

 Smith Ranch - Highland

 Uranium Project

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March 28, 2003

ADDRESSEE ONLY Mr. Dan Gillen, Chief Fuel Cycle Licensing Branch, NMSS Mail Stop T-8A33 US Nuclear Regulatory Commission Washington, DC 20555

RE: Smith Ranch Project Docket No. 40-8964, License SUA-1548 2003-2004 Surety Estimate Revision

Dear Mr. Gillen:

In accordance with License Condition 9.5 of Source Material License SUA-1548, attached please find two copies of the proposed 2003-2004 Surety Estimate Revision for the Smith Ranch Project. The 2003-2004 Surety Estimate Revision utilizes the previous format developed by Rio Algom Mining Corp. and is based on the current approved estimate for the 2002-2003 surety period. The surety estimate is calculated in 1997 dollars and adjusted to current (2003) dollars using the appropriate Consumer Price Index escalator.

The 2003-2004 Surety Estimate Revision results in a surety estimate of \$14,343,300, which is an increase of \$2,086,500 from the current approved surety estimate of \$12,256,800. The surety estimate reflects costs associated with operations that expanded during the previous year and development that is planned during the next one-year surety period. Major changes that resulted in an increase in the proposed surety amount include the following:

- Completion of pattern installation in Wellfield 2 during the 2003-2004 surety period will result in an increase in the number of patterns in Wellfield 2. Updating cost estimates associated with affected pore volumes, ground water restoration, and wellfield reclamation of Wellfield 2 results in an increase of approximately \$1,300,000 (before any escalators) or \$1,900,000 (after application of escalators);
- Completion of Wellfield 4 Extension during the 2002-2003 surety period resulted in fewer patterns than previously estimated. Updating cost estimates associated with affected pore volumes and ground water restoration of Wellfield 4 Extension results in a decrease of approximately \$37,000 (before any escalators); and

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• Based on current (2003) operating costs at the Smith Ranch-Highland Uranium Project, the new unit cost for Byproduct Material transportation and disposal at an NRC-licensed facility is \$5.62 per ft<sup>3</sup>. Updating the surety estimate with this new unit cost results in relatively no change in the overall surety amount for this item. This unit cost should be considered conservative as it is based on current (2003) operating costs and is still subject to the 14.3% CPI escalator.

PRI believes that the 2003-2004 Surety Estimate Revision is conservative and exceeds potential actual restoration, reclamation, and decommissioning costs in the unlikely event of bond forfeiture for the following major reasons:

- PRI believes that ground water restoration can be accomplished in less time than the restoration technique and schedule utilized in the estimate indicate;
- The added contingency of 25% further increases the conservatism of all items included in the estimate;
- No salvage value is realized for buildings, process equipment, switchgear, electrical equipment, motors, rolling stock and other uncontaminated materials and facilities that actually have significant salvage value; and
- It is likely that all buildings and roads will not require demolition, disposal, and reclamation, as area landowners may request to use these facilities.

Upon WDEQ and NRC approval of the 2003-2004 Surety Estimate Revision, PRI will revise the existing surety instrument to the applicable amount. Until that time, the existing surety instrument will remain in place. If you have any questions, please call me at (307) 358-6541, ext. 62.

Sincerely,

Bill Jean

W.F. Kearney Manager-Health, Safety & Environmental Affairs

WFK/sab

Attachment

cc: S.P. Collings w/o atta R. Townley w/atta R. Knode w/o atta File SR 4.6.4.1 w/atta

# **POWER RESOURCES, INC.**

# SMITH RANCH PROJECT

# 2003-2004 SURETY ESTIMATE REVISION

REVISED MARCH 2003

#### 2003-2004 SURETY ESTIMATE REVISION

The 2003-2004 Surety Estimate Revision for the Smith Ranch Project utilizes the previous format developed by Rio Algom Mining Corp. (RAMC) and is based on the current approved estimate for the 2002-2003 surety period. The surety estimate is presented in three (3) parts. Part I "Surety Bond Summary" is a summary of the itemized costs for ground water restoration, facility decommissioning, and surface reclamation. Part II "Surety Bond Detail" presents the detailed calculations of the summaries provided in Part I. Part III "Cost Basis" contains the cost bases that were used in the bond calculations in Part II. The surety estimate is calculated in 1997 dollars and adjusted to current (2003) dollars using the appropriate Consumer Price Index (CPI) escalator.

The 2003-2004 Surety Estimate Revision results in a surety estimate of \$14,343,300, which is an increase of \$2,086,500 from the current approved surety estimate of \$12,256,800. The surety estimate reflects costs associated with operations that expanded in Wellfield 2 during the previous year and revised costs associated with second well completions in Wellfield 4 (i.e., Wellfield 4 Extension). In addition, pursuant to discussions between RAMC and WDEQ, PRI is including the cost of bonding for delineation holes within the permit area rather than including these potential reclamation costs under Drilling Notification 236DN.

Major changes that resulted in an overall increase in the 2003-2004 Surety Estimate Revision include the following:

- Completion of pattern installation in Wellfield 2 during the 2003-2004 surety period will result in a total of approximately 181 patterns with a measured pattern area of 2,260,172 ft<sup>2</sup>. Using these data to update the affected pore volume, ground water restoration, and wellfield reclamation cost estimates for Wellfield 2 results in an increase of approximately \$1,300,000 (before any escalators).
- Completion of Wellfield 4 Extension during the 2002-2003 surety period resulted in fewer patterns (33 vs. 35) than previously estimated. In addition, the number of perimeter injection wells and the measured pattern area are slightly less than previous estimates. Using these data to update the affected pore volume and ground water restoration cost estimates for Wellfield 4 Extension results in a decrease of approximately \$37,000 (before any escalators).
- Based on current (2003) operating costs at the Smith Ranch-Highland Uranium Project, the new unit cost for Byproduct Material transportation and disposal at an NRC-licensed facility is \$5.62 per ft<sup>3</sup>. Updating the surety estimate with this new unit cost results in relatively no change in the overall surety amount for this item. This unit cost should be considered conservative as it is based on current (2003) operating costs and is still subject to the 14.3% CPI escalator.

PRI believes that the 2003-2004 Surety Estimate Revision is conservative and exceeds potential actual restoration, reclamation, and decommissioning costs in the unlikely event of bond forfeiture for the following major reasons:

• PRI believes that ground water restoration can be accomplished in less time than the restoration technique and schedule utilized in the estimate indicate.

- The added contingency of 25% further increases the conservatism of all items included in the estimate.
- No salvage value is realized for buildings, process equipment, switchgear, electrical equipment, motors, rolling stock and other uncontaminated materials and facilities that actually have significant salvage value.
- It is likely that all buildings and roads will not require demolition, disposal, and reclamation, as area landowners may request to use these facilities.

## PART L-SURETY BOND SUMMARY

Table 1 provides a summary of the itemized bond calculations for the 2003-2004 review period. The proposed adjustment to the surety estimate includes new disturbances resulting from commercial construction activities along with the anticipated one year forward reclamation costs associated with installation and operation of Wellfield 1, Wellfield 2, Wellfield 3, Wellfield 3 Extension, Wellfield 4, Wellfield 4 Extension, Wellfield 4A, the Central Processing Plant facility, and Satellite SR-1. Accordingly, the surety recognizes these items and utilizes the CPI escalator of 14.3% from April 1997 (160.2) through February 2003 (183.1).

Table 2 provides a description of areas disturbed the 2002-2003 review period. Planned areas of disturbance during the 2003-2004 review period are provided in Table 3. Tables 4 through 6 provide a list of disturbed areas to be reclaimed/released, areas previously reclaimed, and areas that will not be fully reclaimed, respectively.

	SUMMARY OF 2003-2004 SURETY ESTIMATE REVISION	SURETY
Ion Exc	change Plant	
1.1	Building	40,116
1.2	Tankage and Vessels	26,573
1.3	Piping	13,204
1.4	Pumps	5,866
1.5	Electrical	9,470
1.6	Foundations	32,598
1.7	Plant Site	2,058
1.8	Access Road	1,054
1.9	Smith Ranch – Highland Road	19,554
1.5	SUB-TOTAL	150,493
I Centra	1 Processing Plant	
2.1	Buildings	57,548
2.2	Tankage and Vessels	51,637
2.3	Piping	11,464
2.4	Pumps	10,838
2.5	Electrical	19,682
2.6	Foundations	46,984
2.0	SUB-TOTAL	198,153
Dryer		
3.1	Buildings	43,109
3.2	Equipment	10,764
3.3	Foundations	11,824
	SUB-TOTAL	65,697
Exist	ing Facilities	
4.1	Buildings	95,635
4.2	Structures	17,914
4.3	Pilot Plant Equipment	21,651
4.4	Foundations	93,185
4.5	Site Reclamation	84,073
4.6	O-Sand Pilot	56,117
4.7	Q-Sand Pilot	0
4.8	Mine Water Treatment Ponds	19,878
	SUB-TOTAL	388,453

 TABLE 1

 SUMMARY OF 2003-2004 SURETY ESTIMATE REVISION

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	WORKUNIN	
Unit H	eader Site & Wellfields	
5.1	Buildings	107,501
5.2	Header Piping	193,765
5.3	Secondary Electrical	182,730
5.4	Wells-Totals	752,921
5.5	Monitor Wells-Total	104,516
5.6	Site Reclamation	70,719
	SUB-TOTAL	1,412,152
Associ	ated Structures	
6.1	#1 Trunkline (5,000 ft ea)	68,901
6.2	#2 Trunkline (10,000 ft ea)	137,802
6.3	Radium Settling Ponds	62,555
6.4a	Plugging & Aband. Disposal Well #1	77,735
6.4b	Plugging & Aband. 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
	SUB-TOTAL	451,024
Groun	dwater Reclamation & RO Units	
7.1	Restoration	7,181,835
	Physics and Radiation Surveys	
8.1	Monitoring	168,470
	Trucking (Remaining Fractional Units)	
9.3	Contaminated Trucking	523
9.4	Non-contaminated Trucking	157
	SUB-TOTAL	680
Deline	eation Hole Reclamation	
10.1	Delineation Hole Reclamation	22,068
	TOTAL	10,039,025
	RHEAD AND PROFIT (10%)	1,003,903
	TINGENCY (15%)	1,505,854
	TOTAL	12,548,782
	ESCALATOR: APRIL 1997 – FEBRUARY 2003 (14.3%)	1,794,476
тот		14,343,258
	2004 SURETY ESTIMATE (IN 2003 DOLLARS)	14,343,300

# TABLE 2 AREAS DISTURBED DURING 2002-2003 REVIEW PERIOD

AREA	ACREAGE
Smith Ranch-Highland Connecting Road and Associated Topsoil Piles #22-#28 <sup>(1)</sup>	13.6
Total	

(1) Disturbance already included in bond.

AREA	EST ACREAGE
None	N/A
Total	0.0

TABLE 3	
PLANNED AREAS OF DISTURBANCE DURING 2003-2004 REVIEW PL	RIOD

ACREAGE TO BE RECLAIMED/RELEASED			
AREA	YEAR	ACREACE	
Bill Smith Surface Plant, Yard, Spoil	1971	10.57	
Bill Smith Storage Yard (50% of 10.18 acres)	1971	5.09	
Access Road (1/2 roadbed)	1968	4.75	
Settling Ponds, Treatment Plant Area	1968	8.60	
Topsoil Piles (pre-1996)	1968	3.36	
Other Roads (Access to ISL Wellfield)	1982	5.00	
Miscellaneous (Area around evap. ponds, settling ponds)	1981	3.61	
Wellfield #1 (inclusive of header houses and roads)	1996	27.1	
Oxygen Storage Facility	1997	0.2	
Chemical Storage Facility <sup>(1)</sup>	1997	0.0	
Disposal Well Area (Pad, Road & Spoil Pile)	1996	2.9	
Drill Mud Storage Area	1996	0.25	
Wellfield #1 Storage Area	1996	1.5	
Topsoil #8	1996	0.2	
Topsoil #9 <sup>(2)</sup>	1997	0.3	
Wellfield #2 Storage Area	1998	1.24	
Wellfield #3 (inclusive of header houses and roads)	1998	37.52	
Wellfield #3 Southern Storage Area	1998	1.2	
Satellite #1	1998	2.05	
Wellfield #4 Storage Area	1998	1.64	

# TABLE 4 CREAGE TO BE RECLAIMED/RELEASED

AREA	YEAR.	ACREACE
Wellfield #4 (inclusive of header houses and roads)	1998	29.59
Topsoil Pile #10	1998	0.40
Topsoil Pile #11	1998	0.08
Topsoil Pile #12	1998	0.29
Topsoil Pile #13	1998	0.72
Topsoil Pile #14	1998	0.16
Shop Building <sup>(1)</sup>	1997	0.00
Office Addition Building	1998	0.23
Trunkline #1	1998	3.1
Topsoil Pile #15	1999	0.1
Topsoil Pile #16	1999	0.2
Trunkline #2	1999	11.7
Topsoil Pile #6	1997	0.78
Office Parking Lot	1999	0.4
Trunkline #2 Pipeline Laydown Area	1999	1.1
Wellfield #4/Phase #2	1999/2000	27.0
Wellfield #4A/Phase #2 Staging Area	2000	0.3
Drill Water Facility	1999	0.1
Topsoil Pile #17	1999	0.2
Facility Fire Water System Tank	2000	0.1
Deep Disposal Well #2 Pad	1999	1.9
Topsoil Pile #18	2000	0.1
Wellfield #4 / Phase #2 Pipeline	2000	5.9
Topsoil Pile #19	2001	0.1
Topsoil Pile #20 <sup>(3)</sup>	2001	0.0
Wellfield #4 HH4-5,6 Booster	2001	0.1
Wellfield #4/Phase #2 Pipeline for HH4-10, 11	2001	2.3
Wellfield #4 Booster Station	2001	0.1
Deep Disposal Well #2 Pipeline	2001	0.1
Wellfield #2 (Inclusive of header houses and roads)	2001	52
Topsoil Pile #21 <sup>(3)</sup>	2002	0.0
Smith Ranch-Highland Connecting Road	2002	10.9
Topsoil Pile #22	2002	0.3

AREA A	TYEAR	ACREACE.
Topsoil Pile #23	2002	0.6
Topsoil Pile #24	2002	0.4
Topsoil Pile #25	2002	0.4
Topsoil Pile #26	2002	0.4
Topsoil Pile #27	2002	0.4
Topsoil Pile #28	2002	0.2
Unreclaimed Areas		269.83
Areas Previously Reclaimed (See Table 5)		18.88
Total Acres		250.95

Included within "Bill Smith Surface Plant, Yard and Spoil"
 Previous topsoil pile #9 was moved and combined several smaller topsoil piles to make new topsoil pile.
 Topsoil located in areas already covered by bond.

TABLE 5			
AREAS PREVIOUSLY RECLAIMED			

AREA	YEAR	ACREAGE
Bill Smith Mine Test Well Sites	1968	2.80
Miscellaneous - Bill Smith Mine	1968	4.19
ISL Pilot Pipeline and Wellfield	1983	5.80
Mine Settling Pond #1 and #2	1997	2.8
Drill Mud Storage Area	1999	.25
Wellfield #1 Staging Area	1999	1.5
Wellfield #3 North Staging Area	2001	1.54
Total Acres		18.88

#### TABLE 6 AREAS THAT WILL NOT BE FULLY RECLAIMED

AREA	YEAR .	ACREAGE
Bill Smith Mine Access (reduced to previous existing road)	1968	4.75
Total Acres		4.75

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## PART II - SURETY BOND DETAIL

Part II presents the bond support details for the summary totals included in Table 1. The bond detail is divided into 10 sections that encompass the mining activities at the Smith Ranch Project. These 10 sections include (1) ion exchange plants, (2) central processing plant, (3) dryer area, (4) existing facilities, (5) header sites and wellfields, (6) associated structures, (7) groundwater reclamation and RO Units, (8) health physics and radiation surveys, (9) whole trucking, and (10) delineation hole reclamation. The cost bases for the calculations used in each section are from contractor quotes. These quotes are presented in Part III "Cost Basis".

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#### **SECTION 1**

# ION EXCHANGE PLANT RECLAMATION COSTS

Cost Summary		
ITEM	COSTS (\$97)	
1.1 Building	40,116	
1.2 Tankage and Vessels	26,573	
1.3 Piping	13,204	
1.4 Pumps	5,866	
1.5 Electrical	9,470	
1.6 Foundations	32,598	
1.7 Plant Site	2,058	
1.8 Access Road	1,054	
1.9 Smith-Highland Road	19,554	
Total Cost	150,493	

#### 1.1 Building

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А.	<u>Washdown Building</u> - 6 Days: Wash 10,810 $Ft^2$ @ 1 Gal/ $Ft^2$ = 10 Wash 10,810 $Ft^2$ @ 450 $Ft^2$ /Man-I			
	• Labor Crew = 1 - Foreman 4 - Laborers	@ \$21.58/Hr @ \$13.02/Hr \$73.66/Hr x 48 Hr	=	\$ 3,536
	• Travel = \$73.66/Hr x 6 Day x 1	Hr/Day	=	\$ 442
	• Eq. Rental = 4 - Pressure Wash	ers @ <u>\$_8.71/ Hr</u> \$ 34.84/Hr x 48 Hr	=	\$ 1,672
	<ul> <li>Materials = Soap @ \$1.09/BBL 10,810 Gal x BBL x \$1.09/BBL 42 Gal</li> </ul>			\$ 281
	<ul> <li>Dispose of Fluid @ \$0.11/BBL 10,810 Gal x BBL x \$ 42 Gal</li> </ul>	50.11/BBL	=	\$28
	Sub-total		=	\$ 5,959
B.	Dismantle and Load - 15 Days:			
	11,550 Ft <sup>2</sup> @ 100 Ft <sup>2</sup> /Man-Day	= 115.5 Man-Days = 15.0 Crew-Days		
	• Labor Crew = 1 - Foreman 2 - Welders 2 - Operators 4 - Laborers	@ \$ 21.58/Hr @ \$ 19.35/Hr @ \$ 17.71/Hr @ <u>\$ 13.02/Hr</u> \$147.78/Hr x 120 Hr	=	\$ 17,734

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

	• Travel = \$147.78/Hr x 15 Days x 1 Hr/Day	=	\$ 2,217
	<ul> <li>Eq. Rental =2 - 20 Ton Cranes @ \$37.39/Hr</li> <li>2 - Welders/Torches @ \$10.90/Hr = \$96.58/Hr x 120 Hr</li> </ul>	=	\$ 11,590
	Sub-total	=	\$ 31,541
C.	Haul and Dispose - On-Site Landfill: Building = 801.6 ft3 = 235,000# = 5 Truck Loads* @ 47,000# 5 Trucks x 8 Hrs/Truck x \$65.39/Hr	=	\$ 2,616
	* 5 Trucks required to move building in 1988		
Buildi	ng Total	H	\$ 40,116
1.2 <u>Tan</u>	kage and Vessels		
Basis:	See Table 1.1		
A.	Decontaminate - 0 Days: (Assume No Decontamination)		
В	Remove and Load - 11 Days:         • Labor Crew = 1 - Foreman       @ \$21.58/Hr*         1 - Operator       @ \$17.71/Hr         2 - Laborers       @ \$13.02/Hr	-	\$ 5,749
	\$65.33/Hr x 88 Hr		
	<ul> <li>Travel = \$65.33/Hr x 11 Days x 1 Hr/Day</li> </ul>	=	\$ 719
	• Eq. Rental = 1 - 20 Ton Crane @ \$37.39/Hr.x 88 Hr	=	\$ 3,290
	* This foreman will also supervise1.2 C.		
	Sub-total	E	\$ 9,758
C.	Dismantle, Cut, or Crush - 11 Days: Cut Steel @ 30 Ft. <sup>3</sup> /Man-Day @ 631.4 Ft <sup>3</sup> = 21 Man-Day Crush FRP @ 60 Ft. <sup>3</sup> /Man-Day @ 240.5 Ft <sup>3</sup> = 4 Man-Day		
	• Labor Crew = 1 - Foreman @ Foreman supervises both 1.2 (B) & (C) 2 - Welders @ \$19.35/Hr	I	
	2 - Laborers @ \$13.02/Hr \$64.74/Hr x 88 Hr	=	\$ 5,697
	• Travel = \$64.74/Hr x 11 Days x 1 Hr/Day	=	<b>\$</b> 712
	• Eq. Rental = 1 - D8N Dozer @ \$117.71/Hr x 32 Hr	=	\$ 3,767
	2 - Welders/Torches @ \$ 10.90/Hr = \$ 21.80/Hr x 88 Hr	=	\$ 1,918
	Sub-total		\$ 12,094
D	Haul and Dispose - Licensed Site: Contaminated Service = $835.4 \text{ Ft.}^3$ @ $$5.62/\text{ft3}^1$	=	\$ 4,695

<sup>&</sup>lt;sup>1</sup> Based on 2003 operating costs at Smith Ranch-Highland Uranium Project for Byproduct Material transportation and disposal at NRC-licensed facility.

E.	Haul and Dispose - On Non-Contaminated Ser Total = 1.4 Cu.Yd. @ 2	rvice = 36.5 Ft	<sup>3</sup> @ 2,320# Truck Loads @ 47,000#		
	0.05 Trucks x 8 Hrs/Truck x \$65.39/Hr			=	<b>\$</b> 26
	Tankage and Vessel T	[otal		=	\$26,573
1.3 Pipir	ıg				
Basis:	See Table 1.2				
А.	Remove, Cut or Crush PVC & Poly - 2,800 Fi Steel - 1,100 Ft @ 110	't @ 140 Ft/Ma	Days: m-Day = 20 Man-Day = 5 Crew-Day = 10 Man-Day = 5 Crew-Day		
	1-0	Welders Operator	@ \$ 21.58/Hr @ \$ 19.35/Hr @ \$ 17.71/Hr		
	4 - I	Laborers	@ <u>\$ 13.02/Hr</u> \$130.07/Hr x 40 Hr	=	\$ 5,203
	• Travel = \$130.07/H	r x 5 Days x 1	Hr/Day	=	\$ 650
	• Eq. Rental = 1 - 20 7 2 - Wel	Ton Crane lders/Torches	@ \$37.39/Hr @ <u>.\$10.90/Hr</u> \$59.19/Hr x 40 Hr	=	\$ 2,368
	Sub-total			=	\$ 8,221
В.	Decontaminate - 0 Day	ys:			
C.	Haul and Dispose - Lie 100% Piping = 886.7 ]	icensed Site: Ft <sup>3</sup> @ \$5.62/ft	3	=	\$ 4,983
Piping	Total			=	\$ 13,204
1.4 <u>Pun</u>	ups	~			
Basis:	See Table 1.3				
А.	Removal and Loading 21 Pumps @ 2 Pumps	g - 6 Days: s/Man-Day	= 10.5 Man-Days = 6.0 Crew-Days		
		Foreman Operator Laborers	@ \$21.58/Hr @ \$17.71/Hr @ \$13.02/Hr		
			\$65.33/Hr x 48 Hrs	=	\$ 3,136
	• Travel = \$65.33/Hr	x 6 Days x 1 H	Hr/Day	=	\$ 392
	• Eq. Rental = 1 - 1	20 Ton Crane	@ <u>\$37.39/Hr</u> \$37.39/Hr x 48 Hrs	=	\$ 1,795
	Sub-total			=	\$ 5,323

В.	Haul and Dispose - Licensed Site: Contaminated Pumps = 77.9 Ft. <sup>3</sup> @ \$5.62/ft3		. =	\$ 438
C.	Haul and Dispose - On-Site Landfill: Non-Contaminated Motors = $69.9 \text{ Ft}^3 @ 8$ Non-Contaminated Pumps = $2 \text{ Ft}^3 @ 1008$ Total = $71.9 \text{ Ft.}^3 @ 8,545# = 0.2 \text{ Truck L}$	#		
	0.2 Trucks x 8 Hrs/Truck x \$65.39/Hr		=	<b>\$</b> 105
Pump	Total		=	\$ 5,866
1.5 <u>Elec</u>	etrical			
А.	Remove, Cut and Load - 5 Days: • Labor Crew = 1 - Journeyman Elect. 2 - Helpers 1 - Welder 1 - Operator	@ \$ 34.88/Hr @ \$ 30.51/Hr @ \$ 19.35/Hr @ <u>\$ 17.71/Hr</u> \$132.96/Hr x 40 Hr	=	\$ 5,318
	• Elec. Travel = \$95.90/Hr x 5 Days x 2 + \$0.54/Mile x 5 Days		=	\$ 959 \$ 324
	• Travel = \$37.06/Hr x 5 Days x 1 Hr/Da	y	=	\$ 185
	<ul> <li>Eq. Rental = 1 - 20 Ton Crane</li> <li>1 - Truck</li> <li>1 - Welder/Torch</li> </ul>	@ \$37.39/Hr @ \$12.26/Hr* @ <u>\$10.90/Hr</u> \$60.55/Hr x 40 Hr	=	\$ 2,422
	Sub-total		=	\$ 9,208
B.	Haul and Dispose - On-Site Landfill: MCC = 11.75 Ft. x 1.25 Ft. x 7.5 Ft. = 11 Cable = 110.2 Ft. <sup>3</sup> x 0.5 = 55.1 Ft. <sup>3</sup> @ 18 Total = 165.1 Ft. <sup>3</sup> @ 22,950# = 6.1 Cu. Yd. @ 22,950# = 0.5 Tru	,400# (@ 40% Voids)		
	0.5 Trucks x 8 Hrs/Truck x \$65.39/Hr		=	\$ 262
Electi	ical Total		=	\$ 9,470
1.6 Eo	undation			
А.		1.6 Man-Days 3.0 Crew-Days		
	4 - Laborers @	521.58/Hr <u>513.02/Hr</u> 573.66/Hr x 24 Hr	=	\$ 1,768
	• Travel = \$73.66/Hr x 3 Days x 1 Hr/D	ay	=	\$ 221

	• Eq. Rental = Hand Tools @ <u>\$10.90/Hr</u> (Brooms, Squeegee) \$10.90/Hr x 24 Hr	=	\$ 262
	• 10% HCl = 2 Gal/Ft <sup>2</sup> x 11,550 Ft <sup>2</sup> = 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 42 Gal	=	\$61
	Sub-total		\$ 5,971
В.	Break and Remove 25% of Slab 10 Days: 11,550 Ft <sup>2</sup> x 0.25 = 2,888 Ft <sup>2</sup> 2,888 Ft <sup>2</sup> @ 37.5 Ft <sup>2</sup> /Hr = 77 Hrs		
	• Labor Crew = 1 - Operator @ <u>\$17.71/Hr</u> \$17.71/Hr x 77 Hrs	=	\$ 1,364
	• Travel = \$17.71/Hr x 10 Days x 1 Hr/Day	=	\$ 177
	<ul> <li>Eq. Rental = 1 - Pavement Breaker @ \$31.33/Hr \$31.33/Hr x 77 Hrs</li> </ul>	=	\$ 2,412
	1 - Cat 980C Loader @ <u>\$92.64/Hr</u> \$92.64/Hr x 40 Hrs	=	\$ 3,706
	Sub-total	<b>*2</b>	\$ 7,659
C.	Haul and Dispose - Licensed Site:		
	Concrete = 2,888 $Ft^2 x \underline{8.In} = 1925 Ft^3 Set$ 2 In/Ft		
	$= 3,209 \text{ Ft}^3 \text{ Loose (40\% voids)} @ $5.62/ft3$	=	\$ 18,035
D.	Bury Area w/2 Ft Cover: • Materials = 856 Cu.Yd. Cover @ \$1.09/Cu.Yd.	=	\$ 933
Found	ation Total		\$ 32,598
1.7 <u>Plan</u>	tSite		
Basis:	200 Ft. x 300 Ft. = 60,000 Ft. <sup>2</sup> = 1.4 Acres		
A.	Rip and Contour: • Basis: See Table 1.4 • Rip and Contour @ \$166.68/Acre	=	\$   233
B.	Topsoil Placement: Replace 6 in. Topsoil = 60,000 Ft. <sup>2</sup> x $0.5 = 30,000$ Ft. <sup>3</sup> = 1,111 Cu.Yd. • Topsoil Placement @ \$1.09/Cu.Yd.	-	\$ 1,211
C.	Revegetate:• Grade and Contour Topsoil@ \$ 87.19/Acre x 1.4 Acre	=	<b>\$</b> 122
			Devil 115

	<ul> <li>Seedbed Prep. (Disc. + Harrow)</li> <li>Mulch (Drill + Seed + Mow)</li> <li>Drill Seed and Fertilize (Drill + Seed + Fertilizer)</li> <li>Revegetation Contingency (All items excluding grading)</li> <li>*Assume only 50% of acreage required</li> </ul>	<ul> <li>@ \$ 21.80/Acre x 1.4 Acre</li> <li>@ \$ 49/Acre x 1.4 Acre</li> <li>@ \$163/Acre x 1.4 Acre</li> <li>@ \$233.80/Acre<sup>*</sup> x 0.7 Acre</li> <li>uires reseeding</li> </ul>		• -	
Sub-to	otal		=	<b>\$</b> 61	4
Plant .	Site Total		=	\$ 2,05	58
1.8 <u>Acc</u>	ess Road				
Basis:	Gravel Road = 21 Ft. x 1320 Ft. = 2	$7,720 \text{ Ft.}^2 = 0.6 \text{ Acres}$			
A.	Rip and Contour: • Basis: See Table 1.4 • Rip and Contour @ \$166.68/Act	ге	=	\$ 23	3
В.	<u>Topsoil Placement:</u> Replace 6 in. Topsoil = 27,720 Ft.	<sup>2</sup> x 0.5 = 13,860 Ft. <sup>3</sup> = 513 Cu.Yd			
	Topsoil Placement @ \$1.09/Cu.	Yd.	=	<b>\$</b> 55	9
C.	Revegetate: <ul> <li>Grade and Contour</li> <li>Seedbed Prep.</li> </ul>	@ \$ 87.19/Acre x 0.6 Acre	=	\$5	
	(Disc. + Harrow)	@ \$ 21.80/Acre x 0.6 Acre	=	\$ 1	-
	• Mulch (Drill + Seed + Mow)	@ \$ 49/Acre x 0.6 Acre	=	\$2 \$9	
	<ul> <li>Drill Seed and Fertilize (Drill + Seed + Fertilizer)</li> </ul>	@ \$163/Acre x 0.6 Acre	_	φΖ	0
	<ul> <li>Revegetation Contingency (All items excluding grading)</li> </ul>	@ \$233.80/Acre* x 0.3 Acre	=	<u>\$_7</u>	Ω
Sub-te	otal		=	<b>\$ 2</b> 6	2
	*Assume only 50% of acreag				
Acces	s Road Total	14	=	\$ 1,0	54
1.9 Sm	ith Ranch – Highland Road				
Basis:	Cost to reclaim Satellite No. 3 Acce	ss Road at Highland Uranium Project			
	• 3 miles of road @ \$6,518/mile		=	\$19,5	54
Smith	Ranch – Highland Road Total		=	\$19,5	54

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#### 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

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Productivity = 3.9 Mile x 5280 Et x 9 Et x 0.83 Eff.Hr Mile Pass =  $153,822 \text{ Et}^2$ Hr = 3.53 AcreHr \$/Acre = \$65.39 x Hr = \$18.52Hr 3.53 Acre Acre

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

#### SECTION 2 CENTRAL PROCESSING PLANT RECLAMATION COSTS

Cost	Summary
CUSL	Ounning y

ITEM	COSTS (\$)
2.1 Building	57,548
2.2 Tankage and Vessels	51,637
2.3 Piping	11,464
2.4 Pumps	10,838
2.5 Electrical	19,682
2.6 Foundations	46,984
Total Cost	198,153

#### 2.1 Building

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

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### A. Washdown Building - 9 days:

Wash 15,900 $Ft^2 @ 1 Gal/Ft^2 = 15,900 Gal$ Wash 15,900 $Ft^2 @ 450 Ft^2/Man-Day = 35 Man-Days$ = 9 Crew-Days					
• Labor Crew =	1 - Foreman @ \$21.58/Hr 4 - Laborers @ <u>\$13.02/Hr</u> \$73.66/Hr x 72 Hr	=	\$ 5,303		
• Travel = $73.66/Hr \times 9$	Days x 1 Hr/Day	=	\$ 663		
• Eq. Rental $= 4 - P_1$	ressure Washers @ <u>\$_8.71/Hr</u> \$ 34.84/Hr x 80 Hr	=	\$ 2,787		
<ul> <li>Materials = Soap @ \$1. 15,900 Gal x BB 42</li> </ul>	=	\$ 413			
<ul> <li>Dispose of Fluid @ \$0.1 15,900 Gal x BB 42</li> </ul>	=	\$ 42			
Sub-total		=	\$ 9,208		
B. Dismantle and Load - 21 Days:					
Dismantle and Load 16,500 Ft <sup>2</sup>	@ 100 Ft <sup>2</sup> /Man-Day @ 100 Ft <sup>2</sup> /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 @ <u>\$ 10.90/Hr</u> \$ 96.58/Hr x 168 Hr	F	\$16,225
5	Sub-total		=	\$44,155
	nd Dispose - On-Site Lan Building = 376,000# = 8 1			
٤	8 Trucks x 8 Hrs/Truck x 3	\$65.39/Hr	=	\$ 4,185
<b>Building</b>	Total		=	\$ 57,548
2.2 Tankag	ge and Vessels			
Basis: Se	e Table 2.1			
A. Decon	ntaminate - 0 Days:			
	ve and Load - 19 Days: • Labor Crew =	1 - Foreman @ \$21.58/Hr 1 - Operator @ \$17.71/Hr 2 - Laborers @ <u>\$13.02/Hr</u>		¢ 0.020
		\$ 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 T	on Crane @ <u>\$.37.39/Hr</u> \$ 37.39/Hr x 152 Hrs	=	\$ 5,683
5	Sub-total		=	\$ 16,854
(	ntl <u>e, Cut, or Crus</u> h - 19 Da Cut Steel @ 30 Ft <sup>3</sup> /Man-D Crush FRP @ 60 Ft <sup>3</sup> /Man	Day @ 518.5 $Ft^3 = 17$ Man-Days		
•	• Labor Crew = 1 - Fore 1 - Wel 2 - Labo	der @ \$ 19.35/Hr prers @ <u>\$ 13.02/Hr</u>		
		\$ 45.39/Hr x 152 Hrs	=	\$ 6,899
•	• Travel = $45.39/Hr \times 19$	Days x 1 Hr/Day	=	\$ 862
•	• Eq. Rental = 1 - D8N 1 - Wel	U Dozer @ \$117.71/Hr der/Torch @ <u>\$ 10.90/Hr</u> \$128.61/Hr x 152 Hrs	=	\$ 19,549
5	Sub-total		=	\$ 27,310
	Haul and Dispose - Licens Contaminated Service = 1		=	\$ 6,950
	Haul and Dispose - On-Sit Non-Contaminated Servic			

	Total = 14.6 Cu.Yd. @ 45,010# = 1 Truckloads @ 47,000#			
	1 Truck x 8 Hrs/Truck x \$65.39/Hr	=	\$    523	
Tankag	ge and Vessel Total	=	\$ 51,637	
2.3 Pipir	lg			
Basis:	See Table 2.2			
A. Ren	nove, 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	
			U	
	• Eq. Rental = 1 - 20 Ton Crane @ <u>\$ 37.39/Hr</u> \$ 37.39/Hr x 72 Hr	=	\$ 2,692	
	Sub-total	=	\$ 10,093	
В.	Decontaminate - 0 Days:			
C.	Haul and Dispose - Licensed Site: Pipe = 244 Ft. <sup>3</sup> @ \$5.62/ft3	=	\$ 1,371	
Piping Total			\$ 11,464	
2.4 <u>Pum</u>	ps .			
Basis:	See Table 2.3			
A. Ren	noval 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 @ <u>\$37.39/Hr</u> \$37.39/Hr x 88 Hr	=	\$ 3,290	
	Sub-total		\$ 9,758	
B. Hau	<u>l and Dispose</u> - Licensed Site: Contaminated Service = 164.3 Ft. <sup>3</sup> @ \$5.62/ft3	=	\$   923	
C. Hau	Land Dispose - On-Site Landfill: Non-Contaminated Service = 106.5 Ft. <sup>3</sup> @ 10,723# Total = 3.9 Cu. Yd. @ 10,723# = 0.3 Truck Load @ 47,000#			

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0.3 Truck x 8 Hrs/Truck x \$65.39/Hr	=	<b>\$</b> 157
Pump Total	=	\$ 10,838
2.5 Electrical		
A. <u>Remove, Cut and Load</u> - 10 Days: • Labor Crew = 1 - Journeyman <sup>-</sup> Elect. @ \$ 34.88/Hr 2 - Helpers @ \$ 30.51/Hr 1 - Welder @ \$ 19.35/Hr 1 - Operator @ <u>\$ 17.71/Hr</u>		
\$132.96/Hr x 80 Hr	=	\$ 10,637
<ul> <li>Elec. Travel = \$132.96/Hr x 10 Days x 2 Hr/Day + \$0.54/Mile x 10 Days x 120 Mile/Day</li> </ul>	=	\$   2,659 \$    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 1 - Welder/Torch @ <u>\$ 10.90/Hr</u>		
\$ 60.55/Hr x 80 Hr	=	\$ 4,844
Sub-total	=	\$ 19,159
B. Haul and Dispose - On-Site Landfill: MCC#1 = 11.75 Ft. x 1.25 Ft. x 7.5 Ft. = 110.2 Ft. <sup>3</sup> @ 4,550# MCC#2 = 11.75 Ft. x 1.25 Ft. x 7.5 Ft. = 110.2 Ft. <sup>3</sup> @ 4,550# Cable = 220.4 Ft. <sup>3</sup> x 0.5* = 110.2 Ft. <sup>3</sup> @ 36,700# (555#/Ft. <sup>3</sup> @ 40% Void = 333#/Ft <sup>2</sup> ) Total = 330.6 Ft. <sup>3</sup> @ 45,800# = 12.2 Cu. Yd. @ 45,800# = 1 Truck @ 47,000#		
1 Truck x 8 Hrs/Truck x \$65.39/Hr	=	\$ 523
* Cable Volume = 1/2 MCC Volume		
Electrical Total	=	\$ 19,682
2.6 Foundation		
A. Decontaminate Slah - 5 Days: 16,500 Ft <sup>2</sup> @ 1000 Ft <sup>2</sup> /Man-Day = 17 Man-Days = 5 Crew-Days		
• Labor Crew = 1 - Foreman @ \$ 21.58/Hr 4 - Laborers @ \$ 13.02/Hr \$ 73.66/Hr x 40 Hr	=	\$ 2,946
• Travel = \$73.66/Hr x 5 Days x 1 Hr/Day	=	\$ 368
• Eq. Rental = Hand Tools @ <u>\$ 10.90/Hr</u> (Broom, Squeegee) \$ 10.90/Hr x 40 Hr	=	\$ 436
• 10% HCl = 2 Gal/Ft <sup>2</sup> x 16,500 Ft <sup>2</sup> = 33,000 Gal.		

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make-up from 20° Be HCl Stock @ \$0.508/Gal Require 288 Gal. Stock per 1,000 Gal 10%		
33,000 x 0.288 x \$0.55/Gal	=	\$ 5,227
<ul> <li>Dispose of Fluid @ \$0.11/BBL 33,000 Gal x BBL x \$0.11/BBL 42 Gal</li> </ul>	=	\$86 -
Sub-total	=	\$ 9,063
B. <u>Break and Remove 25% of Slah</u> - 14 Days: 16,500 Ft <sup>2</sup> x 0.25 = 4,125 Ft <sup>2</sup> 4,125 Ft <sup>2</sup> @ 37.5 Ft <sup>2</sup> /Hr = 110 Hrs		
• Labor Crew = 1 - Operator @ <u>\$ 17.71/Hr</u> \$ 17.71/Hr x 110 Hrs	=	\$ 1,948
• Travel = \$17.71/Hr x 14 Days x 1 Hr/Day	=	\$ 248
• Eq. Rental = 1 - Pavement Breaker @ <u>\$31.33/Hr</u> \$31.33/Hr x 110 Hrs	=	\$ 3,446
1- Cat 980C Loader @ <u>\$92.64/Hr</u> \$92.64/Hr x 56 Hrs	=	\$ 5,188
Sub-total	=	\$ 10,830
C. <u>Haul and Dispose</u> - Licensed Site: Concrete = $4,125$ Ft <sup>2</sup> x 8.In. = $2,750$ Ft <sup>3</sup> Set 12 In/Ft		
= $4,583 \text{ Ft}^3 \text{ Loose} (40\% \text{ Voids}) @ $5.62/ft3$	=	\$ 25,756
D. Bury Area with 2 Ft. Cover:		
• Material = 1,225 Cu.Yd. Cover @ \$1.09/Cu.Yd.	=	\$ 1,335
Foundation Total	=	\$70,019

#### SECTION 3 DRYER AREA RECLAMATION COSTS Cost Summary

COSTS (\$97)	
43,109	
10,764	
11,824	
65,697	
	43,109 10,764 11,824

# 3.1 Building

Basis: 100 Ft. x 35 Ft. with 30 Ft. Eave Floor Area = $3,500 \text{ Ft}^2$ Skin Area = $8,100 \text{ Ft}^2$		
A. Washdown Building - 0 Days	=	<b>\$</b> 0
B. Dismantle and Load - 5 Days: 3500 Ft <sup>2</sup> @ 100 Ft <sup>2</sup> /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 @ <u>\$10.90/Hr</u> \$96.58/Hr x 40 Hr	=	\$ 3,863
Sub-total	=	\$ 10,513
C. Haul and Dispose - Licensed Site: Building Materials = 5800 ft3* @ \$5.62/ft3	=	\$ 32,596
* Assumes average wall thickness of 0.5 ft		
Building Total	=	<b>\$ 43,</b> 109
3.2 Equipment		
Basis: See Table 3.1		
A. Remove and Load - 7 Days: • Labor Crew = 1 - Foreman @ \$21.58/Hr 1 - Operator @ \$17.71/Hr 4 - Laborers @ \$13.02/Hr \$91.37/Hr x 56 Hrs	=	\$ 5,117
• Travel = \$91.37/Hr x 7 Days x 1 Hr/Day	1	<b>\$ 640</b>

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• Eq. Rental = $1 - 20$ Ton Crane @ $37.39/Hr$		£ 2 004
\$37.39/Hr x 56 Hrs	=	\$ 2,094
Sub-total	=	\$ 7,851
B. <u>Dismantle and Cut</u> - 7 Days: Cut Steel @ 30 Ft <sup>3</sup> /Man-Day @ 198.6 Ft <sup>3</sup> = 7 Man-Days		
• Labor Crew = 1 - Foreman @ \$ Foreman supervises 3.2(A) & (B) 1 - Welders @ <u>\$19.35/Hr</u> \$19.35/Hr x 56 Hr	=	£ 1094
		\$_1,084
• Travel = \$19.35/Hr x 7 Days x 1 Hr/Day	=	<b>\$</b> 135
<ul> <li>Eq. Rental = 1 - Welder/Torch @ \$10.90/Hr \$10.90/Hr x 56 Hr</li> </ul>	=	\$ 610
Sub-total	=	\$ 1,829
C. <u>Haul and Dispose</u> - Licensed Site: Contaminated = 183.6 Ft. <sup>3</sup> @ \$5.62/ft3		\$ 1,032
D. <u>Haul and Dispose</u> - Landfill: Non-Contaminated = 15 Ft. <sup>3</sup> @ 4,400# Total = 0.6 Cu. Yd. @ 4,400# = 0.1 Truck Loads @ 47,000#		
0.1 Truck x 8 Hrs/Truck x \$65.39/Hr	=	\$ 52
Equipment Total	=	\$10,764
3.3 Foundation		
A. Decontaminate Slab - 2 Day:		
A. Detunianinate that 2 Day. $3500 \text{ Ft}^2 @ 1000 \text{ Ft}^2/\text{Man-Day Twice} = 7 \text{ Man-Days} = 2 \text{ Crew-Days}$		
• Labor Crew = 1 - Foreman @ \$21.58/Hr 4 - Laborers @ \$13.02/Hr \$73.66/Hr x 16 Hrs	=	\$ 1,179
• Travel = \$73.66/Hr x 2 Days x 1 Hr/Day	=	\$ 147
• Eq. Rental = Hand Tools @ \$10.90/Hr (Broom, Squeegee) \$10.90/Hr x 16 Hrs	=	<b>\$</b> 174
• 10% HCl = 2 Gal x 3500 Ft <sup>2</sup> x 2 = 14,000 Gal. Ft <sup>2</sup>		
Make-Up from 20° Be HCl Stock @ \$0.55/Gal Require 288 Gal. Stock per 1,000 Gal 10%		
14,000 x 0.288 x \$0.55/Gal	=	\$ 2,218
<ul> <li>Dispose of Fluid @ \$0.11/BBL 14,000 Gal x <u>BBL</u> x \$0.11/BBL</li> </ul>	-	\$ 37
42 Gal Sub-Total	=	\$ 3,755

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B. <u>Break and Remove 25% of Slab.</u> - 3 Da $3500 \text{ Ft}^2 \ge 0.25 = 875 \text{ Ft}^2$ $875 \text{ Ft}^2 @ 37.5 \text{ Ft}^2/\text{Hr} = 23 \text{ Hrs}$	<b>y:</b>		
• Labor Crew = 1 - Operator	@ \$ <u>17.71/Hr</u> \$17.71/Hr x 23 Hrs	=	<b>\$</b> 407
• Travel = \$17.71/Hr x 3 Days x	1Hr/Day	=	<b>\$</b> 53
• Eq. Rental = 1 - Pavement Bre	aker @ <u>\$31.33/Hr</u> \$31.33/Hr x 24 Hrs	=	<b>\$</b> 752
1- Cat 980C L	.oader @ <u>\$92.64/Hr</u> \$92.64/Hr x 12 Hr	=	\$ 1,112
Sub-total		=	\$ 2,324
C. <u>Haul and Dispose</u> - Licensed Site: Concrete = $875 \text{ Ft}^2 \times 8 \text{ In} = 12 \text{ In/Ft}$			<b>6 7</b> 473
$= 972  \mathrm{Ft}^3  \mathrm{Loose}  (40\%)^3$	Voids) (@ \$5.62/ft3	=	\$ 5,463
D. Bury Area with 2 Ft Cover:			
<ul> <li>Materials = 259 Cu.Yd. Cover</li> </ul>	@ \$1.09/Cu.Yd.	=	<b>\$ 282</b>
Foundation Total		=	\$ 11,824

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Cost	Summary
ITEM	COSTS (\$97)
4.1 Buildings	95,635
4.2 Structures	17,914
4.3 Pilot Plant Equipment	21,651
4.4 Foundation	93,185
4.5 Site Reclamation	84,073
4.6 O-Sand Pilot	56,117
4.7 Q-Sand Pilot	NA
4.8 Mine Water Treat. Ponds	19,878
Total Cost	388,453

# SECTION 4 EXISTING FACILITIES RECLAMATION COSTS

## 4.1 Buildings

Basis:	Floor Area = 33,248 $Ft^2$ Skin Area = 22,828 $Ft^2$ (13 Ft Eave)		
	1 @ 200 Ft. x 60 Ft. = 12,000 Ft <sup>2</sup> (Pilot ISL Building)         0 @ 70 Ft. x 48 Ft Demolished & Removed Sept. 1991         1 @ 70 Ft. x 68 Ft. = 4,760 Ft <sup>2</sup> (Existing Office Building)         1 @ 48 Ft. x 24 Ft. = 1,152 Ft <sup>2</sup> (Storage Building)         1 @ 24 Ft. x 24 Ft. = 576 Ft <sup>2</sup> (Water Treatment Plant)         1 @ 40 Ft x 120 Ft. = 4,826 Ft <sup>2</sup> (Shop Building)         1 @ Building       = 9,934 Ft <sup>2</sup> (New Office Annex Building)		
A. Was	$\begin{array}{l} \mbox{hdown Building - 8 Days} \\ 22,828 \mbox{ Ft}^2 (@ \ 1 \ Gal/\mbox{Ft}^2 &= 22,828 \ Gal \\ 22,828 \ \mbox{Ft}^2 (@ \ 450 \ \mbox{Ft}^2/\mbox{Man} &= 51 \ \mbox{Man-Days} \\ &= 13 \ \mbox{Crew-Days} \end{array}$		
	• Labor Crew = 1 - Foreman @ \$ 21.58/Hr 4 - Laborers @ <u>\$ 13.02/Hr</u> \$ 73.66/Hr x 104 Hr	=	\$ 7,661
	• Travel = \$73.66/Hr x 13 Days x 1 Hr/Day	=	<b>\$</b> 958
	• Eq. Rental = 4 - Pressure Washers @ <u>\$.8.71/Hr</u> \$ 34.84/Hr x 104 Hr	=	\$ 3,623
	<ul> <li>Materials = Soap @ \$1.09/BBL 22,828 Gal x BBL x \$1.09/BBL 42 Gal</li> </ul>	=	\$ 592
	<ul> <li>Dispose of Fluid @ \$0.11/BBL</li> <li>22,828 Gal x BBL x \$0.11/BBL</li> <li>42 Gal</li> </ul>	=	\$ 60
	Sub-total	=	\$ 12,894
B. Disn	nantle and Load - 24 Days: 33,248 Ft <sup>2</sup> @ 100 Ft <sup>2</sup> /Man-Day = 332 Man-Days = 42 Crew-Days		

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	Labor Crew	= 1 - Foreman @ \$ 2 2 - Welders @ \$ 1 2 - Operators @ \$ 4 - Laborers @ \$ 1	9.35/Hr 17.71/Hr			
			\$147.78/Hr x 336 Hrs	=	\$	49,654
	• Travel = \$147.7	78/Hr x 42 Days x 1 Hi	:/Day	=	\$	6,207
	• Eq. Rental =	2 - 20 Ton Cranes 2- Welder/Torches	@ \$37.39/Hr @ <u>\$10.90/Hr</u> \$96.58/Hr x 336 Hrs	=	\$ 3	32,450
	Sub-total			=	<b>\$</b> {	38,311
C.		a - On-Site Landfill: 300# = 14 Truck Loads	* @ 47,000#		•	
	14 Trucks x 8 Hrs	s/Truck x \$65.39/Hr		=	\$	7,324
	<b>* 5</b> Trucks x <u>18,4</u> 11,5	$\frac{88 \text{ Ft}^2}{550 \text{ Ft.}^2} = 14 \text{ Trucks}$				
Buildir	ngs Total			=	\$ 9	95,635
4.2 <u>Stru</u>	ctures					
A. Plug	shaft - Completed	in 1994		=	\$	0
B. Plug	<u>Venthole</u>					
-	• Backfill 335 ft.	of hole . @ \$1.09/yd)		=	\$	294
	Backhoe 16 hrs	@ \$27.25/hr		=	\$	436
	• Steel plate and 1	rebar		=	\$	300
	• Cement - 10 c.y	v. @ \$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. Min	e Water Treatment I See Section 4.8	Ponds				
D. Eva	poration Ponds Total Area = 200 • Total = 0.5 Acro	Ft. x 100 Ft. = 20,000 es x <u>\$62,555<sup>*</sup></u> 5 Acres	$Ft.^2 = 0.5 Acres$	=	\$	6,256
	* See Section 6.3	for cost on a 5 acre bas	sis			
E. Hea	dframe Removal					
	• Dismantle -	Completed in 1991		=	\$	0
Smith ]	Ranch Surety Estim	nate Revision	26	Re	vised	March 2

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Haul & Dispose - Completed in 1993	=	\$0
F. Eencing (includes delineation posts)		
Facility Fence       - 5,900 ft         Wellfield #1       - 6,600 ft         Wellfield #3       - 7,500 ft         Wellfield #4/4A       -25,000 ft         45,000 ft		
• Cost to remove fencing = \$0.15/ft	=	\$ 7,426
• Cost Basis – Third party quote dated 6/11/99		
G. Water Wells		
• Water wells (2) are 5 inch diameter wells with depth of 750 feet.		
<ul> <li>Cost Basis - \$402/well (See Section 5.4 - \$10,849 per 27 wells)</li> </ul>	=	\$ 804
H. Fuel Area		
• Size - 15 ft x 25 ft = 375 Ft <sup>2</sup> . 375 Ft <sup>2</sup> @ 37.5 Ft <sup>2</sup> /Hr = 10 Hrs		
• Labor Crew = 1 - Operators @ <u>\$ 17.71/Hr</u> \$ 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	=	\$ 17,914
4.3 <u>Pilot Plant Equipment</u> A. <u>Tanks</u> ;		
15 Tanks • Total = 15 Tanks x <u>\$51,637</u> 51 Tanks	=	\$ 15,187
B. Piping: 1500 Ft. @ 6" Dia. or Less • Total = 1500 Ft. x \$11,464 <sup>*</sup> 5,000 Ft.	=	\$ 3,439
C. Pumps: 12 Pumps		
• Total = 12 Pumps x \$10,838 <sup>*</sup>	=	\$ 3,025
43 Pumps * Cost Basis - See Sections 2.2, 2.3, & 2.4		
Pilot Plant Total	=	\$ 21,651

## 4.4 Foundation

A. Decontaminate Slab - 5 Days:		
33,248 $Ft^2$ @ 1000 $Ft^2$ /Man-Day = 33.2 Man-Days = 8.3 Crew-Days		
<ul> <li>Labor Crew = 1 - Foreman @\$21.58/Hr</li> <li>4 - Laborers @\$13.02/Hr</li> <li>\$73.66/Hr x 66.4 Hrs</li> </ul>	=	\$ 4,891
• Travel = \$73.66/Hr x 9 Days x 1 Hr/Day	=	\$ 663
• Eq. Rental = Hand Tools @ <u>\$10.90/Hr</u> (Brooms, Squeegee) @ <u>\$10.90/Hr</u> x 66.4 Hrs	=	<b>\$</b> 724
• 10% HCl = 2 Gal/Ft <sup>2</sup> x 33,248 Ft <sup>2</sup> = 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
<ul> <li>Dispose of Fluid @ \$0.11/BBL</li> <li>66,496 Gal x BBL x \$0.11 BBL</li> <li>42 Gal</li> </ul>	=	\$ 174
Sub-total	=	\$ 16,984
B. <u>Break and Remove 25% of Slab</u> - 28 Days: 33,248 Ft <sup>2</sup> x 0.25 = 8,312 Ft <sup>2</sup> 8,312 Ft <sup>2</sup> @ 37.5 Ft <sup>2</sup> /Hr = 221 Hrs		
• Labor Crew = 1 - Operator @ <u>\$17.71/Hr</u> \$17.71/Hr x 221 Hrs	22	\$ 3,914
• Travel = \$17.71/Hr x 28 Days x 1 Hr/Day	=	\$ 496
• Eq. Rental = 1 - Pavement Breaker @ <u>\$31.33/Hr</u> \$31.33/Hr x 221 Hrs	=	\$ 6,923
1 - Cat 980C Loader @ <u>\$92.64/Hr</u> \$92.64/Hr x 111 Hrs	=	\$ 10,283
Sub-total	=	\$ 21,616
C. <u>Haul and Dispose</u> - Licensed Site: Concrete = 8,312 Ft <sup>2</sup> x <u>8.1n</u> = 5,541 Ft <sup>3</sup> Set 12 In/Ft		
$= 9,235 \text{ Ft}^3 \text{ Loose (40\% Voids)} @ $5.62/ft3$	=	\$ 51,901
D. Bury Area with 2 Ft Cover:		
• Materials = 2,462 Cu. Yd. Cover @ \$1.09/Cu. Yd.	=	\$ 2,684
Foundation Total	=	\$ 93,185

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## 4.5 Site Reclamation

Basis: 47.35 Acres = 2,062,130 ft2 (Costs associated with the reclmation of the access road, CPP, wellfield pattern areas, and Trunklines 1 and 2 are covered in other areas.)

A. Rip & Contour: • Rip & Contour @ \$166.68/Acr	e x 47.35 Acre	=	\$ 7,892
B. <u>Topsoil Placement:</u> Replace 8 In. <sup>*</sup> Topsoil = 50,866 • Topsoil @ \$1.09/Cu. Yd.	Cu.Yd.	=	\$ 55,444
* 8 In. Topsoil Removed in Prev	ious Years		
C. Revegetate: • Grade and Contour @ \$8	37.19/Acre x 47.35 Acre	=	\$ 4,128
<ul> <li>Seedbed Prep.</li> <li>(Disc. + Harrow)</li> </ul>	@ \$ 21.80/Acre x 47.35 Acre	=	\$ 1,032
• Mulch (Drill + Seed + Mow)	@ \$ 49/Acre x 47.35 Acre	=	\$ 2,320
• Drill Seed and Fertilize (Drill + Seed + Fertilizer)@	\$163/Acre x 47.35 Acre	=	\$ 7,718
• Revegetation Contingency (All items excluding grading)	@ \$234/Acre x 23.67 Acre	=	\$ 5,539
* Assume only 50% of acreage n	equires reseeding		
Sub-total		=	\$ 20,737
Site Reclamation Total		=	\$84,073
4.6 O-Sand Pilot			
A. Surface Reclamation: Basis = 6 Patterns			
• Total = 6 Patterns x \$20,348 <sup>*</sup> 10 Patterns	; c	=	\$ 12,209
* See Section 5 – Cost Summary	Table (Total Cost per 10 Patterns)		
B. <u>Groundwater Restoration:</u> Basis = 6 Patterns			
• Total = 6 Patterns x <u>\$7,318</u> Pattern	,	=	\$ 43,908
* See Section 7 – Wellfield 3			
Sub-Total		=	\$ 56,117

## 4.7 Q-Sand Pilot

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# Basis - 6 Patterns

<ul> <li>Building - Removed in 1992</li> <li>Plug &amp; Abandon 10 Wells - Completed in 1992</li> <li>Reclaim Surface = To Be Completed With WF1 Operations</li> </ul>	= = =	\$0 \$0 \$0
Sub-total	=	\$0
4.8 Mine Water Treatment Ponds		
<ul> <li>A. Burial In-Place</li> <li>Settled solids to Pond 3 for Burial In-Place</li> </ul>		
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

ITEM	Cost (\$97) per 10 Patterns	Cost (\$97) 694 Patterns* 2003-2004
5.1 Buildings	1,549	107,501
5.2 Header Piping	2,792	193,765
5.3 Secondary Electrical	2,633	182,730
5.4 Wells-Total	10,849	752,921
5.5 Monitor Wells - Total	1,506	104,516
5.6 Site Reclamation	1,019	70,719
Total Cost	20,348	1,412,152

\* See Table 7.1 (Includes total number of patterns in Wellfields 1, 2, 3, 4, and 4A, plus six additional patterns added during Wellfield 3 Extension)

#### 5.1 Building

Basis: 12 Ft. x 24 Ft. with 10 Ft. Eave Floor Area =  $288 \text{ Ft}^2$ Skin Area =  $720 \text{ Ft}^2$ 

A. Washdown Building - 1 Day: Wash 720  $\operatorname{Ft}^2 @ 1 \operatorname{Gal/Ft}^2 = 720 \operatorname{Gal}$ 

Wash 720  $\operatorname{Ft}^2(a)$  450  $\operatorname{Ft}^2/\operatorname{Man-Day} = 1.6$  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 (a) \$ 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 Ft<sup>2</sup>/Man-Day  $288 \text{ Ft}^2$  @ 100 Ft<sup>2</sup>/Man-Day = 2.9 Man-Day = 1.0 Crew-Day • Labor Crew = 1 - Foreman @\$21.58/Hr 1 - Welders @\$19.35/Hr @ \$ 13.02/Hr 2 - Laborers

	\$66.97/Hr x 8 Hr		=	\$ 536
<ul> <li>Travel = \$66.97/Hr x 1 Day x</li> <li>Eq. Rental =1 - Backhoe</li> </ul>	1 Hr/Day @ \$ 27.25/Hr	``	=	\$ 67

1 - Welder/Torch	@ <u>\$ 10.90/Hr</u> \$ 38.15/Hr x 8 Hr	=	\$	305
Sub-total			=	\$ 908
C. <u>Haul and Dispose</u> - On-Site Landfill: Building = 4,700# = 0.1 Truck Load:	s <sup>•</sup> @ 47,000#			
0.1 Truck x 8 Hrs/Truck x \$65.39/H	r		=	\$ 52
* 5 Truck x 288 Ft <sup>2</sup> = 0.1 Trucks 11,550 Ft. <sup>2</sup>				
Sub-total	•		I	<b>\$</b> 52
Building Total			=	\$1,549
5.2 Header Piping				
Basis: 2000 Ft 1 <sup>1</sup> /4" Piping Buried @6 Ft. Trench = 6 Ft. x 2 Ft. = 45 Cu. Yd. Excavation = 26 Cu. Yd./Hr (Ca				
A. <u>Open Trenches</u> - 5 Days: (2000 Ft.) x ( <u>45 Cu. Yd.</u> ) x ( <u>Hr.</u> 100 Ft. 26 Cu. Y				
• Eq. Rental = 1 - Backhoe @	<u>\$ 27.25/Hr</u> \$ 27.25/Hr x 40 Hr		=	\$1,090
B. <u>Remove, Cut and Load</u> - 2.5 Days: Trenches Opened at 400 Ft/Man-Day Piping = 2000 Ft @ 400 Ft/Man-Day				
• Labor Crew = 1 - Foreman 2 - Laborers	@ \$ 21.58/Hr @ <u>\$ 13.02/Hr</u> \$ 47.62/Hr x 20 Hr		=	<b>\$</b> 952
• Travel = \$47.62 x 3 Days x 1 Hr/I	Day		H	\$ 143
• Eq. Rental = 2 - Chainsaws	@ <u>\$2.40/Hr</u> \$4.8/Hr x 20 Hrs		=	<u>\$96</u>
Sub-total	ι.		=	\$ 1,191
C. Backfill Trenches - 2 Day: Backfill @ 2.5 Time Excavation Rat Backfill @ 26 Cu.Yd/Hr. x				
(2000 Ft) x (45 <u>Cu.Yd.</u> ) x (Hr) = 13. 100 Ft 65 Cu.Yd.	.8 Hrs or 14 hours			
• Eq. Rental = 1 - Backhoe	@ <u>\$ 27.25/Hr</u> \$ 27.25/Hr x 14 Hrs		=	\$ 382
D. <u>Haul and Dispose</u> - Licensed Site: 1 1/4" Poly Pipe = 43 #/100 Ft. = 2,	000 Ft. x 0.43#/Ft. = 860#			

	Volume = $2,000 \text{ Ft x } (43 \#/100 \text{ Ft.}) = 23 \text{ Ft.}^3 @ $5.62/ft3$ 62.4 $\#_x \text{ x } 0.6$ Ft. <sup>3</sup>	=	<b>\$ 129</b>
Header	r Piping Total	=	\$2,792
5.3 <u>Seco</u>	ndary Electrical		
Basis:	Remove 2,000 ft - #10 AWG, Power Cable Remove Pole and Motor Starters		
А.	Remove Tray Cable - 1 Day:         • Labor Crew = 1 - Journeyman @ \$ 34.88/Hr         1 - Helper       @ \$ 30.51/Hr         \$ 65.39/Hr x 8 Hr	=	\$ 523
	• Travel = \$65.39/Hr x 1 Day x 2 Hr/Day + \$0.54/Mile x 1 Day x 120 Mile/Day	=	\$ 131 \$ 65
	• Eq. Rental = 1 - Truck @ \$12.26/Hr \$12.26/Hr x 8 Hr	=	\$98
	Sub-total	=	\$ 817
B. Ren	nove Motor Starters - 1 Day: • Labor Crew = 1 - Journeyman @ \$ 34.88/Hr 1 - Helper @ <u>\$ 30.51/Hr</u> \$ 65.39/Hr x 8 Hr	=	\$ 523
	• Travel = \$65.39/Hr x 1 Day x 2 Hr/Day + \$0.54/Mile x 1 Day x 120 Mile/Day	=	\$ 131 \$ 65
	• Eq. Rental = 1 - Truck @ <u>\$12.26/Hr</u> \$12.26/Hr x 8 Hr Sub-total	=	\$98 \$817
C. Dise	<ul> <li><u>connect Power Cable from Pole</u> - 0.5 Days:</li> <li>Labor Crew = 1 - Journeyman @ \$ 34.88/Hr</li> </ul>		
	1 - Helper @ <u>\$ 30.51/Hr</u> \$ 65.39/Hr x 4 Hr	=	\$ 262
	<ul> <li>Travel = \$65.39/Hr x 0.5 Day x 2 Hr/Day + \$0.54/Mile x 0.5 Day x 120 Mile/Day</li> </ul>	-	\$65 \$32
	• Eq. Rental = 1 - Bucket Truck @ \$ 37.36/Hr 1 - Truck @ \$ 12.26/Hr \$ 49.62/Hr x 4 Hr	=	<b>\$</b> 198
Sub-tota	al	=	\$ 557
D. Rer	nove 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	=	<b>\$</b> 52

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<ul> <li>Eq. Rental = 1 - 20 Ton Crane @ <u>\$ 37.39/Hr</u> \$ 37.39/Hr x 4 Hr</li> </ul>	=	\$ 150
Sub-total	=	\$ 411
E. <u>Haul and Dispose</u> - On-Site Landfll: Cable = $3.14 \times (0.5)^2 \times 2,000$ $4 \times 144 \times 0.6$ = 4.5 Ft. <sup>3</sup> @ 1499# (555#/Ft. <sup>3</sup> @ 40% Void)		
Motor Starter = 10x(24in.x 10in.x 8in.)= 11.1 Ft. <sup>3</sup> @260# (@ 26# Each) 1728		
Pole = 1 Ft. Diam. x 35 Ft. = 27.5 Ft. <sup>3</sup> @ 825# (@ $30$ #/Ft <sup>3</sup> )		
Total = 43.1 Ft. <sup>3</sup> @ 2,585# = 1.6 Cu. Yd. @ 2,585# = 0.06 Trucks @ 47,000#		
0.06 Trucks x 8 Hr/Truck x \$65.39/Hr	ы	\$ 31
Secondary Electrical Total	=	\$ 2,633
5.4 Wells		
Basis: 27 Wells per 10 Patterns 5 in. Casing, 750 Ft. TD Pumps and Tubing Set @ 550 Ft.		
A. <u>Pull Pumps and Tubing</u> - 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. <u>Plug and Abandon</u> - 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
	=	\$ 327
<ul> <li>Travel = \$65.33 x 5 Days x 1 Hr/Day</li> <li>Eq. Rental = 1 - Backhoe @ \$27.25/Hr</li> </ul>		Q 321
• Eq. Rental = 1 - Backhoe @ \$ 27.25/Hr 1 - 6000# Forklift @ \$ 13.12/Hr 2 - Skid Tanks @ <u>\$ 2.40/Hr</u> \$ 45.17/Hr x 36 Hrs	=	\$ 1,626
* \$1927/Month @ 160 Hr/Month x 1.899 (CPI inflator) = \$13.12/Hr		\$ 1,020
<ul> <li>Materials - 270 - Sacks Cement 21,600 - # 'Shur Gel'</li> <li>(a) \$ 5.45/each</li> <li>(b) \$ 5.45/each</li> <li>(c) \$ 5.45/each</li></ul>	=	\$ 5,001
Sub-total	=	\$ 9,306

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C. <u>Haul and Dispose</u> - Licensed Site: Pumps = 10 x 5 In. Dia. x 8 Ft. Long = 10.9 Ft. <sup>3</sup> @ 850# (@ 85# Each)		
Tubing = 27 x $550$ Ft x $43\#/100$ Ft. = 170.6 Ft. <sup>3</sup> @ $62.4 \#/Ft.^3 x 0.6$	. 6386#	
Total = 181.5 ft3 @ \$5.62/ft3	= \$1,	,020
Wells Total	= \$10,	,849
5.5 Monitor Wells		
Basis: 3.21 Per 10 Patterns 5 in. Casing, 750 Ft. T.D. Pumps and Tubing Set @ 550 Ft.		
A. <u>Pull Pumps and Tubing</u> - 1 Day: 3.21 Pumps @ 5 Pumps/Crew-Day = 1 Day		
• Eq. Rental = 1 - Pulling Unit w/2-Man Crew @		262
B. <u>Plug and Abandon</u> - 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/ 1 - Operator @ \$19.35/ 2 - Laborers @ \$13.02/ \$66.97/	/Hr	268
• Travel = \$66.97/Hr x 1 Day x 1 Hr/Day	= \$	67
1 - 6000# Forklift @ \$ 13.12 2 - Skid Tanks @ \$_2.	.40/Hr	181
• Materials - 32 Sacks Cement @ \$ 5.45/ 2,568 - # 'Shur Gel' @ \$ 16.34 \$ 59	/100#	594
Sub-total	= \$1	,110
C. <u>Haul and Dispose</u> - Licensed Site: Pumps = 3.21 @ 5 In. Dia. x 8 Ft. Long = 3.5 Ft. <sup>3</sup>	@273# (83# Each)	
Tubing = $3.21 \times \frac{550 \text{ Ft} \times 43\#/100 \text{ Ft}}{62.4 \#/\text{Ft}} = 20.3 \text{ Ft}^3$ (6)	J759#	
Total = 23.8 Ft. <sup>3</sup> @ $5.62/ft3$	= \$	134
Monitor Well Total	= \$1	,506

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# 5.6 Site Reclamation

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Basis: Revegetate 2.3 Acres (500 Ft. x 20 Replace 10 Cu.Yd. Tops	00 Ft.) oil (540 Ft. <sup>2</sup> x 6 In.) @ Building Pad		
A. Topsoil Placement: • 10 Cu.Yd. @ 1.09/Cu.Yd.		=	\$ 11
B. Revegetate:			
<ul> <li>Grade and Contour Topsoil</li> <li>Seedbed Prep.</li> </ul>	@ \$ 87.19/Acre x 2.3 Acres	=	\$ 201
(Disc. + Harrow)	@ \$21.80/Acre x 2.3 Acres	=	\$ 50
<ul> <li>Mulch (Drill + Seed + Mow)</li> <li>Drill Seed and Fertilize</li> </ul>	@ \$49/Acre x 2.3 Acres	=	\$ 113
(Drill + Seed + Fertilizer)	@ \$163/Acre x 2.3 Acres	=	\$ 375
<ul> <li>Revegetation Contingency (All items excluding grading)</li> </ul>	@ \$234/Acre x 1.15 Acres	=	\$ 269
Sub-total		=	\$ 1,008
* Assume only 50% of acreage rec	nuires reseeding		
Site Reclamation Total		=	\$ 1,019

# SECTION 6 ASSOCIATED STRUCTURES RECLAMATION COSTS

Cost Summary				
ITEM	COSTS (\$97)			
6.1 Trunkline #1 (5000 ft)	68,901			
6.2 Trunkline #2 (10000 ft)	137,802			
6.3 Radium Settling Ponds	62,555			
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	451,024			

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# 6.1 Trunkline

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

	Length Trench Excavat		5,000 Ft. 6 Ft. x 4 Ft. = 89 Cu. Yd./100 Ft 150 <u>Cu. Yd.</u> (Cat. 225 1.25 Cu. Yd. Bucket) Hr		
A. Oper	<u>1 Trench -</u> 4 Days: (5000 Ft.) x (89.1		ir) = 30 Hrs - Round to 32 Hrs 0 Cu. Yd.		
	• Eq. Rental =	1 - Cat. 225 1	rackhoe @ <b>\$112.26/Hr</b> \$112.26/Hr x 32 Hr	=	\$ 3,592
B.	Remove, Cut and 2 - 5000 Ft Trun		rs: /Man-Day = 71.4 Man-Day = 18 Crew-Day		
	Labor Crew	= 1 - Foreman 4 - Laboren	a @ \$21.58/Hr 5 @ <u>\$13.02/Hr</u> \$73.66/Hrs x 144 Hr	=	\$ 10,607
	• Travel = \$73.6	66/Hr x 18 Days	x 1 Hr/Day	ŧ	\$ 1,326
	• Eq. Rental =	2 - Backhoe 2 - Chainsaw	@ \$27.25/Hr @ <u>\$ 2.40/Hr</u> \$59.30/Hr x 144 Hr	=	\$ 8,539
	Sub-total			=	\$ 20,472
C. Back	cfill Trench - 5 Day Backfill @ 65 C Backfill @ 130 (	u.Yd./Hr Per B			
	<b>(5000 Ft.) x (89_</b> 10(	<u>Cu.Yd.) (_Hr</u> 0 Ft. 130 Cu.			
	• Eq. Rental = 2	- Backhoes	@ <u>\$ 27.25/Hr</u> \$ 54.50/Hr x 40 Hrs	=	\$ 2,180

D. Deco	ontaminate - 0 Days:		=	\$	0
E. Haul	<u>and Dispose</u> - Licensed Site: 100% of Pipe = 2 x 5,000 Ft. x 2	8.27#/Ft = 282,700#			~
	= 282,700# 62.4#/Ft. <sup>3</sup> x 0.	$_{=}$ = 7551 Ft. <sup>3</sup> @ \$5.62/ft3 6	=	<b>S</b> 4	2,437
F. Haul	& Dispose - Landfill:	、	=	\$	0
G. Surfi	ace Reclamation: 4 Ft. x 5000 Ft. = 20,000 Ft. <sup>2</sup> = 0	9.5 Acres			
	• Grade and Contour @	\$ 87.19/Acre x 0.5 Acre	=	\$	. <b>43</b>
	<ul> <li>Seedbed Prep.</li> <li>(Disc. + Harrow)</li> </ul>	@ \$21.80/Acre x 0.5 Acre	=	\$	11
	• Mulch (Drill + Seed + Mow)	@ \$ 49/Acre x 0.5 Acre	=	\$	25
	<ul> <li>Drill Seed and Fertilize (Drill + Seed + Fertilizer)@\$1</li> </ul>	63/Acre x 0.5 Acre	=	\$	82
	• Revegetation Contingency (All items excluding grading)	@ \$234/Acre x 0.25 Acre	=	\$	59
	* Assume only 50% of acreage r	equires reseeding			
Sub-to	tal		` <b>=</b>	\$	220
Trunklin	e Total		=	\$68	8,901 v
6.2 Tru	okline #2				
Cost for	r 5000 ft line is \$68,901. Trucklir	ne #2 is 10,000 ft. @ \$68,901 x 2	=	\$13	37,802
6.3 <u>Radi</u>	ium Settling Ponds				
Basis:	2 Ponds 9 Ft. Deep Below Grade plus 3 H Bottom = 180 Ft. x 360 Ft. (Per Top = 252 Ft. x 43 Liner = 106,000 Ft <sup>2</sup> x 30 MH Solids = 200 Ft. <sup>3</sup> /Yr (Both Pon	· Pond) 2 Ft. (Per Pond) . (Per Pond)			
A. Rem	nove Solids and Liner - 8 Days:	2			
	Liner = 2 Ponds x 106,000 Ft	$t^2 \ge 0.03 \text{ In}/12 = 530 \text{ Ft.}^3$ = 33,072# @ 62.4#/Ft^3 = 883 Ft^3 @ 40% Voids			
	Solids = 200 ft3/yr = 2 = 8	00 Ft. <sup>3</sup> /Yr Yr #1 - 1998 00 Ft. <sup>3</sup> In Yr #5 - 2002			
	Remove @ 55 Gal/Man-Hr or 6	0 Ft <sup>3</sup> /Man-Day			

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Yr #5 = $1683 \text{ Ft}^3 @ 60 \text{ Ft}^3/\text{Man-Day} =$	= 28 Man-Days = 7 Crew-Days		
• Labor Crew = 1 - Foreman @ 4 - Laborers @	\$21.58/Hr \$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 @	<u>\$27.25/Hr</u> \$54.50/Hr x 56 Hr	=	\$ 3,052
Sub-total		=	\$ 7,693
	9 Ft = 583,200 Ft <sup>3</sup> t x 9 Ft = 43,740 Ft <sup>3</sup> FT X 9 Ft = $\frac{87,480 \text{ Ft}^3}{714,420 \text{ Ft}^3}$ (Per Pond)		
Total Volume = $714,420$ Ft <sup>3</sup> /Pond x 2	$Ponds = 1,428,840 \text{ Ft}^3 = 52,920 \text{ Cu.Yd.}$		
Backfill @ 250 Cu.Yd./Hr = $21$	2 Hrs		
• Eq. Rental = 1 - D8N Dozer @ 1- Grader	\$117.71/Hr @ <u>\$ 65.39/Hr</u> \$183.10/Hr x 212 Hr	=	\$ 38,817
C. <u>Replace 6 In. Topsoil</u> : 2 Ponds x 0.5 Ft. x 252 Ft. x 432 Ft. =	= 108,864 Ft. <sup>3</sup> = 4032 Cu. Yd.		
• Topsoil = 4032 Cu. Yd x \$1.09/Cu	u. Yd.	ŧ	\$ 4,395
D. <u>Revegetate</u> : 2 Ponds x 252 Ft. x 432 Ft. = 217,728	$3 \text{ Ft.}^2 = 5 \text{ Acres}$		
Grade and Contour     @ \$2	87.19/Acre x 5 Acre	=	\$ 436
<ul> <li>Seedbed Prep.</li> <li>(Disc. + Harrow) @ \$21.80/Acres</li> </ul>	x 5 Acre	=	\$ 109
• Mulch (Drill + Seed + Mow) @	\$ 49/Acre x 5 Acre	=	\$ 245
<ul> <li>Drill Seed and Fertilize (Drill + Seed + Fertilizer)@ \$1</li> </ul>	63/Acre x 5 Acre	=	\$ 817
• Revegetation Contingency <sup>•</sup> @ (All items excluding grading)	\$234/Acre x 2.5 Acre	=	\$ 585
* Assume only 50% of acrea	age requires reseeding		
Sub-total		=	\$ 2,192
E. <u>Haul and Dispose</u> - Licensed Site: Solids = 800 Ft. <sup>3</sup> @ 154,400# (60% Liner = 883 Ft. <sup>3</sup> @ 33,072# (62.4	%@280#/Ft. <sup>3</sup> + 40%@62.4#/Ft. <sup>3</sup> = 193#/Ft <sup>3</sup> ) !#/Ft. <sup>3</sup> @40% Voids)		

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Total = $1683 \text{ Ft.}^3$ @ \$5.62/ft3	=	\$ 9,458
Radium Settling Pond Total	=	\$ 62,555
6.4a Plugging and Abandoning Deep Disposal Well #1		ć
Oilfield Workover Unit, 6 Days @ \$1,634.85/Day	z	\$ 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	=	<b>\$</b> 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
Dieg and then doning Disposal Well	_	\$ 77,735
Plug and Abandoning Disposal Well	=	\$ 77,733
6.4b Plugging and Abandoning Deep Disposal Well #2	=	\$ 77,733
	=	\$ 9,809
6.4b Plugging and Abandoning Deep Disposal Well #2		\$   9,809 \$   1,090
6.4b Plugging and Abandoning Deep Disposal Well #2 Oilfield Workover Unit, 6 Days @ \$1,634.85/Day	=	\$ 9,809
6.4b Plugging and Abandoning Deep Disposal Well #2 Oilfield Workover Unit, 6 Days @ \$1,634.85/Day Circulating Pump & Tank, 2 Days @ \$545/Day	=	\$   9,809 \$   1,090
6.4b Plugging and Abandoning Deep Disposal Well #2 Oilfield Workover Unit, 6 Days @ \$1,634.85/Day Circulating Pump & Tank, 2 Days @ \$545/Day Power Swivel, 1 Day @ \$436/Day	=	\$ 9,809 \$ 1,090 \$ 436 \$ 1,062 \$ 109
6.4b Plugging and Abandoning Deep Disposal Well #2 Oilfield Workover Unit, 6 Days @ \$1,634.85/Day Circulating Pump & Tank, 2 Days @ \$545/Day Power Swivel, 1 Day @ \$436/Day Water Hauling & Water, 3 Days @ \$354/Day	= = =	\$ 9,809 \$ 1,090 \$ 436 \$ 1,062 \$ 109 \$ 1,198
<ul> <li>6.4b Plugging and Abandoning Deep Disposal Well #2</li> <li>Oilfield Workover Unit, 6 Days @ \$1,634.85/Day Circulating Pump &amp; Tank, 2 Days @ \$545/Day Power Swivel, 1 Day @ \$436/Day Water Hauling &amp; Water, 3 Days @ \$354/Day Frac Tank Rental Slickline Services, 2 Days @ \$599/Day 2 - 7/8 Inch "R" Nipple</li> </ul>		\$ 9,809 \$ 1,090 \$ 436 \$ 1,062 \$ 109 \$ 1,198 \$ 1,417
6.4b Plugging and Abandoning Deep Disposal Well #2 Oilfield Workover Unit, 6 Days @ \$1,634.85/Day Circulating Pump & Tank, 2 Days @ \$545/Day Power Swivel, 1 Day @ \$436/Day Water Hauling & Water, 3 Days @ \$354/Day Frac Tank Rental Slickline Services, 2 Days @ \$599/Day 2 - 7/8 Inch "R" Nipple Mud Materials		\$ 9,809 \$ 1,090 \$ 436 \$ 1,062 \$ 109 \$ 1,198 \$ 1,417 \$ 545
6.4b Plugging and Abandoning Deep Disposal Well #2 Oilfield Workover Unit, 6 Days @ \$1,634.85/Day Circulating Pump & Tank, 2 Days @ \$545/Day Power Swivel, 1 Day @ \$436/Day Water Hauling & Water, 3 Days @ \$354/Day Frac Tank Rental Slickline Services, 2 Days @ \$599/Day 2 - 7/8 Inch "R" Nipple Mud Materials 2 - 7/8 Inch Tubing Rental, 8610' @ \$0.54/Ft-Day		\$ 9,809 \$ 1,090 \$ 436 \$ 1,062 \$ 109 \$ 1,198 \$ 1,417 \$ 545 \$ 2,325
<ul> <li>6.4b Plugging and Abandoning Deep Disposal Well #2</li> <li>Oilfield Workover Unit, 6 Days @ \$1,634.85/Day Circulating Pump &amp; Tank, 2 Days @ \$545/Day Power Swivel, 1 Day @ \$436/Day Water Hauling &amp; Water, 3 Days @ \$354/Day Frac Tank Rental Slickline Services, 2 Days @ \$599/Day 2 - 7/8 Inch "R" Nipple Mud Materials 2 - 7/8 Inch Tubing Rental, 8610' @ \$0.54/Ft-Day Rental Tubing Inspection, 278 Jnts @ \$10.90/Jnt</li> </ul>		\$ 9,809 \$ 1,090 \$ 436 \$ 1,062 \$ 109 \$ 1,198 \$ 1,417 \$ 545 \$ 2,325 \$ 3,030
<ul> <li>6.4b Plugging and Abandoning Deep Disposal Well #2</li> <li>Oilfield Workover Unit, 6 Days @ \$1,634.85/Day Circulating Pump &amp; Tank, 2 Days @ \$545/Day Power Swivel, 1 Day @ \$436/Day Water Hauling &amp; Water, 3 Days @ \$354/Day Frac Tank Rental Slickline Services, 2 Days @ \$599/Day 2 - 7/8 Inch "R" Nipple Mud Materials 2 - 7/8 Inch Tubing Rental, 8610' @ \$0.54/Ft-Day Rental Tubing Inspection, 278 Jnts @ \$10.90/Jnt Cement &amp; Services, 3 Squeeze Jobs @ 4374 each</li> </ul>		\$ 9,809 \$ 1,090 \$ 436 \$ 1,062 \$ 109 \$ 1,198 \$ 1,417 \$ 545 \$ 2,325
<ul> <li>6.4b Plugging and Abandoning Deep Disposal Well #2</li> <li>Oilfield Workover Unit, 6 Days @ \$1,634.85/Day Circulating Pump &amp; Tank, 2 Days @ \$545/Day Power Swivel, 1 Day @ \$436/Day Water Hauling &amp; Water, 3 Days @ \$354/Day Frac Tank Rental Slickline Services, 2 Days @ \$599/Day 2 - 7/8 Inch "R" Nipple Mud Materials 2 - 7/8 Inch Tubing Rental, 8610' @ \$0.54/Ft-Day Rental Tubing Inspection, 278 Jnts @ \$10.90/Jnt Cement &amp; Services, 3 Squeeze Jobs @ 4374 each Squeeze Manifold, Retainer, Swivel, Setting Tool</li> </ul>		\$ 9,809 \$ 1,090 \$ 436 \$ 1,062 \$ 109 \$ 1,198 \$ 1,417 \$ 545 \$ 2,325 \$ 3,030 \$ 13,122
6.4b Plugging and Abandoning Deep Disposal Well #2 Oilfield Workover Unit, 6 Days @ \$1,634.85/Day Circulating Pump & Tank, 2 Days @ \$545/Day Power Swivel, 1 Day @ \$436/Day Water Hauling & Water, 3 Days @ \$354/Day Frac Tank Rental Slickline Services, 2 Days @ \$599/Day 2 - 7/8 Inch "R" Nipple Mud Materials 2 - 7/8 Inch Tubing Rental, 8610' @ \$0.54/Ft-Day Rental Tubing Inspection, 278 Jnts @ \$10.90/Jnt Cement & Services, 3 Squeeze Jobs @ 4374 each Squeeze Manifold, Retainer, Swivel, Setting Tool @ \$1,820/Squeeze Job		\$ 9,809 \$ 1,090 \$ 436 \$ 1,062 \$ 109 \$ 1,198 \$ 1,417 \$ 545 \$ 2,325 \$ 3,030 \$ 13,122 \$ 5,460
6.4b Plugging and Abandoning Deep Disposal Well #2 Oilfield Workover Unit, 6 Days @ \$1,634.85/Day Circulating Pump & Tank, 2 Days @ \$545/Day Power Swivel, 1 Day @ \$436/Day Water Hauling & Water, 3 Days @ \$354/Day Frac Tank Rental Slickline Services, 2 Days @ \$599/Day 2 - 7/8 Inch "R" Nipple Mud Materials 2 - 7/8 Inch Tubing Rental, 8610' @ \$0.54/Ft-Day Rental Tubing Inspection, 278 Jnts @ \$10.90/Jnt Cement & Services, 3 Squeeze Jobs @ 4374 each Squeeze Manifold, Retainer, Swivel, Setting Tool @ \$1,820/Squeeze Job Cement & Services, 2 Stabilizers & Surface Plugs		\$ 9,809 \$ 1,090 \$ 436 \$ 1,062 \$ 109 \$ 1,198 \$ 1,417 \$ 545 \$ 2,325 \$ 3,030 \$ 13,122 \$ 5,460 \$ 4,711
6.4b Plugging and Ahandoning Deep Disposal Well #2 Oilfield Workover Unit, 6 Days @ \$1,634.85/Day Circulating Pump & Tank, 2 Days @ \$545/Day Power Swivel, 1 Day @ \$436/Day Water Hauling & Water, 3 Days @ \$354/Day Frac Tank Rental Slickline Services, 2 Days @ \$599/Day 2 - 7/8 Inch "R" Nipple Mud Materials 2 - 7/8 Inch Tubing Rental, 8610' @ \$0.54/Ft-Day Rental Tubing Inspection, 278 Jnts @ \$10.90/Jnt Cement & Services, 3 Squeeze Jobs @ 4374 each Squeeze Manifold, Retainer, Swivel, Setting Tool @ \$1,820/Squeeze Job Cement & Services, 2 Stabilizers & Surface Plugs Welder, Dirtwork & Roustabouts		\$ 9,809 \$ 1,090 \$ 436 \$ 1,062 \$ 109 \$ 1,198 \$ 1,417 \$ 545 \$ 2,325 \$ 3,030 \$ 13,122 \$ 5,460 \$ 4,711 \$ 13,624
<ul> <li>6.4b Plugging and Abandoning Deep Disposal Well #2</li> <li>Oilfield Workover Unit, 6 Days @ \$1,634.85/Day Circulating Pump &amp; Tank, 2 Days @ \$545/Day Power Swivel, 1 Day @ \$436/Day Water Hauling &amp; Water, 3 Days @ \$354/Day Frac Tank Rental Slickline Services, 2 Days @ \$599/Day 2 - 7/8 Inch "R" Nipple Mud Materials</li> <li>2 - 7/8 Inch Tubing Rental, 8610' @ \$0.54/Ft-Day Rental Tubing Inspection, 278 Jnts @ \$10.90/Jnt Cement &amp; Services, 3 Squeeze Jobs @ 4374 each Squeeze Manifold, Retainer, Swivel, Setting Tool @ \$1,820/Squeeze Job Cement &amp; Services, 2 Stabilizers &amp; Surface Plugs Welder, Dirtwork &amp; Roustabouts Trucking</li> </ul>		\$ 9,809 \$ 1,090 \$ 436 \$ 1,062 \$ 109 \$ 1,198 \$ 1,417 \$ 545 \$ 2,325 \$ 3,030 \$ 13,122 \$ 5,460 \$ 4,711 \$ 13,624 \$ 2,725
6.4b Plugging and Abandoning Deep Disposal Well #2 Oilfield Workover Unit, 6 Days @ \$1,634.85/Day Circulating Pump & Tank, 2 Days @ \$545/Day Power Swivel, 1 Day @ \$436/Day Water Hauling & Water, 3 Days @ \$354/Day Frac Tank Rental Slickline Services, 2 Days @ \$599/Day 2 - 7/8 Inch "R" Nipple Mud Materials 2 - 7/8 Inch Tubing Rental, 8610' @ \$0.54/Ft-Day Rental Tubing Inspection, 278 Jnts @ \$10.90/Jnt Cement & Services, 3 Squeeze Jobs @ 4374 each Squeeze Manifold, Retainer, Swivel, Setting Tool @ \$1,820/Squeeze Job Cement & Services, 2 Stabilizers & Surface Plugs Welder, Dirtwork & Roustabouts Trucking Supervision, 8 Days @ \$545/Day		\$ 9,809 \$ 1,090 \$ 436 \$ 1,062 \$ 109 \$ 1,198 \$ 1,417 \$ 545 \$ 2,325 \$ 3,030 \$ 13,122 \$ 5,460 \$ 4,711 \$ 13,624 \$ 2,725 \$ 4,360
6.4b Plugging and Abandoning Deep Disposal Well #2 Oilfield Workover Unit, 6 Days @ \$1,634.85/Day Circulating Pump & Tank, 2 Days @ \$545/Day Power Swivel, 1 Day @ \$436/Day Water Hauling & Water, 3 Days @ \$354/Day Frac Tank Rental Slickline Services, 2 Days @ \$599/Day 2 - 7/8 Inch "R" Nipple Mud Materials 2 - 7/8 Inch Tubing Rental, 8610' @ \$0.54/Ft-Day Rental Tubing Inspection, 278 Jnts @ \$10.90/Jnt Cement & Services, 3 Squeeze Jobs @ 4374 each Squeeze Manifold, Retainer, Swivel, Setting Tool @ \$1,820/Squeeze Job Cement & Services, 2 Stabilizers & Surface Plugs Welder, Dirtwork & Roustabouts Trucking Supervision, 8 Days @ \$545/Day Miscellaneous, Contingencies, & Sales Tax (10% Above)		\$ 9,809 \$ 1,090 \$ 436 \$ 1,062 \$ 109 \$ 1,198 \$ 1,417 \$ 545 \$ 2,325 \$ 3,030 \$ 13,122 \$ 5,460 \$ 4,711 \$ 13,624 \$ 2,725 \$ 4,360 \$ _6,502
6.4b Plugging and Abandoning Deep Disposal Well #2 Oilfield Workover Unit, 6 Days @ \$1,634.85/Day Circulating Pump & Tank, 2 Days @ \$545/Day Power Swivel, 1 Day @ \$436/Day Water Hauling & Water, 3 Days @ \$354/Day Frac Tank Rental Slickline Services, 2 Days @ \$599/Day 2 - 7/8 Inch "R" Nipple Mud Materials 2 - 7/8 Inch Tubing Rental, 8610' @ \$0.54/Ft-Day Rental Tubing Inspection, 278 Jnts @ \$10.90/Jnt Cement & Services, 3 Squeeze Jobs @ 4374 each Squeeze Manifold, Retainer, Swivel, Setting Tool		\$ 9,809 \$ 1,090 \$ 436 \$ 1,062 \$ 109 \$ 1,198 \$ 1,417 \$ 545 \$ 2,325 \$ 3,030 \$ 13,122 \$ 5,460 \$ 4,711 \$ 13,624 \$ 2,725 \$ 4,360 \$ 6,502 \$ 71,525
6.4b Plugging and Abandoning Deep Disposal Well #2 Oilfield Workover Unit, 6 Days @ \$1,634.85/Day Circulating Pump & Tank, 2 Days @ \$545/Day Power Swivel, 1 Day @ \$436/Day Water Hauling & Water, 3 Days @ \$354/Day Frac Tank Rental Slickline Services, 2 Days @ \$599/Day 2 - 7/8 Inch "R" Nipple Mud Materials 2 - 7/8 Inch Tubing Rental, 8610' @ \$0.54/Ft-Day Rental Tubing Inspection, 278 Jnts @ \$10.90/Jnt Cement & Services, 3 Squeeze Jobs @ 4374 each Squeeze Manifold, Retainer, Swivel, Setting Tool @ \$1,820/Squeeze Job Cement & Services, 2 Stabilizers & Surface Plugs Welder, Dirtwork & Roustabouts Trucking Supervision, 8 Days @ \$545/Day Miscellaneous, Contingencies, & Sales Tax (10% Above) Sub-Total Year 1991 & 1992 CPI Escalation		\$ 9,809 \$ 1,090 \$ 436 \$ 1,062 \$ 109 \$ 1,198 \$ 1,417 \$ 545 \$ 2,325 \$ 3,030 \$ 13,122 \$ 5,460 \$ 4,711 \$ 13,624 \$ 2,725 \$ 4,360 \$ 6,502 \$ 71,525 \$ 6,210
6.4b Plugging and Abandoning Deep Disposal Well #2 Oilfield Workover Unit, 6 Days @ \$1,634.85/Day Circulating Pump & Tank, 2 Days @ \$545/Day Power Swivel, 1 Day @ \$436/Day Water Hauling & Water, 3 Days @ \$354/Day Frac Tank Rental Slickline Services, 2 Days @ \$599/Day 2 - 7/8 Inch "R" Nipple Mud Materials 2 - 7/8 Inch Tubing Rental, 8610' @ \$0.54/Ft-Day Rental Tubing Inspection, 278 Jnts @ \$10.90/Jnt Cement & Services, 3 Squeeze Jobs @ 4374 each Squeeze Manifold, Retainer, Swivel, Setting Tool		\$ 9,809 \$ 1,090 \$ 436 \$ 1,062 \$ 109 \$ 1,198 \$ 1,417 \$ 545 \$ 2,325 \$ 3,030 \$ 13,122 \$ 5,460 \$ 4,711 \$ 13,624 \$ 2,725 \$ 4,360 \$ 6,502 \$ 71,525

# 6.5 Reclamation of Sand Mining Area

6.5 <u>Reclamation of Sand Mining Area</u> 10 acres of disturbed area on sa			
Grade and contour @ \$ 87.19/a	cre x 10 Acre	=	\$ 872
Replace 6 inch topsoil = 217,80 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 @\$10	3/acre x 10 Acre	=	\$ 1,630
Revegetation Contingency (All items excluding grading)	@ \$234/acre x 5 Acre	=	\$ 1,170
Assume only 50% of acreage re	quires reseeding		
Sand Mining Area Total		=	\$ 13,173
6.6 Land Fill			
Bottom = 3 Top = 5	with 4 Ft. active strg. plus 2 ft. cover. 0 Ft. x 70 Ft. = 2,100 Ft. <sup>2</sup> 4 Ft. x 94 Ft. = 5,076 Ft. <sup>2</sup> 5 Ft. x 106 Ft. = 6,996 Ft. <sup>2</sup> Ft. x 70 Ft. x 4 Ft. = 8,400 Ft. <sup>3</sup>		
	+ 12 Ft. x 30 Ft. x 4 Ft = 1,440 Ft. <sup>3</sup> + 12 Ft. x 70 Ft. x 4 Ft. = $_{3,360}$ Ft. <sup>3</sup> 13,200 Ft. <sup>3</sup>		
	$\begin{array}{rcl} 94 \ \mathrm{Ft.} & \mathrm{x} \ 2 \ \mathrm{Ft.} \ = & 10,152 \ \mathrm{Ft.}^3 \\ \mathrm{t.} & \mathrm{x} \ 54 \ \mathrm{Ft.} & \mathrm{x} \ 2 \ \mathrm{Ft.} \ = & 648 \ \mathrm{Ft.}^3 \\ \mathrm{t.} & \mathrm{x} \ 94 \ \mathrm{Ft.} & \mathrm{x} \ 2 \ \mathrm{Ft.} \ = & 1,128 \ \mathrm{Ft.}^3 \\ & 11,928 \ \mathrm{Ft.}^3 \end{array}$		
Total Volume = $13,200$ Ft. <sup>3</sup> + 1	$1,928 \text{ Ft.}^3 = 25,120 \text{ Ft.}^3 = 931 \text{ Cu.Yd.}$		
A. <u>Open Pit</u> - 1 Day:			
$Productivity = 167 \Omega$	LYd. (Cat. 627E Scraper) Hr		
	$_{-}) = 5.6$ Hrs round to 6 Hrs Cu.Yd.		
• Eq. Rental = 1 - Cat	627E Scraper @ \$121/Hr \$121/Hr x 6 Hrs	=	\$ 726
B. Backfill Non-Contaminated Basis: See Table 6.1 Yr. 5 Total Volume =	<u>Material - 1 Day:</u> 8448 Ft. <sup>3</sup> = 312.9 Cu.Yd.		
Backfill @ 65 Cu.Yd	Hr. = 4.8 Hrs. round to 5 Hrs		

• Eq. Rental = 1 - Backhoe @ <u>\$27.25/Hr</u> \$27.25/Hr x 8 Hrs		=	\$	218
C. <u>Backfill to Grade</u> - 2 Days: Voids = 312.9 Cu.Yd. x 0.4 = 125 Cu.Yd.				
Remainder of Active Strg. = $13,200 \text{ Ft.}^3 - 8,203 \text{ Ft.}^3$ = $5,103 \text{ Ft.}^3 = 189 \text{ Cu.Yd.}$				
Cover = $11,928$ Ft. <sup>3</sup> = 442 Cu.Yd. Total = 756 Cu.Yd.				
Backfill @ 65 Cu.Yd./Hr = 11.6 Hrs round to 12 Hrs				
• Eq. Rental = 1 - Backhoe @ \$27.25/Hr \$27.25/Hr x 12 Hrs		=	\$	327
D. Surface Reclamation: Basis: 6996 Ft. <sup>2</sup> = 0.2 Acre				
Replace 6 in. Topsoil = 6996 Ft. <sup>2</sup> x 0.5 Ft. = $3498$ Ft <sup>3</sup> = 130 Cu.Yd.				
• Topsoil Placement @ 1.09/Cu.Yd.		=	\$	142
• Grade and Contour @ \$87.19/Acre x 0.2 Acre		=	\$	17
• Seedbed Prep. (Disc. + Harrow) @ \$21.80/Acre x 0.2 Acre		=	\$	4
• Mulch (Drill + Seed + Mow) @ \$49/Acre x 0.2 Acre		=	\$	10
<ul> <li>Drill Seed &amp; Fertilize @ \$163/Acre x 0.2 Acre</li> <li>Revegetation Contingency @ \$234/Acre x 0.1 Acre (All items excluding grading)</li> </ul>		=	\$ \$	33 23
* Assume only 50% of acreage requires reseeding.			-	
Sub-total		=	\$	229
Land Fill Total		=	\$1	1,500
<b><u>6.7</u></b> Fire Protection System Basis = 32 ft dia. x 26 ft ht. x $0.25 = 43,400 \ \# = 148 \ \text{ft}^3$ (40% void)				
A. Decontaminate - 0 Days:	u		\$	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	2,613
<ul> <li>Travel = \$65.33/Hr x 5 Days x 1 Hr/Day</li> <li>Eq. Rental = 1 - 20 Ton Crane @ \$37.39/Hr \$37.39/Hr x 40 Hrs</li> </ul>	=		\$ \$	327 1,496
Sub-total	=		\$	4,436

C. Disn	nantle, Cut, or Crush - 5 Days: Cut Steel @ 30 Ft <sup>3</sup> /Man-Day @ 518.5 Ft <sup>3</sup> = 5 Man-Days		
	<ul> <li>Labor Crew = 1 - Foreman <ol> <li>Welder</li> <li>2 - Laborers</li> </ol> </li> <li>Welder</li> <li>\$ 19.35/Hr</li> <li>\$ 13.02/Hr</li> <li>\$ 45.39/Hr x 40 Hrs</li> </ul>	=	\$ 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 @ <u>\$10.90/Hr</u> \$128.61/Hr x 40 Hrs	=	\$ 5,144
	Sub-total	=	\$ 7,187
D.	Haul and Dispose - On-Site Landfill: 100% of Non-Contaminated Service = 148 Ft <sup>3</sup> @ 43,400# Total = 5.5 Cu.Yd. @ 43,400# = 1 Truckloads @ 47,000#		
	1 Truck x 8 Hrs/Truck x \$65.39/Hr	<b>#</b>	<b>\$</b> 523
Tankaş	ge and Vessel Total	=	\$ 11,623

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# SECTION 7 GROUNDWATER RESTORATION COSTS

Cost Summary					
ITEM	COST (\$97)				
7.1 Ground Water Restoration					
Wellfield 1	\$943,104				
Wellfield 2	\$2,199,549				
Wellfield 3	\$1,325,809				
Wellfield 3 Ext.	\$604,950				
Wellfield 4	\$996,586				
Wellfield 4 Ext.	\$326,250				
Wellfield 4A	\$785,587				
Total Cost	\$7,181,835				

#### 7.1 Groundwater Restoration Costs

Basis: Tables 7.1 through 7.8 - Groundwater Restoration Basis

Using the Affected Pore Volumes from Table 7.1, the detailed cost for groundwater restoration is provided for each wellfield in Tables 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, and 7.8.

Wellfield 3 Ext. represents the second completion for 76 existing patterns in Wellfield 3 and results in a net increase of six patterns. Wellfield 4 Ext. represents the second completion for 33 existing patterns in Wellfield 4.

Table 7.1Affected Pore Volume Estimates

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Weilfield	Number of Perimeter Injection Wells	Measured Pattern Area. (ft²)	Perimetet Inj Wells per Unit Area	Number of Patterns	Average Open Interval (ft)	Effective Porosity	from Fig	Pore Volume	Wellfield Affected Pore Volume (gallons)
1	170	1,115,229	1.52E-04	116	18	0.27	1.7	594,146	68,920,890
2	176	2,260,172	7.79E-05	181	24	0.27	1.5	907,885	164,327,161
3	147	1,622,462	9.06E-05	162	20	0.27	1.5	606,801	98,301,728
3 Ext.	97	782,800	1.24E-04	76	14	0.27	1.5	436,839	33,199,800
4	163	1,334,798	1.22E-04	128	18	0.27	1.5	568,636	72,785,467
4 Ext.	53	308,170	1.72E-04	33	17	0.27	1.7	545,054	17,986,786
4A	142	1,050,576	1.35E-04	101	18	0.27	1.5	567,199	57,287,069

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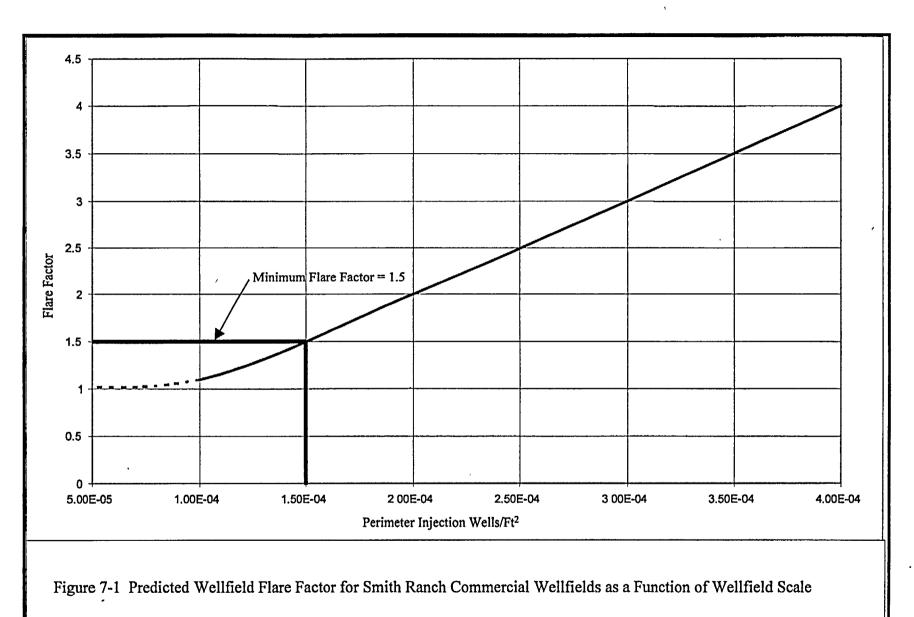
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Source: Figure 3-16 in "Evaluation and Simulation of Wellfield Restoration at the RAMC Smith Ranch Facility" by Lewis Water Consultants (October 29, 1999)

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

			Weimeiu #1					
1 APV =	68,920,8	90 gallons		Total	Operating			í,
				Gallons	Flow Rate		Total	Number of
RESTO	RATION CO	ST COMPONENT	Unit Cost	Treated	GPM		Cost	Days
<u>1 We</u>	lifield Pumpu	ng Costs (Electrical costs)						
a)	Groundwat	er Treatment (IX treatment Only) (100% of flow)	(\$0.117/1,000 gal )	413,525,340	1400	* \$	48,382	287
b)	Treated Gr	oundwater Re-injection (bypass RO/EDR Treatment)	(\$0.117/1,000 gal )	248,115,204	600	* \$	29,029	287
c)	RO/EDR T	reatment (800 GPM Feed 600 GPM Permeate)	(\$0.289/1,000 gai )	330,820,272	800	\$	95,607	287
e)	Groundwat	er Sweep (GW Inflow to replace water sent to disposal)	(\$0.117/1,000 gal )	82,705,068	200	\$	9,676	287
SU	BTOTAL		Total Treated Volume	413,525,340	1000	\$	182,695	287
2. Ch	emical Treati	ment Power Costs						
a)	Reverse O	smosis Unit	\$0 10/gpm/day (\$0 07/1,000 gal )	330,820,272	800	\$	23,157	
b)	Disposal W	/ell Operation	\$0 05/1,000 gal	82,705,068	200	\$	4,135	
SU	BTOTAL					\$	27,293	
3 Ch	emicals							
		ter Treatment (Resin Elut, Chem)						
		tion, Waste Water @ 2 mg/L U308	Elution Costs (12 3 Elutions/year * \$4	00/ Elution)		\$	3,871	287
		in, 2 lb /ft3 loading,						
		Waste Water Flow, 1400 gpm						
		very 29 7 days or 12 3 elutions per year						
b)		Reductant (H2S or alternative)	\$1 80/gpm/day (\$1.25/1,000 gal.)	68,920,890	1200	\$	86,151	
		cals (H2SO4, Antiscalents, Oxygen Scavenger)	\$0 57/gpm/day (\$0 40/1,000 gal.)	330,820,272	800	\$	132,328	
	BTOTAL					\$	222,350	
• •	pairs and Ma	Intenance						
		nd Waste Water Treatment	\$10,000/ma	94	months	\$	94,154	
		ocess equipment	\$5,000/mo	94	months	\$	47,077	
•	BTOTAL					S	141,231	
5 La						•		
		20 00 per hour		94	months	5	30,129	
		\$13 00 per hour		94	months	Ŝ	78,336	
		@ \$13 00 per hour		94	months	\$	39,168	
	BTOTAL	(g \$15 00 per liber		•	1.01.010	\$	147,634	
		atory Analysis				•		
		ells (24 samples/yr/well @ \$20)		08	years	5	18,454	
	abilization Sa				Jouro	•	10,101	
		•				\$	10,500	
10	Wells	- 3 complete Assays @\$350				\$	22,500	
~		- 9 abbreviated assays @ \$250				<u>,</u>	51,454	•
	IBTOTAL			,		÷	51,454	
	erating Expe			94	months	\$	28,246	
	pplies	@\$3,000/mo		94 47	months	э \$	23,539	
	ating	@\$5,000/mo		94	months	\$	23,539 9,415	
	hicle Fuel	@\$1,000/mo		94	months	\$ \$	9,415 9,415	
	fice Utilities	@\$1,000/mo		34	monuis	s s	70,616	
SL	BTOTAL					\$	10,010	
						s	843 979	(10038)
		TING COST TO RESTORE GROUNDWATER AT FULL	PRODUCTION (Nominal Mine Unit)		Detterre	-		(1993\$)
U١	IT RESTOR	ATION OPERATING COST		116	Patterns	\$	1,210	Pattern
			- 44.040/			-	00 999	
		1993 -1997 inflation (CPI-U) = 160 6/143 6 :	= 11.84%		<b>T</b> _4_1	\$	99,830	(40074)
					Total	\$	943,104	(1997\$)

#### Table 7.3 SMITH RANCH PROJECT Mining Unit Groundwater Restoration Costs Wellfield #2

1 AI	×۷≖	164,327,161	gallons		Total	Operating			
					Gallons	Flow Rate		Total	Number of
_		ATION COST C		Unit Cost	Treated	GPM	<u></u>	Cost	Days
<u>1.</u>			Costs (Electrical costs)						
			reatment (IX treatment Only) (100% of flow)	(\$0 117/1,000 gal.)	985,962,968	1400	• \$	115,358	685
			twater Re-injection (bypass RO/EDR Treatment)	(\$0 117/1,000 gal.)	591,577,781	600	* \$	69,215	685
			ment (800 GPM Feed 600 GPM Permeate)	(\$0 289/1,000 gal)	788,770,375	800	\$	227,955	685
			weep (GW Inflow to replace water sent to disposal)	(\$0 117/1,000 gal.)	197,192,594	200	\$	23,072	685
		TOTAL		Total Treated Volume	985,962,968	1000	\$	435,598	685
2		nical Treatment			700 770 075			FF 044	
		Reverse Osmo		\$0.10/gpm/day (\$0 07/1,000 gal )	788,770,375	800	\$	55,214	
		Disposal Well (	Operation	\$0 05/1,000 gal	197,192,594	200	\$	9,860	
		TOTAL					\$	65,074	
<u>3</u>	-	nicals							
	•		reatment (Resin Elut, Chem)				_		
		-	Waste Water @ 2 mg/L U308	Elution Costs (12 3 Elutions/year * \$4	00/ Elution)		\$	9,229	685
		500 ft3 resin, 2	-						
			ste Water Flow, 1400 gpm						
		-	29.7 days or 12.3 elutions per year						
	•		ctant (H2S or alternative)	\$1.80/gpm/day (\$1.25/1,000 gal )	164,327,161	1200	\$	205,409	
	c)	RO Chemicals	(H2SO4, Antiscalents, Oxygen Scavenger)	\$0 57/gpm/day (\$0.40/1,000 gal )	788,770,375	800	\$	315,508	
	SUB	TOTAL					\$	530,146	
<u>4</u>	Repa	irs and Maintei	nance						
	a) '	Wellfield and V	Vaste Water Treatment	\$10,000/mo	22 4	months	\$	224,491	
	b)	RO and proces	s equipment	\$5,000/mo	22 4	months	\$	112,245	
	SUB	TOTAL					\$	336,736	
<u>5</u>	Labo	<u>r</u>							
	Supe	rvisor @ \$20 0	0 per hour		22.4	months	\$	71,837	
	4 Op	erators @ \$13	00 per hour		22 4	months	\$	186,776	
	2 Ma	intenance @ \$	13 00 per hour		22 4	months	\$	93,388	
	SUB	TOTAL	ς.				\$	352,001	
<u>6</u>	Cont	ract Laboratory	Analysis						
	51	Monitor Wells (	(24 samples/yr/well @ \$20)		19	years	\$	45,796	
	Stabi	ilization Sample	25						
	10 W	/elis	- 3 complete Assays @\$350				\$	10,500	
			- 9 abbreviated assays @ \$250				<u> </u>	22,500	-
	SUB	TOTAL					\$	78,796	
Ζ.	Oper	ating Expenses	<u>š</u> -						
	Supp	lies	@\$3,000/mo		22 4	months	\$	67,347	
	Heat	ing	@\$5,000/mo		11.2	months	\$	56,123	
	Vehic	cle Fuel	@\$1,000/mo		22.4	months	\$	22,449	
	Offic	e Utilities	@\$1,000/mo		22.4	months	\$	22,449	
	SUB	TOTAL					\$	168,368	
	тоти		۔ G COST TO RESTORE GROUNDWATER AT FULL F	PRODUCTION (Nominal Mine Unit)			\$	1,966,720	(1993\$)
			ON OPERATING COST	-	181	Patterns	\$		/Pattern
	0.0.1		er er er stinte vevt	~			•		
			1993 - 1997 inflation (CPI-U) = 160.6/143 6	= 11.84%			\$	232,829	
			• • •			Total	\$	2,199,549	(1997\$)

#### Table 7.4 SMITH RANCH PROJECT Mining Unit Groundwater Restoration Costs Weilfield #3

		Wolling a mo					
1 APV = 98,301,72	28 gallons		Total	Operating			
		Half Card	Gallons	Flow Rate		Total	Number of
RESTORATION COS		Unit Cost	Treated	GPM		Cost	Days
	ng Costs (Electrical costs)	(10.117/1.000 mail)	589,810,366	1400	• 5	69.008	410
	er Treatment (IX treatment Only) (100% of flow)	(\$0.117/1,000 gal )	353,886,220	600	• 5	41,405	410
	oundwater Re-injection (bypass RO/EDR Treatment)	(\$0.117/1,000 gal ) (\$0.289/1.000 gal )	471,848,293	800	Š	136,364	410
	reatment (800 GPM Feed 600 GPM Permeate)	(\$0.289/1,000 gal )	117,962,073	200	Š	13,802	410
•	er Sweep (GW inflow to replace water sent to disposal)	(\$0.117/1,000 gal) Total Treated Volume	589,810,366	1000	Š	260,578	410
SUBTOTAL	ne of Device Conto	Total Treated Volume	203,010,000	1000	Ψ	200,570	410
2 Chemical Treats		\$0 10/gpm/day (\$0 07/1,000 gal )	471,848,293	800	\$	33,029	
a) Reverse Os			117,962,073	200	\$	5,898	
b) Disposal W	/ell Operation	\$0 05/1,000 gal	117,902,075	200	* \$	38,927	
SUBTOTAL					Ŷ	30,927	
3 Chemicals							
•	er Treatment (Resin Elut. Chem)	El dia Ocata (40.0 El diagolacent F/O			\$	E E21	440
•	tion, Waste Water @ 2 mg/L U308	Elution Costs (12 3 Elutions/year * \$40	or Elucion)		Ŷ	5,521	410
	n, 2 lb./ft3 loading,						
	Waste Water Flow; 1400 gpm						
	very 29.7 days or 12 3 elutions per year					400.077	
•	Reductant (H2S or alternative)	\$1 80/gpm/day (\$1 25/1,000 gal )	98,301,728	1200	\$	122,877	
•	cals (H2SO4, Antiscalents, Oxygen Scavenger)	\$0 57/gpm/day (\$0 40/1,000 gal )	471,848,293	800	\$	188,739	
SUBTOTAL					\$	317,138	
4 Repairs and Mai						404.000	
•	nd Waste Water Treatment	\$10,000/mo	13 4	months	\$	134,292	
· ·	ocess equipment	\$5,000/mo	13 4	months	\$	67,146	
SUBTOTAL					\$	201,438	
5. Labor			40.4			40.072	
Supervisor @ \$2	-		13 4	months	\$	42,973	
4 Operators @	-		13 4	months	\$	111,731	
-	@ \$13 00 per hour		. 134	months	\$	55,865	
SUBTOTAL					,\$	210,570	
6 Contract Labora							
	elis (24 samples/yr/well @ \$20)		1.1	years	\$	23,098	
Stabilization Sar	••						
10 Wells	- 3 complete Assays @\$350				\$	10,500	
	- 9 abbreviated assays @ \$250				<u> </u>	22,500	•
SUBTOTAL					\$	56,098	
7 Operating Exper	· · · · · · · · · · · · · · · · · · ·				~	40.000	
Supplies	@\$3,000/mo		13 4	months	\$	40,288	
Heating	@\$5,000/mo		67	months	\$	33,573	
Vehicle Fuel	@\$1,000/mo		13 4	months	\$	13,429	
Office Utilities	@\$1,000/ma		13 4	months	\$	13,429	
SUBTOTAL					\$	100,719	
	TING COST TO RESTORE GROUNDWATER AT FULL	PRODUCTION (Nominal Mine Unit)			\$	1,185,468	(1993\$)
	the search of the second s		401	2 Patterns	Ś		Pattern
	ATION OPERATING COST		104	C Faucans			
	ATION OPERATING COST		102	Faucits	•	,	
	ATION OPERATING COST 1993 -1997 Inflation (CPI-U) = 160 6/143 6	= 11 84%	,		\$	140,341	

#### Table 7.5 SMITH RANCH PROJECT Mining Unit Groundwater Restoration Costs Wellfield #3 Extension

1 A	PV = 33	,199,800 gailons		Total	Operating			
				Gallons	Flow Rate		Total	Number of
RE	STORATIC	N COST COMPONENT	Unit Cost	Treated	GPM		Cost	Days
1		Pumping Costs (Electrical costs)						
	a) Grou	ndwater Treatment (IX treatment Only) (100% of flow)	(\$0.117/1,000 gal )	199,198,803	1400	* \$	23,306	138
	b) Trea	ted Groundwater Re-injection (bypass RO/EDR Treatment)	(\$0.117/1,000 gal )	119,519,282	600	• \$	13,984	138
	c) RO/	DR Treatment (800 GPM Feed 600 GPM Permeate)	(\$0.289/1,000 gal )	159,359,042	800	\$	46,055	138
	e) Grou	ndwater Sweep (GW Inflow to replace water sent to disposal)	(\$0 117/1,000 gal )	39,839,761	200	\$	4,661	138
	SUBTOT	AL .	Total Treated Volume	199,198,803	1000	\$	88,006	138
2	Chemical	Treatment Power Costs						
	a) Reve	erse Osmosis Unit	\$0.10/gpm/day (\$0 07/1,000 gal )	159,359,042	800	\$	11,155	
	b) Disp	osal Well Operation	\$0 05/1,000 gal	39,839,761	200	\$	1,992	
	SUBTOT	AL				\$	13,147	
3	Chemical	<u>s</u>						
	a) Was	te Water Treatment (Resin Elut Chem)						
	@\$4	00/eiution, Waste Water @ 2 mg/L U308	Elution Costs (12.3 Elutions/year * \$4	00/ Elution)		\$	1,865	138
	500	t3 resin, 2 lb./ft3 loading,						
	Ann	alized Waste Water Flow; 1400 gpm						
		tion every 29 7 days or 12 3 elutions per year						
		nical Reductant (H2S or alternative)	\$1 80/gpm/day (\$1.25/1,000 gal )	33,199,800	1200	\$	41,500	
	•	Chemicals (H2SO4, Antiscalents, Oxygen Scavenger)	\$0 57/gpm/day (\$0 40/1,000 gal )	159,359,042	800	S	63,744	
	SUBTOT		••••••••••••••••••••••••••••••••••••••			S	107,108	
4		nd Maintenance				•		
Ξ.		field and Waste Water Treatment	\$10,000/ma	45	months	5	45,355	
	•	and process equipment	\$5,000/mo	4.5	months	5	22,677	
	SUBTOT		••••••			Š	68,032	
	Labor					•		
5		or @ \$20 00 per hour		45	months	\$	14,514	
	•	ors @ \$13 00 per hour		45	months	s	37,735	
	-	nance @ \$13 00 per hour		45	months	\$	18,868	
	2 Mainter SUBTOT			45	months	Š	71,117	
•		-				•	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
6		Laboratory Analysis		04	years	\$	4,426	
		itor Wells (24 samples/yr/well @ \$20)		04	years	*	4,420	
		on Samples				\$	10,500	
	10 Wells	- 3 complete Assays @\$350				э \$	22,500	
	0.0767	- 9 abbreviated assays @ \$250				<u>*</u>	37,426	•
~	SUBTOT					4	51,420	
Z.		I Expenses		4 5	months	\$	13,606	
	Supplies	@\$3,000/mo		4 D 2 3	months	ې \$	11,339	
	Heating	@\$5,000/mo			months	* 5	•	
	Vehicle F	8.4		45		•	4,535	
	Office Uti			4 5	months	\$	4,535	
	SUBTOT	AL				\$	34,016	
								(10000)
		PERATING COST TO RESTORE GROUNDWATER AT FULL	PRODUCTION (Nominal Mine Unit)			\$	418,852	
	UNIT RE	STORATION OPERATING COST		76	Patterns	\$	-	/Pattern
		1993 -1997 inflation (CPI-U) ≠ 160 6/143 6	= 11 84%			\$	49,586	
	RECOM	PLETION (\$640/well)(2 7 wells/pattern)(79 patterns)				\$	136,512	
					Total	\$	604,950	(1997\$)

# Table 7.6SMITH RANCH PROJECTMining Unit Groundwater Restoration CostsWellfield #4

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Gallons         Flow Rate         Total         Number           STORATION COST COMPONENT         Unit Cost         Treated         GPM         Cost         Days           Weithed Pumping Costs (Electrocal costs)         a)         Groundwater Treatment (X treatment Only) (100% of flow)         (\$0 117/1,000 gal)         436,712,803         1400         \$ 51,095         303           b)         Treated Groundwater Re-injection (bypass RO/EDR Treatment)         (\$0 117/1,000 gal)         262,027,682         600         \$ 30,657         303           c)         RO/EDR Treatment (800 GPM Feed 600 GPM Permeate)         (\$0.2289/1,000 gal)         349,370,242         800         \$ 100,968         303           e)         Groundwater Sweep (GW Inflow to replace water sent to disposal)         (\$0 117/1,000 gal)         87,342,561         200         \$ 102,940         303           SUBTOTAL         Total Treated Volume:         43,6712,803         1000         \$ 192,940         303           Disposal Well Operation         \$0 05/1,000 gal         349,370,242         800         \$ 24,456         \$ 28,823           SUBTOTAL         \$ 20,823         \$ 50 05/1,000 gal         87,342,561         200         \$ 4,088         303           g/@ 400/eluton, Waste Water Treatment (Resin Elut Cherm)         \$ 00 5/1,000 gal			AAGUUGIO 44					
STORATION COST COMPONENT         Unit Cest         Tratad         GPM         Cost         Pays.           Watering Lossing (Linkshaul costs)         (30 1171,000 gal)         436,712,202         1400         * \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	APV = 72,785,46	7 gallons			• •			
Walled Fundation Costs (Electrical costs)         (3) Groundwater Treatment (1X treatment, Curly) (100% of flow)         (3) 1171,000 gal)         436,712,2603         1400         \$ 51,095         303           (4) Groundwater Treatment (1X treatment)         (3) 1171,000 gal)         265,027,682         600         \$ 50,057         303           (5) Clock Treatment (100 GPM Feed 600 GPM Fermeate)         (50,237),000 gal)         343,712,263         1000         \$ 100,966         303           (5) Clock Treatment (100 GPM Feed 600 GPM Fermeate)         (50,237),000 gal)         343,712,403         1000         \$ 102,960         303           (5) Clock Treatment (100 GPM Feed 600 GPM Fermeate)         (50,237),000 gal)         349,370,242         800         \$ 102,960         303           (5) USTOTAL         Total Treated Volume:         435,712,803         1000         \$ 24,455         \$ 28,823           (1) USTOTAL         S0 102gm/day (51,251,000 gal)         54,357         200         \$ 4,457         \$ 28,823           (1) Water Vater Treatment (Resin Elut. Chem)         (3) 0.571,900 gal)         57,472,561         200         \$ 4,668         303           (1) Water Vater Treatment (Resin Elut. Chem)         (3) 0.571,900 gal)         72,755,467         1200         \$ 103,974.8           (1) Chemical Redudat (PLS or alternative)         \$ 10.000m							·	
a) Coundwater Treatment (1X treatment (1X) (100% of fwy)       (50 1171/000 gal)       449,712,803       1400       * 5       51,068       303         b) Treated Coundwater Revers (100 OPA Feed 600 GPA Permate)       (50 1171/000 gal)       349,370,242       600       \$       10,268       303         c) Groundwater Sweep (3W) Inflow to replace water sent to disposal)       (30,1171/000 gal)       87,342,561       200       \$       10,219       303         Chemical Treatment Dower Costs       Total Treated Volume:       436,712,803       1000       \$       122,940       303         Chemical Treatment Dower Costs       Total Treatment Volume:       436,712,803       1000       \$       24,455       200       \$       24,455         SUBTOTAL       S0 100gen/day (30 0711,000 gal)       349,370,242       800       \$       4,658       303         SUBTOTAL       S0 100 gen/day (30 0711,000 gal)       347,370,242       800       \$       4,658       303         SUBTOTAL       S0 100 gen/day (30 0711,000 gal)       347,370,242       800       \$       136,77         USTOTAL       S0 100 gen/day (30 0711,000 gal)       347,370,242       800       \$       90,862         S0 Totagen/day (30 071,000 gal)       S1,371,4700 gal)       74,785,457       1200			Unit Cost	Treated	GPM		Cost	Days
a) Groundwater Revealed (Upbas and Cash and					4400		E+ 005	202
D)         1000000000000000000000000000000000000				• •		÷	•	+
CircleDate Treatment (bod Serier Year)         10,219         303           Groundwater Sweep (GW Harver or probase water sent to disposal)         10,1171/JC00 pail         87,342,561         200         \$10,219         303           SUBTOTAL         Total Treatment Volume:         436,712,803         1000         \$129,490         303           Operating and the sent to disposal         50 057/1,000 gal         349,370,242         800         \$24,456           Disposal Well Operation         50 057/1,000 gal         87,342,561         200         \$24,853           USISTOTAL         50 057/1,000 gal         87,342,561         200         \$24,858           USISTOTAL         50 057/1,000 gal         87,342,561         200         \$24,858           USISTOTAL         50 057/1,000 gal         72,75,467         1200         \$90,832           Chemical (H2C) Athisealents, Coygen Scavenger)         30,77gm/day (\$125/1,000 gal)         349,370,242         800         \$139,748           USISTOTAL <td></td> <td>• • • • • •</td> <td>• • • •</td> <td></td> <td></td> <td>•</td> <td>•</td> <td></td>		• • • • • •	• • • •			•	•	
9)         Object Nation Office (241 mode of points function of the suppose)         Total Treated Volume:         436,712,803         1000         \$         192,940         303           Chemical Treatment Power Costs         30         50         100 gent (30 071,000 gal)         349,370,242         600         \$         24,456           b)         Disposal Well Operation         30         57,422,561         200         \$         4,367           Chemicals         30         57,000 gal         67,242,561         200         \$         4,367           USURTOTAL         Chemicals         5         20,001         \$         4,083         303           Off Stress (12, 2 Influence)         Elution Costs (12,3 Elutions/year *\$400/ Elution)         \$         4,083         303           S00 13 resin, 2 In x73 badang,         Annualaced Watst Water Flow, 1400 gpm         \$         190,743         \$         90,992           c)         Chemical Maintenance         \$         20 57/gpm/day (30 40/1,000 gal)         349,370,242         600         \$         193,743           SUBTOTAL         \$         100,000/mo         \$         \$         90,998         \$         193,743           SUBTOTAL         \$         100,000/mo         \$         \$		•				•	-	
SUBTORL       S0 100 pervisery (\$0 07/1.00 gal)       349,370,242       800       \$         24,456         a) Reverse Osmose Unit 1       S0 100 gal       B7,242,561       200       \$         24,456         b) Dispositivel (Dependion       \$         50 057,000 gal       B7,242,561       \$         23,823         Uter Control       \$         250,000 gal       B7,242,561       \$         23,823         Unable       S0 057,000 gal       B7,242,561       \$         23,823         S0 051,000 gal       S0 057,000 gal       B7,242,561       \$         23,823         Othermicals       Reduction, Vaste Water (Resin Eluit Chem)       \$         4,083       303         S0 01 37:ein; 2,D m3 toaling, Annualized Water Vaster Flow, 1400 gpm       1       1200       \$         13,037,48         SUBTOTAL       S       1200 gpm/day (\$1,25/1,000 gal)       349,370,242       800       \$         13,37,48         SUBTOTAL       S       100 pm/day (\$1,25/1,000 gal)       349,370,242       800       \$         13,37,48         SUBTOTAL       S       100 pm/day (\$1,25/1,000 gal)       349,370,242       800       \$         13,37,48         SUBTOTAL       S       100 pm/day (\$1,25/1,000 gal)       349,370,242       800       \$         13,37,48         SUBTOTAL       S       100 pm/day	•	r Sweep (GW Inflow to replace water sent to disposal)			-	•	•	
a)       Reverse Cormus Unit , So 100gn/day (\$0 07/1,000 gal)       \$49,370,242       800       \$24,456         b)       Disposal Well Operation       \$0 0571,000 gal       \$7,342,561       200       \$4,367         Chemicals			Total Treated Volume:	436,712,803	1000	\$	192,940	303
a)         Notesta Submit ()         Statesta Submit ()	Chemical Treatm	ent Power Costs						
0)         Dipbode Treatment (Resin Elut Chem)         \$ 28,23           0)         Waste Water Treatment (Resin Elut Chem)         \$ 4,08         303           0)         Waste Water (D2 mg/L U3O8         Elution Costs (12.3 Elutions/year *\$400/ Elution)         \$ 4,088         303           500 R3 resin, 2L br.R3 loading,         Annulacce Waste Water Flow, 1400 gpm         1 elution every 29 7 days or 12.3 elutions per year         1 elution every 29 7 days or 12.3 elutions per year         5 00,982         600         \$ 139,748           0)         Chemicals (H2SO4, Antiscalents, Oxygen Scavenger)         \$ 570gpm/day (\$1.25/1,000 gal.)         72,785,467         1200         \$ 09,882           c)         Chemicals (H2SO4, Antiscalents, Oxygen Scavenger)         \$ 570gpm/day (\$0.40/1,000 gal.)         72,785,467         1200         \$ 139,748           SUBTOTAL         \$ 0 Chemicals (H2SO4, Antiscalents, Oxygen Scavenger)         \$ 570gpm/day (\$0.40/1,000 gal.)         349,370,242         800         \$ 139,748           SUBTOTAL         \$ 10,000/mo         \$ 9 months         \$ 94,341         \$ 234,818         \$ 234,818           Elevater and Maintenance         \$ 9 months         \$ 9,434         \$ 99,434         \$ 99,431           s)         RO and process equipment         \$ 9 9 months         \$ 149,151         \$ 149,151           Labor		t t		• •		•		
Stori Drat.       Vaste Water Treatment (Resin Elut Chem)       Vaster Treatment (Resin Elut Chem) <t< td=""><td><li>b) Disposal We</li></td><td>ell Operation</td><td>\$0 05/1,000 gal</td><td>87,342,561</td><td>200</td><td></td><td>-</td><td></td></t<>	<li>b) Disposal We</li>	ell Operation	\$0 05/1,000 gal	87,342,561	200		-	
a) Waste Water Treatment (Resin Elic Chem)       gs 4,081 Waste Water (bg 2 mg/L U3OS       Eliction Costs (12.3 Elictions/year * \$400/ Eliction)       \$ \$ \$ 4,088 \$ 303         500 ftr resin, 2 Ib./t3 loading,       Annualized Waste Water (Flow, 1400 gpm       Image: Control Costs (12.3 Elictions/year * \$400/ Eliction)       \$ \$ 0.982       Image: Control Costs (12.3 Elictions/year * \$400/ Eliction)       \$ \$ 0.982       Image: Control Costs (12.3 Elictions/year * \$400/ Eliction)       \$ \$ 0.982       Image: Control Costs (12.3 Elictions/year * \$400/ Eliction)       \$ \$ 0.982       Image: Control Costs (12.3 Elictions/year * \$400/ Eliction)       \$ \$ 0.982       Image: Control Costs (12.3 Elictions/year * \$400/ Eliction)       \$ \$ 0.982       Image: Control Costs (12.3 Elictions/year * \$400/ Eliction)       \$ \$ 0.982       Image: Control Costs (12.3 Elictions/year * \$400/ Eliction)       \$ \$ 0.982       Image: Control Costs (12.3 Elictions/year * \$400/ Eliction)       \$ \$ 0.982       Image: Control Costs (12.3 Elictions/year * \$400/ Eliction)       \$ \$ 0.982       Image: Control Costs (12.3 Elictions/year * \$400/ Eliction)       \$ \$ 0.982       Image: Control Costs (12.3 Elictions/year * \$400/ Eliction)       \$ \$ \$ 0.982       Image: Control Costs (12.3 Elictions/year * \$400/ Eliction)       \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	SUBTOTAL					\$	28,823	
g8400/elution, Waste Water @2 mg/t, Li3O8         Elution Costs (12.3 Elutionslyear *\$400/ Elution)         \$         4,088         303           S00 tto resin, 2 Ib./Tto Joading, Annualized Waste Water Flow, 1400 gpm         1         1         9         90,982         50         50         90,982         50         5         90,982         5         90,983         5         139,748         5         90,943         5         90,943         5         149,151         140,515         5         143,515         5         16,501         5         5         16,519         5	Chemicals							
genometation       Soft Treating, 2 bit 20 bading, Annualized Waste Water Flow, 1400 gpm       180/gpm/day (\$1.25/1,000 gal.)       72,785,467       1200       \$ 90,882         b)       Chemical Reductant (H2S or alternative)       \$ 180/gpm/day (\$1.25/1,000 gal.)       72,785,467       1200       \$ 90,882         c)       R O Chemical Reductant (H2S or alternative)       \$ 180/gpm/day (\$1.25/1,000 gal.)       72,785,467       1200       \$ 90,882         c)       R O Chemicals (H2SO4, Antiscalents, Oxygen Scavenger)       \$ 057/gpm/day (\$0.40/1,000 gal.)       349,370,242       800       \$ 139,743         SUBTOTAL       \$ 234,818       \$ 234,818       \$ 234,818       \$ 234,818         Repars and Maintenance       \$ 10,000/mo       \$ 9 months       \$ 99,434       \$ 149,151         Labor       \$ 149,151       \$ 49,717       \$ \$ 54,875       \$ 149,151         Supervisor (@ \$ 20 00 per hour       \$ 9 9 months       \$ 31,819       \$ 40,971         4 Operators (@ \$ 13 00 per hour       \$ 9 9 months       \$ 31,819       \$ 41,364         SUBTOTAL       \$ 9 9 months       \$ 21,875       \$ 54,875         Contract Laborator Analysis       \$ 50 months       \$ 21,875         Subulzation Samples       \$ 9 9 months       \$ 29,830         10 Wells       -3 complete Assays @ \$250	a) Waste Wate	r Treatment (Resin Elut Chem)						
Annualized Waste Water Flow, 1400 gpm         1 elution every 297 days or 12.3 elutions per year       \$1 80/gpm/day (\$1.25/1,000 gal.)       72,785,467       1200       \$\$90,982         c)       Roe Reductant (12S 04. Antiscalents, Oxygen Scavenger)       \$0 57/gpm/day (\$0 40/1,000 gal.)       349,370,242       \$600       \$\$180,748         Repairs and Maintenance       \$\$0 57/gpm/day (\$0 40/1,000 gal.)       349,370,242       \$600       \$\$180,748         Repairs and Maintenance       \$\$10,000/mo       9.9       months       \$\$99,434         b)       Repairs and Maintenance       \$\$10,000/mo       9.9       months       \$\$99,434         c)       Netifield and Waste Water Treatment       \$\$10,000/mo       9.9       months       \$\$19,111         SUBTOTAL       \$\$149,151       \$\$149,151       \$\$149,151       \$\$149,151         Labor       \$\$9.9       months       \$\$\$21,879       \$\$1300 per hour       \$\$9.9       months       \$\$\$21,879         SubtroTAL       \$\$9.9       months       \$\$\$\$\$\$\$\$22,729       \$\$15,050       \$	@\$400/eiutu	on, Waste Water @ 2 mg/L U3O8	Elution Costs (12.3 Elutions/year * \$40	0/ Elution)		\$	4,088	303
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.)       72,785,467       1200       \$ 90,982         c)       RC Ochemicals (H2SO4, Antiscalents, Oxygen Scavenger)       \$0 57/gpm/day (\$1.25/1,000 gal.)       349,370,242       800       \$ 234,518         Respanse and Maintenance       \$0 57/gpm/day (\$1.25/1,000 gal.)       \$49,370,242       \$ 00       \$ 99,434         a)       Weiltied and Waste Water Treatment       \$10,000/mo       \$ 9 9       months       \$ 99,434         b)       RC and process equipment       \$5,000/mo       \$ 9 9       months       \$ 49,717         Supervisor (@ \$20 00 per hour       \$ 9 9       months       \$ 31,819       \$ 49,717         Supervisor (@ \$20 00 per hour       \$ 9 9       months       \$ 31,819         4 Operators @ \$13 00 per hour       \$ 9 9       months       \$ 21,875         Subitization Samples       \$ 14,364       \$ 155,912       \$ 155,912         Contract Laborator Analysis       \$ 54,013,000 mo       \$ 9 9       months       \$ 21,875         Subitization Samples       \$ 30,000 mo       \$ 9 9       \$ 10,500       \$ 22,800         Supplies       \$ \$13,000 mo       \$ 9 9       \$ 9,943       \$ 9,943	500 ft3 resin	, 2 lb./ft3 loading,						
b)       Chemical Reductant (H2S or alternative)       \$1 80/gpm/day (\$1.25/1,000 gal.)       72,785,467       1200       \$90,882         c)       R O Chemicals (H2SC4, Antiscalents, Oxygen Scavenger)       \$0 57/gpm/day (\$0 40/1,000 gal.)       349,370,242       800       \$139,748         SUBTOTAL        234,818       234,818       234,818         Repairs and Maintenance        310,000/mo       9.9       months       \$99,434         a)       Weitfield and Waste Water Treatment       \$10,000/mo       9.9       months       \$49,717         SUBTOTAL        \$149,151       \$149,151       \$149,151         Labor        9.9       months       \$31,819       \$2,729         SUBTOTAL       9.9       months       \$43,374       \$149,151         Labor       9.9       months       \$31,819       \$2,729         2 Maintenance @ \$13 00 per hour       9.9       months       \$15,512         Contract Laboratory Analysis       \$155,912       \$150,000       \$155,912         Stabilization Samples       \$10,500       \$2,2500       \$2,2500       \$2,2500         SUBTOTAL       \$9 showns \$16,833,89,353       \$2,953       \$2,953       \$2,953         SUBTOTAL	Annualized \	Waste Water Flow, 1400 gpm						
0) Olivinitian (Visionality (Visionality))       319,370,242       800       \$ 139,748         SUBTOTAL       \$ 234,818         Repairs and Maintenance       \$ 10,000/mo       9.9       months       \$ 99,434         a) Wellied and Waste Water Treatment       \$ 10,000/mo       9.9       months       \$ 99,434         b) RO and process equipment       \$ 5,000/mo       9.9       months       \$ 99,434         supervision (@ \$20 00 per hour       9.9       months       \$ 149,151         Labor       \$ 9.9       months       \$ 31,819         2 Maintenance @ \$13 00 per hour       9.9       months       \$ 82,729         2 Maintenance @ \$13 00 per hour       9.9       months       \$ 41,564         2 Operators @ \$13 00 per hour       9.9       months       \$ 21,875         Stabilization Samples       \$ 105,001       0.8       years       \$ 21,875         Stabilization Samples       \$ 10,500       \$ 22,600       \$ 54,875         Operating Expenses       \$ 9.9       months       \$ 29,830         SUBTOTAL       \$ 9.9       months       \$ 24,858         Office Utilities       \$\$1,000/mo       \$ 9.9       months       \$ 29,830         \$ 50       months       \$ 29,830	1 elution eve	ery 29 7 days or 12.3 elutions per year						
c) NO clinitiation (Index), fundation, corported (index)       \$ 234,818         Repairs and Maintenance       \$ 10,000/mo       9.9         a) Wellfield and Waste Water Treatment       \$ 10,000/mo       9.9         b) R0 and process equipment       \$ 5,000/mo       9.9         SUBTOTAL       \$ 149,151         Labor       \$ 149,151         Supervisor @ \$20.00 per hour       9.9         4 Operation @ \$13.00 per hour       9.9         9.9       months       \$ 21,875         ZMantenance @ \$13.00 per hour       9.9       months       \$ 21,875         ZMantenance @ \$13.00 per hour       9.9       months       \$ 21,875         ZMantenance @ \$13.00 per hour       9.9       months       \$ 21,875         SUBTOTAL       \$ 143,644       \$ 155,912         Contract Laboratory Analysis       \$ 143,644       \$ 155,912         Stabilization Samples       0.8       years       \$ 21,875         Stabilization Samples       \$ 105,000       \$ 50       \$ 54,875         Operating Expenses       \$ 50,000 mo       \$ 9.9       \$ 50,000         Supplies       \$\$3,0000 mo       \$ 9.9       months       \$ 24,853         Vehicle Full       \$\$\$10000 mo       \$ 9.9       \$ 54,853 <td>b) Chemical Re</td> <td>eductant (H2S or alternative)</td> <td>\$1 80/gpm/day (\$1.25/1,000 gal.)</td> <td>72,785,467</td> <td>1200</td> <td>\$</td> <td>90,982</td> <td></td>	b) Chemical Re	eductant (H2S or alternative)	\$1 80/gpm/day (\$1.25/1,000 gal.)	72,785,467	1200	\$	90,982	
Begars and Maintenance       \$10,000/mo       9.9       months       \$       99,434         b)       RC and process equipment       \$5,000/mo       9.9       months       \$       49,717         SUBTOTAL       \$       149,151       \$       149,151       \$       149,151         Labor       9.9       months       \$       31,819       \$       40,717         4       Operators @ \$13.00 per hour       9.9       months       \$       31,819         4       Operators @ \$13.00 per hour       9.9       months       \$       42,728         2       Maintenance@ \$13.00 per hour       9.9       months       \$       42,729         2       Maintenance@ \$13.00 per hour       9.9       months       \$       41,384         SUBTOTAL       \$       155,912       \$       155,912       \$         Centract Laboratory Analysis       \$       55       Montor Welts (24 samples/yr/well @ \$20)       \$       8       years       \$       21,875         Stabilization Samples       -       -       \$       10,500       \$       5       54,875         Operating Expenses       -       -       \$       50       months       \$	c) RO Chemica	als (H2SO4, Antiscalents, Oxygen Scavenger)	\$0 57/gpm/day (\$0 40/1,000 gal )	349,370,242	800	\$	139,748	
a) Wellfield and Waste Water Treatment       \$10,000/mo       9 9       months       \$       99,34         b) RO and process equipment       \$5,000/mo       9 9       months       \$       49,717         SUBTOTAL       \$       \$149,151       \$       \$       149,151         Supervisor @ \$20 00 per hour       9 9       months       \$       31,819         4 Operators @ \$13 00 per hour       9 9       months       \$       62,729         2 Mantenance @ \$13 00 per hour       9 9       months       \$       62,729         2 Mantenance @ \$13 00 per hour       9 9       months       \$       62,729         2 Mantenance @ \$13 00 per hour       9 9       months       \$       62,729         2 Mantenance @ \$13 00 per hour       9 9       months       \$       62,729         2 Mantenance @ \$13 00 per hour       9 9       months       \$       62,729         SUBTOTAL       \$       155,912       \$       143,64         SUBTOTAL       \$       10,500       \$       \$       54,875         Operating Expenses       \$       10,500       \$       \$       54,875         Supplies       @\$\$1,000/mo       \$       9 9       months	SUBTOTAL					\$	234,818	
a) Wellfield and Waste Water Treatment       \$10,000/mo       9.9       months       \$       69,434         b) RO and process equipment       \$5,000/mo       9.9       months       \$       49,717         SUBTOTAL       \$       \$149,151       \$       149,151       \$       149,151         Supervisor @ \$20 00 per hour       9.9       months       \$       31,819       \$       62,729       \$       149,151       \$       \$       13,344       \$       \$       13,344       \$       \$       13,344       \$       \$       155,912       \$       \$       143,344       \$       \$       155,912       \$       \$       13,344       \$       \$       155,912       \$       \$       155,912       \$       \$       155,912       \$       \$       155,912       \$       \$       149,151       \$       \$       155,912       \$       \$       155,912       \$       \$       149,151       \$       \$       155,912       \$       \$       149,151       \$       \$       155,912       \$       \$       165,162       \$       \$       165,162       \$       10,500       \$       \$       22,600       \$       \$       10,500       \$ <t< td=""><td>Repairs and Mair</td><td>ntenance</td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	Repairs and Mair	ntenance						
b) RO and process equipment       5       149,151         Labor       99 months       \$       31,819         SUBTOTAL       99 months       \$       31,819         4 Operators @ \$13 00 per hour       99 months       \$       82,729         2 Maintenance @ \$13 00 per hour       99 months       \$       82,729         2 Maintenance @ \$13 00 per hour       99 months       \$       82,729         2 Maintenance @ \$13 00 per hour       99 months       \$       82,729         2 Maintenance @ \$13 00 per hour       99 months       \$       82,729         2 Maintenance @ \$13 00 per hour       99 months       \$       82,729         2 Maintenance @ \$13 00 per hour       99 months       \$       82,729         2 Maintenance @ \$13 00 per hour       99 months       \$       21,875         Stabilization Samples       08 years       \$       21,875         Stabilization Samples       5       10,500       \$       22,500         0 Velis       - 3 complete Assays @ \$250       \$       10,500       \$         Supplies       @ \$3,000/mo       9.9 months       \$       29,830         Heating       @ \$3,000/mo       9.9 months       \$       9,943         Veh			\$10,000/mo	99	months	\$	99,434	
SUBTOTAL       \$ 149,151         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       \$ 82,729         2 Maintenance @ \$13 00 per hour       9 9       months       \$ 41,364         SUBTOTAL       9 9       months       \$ 41,364         SUBTOTAL       9 9       months       \$ 155,912         Contract Laboratory Analysis       5       55,912       51,5912         Stabilization Samples       5       21,875       51,859,912         10 Wells       -3 complete Assays @ \$250       \$ 10,500       \$ 22,500         SUBTOTAL       - 9 abbreviated assays @ \$250       \$ 10,500       \$ 22,500         SUBTOTAL       - 9 abbreviated assays @ \$250       \$ 10,500       \$ 22,500         SUBTOTAL       - 9 abbreviated assays @ \$250       \$ 24,853       \$ 54,875         Operating Expenses       9 9       months       \$ 29,830         Heating       @ \$3,000/mo       9 9       months       \$ 9,943         SUBTOTAL       9 9       months       \$ 9,943       \$ 74,575         TOTAL OPERATING COST T			\$5,000/mo	99	months	\$	49,717	
Labor         99         months         \$ 31,819           Supervisor @ \$20 00 per hour         99         months         \$ 62,729           2 Maintenance @ \$13 00 per hour         99         months         \$ 62,729           2 Maintenance @ \$13 00 per hour         99         months         \$ 62,729           2 Maintenance @ \$13 00 per hour         99         months         \$ 62,729           2 Maintenance @ \$13 00 per hour         99         months         \$ 62,729           2 Maintenance @ \$13 00 per hour         99         months         \$ 155,912           Contract Laboratory Analysis         \$ 155,912         \$ 155,912           Contract Laboratory Analysis         \$ 21,875         \$ 10,500           Stabilization Samples         \$ 10,500         \$ 22,500           10 Wells         - 3 complete Assays @\$350         \$ 10,500           - 9 abbreviated assays @ \$250         \$ 22,500         \$ 22,500           Supplies         @\$3,000/mo         \$ 99         months         \$ 29,830           Heating         @\$3,000/mo         \$ 99         months         \$ 29,830           Vehicle Fuel         @\$1,000/mo         \$ 99         months         \$ 9,943           SUBTOTAL         \$ 74,575         \$ 74,575	• •					\$	149,151	
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         \$         82,729           2 Maintenance @ \$13 00 per hour         9 9         months         \$         82,729           2 Maintenance @ \$13 00 per hour         9 9         months         \$         82,729           2 Maintenance @ \$13 00 per hour         9 9         months         \$         82,729           2 Maintenance @ \$13 00 per hour         9 9         months         \$         141,364           SUBTOTAL         Contract Laboratory Analysis         5         155,912         5           55 Montor Wells (24 samples/yr/well @ \$20)         0 8         years         \$         21,875           Stabilization Samples         - 3 complete Assays @\$350         \$         10,500         \$         22,500           SUBTOTAL         - 9 abbreviated assays @\$250         \$         105,4875         \$         54,875           Operating Expenses         Supplies         @\$3,000/mo         \$ 9.9         months         \$ 24,858           Vehicle Fuel         @\$1,000/mo         \$ 9.9 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>								
4 Operators @ \$13 00 per hour       9 9       months       \$ 82,729         2 Maintenance @ \$13 00 per hour       9 9       months       \$ 14,364         SUBTOTAL       9 9       months       \$ 155,912         Contract Laboratory Analysis       55       55 Monitor Wells (24 samples/trivuell @ \$20)       0 8       years       \$ 21,875         Stabilization Samples       0 8       years       \$ 21,875       10,500       \$ 22,500         10 Wells       - 3 complete Assays @ \$250       \$ 10,500       \$ 22,500       \$ 22,500       \$ 22,500         SUBTOTAL       - 9 abbreviated assays @ \$250       \$ 54,875       \$ 54,875       \$ 54,875         Operating Expenses       Supplies       @ \$\$ 0,000/mo       \$ 9 9       months       \$ 29,830         Supplies       @ \$\$1,000/mo       \$ 9 9       months       \$ 29,830         Vehicle Fuel       @ \$\$1,000/mo       \$ 9 9       months       \$ 24,853         Office Utilities       @ \$\$1,000/mo       \$ 9 9       months       \$ 9,943         SUBTOTAL       \$ 9,943       \$ 74,575       \$ 74,575         TOTAL OPERATING COST TO RESTORE GROUNDWATER AT FULL PRODUCTION (Nominal Mine Unit)       \$ 891,094 (1993\$)       \$ 6,962 /Pattern         UNIT RESTORATION OPERATING COST		0 00 per hour		99	months	\$	31,819	
2 Maintenance @ \$13 00 per hour       9 9       months       \$ 41,364         SUBTOTAL       Contract Laboratory Analysis       \$ 155,912         Contract Laboratory Analysis       5       Montor Wells (24 samples/yr/well @ \$20)       0 8       years       \$ 21,875         Stabilization Samples       0 8       years       \$ 21,875         10 Wells       -3 complete Assays @ \$250       \$ 10,500       \$ 22,500         -9 abbreviated assays @ \$250       \$ 22,500       \$ 54,875         SUBTOTAL       -9 abbreviated assays @ \$250       \$ 24,858         SUBTOTAL       \$ 50 months       \$ 29,830         Operating Expenses       \$ 50 months       \$ 24,858         Subplies       @ \$3,000/mo       \$ 9 9       months       \$ 29,830         Vehicle Fuel       @ \$1,000/mo       \$ 9.943       \$ 9.943       \$ 9.943         Office Utilities       @ \$1,000/mo       \$ 9.943       \$ 74,575         SUBTOTAL       \$ 74,575       \$ 891,094 (1993\$)       \$ 9.943         UNIT RESTORATION OPERATING COST       \$ 891,094 (1993\$)       \$ 6,962 /Pattern         1993 -1997 inflation (CPI-U) = 160 6/143 6 = 11 84%       \$ 105,492       \$ 105,492		•		99	months	\$	82,729	
SUBTOTAL       \$ 155,912         Contract Laboratory Analysis       55 Monitor Wells (24 samples/yr/well @ \$20)       0.8 years       \$ 21,875         Stabilization Samples       - 3 complete Assays @\$350       \$ 10,500       \$ 22,500         SUBTOTAL       - 9 abbreviated assays @ \$250       \$ 54,875         Supplies       @\$3,000/mo       \$ 29,830         Heating       @\$\$5,000/mo       \$ 24,858         Vehicle Fuel       @\$\$1,000/mo       \$ 99         Office Utilities       @\$1,000/mo       \$ 99         Office Utilities       @\$1,000/mo       \$ 99         SUBTOTAL       \$ 99,943         TOTAL OPERATING COST TO RESTORE GROUNDWATER AT FULL PRODUCTION (Nominal Mine Unit)       \$ 89,943         UNIT RESTORATION OPERATING COST       \$ 891,094 (1993\$)         1993 - 1997 inflation (CPI-U) = 160 6/143 6 = 11 84%       \$ 105,492	• •			99	months	\$	<b>^ 41,36</b> 4	
Contract Laboratory Analysis         08         years         \$         21,875           55 Montor Wells (24 samples/yr/well @ \$20)         08         years         \$         21,875           Stabilization Samples         10 Wells         - 3 complete Assays @ \$350         \$         10,500           - 9 abbreviated assays @ \$250         \$         54,875           SUBTOTAL         -         \$         54,875           Operating Expenses         9 9         months         \$         29,830           Supplies         @\$\$3,000/mo         \$         9.9         months         \$         29,830           Heating         @\$\$5,000/mo         \$         9.9         months         \$         24,858           Vehicle Fuel         @\$\$1,000/mo         9.9         months         \$         24,858           Vehicle Fuel         @\$\$1,000/mo         9.9         months         \$         9,943           SUBTOTAL         9.9         months         \$         9,943         \$           TOTAL OPERATING COST TO RESTORE GROUNDWATER AT FULL PRODUCTION (Nominal Mine Unit)         \$         891,094 (1993\$)         \$           UNIT RESTORATION OPERATING COST         128 Patterns         \$         891,094 (1993\$)         \$ </td <td>-</td> <td>3 • • • • • • • • • • • • • • •</td> <td></td> <td></td> <td></td> <td>\$</td> <td>155,912</td> <td></td>	-	3 • • • • • • • • • • • • • • •				\$	155,912	
55 Monitor Wells (24 samples/yr/well @ \$20)       0.8       years       \$ <ul> <li>21,875</li> <li>Stabilization Samples</li> <li>10 Wells</li> <li>- 3 complete Assays @ \$350</li> <li>- 9 abbreviated assays @ \$250</li> <li>SUBTOTAL</li> <li>Operating Expenses</li> <li>Supplies</li> <li>@\$3,000/mo</li> <li>9 9</li> <li>months</li> <li>\$                 29,830</li> <li>Heating</li> <li>@\$5,000/mo</li> <li>9.9</li> <li>months</li> <li>\$                 24,858</li> <li>9.9</li> <li>months</li> <li>\$                 9,943</li> <li>SUBTOTAL</li> <li>Office Utilities</li> <li>@\$1,000/mo</li> <li>9.9</li> <li>months</li> <li>\$                 9,943</li> <li>TOTAL OPERATING COST TO RESTORE GROUNDWATER AT FULL PRODUCTION (Nominal Mine Unit)</li> <li>UNIT RESTORATION OPERATING COST</li> <li>128 Patterns</li> <li>\$                 891,094 (19935)</li> <li>6,962 /Pattern</li> <li>1993 -1997 inflation (CPI-U) = 160 6/143 6 = 11 84%</li> <li>\$                 105,492</li> </ul>		on Analysis						
Stabilization Samples       3 complete Assays @\$350       \$ 10,500         - 9 abbreviated assays @\$250       \$ 22,500         SUBTOTAL       \$ 54,875         Operating Expenses       \$ 50         Supplies       @\$\$,000/mo         Heating       @\$\$,000/mo         Heating       @\$\$,000/mo         Vehicle Fuel       @\$1,000/mo         Office Utilities       @\$1,000/mo         SUBTOTAL       9.9         TOTAL OPERATING COST TO RESTORE GROUNDWATER AT FULL PRODUCTION (Nominal Mine Unit)       \$ 891,094 (1993\$)         UNIT RESTORATION OPERATING COST       \$ 6,962 /Pattern         1993 -1997 inflation (CPI-U) = 160 6/143 6 = 11 84%       \$ 105,492		-		08	years	\$	21,875	
10 Wells       - 3 complete Assays @ \$350       \$ 10,500         -9 abbreviated assays @ \$250       \$ 22,500         SUBTOTAL       \$ 54,875         Operating Expenses       \$ 99         Supplies       @ \$3,000/mo         Heating       @ \$3,000/mo         Heating       @ \$3,000/mo         Vehicle Fuel       @ \$1,000/mo         Office Utilities       @ \$1,000/mo         SUBTOTAL       9.9         TOTAL OPERATING COST TO RESTORE GROUNDWATER AT FULL PRODUCTION (Nominal Mine Unit)       \$ 891,094 (1993\$)         UNIT RESTORATION OPERATING COST       128 Patterns       \$ 891,094 (1993\$)         1993 -1997 inflation (CPI-U) = 160 6/143 6 = 11 84%       \$ 105,492		• • • • •			•			
- 9 abbreviated assays @ \$250       \$ 22,500         SUBTOTAL       \$ 54,875         Operating Expenses       9 9 months       \$ 29,830         Supplies       @\$\$0,000/mo       50 months       \$ 24,858         Vehicle Fuel       @\$\$1,000/mo       9.9 months       \$ 9,943         Office Utilities       @\$\$1,000/mo       9 9 months       \$ 9,943         SUBTOTAL       \$ 74,575       \$ 74,575         TOTAL OPERATING COST TO RESTORE GROUNDWATER AT FULL PRODUCTION (Nominal Mine Unit)       \$ 891,094 (1993\$)         UNIT RESTORATION OPERATING COST       128 Patterns       \$ 6,962 // Pattern         1993 - 1997 inflation (CPI-U) = 160 6/143 6 = 11 84%       \$ 105,492	-	····				\$	10.500	
SUBTOTAL       \$ 54,875         Operating Expenses       9 9 months       \$ 29,830         Supplies       @\$\$000/mo       50 months       \$ 24,858         Vehicle Fuel       @\$\$1,000/mo       9.9 months       \$ 9,943         Office Utilities       @\$\$1,000/mo       9.9 months       \$ 9,943         SUBTOTAL       \$ 74,575       \$ 74,575         TOTAL OPERATING COST TO RESTORE GROUNDWATER AT FULL PRODUCTION (Nominal Mine Unit)       \$ 891,094 (1993\$)         UNIT RESTORATION OPERATING COST       128 Patterns       \$ 6,962 //Pattern         1993 - 1997 inflation (CPI-U) = 160 6/143 6 = 11 84%       \$ 105,492	to wens					-	•	
Subicities         Operating Expenses         9 9         months         \$         29,830           Supplies         @\$\$3,000/mo         50         months         \$         29,830           Heating         @\$\$5,000/mo         50         months         \$         24,858           Vehicle Fuel         @\$1,000/mo         9.9         months         \$         9,943           Office Utilities         @\$1,000/mo         9.9         months         \$         9,943           SUBTOTAL         \$         74,575         \$         74,575         \$           TOTAL OPERATING COST TO RESTORE GROUNDWATER AT FULL PRODUCTION (Nominal Mine Unit)         \$         \$         \$         891,094 (1993\$)           UNIT RESTORATION OPERATING COST         128 Patterns         \$         6,962 //Pattern         \$         6,962 //Pattern         \$	CLIDTOTAL	- a annichigica googla fa aron						
Supplies         @\$3,000/mo         9 9         months         \$         29,830           Heating         @\$\$5,000/mo         50         months         \$         24,858           Vehicle Fuel         @\$1,000/mo         9.9         months         \$         9,943           Office Utilities         @\$1,000/mo         9.9         months         \$         9,943           SUBTOTAL         5         74,575         5         74,575         5           TOTAL OPERATING COST TO RESTORE GROUNDWATER AT FULL PRODUCTION (Nominal Mine Unit)         \$         891,094 (1993\$)         6,962 /Pattern           UNIT RESTORATION OPERATING COST         128 Patterns         \$         6,962 /Pattern         1993 - 1997 inflation (CPI-U) = 160 6/143 6 = 11 84%         \$         105,492						•	, •	
Supplies       (24,5000/mo)         Heating       (25,000/mo)         Vehicle Fuel       (251,000/mo)         Office Utilities       (251,000/mo)         Office Utilities       (251,000/mo)         SUBTOTAL       9.9         TOTAL OPERATING COST TO RESTORE GROUNDWATER AT FULL PRODUCTION (Nominal Mine Unit)       \$ 891,094 (1993\$)         UNIT RESTORATION OPERATING COST       128 Patterns       \$ 6,962 /Pattern         1993 - 1997 inflation (CPI-U) = 160 6/143 6 = 11 84%       \$ 105,492				99	months	S	29.830	
Heating       (g.s.),000/mo       9.9       months       \$ 9,943         Office Utilities       (g.\$1,000/mo       9.9       months       \$ 9,943         Office Utilities       (g.\$1,000/mo       9.9       months       \$ 9,943         SUBTOTAL       \$ 74,575         TOTAL OPERATING COST TO RESTORE GROUNDWATER AT FULL PRODUCTION (Nominal Mine Unit)       \$ 891,094 (1993\$)         UNIT RESTORATION OPERATING COST       128 Patterns       \$ 6,962 // Pattern         1993 - 1997 inflation (CPI-U) = 160 6/143 6 = 11 84%       \$ 105,492	• •						-	
Office Utilities       @\$1,000/mo       9 9       months       \$ 9,943         SUBTOTAL       \$ 74,575         TOTAL OPERATING COST TO RESTORE GROUNDWATER AT FULL PRODUCTION (Nominal Mine Unit)       \$ 891,094 (1993\$)         UNIT RESTORATION OPERATING COST       128 Patterns       \$ 6,962 / Pattern         1993 - 1997 inflation (CPI-U) = 160 6/143 6 = 11 84%       \$ 105,492	-					•		
SUBTOTAL       \$ 74,575         TOTAL OPERATING COST TO RESTORE GROUNDWATER AT FULL PRODUCTION (Nominal Mine Unit)       \$ 891,094 (1993\$)         UNIT RESTORATION OPERATING COST       128 Patterns       \$ 6,962 / Pattern         1993 - 1997 inflation (CPI-U) = 160 6/143 6 = 11 84%       \$ 105,492		-				•	-	
UNIT RESTORATION OPERATING COST         128 Patterns         \$ 6,962 / Pattern           1993 - 1997 inflation (CPI-U) = 160 6/143 6 = 11 84%         \$ 105,492		and the second s						2
UNIT RESTORATION OPERATING COST         128 Patterns         \$ 6,962 / Pattern           1993 - 1997 inflation (CPI-U) = 160 6/143 6 = 11 84%         \$ 105,492	TOTAL OPERA		PRODUCTION (Nominal Mine Linit)			\$	891.094	(19935)
1993 -1997 inflation (CPI-U) = 160 6/143 6 = 11 84% \$ 105,492				12	8 Patterns		-	• •
						-	105 105	
Total \$ 996,586 (1997\$)		1993 -1997 inflation (CPI-U) = 160 6/143 6	= 11 84%			•	•	
					Total	\$	996,586	(1997 <b>\$</b> )

#### Table 7.7 SMITH RANCH PROJECT Mining Unit Groundwater Restoration Costs Wellfield #4 Extension

1 A	₽V≖	17,986,786	5 gallons		Total Gallons	Operating Flow Rate		Total	Number of
RE	STORA	ATION COST	COMPONENT	Unit Cost	Treated	GPM		Cost	Days
1			Costs (Electrical costs)						
	a) (	Groundwater	Treatment (IX treatment Only) (100% of flow)	(\$0.117/1,000 gal )	107,920,715	1400	• \$	12,627	75
	b) 1	Treated Grou	ndwater Re-injection (bypass RO/EDR Treatment)	(\$0.117/1,000 gal )	64,752,429	600	* \$	7,576	75
	c) {	RO/EDR Trea	atment (800 GPM Feed 600 GPM Permeate)	(\$0.289/1,000 gal )	86,336,572	800	\$	24,951	75
	e) (	Groundwater	Sweep (GW Inflow to replace water sent to disposal)	(\$0.117/1,000 gal )	21,584,143	200	\$	2,525	75
	SUBI	TOTAL		Total Treated Volume	107,920,715	1000	\$	47,679	75
2	Cherr	nical Treatme	ent Power Costs						
	a) i	Reverse Osn	nosis Unit	\$0.10/gpm/day (\$0 07/1,000 gal )	86,336,572	800	\$	6,044	
	b) [	Disposal We	II Operation	\$0 05/1,000 gaf	21,584,143	200	\$	1,079	
	SUBT	TOTAL					\$	7,123	
<u>3</u>	Chem	nicals							
	a) \	Waste Water	Treatment (Resin Elut Chem)						
	(	@\$400/elutio	n, Waste Water @ 2 mg/L U308	Elution Costs (12 3 Elutions/year * \$40	00/ Elution)		\$	1,010	75
		500 ft3 resin,	2 lb./ft3 loading,						
		Annualized V	Vaste Water Flow; 1400 gpm						
		1 elution eve	ry 29 7 days or 12.3 elutions per year						
			ductant (H2S or alternative)	\$1 80/gpm/day (\$1 25/1,000 gal.)	17,986,786	1200	\$	22,483	
			Is (H2SO4, Antiscalents, Oxygen Scavenger)	\$0 57/gpm/day (\$0 40/1,000 gal.)	86,336,572	800	\$	34,535	
	-	TOTAL					\$	58,028	
4		urs and Main	tenance						
			Waste Water Treatment	\$10,000/mo	2.5	months	\$	24,572	
	-,		ess equipment	\$5,000/mo	2.5	months	\$	12,286	
	•	TOTAL					s	36,858	
5	Labo								
-		÷ ervisor @ \$20	00 per bour		25	months	\$	7,863	
		-	3 00 per hour		25	months	\$	20,444	
		-	\$13 00 per hour		2.5	months	\$	10,222	
		TOTAL					Ś	38,529	
6		ract Laborato	or Analysis				•	,	
⊻.	-		s (24 samples/yr/well @ \$20)		0.2	vears	\$	1.081	
		lization Sam			U.L	Joaro	•	1,001	
	10 W		- 3 complete Assays @\$350				\$	10,500	
	10 10		- 9 abbreviated assays @\$250				Š	22,500	
	SH P	TOTAL	- 0 20010112100 833833 (2 9200				ŝ	34,081	•
7			DE .				•	0,001	
7	Supp	ating Expens	es @\$3,000/mo		25	months	\$	7,372	
			@\$5,000/mo		1.2	months	Š	6,143	
	Heati	-	-		2.5	months	s.	2,457	
		cie Fuel e Utilities	@\$1,000/mo @\$1,000/mo		2.5	months	5 5	2,457	
			@\$1,000/mo		23	montas	Š	18,429	
	208	TOTAL					÷	10,420	
	TOT:		NG COST TO RESTORE GROUNDWATER AT FULL	PRODITION (Nominal Mine Linit)			\$	240,728	(1993\$)
						Patterns	5		(19955) /Pattern
	UNII	RESIDRA	TION OPERATING COST	- 11 9/9/	30	Fallenis		28,498	IF ALCOLL
			1993 - 1997 Inflation (CPI-U) = 160 6/143 6	- 110470			4 5	20,490 57,024	
	REC	OMPLETION	(\$640/well)(2 7 wells/pattern)(33 patterns)			Total	ې 5	•	/1007\$\
						I ULAI	4	326,250	(13314)

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

•

1 APV = 57,287,069 gallons		Total	Operating			
		Gallons	Flow Rate		Total	Number of
RESTORATION COST COMPONENT	Unit Cost	Treated	GPM		Cost	Days
1 Wellfield Pumping Costs (Electrical 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 dispose		68,744,483	200	\$	8,043	239
SUBTOTAL	Total Treated Volume:	343,722,413	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 gai	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 * \$40	00/ 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						
<li>b) Chemical Reductant (H2S or alternative)</li>	\$1 80/gpm/day (\$1.25/1,000 gai )	57,287,069	1200	\$	71,609	
<ul> <li>c) RO Chemicals (H2SO4, Antiscalents, Oxygen Scavenger)</li> </ul>	\$0 57/gpm/day (\$0 40/1,000 gal )	274,977,930	800	\$	109,991	
SUBTOTAL				\$	184,818	
4 Repairs and Maintenance						
a) Welifield and Waste Water Treatment	\$10,000/mo	78	months	\$	78,261	
<li>b) RO and process equipment</li>	\$5,000/mo	7.8	months	\$	39,131	
SUBTOTAL				\$	117,392	
5 Labor		-,				
Supervisor @ \$20 00 per hour		78	months	\$	25,044	
4 Operators @ \$13 00 per hour		78	months	\$	65,113	
2 Maintenance @ \$13 00 per hour		78	months	\$	32,557	
SUBTOTAL				\$	122,713	
6 Contract Laboratory Analysis						
36 Monitor Wells (24 samples/yr/well @ \$20)		07	years	\$	11,270	
Stabilization Samples						
10 Wells - 3 complete Assays @\$350				\$	10,500	
- 9 abbreviated assays @ \$250				\$	22,500	
SUBTOTAL				\$	44,270	-
7. Operating Expenses						
Supplies @\$3,000/mo		78	months	\$	23,478	
Heating @\$5,000/mo		39	months	\$	19,565	
Vehicle Fuel @\$1,000/mo		78	months	\$	7,826	
Office Utilities @\$1,000/mo		7.8	months	\$	7,826	
SUBTOTAL				\$	58,696	
TOTAL OPERATING COST TO RESTORE GROUNDWATER AT FL	JLL PRODUCTION (Nominal Mine Unit)			\$	702,430	(1993\$)
UNIT RESTORATION OPERATING COST		101	Patterns	\$	6,955	/Pattem
				-		
1993 -1997 inflation (CPI-U) = 160.6/14	3.6 = 11 84%			\$	83,157	40070
·			Total	\$	785,587	(12312)

# SECTION 8 HEALTH PHYSICS COSTS

Co	st 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		
• Labo	r 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		
• Labo	r 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 previous surety estimates, PRI has elected at this time to continue to use the five (5) forward bond amount for NRC purposes.

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# SECTION 9 WHOLE TRUCKING COSTS

Cost Si	immary
ITEM	COSTS (\$97)
9.3 Contaminated Trucking	523
9.4 Uncontam. Trucking	157
Total Cost	680

# Contaminated Trucking - Year #1

9.2

9.3

9.4

	Basis:	See Table 9.1		
	• Haul =	0.2 Trucks x 800 Miles x \$3.27/Mile	=	<b>\$ 523</b>
No	n-Contan	ninated Trucking - Year #1		
	Basis:	See Table 9.2		
	• Haul =	0.5 Trucks x 8 Hrs/Truck x \$65.39/Hr	=	\$ 262
Co	ntaminat	ed Trucking - Year #5		
	Basis:	See Table 9.3		
	• Haul =	0.2 Trucks x 800 Miles x \$3.27/Mile	=	\$ 523
No	n-contam	inated Trucking - Year #5		
	Basis:	See Table 9.4		
	• Haul =	0.3 Trucks x 8 Hrs/Truck x \$65.39/Hr	=	\$ 157

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

## **SECTION 10 DELINEATION DRILLING RECLAMATION COSTS**

Cost S	Summary	
ITEM	COSTS (\$97)	
10 1 Delineation Drilling	22,068	
Total Cost	22,068	

# **Delineation Drilling Costs**

Basis:	Unreclaimed delineation holes from 1998-2003	0	
	Delineation holes to be drilled in 2003-2004	162	
	Total Delineation Holes to be Bonded	162	
Per hole cos	t for reclamation of delineation is based on bonding estimate for ex	xploration holes under DN 236	

6. (see attached Pe table)

,

Reclamation costs per hole = \$136.22/hole Cost for plugging and abandonment: 162 holes x \$136.22/hole

# **Delineation Drilling Costs**

\$ 22,068

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#### 1999 Reclamation Bond Estimate for DN236

Well Abandonment and Topsoil Replacement and Re-vegetation **Assumptions** I. Well Abandonment Α. # 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 С. Survey Crew Cost Hours/hole 0.3 \$/hour \$75.00 Subtotal \$22.50 \$22.50 Survey Crew Cost П. Equipment A. Abandonment Equipment **Drill Rig Mobilization Cost** ABANDONMENT COST \$103.08 Total Cost per Well or Drill Hole \$103.08 **Backfill & Topsoil Replacement** III. Α. Assumptions 1. General Affected Area/hole (ft2) 400 Affected area/hole (acres) 0.01 Pit area/pit (ft2) 120 Backfill depth 9 Modified Pit Volume 800 Number of wells and drill holes 1 Topsoil Replacement Depth (ft) 0.33 Pit Topsoil Volume (yd3) 1.47 yd3 backfill 29.63 total yd3 backfill 29.63 Total yd3 topsoil 1.47 Total affected area (acres) 0.01 2. Equipment with operator Productivity backhoe w/trailer (yd3/hr) 32.39 \$33.24 \$/hour Total replacement costs \$31.92 IV. Reseeding 1. Equipment Drill Seeder w/trailer (\$/acre) \$100.00 Subtotal Equipment Cost \$0.92 2. Seed \$33.00 \$/acre Subtotal Seed Cost \$0.30 Subtotal Re-Seeding Cost \$1.22

<b>v.</b>	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 Co	ost	\$1.22		
TOTAL	· _		\$136.22		

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#### PART III - SURETY BOND SUMMARY

This section contains the cost bases that were used in the bond calculations provided in 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.

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

#### **BID RATES FOR LABOR AND EQUIPMENT**

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% [1<sup>st</sup> quarter 1993 (101.8) through  $1^{st}$  quarter 1997 (110.95)].