited the consolidated financial statements of Rio Algom Limited ("the Corporation") for the year ended December 31, 1999, and our opinion on these consolidated financial statements is included in the Corporation's Annual Report (Page 51). We conducted our audit in accordance with generally accepted auditing standards.

Our audit of the consolidated financial statements for the year ended December 31, 1999 comprised audit tests and procedures deemed necessary for the purposes of expressing an opinion on such financial statements taken as a whole. We did not perform audit tests for the purpose of expressing an opinion on individual balances of accounts or summaries of transactions.

We understand that Rio Algom Limited has prepared documents to demonstrate its financial responsibility under the NRC's financial assurance regulations, in compliance with Appendix A, of 10 CFR Part 40. This letter is furnished solely to assist the licensee, Rio Algom Mining Corp., NRC License SUA-1548, in complying with these regulations and should not be used for other purposes.

The attached schedule reconciles the specified information furnished in the Chief Financial Officer's (CFO's) letter dated September 30, 2000 with the Corporation's consolidated financial statements. In connection therewith, we have:

1. Compared the amounts in the column "per Financial Statements" with amounts contained in the Corporation's consolidated financial statements for the year ended December 31, 1999 and found them to be in agreement;

2. Compared the amount in the column "per CFO's Letter" with the letter prepared in response to the NRC's request (Mr. Michael S. Parrett's letter dated September 30, 2000) and found them to be in agreement;

3. Compared the amounts in the column "Reconciling Items" with analyses prepared by the Corporation setting forth the indicated items and found them to be in agreement; and

4. Re-performed the arithmetic calculations in the schedule and found them to be correctly calculated.

Because the procedures in 1-4 above do not constitute an audit made in accordance with generally accepted auditing standards, we do not express an opinion on the manner in which the amounts were derived in the items referred to above.

We make no representations as to questions of legal interpretation or as to the sufficiency for your purposes of the procedures enumerated above.

Yours very truly,

PricewaterhouseCoopers LLP
Assurance and Business Advisory Services

RIO ALGOM LIMITED
YEAR ENDED DECEMBER 31, 1999

		Millions - Canadian $'s		
Line Number in attached Alternative I summary to CFO's Letter		Per Financial Statements	Reconciling Items	Per CFO's Letter
2	Total Liabilities (Page 52)	827	NONE	827
4	Net worth (Page 52)	1,658		
	Goodwill (Page 62 - Footnote 11)		(38)	
	Investment in Rio Algom Mining Corp. at cost		(82)*	
3	Tangible Net Worth (Net worth excluding goodwill and investment in Rio Algom Mining Corp. at cost)			1,538
5	Current Assets (Page 52)	689	NONE	689
6	Current Liabilities (Page 52)	359	NONE	359
8	Net Earnings before extraordinary items (Page 51)	30		
	Depreciation and Amortization (Page 51)		103	
	Net Earnings before extraordinary items plus depreciation and amortization			133

* US $56,770,226 ÷ 0.694 (December 31, 1999 US/CDN exchange rate)

--Proposed-

September 30, 2000

Mr. Philip Ting
Branch Chief
U.S. Nuclear Regulatory Commission
Fuel Cycle Licensing Branch
11545 Rockville Pike
Mail Stop T-7J8
Rockville MD 80852

Re: Rio Algom Mining Corp.
Parent Company Guarantee
Wyoming Department of Environmental Quality Bond - SBNC-049
Smith Ranch Facility, SUA-1548, Docket No. 40-8964

Dear Mr. Surmeier:

This guarantee to NRC by Rio Algom Limited, a corporation organized under the laws of the Providence of Ontario, herein referred to as "guarantor", regarding Wyoming DEQ Bond SBNC-049, (Parent Company Guarantee), to the State of Wyoming on behalf of our subsidiary Rio Algom Mining Corp. (RAMC) of 6305 Waterford Blvd., Suite 325, Oklahoma City, Oklahoma, 73118, NRC License Number SUA-1548.

Recitals

1. Guarantor has full authority and capacity to enter into this guarantee under its bylaws, articles of incorporation, and the laws of the Providence of Ontario, its Providence of incorporation. Guarantor has approval from its Board of Directors to enter into this guarantee.

2. This guarantee is being issued to comply with regulations issued by the NRC, an agency of the United States Government, pursuant to the Atomic Energy Act of 1954, as amended, and the Energy Reorganization Act of 1974. NRC has promulgated regulations in Title 10, Chapter I of the Code of Federal Regulations, Part 40, Appendix A, Criteria 9 and 10. These regulations require that a holder of a materials license issued pursuant to 10 CFR Part 40 provide assurance that funds will be available when needed for required decommissioning activities.

3. The Guarantee is issued to provide financial assurance for decommissioning activities for RAMC's Smith Ranch Facility NRC License No. SUA-1548 as required by 10 CFR Part 40. The decommissioning cost estimate for this facility is $8.093 million.

4. Guarantor meets or exceeds the following financial test criteria under Alternative I and agrees to comply with all notification requirements as specified in 10 CFR Part 40, Appendix A:

   (a) Guarantor's tangible net worth is at least $20 million dollars.

   (b) Guarantor's tangible net worth and net working capital are each equal to or greater than six times the sum of the current decommissioning cost estimates;

   (c) Guarantor's assets located in the United States amount to at least six times the sum of the current decommissioning cost estimates; and

   (d) Guarantor meets the following financial test ratios: a ratio of total liabilities to net worth less than 2.0 and a ratio of current assets to current liabilities greater than 1.5.

5. Guarantor, through subsidiaries, owns 100 percent of the voting stock of the licensee covered by this guarantee (Rio Algom Mining Corp., Smith Ranch Facility, License SUA-1548). Guarantor also certifies that the licensee for which this guarantee is being made has a positive tangible net worth.

6. Decommissioning activities as used below refers to activities as required by 10 CFR Part 40, Appendix A, for decommissioning of facilities identified above.

7. For value received and pursuant to the authority conferred upon the guarantor by resolution of its directors guarantor guarantees to NRC that if the licensee fails to perform the decommissioning activities required by License No. SUA-1548, the guarantor shall:

   (a) Carry out the required activities, or

   (b) Set up a trust fund in favor of the above identified beneficiary in the amount of the current NRC-approved cost estimates for these activities.

8. Guarantor agrees to submit revised financial statements, financial test data, and a special auditor's report and reconciling schedule annually, within 90 days of completion of the Auditor's report on the parent company guarantor's fiscal year or as required by license condition.

9. Guarantor agrees that if, at the end of any fiscal year before termination of this guarantee, the guarantor fails to meet the financial test criteria, the licensee shall send within 90 days of the end of the fiscal year, by certified mail, notice to the NRC that the licensee intends to provide alternate financial assurance as specified in Appendix A of 10 CFR Part 40. Within 120 days after the end of the fiscal year, the guarantor shall establish such financial assurance if RAMC has not done so.

10. The Guarantor also agrees to notify the NRC promptly if the ownership of the

licensee or the parent firm is transferred and to maintain this guarantee until the new parent firm or the licensee provides alternate financial assurance acceptable to the beneficiary.

11. Guarantor agrees that within 30 days after it determines that it no longer meets the financial test criteria or that it is disallowed from continuing as a guarantor for the facility under License Number SUA-1548, it shall establish an alternate financial assurance, as specified in 10 CFR Part 40, Appendix A, as applicable in the name of RAMC, unless RAMC has done so.

12. Guarantor as well as its successors and assigns agree to remain bound jointly and severally under this guarantee notwithstanding any or all of the following: amendment or modification of license or NRC-approved decommissioning plan for that facility, the extension or reduction of the time of performance of required activities or any other modification or alternation of an obligation of the licensee pursuant to 10 CFR Part 40.

13. Guarantor agrees to remain bound under this guarantee for so long as RAMC must comply with the applicable financial assurance requirements of 10 CFR Part 40, Appendix A, for the previously listed facility, except that guarantor may cancel this guarantee by sending notice by certified mail to the NRC and to RAMC, such cancellation to become effective no earlier than 120 days after receipt of such notice by both NRC and RAMC, as evidenced by the return receipts.

14. Guarantor agrees that if RAMC fails to provide alternate financial assurance as specified in 10 CFR Part 40, Appendix A as applicable, and to obtain written approval of such assurance from the NRC within 90 days after a notice of cancellation by the guarantor is received by the NRC and RAMC from the guarantor, guarantor shall provide such alternate financial assurance in the name of RAMC or make full payment under the guarantee.

15. Guarantor agrees to be jointly and severally liable for all litigation costs incurred by the NRC in any successful effort to enforce the agreement against the guarantor.

16. Guarantor expressly waives notice of acceptance of this guarantee by the NRC or by RAMC. Guarantor also expressly waives notice of amendments or modification of the decommissioning requirements and of amendments or modifications of the license.

17. If the guarantor files Financial Reports with the U.S. Securities and Exchange Commission, then it shall promptly submit them to the NRC during each year in which this guarantee is in effect.

I hereby certify that this guarantee is true and correct to the best of my knowledge.

Attest:

RIO ALGOM LIMITED

David J. Kavanagh
Assistant Secretary

Patrick M. James
President & CEO

Attest:

c/s

David J. Kavanagh
Assistant Secretary

John A. H. Bush
Vice-President

APPENDIX C

SURETY DETAIL

PART II - SURETY BOND DETAIL

This section presents the support details for the summary totals included in Table 1. Within this part, the bond detail is divided into ten (10) sections that encompass the mining activities at the Smith Ranch facility. These 10 divisions match each of the summary sections that are presented in Table 1.

These bond division areas include; ion exchange plants, central processing plant, dryer area, existing facilities, header sites and wellfields, associated structures, groundwater reclamation and RO Units, whole trucking, and delineation hole reclamation. The cost basis for these calculations are from contractor quotes. These quotes are presented in "Part III - Cost Basis".

SECTION 1

ION EXCHANGE PLANT RECLAMATION COSTS

Cost Summary

ITEM	COSTS ($97)
1.1 Building	40,116
1.2 Tankage and Vessels	39,913
1.3 Piping	13,224
1.4 Pumps	6,094
1.5 Electrical	9,470
1.6 Foundations	48,588
1.7 Plant Site	2,058
1.8 Access Road	1,054
Total Cost	160,517

1.1 Building

Calculation Basis: 70 Ft. x 165 Ft. with 23 Ft. Eave
Floor Area = 11,550 Ft^2
Skin Area = 10,810 Ft^2

A. Washdown Building - 6 Days:
Wash 10,810 Ft^2 @ 1 Gal/Ft^2 = 10,818 Gal
Wash 10,810 Ft^2 @ 450 Ft^2/Man-Day = 24 Man-Days
= 6 Crew-Days

- Labor Crew = 1 - Foreman @ $21.58/Hr
  4 - Laborers @ $13.02/Hr
  $73.66/Hr x 48 Hr = $ 3,536
- Travel = $73.66/Hr x 6 Day x 1 Hr/Day = $ 442
- Eq. Rental = 4 - Pressure Washers @ $ 8.71/ Hr
  $ 34.84/Hr x 48 Hr = $ 1,672
- Materials = Soap @ $1.09/BBL
  10,810 Gal x BBL / 42 Gal x $1.09/BBL = $ 281
- Dispose of Fluid @ $0.11/BBL
  10,810 Gal x BBL / 42 Gal x $0.11/BBL = $ 28

Sub-total = $ 5,959

B. Dismantle and Load - 15 Days:

11,550 Ft^2 @ 100 Ft^2/Man-Day = 115.5 Man-Days
= 15.0 Crew-Days

- Labor Crew = 1 - Foreman @ $ 21.58/Hr
  2 - Welders @ $ 19.35/Hr

2 - Operators @ $ 17.71/Hr
4 - Laborers @ $ 13.02/Hr
$147.78/Hr x 120 Hr = $ 17,734

- Travel = $147.78/Hr x 15 Days x 1 Hr/Day = $ 2,217

- Eq. Rental =2 - 20 Ton Cranes @ $37.39/Hr
2 - Welders/Torches @ $10.90/Hr
$96.58/Hr x 120 Hr = $ 11,590

Sub-total = $ 31,541

C. Haul and Dispose - On-Site Land Fill:
Building = 235,000# = 5 Truck Loads** @ 47,000#
- Haul = 5 Trucks x 8 Hrs/Truck x $65.39/Hr = $ 2,616
- Dispose = Cost Included in Section 6.5

** 5 Trucks required to move building in 1988

Building Total = *$ 40,116*

1.2 Tankage and Vessels

Basis: See Table 1.1

A. Decontaminate - 0 Days: (Assume No Decontamination)

B. Remove and Load - 11 Days:
- Labor Crew = 1 - Foreman @ $21.58/Hr*
1 - Operator @ $17.71/Hr
2 - Laborers @ $13.02/Hr
$65.33/Hr x 88 Hr = $ 5,749

- Travel = $65.33/Hr x 11 Days x 1 Hr/Day = $ 719

- Eq. Rental = 1 - 20 Ton Crane @ $37.39/Hr
$37.39/Hr x 88 Hr = $ 3,290

* This foreman will also supervise1.2 C.

Sub-total = $ 9,758

C. Dismantle, Cut, or Crush - 11 Days:
Cut Steel @ 30 $Ft.^3$/Man-Day @ 631.4 Ft^3 = 21 Man-Day
Crush FRP @ 60 $Ft.^3$/Man-Day @ 240.5 Ft^3 = 4 Man-Day

- Labor Crew = 1 - Foreman @ Foreman supervises both 1.2 (B) & (C)
2 - Welders @ $19.35/Hr
2 - Laborers @ $13.02/Hr
$64.74/Hr x 88 Hr = $ 5,697

- Travel = $64.74/Hr x 11 Days x 1 Hr/Day = $ 712

- Eq. Rental = 1 - D8N Dozer @ $117.71/Hr for 4 Days
$117.71/Hr x 32 Hr = $ 3,767
2 - Welders/Torches @ $ 10.90/Hr

	$ 21.80/Hr x 88 Hr	=	$ 1,918
	Sub-total		$ 12,094
D.	Haul and Dispose - Licensed (NRC SUA - #1473) Site: 100% of Contaminated Service = 835.4 $Ft.^3$ @ 198,380# Total = 30.9 Cu.Yd. @ 198,380# = 5 Truck Loads @ 40,000#		
	• Haul = 5 Truck x 800 Mile x $3.27/Mile	=	$ 13,080
	• Dispose = 198,380# = 99.1 tons @ $50/ton disposal cost[1]	=	$ 4,955
E.	Haul and Dispose - On-Site Land Fill: 100% of Non-Contaminated Service = 36.5 Ft^3 @ 2,320# Total = 1.4 Cu.Yd. @ 2,230# = 0.05 Truck Loads @ 47,000#		
	• Haul = 0.05 Trucks x 8 Hrs/Truck x $65.39/Hr	=	$ 26
	• Dispose = Cost Included in Section 6.5		
	Tankage and Vessel Total	=	*$39,913*

1.3 Piping

Basis: See Table 1.2

A.	Remove, Cut or Crush and Load - 5 Days: PVC & Poly - 2,800 Ft @ 140 Ft/Man-Day = 20 Man-Day = 5 Crew-Day Steel - 1,100 Ft @ 110 Ft/Man-Day = 10 Man-Day = 5 Crew-Day		
	• Labor Crew = 1 - Foreman @ $ 21.58/Hr 2 - Welders @ $ 19.35/Hr 1 - Operator @ $ 17.71/Hr 4 - Laborers @ $ 13.02/Hr $130.07/Hr x 40 Hr	=	$ 5,503
	• Travel = $130.07/Hr x 5 Days x 1 Hr/Day	=	$ 650
	• Eq. Rental = 1 - 20 Ton Crane @ $37.39/Hr 2 - Welders/Torches @ $10.90/Hr $59.19/Hr x 40 Hr	=	$ 2,368
	Sub-total	=	$ 8,521
B.	Decontaminate - 0 Days:		$ 0
C.	Haul and Dispose - Licensed (NRC SUA #1473) Site: 100% Piping = 886.7 Ft^3 @ 52,080#		

[1] See 1997-1998 Permit to Mine 633 2nd Round Responses. Cost is provided in 1998 NRC Surety for SUA-1548, and determined acceptable by NRC and it is based on actual fees charged by Quivira Mining Co., NRC license SUA-1473

Total = 32.8 Cu.Yd. @ 52,080# = 1.3 Truck Load @ 40,000#

- Haul = 1.3 Truck x 800 Mile x $3.27/Mile = $ 3,401
- Dispose = 52,080# = 26.04 tons
  @ $50/ton disposal cost[2] = $ 1,302

Piping Total = *$ 13,224*

1.4 Pumps

Basis: See Table 1.3

A. Removal and Loading - 6 Days:
21 Pumps @ 2 Pumps/Man-Day = 10.5 Man-Days
= 6.0 Crew-Days

- Labor Crew = 1 - Foreman @ $21.58/Hr
  1 - Operator @ $17.71/Hr
  2 - Laborers @ $13.02/Hr
  $65.33/Hr x 48 Hrs = $ 3,136
- Travel = $65.33/Hr x 6 Days x 1 Hr/Day = $ 392
- Eq. Rental = 1 - 20 Ton Crane @ $37.39/Hr
  $37.39/Hr x 48 Hrs = $ 1,795

Sub-total = $ 5,323

B. Haul and Dispose - Licensed (NRC SUA #1473) Site:
Contaminated Pumps = 77.9 Ft.^{3} @ 5,700#
Total = 2.9 Cu. Yd. @ 5,700# = 0.2 Truck Loads @ 40,000#

- Haul = 0.2 Truck x 800 Mile x $3.27/Mile = $ 523
- Dispose = 5,700# = 2.85 tons
  @ $50/ton disposal cost[3] = $ 143

C. Haul and Dispose - On-Site Land Fill:
Non-Contaminated Motors = 69.9 Ft^3 @ 8,445#
Non-Contaminated Pumps = 2 Ft^3 @ 100#
Total = 71.9 Ft.^{3} @ 8,545# = 0.2 Truck Loads @ 47,000#

- Haul = 0.2 Trucks x 8 Hrs/Truck x $65.39/Hr = $ 105
- Dispose = Cost Included in Section 6.5

Pump Total = *$ 6,094*

[2] See 1997-1998 Permit to Mine 633 2nd Round Responses. Cost is provided in 1998 NRC Surety for SUA-1548, and determined acceptable by NRC and it is based on actual fees charged by Quivira Mining Co., NRC license SUA-1473

[3] See 1997-1998 Permit to Mine 633 2nd Round Responses. Cost is provided in 1998 NRC Surety for SUA-1548, and determined acceptable by NRC and it is based on actual fees charged by Quivira Mining Co., NRC license SUA-1473

1.5 Electrical

A. Remove, Cut and Load - 5 Days:

- Labor Crew = 1 - Journeyman Elect. @ $ 34.88/Hr
  2 - Helpers @ $ 30.51/Hr
  1 - Welder @ $ 19.35/Hr
  1 - Operator @ $ 17.71/Hr
  $132.96/Hr x 40 Hr = $ 5,318

- Elec. Travel = $95.90/Hr x 5 Days x 2 Hr/Day = $ 959
  + $0.54/Mile x 5 Days x 120 Mile/Day = $ 324

- Travel = $37.06/Hr x 5 Days x 1 Hr/Day = $ 185

- Eq. Rental = 1 - 20 Ton Crane @ $37.39/Hr
  1 - Truck @ $12.26/Hr*
  1 - Welder/Torch @ $10.90/Hr
  $60.55/Hr x 40 Hr = $ 2,422

Sub-total = $ 9,208

B. Haul and Dispose - On-Site Land Fill:

MCC = 11.75 Ft. x 1.25 Ft. x 7.5 Ft. = 110.2 $Ft.^3$ @ 4,550#
Cable = 110.2 $Ft.^3$ x 0.5 = 55.1 $Ft.^3$ @ 18,400# (@ 40% Voids)
Total = 165.1 $Ft.^3$ @ 22,950#
= 6.1 Cu. Yd. @ 22,950# = 0.5 Truck Loads @ 47,000#

- Haul = 0.5 Trucks x 8 Hrs/Truck x $65.39/Hr = $ 262
- Dispose = Cost Included in Section 6.5

Electrical Total = *$ 9,470*

1.6 Foundation

A. Decontaminate Slab - 3 Days:

11,550 Ft^2 @ 1,000 Ft^3/Man-Day = 11.6 Man-Days
= 3.0 Crew-Days

- Labor Crew = 1 - Foreman @ $21.58/Hr
  4 - Laborers @ $13.02/Hr
  $73.66/Hr x 24 Hr = $ 1,768

- Travel = $73.66/Hr x 3 Days x 1 Hr/Day = $ 221

- Eq. Rental = Hand Tools @ $10.90/Hr
  (Brooms, Squeegee) $10.90/Hr x 24 Hr = $ 262

- 10% HCl = 2 Gal/Ft^2 x 11,550 Ft^2
  = 23,100 Gal.

Make-Up from 20° Be HCl Stock @ $0.55/Gal
Require 288 Gal. Stock per 1,000 Gal. - 10%

23,100 gal x 0.288 x $0.55/Gal = $ 3,659

- Dispose of Fluid @ $0.11/BBL
  23,100 Gal x $\frac{\text{BBL}}{42\ \text{Gal}}$ x $0.11/BBL = $ 61

Sub-total $ 5,971

B. Break and Remove 25% of Slab - 10 Days:
11,550 Ft^2 x 0.25 = 2,888 Ft^2
2,888 Ft^2 @ 37.5 Ft^2/Hr = 77 Hrs

- Labor Crew = 1 - Operator @ $17.71/Hr
  17.71/Hr x 77 Hrs = $ 1,364
- Travel = $17.71/Hr x 10 Days x 1 Hr/Day = $ 177
- Eq. Rental = 1 - Pavement Breaker @ $31.33/Hr
  $31.33/Hr x 77 Hrs = $ 2,412
  1 - Cat 980C Loader @ $92.64/Hr
  $92.64/Hr x 40 Hrs = $ 3,706

Sub-total = $ 7,659

C. Haul and Dispose - Licensed (NRC SUA #1473) Site:

Concrete = 2,888 Ft^2 x $\frac{8\ \text{In}}{12\ \text{In/Ft}}$ = 1925 Ft^3 Set
= 377,365# @ 196# Ft^3
= 3,209 Ft^3 Loose (40% voids)

Total = 11.9 Cu.Yd. @ 377,365# = 9.4 Truck Loads @ 40,000#

- Haul = 9.4 Truck x 800 Miles x $3.27/Mile = $ 24,590
- Dispose = 377,365# = 188.7 tons
  @ $50/ton disposal cost[4] = $ 9,435

D. Bury Area w/2 Ft Cover:
- Materials = 856 Cu.Yd. Cover @ $1.09/Cu.Yd. = $ 933

Foundation Total = *$ 48,588*

1.7 Plant Site

Basis: 200 Ft. x 300 Ft. = 60,000 $Ft.^2$ = 1.4 Acres

A. Rip and Contour:
- Basis: See Table 1.4

[4] See 1997-1998 Permit to Mine 633 2nd Round Responses. Cost is provided in 1998 NRC Surety for SUA-1548, and determined acceptable by NRC and it is based on actual fees charged by Quivira Mining Co., NRC license SUA-1473

• Rip and Contour @ $166.68/Acre			=	$ 233

B. Topsoil Placement:

Replace 6 in. Topsoil = 60,000 $Ft.^2$ x 0.5 = 30,000 $Ft.^3$ = 1,111 Cu.Yd.

Topsoil Placement @ $1.09/Cu.Yd.			=	$ 1,211

C. Revegetate:

• Grade and Contour Topsoil	@ $ 87.19/Acre x 1.4 Acre		=	$ 122
• Seedbed Prep. (Disc. + Harrow)		@ $ 21.80/Acre x 1.4 Acre	=	$ 31
• Mulch (Drill + Seed + Mow)	@ $ 49/Acre x 1.4 Acre		=	$ 69
• Drill Seed and Fertilize (Drill + Seed + Fertilizer)		@ $163/Acre x 1.4 Acre	=	$ 228
• Revegetation Contingency (All items excluding grading)		@ $233.80/Acre* x 0.7 Acre	=	$ 164

*Assume only 50% of acreage requires reseeding

Sub-total			=	$ 614
Plant Site Total			=	*$ 2,058*

1.8 Access Road

Basis: Gravel Road = 21 Ft. x 1320 Ft. = 27,720 $Ft.^2$ = 0.6 Acres

A. Rip and Contour:

• Basis: See Table 1.4				
• Rip and Contour @ $166.68/Acre			=	$ 233

B. Topsoil Placement:

Replace 6 in. Topsoil = 27,720 $Ft.^2$ x 0.5 = 13,860 $Ft.^3$ = 513 Cu.Yd

• Topsoil Placement @ $1.09/Cu.Yd.			=	$ 559

C. Revegetate:

• Grade and Contour		@ $ 87.19/Acre x 0.6 Acre	=	$ 52
• Seedbed Prep. (Disc. + Harrow)		@ $ 21.80/Acre x 0.6 Acre	=	$ 13
• Mulch (Drill + Seed + Mow)	@ $ 49/Acre x 0.6 Acre		=	$ 29
• Drill Seed and Fertilize (Drill + Seed + Fertilizer)		@ $163/Acre x 0.6 Acre	=	$ 98
• Revegetation Contingency (All items excluding grading)		@ $233.80/Acre* x 0.3 Acre	=	$ 70

Sub-total			=	$ 262

*Assume only 50% of acreage requires reseeding

Access Road			=	*$ 1,054*

TABLE 1.4
IX PLANT
SCARIFY (RIP) COMPACTED SURFACE

Equipment = Cat. 140G Motor Grader @ $65.39/Hr - Complete
Speed = 3.9 mph (2nd gear)
Width = 9 Ft/Pass

$$\text{Productivity} = 3.9 \frac{\text{Mile}}{\text{Hr}} \times 5280 \frac{\text{Ft}}{\text{Mile}} \times 9 \frac{\text{Ft}}{\text{Pass}} \times 0.83 \text{ Eff.}$$

$$= 153{,}822 \frac{\text{Ft}^2}{\text{Hr}}$$

$$= 3.53 \frac{\text{Acre}}{\text{Hr}}$$

$$\$/\text{Acre} = \frac{\$65.39}{\text{Hr}} \times \frac{\text{Hr}}{3.53 \text{ Acre}} = \frac{\$18.52}{\text{Acre}}$$

From Above - Ripping @ $166.68/Acre Allows for 9 Passes

SECTION 2
CENTRAL PROCESSING PLANT RECLAMATION COSTS

Cost Summary

ITEM	COSTS ($97)
2.1 Building	57,548
2.2 Tankage and Vessels	60,246
2.3 Piping	10,846
2.4 Pumps	10,965
2.5 Electrical	19,682
2.6 Foundations	69,719
Total Cost	229,006

2.1 Building

Basis: 100 Ft. x 165 Ft. with 30 Ft. Eave
Floor Area = 16,500 Ft^2
Skin Area = 15,900 Ft^2

A. Washdown Building - 9 days:

Wash 15,900 Ft^2 @ 1 Gal/Ft^2 = 15,900 Gal
Wash 15,900 Ft^2 @ 450 Ft^2/Man-Day = 35 Man-Days
= 9 Crew-Days

- Labor Crew = 1 - Foreman @ $21.58/Hr
4 - Laborers @ $13.02/Hr
$73.66/Hr x 72 Hr = $ 5,303

- Travel = $73.66/Hr x 9 Days x 1 Hr/Day = $ 663

- Eq. Rental = 4 - Pressure Washers @ $ 8.71/Hr
$ 34.84/Hr x 80 Hr = $ 2,787

- Materials = Soap @ $1.09/BBL
15,900 Gal x BBL / 42 Gal x $1.09/BBL = $ 413

- Dispose of Fluid @ $0.11/BBL
15,900 Gal x BBL / 42 Gal x $0.11/BBL = $ 42

Sub-total = $ 9,208

B. Dismantle and Load - 21 Days:

Dismantle and Load 16,500 Ft^2 @ 100 Ft^2/Man-Day @ 100 Ft^2/Man-Day = 165 Man-Days = 168 Man-Days = 21 Crew-Days

- Labor Crew = 1 - Foreman @ $ 21.58/Hr
2 - Welders @ $ 19.35/Hr

2 - Operators @$ 17.71/Hr
4 - Laborers @$ 13.02/Hr
$147.78/Hr x 168 Hr = $24,827

- Travel = $147.78 Hrs x 21 Days x 1 Hr/Day = $ 3,103

- Eq. Rental = 2 - 20 Ton Cranes @ $ 37.39/Hr
2 - Welders/Torches @ $ 10.90/Hr
$ 96.58/Hr x 168 Hr = $16,225

Sub-total = $44,155

C. Haul and Dispose - On-Site Land Fill:
Building = 376,000# = 8 Truck Loads* @ 47,000#

- Haul = 8 Trucks x 8 Hrs/Truck x $65.39/Hr = $ 4,185
- Dispose = See Appendix 6.5

Building Total = *$ 57,548*

2.2 Tankage and Vessels

Basis: See Table 2.1

A. Decontaminate - 0 Days: = $ 0

B. Remove and Load - 19 Days:
- Labor Crew = 1 - Foreman @ $ 21.58/Hr
1 - Operator @ $ 17.71/Hr
2 - Laborers @ $ 13.02/Hr
$ 65.33/Hr x 152 Hr = $ 9,930

- Travel = $65.33/Hr x 19 Days x 1 Hr/Day = $ 1,241

- Eq. Rental = 1 - 20 Ton Crane @ $ 37.39/Hr
$ 37.39/Hr x 152 Hrs = $ 5,683

Sub-total = $ 16,854

C. Dismantle, Cut, or Crush - 19 Days:
Cut Steel @ 30 Ft^3/Man-Day @ 518.5 Ft^3 = 17 Man-Days
Crush FRP @ 60 Ft^3/Man-Day @ 111.4 Ft^3 = 19 Man-Days

- Labor Crew = 1 - Foreman @ $ Foreman Supervises both 2.2(A) & (B)
1 - Welder @ $ 19.35/Hr
2 - Laborers @ $ 13.02/Hr
$ 45.39/Hr x 152 Hrs = $ 6,899

- Travel = $45.39/Hr x 19 Days x 1 Hr/Day = $ 862

- Eq. Rental = 1 - D8N Dozer @ $117.71/Hr
1 - Welder/Torch @ $ 10.90/Hr
$128.61/Hr x 152 Hrs = $ 19,549

Sub-total = $ 27,310

D. Haul and Dispose - Licensed (NRC SUA #1473) Site:
100% of Contaminated Service = 1236.7 Ft.^{3} @ 172,420#
Total = 45.8 Cu.Yd. @ 172,420# = 4.3 Truckloads @ 40,000#

- Haul = 4.3 Trucks x 800 Mile x $3.27/Mile = $ 11,249
- Dispose = 172,420# = 86.2 tons
  @ $50/ton disposal cost[5] = $ 4,310

E. Haul and Dispose - On-Site Land Fill:
100% of Non-Contaminated Service = 393.2 Ft^3 @ 45,010#
Total = 14.6 Cu.Yd. @ 45,010# = 1 Truckloads @ 47,000#

- Haul = 1 Truck x 8 Hrs/Truck x $65.39/Hr = $ 523
- Dispose = See Appendix 6.5

Tankage and Vessel Total = *$ 60,246*

2.3 Piping

Basis: See Table 2.2

A. Remove, Cut or Crush and Load - 9 days:
PVC and Poly @ 140 Ft/Man-Day @ 5,000 Ft = 36 Man-Days
= 9 Crew-Days

- Labor Crew = 1 - Foreman @ $ 21.58/Hr
  1 - Operator @ $ 17.71/Hr
  4 - Laborers @ $ 13.02/Hr
  $ 91.37/Hr x 72 Hr = $ 6,579
- Travel = $91.37/Hr x 9 Days x 1 Hr/Day = $ 822
- Eq. Rental = 1 - 20 Ton Crane @ $ 37.39/Hr
  $ 37.39/Hr x 72 Hr = $ 2,692

Sub-total = $ 10,093

B. Decontaminate - 0 Days: = $ 0

C. Haul and Dispose - Licensed (NRC SUA #1473) Site:
100% Pipe = 244 Ft.^{3} @ 9,136#
Total = 9 Cu. Yd. @ 9,136# = 0.2 Truckloads @ 40,000#

- Haul = 0.2 Trucks x 800 Mile x $3.27/Mile = $ 523
- Dispose = 9,136# = 4.6 tons
  @ $50/ton disposal cost[6] = $ 230

[5] See 1997-1998 Permit to Mine 633 2nd Round Responses. Cost is provided in 1998 NRC Surety for SUA-1548, and determined acceptable by NRC and it is based on actual fees charged by Quivira Mining Co., NRC license SUA-1473

[6] See 1997-1998 Permit to Mine 633 2nd Round Responses. Cost is provided in 1998 NRC Surety for SUA-1548, and determined acceptable by NRC and it is based on actual fees charged by Quivira Mining Co., NRC license SUA-1473

Piping Total = *$ 10,846*

2.4 Pumps

Basis: See Table 2.3

A. Removal and Loading - 11 Days:
2 Pumps/Man-Day @ 43 Pumps = 21.5 Man-Days
= 11.0 Crew-Days

- Labor Crew = 1 - Foreman @ $21.58/Hr
1 - Operator @ $17.71/Hr
2 - Laborers @ $13.02/Hr
$65.33/Hr x 88 Hr = $ 5,749
- Travel = $65.33/Hr x 11 Days x 1 Hr/Day = $ 719
- Eq. Rental = 1 - 20 Ton Crane @ $37.39/Hr
$37.39/Hr x 88 Hr = $ 3,290

Sub-total = $ 9,758

B. Haul and Dispose - Licensed (NRC SUA #1473) Site:
100% Contaminated = 164.3 Ft.^{3} @ 10,612#
Total = 6.1 Cu. Yd. @ 10,612# = 0.3 Truck Load @ 40,000#

- Haul = 0.3 Truck x 800 Mile x $3.27/Mile = $ 785
- Dispose = 10,612# = 5.3 tons
@ $50/ton disposal cost[7] = $ 265

C. Haul and Dispose - On-Site Land Fill:
100% Non-Contaminated = 106.5 Ft.^{3} @ 10,723#
Total = 3.9 Cu. Yd. @ 10,723# = 0.3 Truck Load @ 47,000#

- Haul = 0.3 Truck x 8 Hrs/Truck x $65.39/Hr = $ 157
- Dispose = See Appendix 6.5

Pump Total = *$ 10,965*

2.5 Electrical

A. Remove, Cut and Load - 10 Days:
- Labor Crew = 1 - Journeyman Elect. @ $ 34.88/Hr
2 - Helpers @ $ 30.51/Hr
1 - Welder @ $ 19.35/Hr
1 - Operator @ $ 17.71/Hr
$132.96/Hr x 80 Hr = $ 10,637
- Elec. Travel = $132.96/Hr x 10 Days x 2 Hr/Day = $ 2,659
+ $0.54/Mile x 10 Days x 120 Mile/Day = $ 648

[7] See 1997-1998 Permit to Mine 633 2nd Round Responses. Cost is provided in 1998 NRC Surety for SUA-1548, and determined acceptable by NRC and it is based on actual fees charged by Quivira Mining Co., NRC license SUA-1473

- Other Travel = $37.06/Hr x 10 Days x 1 Hr/Day = $ 371

- Eq. Rental = 1 - 20 Ton Crane @ $ 37.39/Hr
  1 - Truck @ $ 12.26/Hr
  1 - Welder/Torch @ $ 10.90/Hr
  $ 60.55/Hr x 80 Hr = $ 4,844

Sub-total = $ 19,159

B. Haul and Dispose - On-Site Land Fill:

MCC#1 = 11.75 Ft. x 1.25 Ft. x 7.5 Ft. = 110.2 $Ft.^3$ @ 4,550#
MCC#2 = 11.75 Ft. x 1.25 Ft. x 7.5 Ft. = 110.2 $Ft.^3$ @ 4,550#
Cable = 220.4 $Ft.^3$ x 0.5* = 110.2 $Ft.^3$ @ 36,700#
(555#/$Ft.^3$ @ 40% Void = 333#/Ft^2)
Total = 330.6 $Ft.^3$ @ 45,800#
= 12.2 Cu. Yd. @ 45,800# = 1 Truck @ 47,000#

- Haul = 1 Truck x 8 Hrs/Truck x $65.39/Hr = $ 523

- Dispose = See Appendix 6.5

* Cable Volume = 1/2 MCC Volume

Electrical Total = *$ 19,682*

2.6 Foundation

A. Decontaminate Slab - 5 Days:

16,500 Ft^2 @ 1000 Ft^2/Man-Day = 17 Man-Days
= 5 Crew-Days

- Labor Crew = 1 - Foreman @ $ 21.58/Hr
  4 - Laborers @ $ 13.02/Hr
  $ 73.66/Hr x 40 Hr = $ 2,646

- Travel = $73.66/Hr x 5 Days x 1 Hr/Day = $ 368

- Eq. Rental = Hand Tools @ $ 10.90/Hr
  (Broom, Squeegee) $ 10.90/Hr x 40 Hr = $ 436

- 10% HCl = 2 Gal/Ft^2 x 16,500 Ft^2
  = 33,000 Gal.

make-up from 20° Be HCl Stock @ $0.508/Gal
Require 288 Gal. Stock per 1,000 Gal. - 10%

33,000 x 0.288 x $0.55/Gal = $ 5,227

- Dispose of Fluid @ $0.11/BBL
  33,000 Gal x BBL / 42 Gal x $0.11/BBL = $ 86

Sub-total = $ 8,763

B. Break and Remove 25% of Slab - 14 Days:

16,500 Ft^2 x 0.25 = 4,125 Ft^2

4,125 Ft^2 @ 37.5 Ft^2/Hr = 110 Hrs

- Labor Crew = 1 - Operator @ $ 17.71/Hr
  $ 17.71/Hr x 110 Hrs = $ 1,948
- Travel = $17.71/Hr x 14 Days x 1 Hr/Day = $ 248
- Eq. Rental = 1 - Pavement Breaker @ $ 31.33/Hr
  $ 31.33/Hr x 110 Hrs = $ 3,446

  1- Cat 980C Loader @ $ 92.64/Hr
  $ 92.64/Hr x 56 Hrs = $ 5,188

Sub-total = $ 10,830

C. Haul and Dispose - Licensed (NRC SUA #1743) Site:

Concrete = 4,125 Ft^2 x 8 In. / 12 In/Ft = 2,750 Ft^3 Set

= 539,000# @ 196#/Ft^3

= 4,583 Ft^3 Loose (40% Voids)

Total = 170 Cu.Yd. @ 539,000# = 13.5 Truckloads @ 40,000#

- Haul = 13.5 Truckloads x 800 Miles x $3.27/Mile = $ 35,316
- Dispose = 539,000# = 269.5 tons
  @ $50/ton disposal cost[8] = $ 13,475

D. Bury Area with 2 Ft. Cover:

- Material = 1,225 Cu.Yd. Cover @ $1.09/Cu.Yd. = $ 1,335

Foundation Total = *$69,719*

[8] See 1997-1998 Permit to Mine 633 2nd Round Responses. Cost is provided in 1998 NRC Surety for SUA-1548, and determined acceptable by NRC and it is based on actual fees charged by Quivira Mining Co., NRC license SUA-1473

SECTION 3
DRYER AREA RECLAMATION COSTS
Cost Summary

ITEM	COSTS ($97)
3.1 Building	16,222
3.2 Equipment	14,739
3.3 Foundations	16,802
Total Cost	47,763

3.1 Building

Basis: 100 Ft. x 35 Ft. with 30 Ft. Eave
Floor Area = 3,500 Ft^2
Skin Area = 8,100 Ft^2

A. Washdown Building - 0 Days = $ 0

B. Dismantle and Load - 5 Days:
3500 Ft^2 @ 100 Ft^2/Man-Day = 35 Man-Days
= 5 Crew-Days

- Labor Crew = 1 - Foreman @ $ 21.58/Hr
2 - Welders @ $ 19.35/Hr
2 - Operators @ $ 17.71/Hr
4 - Laborers @ $ 13.02/Hr
$147.78/Hr x 40 Hr = $ 5,911
- Travel = $147.78/Hr x 5 Days x 1 Hr/Day = $ 739
- Eq. Rental = 2 - 20 Ton Cranes @ $37.39/Hr
2 - Welder/Torch @ $10.90/Hr
$96.58/Hr x 40 Hr = $ 3,863

Sub-total = $ 10,513

C. Haul and Dispose - Licensed (NRC SUA - #1473) Site:
Buildings = 71,212#* = 1.8 Truck Loads @ 40,000#

- Haul = 1.8 Trucks x 800 Mile x $3.27/Mile = $ 4,709
- Dispose = 40,000# = 20 tons
@ $50/ton disposal cost[9] = $ 1,000

*5 Trucks x 47,000#/Truck x $\frac{3500\ Ft^2}{11550\ Ft^2}$ = 71,212#

Building Total = *$ 16,222*

3.2 Equipment

[9] See 1997-1998 Permit to Mine 633 2nd Round Responses. Cost is provided in 1998 NRC Surety for SUA-1548, and determined acceptable by NRC and it is based on actual fees charged by Quivira Mining Co., NRC license SUA-1473

Basis: See Table 3.1

A. Remove and Load - 7 Days:

- Labor Crew = 1 - Foreman @ $21.58/Hr
  1 - Operator @ $17.71/Hr
  4 - Laborers @ $13.02/Hr
  91.37/Hr x 56 Hrs = $ 5,117
- Travel = $91.37/Hr x 7 Days x 1 Hr/Day = $ 640
- Eq. Rental = 1 - 20 Ton Crane @ $37.39/Hr
  $37.39/Hr x 56 Hrs = $ 2,094

Sub-total = $ 7,851

B. Dismantle and Cut - 7 Days:

Cut Steel @ 30 Ft^3/Man-Day @ 198.6 Ft^3 = 7 Man-Days

- Labor Crew = 1 - Foreman @ $ Foreman supervises 3.2(A) & (B)
  1 - Welders @ $19.35/Hr
  $19.35/Hr x 56 Hr = $ 1,084
- Travel = $19.35/Hr x 7 Days x 1 Hr/Day = $ 135
- Eq. Rental = 1 - Welder/Torch @ $10.90/Hr
  $10.90/Hr x 56 Hr = $ 610

Sub-total = $ 1,829

C. Haul and Dispose - Licensed (NRC SUA #1473) Site:

100% of Contaminated = 183.6 $Ft.^3$ @ 53,800#
Total = 6.8 Cu. Yd. @ 53,800# = 1.4 Truck Loads @ 40,000#

- Haul = 1.4 Truck x 800 Mile x $3.27/Mile = $ 3,662
- Dispose = 53,800# = 26.9 tons
  @ $50/ton disposal cost[10] = $ 1,345

D. Haul and Dispose - Land Fill:

100% Non-Contaminated = 15 $Ft.^3$ @ 4,400#
Total = 0.6 Cu. Yd. @ 4,400# = 0.1 Truck Loads @ 47,000#

- Haul = 0.1 Truck x 8 Hrs/Truck x $65.39/Hr = $ 52
- Dispose = See Appendix 6.5

Equipment Total = *$14,739*

3.3 Foundation

A. Decontaminate Slab - 2 Day:

[10] See 1997-1998 Permit to Mine 633 2nd Round Responses. Cost is provided in 1998 NRC Surety for SUA-1548, and determined acceptable by NRC and it is based on actual fees charged by Quivira Mining Co., NRC license SUA-1473

3500 Ft^2 @ 1000 Ft^2/Man-Day Twice = 7 Man-Days
= 2 Crew-Days

- Labor Crew = 1 - Foreman @ $21.58/Hr
  4 - Laborers @ $13.02/Hr
  $73.66/Hr x 16 Hrs = $ 1,179
- Travel = $73.66/Hr x 2 Days x 1 Hr/Day = $ 147
- Eq. Rental = Hand Tools (Broom, Squeegee) @ $10.90/Hr
  $10.90/Hr x 16 Hrs = $ 174
- 10% HCl = 2 Gal/Ft^2 x 3500 Ft^2 x 2
  = 14,000 Gal.

Make-Up from 20° Be HCl Stock @ $0.55/Gal
Require 288 Gal. Stock per 1,000 Gal. - 10%

14,000 x 0.288 x $0.55/Gal = $ 2,218

- Dispose of Fluid @ $0.11/BBL
  14,000 Gal x BBL/42 Gal x $0.11/BBL = $ 37

Sub-Total = $ 3,755

B. Break and Remove 25% of Slab - 3 Day:
3500 Ft^2 x 0.25 = 875 Ft^2
875 Ft^2 @ 37.5 Ft^2/Hr = 23 Hrs

- Labor Crew = 1 - Operator @ $17.71/Hr
  $17.71/Hr x 23 Hrs = $ 407
- Travel = $17.71/Hr x 3 Days x 1Hr/Day = $ 53
- Eq. Rental = 1 - Pavement Breaker @ $31.33/Hr
  $31.33/Hr x 24 Hrs = $ 752

  1- Cat 980C Loader @ $92.64/Hr
  $92.64/Hr x 12 Hr = $ 1,112

Sub-total = $ 2,324

C. Haul and Dispose - Licensed (NRC SUA #1743) Site:
Concrete = 875 Ft^2 x 8 In/12 In/Ft = 583 Ft^3 Set
= 114,268# @ 196#/Ft^3
= 972 Ft^3 Loose (40% Voids)

Total = 36 Cu.Yd. @ 114,268# = 2.9 Truckloads @ 40,000#

- Haul = 2.9 Truck x 800 Mile x $3.27/Mile = $ 7,586
- Dispose = 114,268# = 57.1 tons

@ $50/ton disposal cost[11]	=	$ 2,855
D. Bury Area with 2 Ft Cover:		
• Materials = 259 Cu.Yd. Cover @ $1.09/Cu.Yd.	=	$ 282
Foundation Total	=	*$ 16,802*

[11] See 1997-1998 Permit to Mine 633 2nd Round Responses. Cost is provided in 1998 NRC Surety for SUA-1548, and determined acceptable by NRC and it is based on actual fees charged by Quivira Mining Co., NRC license SUA-1473

SECTION 4
EXISTING FACILITIES RECLAMATION COSTS
Cost Summary

ITEM	COSTS ($97)
4.1 Buildings	95,635
4.2 Structures	14,067
4.3 Pilot Plant Equipment	21,266
4.4 Foundation	139,333
4.5 Site Reclamation	124,677
4.6 O-Sand Pilot	41,435
4.7 Q-Sand Pilot	N.A.
4.8Mine Water Trt Ponds	19,878
Total Cost	456,291

4.1 Buildings

Basis: Floor Area = 33,248 Ft^2
Skin Area = 22,828 Ft^2 (13 Ft Eave)

1 @ 200 Ft. x 60 Ft. = 12,000 Ft^2 (Pilot ISL Building)
0 @ 70 Ft. x 48 Ft. - Demolished & Removed Sept. 1991
1 @ 70 Ft. x 68 Ft. = 4,760 Ft^2 (Existing Office Building)
1 @ 48 Ft. x 24 Ft. = 1,152 Ft^2 (Storage Building)
1 @ 24 Ft. x 24 Ft. = 576 Ft^2 (Water Treatment Plant)
1 @ 40 Ft x 120 Ft. = 4,826 Ft^2 (Shop Building)
1 @ Building = 9,934 Ft^2 (New Office Annex Building)

A. Washdown Building - 8 Days
22,828 Ft^2 @ 1 Gal/Ft^2 = 22,828 Gal
22,828 Ft^2 @ 450 Ft^2/Man = 51 Man-Days
= 13 Crew-Days

- Labor Crew = 1 - Foreman @ $ 21.58/Hr
  4 - Laborers @ $ 13.02/Hr
  $ 73.66/Hr x 104 Hr = $ 7,661
- Travel = $73.66/Hr x 13 Days x 1 Hr/Day = $ 958
- Eq. Rental = 4 - Pressure Washers @ $ 8.71/Hr
  $ 34.84/Hr x 104 Hr = $ 3,623
- Materials = Soap @ $1.09/BBL
  22,828 Gal x BBL / 42 Gal x $1.09/BBL = $ 592
- Dispose of Fluid @ $0.11/BBL
  22,828 Gal x BBL / 42 Gal x $0.11/BBL = $ 60

Sub-total = $ 12,894

B. Dismantle and Load - 24 Days:
33,248 Ft^2 @ 100 Ft^2/Man-Day = 332 Man-Days
= 42 Crew-Days

- Labor Crew = 1 - Foreman @ $ 21.58/Hr
  2 - Welders @ $ 19.35/Hr
  2 - Operators @ $ 17.71/Hr
  4 - Laborers @ $ 13.02/Hr
  $147.78/Hr x 336 Hrs = $ 49,654

- Travel = $147.78/Hr x 42 Days x 1 Hr/Day = $ 6,207

- Eq. Rental = 2 - 20 Ton Cranes @ $37.39/Hr
  2- Welder/Torches @ $10.90/Hr
  $96.58/Hr x 336 Hrs = $ 32,450

Sub-total = $ 88,311

C. Haul and Dispose - On-Site Land Fill:
Buildings = 676,800# = 14 Truck Loads* @ 47,000#

- Haul = 14 Trucks x 8 Hrs/Truck x $65.39/Hr = $ 7,324

- Dispose = See Appendix 6.5

* 5 Trucks x $\frac{18,488\ Ft.^2}{11,550\ Ft.^2}$ = 14 Trucks

Buildings Total = *$ 95,635*

4.2 Structures

A. Plug Shaft - Completed in 1994 = $ 0

B. Plug Venthole

- Backfill 335 ft. of hole
  (270 c.y. @ $1.09/yd) = $ 270

- Backhoe 16 hrs @ $27.25/hr = $ 436

- Steel plate and rebar = $ 300

- Cement - 10 c.y. @ $76/c.y. delivered = $ 760

- 40 man hours @ $13.02/hr = $ 521

- Dirt cover - 100 c.y. @ $1.09/c.y. = $ 109

Sub-total = $ 2,396

C. Mine Water Treatment Ponds
See Section 4.8

D. Evaporation Ponds
Total Area = 200 Ft. x 100 Ft. = 20,000 $Ft.^2$ = 0.5 Acres

- Total = 0.5 Acres x $\frac{\$65,392^{*}}{5 \text{ Acres}}$ = $ 6,539

* See Section 6 - part 6.2 for the cost on a 5 acre basis

E. Headframe Removal

- Dismantle - Completed in 1991 = $ 0
- Haul & Dispose - Completed in 1993 = $ 0

F. Fencing (includes delineation posts)

Facility Fence - 5900 ft
Wellfield #1 - 6600 ft
Wellfield #3 - 7500 ft
20000 ft

- Cost to remove fencing = $0.15/ft[12] = $ 3,000

G. Water Wells

- Water wells (2) are 5 inch diameter wells with depth of 750 feet.
- Cost Basis - $285/well ($7705 per 27 wells, see "Section 5.4 - Wells") = $ 570

H. Fuel Area

- Size - 15 ft x 25 ft = 375 Ft^2.
  375 Ft^2 @ 37.5 Ft^2/Hr = 10 Hrs
- Labor Crew = 1 - Operators @ $17.71/Hr
  $17.71/Hr x 10 Hrs = $ 177
- Travel = $17.71/Hr x 2 Days x 1 Hr/Day = $ 35
- Eq. Rental = 1- Pavement Breaker @ $31.33/Hr
  $31.33/Hr x 10 hrs = $ 313

  1- Cat 980C Loader @ 92.64/Hr
  $96.58/Hr x 5 hr = $ 483

Sub-total = $ 1008

Structures Total = *$ 14,067*

4.3 Pilot Plant Equipment

A. Tanks:

15 Tanks

- Total = 15 Tanks x $\frac{\$55,926^{*}}{51 \text{ Tanks}}$ = $ 15,095

B. Piping:

[12] Cost per linear foot based on Third Party Cost Quote dated 6/11/99

1500 Ft. @ 6" Dia. or Less
• Total = 1500 Ft. x $\frac{\$10,616^{*}}{5,000 \text{ Ft.}}$ = $ 3,185

C. Pumps:
12 Pumps
• Total = 12 Pumps x $\frac{\$10,700^{*}}{43 \text{ Pumps}}$ = $ 2,986

* Reference Section 2 - parts 2.2, 2.3 & 2.4

Pilot Plant Total = *$ 21,266*

4.4 Foundation

A. Decontaminate Slab - 5 Days:
33,248 Ft^2 @ 1000 Ft^2/Man-Day = 33.2 Man-Days
= 8.3 Crew-Days

• Labor Crew = 1 - Foreman @ $ 21.58/Hr
4 - Laborers @ $ 13.02/Hr
$ 73.66/Hr x 66.4 Hrs = $ 4,891

• Travel = $73.66/Hr x 9 Days x 1 Hr/Day = $ 663

• Eq. Rental = Hand Tools @ $10.90/Hr
(Brooms, Squeegee) @ $10.90 /Hr x 66.4 Hrs = $ 724

• 10% HCl = 2 Gal/Ft^2 x 33,248 $Ft.^2$
= 66,496 Gal.

Make-Up from 20° Be HCl Stock @ $0.55/Gal
Require 288 Gal. Stock per 1,000 Gal. - 10%

66,496 x 0.288 x $0.55/Gal = $ 10,532

• Dispose of Fluid @ $0.11/BBL
66,496 Gal x $\frac{\text{BBL}}{42 \text{ Gal}}$ x $0.11 BBL = $ 174

Sub-total = $ 16,984

B. Break and Remove 25% of Slab - 28 Days:
33,248 Ft^2 x 0.25 = 8,312 Ft^2
8,312 Ft^2 @ 37.5 Ft^2/Hr = 221 Hrs

• Labor Crew = 1 - Operator @ $17.71/Hr
$17.71/Hr x 221 Hrs = $ 3,914

• Travel = $17.71/Hr x 28 Days x 1 Hr/Day = $ 496

• Eq. Rental = 1 - Pavement Breaker @ $31.33/Hr
$31.33/Hr x 221 Hrs = $ 6,923

1 - Cat 980C Loader @ $92.64/Hr
$92.64/Hr x 111 Hrs = $ 10,283

Sub-total = $ 21,616

C. Haul and Dispose - Licensed (NRC SUA #1743) Site:
Concrete = 8,312 Ft^2 x 8 In. / 12 In/Ft = 5,541 Ft^3 Set
= 1,086,101# @ 196#/Ft^3
= 9,235 Ft^3 Loose(40% Voids)

Total = 342 Cu.Yd. @ 1,086,101# = 27.1 Truckloads @ 40,000#

- Haul = 27.1 Truckloads x 800 Miles x $3.27/Mile = $70,894
- Dispose = 1,086,101# = 543.1 tons @ $50/ton disposal cost[13] = $27,155

D. Bury Area with 2 Ft Cover:

- Materials = 2,462 Cu. Yd. Cover @ $1.09/Cu. Yd. = $ 2,684

Foundation Total = *$139,333*

4.5 Site Reclamation

Basis: 70.2 Acres = 3,057,912 $Ft.^2$

A. Rip & Contour:
- Rip & Contour @ $166.68/Acre x 70.2 Acre = $ 11,701

B. Topsoil Placement:
Replace 8 In.* Topsoil = 2,038,608 $Ft.^3$ = 75,504 Cu.Yd.
- Topsoil @ $1.09/Cu. Yd. = $82,229

* 8 In. Topsoil Removed in Previous Years

C. Revegetate:
- Grade and Contour @ $87.19/Acre x 70.2 Acre = $ 6,121
- Seedbed Prep. (Disc. + Harrow) @ $ 21.80/Acre x 70.2 Acre = $ 1,530
- Mulch (Drill + Seed + Mow) @ $ 49/Acre x 70.2 Acre = $ 3,440
- Drill Seed and Fertilize (Drill + Seed + Fertilizer)@ $163/Acre x 70.2 Acre = $ 11,443
- Revegetation Contingency* @ $234/Acre x 35.1 Acre = $ 8,213 (All items excluding grading)

* Assume only 50% of acreage requires reseeding

Sub-total = $ 30,747

[13] See 1997-1998 Permit to Mine 633 2nd Round Responses. Cost is provided in 1998 NRC Surety for SUA-1548, and determined acceptable by NRC and it is based on actual fees charged by Quivira Mining Co., NRC license SUA-1473

Site Reclamation Total	=	*$124,677*

4.6 Q-Sand Pilot

A. Surface Reclamation:
Basis = 6 Patterns

• Total = 6 Patterns x $16,669* / 10 Patterns	=	$ 10,001

* Reference Section 5 - Summary Table Cost Per Pattern

B. Groundwater Restoration:
Basis = 6 Patterns

• Total = 6 Patterns x $5,239* / Pattern	=	$ 31,434

* Reference Appendix #7

Sub-Total	=	$ 41,435

4.7 Q-Sand Pilot

Basis - 6 Patterns

• Building - Removed in 1992	=	$ 0
• Plug & Abandon 10 Wells - Completed in 1992	=	$ 0
• Reclaim Surface = To Be Completed With WF1 Operations	=	$ 0
Sub-total	=	$ 0

4.8 Mine Water Treatment Ponds

A. Burial In-Place
- Settled solids to Pond 3 for Burial In-Place

D8N Dozer - 40 Hrs @ $117.71/Hr	=	$ 4,708

- Backfill and Contour Settling Ponds

D8N Dozer - 120 Hrs @ $117.71/Hr	=	$14,125
Motor Grader - 16 Hrs @ $65.34/Hr	=	1,045
Sub-total	=	$19,878
Mine Water Treatment Total	=	*$19,878*

SECTION 5
UNIT HEADER SITE AND ASSOCIATED WELLFIELD RECLAMATION COSTS

Cost Summary

ITEM	Cost ($97) per 10 Patterns	Cost ($97) 507 Patterns 2000-2001
5.1 Buildings	1,549	78,534
5.2 Header Piping	2,735	138,664
5.3 Secondary Electrical	2,633	133,493
5.4 Wells-Total	10,532	533,972
5.5 Monitor Wells - Total	1,450	73,515
5.6 Site Reclamation	1,019	51,663
Total Cost	19,918	1,009,842

5.1 Building

Basis: 12 Ft. x 24 Ft. with 10 Ft. Eave
Floor Area = 288 Ft^2
Skin Area = 720 Ft^2

A. Washdown Building - 1 Day:
Wash 720 Ft^2 @ 1 Gal/Ft^2 = 720 Gal
Wash 720 Ft^2 @ 450 Ft^2/Man-Day = 1.6 Man-Days
= 0.8 Crew-Days

- Labor Crew = 1 - Foreman @ $ 21.58/Hr
2 - Laborers @ $ 13.02/Hr
$ 47.62/Hr x 8 Hr = $ 381
- Travel = $47.62/Hr x 1 Day x 1 Hr/Day = $ 48
- Eq. Rental = 2 - Pressure Washers @ $ 8.71/Hr
$ 17.42/Hr x 8 Hr = $ 139
- Materials = Soap @ $1.09/BBL
720 Gal x BBL / 42 Gal x $1.09/BBL = $ 19
- Dispose of Fluid @ $0.11/BBL
720 Gal x BBL / 42 Gal x $0.11/BBL = $ 2

Sub-total = $ 589

B. Dismantle and Load - 1 Day:
Dismantle and Load @ 100 Ft^2/Man-Day
288 Ft^2 @ 100 Ft^2/Man-Day = 2.9 Man-Day
= 1.0 Crew-Day

- Labor Crew = 1 - Foreman @ $ 21.58/Hr
1 - Welders @ $ 19.35/Hr
2 - Laborers @ $ 13.02/Hr
$66.97/Hr x 8 Hr = $ 536
- Travel = $66.97/Hr x 1 Day x 1 Hr/Day = $ 67

- Eq. Rental =1 - Backhoe @ $ 27.25/Hr
  1 - Welder/Torch @ $ 10.90/Hr
  $ 38.15/Hr x 8 Hr = $ 305

Sub-total = $ 908

C. Haul and Dispose - On-Site Land Fill:
Building = 4,700# = 0.1 Truck Loads* @ 47,000#

- Haul = 0.1 Truck x 8 Hrs/Truck x $65.39/Hr = $ 52
- Dispose = See Appendix 6.5

* 5 Truck x $\frac{288\ Ft.^2}{11{,}550\ Ft.^2}$ = 0.1 Trucks

Sub-total = $ 52

Building Total = *$ 1,549*

5.2 Header Piping

Basis: 2000 Ft. - 1¼" Piping Buried @6 Ft.
Trench = 6 Ft. x 2 Ft. = 45 Cu. Yd./100 Ft.
Excavation = 26 Cu. Yd./Hr (Case 580 Backhoe - 24 in. Bucket)

A. Open Trenches - 5 Days:
(2000 Ft.) x ($\frac{45\ Cu.\ Yd.}{100\ Ft.}$) x ($\frac{\ Hr.\ }{26\ Cu.\ Yd.}$) = 35 Hrs

- Eq. Rental = 1 - Backhoe @ $ 27.25/Hr
  $ 27.25/Hr x 40 Hr = $1,090

B. Remove, Cut and Load - 2.5 Days:
Trenches Opened at 400 Ft/Man-Day
Piping = 2000 Ft @ 400 Ft/Man-Day = 5 Man-Days
= 2.5 Crew-Days

- Labor Crew = 1 - Foreman @ $ 21.58/Hr
  2 - Laborers @ $ 13.02/Hr
  $ 47.62/Hr x 20 Hr = $ 952
- Travel = $47.62 x 3 Days x 1 Hr/Day = $ 143
- Eq. Rental = 2 - Chainsaws @ $2.40/Hr
  $4.8/Hr x 20 Hrs = $ 96

Sub-total = $ 1,191

C. Backfill Trenches - 2 Day:
Backfill @ 2.5 Time Excavation Rate or
Backfill @ 26 $\frac{Cu.Yd.}{Hr}$ x 2.5 = 65 Cu.Yd./Hr
(2000 Ft) x (45 $\frac{Cu.Yd.}{100\ Ft}$) x ($\frac{\ Hr\ }{65\ Cu.Yd.}$) = 13.8 Hrs or 14 hours

- Eq. Rental = 1 - Backhoe @ $ 27.25/Hr
  $ 27.25/Hr x 14 Hrs = $ 382

D. Haul and Dispose - Licensed (NRC SUA #1473) Site:
11/4" Poly Pipe = 43 #/100 Ft. = 2,000 Ft. x 0.43#/Ft. = 860#

$$\text{Volume} = \frac{2{,}000 \text{ Ft} \times (43 \text{ \#}/100 \text{ Ft.})}{62.4 \frac{\text{\#}}{\text{Ft.}^3} \times 0.6} = 23 \text{ Ft.}^3$$

Total = 0.9 Cu. Yd. @ 860# = 0.02 Truck Loads @ 40,000#

- Haul = 0.02 Trucks x 800 Mile x $3.27/Mile = $ 52
- Dispose = 860# = 0.4 tons
  @ $50/ton disposal cost[14] = $ 20

Header Piping Total = *$2,735*

5.3 Secondary Electrical

Basis: Remove 2,000 ft - #10 AWG, Power Cable
Remove Pole and Motor Starters

A. Remove Tray Cable - 1 Day:
- Labor Crew = 1 - Journeyman @ $ 34.88/Hr
  1 - Helper @ $ 30.51/Hr
  $ 65.39/Hr x 8 Hr = $ 523
- Travel = $65.39/Hr x 1 Day x 2 Hr/Day = $ 131
  + $0.54/Mile x 1 Day x 120 Mile/Day = $ 65
- Eq. Rental = 1 - Truck @ $12.26/Hr
  $12.26/Hr x 8 Hr = $ 98

Sub-total = $ 817

B. Remove Motor Starters - 1 Day:
- Labor Crew = 1 - Journeyman @ $ 34.88/Hr
  1 - Helper @ $ 30.51/Hr
  $ 65.39/Hr x 8 Hr = $ 523
- Travel = $65.39/Hr x 1 Day x 2 Hr/Day = $ 131
  + $0.54/Mile x 1 Day x 120 Mile/Day = $ 65
- Eq. Rental = 1 - Truck @ $12.26/Hr
  $12.26/Hr x 8 Hr = $ 98

Sub-total = $ 817

C. Disconnect Power Cable from Pole - 0.5 Days:
- Labor Crew = 1 - Journeyman @ $ 34.88/Hr
  1 - Helper @ $ 30.51/Hr

[14] See 1997-1998 Permit to Mine 633 2nd Round Responses. Cost is provided in 1998 NRC Surety for SUA-1548, and determined acceptable by NRC and it is based on actual fees charged by Quivira Mining Co., NRC license SUA-1473

$ 65.39/Hr x 4 Hr = $ 262

- Travel = $65.39/Hr x 0.5 Day x 2 Hr/Day = $ 65
  + $0.54/Mile x 0.5 Day x 120 Mile/Day = $ 32

- Eq. Rental = 1 - Bucket Truck @ $ 37.36/Hr
  1 - Truck @ $ 12.26/Hr
  $ 49.62/Hr x 4 Hr = $ 198

Sub-total = $ 557

D. Remove Pole - 0.5 Day:

- Labor Crew = 1 - Foreman @ $ 21.58/Hr
  1 - Operator @ $ 17.71/Hr
  1 - Laborer @ $ 13.02/Hr
  $ 52.31/Hr x 4 Hr = $ 209

- Travel = $52.31/Hr x 1 Day x 1 Hr/Day = $ 52

- Eq. Rental = 1 - 20 Ton Crane @ $ 37.39/Hr
  $ 37.39/Hr x 4 Hr = $ 150

Sub-total = $ 411

E. Haul and Dispose - On-Site Land Fill:

Cable = $\frac{3.14 \times (0.5)^2 \times 2{,}000}{4 \times 144 \times 0.6}$ = 4.5 $Ft.^3$ @ 1499# (555#/$Ft.^3$ @ 40% Void)

Motor Starter =
10x$\frac{(24in. \times 10in. \times 8in.)}{1728}$ = 11.1 $Ft.^3$ @260# (@ 26# Each)

Pole = 1 Ft. Diam. x 35 Ft. = 27.5 $Ft.^3$ @ 825# (@ 30#/Ft^3)

Total = 43.1 $Ft.^3$ @ 2,585#
= 1.6 Cu. Yd. @ 2,585# = 0.06 Trucks @ 47,000#

- Haul = 0.06 Trucks x 8 Hr/Truck x $65.39/Hr = $ 31

- Dispose = See Appendix 6.5

Secondary Electrical Total = *$ 2,633*

5.4 Wells

Basis: 27 Wells per 10 Patterns
5 in. Casing, 750 Ft. TD
Pumps and Tubing Set @ 550 Ft.

A. Pull Pumps and Tubing - 2 Days:
10 Pumps @ 5 Pumps/Crew-Day = 2 Days

- Eq. Rental = 1 - Pulling Unit w/2-Man Crew @ $32.70/Hr
  $32.70/Hr x 16 Hrs = $ 523

B. Plug and Abandon - 4.5 Days:

27 Wells @ 6 Wells/Crew-Day = 4.5 Days
10 - Sack Cement/Well
800# - 'Shur-Gel'/Well

- Labor Crew = 1 - Foreman @ $ 21.58/Hr
  1 - Operator @ $ 17.71/Hr
  2 - Laborers @ $ 13.02/Hr
  $ 65.33/Hr x 36 Hrs = $ 2,352

- Travel = $65.33 x 5 Days x 1 Hr/Day = $ 327

- Eq. Rental = 1 - Backhoe @ $ 27.25/Hr
  1 - 6000# Forklift @ $ 13.12/Hr*
  2 - Skid Tanks @ $ 2.40/Hr
  $ 45.17/Hr x 36 Hrs = $ 1,626

* $1927/Month @ 160 Hr/Month x 1.899 (CPI inflator) = $13.12/Hr

- Materials - 270 - Sacks Cement @ $ 5.45/each
  21,600 - # 'Shur Gel' @ $ 16.34/100#
  $ 5,001 = $ 5,001

Sub-total = $ 9,306

C. Haul and Dispose - Licensed (NRC SUA #1473) Site:
Pumps = 10 x 5 In. Dia. x 8 Ft. Long = 10.9 $Ft.^3$
@ 850# (@ 85# Each)

Tubing = 27 x $\frac{550 \text{ Ft} \times 43\#/100 \text{ Ft.}}{62.4 \#/Ft.^3 \times 0.6}$ = 170.6 $Ft.^3$ @ 6386#

Total = 181.5 $Ft.^3$ @ 7,236#
= 6.7 Cu. Yd. @ 7,236# = 0.2 Trucks @ 40,000#

- Haul = 0.2 Truck x 800 Mile x $3.27/Mile = $ 523
- Dispose = 7,236# = 3.6 tons
  @ $50/ton disposal cost[15] = $ 180

Wells Total = *$10,532*

5.5 Monitor Wells

Basis: 3.21 Per 10 Patterns
5 in. Casing, 750 Ft. T.D.
Pumps and Tubing Set @ 550 Ft.

A. Pull Pumps and Tubing - 1 Day:
3.21 Pumps @ 5 Pumps/Crew-Day = 1 Day

- Eq. Rental = 1 - Pulling Unit w/2-Man Crew @ $ 32.70/Hr
  $ 32.70/Hr x 8 Hrs = $ 262

B. Plug and Abandon - 0.5 Days:

[15] See 1997-1998 Permit to Mine 633 2nd Round Responses. Cost is provided in 1998 NRC Surety for SUA-1548, and determined acceptable by NRC and it is based on actual fees charged by Quivira Mining Co., NRC license SUA-1473

3.21 Wells @ 6 Wells/Crew-Day = 0.5 Crew-Days
10 Sacks Cement/Well
200# 'Shur-Gel'/Well

- Labor Crew = 1 - Foreman @ $ 21.58/Hr
  1 - Operator @ $ 19.35/Hr
  2 - Laborers @ $ 13.02/Hr
  $ 66.97/Hr x 4 Hrs = $ 268

- Travel = $66.97/Hr x 1 Day x 1 Hr/Day = $ 67

- Eq. Rental = 1 - Backhoe @ $ 27.25/Hr
  1 - 6000# Forklift @ $ 13.12/Hr
  2 - Skid Tanks @ $ 2.40/Hr
  $ 45.17/Hrs x 4 Hrs = $ 181

- Materials - 32 Sacks Cement @ $ 5.45/each
  2,568 - # 'Shur Gel' @ $ 16.34/100#
  $ 594 = $ 594

Sub-total = $ 1,110

C. Haul and Dispose - Licensed (NRC SUA #1473) Site:
Pumps = 3.21 @ 5 In. Dia. x 8 Ft. Long = 3.5 $Ft.^3$ @273#
(83# Each)

Tubing = $3.21 \times \frac{550 \text{ Ft} \times 43\#/100 \text{ Ft.}}{62.4 \#/Ft.^3 \times 0.6} = 20.3 Ft.^3$ @759#

Total = 23.8 $Ft.^3$ @ 1032#
= 0.8 Cu. Yd. @ 1032# = 0.03 Truck @ 40,000#

- Haul = 0.03 Truck x 800 Mile x $3.27/Mile = $ 78

Monitor Well Total = *$ 1,450*

5.6 Site Reclamation

Basis: Revegetate 2.3 Acres (500 Ft. x 200 Ft.)
Replace 10 Cu.Yd. Topsoil (540 $Ft.^2$ x 6 In.) @ Building Pad

A. Topsoil Placement:
- 10 Cu.Yd. @ 1.09/Cu.Yd. = $ 11

B. Revegetate:

- Grade and Contour Topsoil @ $ 87.19/Acre x 2.3 Acres = $ 201
- Seedbed Prep. (Disc. + Harrow) @ $ 21.80/Acre x 2.3 Acres = $ 50
- Mulch (Drill + Seed + Mow) @ $ 49/Acre x 2.3 Acres = $ 113
- Drill Seed and Fertilize (Drill + Seed + Fertilizer) @ $163/Acre x 2.3 Acres = $ 375
- Revegetation Contingency* (All items excluding grading) @ $234/Acre x 1.15 Acres = $ 269

Sub-total	=	$ 1,019

* Assume only 50% of acreage requires reseeding

Site Reclamation Total	=	*$ 1,030*

SECTION 6
ASSOCIATED STRUCTURES RECLAMATION COSTS

Cost Summary

ITEM	COSTS ($97)
6.1 Trunkline #1 (5000 ft)	52,108
6.2 Trunkline #2 (10000 ft)	104,216
6.3 Radium Settling Ponds	70,077
6.4a P/A Disposal Well #1	77,735
6.4b P/A Disposal Well #2	77,735
6.5 Sand Mining Area	13,173
6.6 Land Fill	1,500
6.7 Fire Protection System	23,327
Total Cost	419,871

6.1 Trunkline

Basis: 2 - 16 in. Trunklines Buried @6 Ft.

Length = 5,000 Ft.
Trench = 6 Ft. x 4 Ft. = 89 Cu. Yd./100 Ft
Excavation = 150 Cu. Yd. / Hr (Cat. 225 1.25 Cu. Yd. Bucket)

A. Open Trench - 4 Days:
(5000 Ft.) x (89 Cu. Yd.) x (Hr.) = 30 Hrs - Round to 32 Hrs
100 Ft. 150 Cu. Yd.

- Eq. Rental = 1 - Cat. 225 Trackhoe @ $112.26/Hr
$112.26/Hr x 32 Hr = $ 3,592

B. Remove, Cut and Load - 18 Days:
2 - 5000 Ft Trunklines @ 140 Ft/Man-Day = 71.4 Man-Day
= 18 Crew-Day

- Labor Crew = 1 - Foreman @ $21.58/Hr
4 - Laborers @ $13.02/Hr
$73.66/Hrs x 144 Hr = $ 10,607

- Travel = $73.66/Hr x 18 Days x 1 Hr/Day = $ 1,326

- Eq. Rental = 2 - Backhoe @ $27.25/Hr
2 - Chainsaw @ $ 2.40/Hr
$59.30/Hr x 144 Hr = $ 8,539

Sub-total = $ 20,472

C. Backfill Trench - 5 Days:
Backfill @ 65 Cu.Yd./Hr Per Backhoe or
Backfill @ 130 Cu.Yd./Hr with 2 Backhoes

(5000 Ft.) x (89 Cu. Yd.) (Hr.) = 34 Hrs

100 Ft. 130 Cu. Yd.

- Eq. Rental = 2 - Backhoes @ $ 27.25/Hr
  $ 54.50/Hr x 40 Hrs = $ 2,180

D. Decontaminate - 0 Days: = $ 0

E. Haul and Dispose - Licensed (NRC SUA #1473) Site:
100% of Pipe = 2 x 5,000 Ft. x 28.27#/Ft = 282,700#

$$= \frac{282{,}700\#}{62.4\#/Ft.^3 \times 0.6} = 7551\ Ft.^3$$

Total = 279.7 Cu. Yd. @ 282,700# = 7.1 Truckloads @ 40,000#

- Haul = 7.1 Trucks x 800 Mile x $3.27/Mile = $ 18,574
- Dispose = 282,700# = 141.4 tons
  @ $50/ton disposal cost[16] = $ 7,070

F. Haul & Dispose - Land Fill: = $ 0

G. Surface Reclamation:
4 Ft. x 5000 Ft. = 20,000 Ft.^{2} = 0.5 Acres

- Grade and Contour @ $ 87.19/Acre x 0.5 Acre = $ 43
- Seedbed Prep. (Disc. + Harrow) @ $ 21.80/Acre x 0.5 Acre = $ 11
- Mulch (Drill + Seed + Mow) @ $ 49/Acre x 0.5 Acre = $ 25
- Drill Seed and Fertilize (Drill + Seed + Fertilizer)@ $163/Acre x 0.5 Acre = $ 82
- Revegetation Contingency* @ $234/Acre x 0.25 Acre = $ 59
  (All items excluding grading)

* Assume only 50% of acreage requires reseeding

Sub-total = $ 220

Trunkline Total = *$52,108*

6.2 Trunkline #2

Cost for 5000 ft line is $52,108. Truckline #2 is 10,000 ft.
@ $52,108 x 2 = $104,216

6.3 Radium Settling Ponds

[16] See 1997-1998 Permit to Mine 633 2nd Round Responses. Cost is provided in 1998 NRC Surety for SUA-1548, and determined acceptable by NRC and it is based on actual fees charged by Quivira Mining Co., NRC license SUA-1473

Basis: 2 Ponds
9 Ft. Deep Below Grade plus 3 Ft. Freeboard Above Grade
Bottom = 180 Ft. x 360 Ft. (Per Pond)
Top = 252 Ft. x 432 Ft. (Per Pond)
Liner = 106,000 Ft^2 x 30 MIL (Per Pond)
Solids = 200 $Ft.^3$/Yr (Both Ponds)

A. Remove Solids and Liner - 8 Days:

Liner = 2 Ponds x 106,000 $Ft.^2$ x 0.03 In/12 = 530 $Ft.^3$
= 33,072# @ 62.4#/Ft^3
= 883 Ft^3 @ 40% Voids

Solids = 200 ft3/yr = 200 $Ft.^3$/Yr Yr #1 - 1998
= 800 $Ft.^3$ In Yr #5 - 2002

Remove @ 55 Gal/Man-Hr or 60 Ft^3/Man-Day

Yr #5 = 1683 Ft^3 @ 60 Ft^3/Man-Day = 28 Man-Days
= 7 Crew-Days

- Labor Crew = 1 - Foreman @ $21.58/Hr
4 - Laborers @ $13.02/Hr
$73.66/Hr x 56 Hrs = $ 4,125

- Travel = $73.66/Hr x 7 Days x 1 Hr/Day = $ 516

- Eq. Rental = 2 - Backhoes @ $27.25/Hr
$54.50/Hr x 56 Hr = $ 3,052

Sub-total = $ 7,693

B. Backfill Ponds - 27 Days:

Volume @ Grade = 180 Ft x 360 Ft x 9 Ft = 583,200 Ft^3
+ 27 Ft x 180 Ft x 9 Ft = 43,740 Ft^3
+ 27 fT X 360 fT X 9 Ft = 87,480 Ft^3
714,420 Ft^3 (Per Pond)

Total Volume = 714,420 Ft^3/Pond x 2 Ponds = 1,428,840 Ft^3 = 52,920 Cu.Yd.

Backfill @ 250 Cu.Yd./Hr = 212 Hrs

- Eq. Rental = 1 - D8N Dozer @ $117.71/Hr
1- Grader @ $ 65.39/Hr
$183.10/Hr x 212 Hr = $ 38,817

C. Replace 6 In. Topsoil:

2 Ponds x 0.5 Ft. x 252 Ft. x 432 Ft. = 108,864 $Ft.^3$ = 4032 Cu. Yd.

- Topsoil = 4032 Cu. Yd x $1.09/Cu. Yd. = $ 4,395

D. Revegetate:

2 Ponds x 252 Ft. x 432 Ft. = 217,728 $Ft.^2$ = 5 Acres

- Grade and Contour @ $ 87.19/Acre x 5 Acre = $ 436

- Seedbed Prep.
  (Disc. + Harrow) @ $ 21.80/Acre x 5 Acre = $ 109

- Mulch (Drill + Seed + Mow) @ $ 49/Acre x 5 Acre = $ 245

- Drill Seed and Fertilize
  (Drill + Seed + Fertilizer)@ $163/Acre x 5 Acre = $ 817

- Revegetation Contingency* @ $234/Acre x 2.5 Acre = $ 585
  (All items excluding grading)

Assume only 50% of acreage requires reseeding

Sub-total = $ 2,192

E. Haul and Dispose - Licensed (NRC SUA #1473) Site:

Solids = 800 $Ft.^3$ @ 154,400# (60% @ 280#/$Ft.^3$ + 40% @ 62.4#/$Ft.^3$ = 193#/Ft^3)
Liner = 883 $Ft.^3$ @ 33,072# (62.4#/$Ft.^3$ @ 40% Voids)
Total = 1683 $Ft.^3$ @ 187,472#
62.3 Cu. Yd. @ 187,472# = 4.7 Truckloads @ 40,000#

- Haul = 4.7 Trucks x 800 Mile x $3.27/Mile = $ 12,295
- Dispose = 187,472# = 93.7 tons
  @ $50/ton disposal cost[17] = $ 4,685

Radium Settling Pond Total = *$ 70,077*

6.4a Plugging and Abandoning Deep Disposal Well #1

Oilfield Workover Unit, 6 Days @ $1,634.85/Day	=	$ 9,809
Circulating Pump & Tank, 2 Days @ $545/Day	=	$ 1,090
Power Swivel, 1 Day @ $436/Day	=	$ 436
Water Hauling & Water, 3 Days @ $354/Day	=	$ 1,062
Frac Tank Rental	=	$ 109
Slickline Services, 2 Days @ $599/Day	=	$ 1,198
2 - 7/8 Inch "R" Nipple	=	$ 1,417
Mud Materials	=	$ 545
2 - 7/8 Inch Tubing Rental, 8610' @ $0.54/Ft-Day	=	$ 2,325
Rental Tubing Inspection, 278 Jnts @ $10.90/Jnt	=	$ 3,030
Cement & Services, 3 Squeeze Jobs @ 4374 each	=	$ 13,122
Squeeze Manifold, Retainer, Swivel, Setting Tool @ $1,820/Squeeze Job	=	$ 5,460
Cement & Services, 2 Stabilizers & Surface Plugs	=	$ 4,711
Welder, Dirtwork & Roustabouts	=	$ 13,624
Trucking	=	$ 2,725
Supervision, 8 Days @ $545/Day	=	$ 4,360
Miscellaneous, Contingencies, & Sales Tax (10% Above)	=	$ 6,502
Sub-Total	=	$ 71,525
Year 1991 &1992 CPI Escalation	=	$ 6,210

[17] See 1997-1998 Permit to Mine 633 2nd Round Responses. Cost is provided in 1998 NRC Surety for SUA-1548, and determined acceptable by NRC and it is based on actual fees charged by Quivira Mining Co., NRC license SUA-1473

Sub-Total ($1997)	=	$ 77,735
Plug and Abandoning Disposal Well	=	*$ 77,735*

6.4b Plugging and Abandoning Deep Disposal Well #2

Oilfield Workover Unit, 6 Days @ $1,634.85/Day	=	$ 9,809
Circulating Pump & Tank, 2 Days @ $545/Day	=	$ 1,090
Power Swivel, 1 Day @ $436/Day	=	$ 436
Water Hauling & Water, 3 Days @ $354/Day	=	$ 1,062
Frac Tank Rental	=	$ 109
Slickline Services, 2 Days @ $599/Day	=	$ 1,198
2 - 7/8 Inch "R" Nipple	=	$ 1,417
Mud Materials	=	$ 545
2 - 7/8 Inch Tubing Rental, 8610' @ $0.54/Ft-Day	=	$ 2,325
Rental Tubing Inspection, 278 Jnts @ $10.90/Jnt	=	$ 3,030
Cement & Services, 3 Squeeze Jobs @ 4374 each	=	$ 13,122
Squeeze Manifold, Retainer, Swivel, Setting Tool @ $1,820/Squeeze Job	=	$ 5,460
Cement & Services, 2 Stabilizers & Surface Plugs	=	$ 4,711
Welder, Dirtwork & Roustabouts	=	$ 13,624
Trucking	=	$ 2,725
Supervision, 8 Days @ $545/Day	=	$ 4,360
Miscellaneous, Contingencies, & Sales Tax (10% Above)	=	$ 6,502
Sub-Total	=	$ 71,525
Year 1991 &1992 CPI Escalation	=	$ 6,210
Sub-Total ($1997)	=	$ 77,735
Plug and Abandoning Disposal Well	=	*$ 77,735*

6.5 Reclamation of Sand Mining Area

10 acres of disturbed area on sand outcrop

Grade and contour @ $ 87.19/acre x 10 Acre	=	$ 872
Replace 6 inch topsoil = 217,800 ft.^{3} = 8,067 Cu.Yd. topsoil = $1.09/Cu.Yd.	=	$ 8,793
Seedbed Prep. (Disc. + Harrow) @ $ 21.80/acre x 10 Acre	=	$ 218
Mulch (Drill + Seed + Mow) @ $ 49/acre x 10 Acre	=	$ 490
Drill Seed and Fertilizer @ $163/acre x 10 Acre	=	$ 1,630
Revegetation Contingency* (All items excluding grading) @ $234/acre x 5 Acre	=	$ 1,170

Assume only 50% of acreage requires reseeding

Sand Mining Area Total	=	*$ 13,173*

6.6 Land Fill

Basis: Depth = 6 Ft. total with 4 Ft. active strg. plus 2 ft. cover.
Bottom = 30 Ft. x 70 Ft. = 2,100 $Ft.^2$
Top = 54 Ft. x 94 Ft. = 5,076 $Ft.^2$
Grade = 66 Ft. x 106 Ft. = 6,996 $Ft.^2$

4 Ft. Active Strg. Volume = 30 Ft. x 70 Ft. x 4 Ft. = 8,400 $Ft.^3$
+ 12 Ft. x 30 Ft. x 4 Ft = 1,440 $Ft.^3$
+ 12 Ft. x 70 Ft. x 4 Ft. = 3,360 $Ft.^3$
13,200 $Ft.^3$

2 Ft. Cover Volume = 54 Ft. x 94 Ft. x 2 Ft. = 10,152 $Ft.^3$
+ 6 Ft. x 54 Ft. x 2 Ft. = 648 $Ft.^3$
+ 6 Ft. x 94 Ft. x 2 Ft. = 1,128 $Ft.^3$
11,928 $Ft.^3$

Total Volume = 13,200 $Ft.^3$ + 11,928 $Ft.^3$ = 25,120 $Ft.^3$ = 931 Cu.Yd.

A. Open Pit - 1 Day:

Productivity = 167 $\frac{\text{Cu.Yd.}}{\text{Hr}}$ (Cat. 627E Scraper)

(931 Cu. Yd.) x ($\frac{\text{Hr}}{167 \text{ Cu.Yd.}}$) = 5.6 Hrs round to 6 Hrs

• Eq. Rental = 1 - Cat. 627E Scraper @ $121/Hr
$121/Hr x 6 Hrs = $ 726

B. Backfill Non-Contaminated Material - 1 Day:

Basis: See Table 6.1
Yr. 5 Total Volume = 8448 $Ft.^3$ = 312.9 Cu.Yd.

Backfill @ 65 Cu.Yd./Hr. = 4.8 Hrs. round to 5 Hrs

• Eq. Rental = 1 - Backhoe @ $27.25/Hr
$27.25/Hr x 8 Hrs = $ 218

C. Backfill to Grade - 2 Days:

Voids = 312.9 Cu.Yd. x 0.4 = 125 Cu.Yd.

Remainder of Active Strg. = 13,200 $Ft.^3$ - 8,203 $Ft.^3$
= 5,103 $Ft.^3$ = 189 Cu.Yd.

Cover = 11,928 $Ft.^3$ = 442 Cu.Yd.
Total = 756 Cu.Yd.

Backfill @ 65 Cu.Yd./Hr = 11.6 Hrs round to 12 Hrs

• Eq. Rental = 1 - Backhoe @ $27.25/Hr
$27.25/Hr x 12 Hrs = $ 327

D. Surface Reclamation:

Basis: 6996 $Ft.^2$ = 0.2 Acre

Replace 6 in. Topsoil = 6996 $Ft.^2$ x 0.5 Ft. = 3498 Ft^3 = 130 Cu.Yd.

• Topsoil Placement @ 1.09/Cu.Yd.	=	$ 142
• Grade and Contour @ $87.19/Acre x 0.2 Acre	=	$ 17
• Seedbed Prep. (Disc. + Harrow) @ $21.80/Acre x 0.2 Acre	=	$ 4
• Mulch (Drill + Seed + Mow) @ $49/Acre x 0.2 Acre	=	$ 10
• Drill Seed & Fertilize @ $163/Acre x 0.2 Acre	=	$ 33
• Revegetation Contingency* @ $234/Acre x 0.1 Acre (All items excluding grading)	=	$ 23

* Assume only 50% of acreage requires reseeding.

Sub-total	=	$ 229
Land Fill Total	=	*$ 1,500*

6.7 Fire Protection System

6.7.1 FIRE MAIN

Basis: 1 - 8 in. Fire Main Buried @6 Ft.

Length = 2,500 Ft.
Trench = 6 Ft. x 4 Ft. = 89 Cu. Yd./100 Ft
Excavation = 150 Cu. Yd./Hr (Cat. 225 1.25 Cu. Yd. Bucket)

A. Open Trench - 2 Days:

(2,500 Ft.) x (89 Cu. Yd. / 100 Ft.) x (Hr. / 150 Cu. Yd.) = 15 Hrs - Round to 16 Hrs

• Eq. Rental = 1 - Cat. 225 Trackhoe @ $103/Hr
$103/Hr x 16 Hr = $ 1,648

B. Remove, Cut and Load - 5 Days:

1 - 2,500 Ft Fire Main @ 140 Ft/Man-Day = 179 Man-Day
= 5 Crew-Day

• Labor Crew = 1 - Foreman @ $19.80/Hr
4 - Laborers @ $11.95/Hr
$67.60/Hrs x 32 Hr = $ 2,163

• Travel = $67.60/Hr x 15 Days x 1 Hr/Day = $ 338

- Eq. Rental = 2 - Backhoe @ $25.00/Hr
  2 - Chainsaw @ $ 2.20/Hr
  $54.40/Hr x 32 Hr = $ 1,741

$5,890

C. Backfill Trench - 5 Days:
Backfill @ 65 Cu.Yd./Hr Per Backhoe or
Backfill @ 130 Cu.Yd./Hr with 2 Backhoes

(2,500 Ft.) x (89 Cu. Yd.) (Hr.) = 17 Hrs - Round to 24 Hrs
100 Ft. 130 Cu. Yd.

- Eq. Rental = 2 - Backhoes @ $ 25/Hr
  $ 50/Hr x 24 Hrs = $ 1,200

D. Decontaminate - 0 Days: = $ 0

E. Haul & Dispose - Land Fill:

Pipe = 2,500 Ft. 8" SDR-11 @ 8.42 #/Ft.

$$\frac{(2{,}500\ \text{Ft})(8.42\ \#/\text{Ft})}{(62.4\ \#/\text{Ft}^3)(0.955)(0.6)} = 588\ \text{Ft.}^3 @ 21{,}050\#$$

Total = 588 Ft.^{3} @ 21,050 #
= 21 CY @ 21,050 #

- Haul 1 Truck x $\frac{8\ \text{Hr.}}{\text{Truck}}$ x $\frac{\$60}{\text{Hr}}$ = $480

- Dispose - See Appendix 6.5

F. Surface Reclamation:
4 Ft. x 2,500 Ft. = 10,000 Ft.^{2} = 0.3 Acres

- Grade and Contour @ $ 80/Acre x 0.3 Acre = $ 24
- Seedbed Prep. (Disc. + Harrow) @ $ 20/Acre x 0.3 Acre = $ 6
- Mulch (Drill + Seed + Mow) @ $ 45/Acre x 0.3 Acre = $ 13.5
- Drill Seed and Fertilize (Drill + Seed + Fertilizer) @ $150/Acre x 0.3 Acre = $ 45
- Revegetation Contingency* @ $215/Acre x 0.15 Acre = $ 32
  (All items excluding grading) $ 121

* Assume only 50% of acreage requires reseeding

Trunkline Sub-Total (End of Year - 1992$) $ 9,339

1997 CPI Escalation = 14.4% $ 1,344
Trunkline Total (End of Year - 1993$) $10,683

6.7.2 TANKAGE AND VESSELS

Basis: 32 Ft. Dia. x 26 Ft. x ⌖" steel - 4,222 Ft.2 x ⌖" = 88 $Ft.^3$ with no voids
= 42,876 lbs
= 147 $Ft.^3$ with 40% voids

A. Decontaminate - 0 Days: = $ 0

B. Remove and Load - 5 Days:
- Labor Crew = 1 - Foreman @ $ 19.80/Hr*
  1 - Operator @ $ 16.25/Hr
  2 - Laborers @ $ 11.95/Hr
  $ 59.95/Hr x 40 Hr = $ 2,298
- Travel = $59.95/Hr x 5 Days x 1 Hr/Day = $ 300
- Eq. Rental = 1 - 20 Ton Crane @ $ 34.31/Hr
  $ 34.31/Hr x 40 Hrs = $ 1,372

$ 3,970

C. Dismantle, Cut, or Crush - 5 Days:
Cut Steel @ 30 Ft^3/Man-Day @ 147 Ft^3 = 5 Crew-Days
Crush FRP @ 60 Ft^3/Man-Day @ 111.4 Ft^3 = 0 Crew-Days

- Labor Crew = 1 - Foreman @ $ *
  1 - Welder @ $ 17.75/Hr
  2 - Laborers @ $ 11.95/Hr
  $ 41.65/Hr x 40 Hrs = $ 1,666

* Foreman supervises both 2.2 B. & 2.2 C.

- Travel = $41.65/Hr x 5 Days x 1 Hr/Day = $ 208
- Eq. Rental = 1 - D8N Dozer @ $0/Hr
  1 - Welder/ Torch @ $ 10/Hr
  $ 10/Hr x 40 Hrs = $ 400

$ 2,274

D. Haul and Dispose - On-Site Land Fill:
100% of Non-Contaminated Service = 147 Ft^3 @ 42,976#
Total = 5.4 Cu.Yd. @ 42,976# = 1 Truckloads @ 47,000#

- Haul = 1 Truck x 8 Hrs/Truck x $60/Hr = $ 480
- Dispose = See Appendix 6.5 $ 480

Tankage & Vessels Sub-Total (End of Year - 1992$) $ 6,724
1997 CPI Escalation = 14.4% $ 968
Tankage & Vessels Total (End of Year - 1997$) = $ 7,692

6.7.3 PUMPS

A. Removal and Loading - 2 Days:
2 Pumps/Man-Day @ 2 Pumps = 1 Man-Day
= 1 Crew-Day

- Labor Crew = 1 - Foreman @ $19.80/Hr
1 - Operator @ $16.25/Hr
2 - Laborers @ $11.95/Hr
$59.95/Hr x 8 Hr =$ 480

- Travel = $59.95/Hr x 1 Days x 1 Hr/Day =$ 60

- Eq. Rental = 1 - 20 Ton Crane @ $34.31/Hr
$34.31/Hr x 8 Hr = $ 274
$ 814

B. Haul and Dispose - On-Site Land Fill:
100% Non-Contaminated = 121 $Ft.^3$ @ 2670#
Total = 4.5 Cu. Yd. @ 2670# = 0.1 Truck Load @ 47,000#

- Haul = 0.1 Truck x 8 Hrs/Truck x $60/Hr = $ 48
- Dispose = See Appendix 6.5 $ 48

Pumps Sub-Total (End of Year - 1992$) $ 862
1997 CPI Escalation = 14.4% $ 124
Pumps Total (End of Year - 1997$) $ 986

6.7.4 BUILDING

Basis: 12 Ft. x 40 Ft. with 8 Ft. Eave
Floor Area = 480 Ft^2
Skin Area = 832 Ft^2

A. Dismantle and Load - 1 Day:
Dismantle and Load @ 100 Ft^2/Man-Day
480 Ft^2 @ 100 Ft^2/Man-Day = 4.8 Man-Day
= 2 Crew-Day

• Labor Crew =	1	-	Foreman	@	$ 19.80/Hr	
	1	-	Welders	@	$ 17.75/Hr	
	2	-	Laborers	@	$ 11.95/Hr	
					$ 61.45/Hr x 16 Hr =	$ 983
• Travel = $61.45/Hr x 1 Day x 1 Hr/Day					=	$ 123
• Eq. Rental =	1	-	Backhoe	@	$ 25/Hr	
	1	-	Welder/ Torch	@	$ 10/Hr	
					$ 35/Hr x 16 Hr =	$ 560
						$1,666

B. Haul and Dispose - On-Site Land Fill:
Building = 9,400# = 0.2 Truck Loads* @ 47,000#

• Haul = 0.2 Truck x 8 Hrs/Truck x $60/Hr	=	$ 96
• Dispose = See Appendix 6.5		$ 96

* 5 Truck x $\frac{288 \text{ Ft.}^2}{11{,}550 \text{ Ft.}^2}$ = 0.1 Trucks

Building Sub-Total (End of Year - 1992$)	$ 1,762
1997 CPI Escalation = 14.4%	$ 254
Building Total (End of Year - 1997$)	$ 2,016

6.7.5 SECONDARY ELECTRICAL

Basis: Remove Pole and Motor Starters

A. Remove Motor Starters - 1 Day:

• Labor Crew = 1	-	Journeyman	@	$ 32/Hr		
	1	-	Helper	@	$ 28/Hr	
					$ 60/Hr x 8 Hr =	$ 480
• Travel = $60/Hr x 1 Day x 2 Hr/Day					=	$ 120
+ $0.5/Mile x 1 Day x 120 Mile/Day					=	$ 60
• Eq. Rental = 1 - Truck			@	$11.25/Hr		
					$11.25/Hr x 8 Hr =	$ 90
						$ 750

B. Disconnect Power Cable from Pole - 0.5 Days:

• Labor Crew = 1	-	Journeyman	@	$ 32/Hr		
	1	-	Helper	@	$ 28/Hr	
					$ 60/Hr x 4 Hr =	$ 240
• Travel = $60/Hr x 0.5 Day x 2 Hr/Day					=	$ 60
+ $0.5/Mile x 0.5 Day x 120 Mile/Day					=	$ 30

- Eq. Rental = 1 - Bucket Truck @ $ 34.31/Hr
  1 - Truck @ $ 11.25/Hr
  $ 45.56/Hr x 4 Hr = $ 182
  $ 512

C. Remove Pole - 0.5 Day:

- Labor Crew = 1 - Foreman @ $ 19.80/Hr
  1 - Operator @ $ 16.25/Hr
  1 - Laborer @ $ 11.95/Hr
  $ 48.00/Hr x 4 Hr = $ 192

- Travel = $48.00/Hr x 1 Day x 1 Hr/Day = $ 48

- Eq. Rental = 1 - 20 Ton Crane @ $ 34.31/Hr
  $ 34.31/Hr x 4 Hr = $ 137
  $ 377

D. Haul and Dispose - On-Site Land Fill:

Motor Starter =

$$\frac{(90\text{in.} \times 40\text{in.} \times 20\text{in.}) = 42}{1728} \text{ Ft.}^3 \text{ @500\#}$$

Pole = 1 Ft. Diam. x 35 Ft. = 27.5 $Ft.^3$ @ 825# (@ 30#/Ft^3)

Total = 69.5 $Ft.^3$ @ 1,325#
= 1.6 Cu. Yd. @ 1,325# = 0.03 Trucks @ 47,000#

- Haul = 0.03 Trucks x 8 Hr/Truck x $60/Hr = $ 14
- Dispose = See Appendix 6.5 $ 14

Electrical Sub-Total (End of Year - 1992$) $ 1,653
1997 CPI Escalation = 14.4% $ 238
Electrical Total (End of Year - 1997$) $ 1,891

6.7.6 SITE RECLAMATION

Basis: Replace 10 Cu.Yd. Topsoil (540 $Ft.^2$ x 6 In.) @ Building Pad

A. Topsoil Placement:

- 10 Cu.Yd. @ 1.00/Cu.Yd. = $ 10

B. Revegetate:

• Grade and Contour Topsoil	@ $ 80/Acre x 0.1 Acres	=	$ 8
• Seedbed Prep. (Disc. + Harrow)	@ $ 20/Acre x 0.1 Acres	=	$ 2
• Mulch (Drill + Seed + Mow)	@ $ 45/Acre x 0.1 Acres	=	$ 5
• Drill Seed and Fertilize (Drill + Seed + Fertilizer)	@ $150/Acre x 0.1 Acres	=	$ 15
• Revegetation Contingency* (All items excluding grading)	@ $215/Acre x 0.05 Acres	=	$ 11
			$ 41

* Assume only 50% of acreage requires reseeding

Site Reclamation Sub-Total (End of Year - 1992$)	$ 51
1997 CPI Escalation = 14.4%	$ 7
Site Reclamation Total (End of Year - 1997$)	$ 59
TOTAL Reclamation Cost (1997$)	$23,327

TABLE 6.1
Non-Contaminated Disposal Volume

SOURCE	UNIT WEIGHT (#)	UNIT VOLUME ($Ft.^3$)	YR. #1 1998 ($Ft.^3$)	YR. #5 2003 ($Ft.^3$)
1. IX Plant:				
A. Building	235,000	801.6*	801.6	1,603.2
B. Tankage & Vessels	2,320	36.5	0	73.0
C. Piping	0	0	0	0
D. Pumps	8,545	71.9	0	43.8
E. Electrical	22,950	165.1	0	30.2
			801.6	2,150.2
2. Central Processing Plant:				
A. Building	376,000	1,282.6*	0	1,282.6
B. Tankage & Vessels	45,010	393.2	0	393.2
C. Piping	0	0	0	0
D. Pumps	10,723	106.5	0	106.5
E. Electrical	45,800	330.6	0	330.6
			0	2,112.9
3. Dryer Area:				
A. Building	0	0	0	0

B. Equipment	4,400	15.0	0	15.0
4. Existing Facilities:				
A. Building	676,800	2,308.6	2,308.6	2,308.6
B. Structures	0	0	0	0
C. Pilot Plant Equip.	16,230	145.3	145.3	145.3
			2,453.9	2,453.9
5. Header Site & Associated Wellfield:				
A. Building	4,700	16.0*	0	742.4
B. Header Piping	0	0	0	0
C. Secondary Elect.	2,585	43.1	0	1,999.8
D. Wells - Total	0	0	0	0
E. Mon. Wells - Total	0	0	0	0
			0	2,742.2
6. Associated Structures				
A. Storage Tank				
B. Pump				
C. Pump House				
D. Piping				
TOTAL			3,255.5	9,474.2

*Building Unit Volume = $\frac{\text{Unit Weight}}{62.4 \times 7.83 \times 0.6}$

SECTION 7

GROUNDWATER RESTORATION COSTS

Cost Summary

ITEM	COSTS ($97)
7.1 Groundwater Restoration	$3,647,261
Total Cost	$3,647,261

7.1 Groundwater Restoration Costs

Basis: Table 7.1, Table 7.2 & Table 7.3, 7.4 and 7.5 - Groundwater Restoration Basis

Table 7.1

Affected Pore Volume Estimate

Wellfield	Number of Perimeter Injection Wells	Measured Pattern Area (ft^2)	Perimeter Inj Wells per Unit Area	Number of Patterns	Average Open Interval (ft)	Effective Porosity	Flare Factor from Fig 7-1	Pattern Affected Pore Volume (gal/ pattern)	Wellfield Affected Pore Volume (gallons)
1	170	1115229	1.52E-004	116	18	0.27	1.7	594,146	68,920,890
3	147	1622462	9.06E-005	162	20	0.27	1.5	606,801	98,301,728
4	163	1334798	1.22E-004	128	18	0.27	1.5	568,636	72,785,467
4A	142	1050576	1.35E-004	101	18	0.27	1.5	567,199	57,287,069

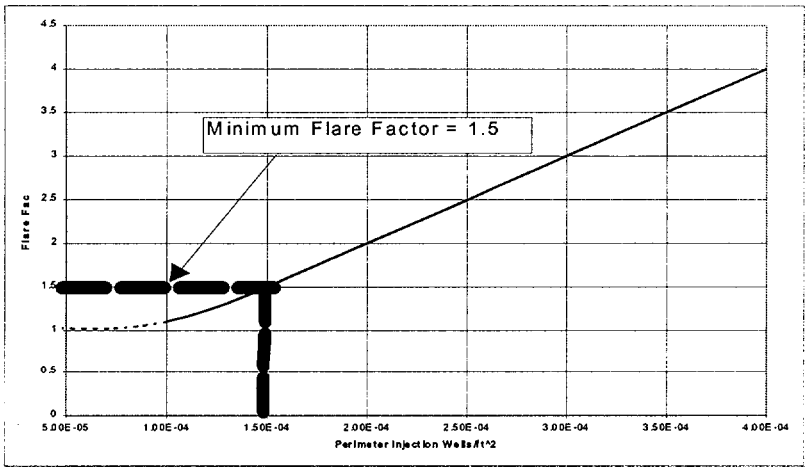

Figure 7-1. Predicted wellfield flare factor for RAMC commercial wellfields, as a function of wellfield scale

Methodology for Flare Factor Determination

Figure 7-1 is derived from Figure 3-16 in *"Evaluation and Simulation of Wellfield Restoration at the RAMC Smith Ranch Facility"* dated October 29, 1999. This document was submitted to the Wyoming DEQ - Land Quality Division with a letter dated December 13, 1999 for review. In that document, RAMC proposes a methodology developed through hydraulic and geochemical modeling that uses the geometry of the wellfield to estimate a Flare Factor. In this case, the number of perimeter injection wells are counted, the surface area of the wellfield pattern is measured using a CAD based map, a ratio is developed of the # of perimeter injection wells to the surface area of the wellfield patterns. That ratio is located on the horizontal axis of figure 7-1 (above). From that intercept, a vertical line is projected to intersect the curve. At that intersection, a horizontal line is projected to intercept the vertical axis. The estimated flare factor is derived from that intercept.

On May 11, 2000, RAMC met with LQD to discuss the review of the document and RAMC's proposed approach for estimating groundwater restoration costs. RAMC verified that the curve shown on Figure 7-1 had been validated using modeling for flare factors of 1.5 and higher, but it had not been verified for Flare

Table 7.2
SMITH RANCH PROJECT
Mining Unit Groundwater Restoration Costs
Wellfield #1

1 APV = 68,920,890 gallons

RESTORATION COST COMPONENT			Total Gallons Treated	Operating Flow Rate GPM	Total Cost	Number of Days
1. Wellfield Pumping Costs						
a)	Groundwater Sweep (no reinjection) (3 APV)	($0.118/1,000 gal.)	206,762,670	1015	$24,398	141
b)	Chemical Reductant Injection (95% reinjection) (1 APV)	($0.232/1,000 gal.)	68,920,890	1015	$15,990	47
c)	RO/EDR Treatment (75% reinjection) (2 APV)	($0.201/1,000 gal.)	137,841,780	1000	$27,706	96
SUBTOTAL					$68,094	284
2. Chemical Treatment Power Costs						
a)	Reverse Osmosis Unit	$1.33/gpm/day ($0.92/1,000 gal.)	137,841,780	1000	$126,814	
SUBTOTAL					$160,930	
3. Chemicals						
a)	Waste Water Treatment (BaCl2, Resin Elut. Chem)			600	$50,342	284
	BaCl2 @ $9.00/gpm/month, Elution					
	@$400/elution, Waste Water @ 2 mg/L U3O8	Elution Costs (5.2 Elutions/year * $400/ Elution)			$1,620	
	500 ft3 resin, 2 lb./ft3 loading,					
	Annualized Waste Water Flow; 600 gpm					
	1 elution every 69 days or 5.2 elutions per year					
b)	Chemical Reductant (H2S or alternative)	$1.80/gpm/day ($1.25/1,000 gal.)	68,920,890	1015	$86,151	
c)	RO Chemicals (H2SO4, Antiscalents, Oxygen Scavenger)	$0.57/gpm/day ($0.40/1,000 gal.)	137,841,780	1000	$55,137	
SUBTOTAL					$141,288	
4. Repairs and Maintenance						
a)	Wellfield and Waste Water Treatment	$10,000/mo	9.3	months	$93,227	
b)	RO and process equipment	$5,000/mo	9.3	months	$46,613	
SUBTOTAL					$139,840	
5. Labor						
Supervisor @ $20.00 per hour			9.3	months	$29,833	
4 Operators @ $13.00 per hour			9.3	months	$77,565	
2 Maintenance @ $13.00 per hour			9.3	months	$38,782	
SUBTOTAL					$146,179	
6. Contract Laboratory Analysis						
70 Monitor Wells (140 UCL samples per year @$100)			0.8		$10,876	
Stabilization Samples						
10 Wells	- 3 complete Assays @$350				10,500	
	- 9 abbreviated assays @ $250				22,500	
SUBTOTAL					$43,876	
7. Operating Expenses						
Supplies	@$3,000/mo		9.3		27,968	
Heating	@$5,000/mo		4.7		23,307	
Vehicle Fuel	@$1,000/mo		9.3		9,323	
Office Utilities	@$1,000/mo		9.3		9,323	
SUBTOTAL					$69,920	
TOTAL OPERATING COST TO RESTORE GROUNDWATER AT FULL PRODUCTION (Nominal Mine Unit)					$770,127	(1993$)
UNIT RESTORATION OPERATING COST				116 Patterns	$6,639	/Pattern
	1993 -1997 inflation (CPI-U) = 160.6/143.6 =	11.84%			$91,171	
				Total	$861,298	(1997$)

Table 7.3
SMITH RANCH PROJECT
Mining Unit Groundwater Restoration Costs
Wellfield #3

1 APV = 98301728 gallons

	RESTORATION COST COMPONENT			Total Gallons Treated	Operating Flow Rate GPM	Total Cost	Number of Days
1.	Wellfield Pumping Costs						
	a)	Groundwater Sweep (no reinjection) (3 APV)	($0.118/1,000 gal.)	294,905,183	1015	$34,799	202
	b)	Chemical Reductant Injection (95% reinjection) (1 APV)	($0.232/1,000 gal.)	98,301,728	1015	$22,806	67
	c)	RO/EDR Treatment (75% reinjection) (2 APV)	($0.201/1,000 gal.)	196,603,455	1000	$39,517	137
	SUBTOTAL					$97,122	406
2.	Chemical Treatment Power Costs						
	a)	Reverse Osmosis Unit	$1.33/gpm/day ($0.92/1,000 gal.)	196,603,455	1000	$180,875	
	SUBTOTAL					$160,930	
3.	Chemicals						
	a)	Waste Water Treatment (BaCl2, Resin Elut. Chem)			600	$71,803	406
		BaCl2 @ $9.00/gpm/month, Elution					
		@$400/elution, Waste Water @ 2 mg/L U3O8	Elution Costs (5.2 Elutions/year * $400/ Elution)			$2,311	
		500 ft3 resin, 2 lb./ft3 loading,					
		Annualized Waste Water Flow; 600 gpm					
		1 elution every 69 days or 5.2 elutions per year					
	b)	Chemical Reductant (H2S or alternative)	$1.80/gpm/day ($1.25/1,000 gal.)	98,301,728	1015	$122,877	
	c)	RO Chemicals (H2SO4, Antiscalents, Oxygen Scavenger)	$0.57/gpm/day ($0.40/1,000 gal.)	196,603,455	1000	$78,641	
	SUBTOTAL					$201,519	
4.	Repairs and Maintenance						
	a)	Wellfield and Waste Water Treatment	$10,000/mo	13.3	months	$132,969	
	b)	RO and process equipment	$5,000/mo	13.3	months	$66,484	
	SUBTOTAL					$199,453	
5.	Labor						
	Supervisor @ $20.00 per hour			13.3	months	$42,550	
	4 Operators @ $13.00 per hour			13.3	months	$110,630	
	2 Maintenance @ $13.00 per hour			13.3	months	$55,315	
	SUBTOTAL					$208,495	
6.	Contract Laboratory Analysis						
	70 Monitor Wells (140 UCL samples per year @$100)			1.1		$15,513	
	Stabilization Samples						
	10 Wells	- 3 complete Assays @$350				10,500	
		- 9 abbreviated assays @ $250				22,500	
	SUBTOTAL					$48,513	
7.	Operating Expenses						
	Supplies	@$3,000/mo		13.3		39,891	
	Heating	@$5,000/mo		6.6		33,242	
	Vehicle Fuel	@$1,000/mo		13.3		13,297	
	Office Utilities	@$1,000/mo		13.3		13,297	
	SUBTOTAL					$99,727	
	TOTAL OPERATING COST TO RESTORE GROUNDWATER AT FULL PRODUCTION (Nominal Mine Unit)					$1,015,759	(1993$)
	UNIT RESTORATION OPERATING COST			162	Patterns	$6,270	/Pattern
		1993 -1997 inflation (CPI-U) = 160.6/143.6 =	11.84%			$120,250	
					Total	$1,136,009	(1997$)

Table 7.4

SMITH RANCH PROJECT

Mining Unit Groundwater Restoration Costs

Wellfield #4

1 APV = 72,785,467 gallons

RESTORATION COST COMPONENT			Total Gallons Treated	perating low Rat GPM	Total Cost	Number of Days
1. Wellfield Pumping Costs						
a)	Groundwater Sweep (no reinjection) (3 APV)	($0.118/1,000 gal.)	218,356,401	1015	$25,766	149
b)	Chemical Reductant Injection (95% reinjection) (1 APV)	($0.232/1,000 gal.)	72,785,467	1015	$16,886	50
c)	RO/EDR Treatment (75% reinjection) (2 APV)	($0.201/1,000 gal.)	145,570,934	1000	$29,260	101
SUBTOTAL					$71,912	300
2. Chemical Treatment Power Costs						
a)	Reverse Osmosis Unit	$1.33/gpm/day ($0.92/1,000 gal.)	145,570,934	1000	$133,925	
SUBTOTAL					$160,930	
3. Chemicals						
a)	Waste Water Treatment (BaCl2, Resin Elut. Chem)			600	$53,165	300
	BaCl2 @ $9.00/gpm/month, Elution					
	@$400/elution, Waste Water @ 2 mg/L U3O8	Elution Costs (5.2 Elutions/year * $400/ Elution)			$1,711	
	500 ft3 resin, 2 lb./ft3 loading,					
	Annualized Waste Water Flow; 600 gpm					
	1 elution every 69 days or 5.2 elutions per year					
b)	Chemical Reductant (H2S or alternative)	$1.80/gpm/day ($1.25/1,000 gal.)	72,785,467	1015	$90,982	
c)	RO Chemicals (H2SO4, Antiscalents, Oxygen Scavenger)	$0.57/gpm/day ($0.40/1,000 gal.)	145,570,934	1000	$58,228	
SUBTOTAL					$149,210	
4. Repairs and Maintenance						
a)	Wellfield and Waste Water Treatment	$10,000/mo	9.8	months	$98,454	
b)	RO and process equipment	$5,000/mo	9.8	months	$49,227	
SUBTOTAL					$147,681	
5. Labor						
Supervisor @ $20.00 per hour			9.8	months	$31,505	
4 Operators @ $13.00 per hour			9.8	months	$81,914	
2 Maintenance @ $13.00 per hour			9.8	months	$40,957	
SUBTOTAL					$154,376	
6. Contract Laboratory Analysis						
70 Monitor Wells (140 UCL samples per year @$100)			0.8		$11,486	
Stabilization Samples						
10 Wells	- 3 complete Assays @$350				10,500	
	- 9 abbreviated assays @ $250				22,500	
SUBTOTAL					$44,486	
7. Operating Expenses						
Supplies	@$3,000/mo		9.8		29,536	
Heating	@$5,000/mo		4.9		24,614	
Vehicle Fuel	@$1,000/mo		9.8		9,845	
Office Utilities	@$1,000/mo		9.8		9,845	
SUBTOTAL					$73,841	
TOTAL OPERATING COST TO RESTORE GROUNDWATER AT FULL PRODUCTION (Nominal Mine Unit)					$802,436 (1993$)	
UNIT RESTORATION OPERATING COST				128 Patterns	$6,269 /Pattern	
	1993 -1997 inflation (CPI-U) = 160.6/143.6 =	11.84%			$94,996	
				Total	$897,432 (1997$)	

Table 7.5
SMITH RANCH PROJECT
Mining Unit Groundwater Restoration Costs
Wellfield 4A

1 APV = 57,287,069 gallons

RESTORATION COST COMPONENT				Total Gallons Treated	Operating Flow Rate GPM	Total Cost	Number of Days
1.	Wellfield Pumping Costs						
	a)	Groundwater Sweep (no reinjection) (3 APV)	($0.118/1,000 gal.)	171,861,206	1015	$20,280	118
	b)	Chemical Reductant Injection (95% reinjection) (1 APV)	($0.232/1,000 gal.)	57,287,069	1015	$13,291	39
	c)	RO/EDR Treatment (75% reinjection) (2 APV)	($0.201/1,000 gal.)	114,574,138	1000	$23,029	80
	SUBTOTAL					$56,600	236
2.	Chemical Treatment Power Costs						
	a)	Reverse Osmosis Unit	$1.33/gpm/day ($0.92/1,000 gal.)	114,574,138	1000	$105,408	
	SUBTOTAL					$160,930	
3.	Chemicals						
	a)	Waste Water Treatment (BaCl2, Resin Elut. Chem)			600	$41,845	236
		BaCl2 @ $9.00/gpm/month, Elution					
		@$400/elution, Waste Water @ 2 mg/L U3O8	Elution Costs (5.2 Elutions/year * $400/ Elution)			$1,347	
		500 ft3 resin, 2 lb./ft3 loading,					
		Annualized Waste Water Flow; 600 gpm					
		1 elution every 69 days or 5.2 elutions per year					
	b)	Chemical Reductant (H2S or alternative)	$1.80/gpm/day ($1.25/1,000 gal.)	57,287,069	1015	$71,609	
	c)	RO Chemicals (H2SO4, Antiscalents, Oxygen Scavenger)	$0.57/gpm/day ($0.40/1,000 gal.)	114,574,138	1000	$45,830	
	SUBTOTAL					$117,438	
4.	Repairs and Maintenance						
	a)	Wellfield and Waste Water Treatment	$10,000/mo	7.7	months	$77,490	
	b)	RO and process equipment	$5,000/mo	7.7	months	$38,745	
	SUBTOTAL					$116,235	
5.	Labor						
	Supervisor @ $20.00 per hour			7.7	months	$24,797	
	4 Operators @ $13.00 per hour			7.7	months	$64,472	
	2 Maintenance @ $13.00 per hour			7.7	months	$32,236	
	SUBTOTAL					$121,504	
6.	Contract Laboratory Analysis						
	70 Monitor Wells (140 UCL samples per year @$100)			0.6		$9,040	
	Stabilization Samples						
	10 Wells	- 3 complete Assays @$350				10,500	
		- 9 abbreviated assays @ $250				22,500	
	SUBTOTAL					$42,040	
7.	Operating Expenses						
	Supplies	@$3,000/mo		7.7		23,247	
	Heating	@$5,000/mo		3.9		19,372	
	Vehicle Fuel	@$1,000/mo		7.7		7,749	
	Office Utilities	@$1,000/mo		7.7		7,749	
	SUBTOTAL					$58,117	
	TOTAL OPERATING COST TO RESTORE GROUNDWATER AT FULL PRODUCTION (Nominal Mine Unit)					$672,865	(1993$)
	UNIT RESTORATION OPERATING COST				101 Patterns	$6,662	/Pattern
		1993 -1997 inflation (CPI-U) = 160.6/143.6 =	11.84%			$79,657	
					Total	$752,522	(1997$)

Costs Associated with Groundwater Restoration

Using the Affected Pore Volumes developed on Table 7.1, the detail cost for groundwater restoration is provided for each wellfield on Tables 7.2, 7.3, 7.4, and 7.5. The estimated cost for groundwater restoration is shown below on Table 7.6.

TABLE 7.6

Estimated Groundwater Restoration Costs
By Wellfield

Wellfield #	Estimated Cost ($1997)
#1	$861,298
#3	$1,136,009
#4	$897,432
#4A	$752,522
Total	$3,647,261

SECTION 8
HEALTH PYSICS COSTS

Cost Summary

ITEM	COSTS ($97)
8.1 Health Physics	168,470
Total Cost	168,470

Health Physics

Basis: Year #1 - 223 Days:
See Table 8.1

- Labor Crew = 1 - RSO @ $32.70/Hr
  0.5 - RST @ $21.80/Hr
  $43.60/Hr x 1784 Hr = $ 77,782

Basis: Year #5 - 483 Days
See Table 8.1

- Labor Crew = 1 - RSO @ $32.70/Hr
  0.5 - RST @ $22.80/Hr
  $43.60/Hr x 3864 Hr = $168,470

To provide consistency with Rio Algom Mining Corp.'s U.S. Nuclear Regulatory Commission (NRC) surety, Rio Algom has elected at this time to continue to use the five (5) forward bond amount utilized for NRC purposes.

SECTION 9
WHOLE TRUCKING COSTS

Cost Summary

ITEM	COSTS ($97)
9.1 Contaminated Trucking	523
9.2 Uncontam. Trucking	157
Total Cost	680

Contaminated Trucking - Year #1

Basis: See Table 9.1

• Haul = 0.2 Trucks x 800 Miles x $3.27/Mile = $ 523

9.2 Non-Contaminated Trucking - Year #1

Basis: See Table 9.2

• Haul = 0.5 Trucks x 8 Hrs/Truck x $65.39/Hr = $ 157

9.3 Contaminated Trucking - Year #5

Basis: See Table 9.3

• Haul = 0.2 Trucks x 800 Miles x $3.27/Mile = $ 523

9.4 Non-contaminated Trucking - Year #5

Basis: See Table 9.4

• Haul = 0.3 Trucks x 8 Hrs/Truck x $65.39/Hr = $ 157

To provide consistency with Rio Algom Mining Corp.'s U.S. Nuclear Regulatory Commission (NRC) surety, Rio Algom has elected at this time to continue to use the five (5) forward bond amount utilized for NRC purposes.

SECTION 10
DELINEATION DRILLING RECLAMATION COSTS

Cost Summary

ITEM	COSTS ($97)
10.1 Delineation Drilling	96,852
Total Cost	96,852

Delineation Drilling Costs

Basis:	Delineation Holes remaining unreclaimed	131
	Delineation Holes to be drilled in 2000-2001	580
	Total Delineation Holes to be Bonded	711

Per hole cost for reclamation of delineation is based on bonding estimate for exploration holes under DN 236. (see attached table)

Reclamation costs per hole = $136.22/hole
Cost for plugging and abandonment: 711 holes x $136.22/hole

Delineation Drilling Costs = *$96,852*

1999 Reclamation Bond Estimate				
Well Abandonment and Topsoil Replacement and Re-vegetation				
I.	Assumptions			
	A.	Well Abandonment		
		# of Monitoring wells		
		Average Depth (ft.)		
		$/foot		$2.00
		Abandonment Costs		$0
	B.	Drill Hole Abandonment		
		# of Drill holes		1
		Bentonite chips cost		$12.50
		Personnel - $/hr		$17.50
		Transportation - $/hr		$6.54
		Water truck - $/hr		$10.00
		Holes/day		5
		# of Days		0
		# of Hours		2
		Drill Hole Abandonment Cost		$80.58
	C.	Survey Crew Cost		
		Hours/hole		0.3
		$/hour		$75.00
		Subtotal		$22.50
		Survey Crew Cost		$22.50
II.	Equipment			
	A.	Abandonment Equipment		
		Drill Rig Mobilization Cost		
	ABANDONMENT COST			$103.08
Total Cost per Well or Drill Hole				$103.08
III.	Backfill & Topsoil Replacement			
	A.	Assumptions		
	1.	General		
		Affected Area/hole (ft2)		400
		Affected area/hole (acres)		0.01
		Pit area/pit (ft2)		120
		Backfill depth		9
		Modified Pit Volume		800
		Number of wells and drill holes		1
		Topsoil Replacement Depth (ft)		0.33
		Pit Topsoil Volume (yd3)		1.47
		yd3 backfill		29.63
		total yd3 backfill		29.63
		Total yd3 topsoil		1.47
		Total affected area (acres)		0.01
	2.	Equipment with operator		
		Productivity backhoe w/trailer (yd3/hr)		32.39
		$/hour		$33.24
		Total replacement costs		$31.92

IV.	Reseeding			
	1.	Equipment		
		Drill Seeder w/trailer ($/acre)		$100.00
		Subtotal Equipment Cost		$0.92
	2.	Seed		
		$/acre		$33.00
		Subtotal Seed Cost		$0.30
	Subtotal Re-Seeding Cost			$1.22
V.	Mulching & Crimping			
	1.	Equipment		
		Mulcher & Crimper w/trailer ($/acre)		
		Subtotal Equipment Cost		$0.00
	2.	Mulch		
		Mulch $/ton		
		Tons/acre		1
		$/acre		$0.00
		Subtotal Mulch Cost		$0.00
	Subtotal Mulching & Crimping Cost			$0.00
Subtotal Reseeding Cost				$1.22
TOTAL				$136.22

PART III - SURETY BOND SUMMARY

This section contains the cost basis that were used in the bond calculations provided within Part II. The basis for the bond calculations are from contractor bids to perform the work with the costs then adjusted to constant 1997 dollars as requested by WDEQ/LQD. Provided in the summary table below are the initial bids in the dollars of their day and the adjustment to 1997 dollars. The individual contractor bids follow the summary table.

BID RATES FOR LABOR AND EQUIPMENT

ITEM	HOURLY BID RATE- YEAR ($/HR)	ADJUSTED 1997 DOLLARS ($/HR)
Foreman	19.80 (1993)	21.58
Certified Welder	17.75 (1993)	19.35
Operator	16.25 (1993)	17.71
Laborer	11.95 (1993)	13.02
Journeyman Electrician	32.00 (1993)	34.88
Apprentice Electrician	28.00 (1993)	30.51
20 Ton Crane (**)	34.31 (1993)	37.39
6000# Forklift (**)	12.04 (1993)	13.12
Welding/Torch (**)	10.00 (1993)	10.90
D8N Dozer (*)	108.00 (1993)	117.71
140G Blade (*)	60.00 (1993)	65.34
Pavement Breaker, Fuel/Maint	28.75 (1993)	31.33
980C Loader (*)	85.00 (1993)	92.64
235 Trackhoe (*)	103.00 (1993)	112.25
627 Scraper (*)	111.00 (1993)	120.98
Pulling Unit (*)	30.00 (1993)	32.70
Backhoe (*)	25.00 (1993)	27.25
2000 PSI Spray Washer	8.00 (1993)	8.71
Chainsaw (**)	2.20 (1993)	2.40

Note - (*) includes operator, fuel, and maintenance. Others include fuel and maintenance unless shown otherwise.. (**) bid obtained by telephone. Adjustment to 1997 dollars were made using GNP-IPD inflation rate of 8.99% [1st quarter 1993 (101.8) through 1st quarter 1997 (110.95)].