



Rio Algom

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

Rio Algom Mining LLC
6305 Waterford Boulevard
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June 21, 2002

Certified Mail P112 459 124
Return Receipt Requested

Dan Gillen, Chief
Fuel Cycle Facilities Branch, NMSS
Mail Stop T-8A33
U.S. Nuclear Regulatory Commission
Washington, DC 20555

**Re: Smith Ranch Facility
SUA-1548, Docket 40-8964
Wyoming Department of Environmental Quality Bond
Permit to Mine #633
License Condition 9.11, Annual Surety Update**

Dear Mr. Gillen:

Rio Algom Mining LLC submits the following surety documents to support the 2002 annual surety update to the source material license referenced above. Rio Algom Mining LLC is proposing a new surety bond \$12.176 million as required in license condition 9.5 to the Source Material License.

Attached to this letter, pursuant to requirements in license condition 9.5, are the pertinent documents necessary to continue the Irrevocable Letter of Credit in favor of the State of Wyoming. These include:

- (1) Letter of Credit from the Canadian Imperial Bank of Commerce (proposed);
- (2) Surety Estimate Detail

In a letter dated June 19, 2002, Rio Algom Mining LLC submitted a license amendment request to transfer the source material license for the Smith Ranch Facility to Power Resources, Inc. The anticipated closing date for the transfer of the facility and related assets is July 22, 2002, and as a result, it is anticipated that this transaction will be completed prior to the completion of the review of this proposed surety by the Wyoming Department of Environmental Quality and the NRC.

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

Sincerely,

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

Attachments: As Stated

xc: John Lusher w/attachments (NRC) (Addressee Only, Fuel Cycle Facilities Branch, Mail Stop T-8A33, Two White Flint North, 11545 Rockville Pike, Rockville, MD 20850)
B. Law w/attachments (OKC)
Bill Ferdinand w/attachments (Smith Ranch)
J. Cash w/attachments (Ambrosia Lake)

Per S. Muszkewicz

NMSSO!
Public  bhpbilliton

J. Cash w/attachments (Ambrosia Lake)
W. F. Kearney (PRI, Highland)
Division of Radiation Safety (NRC/Arlington, TX)

file

APPENDIX A

RECLAMATION COST BREAK-DOWN

**RIO ALGOM MINING LLC.
ANNUAL ADJUSTMENT OF RECLAMATION SURETY
2002-2003**

Shown below is the 2002-2003 proposed annual surety adjustment for the Smith Ranch facility. The 2002-2003 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 three (3) sections. The first section, entitled "Part I - Surety Bond Summary", is a summary of the itemized reclamation costs. The second section which is labeled "Part II - Surety Bond Detail", presents the detailed calculations of the summaries noted in Part I. The final section, "Part III - Cost Basis", contains the basis that were used in the bond calculations in Part II.

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 2002-2003 surety includes new disturbances resulting from commercial construction activities as shown in Table 2, along with the anticipated one year (1) forward reclamation costs associated with installation and operation of wellfield #1, wellfield #3, wellfield #4, wellfield #4a, wellfield #3 extension, wellfield #2, wellfield #4 extension, main facility, 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 12.2% from April 1997 (CPI 160.2) through April 2002 (CPI 179.7). The proposed 2002-2003 reclamation surety amount for the WDEQ is \$12.177 million.

PART I - SURETY BOND SUMMARY

Presented below in Table 1, is the summary of the itemized bond calculations for the review period of 2002-2003. The proposed adjustment to the WDEQ surety includes 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, wellfield #4a, 4 headerhouses in wellfield #2 and Satellite #1 plant.

Groundwater Restoration Cost Estimate

In October 2001, Rio Algom submitted its restoration plan for Wellfield #1. That restoration plan varied from the plan provided in the Application for Permit to Mine #633 due to changes in the classification of the groundwater restoration discharges from in-situ leach uranium recovery facilities by the NRC in Regulatory Issues Summary 2000-23. The most significant change is the replacement of groundwater sweep with continued treatment by reverse osmosis to minimize the discharge volume to meet disposal well capacity. This increased the cost of restoration for the wellfields included in the 2001-2002 surety estimate by \$884,671 (\$1997). For detail on the restoration plan, please refer to the submittal dated October 18, 2001.

TABLE 1
RIO ALGOM MINING LLC. - SMITH RANCH FACILITY
 2002-2003 PROPOSED WDEQ/LQD BOND

| WORK UNIT | ONE YEAR FORWARD WDEQ/LQD & NRC 2002-2003 BOND AMOUNT |
|---|--|
| Ion Exchange Plant⁽¹⁾ (NRC Related Activity) | |
| 1.1 Building | 40,116 |
| 1.2 Tankage and Vessels | 39,913 |
| 1.3 Piping | 12,924 |
| 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 |
| 1.9 SUB-TOTAL | 160,217 |
| Central Processing Plant (NRC Related Activity) | |
| 2.1 Buildings | 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 | 70,019 |
| SUB-TOTAL | 229,306 |
| Dryer Area (NRC Related Activity) | |
| 3.1 Buildings | 16,222 |
| 3.2 Equipment | 14,739 |
| 3.3 Foundations | 16,802 |
| SUB-TOTAL | 47,763 |
| Existing Facilities | |
| 4.1 Buildings (NRC Related Activity) | 95,635 |
| 4.2 Structures ⁽²⁾ (NRC Related Activity) | 18,187 |
| 4.3 Pilot Plant Equipment (NRC Related Activity) | 22,620 |
| 4.4 Foundations (NRC Related Activity) | 139,333 |
| 4.5 Site Reclamation | 84,070 |
| 4.6 O-Sand Pilot (NRC Related Activity) | 41,435 |
| 4.7 Q-Sand Pilot (NRC Related Activity) | N/A |
| 4.8 Mine Water Treatment Ponds | 19,878 |
| SUB-TOTAL | 421,158 |
| Unit Header Site & Wellfields⁽³⁾ (NRC Related Activity) | |
| 5.1 Buildings | 92,630 |

| WORK UNIT | | ONE YEAR FORWARD WDEQ/LQD & NRC 2002-2003 BOND AMOUNT |
|---|---|--|
| 5.2 | Header Piping | 163,553 |
| 5.3 | Secondary Electrical | 157,453 |
| 5.4 | Wells-Totals | 629,813 |
| 5.5 | Monitor Wells-Total | 86,710 |
| 5.6 | Site Reclamation | 60,936 |
| | SUB-TOTAL | 1,191,095 |
| Associated Structures | | |
| 6.1 | #1 Trunkline (5,000 ft ea) (NRC Related Activity) | 52,108 |
| 6.2 | #2 Trunkline (10,000 ft ea) (NRC Related Activity) | 104,216 |
| 6.3 | Radium Settling Ponds (NRC Related Activity) | 70,077 |
| 6.4a | Plugging & Aband. Disposal Well #1 (NRC Related Activity) | 77,735 |
| 6.4b | Plugging & Aband. Disposal Well #2 (NRC Related Activity) | 77,735 |
| 6.5 | Sand Mining Area | 13,173 |
| 6.6 | Land Fill | 1,500 |
| 6.7 | Fire Protection System | 11,623 |
| | SUB-TOTAL | 408,167 |
| Groundwater Reclamation & RO Units (NRC Related Activity) | | |
| 7.1 | Restoration | 6,033,134 |
| Health Physics and Radiation Surveys (NRC Related Activity) | | |
| 8.1 | Monitoring | 168,470 |
| Whole Trucking (Remaining Fractional Units) (NRC Related Activity) | | |
| 9.1 | Contaminated Trucking | 523 |
| 9.2 | Non-contaminated Trucking | 157 |
| 10.1 | Delineation Hole Reclamation | 22,068 |
| | SUB-TOTAL OF ALL ABOVE | 8,682,058 |
| | Overhead and Profit at 10% | 868,206 |
| | Contingency at 15% | 1,302,309 |
| | SUB-TOTAL OF ALL ABOVE | 10,852,573 |
| | Inflation - 12.2% (4/97 CPI-160.2 through 4/02 CPI-170.7) | 1,324,014 |

| WORK UNIT | ONE YEAR FORWARD WDEQ/LQD & NRC 2002-2003 BOND AMOUNT |
|--------------------------|--|
| 4/02 CPI-179.7) | |
| | |
| | |
| | |
| | |
| TOTAL (in 2002\$) | 12,176,587 |
| Proposed Bonding | 12,176,587 |

- (1) Represents the construction of one (1) satellite during 1997-1998
- (2) Incorporates additional surface disturbances (10.46 acres) from commercial construction activities along with new items including fencing, water wells, and fuel storage area.
- (3) Represents 1 year forward of 598 patterns to be restored.

APPENDIX B
SURETY DOCUMENTS

#SBGT717209 - Proposed

ISSUE DATE: September 30, 2002 AMOUNT: \$12,176,587

EXPIRY DATE: September 30, 2003

Beneficiary:
Wyoming Department of Environmental
Quality, Land Quality Division
Herschler Building, 3rd Floor
Cheyenne, WY 82002
U.S.A.

Applicant:
Rio Algom Mining LLC
6305 Waterford Blvd. Suite 400
Oklahoma City, OK 73118
U.S.A.

Re: WDEQ Permit No.633
NRC License No. SUA-1548
NRC Docket No. 40-8964

We, Canadian Imperial Bank of Commerce, New York Agency, 425 Lexington Avenue, New York, New York 10017 ("CIBC"), on behalf of Rio Algom Mining LLC, hereby issue in your favour this irrevocable letter of credit for the above-mentioned amount.

This letter of credit is available for payment upon presentation to CIBC at its above noted address or Two Paces West, 2727 Paces Ferry Road, Suite 1200, Atlanta, Georgia 30339 of the following documents:

1. Your draft drawn at sight on CIBC, purportedly signed by the Director of the Wyoming Department of Environmental Quality and by the Wyoming Land Quality Administrator and bearing the clause: "Drawn under Canadian Imperial Bank of Commerce Letter of Credit [REDACTED]";
2. Beneficiary's dated statement addressed to CIBC, purportedly signed by the Director of the Wyoming Department of Environmental Quality and by the Wyoming Land Quality Administrator and stating either (a), (b) or (c) below:
 - (a) "We, the undersigned Director of the Wyoming Department of Environmental Quality and by the Wyoming Land Quality Administrator, hereby advise you that the accompanying sight draft in the amount of \$..... (..... United States Dollars) drawn under Canadian Imperial Bank of Commerce Letter of Credit No: [REDACTED] is an amount identical to the amount of the order that has been entered by the Environmental Quality Council pursuant to W.S. 35-11-421, forfeiting all or part of the amount of the said Letter of Credit because of any violation of the Wyoming Environmental Quality Act, by Rio Algom Mining LLC, Permit No.633. "; or
 - (b) "We, the undersigned Director of the Wyoming Department of Environmental Quality and by the Wyoming Land Quality Administrator, hereby advise you that the accompanying sight draft in the amount of \$..... (..... United States Dollars) drawn under Canadian Imperial Bank of Commerce Letter of Credit No: [REDACTED] is an amount identical to the amount of the Settlement Agreement signed on behalf of the Department of Environmental Quality and on behalf of the operator, Rio Algom Mining LLC, Permit No.633, in which the parties have agreed to an amount due to the Department because of a violation of the Wyoming Environmental Quality Act, and that Rio Algom Mining Corp. has failed to pay the amount due within the period of time specified in the said agreement."; or
 - (c) "We, the undersigned Director of the Wyoming Department of Environmental Quality and by the Wyoming Land Quality Administrator, hereby advise you that a sight draft in the amount of \$..... (..... United States Dollars) drawn under Canadian Imperial Bank of Commerce Letter of Credit No: [REDACTED] is accompanying this

statement and certify that the operator, Rio Algom Mining LLC, Permit No.633, has not filed with the Department an extension to the said Letter of Credit, a substitute Letter of Credit or other acceptable evidence of financial responsibility in the place of the said Letter of Credit, and that it is thirty (30) days or less until the current expiration date of the said Letter of Credit."

Partial drawings are permitted hereunder. The total amount of any drawings payable hereunder shall not exceed in aggregate the sum of USD12,176,587.

This letter of credit shall be reduced automatically, by the amount of each drawing paid hereunder and/or by amendment, by the amount of reduction that may be authorized by your written request, purportedly signed by the Director of the Wyoming Department of Environmental Quality and by the Wyoming Land Quality Administrator, given to CIBC.

CIBC understands that Chapter XII, Land Quality Division Noncoal Regulations, requires that the bank give immediate notice to the permittee, Rio Algom Mining LLC, and the Director of the Wyoming Department of Environmental Quality of: (a) any notice received or action filed alleging the insolvency or bankruptcy of the bank; or (b) alleging any violations of regulatory requirements which could result in suspension or revocation of the bank's charter or license to do business; or (c) the bank, for any reason, becomes unable to fulfill its obligation under the letter of credit. CIBC hereby agrees to give such notification as specified in this paragraph to the permittee, Rio Algom Mining Corp., and the Director of the Wyoming Department of Environmental Quality.

CIBC hereby agrees that your drafts drawn under and in compliance with the terms of this letter of credit will be duly honoured if presented to the its above noted address on or before September 30, 2002 (the "expiry date").

It is a condition of this letter of credit that it shall be deemed to be automatically extended without amendment for one year from the present or any future expiration date hereof, unless at least ninety (90) days prior to any such date, CIBC notifies the Director of the Wyoming Department of Environmental Quality in writing by registered mail or courier that CIBC elects not to consider this letter of credit renewed for such further period. Upon receipt by you of such notice, you may draw hereunder as above.

Notwithstanding the expiration date and the condition above, this letter of credit shall be cancelled effective the date of receipt by CIBC of the original letter of credit instrument and a dated letter addressed to CIBC, purportedly signed by the Director of the Wyoming Department of Environmental Quality, referencing this letter of credit number and requesting the cancellation of same.

This letter of credit shall be governed by and construed in accordance with the laws of the State of Wyoming and is also subject to the "Uniform Customs and Practice for Documentary Credits (1993 Revision) International Chamber of Commerce, Publication No. 500", up to the extent that it is not inconsistent with the laws of the State of Wyoming. Any conflicts or disputes with respect to this letter of credit shall be determined according to the laws of the State of Wyoming.

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 | 12,924 |
| 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 | 160,217 |

1.1 Building

Calculation Basis: 70 Ft. x 165 Ft. with 23 Ft. Eave
 Floor Area = 11,550 Ft²
 Skin Area = 10,810 Ft²

A. Washdown Building - 6 Days:

Wash 10,810 Ft² @ 1 Gal/Ft² = 10,818 Gal
 Wash 10,810 Ft² @ 450 Ft²/Man-Day = 24 Man-Days
 = 6 Crew-Days

- Labor Crew = 1 - Foreman @ \$21.58/Hr
 4 - Laborers @ \$13.02/Hr
 $\$73.66/\text{Hr} \times 48 \text{ Hr} = \$ 3,536$
- Travel = \$73.66/Hr x 6 Day x 1 Hr/Day = \$ 442
- Eq. Rental = 4 - Pressure Washers @ \$ 8.71/ Hr
 $\$ 34.84/\text{Hr} \times 48 \text{ Hr} = \$ 1,672$
- Materials = Soap @ \$1.09/BBL
 10,810 Gal x BBL x \$1.09/BBL = \$ 281
 42 Gal
- Dispose of Fluid @ \$0.11/BBL
 10,810 Gal x BBL x \$0.11/BBL = \$ 28
 42 Gal
- Sub-total = \$ 5,959**

B. Dismantle and Load - 15 Days:

11,550 Ft² @ 100 Ft²/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. <u>Haul and Dispose - On-Site Land Fill:</u> | | |
| Building = 235,000# = 5 Truck Loads** @ 47,000# | | = \$ 2,616 |
| • Haul = 5 Trucks x 8 Hrs/Truck x \$65.39/Hr | | |
| • 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. <u>Decontaminate - 0 Days: (Assume No Decontamination)</u> | | |
| B. <u>Remove and Load - 11 Days:</u> | | |
| • 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 supervise 1.2 C. | | |
| Sub-total | | = \$ 9,758 |
| C. <u>Dismantle, Cut, or Crush - 11 Days:</u> | | |
| 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. | <u>Haul and Dispose</u> - 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. | <u>Haul and Dispose</u> - 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 | | |
| | <i>Tankage and Vessel Total</i> | = | <u>\$ 39,913</u> |

1.3 Piping

Basis: See Table 1.2

| | | | |
|----|---|---|------------------------|
| A. | <u>Remove, Cut or Crush and Load</u> - 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 | = | \$ 5,203 |
| | • 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 | = | <u>\$ 8,221</u> |
| B. | <u>Decontaminate</u> - 0 Days: | | \$ 0 |
| C. | <u>Haul and Dispose</u> - Licensed (NRC SUA #1473) Site: 100% Piping = 886.7 Ft. ³ @ 52,080# 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 |

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

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

| | | |
|---|---|-----------------|
| • 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 Ft² @ 1,000 Ft³/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 BBL x \$0.11/BBL | = | \$ 61 |
| 42 Gal | | |

| | | |
|------------------|---|-----------------|
| Sub-total | = | \$ 5,971 |
|------------------|---|-----------------|

B. Break and Remove 25% of Slab - 10 Days:
11,550 Ft² x 0.25 = 2,888 Ft²
2,888 Ft² @ 37.5 Ft²/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. | <u>Haul and Dispose</u> - Licensed (NRC SUA #1473) Site: | | |
| | Concrete = 2,888 Ft ² x 8 In = 1925 Ft ³ Set 12 In/Ft | | |
| | = 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. | <u>Bury Area w/2 Ft Cover:</u> | | |
| • | Materials = 856 Cu.Yd. Cover @ \$1.09/Cu.Yd. | = | \$ 933 |
| | Foundation Total | = | <u>\$ 48,588</u> |

1.7 Plant Site

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

| | | | |
|----|--|---|----------|
| A. | <u>Rip and Contour:</u> | | |
| • | Basis: See Table 1.4 | | |
| • | Rip and Contour @ \$166.68/Acre | = | \$ 233 |
| B. | <u>Topsoil Placement:</u> | | |
| | 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. | <u>Revegetate:</u> | | |
| • | 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 @ \$163/Acre x 1.4 Acre | = | \$ 228 |
| • | Revegetation Contingency @ \$233.80/Acre* x 0.7 Acre | = | \$ 164 |
| | (All items excluding grading) | | |

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

*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 @ \$163/Acre x 0.6 Acre = \$ 98
- (Drill + Seed + Fertilizer)
- Revegetation Contingency @ \$233.80/Acre* x 0.3 Acre = \$ 70
- (All items excluding grading)

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

$$\begin{aligned}
 \text{Productivity} &= \frac{3.9 \text{ Mile}}{\text{Hr}} \times \frac{5280 \text{ Ft}}{\text{Mile}} \times \frac{9 \text{ Ft}}{\text{Pass}} \times 0.83 \text{ Eff.} \\
 &= \frac{153,822 \text{ Ft}^2}{\text{Hr}} \\
 &= \frac{3.53 \text{ Acre}}{\text{Hr}}
 \end{aligned}$$

$$\begin{aligned}
 \$/\text{Acre} &= \frac{\$65.39}{\text{Hr}} \times \frac{\text{Hr}}{3.53 \text{ Acre}} = \underline{\$18.52} \text{ /Acre}
 \end{aligned}$$

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 | 70,019 |
| Total Cost | 229,306 |

2.1 Building

Basis: 100 Ft. x 165 Ft. with 30 Ft. Eave
 Floor Area = 16,500 Ft²
 Skin Area = 15,900 Ft²

A. Washdown Building - 9 days:

Wash 15,900 Ft² @ 1 Gal/Ft² = 15,900 Gal
 Wash 15,900 Ft² @ 450 Ft²/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 x \$1.09/BBL = \$ 413
 42 Gal
- Dispose of Fluid @ \$0.11/BBL
 15,900 Gal x BBL x \$0.11/BBL = \$ 42
 42 Gal
- Sub-total = \$ 9,208**

B. Dismantle and Load - 21 Days:

Dismantle and Load @ 100 Ft²/Man-Day
 16,500 Ft² @ 100 Ft²/Man-Day = 165 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 Ft³/Man-Day @ 518.5 Ft³ = 17 Man-Days
 Crush FRP @ 60 Ft³/Man-Day @ 111.4 Ft³ = 1.9 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 cost⁵ = \$ 4,310

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

100% of Non-Contaminated Service = 393.2 Ft³ @ 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 cost⁶ = \$ 230

Piping Total = **\$ 10,846**

2.4 Pumps

Basis: See Table 2.3

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

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 cost⁷ = \$ 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
- 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

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

| | | |
|--|---|---|
| • 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 | = | <u>\$ 70,019</u> |

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 Ft²
 Skin Area = 8,100 Ft²

| | | | |
|---|---|----|---------------|
| 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 $\frac{3500 \text{ Ft}^2}{11550 \text{ Ft}^2}$ = 71,212# | | | |
| Building Total | = | \$ | 16,222 |

3.2 Equipment

Basis: See Table 3.1

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

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:

3500 Ft² @ 1000 Ft²/Man-Day Twice = 7 Man-Days
= 2 Crew-Days

| | | |
|--|--|--|
| • Labor Crew = 1 - Foreman @ \$21.58/Hr 4 - Laborers @ \$13.02/Hr | | |
|--|--|--|

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

- $\$73.66/\text{Hr} \times 16 \text{ Hrs} = \$ 1,179$
- Travel = $\$73.66/\text{Hr} \times 2 \text{ Days} \times 1 \text{ Hr}/\text{Day} = \$ 147$
- Eq. Rental = Hand Tools @ $\$10.90/\text{Hr}$
(Broom, Squeegee) $\$10.90/\text{Hr} \times 16 \text{ Hrs} = \$ 174$
- 10% HCl = $2 \frac{\text{Gal}}{\text{Ft}^2} \times 3500 \text{ Ft}^2 \times 2$
= 14,000 Gal.

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

- $14,000 \times 0.288 \times \$0.55/\text{Gal} = \$ 2,218$
- Dispose of Fluid @ $\$0.11/\text{BBL}$
 $14,000 \text{ Gal} \times \frac{\text{BBL}}{42 \text{ Gal}} \times \$0.11/\text{BBL} = \$ 37$
- Sub-Total = \$ 3,755**

B. Break and Remove 25% of Slab - 3 Day:

$3500 \text{ Ft}^2 \times 0.25 = 875 \text{ Ft}^2$
 $875 \text{ Ft}^2 @ 37.5 \text{ Ft}^2/\text{Hr} = 23 \text{ Hrs}$

- Labor Crew = 1 - Operator @ $\$17.71/\text{Hr}$
 $\$17.71/\text{Hr} \times 23 \text{ Hrs} = \$ 407$
- Travel = $\$17.71/\text{Hr} \times 3 \text{ Days} \times 1\text{Hr}/\text{Day} = \$ 53$
- Eq. Rental = 1 - Pavement Breaker @ $\$31.33/\text{Hr}$
 $\$31.33/\text{Hr} \times 24 \text{ Hrs} = \$ 752$
- 1- Cat 980C Loader @ $\$92.64/\text{Hr}$
 $\$92.64/\text{Hr} \times 12 \text{ Hr} = \$ 1,112$
- Sub-total = \$ 2,324**

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

Concrete = $875 \text{ Ft}^2 \times 8 \text{ In} = 583 \text{ Ft}^3 \text{ Set}$
 $12 \text{ In}/\text{Ft} = 114,268\# @ 196\#/\text{Ft}^3$
= 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 $\$3.27/\text{Mile} = \$ 7,586$
- Dispose = 114,268# = 57.1 tons
@ $\$50/\text{ton disposal cost}^{\text{11}} = \$ 2,855$

D. Bury Area with 2 Ft Cover:

- Materials = 259 Cu.Yd. Cover @ $\$1.09/\text{Cu.Yd.} = \$ 282$

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

Foundation Total

= \$ 16,802

SECTION 4
EXISTING FACILITIES RECLAMATION COSTS
 Cost Summary

| ITEM | COSTS (\$97) |
|---------------------------|----------------|
| 4.1 Buildings | 95,635 |
| 4.2 Structures | 18,187 |
| 4.3 Pilot Plant Equipment | 22,620 |
| 4.4 Foundation | 139,333 |
| 4.5 Site Reclamation | 84,070 |
| 4.6 O-Sand Pilot | 41,435 |
| 4.7 Q-Sand Pilot | N.A. |
| 4.8 Mine Water Trt Ponds | 19,878 |
| Total Cost | 421,158 |

4.1 Buildings

Basis: Floor Area = 33,248 Ft²
 Skin Area = 22,828 Ft² (13 Ft Eave)

- 1 @ 200 Ft. x 60 Ft. = 12,000 Ft² (Pilot ISL Building)
- 0 @ 70 Ft. x 48 Ft. - Demolished & Removed Sept. 1991
- 1 @ 70 Ft. x 68 Ft. = 4,760 Ft² (Existing Office Building)
- 1 @ 48 Ft. x 24 Ft. = 1,152 Ft² (Storage Building)
- 1 @ 24 Ft. x 24 Ft. = 576 Ft² (Water Treatment Plant)
- 1 @ 40 Ft x 120 Ft. = 4,826 Ft² (Shop Building)
- 1 @ Building = 9,934 Ft² (New Office Annex Building)

A. Washdown Building - 8 Days

22,828 Ft² @ 1 Gal/Ft² = 22,828 Gal
 22,828 Ft² @ 450 Ft²/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 x \$ 1.09/BBL = \$ 592
 42 Gal
- Dispose of Fluid @ \$ 0.11/BBL
 22,828 Gal x BBL x \$ 0.11/BBL = \$ 60
 42 Gal
- Sub-total** = \$ 12,894

B. Dismantle and Load - 24 Days:

33,248 Ft² @ 100 Ft²/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 $\frac{18,488 \text{ Ft.}^2}{11,550 \text{ Ft.}^2}$ = 14 Trucks | | |
| <i>Buildings Total</i> | = | <u>\$ 95,635</u> |
| 4.2 Structures | | |
| A. <u>Plug Shaft</u> - Completed in 1994 | = | \$ 0 |
| B. <u>Plug Venthole</u> | | |
| • Backfill 335 ft. of hole (270 c.y. @ \$1.09/yd) | = | \$ 294 |
| • 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 | = | \$ 2,420 |
| C. <u>Mine Water Treatment Ponds</u> See Section 4.8 | | |
| D. <u>Evaporation Ponds</u> 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 - 5,900 ft
- Wellfield #1 - 6,600 ft
- Wellfield #3 - 7,500 ft
- Wellfield #4/4A-25,000 ft
- Wellfield #2 - 6,000 ft
- 51,000 ft

- Cost to remove fencing = \$0.15/ft¹² = \$ 7,650

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 Ft².
375 Ft² @ 37.5 Ft²/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 = \$ 18,187

4.3 Pilot Plant Equipment

A. Tanks:

- 15 Tanks
- Total = 15 Tanks x $\frac{\$55,926^*}{51 \text{ Tanks}}$ = \$ 16,449

B. Piping:

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

C. Pumps:

- 12 Pumps

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

• 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 = \$ 22,620

4.4 Foundation

A. Decontaminate Slab - 5 Days:

33,248 Ft² @ 1000 Ft²/Man-Day = 33.2 Man-Days
= 8.3 Crew-Days

• Labor Crew = 1 - Foreman @ \$ 21.58/Hr
4 - Laborers @ $\frac{\$13.02}{\text{Hr}}$
 $\frac{\$73.66}{\text{Hr}} \times 66.4 \text{ Hrs}$ = \$ 4,891

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

• Eq. Rental = Hand Tools @ $\frac{\$10.90}{\text{Hr}}$
(Brooms, Squeegee) @ $\frac{\$10.90}{\text{Hr}} \times 66.4 \text{ Hrs}$ = \$ 724

• 10% HCl = 2 Gal/Ft² 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}} \times \0.11 BBL = \$ 174

Sub-total = \$ 16,984

B. Break and Remove 25% of Slab - 28 Days:

33,248 Ft² x 0.25 = 8,312 Ft²
8,312 Ft² @ 37.5 Ft²/Hr = 221 Hrs

• Labor Crew = 1 - Operator @ $\frac{\$17.71}{\text{Hr}}$
 $\frac{\$17.71}{\text{Hr}} \times 221 \text{ Hrs}$ = \$ 3,914

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

• Eq. Rental = 1 - Pavement Breaker @ $\frac{\$31.33}{\text{Hr}}$
 $\frac{\$31.33}{\text{Hr}} \times 221 \text{ Hrs}$ = \$ 6,923

1 - Cat 980C Loader @ $\frac{\$92.64}{\text{Hr}}$
 $\frac{\$92.64}{\text{Hr}} \times 111 \text{ Hrs}$ = \$ 10,283

Sub-total = \$ 21,616

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

Concrete = 8,312 Ft² x $\frac{8 \text{ In.}}{12 \text{ In/Ft}}$ = 5,541 Ft³ Set

= 1,086,101# @ 196#/Ft³
= 9,235 Ft³ 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 cost¹³ = \$ 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: 47.35 Acres = 2,062,130 Ft.²

(Costs associated with the reclamation of the access road, central processing plant, wellfield pattern areas, and trunklines 1 and 2 are covered in other areas.)

A. Rip & Contour:

- Rip & Contour @ \$166.68/Acre x 47.35 Acre = \$ 7,891

B. Topsoil Placement:

- Replace 8 In. Topsoil = 50,866 Cu.Yd.
- Topsoil @ \$1.09/Cu. Yd. = \$ 55,444

* 8 In. Topsoil Removed in Previous Years

C. Revegetate:

- Grade and Contour @ \$87.19/Acre x 47.34 Acre = \$ 4,128
- Seedbed Prep. (Disc. + Harrow) @ \$ 21.80/Acre x 47.34 Acre = \$ 1,032
- Mulch (Drill + Seed + Mow) @ \$ 49/Acre x 47.34 Acre = \$ 2,320
- Drill Seed and Fertilize (Drill + Seed + Fertilizer)@ \$163/Acre x 47.34 Acre = \$ 7,716
- Revegetation Contingency* @ \$234/Acre x 23.67 Acre = \$ 5,539
(All items excluding grading)

* Assume only 50% of acreage requires reseeding

Sub-total = \$ 20,735

Site Reclamation Total = \$ 84,070

4.6 O-Sand Pilot

A. Surface Reclamation:

Basis = 6 Patterns

- Total = 6 Patterns x \$16,669* = \$ 10,001

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

10 Patterns

* Reference Section 5 - Summary Table Cost Per Pattern

B. Groundwater Restoration:

Basis = 6 Patterns

• Total = 6 Patterns x $\frac{\$5,239^*}{\text{Pattern}}$ = \$ 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) 598 Patterns 2002-2003 |
|---------------------------|-----------------------------|------------------------------------|
| 5.1 Buildings | 1,549 | 92,630 |
| 5.2 Header Piping | 2,735 | 163,553 |
| 5.3 Secondary Electrical | 2,633 | 157,453 |
| 5.4 Wells-Total | 10,532 | 629,813 |
| 5.5 Monitor Wells - Total | 1,450 | 86,710* |
| 5.6 Site Reclamation | 1,019 | 60,936 |
| Total Cost | 19,918 | 1,191,095 |

* In period 2002-2003, the second completion to Wellfield #4 will be opened with 6 new patterns. These will be in-fill patterns and will not increase the area of Wellfield #4 or necessitate the addition of monitor wells. The first four headerhouses of Wellfield #2 will add 85 patterns in 2002-2003.

5.1 Building

Basis: 12 Ft. x 24 Ft. with 10 Ft. Eave
 Floor Area = 288 Ft²
 Skin Area = 720 Ft²

A. Washdown Building - 1 Day:

Wash 720 Ft² @ 1 Gal/Ft² = 720 Gal
 Wash 720 Ft² @ 450 Ft²/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 x \$1.09/BBL = \$ 19
 42 Gal
- Dispose of Fluid @ \$0.11/BBL
 720 Gal x BBL x \$0.11/BBL = \$ 2
 42 Gal
- Sub-total = \$ 589**

B. Dismantle and Load - 1 Day:

Dismantle and Load @ 100 Ft²/Man-Day
 288 Ft² @ 100 Ft²/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 288 Ft.² = 0.1 Trucks
- 11,550 Ft.²
- Sub-total = \$ 52**

Building Total = \$ 1,549

5.2 Header Piping

Basis: 2000 Ft. - 1+'' 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 (45 Cu. Yd.) x (Hr.) = 35 Hrs
 100 Ft. 26 Cu. Yd..

- 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 Cu.Yd/Hr. x 2.5 = 65 Cu.Yd./Hr

(2000 Ft) x (45 Cu.Yd.) x (Hr) = 13.8 Hrs or 14 hours
 100 Ft 65 Cu.Yd.

- Eq. Rental = 1 - Backhoe @ \$ 27.25/Hr

| | | | | |
|---|--|---|--|--------------|
| | + \$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 = | $\frac{10 \times (24 \text{ in.} \times 10 \text{ in.} \times 8 \text{ in.})}{1728}$ | = | 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 | = | \$ | <u>2,633</u> |

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

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:

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 | | |

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

| | | | |
|------------------|--------------------------------------|---|-----------------|
| 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 x 550 Ft x 43#/100 Ft. = 20.3 Ft.³ @ 759#
62.4 #/Ft.³ x 0.6

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 = **\$ 1,008**

* Assume only 50% of acreage requires reseeding

Site Reclamation Total = **\$ 1,019**

**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 | 11,623 |
| Total Cost | 408,167 |

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. (Cat. 225 1.25 Cu. Yd. Bucket)
 Hr

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 cost¹⁶ = \$ 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. Trunkline #2 is 10,000 ft.
@ \$52,108 x 2 = \$ 104,216

6.3 Radium Settling Ponds

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 Ft² x 30 MIL (Per Pond)
Solids = 200 Ft.³/Yr (Both 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

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#/Ft³
 = 883 Ft³ @ 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 Ft³/Man-Day

Yr #5 = 1683 Ft³ @ 60 Ft³/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 Ft³
 + 27 Ft x 180 Ft x 9 Ft = 43,740 Ft³
 + 27 Ft X 360 Ft X 9 Ft = 87,480 Ft³
 714,420 Ft³ (Per Pond)

Total Volume = 714,420 Ft³/Pond x 2 Ponds = 1,428,840 Ft³ = 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 reseeded

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 = \$ 2,295

• Dispose = 187,472# = 93.7 tons = \$ 4,685
@ \$50/ton disposal cost¹⁷

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
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

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

| | | | |
|---|---|----|---------------|
| 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 |
| <i>Plug and Abandoning Disposal Well</i> | = | \$ | <u>77,735</u> |

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

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

• Eq. Rental = 1 - Cat. 627E Scraper @ $\frac{\$121/\text{Hr}}{\$121/\text{Hr} \times 6 \text{ Hrs}}$ = \$ 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 @ $\frac{\$27.25/\text{Hr}}{\$27.25/\text{Hr} \times 8 \text{ Hrs}}$ = \$ 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 @ $\frac{\$27.25/\text{Hr}}{\$27.25/\text{Hr} \times 12 \text{ Hrs}}$ = \$ 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 C^ontour @ \$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 = \$ 23
(All items excluding grading)

* Assume only 50% of acreage requires reseedling.

| | | |
|---|---|------------------|
| Sub-total | = | \$ 229 |
| Land Fill Total | = | <u>\$ 1,500</u> |
| <u>6.7 Fire Protection System</u> | | |
| Basis = 32 ft dia. x 26 ft ht. x 0.25 = 43,400 # = 148 ft ³ (40% void) | | |
| A. <u>Decontaminate</u> - 0 Days: | = | \$ 0 |
| B. <u>Remove and Load</u> - 5 Days: | | |
| • Labor Crew = | | |
| 1 - Foreman @ \$ 21.58/Hr | | |
| 1 - Operator @ \$ 17.71/Hr | | |
| 2 - Laborers @ \$ 13.02/Hr | | |
| \$ 65.33/Hr x 40 Hr | = | \$ 2,613 |
| • Travel = \$65.33/Hr x 5 Days x 1 Hr/Day | = | \$ 327 |
| • Eq. Rental = 1 - 20 Ton Crane @ \$ 37.39/Hr | | |
| \$ 37.39/Hr x 40 Hrs | = | <u>\$ 1,496</u> |
| Sub-total | = | \$ 4,436 |
| C. <u>Dismantle, Cut, or Crush</u> - 5 Days: | | |
| Cut Steel @ 30 Ft ³ /Man-Day @ 518.5 Ft ³ | = | 5 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 40 Hrs | = | \$ 1,816 |
| • Travel = \$45.39/Hr x 5 Days x 1 Hr/Day | = | \$ 227 |
| • Eq. Rental = 1 - D8N Dozer @ \$117.71/Hr | | |
| 1 - Welder/Torch @ \$ 10.90/Hr | | |
| \$128.61/Hr x 40 Hrs | = | <u>\$ 5,144</u> |
| Sub-total | = | \$ 7,187 |
| D. <u>Haul and Dispose</u> - On-Site Land Fill: | | |
| 100% of Non-Contaminated Service = 148 Ft ³ @ 43,400# | | |
| Total = 5.5 Cu.Yd. @ 43,400# = 1 Truckloads @ 47,000# | | |
| • Haul = 1 Truck x 8 Hrs/Truck x \$65.39/Hr | = | <u>\$ 523</u> |
| • Dispose = See Appendix 6.5 | | |
| Tankage and Vessel Total | = | <u>\$ 11,623</u> |

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 | \$6,033,134 |
| Total Cost | \$6,033,134 |

7.1 Groundwater Restoration Costs

Basis: Table 7.1, Table 7.2 & Table 7.3, 7.4, 7.5 and 7.6 - 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 |
| 3 ext | 97 | 782800 | 1.24E-004 | 76 | 14 | 0.27 | 1.5 | 436,839 | 33,199,800 |
| 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 |
| 2 | 103 | 1060460 | 9.71E-005 | 85 | 24 | 0.27 | 1.5 | 907,075 | 77,101,381 |
| 4 ext | 60 | 340421 | 1.76E-004 | 35 | 17 | 0.27 | 1.76 | 587,726 | 20,570,426 |

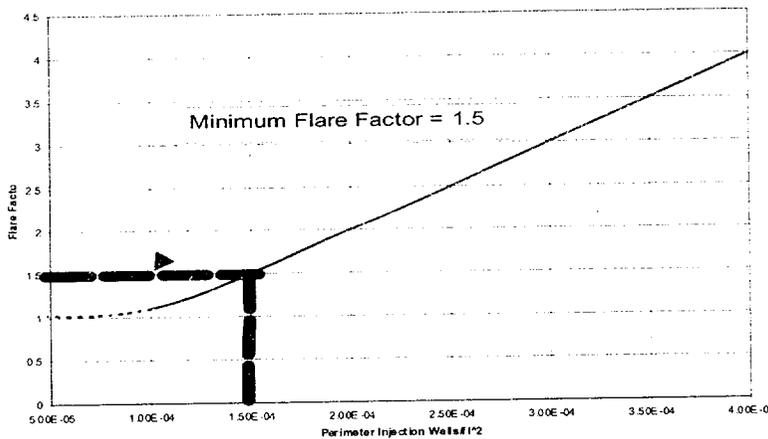


Figure 7-1. Predicted wellfield flare factor for RAMC commercial wellfields, as a function of wellfield scale

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 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.

Wellfield 3 ext. represents the 2nd completion within the existing patterns in Wellfield #3. The 2nd completion represents an opening of an upper interval of the patterns in Wellfield #3 which effects 76 patterns and will result in a net increase of 6 patterns.

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 Treatment (IX treatment Only) (100% of flow) | (\$0.117/1,000 gal.) | 413,525,340 | 1400 * | \$48,382 | 287 |
| b) Treated Groundwater Re-injection (bypass RO/EDR Treatment) | (\$0.117/1,000 gal.) | 248,115,204 | 600 * | \$29,029 | 287 |
| c) RO/EDR Treatment (800 GPM Feed 600 GPM Permeate) | (\$0.289/1,000 gal.) | 330,820,272 | 800 | \$95,607 | 287 |
| e) Groundwater Sweep (GW Inflow to replace water sent to disposal) | (\$0.117/1,000 gal.) | 82,705,068 | 200 | \$9,676 | 287 |
| | Total Treated Volume: | 413525340 | 1000 | \$182,695 | 287 |
| SUBTOTAL | | | | | |
| 2. Chemical Treatment Power Costs | | | | | |
| a) Reverse Osmosis Unit | \$0.10/gpm/day (\$0.07/1,000 gal.) | 330,820,272 | 800 | \$23,157 | |
| b) Disposal Well Operation | \$0.05/1,000 gal | 82,705,068 | 200 | \$4,135 | |
| | | | | \$27,293 | |
| SUBTOTAL | | | | | |
| 3. Chemicals | | | | | |
| a) Waste Water Treatment (Resin Elut. Chem) @ \$400/elution, Waste Water @ 2 mg/L U3O8 500 ft3 resin, 2 lb./ft3 loading, Annualized Waste Water Flow; 1400 gpm 1 elution every 29.7 days or 12.3 elutions per year | Elution Costs (12.3 Elutions/year * \$400/ Elution) | | | \$3,871 | 287 |
| b) Chemical Reductant (H2S or alternative) | \$1.80/gpm/day (\$1.25/1,000 gal.) | 68,920,890 | 1200 | \$86,151 | |
| c) RO Chemicals (H2SO4, Antiscalants, Oxygen Scavenger) | \$0.57/gpm/day (\$0.40/1,000 gal.) | 330,820,272 | 800 | \$132,328 | |
| | | | | \$222,350 | |
| SUBTOTAL | | | | | |
| 4. Repairs and Maintenance | | | | | |
| a) Wellfield and Waste Water Treatment | \$10,000/mo | 9.4 | months | \$94,154 | |
| b) RO and process equipment | \$5,000/mo | 9.4 | months | \$47,077 | |
| | | | | \$141,231 | |
| SUBTOTAL | | | | | |
| 5. Labor | | | | | |
| Supervisor @ \$20.00 per hour | | 9.4 | months | \$30,129 | |
| 4 Operators @ \$13.00 per hour | | 9.4 | months | \$78,336 | |
| 2 Maintenance @ \$13.00 per hour | | 9.4 | months | \$39,168 | |
| | | | | \$147,634 | |
| SUBTOTAL | | | | | |
| 6. Contract Laboratory Analysis | | | | | |
| 70 Monitor Wells (140 UCL samples per year @ \$100) | | 0.8 | | \$10,985 | |
| Stabilization Samples | | | | 10,500 | |
| 10 Wells - 3 complete Assays @ \$350 | | | | 22,500 | |
| - 9 abbreviated assays @ \$250 | | | | \$43,985 | |
| SUBTOTAL | | | | | |
| 7. Operating Expenses | | | | | |
| Supplies @ \$3,000/mo | | 9.4 | | 28,246 | |
| Heating @ \$5,000/mo | | 4.7 | | 23,539 | |
| Vehicle Fuel @ \$1,000/mo | | 9.4 | | 9,415 | |
| Office Utilities @ \$1,000/mo | | 9.4 | | 9,415 | |
| | | | | \$70,616 | |
| SUBTOTAL | | | | | |
| TOTAL OPERATING COST TO RESTORE GROUNDWATER AT FULL PRODUCTION (Nominal Mine Unit) | | | | \$835,804 (1993\$) | |
| UNIT RESTORATION OPERATING COST * | | | | 116 Patterns | \$7,205 /Pattern |
| 1993 -1997 inflation (CPI-U) = 160.6/143.6 = | | | | 11.84% | |
| | | | | Total | \$98,946 |
| | | | | | \$934,750 (1997\$) |

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

1 APV = 98,301,728 gallons

| RESTORATION COST COMPONENT | | Total | Operating | Total | umber o |
|--|--|---|-----------|--------------|----------------------|
| | | Gallons | Flow Rate | | |
| | | Treated | GPM | | |
| 1. | Wellfield Pumping Costs | | | | |
| a) | Groundwater Treatment (IX treatment Only) (100% of flow) (\$0.117/1,000 gal.) | 589,810,366 | 1400 | * | \$69,008 410 |
| b) | Treated Groundwater Re-injection (bypass RO/EDR Treatn) (\$0.117/1,000 gal.) | 353,886,220 | 600 | * | \$41,405 410 |
| c) | RO/EDR Treatment (800 GPM Feed 600 GPM Permeate) (\$0.289/1,000 gal.) | 471,848,293 | 800 | | \$136,364 410 |
| e) | Groundwater Sweep (GW Inflow to replace water sent to dis) (\$0.117/1,000 gal.) | 117,962,073 | 200 | | \$13,802 410 |
| | SUBTOTAL | Total Treated Volume: 589810365.9 | 1000 | | \$260,578 410 |
| 2. | Chemical Treatment Power Costs | | | | |
| a) | Reverse Osmosis Unit \$0.10/gpm/day (\$0.07/1,000 gal.) | 471,848,293 | 800 | | \$33,029 |
| b) | Disposal Well Operation \$0.05/1,000 gal | 117,962,073 | 200 | | \$5,898 |
| | SUBTOTAL | | | | \$38,927 |
| 3. | Chemicals | | | | |
| a) | Waste Water Treatment (Resin Elut. Chem) @\$400/elution, Waste Water @ 2 mg/L U3O8 500 ft3 resin, 2 lb./ft3 loading, Annualized Waste Water Flow; 1400 gpm 1 elution every 29.7 days or 12.3 elutions per year | Elution Costs (12.3 Elutions/year * \$400/ Elution) | | | \$5,521 410 |
| b) | Chemical Reductant (H2S or alternative) \$1.80/gpm/day (\$1.25/1,000 gal.) | 98,301,728 | 1200 | | \$122,877 |
| c) | RO Chemicals (H2SO4, Antiscalants, Oxygen Scavenger) \$0.57/gpm/day (\$0.40/1,000 gal.) | 471,848,293 | 800 | | \$188,739 |
| | SUBTOTAL | | | | \$317,138 |
| 4. | Repairs and Maintenance | | | | |
| a) | Wellfield and Waste Water Treatment \$10,000/mo | 13.4 | months | | \$134,292 |
| b) | RO and process equipment \$5,000/mo | 13.4 | months | | \$67,146 |
| | SUBTOTAL | | | | \$201,438 |
| 5. | Labor | | | | |
| | Supervisor @ \$20.00 per hour | 13.4 | months | | \$42,973 |
| | 4 Operators @ \$13.00 per hour | 13.4 | months | | \$111,731 |
| | 2 Maintenance @ \$13.00 per hour | 13.4 | months | | \$55,865 |
| | SUBTOTAL | | | | \$210,570 |
| 6. | Contract Laboratory Analysis | | | | |
| | 70 Monitor Wells (140 UCL samples per year @\$100) | 1.1 | | | \$15,667 |
| | Stabilization Samples | | | | |
| | 10 Wells - 3 complete Assays @\$350 | | | | 10,500 |
| | - 9 abbreviated assays @ \$250 | | | | 22,500 |
| | SUBTOTAL | | | | \$48,667 |
| 7. | Operating Expenses | | | | |
| | Supplies @\$3,000/mo | 13.4 | | | 40,288 |
| | Heating @\$5,000/mo | 6.7 | | | 33,573 |
| | Vehicle Fuel @\$1,000/mo | 13.4 | | | 13,429 |
| | Office Utilities @\$1,000/mo | 13.4 | | | 13,429 |
| | SUBTOTAL | | | | \$100,719 |
| TOTAL OPERATING COST TO RESTORE GROUNDWATER AT FULL PRODUCTION (Nominal Mine Unit) | | | | | \$1,178,037 (1993\$) |
| UNIT RESTORATION OPERATING COST * | | | | 162 Patterns | \$7,272 /Pattern |
| 1993 -1997 inflation (CPI-U) = 160.6/143. | | | | 11.84% | \$139,461 |
| | | | | Total | \$1,317,499 (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 | Operating Flow Rate GPM | Total Cost | Number of Days |
|--|---|---|-------------------------|--------------------|----------------|
| | | | | | |
| 1. Wellfield Pumping Costs | | | | | |
| a) | Groundwater Treatment (IX treatment Only) (100% of flow) | 436,712,803 | 1400 * | \$51,095 | 303 |
| b) | Treated Groundwater Re-injection (bypass RO/EDR Treatment) | 262,027,682 | 600 * | \$30,657 | 303 |
| c) | RO/EDR Treatment (800 GPM Feed 600 GPM Permeate) | 349,370,242 | 800 | \$100,968 | 303 |
| e) | Groundwater Sweep (GW inflow to replace water sent to disposal) | 87,342,561 | 200 | \$10,219 | 303 |
| SUBTOTAL | | Total Treated Volume: 436712802.6 | 1000 | \$192,940 | 303 |
| 2. Chemical Treatment Power Costs | | | | | |
| a) | Reverse Osmosis Unit | 349,370,242 | 800 | \$24,456 | |
| b) | Disposal Well Operation | 87,342,561 | 200 | \$4,367 | |
| SUBTOTAL | | | | \$28,823 | |
| 3. Chemicals | | | | | |
| a) | Waste Water Treatment (Resin Elut. Chem) @ \$400/elution, Waste Water @ 2 mg/L U308 500 ft3 resin, 2 lb./ft3 loading, Annualized Waste Water Flow; 1400 gpm 1 elution every 29.7 days or 12.3 elutions per year | Elution Costs (12.3 Elutions/year * \$400/ Elution) | | \$4,088 | 303 |
| b) | Chemical Reductant (H2S or alternative) | 72,785,467 | 1200 | \$90,982 | |
| c) | RO Chemicals (H2SO4, Antiscalants, Oxygen Scavenger) | 349,370,242 | 800 | \$139,748 | |
| SUBTOTAL | | | | \$234,818 | |
| 4. Repairs and Maintenance | | | | | |
| a) | Wellfield and Waste Water Treatment | 9.9 | months | \$99,434 | |
| b) | RO and process equipment | 9.9 | months | \$49,717 | |
| SUBTOTAL | | | | \$149,151 | |
| 5. Labor | | | | | |
| Supervisor @ \$20.00 per hour | | 9.9 | months | \$31,819 | |
| 4 Operators @ \$13.00 per hour | | 9.9 | months | \$82,729 | |
| 2 Maintenance @ \$13.00 per hour | | 9.9 | months | \$41,364 | |
| SUBTOTAL | | | | \$155,912 | |
| 6. Contract Laboratory Analysis | | | | | |
| 70 Monitor Wells (140 UCL samples per year @ \$100) | | 0.8 | | \$11,601 | |
| Stabilization Samples | | | | 10,500 | |
| 10 Wells - 3 complete Assays @ \$350 | | | | 22,500 | |
| - 9 abbreviated assays @ \$250 | | | | \$44,601 | |
| SUBTOTAL | | | | | |
| 7. Operating Expenses | | | | | |
| Supplies @ \$3,000/mo | | 9.9 | | 29,830 | |
| Heating @ \$5,000/mo | | 5.0 | | 24,858 | |
| Vehicle Fuel @ \$1,000/mo | | 9.9 | | 9,943 | |
| Office Utilities @ \$1,000/mo | | 9.9 | | 9,943 | |
| SUBTOTAL | | | | \$74,575 | |
| TOTAL OPERATING COST TO RESTORE GROUNDWATER AT FULL PRODUCTION (Nominal Mine Unit) | | | | \$880,819 (1993\$) | |
| UNIT RESTORATION OPERATING COST | | | | \$6,881 /Pattern | 128 Patterns |
| 1993 -1997 inflation (CPI-U) = 160.6/143.6 = | | | | 11.84% | |
| | | | | \$104,275 | |
| | | | | \$985,094 (1997\$) | Total |

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

1 APV = 57,287,069 gallons

| RESTORATION COST COMPONENT | | | Total | Operating | | Total | Number of |
|--|--|---|-------------|-----------|---|--------------------|------------------|
| | | | Gallons | Flow Rate | | Cost | Days |
| | | | Treated | GPM | | | |
| 1. | Wellfield Pumping Costs | | | | | | |
| | a) Groundwater Treatment (IX treatment Only) (100% of flow) | (\$0.117/1,000 gal.) | 343,722,413 | 1400 | * | \$40,216 | 239 |
| | b) Treated Groundwater Re-injection (bypass RO/EDR Treatment) | (\$0.117/1,000 gal.) | 206,233,448 | 600 | * | \$24,129 | 239 |
| | c) RO/EDR Treatment (800 GPM Feed 600 GPM Permeate) | (\$0.289/1,000 gal.) | 274,977,930 | 800 | | \$79,469 | 239 |
| | e) Groundwater Sweep (GW Inflow to replace water sent to disposal) | (\$0.117/1,000 gal.) | 68,744,483 | 200 | | \$8,043 | 239 |
| | SUBTOTAL | Total Treated Volume: | 343722412.9 | 1000 | | \$151,857 | 239 |
| 2. | Chemical Treatment Power Costs | | | | | | |
| | a) Reverse Osmosis Unit | \$0.10/gpm/day (\$0.07/1,000 gal.) | 274,977,930 | 800 | | \$19,248 | |
| | b) Disposal Well Operation | \$0.05/1,000 gal | 68,744,483 | 200 | | \$3,437 | |
| | SUBTOTAL | | | | | \$22,686 | |
| 3. | Chemicals | | | | | | |
| | a) Waste Water Treatment (Resin Elut. Chem) | | | | | | |
| | @\$400/elution, Waste Water @ 2 mg/L U308 | Elution Costs (12.3 Elutions/year * \$400/ Elution) | | | | \$3,217 | 239 |
| | 500 ft3 resin, 2 lb./ft3 loading, | | | | | | |
| | Annualized Waste Water Flow; 1400 gpm | | | | | | |
| | 1 elution every 29.7 days or 12.3 elutions per year | | | | | | |
| | b) Chemical Reductant (H2S or alternative) | \$1.80/gpm/day (\$1.25/1,000 gal.) | 57,287,069 | 1200 | | \$71,609 | |
| | c) RO Chemicals (H2SO4, Antiscalants, Oxygen Scavenger) | \$0.57/gpm/day (\$0.40/1,000 gal.) | 274,977,930 | 800 | | \$109,991 | |
| | SUBTOTAL | | | | | \$184,818 | |
| 4. | Repairs and Maintenance | | | | | | |
| | a) Wellfield and Waste Water Treatment | \$10,000/mo | 7.8 | months | | \$78,261 | |
| | b) RO and process equipment | \$5,000/mo | 7.8 | months | | \$39,131 | |
| | SUBTOTAL | | | | | \$117,392 | |
| 5. | Labor | | | | | | |
| | Supervisor @ \$20.00 per hour | | 7.8 | months | | \$25,044 | |
| | 4 Operators @ \$13.00 per hour | | 7.8 | months | | \$65,113 | |
| | 2 Maintenance @ \$13.00 per hour | | 7.8 | months | | \$32,557 | |
| | SUBTOTAL | | | | | \$122,713 | |
| 6. | Contract Laboratory Analysis | | | | | | |
| | 70 Monitor Wells (140 UCL samples per year @\$100) | | 0.7 | | | \$9,130 | |
| | Stabilization Samples | | | | | | |
| | 10 Wells - 3 complete Assays @\$350 | | | | | 10,500 | |
| | - 9 abbreviated assays @ \$250 | | | | | 22,500 | |
| | SUBTOTAL | | | | | \$42,130 | |
| 7. | Operating Expenses | | | | | | |
| | Supplies @\$3,000/mo | | 7.8 | | | 23,478 | |
| | Heating @\$5,000/mo | | 3.9 | | | 19,565 | |
| | Vehicle Fuel @\$1,000/mo | | 7.8 | | | 7,826 | |
| | Office Utilities @\$1,000/mo | | 7.8 | | | 7,826 | |
| | SUBTOTAL | | | | | \$58,696 | |
| TOTAL OPERATING COST TO RESTORE GROUNDWATER AT FULL PRODUCTION (Nominal Mine Unit) | | | | | | \$700,291 (1993\$) | |
| UNIT RESTORATION OPERATING COST | | | | | | 101 Patterns | \$6,934 /Pattern |
| 1993 -1997 inflation (CPI-U) = 160.6/143.6 = | | | | | | 11.84% | \$82,904 |
| Total | | | | | | \$783,194 (1997\$) | |

Table 7.6
SMITH RANCH PROJECT
Mining Unit Groundwater Restoration Costs
Wellfield #3 Extension

1 APV = 33,199,800 gallons

| RESTORATION COST COMPONENT | | | Total | Operating | | Total | Number of | |
|----------------------------|--|---|-------------|-----------|---|-------------|--------------------|------|
| | | | Gallons | Flow Rate | | | | Cost |
| | | | Treated | GPM | | | | |
| 1. | Wellfield Pumping Costs | | | | | | | |
| a) | Groundwater Treatment (IX treatment Only) (100% of flow) | (\$0.117/1,000 gal.) | 199,198,803 | 1400 | * | \$23,306 | 138 | |
| b) | Treated Groundwater Re-injection (bypass RO/EDR Treatment) | (\$0.117/1,000 gal.) | 119,519,282 | 600 | * | \$13,984 | 138 | |
| c) | RO/EDR Treatment (800 GPM Feed 600 GPM Permeate) | (\$0.289/1,000 gal.) | 159,359,042 | 800 | | \$46,055 | 138 | |
| e) | Groundwater Sweep (GW Inflow to replace water sent to disposal) | (\$0.117/1,000 gal.) | 39,839,761 | 200 | | \$4,661 | 138 | |
| | | Total Treated Volume: | 199198802.9 | 1000 | | \$88,006 | 138 | |
| | SUBTOTAL | | | | | | | |
| 2. | Chemical Treatment Power Costs | | | | | | | |
| a) | Reverse Osmosis Unit | \$0.10/gpm/day (\$0.07/1,000 gal.) | 159,359,042 | 800 | | \$11,155 | | |
| b) | Disposal Well Operation | \$0.05/1,000 gal | 39,839,761 | 200 | | \$1,992 | | |
| | SUBTOTAL | | | | | | | |
| 3. | Chemicals | | | | | | | |
| a) | Waste Water Treatment (Resin Elut. Chem) @\$400/elution, Waste Water @ 2 mg/L U3O8 500 ft3 resin, 2 lb./ft3 loading, Annualized Waste Water Flow; 1400 gpm 1 elution every 29.7 days or 12.3 elutions per year | Elution Costs (12.3 Elutions/year * \$400/ Elution) | | | | \$1,865 | 138 | |
| b) | Chemical Reductant (H2S or alternative) | \$1.80/gpm/day (\$1.25/1,000 gal.) | 33,199,800 | 1200 | | \$41,500 | | |
| c) | RO Chemicals (H2SO4, Antiscalants, Oxygen Scavenger) | \$0.57/gpm/day (\$0.40/1,000 gal.) | 159,359,042 | 800 | | \$63,744 | | |
| | SUBTOTAL | | | | | | | |
| 4. | Repairs and Maintenance | | | | | | | |
| a) | Wellfield and Waste Water Treatment | \$10,000/mo | 4.5 | months | | \$45,355 | | |
| b) | P.O and process equipment | \$5,000/mo | 4.5 | months | | \$22,677 | | |
| | SUBTOTAL | | | | | | | |
| 5. | Labor | | | | | | | |
| | Supervisor @ \$20.00 per hour | | 4.5 | months | | \$14,514 | | |
| | 4 Operators @ \$13.00 per hour | | 4.5 | months | | \$37,735 | | |
| | 2 Maintenance @ \$13.00 per hour | | 4.5 | months | | \$18,868 | | |
| | SUBTOTAL | | | | | | | |
| 6. | Contract Laboratory Analysis | | | | | | | |
| | 70 Monitor Wells (140 UCL samples per year @\$100) | | 0.4 | | | \$5,291 | | |
| | Stabilization Samples | | | | | | | |
| | 10 Wells | - 3 complete Assays @\$350 | | | | 10,500 | | |
| | | - 9 abbreviated assays @ \$250 | | | | 22,500 | | |
| | SUBTOTAL | | | | | | | |
| 7. | Operating Expenses | | | | | | | |
| | Supplies | @\$3,000/mo | 4.5 | | | 13,606 | | |
| | Heating | @\$5,000/mo | 2.3 | | | 11,339 | | |
| | Vehicle Fuel | @\$1,000/mo | 4.5 | | | 4,535 | | |
| | Office Utilities | @\$1,000/mo | 4.5 | | | 4,535 | | |
| | SUBTOTAL | | | | | | | |
| | TOTAL OPERATING COST TO RESTORE GROUNDWATER AT FULL PRODUCTION (Nominal Mine Unit) | | | | | | \$419,718 (1993\$) | |
| | UNIT RESTORATION OPERATING COST | | | | | 76 Patterns | \$5,523 /Pattern | |
| | 1993 -1997 inflation (CPI-U) = 160.6/143.6 = | | | | | 11.84% | \$49,688 | |
| | RECOMPLETION COSTS (\$640/well)(2.7 wells/pattern)(79 patterns) | | | | | | \$136,512 | |
| | | | | | | Total | \$605,918 (1997\$) | |

**Table 7.7
SMITH RANCH PROJECT
Mining Unit Groundwater Restoration Costs
Wellfield #2**

| 1 APV = | | 77,101,381 gallons | Total Gallons Treated | Operating Flow Rate GPM | Total Cost | Number of Days |
|--|--|--|---|-------------------------------|--------------------|----------------------|
| RESTORATION COST COMPONENT | | | | | | |
| 1. | Wellfield Pumping Costs | | | | | |
| | a) | Groundwater Treatment (IX treatment Only) (100% of flow) (\$0.117/1,000 gal.) | 462,608,283 | 1400 | \$54,125 | 321 |
| | b) | Treated Groundwater Re-injection (bypass RO/EDR Treatment) (\$0.117/1,000 gal.) | 277,564,970 | 600 | \$32,475 | 321 |
| | c) | RO/EDR Treatment (800 GPM Feed 600 GPM Permeate) (\$0.289/1,000 gal.) | 370,086,627 | 800 | \$106,955 | 321 |
| | e) | Groundwater Sweep (GW Inflow to replace water sent to disposal) (\$0.117/1,000 gal.) | 92,521,657 | 200 | \$10,825 | 321 |
| | SUBTOTAL | | Total Treated Volume: 462608283.5 | 1000 | \$204,380 | 321 |
| 2. | Chemical Treatment Power Costs | | | | | |
| | a) | Reverse Osmosis Unit \$0.10/gpm/day (\$0.07/1,000 gal.) | 370,086,627 | 800 | \$25,906 | |
| | b) | Disposal Well Operation \$0.05/1,000 gal | 92,521,657 | 200 | \$4,626 | |
| | SUBTOTAL | | | | \$30,532 | |
| 3. | Chemicals | | | | | |
| | a) | Waste Water Treatment (Resin Elut. Chem) @\$400/elution, Waste Water @ 2 mg/L U3O8 500 ft3 resin, 2 lb./ft3 loading, Annualized Waste Water Flow; 1400 gpm 1 elution every 29.7 days or 12.3 elutions per year | Elution Costs (12.3 Elutions/year * \$400/ Elution) | | \$4,330 | 321 |
| | b) | Chemical Reductant (H2S or alternative) \$1.80/gpm/day (\$1.25/1,000 gal.) | 77,101,381 | 1200 | \$96,377 | |
| | c) | RO Chemicals (H2SO4, Antiscalants, Oxygen Scavenger) \$0.57/gpm/day (\$0.40/1,000 gal.) | 370,086,627 | 800 | \$148,035 | |
| | SUBTOTAL | | | | \$248,742 | |
| 4. | Repairs and Maintenance | | | | | |
| | a) | Wellfield and Waste Water Treatment \$10,000/mo | 10.5 | months | \$105,330 | |
| | b) | RO and process equipment \$5,000/mo | 10.5 | months | \$52,665 | |
| | SUBTOTAL | | | | \$157,995 | |
| 5. | Labor | | | | | |
| | Supervisor @ \$20.00 per hour | | 10.5 | months | \$33,706 | |
| | 4 Operators @ \$13.00 per hour | | 10.5 | months | \$87,634 | |
| | 2 Maintenance @ \$13.00 per hour | | 10.5 | months | \$43,817 | |
| | SUBTOTAL | | | | \$165,157 | |
| 6. | Contract Laboratory Analysis | | | | | |
| | 70 Monitor Wells (140 UCL samples per year @\$100) | | 0.9 | | \$12,288 | |
| | Stabilization Samples | | | | | |
| | 10 Wells | - 3 complete Assays @\$350 | | | 10,500 | |
| | | - 9 abbreviated assays @ \$250 | | | 22,500 | |
| | SUBTOTAL | | | | \$45,288 | |
| 7. | Operating Expenses | | | | | |
| | Supplies | @\$3,000/mo | 10.5 | | 31,599 | |
| | Heating | @\$5,000/mo | 5.3 | | 26,332 | |
| | Vehicle Fuel | @\$1,000/mo | 10.5 | | 10,533 | |
| | Office Utilities | @\$1,000/mo | 10.5 | | 10,533 | |
| | SUBTOTAL | | | | \$78,997 | |
| TOTAL OPERATING COST TO RESTORE GROUNDWATER AT FULL PRODUCTION (Nominal Mine Unit) | | | | | \$931,092 (1993\$) | |
| UNIT RESTORATION OPERATING COST | | | | | 85 Patterns | \$10,954 /Pattern |
| 1993 -1997 inflation (CPI-U) = 160.6/14 | | | | | 11.84% | \$110,227 |
| | | | | | Total | \$1,041,318 (1997\$) |

**Table 7.8
SMITH RANCH PROJECT
Mining Unit Groundwater Restoration Costs
Wellfield #4 Extension**

1 APV = 20,570,426 gallons

| RESTORATION COST COMPONENT | Total | Operating | Total | Number of |
|---|---|--------------------|---------------------------|-----------|
| | Gallons | Flow Rate | | |
| | Treated | GPM | | |
| 1. Wellfield Pumping Costs | | | | |
| a) Groundwater Treatment (IX treatment) (\$0.117/1,000 gal.) | 123,422,558 | 1400 | * \$14,440 | 86 |
| b) Treated Groundwater Re-injection (byp)(\$0.117/1,000 gal.) | 74,053,535 | 600 | * \$8,664 | 86 |
| c) RO/EDR Treatment (800 GPM Feed 60)(\$0.289/1,000 gal.) | 98,738,047 | 800 | \$28,535 | 86 |
| e) Groundwater Sweep (GW Inflow to repl.(\$0.117/1,000 gal.) | 24,684,512 | 200 | \$2,888 | 86 |
| SUBTOTAL | Total Treated Volume: 123422558.45 | 1000 | \$54,528 | 86 |
| 2. Chemical Treatment Power Costs | | | | |
| a) Reverse Osmosis Unit \$0.10/gpm/day (\$0.07/1,000 gal.) | 98,738,047 | 800 | \$6,912 | |
| b) Disposal Well Operation \$0.05/1,000 gal | 24,684,512 | 200 | \$1,234 | |
| SUBTOTAL | | | \$8,146 | |
| 3. Chemicals | | | | |
| a) Waste Water Treatment (Resin Elut. Chem) @ \$400/elution, Waste Water @ 2 mg/L Elution Costs (12.3 Elutions/year * \$400/ Elution) 500 ft ³ resin, 2 lb./ft ³ loading, Annualized Waste Water Flow; 1400 gpm 1 elution every 29.7 days or 12.3 elutions per year | | | \$1,155 | 86 |
| b) Chemical Reductant (H ₂ S or alternatives) \$1.80/gpm/day (\$1.25/1,000 gal.) | 20,570,426 | 1200 | \$25,713 | |
| c) RO Chemicals (H ₂ SO ₄ , Antiscalants, O) \$0.57/gpm/day (\$0.40/1,000 gal.) | 98,738,047 | 800 | \$39,495 | |
| SUBTOTAL | | | \$66,364 | |
| 4. Repairs and Maintenance | | | | |
| a) Wellfield and Waste Water Treatment \$10,000/mo | 2.8 | months | \$28,102 | |
| b) RO and process equipment \$5,000/mo | 2.8 | months | \$14,051 | |
| SUBTOTAL | | | \$42,153 | |
| 5. Labor | | | | |
| Supervisor @ \$20.00 per hour | 2.8 | months | \$8,993 | |
| 4 Operators @ \$13.00 per hour | 2.8 | months | \$23,381 | |
| 2 Maintenance @ \$13.00 per hour | 2.8 | months | \$11,690 | |
| SUBTOTAL | | | \$44,063 | |
| 6. Contract Laboratory Analysis | | | | |
| 70 Monitor Wells (140 UCL samples per year @ \$100) | 0.2 | | \$3,279 | |
| Stabilization Samples | | | | |
| 10 Wells - 3 complete Assays @ \$350 | | | 10,500 | |
| - 9 abbreviated assays @ \$250 | | | 22,500 | |
| SUBTOTAL | | | \$36,279 | |
| 7. Operating Expenses | | | | |
| Supplies @ \$3,000/mo | 2.8 | | 8,431 | |
| Heating @ \$5,000/mo | 1.4 | | 7,025 | |
| Vehicle Fuel @ \$1,000/mo | 2.8 | | 2,810 | |
| Office Utilities @ \$1,000/mo | 2.8 | | 2,810 | |
| SUBTOTAL | | | \$21,076 | |
| TOTAL OPERATING COST TO RESTORE GROUNDWATER AT FULL PRODUCTION (Nominal Mine Unit) | | | \$272,608 (1993\$) | |
| UNIT RESTORATION OPERATING COST | | 35 Patterns | \$7,789 /Pattern | |
| 1993 -1997 inflation 11.84% | | | \$32,273 | |
| RECOMPLETION COST: (\$640/well)(2.7 wells/pattern)(35 patterns) | | | \$60,480 | |
| | | Total | \$365,361 (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, 7.5, 7.6, 7.7 and 7.8. The estimated cost for groundwater restoration is shown below on Table 7.9.

TABLE 7.9
Estimated Groundwater Restoration Costs
By Wellfield

| Wellfield # | Estimated Cost (\$1997) |
|--------------|----------------------------|
| #1 | \$934,750 |
| #3 | \$1,317,499 |
| #4 | \$985,094 |
| #4A | \$783,194 |
| #3ext | \$605,918 |
| #2 | \$1,041,318 |
| #4ext | \$365,361 |
| Total | \$6,033,134 |

**SECTION 8
HEALTH PHYSICS 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 |

9.1 Contaminated Trucking

Basis: See Table 9.1

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

9.2 Non-Contaminated Trucking

Basis: See Table 9.2

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

| 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 (ft ²) | 400 |
| | | Affected area/hole (acres) | 0.01 |
| | | Pit area/pit (ft ²) | 120 |
| | | Backfill depth | 9 |
| | | Modified Pit Volume | 800 |
| | | Number of wells and drill holes | 1 |
| | | Topsoil Replacement Depth (ft) | 0.33 |
| | | Pit Topsoil Volume (yd ³) | 1.47 |
| | | yd ³ backfill | 29.63 |
| | | total yd ³ backfill | 29.63 |
| | | Total yd ³ topsoil | 1.47 |
| | | Total affected area (acres) | 0.01 |
| | 2. | Equipment with operator | |
| | | Productivity backhoe w/trailer (yd ³ /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)].