Tota	l Re	estoration	and Recla	mation C	ost Estima	ate				
I.	GR	OUNDWA'	TER REST(ORATION (COST				\$3,517,068	
П.	EQ	UIPMENT	REMOVAL	& DISPOS	SAL COST				\$133,000	
III.	BU	ILDING DI	EMOLITIO	N AND DIS	POSAL CO	ST			\$780,342	
IV.	WI	ELLFIELD	BUILDING	S & EQUIP	MENT REN	MOVAL & I	DISPOSAL	COST	\$53,065	
V.	WI	ELL ABANI	DONMENT	COST					\$161,505	
VI.	WI	ELLFIELD	AND SATE	LLITE SUR	RFACE REC	CLAMATIO	N		\$7,952	
VII.	ТО	TAL MISC	ELLANEO	US RECLAI	MATION C	OST			\$158,517	
	SU	BTOTAL R	ECLAMAT	ION AND F	RESTORAT	TION COST	ESTIMATI	E	\$4,811,449	
			CP	I ESCALA	TOR- July	1,1998 to F	eb. 28, 200	6 (21.75%)		
							S	UBTOTAL	\$4,811,449	
		AD	MINISTRA	TIVE, OVE	RHEAD, AN		GENCY ITI	EMS (25%)	\$1,202,862	
								TOTAL	\$6,014,311	
				TOTAL C	ALCULATE		(IN 2006 I	DOLLARS)	\$6,014,300	
									i	

Ground Water Restoration		Mine Unit-1
PV Assumptions		
Wellfield Area (ft2)		1.050.576
Wellfield Area (acres)		24.1
Affected Ore Zone Area (ft	2)	1,050,576
Avg. Completed Thickness		17
Porosity		0.27
Flare Factor		1.5
Affected Volume (ft3)		26,789,688
Kgallons per Pore Volume		54,104
Number of Patterns in Unit(s)		101
Current		101
Estimated next report period		0
Total Estimated		101
Number of Wells in Unit(s)		
Production Wells		
Current		101
Estimated next report pe	riod	0
Total Estimated		101
Injection Wells		
Current		175
Estimated next report pe	riod	0
Total Estimated		175
Monitoring Wells		
Current		38
Estimated next report pe	riod	0
Total Estimated		38
Number of Wells per Wellfi	eld	314
Total Number of Wells		
Average Well Depth (ft)		750
I. Ground water Sweep Cost		1
PV's Required		I
I otal Kgals for Treatmen	nt	\$1,104
Ground Water Sweep Of	nit Cost (5/Kgal)	۵۱.۵۵ ۳٦۵ ۵٦۵
I otal Ground water Swee		\$/3,0/3
II. Reverse Osmosis Costs		
PV's Required		4
Total Kgals for Treatme	nt	216,418
Reverse Osmosis Unit C	ost (\$/Kgal)	\$0.60
Total Reverse Osmosis Cos	sts	\$129,418
III Chamical Deductant Costs		
Total K gals for Treatma	nt (2 Pore Volumes)	100200
Chemical Reductant Uni	t Cost (\$/Kga])	\$0.32
Chemical Reductalit Off	· • • • • • • • • • • • • • • • • • • •	$\psi 0.52$

Gro	und	Wa	ter R	esto	oration	Canta			Mine Unit-1
	10	tal (Chem	ica	I Reductant	t Costs			\$34,627
** 7									
IV.	Eh	utio	n Cos	ts	·			OUT	
	A.	En	Ution I	700 /E1	cessing Cost	S no d			25.000
			Kgais	5/EI	af Elections	rea			35,000
			Droco	ber	of Elutions	t (¢/Elution)		٥ ٩ ٩ ٦ ٩
		C	Proce	Dre	ng Unit Cos	t (\$/Elution)		\$323
	D	Su	Diotal	PIC all I	initiation Co	sts			\$4,200
	D.	De	Doon		Ill Injection	StS Volumo (V	alc/Elution)	10
			Deep	VV t	ala for Inica	volume (N	gais/ Elution)	12
			Deen	Kg WL	als for fijed	Unit Cost ((¢/V colc)		90 \$1.20
-	_	C	Deep	We De	an Wall Inio	Unit Cost (5/Kgais)		\$1.39 \$1.22
	То	Su	Flutio	De	ep wen mje	ction Costs	5		\$133 \$14 222
	10	cal 1		on (JUSTS				\$4,333
V.	M	onit	oring	and	d Sampling	Costs			
	A.	Ac	tive R	lest	oration Perio	od			
		Es	timate	d R	estoration P	Period (Year	rs)		5
		1.	UCL	Sar	npling	,	,		
			# 0	of V	Vells				36
			\$/5	sam	ple				\$50
			Sa	mp	les/Year				6
		Su	b-tota	l Re	estoration A	nalvses			\$54,000
	B.	Sta	ability	Per	riod				,,
		Es	timate	d S	tabilization	Period (Ye	ars)		1
		1.	Full S	Suit	e Analyses				
			# of \	Nel	ls				10
			Samp	les	/Year				3
-			\$/sam	nple					\$200
		2	Short	Lis	st Analyses				¢=00
			# of V	Vel	ls				10
			Samn	les	/Year				9
			\$/sam	nnle					\$70
-		Su	b-tota	l St	ability Anal	vses			\$12 300
	То	tal	Monif	ori	ng and San	nling Cos	ts		\$66.300
	10			.011		iping cos			\$00,200
X 7 T				T (• • • •		_		
VI.	M	echa Eiz	anical	Int	tegrity Test	(MIT) Cos at (\$/well)	sts		¢100
	-	FIV NI	ve rea		$\frac{111 \text{ Unit Co}}{111 \text{ (200)}}$	st (\$/weii)	D		\$180
	Та	INU	Imber	01	wells (30%	of Inj. and	Rest. wens))))))))))))))))))))
	10		viecn	ani	cal integrit	y resting (JUST		۵۶,450
тот		13/1		IFT	D DESTO		COST		\$213.979
101		vv I		1121	JU KESIU				\$312,808
1/11	D .	14		:1:4	. Costa				Control Plant
V 11.	DU	nul	ng Ut	шty	y Cusis				Central riant

Grou	nd Water Restoration	Mine Unit-1
	Electricity (\$/Month)	\$8,500
	Natural Gas (\$/Month)	\$2,500
	Number of Months	48
	Total Building Utility Costs	\$528,000
		,
VIII	Vahiala Operation Costa	
v 111.	Number of Dickup Trucks/Dulling Units (Cos)	
	Unit Cost in \$/hr (WDEO Cuideline No. 12, Table D. 1)	\$20.21
	Unit Cost in \$/in (wDEQ Guideline No.12, Table D-1)	\$20.21
	Average Operating Time (Hrg/Veer)	\$0.00 1000
	Total Number of Veers (Average)	1000
	Total Number of Years (Average)	4 ۳/۱۰۷ کارل
		5404,200
IX.	Labor Costs	
	Number of Environmental Managers/RSOs	1
	\$/Year	\$100,000
	Number of Restoration Managers	1
	\$/Year	\$80,000
	Number of Environmental Technicians]
	\$/Year	\$34,000
	Number of Operators/Laborers	4
	\$/Year	\$34,000
	Number of Maintenance Technicians	2
	\$/Year	\$34,000
	Number of Years	4
	Total Labor Costs	\$1,672,000
X.	Capital Costs	
	Purchase RO Unit (1X400 gpm Unit)	\$600,000
	Total Capital Costs	\$600,000
тот	AL CROUND WATER DESTORATION COSTS	00 E1E 070

Equ	ipme	ent	Removal and Loading	CPP Ion Ex. Plant	Central Plant	Dryer Building
т	Don	101	al and Loading Costs			
1.	A	Ta	nkage			
		14	Number of Tanks	13	51	0
			Volume of Tank Construction Material (f ³)	835	1340	300
		1.	Labor			
			Number of Persons	3	3	3
			Ft ³ /Day	25	25	25
			Number of Days	33	54	12
			\$/Day/Person	\$120	\$120	\$120
			Subtotal Labor Costs	\$12,030	\$19,296	\$4,320
		2.	Equipment			
			Number of Days	33	54	12
			\$/Day	\$338	\$338	\$338
			Subtotal Equipment Costs	\$11,295	\$18,117	\$4,056
	_	Su	btotal Tankage Removal and Loading Costs	\$23,325	\$37,413	\$8,376
	В.	Pν	C/Steel Pipe			
			PVC Pipe Footage	2800	5000	
			Average PVC Pipe Diameter (inches)	3	3	3
			Shreaded PVC Pipe Volume Reduction (Π/Π)	0.016	0.016	0.016
			Volume of Shredded PVC Pipe (II)	45	80	0
			Average Steel Pine Diameter (inches)	1100	0	0
			Volume (ft ³)	216	0	0
		1	Labor	210	0	0
		1.	Number of Persons	2.	2.	2
			Ft/Day	300	300	300
			Number of Days	13	17	0
			\$/Day/Person	\$120	\$120	\$120
			Subtotal PVC/Steel Pipe Labor Costs	\$3,120	\$4,000	\$0
		Su	btotal PVC/Steel Pipe Removal and Loading Costs	\$3,120	\$4,000	\$0
	C.	Pu	mps			
			Number of Pumps	21	43	0
			Average Volume (ff ³ /pump)	4.93	4.93	0
			Volume of Pumps (ft')	103.53	211.99	0
		1.	Labor			
			Number of Persons	1	1	1
			Pumps/Day	2	2	2
			Number of Days	10.5	21.5	0
			S/Day/Person	\$120	\$120	\$120
		C 11	Sublotal Labor Costs	\$1,200	\$2,380	\$0 \$0
	D	Dr	Ver	\$1,200	\$2,580	\$ U
	D.	Dr	ver Volume (ft ³)			200
		1.	Labor			200
			Number of Persons	0	0	5
			Ft ³ /Day	0	0	175
			Number of Days	0	0	2
			\$/Day/Person	\$120	\$120	\$120
			Total Labor Cost	\$0	\$0	\$1,200
		То	tal Dryer Dismantling and Loading Cost	\$0	\$0	\$1,200

Equ	iipm	ent Removal and Loading				CPP Ion Ex. Plant	Central Plant	Dryer Building
	Sub	total Equipment Removal and	Loading Costs p	per Facility		\$27,705	\$43,993	\$9,576
	Tot	al Equipment Removal and I	oading Costs	-		\$81,274		
	-							
П.	Tra	nsportation and Disposal Cos	sts (NRC-Licer	ised Facility	()			
	A.	Tankage						
		Volume of Tank Construct	ion Material (ff	') 		835	1340	300
		Volume for Disposal Assu	ming 10% Void	Space (fr')		919	1474	330
		Transportation and Dispos	al Unit Cost (\$/1	ft')		\$12.00	\$12.00	\$12.00
		Subtotal Tankage Transportat	on and Disposa	l Costs		\$11,028	\$17,688	\$3,960
	B.	PVC / Steel Pipe						
		Volume of Shredded PVC	Pipe (ft ³)			44.8	80	0
		Volume for Disposal Assu	ming 10% Void	Space (ff^3)		49	88	0
		Volume of Steel Pipe (ft ³)				296	0	0
		Volume for Disposal Assu	ming 10% Void	Space (ff ³)		326	0	0
		Transportation and Dispos	al Unit Cost (\$/1	ft ³)		\$12.00	\$12.00	\$12.00
		Subtotal PVC Pipe Transporta	tion and Dispos	sal Costs		\$4,500	\$1,056	\$0
	C.	Pumps						
		Volume of Pumps (ft ³)				103.53	271	0
		Volume for Disposal Assu	ming 10% Void	Space (ff^3)		114	298	0
		Transportation and Dispos	al Unit Cost (\$/1	ft^3)		\$12.00	\$12.00	\$12.00
		Subtotal Pump Transportation	and Disposal C	Costs		\$1,368	\$3,576	\$0
	D.	Dryer						
		Dryer Volume (ft ³)				0	0	400
		Volume for Disposal Assu	ming Dryer Rer	nains Intact ((f^3)	0	0	400
		Transportation and Dispos	al Unit Cost (\$/1	ft ³)		\$12.00	\$12.00	\$12.00
		Total Dryer Transportation an	d Disposal Cost	ts		\$0	\$0	\$4,800
	Sub	total Equipment Transportation	and Disposal (Costs per Fac	ility	\$16,896	\$22,320	\$8,760
	Tot	al Equipment Transportation	and Disposal	Costs		\$47,976	· · · · · · · · · · · · · · · · · · ·	
III.	Hea	lth and Safety Costs						
		Radiation Safety Equipment				\$1.250	\$1,250	\$1,250
	Tot	al Health and Safety Costs				\$3,750		
SUI		TAL FOLIDMENT REMOVA		SAL COSTS	PER FACILITY	\$45.951	\$67 562	\$10.586
TO	TAI	FOUIDMENT REMOVAL				\$43,031 \$133.000	\$07,505	\$17,500
10		EQUI MENT REMOVAL 2				\$155,000		
			1			1		

							CPP Ion Ex.	Central	Dryer	Office	Shop	DDW	Yellowcake	Warehouse	Fresh Water
Buil	ding	g Demolitio	n and Disposal				Plant	Plant	Building	Building	Building	Buildings	Storage	Building	Pumphouse
T	Dec	ontaminati	ion Costs												
	A	Wall Deco	ntamination												
		Area to	be Decontaminated	$1(ft^2)$			10.810	15,900	0	0	0	0	3100	0	0
		Applica	ation Rate (Gallons	(ft ²)		OUT	1	1	1	1	1	1	1	1	1
		HCl Ac	id Wash, including	labor (\$/ft ²)			\$0.63	\$0.63	\$0.63	\$0.63	\$0.63	\$0.63	\$0.63	\$0.63	\$0.63
		Subtotal W	all Decontaminatio	on Costs			\$6,810	\$10,017	\$0	\$0	\$0	\$0	\$1,953	\$0	\$0
	B.	Concrete F	Floor Decontaminat	ion											
		Area to	be Decontaminated	$d(ft^2)$			11,550	16,500	3,500	0	0	0	2750	0	0
		Applica	ation Rate (Gallons/	'ft ²)		OUT	1	1	1	1	1	1	1	1	1
		HCl Ac	id Wash, including	labor (\$/ft ²)			\$0.47	\$0.47	\$0.47	\$0.47	\$0.47	\$0.47	\$0.47	\$0.47	\$0.47
		Subtotal C	oncrete Floor Deco	ntamination Co	osts		\$5,429	\$7,755	\$1,645	\$0	\$0	\$0	\$1,293	\$0	\$0
	C.	Deep Well	Injection Costs												
		Total K	gals for Injection				22.36	32.4	3.5	0	0	0	5.85	0	0
		Deep W	Vell Injection Unit C	Cost (\$/Kgals)			\$1.39	\$1.39	\$1.39	\$1.39	\$1.39	\$1.39	\$1.39	\$1.39	\$1.39
		Subtotal D	eep Well Injection	Costs			\$31	\$45	\$5	\$0	\$0	\$0	\$8	\$0	\$0
	Sub	total Decon	itamination Costs p	er Building			\$12,270	\$17,817	\$1,650	\$0	\$0	\$0	\$3,254	\$0	\$0
	Tot	al Deconta	mination Costs				\$34,991								
II.	Den	nolition Co	osts												
	Α.	Building													
		Assum	ptions:												
		Dry	er bldg. demolition	unit cost of \$0	.73/1	ft ³ for additional									
		radi	iation safety equipn	nent											
		Area of	f Building(ft ²)				11,550	16,500	3,500	9,934	7,028	500	2750	8,739	832
		Volume	e of Building (ft ³)				346,500	577,500	122,500	248,350	175,700	4,000	55,000	174,780	8,320
		Demoli	tion Unit Cost per V	WDEQ Guideli	ne N	lo.12,App.K (\$/ft ³)	\$0.178	\$0.178	\$0.178	\$0.178	\$0.178	\$0.178	\$0.178	\$0.178	\$0.178
		Unit Co	ost in \$/ft ³ (July 199	98 dollars w/o e	scal	OUT	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
		Subtotal B	uilding Demolition	Costs			\$61,677	\$102,795	\$21,805	\$44,206	\$31,275	\$712	\$9,790	\$31,111	\$1,481
	B.	Concrete F	loor												
		Area of	Concrete Floor (ft)			11,550	16,500	3500	9,934	7,028	0	2750	8,739	832
		Demoli	tion Unit Cost per	WDEQ Guideli	ne N	lo.12,App.K (\$/ft ²)	\$3.40	\$3.40	\$3.40	\$3.40	\$3.40	\$3.40	\$3.40	\$3.40	\$3.40
		Unit Co	ost in \$/ft ⁻ (July 199	98 dollars w/o e	sca	OUT	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	C	Subtotal C	oncrete Floor Dem	olition Costs			\$39,270	\$56,100	\$11,900	\$33,776	\$23,895	\$0	\$9,350	\$29,713	\$2,829
	C.	L an ath	ooting	- (ft)			420	514	227	200	225	20	210	274	115
		Demeli	tion Unit Cost per	g (II) VDEO Guida 1	No.1	Ann V (C/lin ft)	\$12.22	\$12.22	\$12.22	\$12.22	\$12.22	\$12.22	\$12.22	\$12.22	\$12.22
		Unit Co	at in \$/lin_ft (July	1998 dollars w/		12,App.K (\$/1111. 11)	\$12.22	\$12.22	\$12.22	\$12.22	\$12.22	\$12.22	\$12.22	\$12.22	\$12.22
		Subtotal C	oncrete Footing De	molition Costs	0 02	001	\$5.253	\$6.279	\$2.892	\$4.872	\$4.098	\$1.093	\$2.563	\$4.569	\$1.410
	Sub	total Demo	lition Costs per Bui	Iding			\$106,200	\$165,174	\$36 597	\$82,854	\$59.268	\$1,005	\$21,703	\$65 393	\$5,720
	Tot	al Demoliti	ion Costs	lang			\$544,714	\$100,171	\$50,577	\$02,001	\$57,200	\$1,000	\$21,705	\$00,070	\$5,720
	D .						,								
III.	Disp	posal Costs	š												
	A.	Naluma of	Puilding (av)				12822	21280	4527	0108	6507	149	2027	6472	208
		1 On Site	s Sunding (cy)		\vdash		12833	21389	4337	9198	0307	148	2037	0473	308
			umptions:		\vdash										
\vdash		/155	On-site disposal o	ost of \$1.25/ev	+										
<u> </u>		Perc	centage (%)	0.50 01 01.25/Cy			100	100	100	100	100	100	100	100	100
		Vol	ume for Disposal (cubic vards)			12833	21389	4537	9198	6507	148	2037	6473	308
		Dist	posal Unit Cost (\$/	cy)			\$1.25	\$1.25	\$1.25	\$1.25	\$1.25	\$1.25	\$1.25	\$1.25	\$1.25
		Subtota	l On-Site Disposal	Costs			\$16,042	\$26,736	\$5,671	\$11,498	\$8,134	\$185	\$2,546	\$8,092	\$385
		2. NRC-L	icensed Facility												

	CPP Ion Ex.	Central	Dryer	Office	Shop	DDW	Yellowcake	Warehouse	Fresh Water
Building Demolition and Disposal	Plant	Plant	Building	Building	Building	Buildings	Storage	Building	Pumphouse
Percentage (%)	0	0	0	0	0	0	0	0	0
Volume for Disposal (ft ³)	0	0	0	0	0	0	0	0	0
Volume for Disposal Assuming 10% Void Space (ft ³)	0	0	0	0	0	0	0	0	0
Transportation and Disposal Unit Cost (\$/ft ³)	\$12.00	\$12.00	\$12.00	\$12.00	\$12.00	\$12.00	\$12.00	\$12.00	\$12.00
Subtotal NRC-Licensed Facility Disposal Costs	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal Building Disposal Costs	\$16,042	\$26,736	\$5,671	\$11,498	\$8,134	\$185	\$2,546	\$8,092	\$385
B. Concrete Floor									
Area of Concrete Floor (ft ²)	11550	16500	3500	9934	7028	0	2750	8739	1186
Average Thickness of Concrete Floor (ft)	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Volume of Concrete Floor (ft ³)	8662.5	12375	2625	7450.5	5271	0	2062.5	6554.25	889.5
Volume of Concrete Floor (cy)	321	458	97	276	195	0	76	243	33
1. On-Site									
Percentage (%)	75	75	75	100	100	100	75	100	100
Volume for Disposal (cy)	241	344	73	276	195	0	57	243	33
Disposal Unit Cost per WDEQ Guideline No.12, App.K (\$/cy)	\$6.39	\$6.39	\$6.39	\$6.39	\$6.39	\$6.39	\$6.39	\$6.39	\$6.39
Unit Cost in \$/cy (July 1998 dollars w/o e OU	Г \$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Subtotal On-Site Disposal Costs	\$1,538	\$2,197	\$466	\$1,763	\$1,247	\$0	\$366	\$1,551	\$211
2. NRC-Licensed Facility									
Assumptions:									
Additional \$2.00/ft ³ for segregation of concrete									
Percentage (%)	25	25	25	0	0	0	25	0	0
Volume for Disposal (ft ³)	2888	3094	656	0	0	0	516	0	0
Segregation and Loading Unit Cost (\$/ft ³)	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60
Transportation and Disposal Unit Cost (\$/ft ³)	\$12.00	\$12.00	\$12.00	\$12.00	\$12.00	\$12.00	\$12.00	\$12.00	\$12.00
Subtotal NRC-Licensed Facility Disposal Costs	\$42,165	\$45,169	\$9,581	\$0	\$0	\$0	\$7,528	\$0	\$0
Subtotal Concrete Floor Disposal Costs	\$43,703	\$47,366	\$10,047	\$1,763	\$1,247	\$0	\$7,894	\$1,551	\$211
C. Concrete Footing									
Length of Concrete Footing (ft)	430	514	237	399	335	89	210	374	124
Average Depth of Concrete Footing (ft)	4	4	4	4	4	4	4	4	4
Average Width of Concrete Footing (ft)	1	1	1	1	1	1	1	1	1
Volume of Concrete Footing (ft ³)	1720	2055	947	1595	1341	358	839	1496	496
Volume of Concrete Footing (cy)	64	76	35	59	50	13	31	55	18
Disposal Unit Cost per WDEQ Guideline No.12,App.K (\$/cy)	\$6.39	\$6.39	\$6.39	\$6.39	\$6.39	\$6.39	\$6.39	\$6.39	\$6.39
Unit Cost in \$/cy (July 1998 dollars w/o esca. OU	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Subtotal Concrete Footing Disposal Costs	\$407	\$486	\$224	\$377	\$317	\$85	\$199	\$354	\$117
Subtotal Disposal Costs per Building	\$60,152	\$74,588	\$15,942	\$13,638	\$9,698	\$270	\$10,639	\$9,997	\$713
I otal Disposal Costs	\$195,637								
IV Health and Safety Costs									
Radiation Safety Equipment	\$1,000	\$1,000	\$1,000	\$1,000	\$0	\$0	\$1,000	\$0	\$0
Total Health and Safety Costs	\$5,000								
SUBTOTAL BUILDING DEMOLITION AND DISPOSAL COSTS	\$179.622	\$258 579	\$55 189	\$97.492	\$68.966	\$2.075	\$36 596	\$75 300	\$6.433
TOTAL BUILDING DEMOLITION AND DISPOSAL COSTS	\$780,342	<i>4230,317</i>	\$55,167	ψ/1, τ/2	\$00,700	φ2,075	\$50,570	φ, 5,570	φ0,τ55
TOTAL BUILDING DEMOLITION AND DISPOSAL COSTS	\$780,342								

Wellf	ielo	l Buildings and Equip	oment Rem	oval and Di	sposal		Mine Unit-1		
T	w	Ilfield Pining							
1.	***	Assumptions:							
		Number of Header	Houses per	Wellfield			5		
		Length of Pining ne	r Header H	ouse (ft)			2000		
		Total Length of Pin	ing (ft)				10000		
	٨	Removal and Loading	ing (it)				10000		
	А.	Wellfield Pining Re	emoval Uni	t Cost (\$/ft o	f nine)		\$0.42		
		Subtotal Wellfield Pin	ing Remove	al and Loadi	ng Costs		\$4,200		
	P	Transport and Disposa	1 Costs (NE	C Licensed	Facility)	\	\$7,200		
	D.	Average Diameter of	of Pining (ii	nches)	Tacinty	/	2		
		Chinned Volume R	eduction (ff	$\frac{1}{3}$ /ft)			0.005		
		Chipped Volume ne	or Wallfield	(ft^3)			0.005		
		Volume for Dispose	al Accumin	a 10% Void	Space (f	+3)	55		
		Transportation and	Disposal II	g 10/0 v 0 d	$\frac{3}{1}$		\$12.00		
		Subtotal Wallfield Din	ing Transpo	art and Disno	val Cost		\$12.00		
	W	Subtotal Wenned Fip	r Wallfield			5	\$000		
		Conitol Costs	wenneiu				\$4,000		
	U.	DVC Ding Shraddar					¢0		
	Та	FVC Pipe Silleuder	osta				\$U \$4 960		
	10	tar wennelu riping C	0515				\$4,000		
II.	Well Pumps and Tubing								
		Assumptions:							
		Pump and tubing re	moval costs	s included ur	ider grou	ind water restor	ation labor cost	S	
		60% of production/	injection w	ells contain j	oumps ar	nd/or tubing			
	A.	Pump and Tubing Trar	nsportation	and Disposa	1				
		Number of Produ	uction Well	S			101		
		Number of Inject	tion Wells				175		
		1. Pump Volume							
		Number of Produ	uction Well	s with Pump	s		61		
		Average Pump V	volume (ft ³))			1		
		Pump Volume pe	er Wellfield	$l(ft^3)$			61		
		2. Tubing Volume							
		Assumptions:							
		Average tubir	ng length/w	ellfield base	d on ave	rage well depth	minus 25 ft		
		Number of Produ	uction Well	s with Tubin	g		61		
		Number of Inject	tion Wells v	with Tubing	Ī		105		
		Average Tubing	Length per	Well (ft)			725		
		Tubing Length p	er Wellfield	d (ft)			120350		
		Diameter of Proc	luction Wel	ll Fiberglass	Tubing ((inches)	2		
		Diameter of Inje	ction Well I	HDPE Tubin	ig (inche	s)	1.25		
		Chipped Volume	e Reduction	(ft^3/ft)	<u> </u>	<u> </u>	0.005		
		Chipped Volume	e per Wellfi	eld (ft ³)			602		
		Volume of Pump ar	nd Tubing (ft^3)			663		
	Volume for Disposal Assuming 10% Void Space (ft ³)				t ³)	729			
	Transportation and Disposal Unit Cost (\$/ft ³)					,	\$12.00		
	То	tal Pump and Tubing	Costs		Ĺ		\$8,748		

Wel	lfield	I B	uildings and Equ	ipment Rem	oval and Di	sposal	Mine Unit-1	
				ſ				
ш	D	ria	d Trunkling					
	DU		u Trunkine					
		Le	ngth of Trunkline	Trench (ft)			2600	
	Δ	Re	moval and Loadin				2000	
	11.	ICC	Main Pipeline Re	5 moval Unit C	`ost (\$/ft of t	rench)	\$0.89	
		Su	btotal Trunkline R	emoval and	Loading Cos	sts	\$2.314	
	B.	Tr	ansport and Dispo	sal Costs (NF	RC-Licensed	Facility)		
		1.	3" HDPE Trunkli	ne				
			Piping Length	(ft)			2600	
			Chipped Volun	ne Reduction	(ft^3/ft)		0.022	
			Chipped Volur	ne (ft^3)			57.2	
		2.	6" HDPE Trunklin	ne				
			Piping Length	(ft)			5200	
			Chipped Volun	ne Reduction	$(\mathrm{ft}^3/\mathrm{ft})$		0.078	
			Chipped Volun	ne (ft ³)			405.6	
		3.	8" HDPE Trunkli	ne				
			Piping Length	(ft)	3		5000	
			Chipped Volun	ne Reduction	(ft ^{-/} ft)		0.15	
		2	Chipped Volun	ne (ft ³)			750	
		3.	10" HDPE Trunk	ine				
			Piping Length	(ft)	2		0	
			Chipped Volun	ne Reduction	(ft³/ft)		0.277	
			Chipped Volun	ne (ft')			0	
		4.	12" HDPE Trunk	ine				
			Piping Length	(ft)	(03(0))		0	
			Chipped Volun	ne Reduction	(ft [°] /ft)		0.293	
		~	Chipped Volun	ne (ft ⁻)			0	
		5.	14" HDPE Irunk	(ft)			0	
			Ching Length	(II) na Daduatian	(A ³ /A)		0 250	
			Chipped Volun	$\frac{10}{100}$ (ft ³)	(11 /11)		0.339	
		5	16" UDPE Trunk	lino			0	
		5.	Pining Length	(ft)			2600	
			Chipped Volur	ne Reduction	(ft^3/ft)		2000	
			Chipped Volur	$\frac{10}{10}$ (ft ³)	(11 /11)		1040	
			Total Trunkline C	hinned Volu	me (ft ³)		2252.8	
			Volume for Disne	sal Assumin	σ 10% Void	Space (ft^3)	2232.8	
			Transportation an	d Disposal U	nit Cost (\$/f	$\frac{3}{1}$	\$12.00	
		Su	btotal Trunkline T	ransport and	Disposal Co	osts	\$29.736	
	Tot	tal	Trunkline Decon	imissioning	Costs		\$32,050	
137	117							
1 V.	Tot	-11 -1	Quantity				5	
	1101	aı		1	1	1 1	.)	1

Wel	lfield	1 Buildings and Equipment Removal and Disposal	Mine Unit-1	
	Av	erage Well House Volume (ft ³)	12.5	
	A.	Removal		
		Total Volume (ft ³)	62.5	
		Demolition Unit Cost per WDEQ Guideline No.12, App.K (\$/ft ³)	\$0.178	
		Unit Cost in \$/ft ³ (July 1998 dollars w/o escalator) OUT	\$0.00	
		Subtotal Well House Demolition Costs	\$11	
	B.	Survey and Decontamination		
-		Assumptions:		
		Cost per Well House	\$4.49	
		Subtotal Survey and Decontamination Costs	\$22	
	C.	Disposal at NRC licensed Facility		
		Total Volume (cy)	2	
		Volume for Disposal Assuming 10% Void Space (cy)	3	
		Transportation and Disposal Unit Cost (\$/ft ³)	\$12.00	
		Subtotal NRC Licensed Facility Disposal Costs	\$36	
	То	tal Well House Removal and Disposal Costs	\$69	
X 7	TT			
v .	не	Tetel Overtite	E	
	-	Accuracy Handler Hannes Values (A^3)	2700	
	٨	Average Header House Volume (IT)	2700	
	A.	Tetel Velume (θ^3)	12500	
		Total volume (II) Demolition Unit Cost non WDEO Cycidaling No. 12 Ann $K (\ell/\ell^3)$	13500	
		$\frac{1}{1000} \text{ Limit Cost per WDEQ Guideline No.12, App.K (5/11)}$	\$0.178	
	-	Cultated Building Demolition Costs	\$0.00	
	D	Subiolal Building Demontion Costs	\$2,403	
	D.	Assumptions:		
		Cost per Hender House	\$284	
		Subtotal Survey and Decontamination Costs	\$204	
	С	Disposal	\$1,420	
	C.	Total Volume (cv)	500	
		Volume for Disposal Assuming 10% Void Space (cv)	550	
		Disposal Unit Cost per WDEO Guideline No 12 App K (\$/cy)	\$6.39	
		Unit Cost in \$/cy (July 1998 dollars w/o escalator)	\$0.00	
		Subtotal On-Site Disposal Costs	\$3 515	
	То	tal Header House Removal and Disposal Costs	\$7.338	
	10		\$7,000	
Т	OTA	AL WELLFIELD BUILDINGS AND EQUIPMENT REMOVAL		
		AND DISPOSAL COSTS	\$53,065	

Well	Ab	ando	nme	nt				Mine Unit-1
I.	We	ell Ab	and	onment (We	llfields)			
		# of	Prod	uction Wells				101
		# of	Injec	tion Wells				175
		# of	Mon	itoring Wells	5			38
	Total Number of Wel				ls			314
		Ave	rage	Diameter of	Casing (inch	es)		5
		Ave	rage	Depth (ft)				725
		Wel	l Aba	indonment U	nit Cost (\$/w	/ell)		\$359
	Tot	tal W	ellfi	eld Abandor	ment Costs			\$112,805
II.	Wa	ste I	Dispo	sal Well Ab	andonment			DDW#1
	A.	Unit	Cost	Per Foot of	Depth (Base	d on Wyomi	ng Oil	\$4.87
		and	Gas (Conservation	Commissio	1 average cos	st/ft)	
	B.	Dep	th of	Well (ft)				10000
	To	tal W	aste	Disposal W	ell Abandon	ment Costs		\$48,700
тот	'AL	WE	LL A	BANDONN	IENT COST	Г S		\$161,505
								,

***	116-11								Mine Unit-
W	elifield a	anc	i Satellite Si	irface Recla	mation				l
Т	Wellfie	hle	Pattern Are	a. Lavdown	Area and I	l Road Reclan	nation		
1.	vv enne	Ar	rea (acres)	u, Luyuo ((1	in ca, and i				15
		Di	sking/Seedir	g Unit Cost	(\$/acre)				\$235
	Subtota	ıl P	attern Area,	Laydown Ar	ea, and Road	Reclamation	n Costs		\$3,525
	Total V	Ve	llfield Area	Reclamation	n Costs				\$3,525
II.	Satellit	e A	Area Reclam	ation					NB-1
		As	sumptions:	1 (2.05
			Area of Dist	urbance (acr	es)	2)			2.05
			Average De	ptn of Stripp	ed Topsoll (1	t)			1
			Average Le	ngth of Tops	oil Haul (ft)				1000
		Α	Rinning Ov	erburden wit	h Dozer				1000
			httpping o v	Ripping Uni	it Cost per W	DEO Guidel	ine No.12. A	pp.I1 (\$/acre)	\$814.22
				Unit Cost in	\$/acre (July	1998 dollars	w/o escalato	OUT	\$0.00
			Subtotal Rip	ping Costs					\$1,669
		B.	Topsoil App	lication with	Scraper				
				Volume of 7	Fopsoil Rem	oved (cy)			3307
				Application	Unit Cost pe	er WDEQ Gu	ideline No.1	2, App.C (\$/cy)	\$0.71
			~ / / -	Unit Cost in	\$/cy (July 1	998 dollars v	v/o escalator)	OUT	\$0.00
		C	Subtotal To	psoil Applica	tion Costs				\$2,348
		C.	Discing and	Seeding	line Hait Co	-4 (Φ/)			¢200
			Subtatal Die	Discing/See	aing Unit Co	ost (\$/acre)			\$200
	Total S	at	Subiolal Dis	a Area Rec	g Cosis	ste			\$410 \$4 127
	i otal S	al	unic Dunull	ig Ai ca Nec		515			\$ 4 ,427
TC	DTAL V	VE	LLFIELD A	ND SATEL	LITE SURI	FACE RECI	LAMATION	COSTS	\$7,952
						_	_		. , -

Misc	ella	neous Reclamation						
T	СР	P/Office Area/War(ehouse/Ma	int Shon/(Chem Stor	rage/Vard Reclamati	on	
1.		Assumptions					UII	I
	-	$\frac{1}{1} \frac{1}{1} \frac{1}$	3 acres					
	-	Total Area = 10 .	57 acres					
	A.	Concrete Pad						
		Area of Concret	= Pad (ft ²)					13068
	+	Demolition Unit	Cost por W		Jalina No. 1	$2 \text{ Amp } V (\mathfrak{G}/\mathfrak{H}^2)$		\$2.40
	+	Unit Cost in \$/f	$\frac{\text{Cost per w}}{2}$	DEQ Ouic		2,App. k (\$/11)	OUT	\$0.00
	+	Unit Cost in \$/11	$\frac{\text{(July 1990)}}{\cos \alpha}$	5 dollars W/	(a)		001	<u>۵</u> 0.00
	+	Average Thickne			(Π)			0.50
	<u> </u>	Volume of Conc	rete Floor (<u>ft')</u>	<u> </u>			6,534
	<u> </u>	Volume of Conc	rete Floor (cy)				242
	<u> </u>	On-Site Disposa	l Unit Cost	per WDEC	<u>)</u> Guideline	: No.12,App.K (\$/cy)		\$5.00
	<u> </u>	Unit Cost in \$/cy	y (July 1998	3 dollars w/	/o escalator	•	OUT	\$0.00
	<u> </u>	Subtotal Concrete P	ad Demolit	ion and Dis	sposal Cost	S		\$45,641
	В.	Gravel Road Base R	temoval		<u> </u>			
	<u> </u>	Assumptions			<u> </u>			
	<u> </u>	Average hau	Il distance (ft)	<u> </u>			1000
		Gravel Road Bas	se Width (ft	.)				
	<u> </u>	Gravel Road Bas	se Area (acr	:es)				8.0
		Average Road B	ase Depth ((ft)				0.5
		Volume of Road	Base (cy)					6453
		Removal Unit Co	ost per WD	EQ Guidel	ine No.12,	App.C (\$/cy)		\$0.87
		Unit Cost in \$/cy	y (July 1998	3 dollars w/	/o escalator		OUT	\$0.00
		Subtotal Gravel Roa	ad Base Rer	noval Cost	.S			\$5,589
	В.	Ripping Overburder	n with Doze	r				1
		Overburden Surf	face Area (a	icres)				10.6
		Ripping Unit Co	ost per WDF	EQ Guideli	ne No.12, A	App.I1 (\$/acre)		\$814.22
「 <u> </u>		Unit Cost in \$/ac	cre (July 19	98 dollars	w/o escalat		OUT	\$0.00
—	\Box	Subtotal Ripping Ov	verburden C	Costs				\$8,606
	C.	Topsoil Application	1					
		Assumptions:						
		Area of surf:	ace disturba	ance (ft^2)				460426
	-	Average thic	ckness of to	nsoil (ft)				1
	+	Average hau	il distance (ff)				2000
	+	Surface grad	ie (%)					0%
	+	Volume of Tops	oil (cy)					17.053
	+	Topsoil Unit Cor	st ner WDF	O Guidelin	ne No.12. A	vnn C (\$/cv)		\$1.12
	1	Unit Cost in \$/cy	v (July 1998	₹ dollars w	$\frac{10}{0}$ escalator		OUT	\$0.00
	1	Subtotal Topsoil Ar	polication C	losts			001	\$19,150
	D.	Discing/Seeding						<u>**>,</u>
		Assumptions						 I
	+	Surface Area (ac	res)					10.57
	1	Discing/Seeding	Unit Cost ((\$/acre)				\$235

Misc	cella	neous Reclamation						
		Total Discing/Seeding	ng Costs					\$2,484
	Tot	tal CPF/Office/Yard	Area Rec	lamation				\$75,881
п	Ac	cess Road Reclamati	ion					CPP Access Rd
11.	Δ	Assumptions						CIT Access Ru.
	11.	Surface grade						1%
		Length of Road (ft)						7000
		Width of Road (ft)						40
		Area of road (acres)						4 75
	в	Gravel Road Base R	emoval					1.75
	2.	Assumptions						
		Average hau	l distance (ft)				1000
		Gravel Road Bas	e Width (ft)				30
		Gravel Road Bas	e Area (act	es)				4 82
		Average Road Ba	ase Depth (<u>ft)</u>				0.5
		Volume of Road	$\frac{1}{\text{Base}(cv)}$					3889
		Removal Unit Co	ost per WD	EO Guidel	ine No.12.	App.C (\$/cv)		\$0.87
		Unit Cost in \$/cv	(July 1998	dollars w	o escalator	·	OUT	\$0.00
		Subtotal Gravel Roa	d Base Rer	noval Cost	s			\$3.368
	C.	Ripping Overburden	with Doze	r	~			
		Overburden Surf	ace Area (a	cres)				4.8
		Ripping Unit Co	st per WDE	O Guideli	ne No.12, /	App.I1 (\$/acre)		\$814.22
		Unit Cost in \$/ac	re (July 19	98 dollars	w/o escalat		OUT	\$0.00
		Subtotal Ripping Ov	verburden C	Costs				\$3,868
	D.	Topsoil Application						
		Assumptions						
		Average hau	l distance (ft)				1500
		Topsoil Surface	Area (ft^2)					206910
		Depth of Topsoil	(ff)					0.5
		Volume of Topso	oil (cv)					3832
		Topsoil Unit Cos	t per WDE	O Guidelir	ne No.12. A	App.C(\$/cv)		\$1.50
		Unit Cost in \$/cv	(July 1998	dollars w	o escalator		OUT	\$0.00
		Subtotal Topsoil Ap	plication C	osts				\$5,748
	E.	Discing/Seeding	_					
		Assumptions						
		Surface Area (ac	res)					4.8
		Discing/Seeding	Unit Cost ((\$/acre)				\$235
		Subtotal Discing/Sec	eding Costs	; ;				\$1,116
	Sub	ototal Reclamation Co	osts per Ac	cess Road				\$14,100
	Tot	tal Access Road Rec	lamation (Costs				\$22,765
								Trunk Line #1
Ш.	Tri	unk Lines #1 and #2						(To MU-1)
								(
		Length of Trench	n (ft)					4000

Misc	ella	neou	us Recl	amation						
	A.	Rei	noval a	nd Loadir	ıg					
			Main P	ipeline Re	emoval Uni	t Cost (\$/ft	of trench)			\$0.89
		Sul	ototal T	runkline F	Removal an	d Loading	Costs			\$3,560
	B.	Tra	nsport	and Dispo	sal Costs (1	NRC-Licer	nsed Facilit	y)		
		1.	3" HDI	PE Trunkl	ine					
			Pip	oing Lengt	h (ft)					4000
			Ch	ipped Vol	ume Reduc	tion (ft ³ /ft))			0.022
			Ch	ipped Vol	ume (ft^3)					88
		2.	6" HDI	PE Trunkl	ine					
			Pip	oing Lengt	h (ft)					8000
			Ch	ipped Vol	ume Reduc	tion (ft ³ /ft))			0.078
			Ch	ipped Vol	ume (ft^3)					624
		3.	8" HDI	PE Trunkl	ine					
			Pip	oing Lengt	h (ft)					0
			Ch	ipped Vol	ume Reduc	tion (ft ³ /ft))			0.15
			Ch	ipped Vol	ume (ft^3)					0
		3.	10" HI	OPE Trunk	line					
			Pip	oing Lengt	th (ft)					0
			Ch	ipped Vol	ume Reduc	tion (ft ³ /ft))			0.277
			Ch	ipped Vol	ume (ft^3)					0
		4.	12" HI	OPE Trunk	line					
			Pip	oing Lengt	h (ft)					0
			Ch	ipped Vol	ume Reduc	tion (ft ³ /ft))			0.293
			Ch	ipped Vol	ume (ft^3)					0
		5.	14" HE	OPE Trunk	line					
			Pip	oing Lengt	h (ft)					0
			Ch	ipped Vol	ume Reduc	ction (ft ³ /ft))			0.359
			Ch	ipped Vol	ume (ft^3)					0
		5.	16" HI	OPE Trunk	line					
			Pip	oing Lengt	h (ft)					4000
			Ch	ipped Vol	ume Reduc	ction (ft ³ /ft))			0.4
			Ch	ipped Vol	ume (ft^3)					1600
			Total T	runkline (Chipped Vo	blume (ft^3)				2312
			Volum	e for Disp	osal Assum	ning 10% V	oid Space	(ft^3)		2543
			Transp	ortation ar	nd Disposa	l Unit Cost	(NRC-Lic	ensed Facil	$ity) (\$/ft^3)$	\$12.00
		Sul	ototal P	ipeline Di	sposal Cos	ts	<u> </u>			\$30,516
	C.	Dis	cing/Se	eeding						
			Assum	ptions:						
			Wi	dth of Pip	eline Trenc	ch (ft)				4
			Ar	ea of Pipel	line Trench	(acres)				0.4

Misc	ella	neo	us Reclamation						
			Discing/Seeding	Unit Cost	(\$/acre)				\$235
		Su	btotal Discing/Se	eding Costs	3				\$86
	Sul	otota	al Reclamation C	osts per Pip	eline				\$34,162
	To	tal I	Pipeline Reclama	ation Costs					\$34,162
IV.	Set	tlin	g Basin/Evap. P	ond Reclar	nation				Evaporation Pond
	A.	So	il Sampling and N	Aonitoring					
			Number of Soil S	Samples					10
			\$/Sample						\$75
		Su	btotal Soil Sampl	ing and Mc	nitoring C	osts			\$750
	в	Lir	er/Subsoil Remo	val and Dis	sposal				<i><i><i>ϕ</i>,<i></i>,<i></i>,<i></i>,<i></i>,<i></i>,<i></i>,<i></i>,<i></i>,<i></i>,<i></i></i></i>
	<i>D</i> .		Removal and	1 Loading I	Init Cost h	ased on en	gineer's design		
			report and	Cat Perfor	mance Har	ndbook			
			Width of Pond (ft)					112
			Length of Pond ((ff)					487
			Depth of Pond (1	(II) 7)					487
			Surface area of r	$\frac{1}{1}$					54544
			Surface area of h	oth nonda ((\mathbf{f}^2)				100099
		1	Surface area of t	oding	(n)				109088
		1.	Volumo of C	aung Pootovtilo I	inor (au)				272 72
			Contactilal i	nor Domou	al and L on	ding Unit (Test (\$/au)		\$2
			Liner Domos	nel Remov	ding Costa		_0st (\$/cy)		ወ
			DVC Direc E	vai and Loa	ung Costs				\$010 020
			PVC Pipe FC	Dotage	n at an (in al				920
			Average PV	C Pipe Diai	meter (inch	es)		1)	<u>\$</u>
			PVC Pipe K	emoval Cos	StS (base on p	revious estin	ates for piping remov	val)	\$1,008
		2	Subtotal Remova	al and Load	ing Costs				\$1,826
		2.	I ransportation a	nd Disposa	l · (03)				0.50.50
			Volume of C	jeotextile L	$\frac{1}{1}$ (ff ²)				272.72
			Volume of C	seotextile L	$\frac{1000}{1000}$	% void (ft))		455
			Shredded PV	/C Pipe Vo	lume Redu	$\frac{\text{ction}(\text{ft})/\text{f}}{3}$	t)		0.016
			Volume of S	hredded P	C Pipe (ft	<u>)</u>			15
			Transportation	on and Disp	posal Unit	Cost (\$/ft)			\$12.00
			Subtotal Transpo	ortation and	Disposal C	Costs			\$5,631
	9	Su	btotal Liner Rem	oval and Di	sposal Cos	ts			\$7,457
	C.	Gr	ade and Contour						16000
			Volume of E	mbankmer	t Material	(CY)			16,900
		-	Average Gra	ide (%)					0
			Distance (ft)						100
			Material Mo	ving Unit C	Cost per W	DEQ Guid	eline No.12, App.	E (\$/cy)	\$0.092
			Unit Cost in	\$/cy (July	1998 dollar	s w/o esca	1	OUT	\$0.00
		-	Subtotal Grade a	nd Contour	Costs				\$1,555
	C.	To	psoil Application						
			Assumptions:						
		-	Area of surfa	ace disturba	unce (ft^2)				115000
		1	Average thic	kness of to	psoil (ft)				1

Mis	cella	neous	Reclamation						
			Average hau	l distance (ft)	+			1000
	1		Surface grad	e (%)		1			0%
	1	Vc	olume of Topso	oil (cy)		1			4,259
	1	То	psoil Unit Cos	st per WDE	Q Guidelii	ne No.12, A	App.C (\$/cy)		\$1.12
	1	Un	nit Cost in \$/cy	(July 1998	3 dollars w	/o escalator		OUT	\$0.00
		Subto	tal Topsoil Ap	plication C	'osts				\$4,783
	D.	Discir	ng/Seeding			1			
	1	As	sumptions:						
	1		Area of surfa	ace disturb?	ance (acres)			2.6
	1	Dis	scing/Seeding	Unit Cost ((\$/acre)				\$235
		Subtor	tal Discing/See	eding Costs	S				\$611
	To	tal Sett	tling Basin/Ev	ap. Ponds	Reclamat	ion Costs			\$15,156
V.	Mi	scellan	eous Structur	·es		+			
••		Stellar			+	+			
	B.	Potabl	le Water Wells	3					
	1	To	tal Depth (ft) (Two 5-inc	h Diameter	r Wells, @	750 ft)		1,500
		We	ell Abandonme	ent Unit Cc	ost (\$/100 f	t)			\$6.70
		Subtot	tal Potable Wa	ter Wells A	Abandonme	ent Costs			\$100.50
	С.	Fuel A	Area						
	—		ncrete Floor	arata Floor	(A ²)				375
		+	Demolition I	Init Cost n	$\frac{(\Pi)}{27}$	Cuidalina l	$\frac{12}{12} \text{ Ann } K \left(\frac{9}{\text{ft}^2}\right)$		\$2.40
	+	+-+-	Lunit Cost in	$\frac{J \operatorname{nit} \operatorname{Cost} p}{\Phi / \Theta^2}$ (July	er wDEQ	Guidenne	NO.12,App. k (\$/11.)	OUT	\$3.40 \$0.00
	┥──		Unit Cost in	\$/IT (JUIY	1998 dollar	rs w/o esca		001	\$U.UU \$1.275
	─	Su	btotal Concien	e Floor Dei	monuon C	OSIS			\$1,273
	┥──		ncrete Footing	; 	(ft)				
	—	+-+-	Length of Co	ncrete Foo	$\frac{1}{1}$	C it. N.	10 A IZ (@/1:		//
	<u> </u>	<u> </u>	Demolition (Jnit Cost p	er WDEQ	Guide. No.	12,App.K (\$/1in. π)	OUT	\$12.22
	+-		Unit Cost in	<u>\$/lin. ft (Ju</u>	ily 1998 ao	ollars w/o es		001	\$0.00
	+-	Su	btotal Concret	e Footing I	Jemolition	Costs			\$947
		Subto	tal Fuel Area	L'osts					\$2,222
	Tot	tal Mis	cellaneous Sti	ructures R	leclamatio	n Costs			\$3,598
VI.	We	ellfield	Pattern Area	_ Lavdown	Area, and	d Road Re	clamation		
	+	Area ((acres)) Lujuo		1 11000 - 111			29.6
		Diskir	og/Seeding Un	it Cost (\$/a	lore)	+			\$235
	Sul	htotal P	attern Area I	avdown At	rea and Ro	ad Reclam	ation Costs		\$6.956
	To	tal We	Ilfield Area R	eclamation	n Costs				\$6,956 \$6,956
	10					-			
TO	FAL	MISC	ELLANEOU	S RECLA	MATION	COSTS			\$158,517

RADIUM TREATMENT				
HUP SURETY ONLY!!				
Assumptions:				
1. Based on actual 1998 operating costs from Satellite No. 2	2			
Radium Treatment Costs per 1000 Gallons				
Chemical	= \$	0.177		
Filtration	= \$	0.021		
Electricity	= \$	0.048		
By Product Disposal of Sludge	= \$	0.097		
TOTAL RADIUM TREATMENT COSTS PER 1000 GALLONS	= \$	0.34	HUP ONLY	(

GROU	NDWA	TER	SV	/EEP	(GW	S)											
Assun	nptions	S:															
1.	All pur	nps a	re	5 hp j	oump	ing	at 5	5.0 gp	m								
2.	Cost o	f elec	tric	city =	\$0.04	8/k	wh										
3.	All wat	ter pu	mp	oed is	dispo	se	d at	WDV	۷w	vith a 20) hp p	um	۱p				
4.	Repair	and	ma	inten	ance	cos	sts e	estima	ateo	d at \$0.	50/100	00	ga	llons			
5.	Proces	ss sar	np	ling a	nd an	aly	sis (costs	es	timated	at \$0.	.03	3/10	000 gal	lons	1	
6.	Labor	costs	ar	e not	includ	dec	1										
Wellfie	eld Pur	nping	J C	osts	per 1	00	0 Ga	allons	5								
	1000	gal	x	5	hp	x	1	hr	x	0.746	kwh	x	\$	0.05	= \$	0.60	
				5	gpm	~	60	min	\sim	hp	0	~		kwh	Ψ	0.00	
Pumpi	ing to V	NDW	Co	osts p	per 10	000) Ga	llons									
	1000	gal	x	75	hp	x	1	hr	x	0.746	kwh	x	\$	0.05	= \$	0.22	
			~	200	gpm	~	60	min	~	h	C	~		kwh	Ť	·	
Repair	r and N	lainte	na	nce (Costs	pe	er 10	000 G	Sall	ons					= \$	0.5	
Proces	ss Sam	pling	j a	nd Ar	nalysi	is (Cos	ts pe	r 1(000 Ga	llons				= \$	0.03	
ΤΟΤΑΙ	L GWS	COS	TS	PER	1000	G	ALL	ONS							= \$	1.35	

REVEF	RSE O	SMOS	SIS (RO)							
Assum	ption	s:									
1.	Base	d on a	ctual 19	98	opera	ating costs a	at Sat	ellite No. 1.	Verified by	,	
	Hydra	anautio	cs RO S	yst	tem D	esign Softw	/are, \	Version 6.0	(1995)		
2.	Cost	of elec	ctricity =	\$0).048/I	kwh					
3.	75%	berme	ate/25%	6 re	eject s	plit					
4.	Memb	orane	life of 5	ye	ars wi	th a cost of	\$700	per membr	ane elemer	it	
5.	Incluc	les co	st of pu	mp	ing fro	om wellfield	to R0) Unit			
6.											
						6&7 OUT					
7.											
8.	Proce	ess sai	mpling a	and	l analy	ysis costs e	stima	ted at \$0.03	3/1000 gallo	ns	
9.	Labor	costs	are no	t in	cludeo	d					
Revers	e Osr	nosis	Costs	pei	r 1000	Gallons					
	Electr	icity					= \$	0.048			
	Cherr	nicals					= \$	0.23			
	Memb	orane	Replace	eme	ent		= \$	0.03			
	Repa	ir and	Mainter	nan	ice		= \$	0.26			
			Items F	Rer	noved	1					
	Proce	ess Sa	mpling	and	d Anal	lysis	= \$	0.03			
TOTAL	. RO C	OSTS	S PER 1	00	0 GAI	LLONS	= \$	0.60			

			1				
6. The 20%	5 reject is di	sposed at V	VDW with a	20 hp pum	p at actual o	cost of	
\$0.14/10	00 gallons						
7. The perr	neate is ret	urned to the	wellfield wi	ith a 20 hp j	oump at act	ual cost of	
\$0.019/1	000 gallons	3					
Pumping fr	om Wellfiel	d					
Pumping to	Wellfield						
Pumping to	WDW						
\$	0.14	Х	0.2				

CHEMICAL REDUCTANT Image: Chemical and the second seco																	
Assun	nption	s:															
1.	Biorer	nedia	tior	n is utili	zed												
2.	Based	l on a	ctu	al 2003	3-200	4 o	perat	ing co	sts	during rest	orati	ion	a	ctivities			
3.	Addec	the c	os	t of usi	ng ch	ee	se wł	ney									
ΤΟΤΑΙ		MICA	LR	REDUC	TAN	ГС	OST	S PEF	λ K	gal					= \$	0.3	
										July 1998	Dolla	ars	5		= \$	0.26	OUT

ELUTI	ON PR	OCE	SS	ING											
Assun	nptions	s:													
1.	Based	on a	ctu	al oper	ating	CO	sts								
ΤΟΤΑΙ	PRO	CESS	IN	G COS	TS P	ER	ELU	TION	= \$	900					
				Cost	ts re	em	love	d froi	m C	SW RES	ΤV	Vc	ork	kbook	

DEEP	WELL	INJE	СТ	ION														
Assum	nptions	s:																
1.	Pump	150	hp	pump	oing a	t 1	<mark>00</mark> g	pm										
2.	Cost o	f elec	ctric	city =	\$0 .04	-8/	kwh											
3.	Repair	r and	ma	ainten	ance	со	sts b	based	on	averag	ge inje	cti	on	volume	of 8	3,000,000 g	allons per year	
4.	Repair	r and	ma	ainten	ance	со	sts e	estima	iteo	<mark>d at</mark> \$.50)/1000) g	allo	ons				
5.	Chemi	ical c	ost	s bas	ed on	a a	vera	ge inje	ecti	on volu	ime of	8,	00	0,000 g	alloi	ns per year		
6.	Labor	costs	ar	e not	inclu	deo	b											
Waste	Dispo	sal P	um	nping	Cost	ts	per '	1000 (Ga	llons								
	1000	gal	v	150	hp	v	1	hr	v	0.746	kwh	v	\$	0.048	- 6	0 00		
			1^	100	gpm	^	60	min		h	р	7^		kwh	φ –	0.90		
Repair	r and N	lainte	ena	ince (Costs	s p	er 1	000 G	iall	ons					=\$	0.5		
TOTAL	_ DEEF	P WE	LL	INJE	СТІО	N	cos	TS P	ER	1000 0	GALL	ON	S		= \$	1.40		

WELL	ABAN	DONI	MENT												
Assum	ption	s:													
1	Typic	al 8 h	our we	orki	ng c	lay									
2	Backh	noe fo	r 8.0 hi	r/da	y to	dig and	d red	claim	pit at co	ost (of \$65/hr.				
3	Use h	ose re	eel for	8 hr	/day	to pull	equ	lipme	nt from	we	Il at cost o	f \$45/hr.			
4	Use c	emen	ter for	8.0	hr/da	ay to p	ump	cem	ent/plug	g ge	el at cost o	f \$45/hr.			
5	Use to	ow ve	hicle fo	or 8.	0 hr/	day to	tow	hose	reel an	nd c	ementer fi	rom well to	well at cost	of \$40/hr.	
6	Labor	for ba	ackhoe	, ho	se r	eel, ce	men	iter wi	ill requi	re 3	workers a	at 8.0 hr/da	y at cost of	\$35/hr.	
	Mater	ials in	clude 7	7.5 s	sack	s of ce	mer	nt/100	ft and	1 sa	ack of plug	gel/100 ft	of 5" well ca	asing.	
	Cost	of cen	nent is	\$7.6	62an	id plug	gel	cost i	s \$5.95	i/sa	ck.				
	Fixed	Costs	<u>}</u>												
	Backh	noe				_									
		8	hours	Х	\$	65	per	hour		=\$	520.00				
	Hose	Reel/	Tow Ve	ehic	le					-					
	-	8	hours	Х	\$	35	per	hour		=\$	280.00				
	Ceme	enter								-					
		8	hours	Х	\$	45	per	hour		=\$	360.00				
	Tow \	/ehicle	e		_										
		8	hours	Х	\$	40	per	hour		=\$	320.00				
	Labor				-										
3	men=	24	man	Х	\$	15.00	per	man		=\$	360.00				
			hours				hou	ur		•	1010.00				
			I otal I	Fixe	a Co	osts pe	r 8.0	J nr/a	ay	=\$	1840.00				
) (a ai a l		- 4 -		(400 8	- 6 - 1								
	Varia		<u>ISTS</u>		(per	100 π	OT V	vell ae	eptn)						
	mater		a a al c		+	V	¢	7.00							
		1.5	sack C		ent	×	\$	1.62	per	=\$	57.15				
			perit		et				Sack						
		٨	ooolu :			v	¢	E 0E	norbe	_0	5.05				
		1	sack p	Jug	gel	X	Ф	5.95	perno	=⊅	5.95				
			perifu		et				piug						

WELL ABANDONMENT Page 2				
Total materials Cost (pe	r 100 ft of well depth)	\$ 63	3.10	
Total number of wells con	pleted per/day			
6				
Cost per Well per Unit o	f Average Depth			
We	l Depth (ft)			
	450	=\$ 35	54	
	500	=\$ 35	59	
	550	=\$ 36	65	
	600	=\$ 37	70	
	650	=\$ 37	75	
	700	=\$ 38	30	
	750	=\$ 38	36	
	800	=\$ 39	91	
	850	=\$ 39	96	
	900	=\$ 40	01	
	950	=\$ 40	07	

FIVE Y	EAR N	NECH	ANICAL I	NTE	EGR	ΙΤΥ ΤΕ	STS	G (MIT)					
Assum	ption	s:												
1	Pullin	g Unit	for 8.0 hr	/day	/ at c	ost of S	\$45	/hr.						
2	MIT U	Jnit for	[.] 8.0 hr/da	y at	COS	t of \$45	5/hr.							
3	Labor	for op	peration of	f pul	lling	unit wil	l re	quire 2	2 w	orke	ers at \$15/	hr		
4	Labor	for op	peration of	f MI	T Un	it will r	equ	ire 1 v	vorl	ker a	at \$15/hr			
5	Avera	ige we	ells plugge	d p	er da	ay is 6								
MIT Co	sts pe	er We	1											
	-													
Equipr	nent:													
	Pullin	g Unit												
		8	hours	Х	\$	45	per	hour				=\$	360.00	
	MIT L	Jnit												
		8	hours	Х	\$	45	per	hour				=\$	360.00	
Labor:														
	Pullin	g Unit												
		8	hours	Х	\$	15	per	hour	Х	2	workers	=\$	\$240.00	
	MIT L	Jnit												
		8	hours	Х	\$	15	per	hour				=\$	120.00	
						TO	ΓAL	. MIT (CO	ST	PER DAY	=\$	1080.00	
	Wells	Comp	oleted			6	per	⁻ day						
							M	ТСО	ST	S PI	ER WELL	=\$	180.00	

MAIN	PIPELI	NE R	EMOV	AL										
Assum	nption	s:												
1.	Trenc	hing v	vith tra	ckh	oe a	t <mark>750</mark> ft/da	ıy							
2.	Pipeli	ne ext	tractior	n an	d ba	ckfilling w	ith t	rackho	e at 7	50 ft/	/day			
3.	Track	hoe re	ental: \$	1,12	25/w	eek								
4.	Fuel	cost: \$	10/ope	erati	ng h	our								
5.	Track	hoe o	peratio	n re	quir	es 1 work	er a	it \$15/h	iour					
6.	Pipeli	ne ext	traction	rec	quire	s 2 worke	rs a	it \$15/r	iour (ii	n ado	dition to tra	ackhoe ope	rator)	
1.	Pipeli	nes re	emovec	1 SIN	nuta	neously								
8.	Incluc	ies rei	moval	ot m	ann	oles /dex. E.de								
9.	Opera	ating s	cneau	e: 8	s nrs.	/day, 5 da	ys/\	меек						
Main B	inalin	o Don		200	to n	or ft of Tr		h						
	ipeiin	e Ren	loval	-05	is p		enc	n						
Fauipr	nont													
Equipi	Track	hoe												
	TTACK	S S	1125		1	week		1	davs	=\$	0.30			
		Ŵ	eek	Х	5	davs	Х	750	ft	Ψ	0.00			
	Fuel					aayo								
		\$	10	v	8	hrs	v	1	davs	=\$	0.11			
		h	our	X	1	day	X	750	ft					
Labor														
	Track	hoe C	Operat	ion										
		\$	15	x	8	man hrs	x	1	days	=\$	0.16			
		ma	ın hr		1	day	~	750	ft					
	Pipeli	ine E>	ctractio	on										
		\$	15	х	16	man hrs	x	1	day	=\$	0.32			
		ma	in hr		1	day		750	ft					
MAIN	PIPE		REMO	VAL	<u>. CO</u>	ST PER I	-т (JF TRE	INCH	=\$	0.89			

WELLF	FIELD	PIPIN	G REN	/O N	/AL									
Assum	ption	s:												
1.	Trenc	hing v	vith ba	ckho	be al	t 1500 ft/d	ay							
2.	Pipeli	ne ext	ractior	n an	d ba	ckfilling w	ith b	ackhoe	e at 1500	<mark>0</mark> /day	/			
3.	Backh	noe re	ntal: \$	1,00	0/we	eek								
4.	Fuel of	cost: \$	10/ope	erati	ng h	our								
5.	Backh	noe op	eration	n re	quire	es 1 worke	er at	\$15/hc	bur					
6.	Pipeli	ne ext	ractior	n rec	quire	s 2 worke	rs a	t \$15/h	our (in a	dditi	on to tra	ackhoe op	perator)	
7.	Opera	ating s	chedu	le: 8	3 hrs	/day, 5 da	ys/w	veek						
Main P	ipelin	e Ren	noval (Cos	ts p	er ft of Pi	ре							
Equipr	nent													
	Back	hoe												
		\$	1000	x	1	week	x	1	days	=\$	0.13			
		We	eek		5	days		1500	ft					
	Fuel													
		\$	10	х	8	hrs	х	1	days	=\$	0.05			
		ho	our		1	day		1500	ft					
Labor														
	Васк	noe O	perati	on						•	0.00			
		\$	15	Х	8	man nrs	Х	1	days	=\$	0.08			
	Dinel	ma In a Fu	n nr		1	day		1500	π					
	Pipei			on	10	man hro		1	dev	-0	0.10			
		\$	10 n.hr	Х	10	man nrs	Х	1500	uay #	=\$	0.10			
		ma				uay		1500	11					
	MAIN			DE						-¢	0 420			
	WAI			REI				RFIC			0.420			

WELL	FIELD F	ROAD	RECI	AMA	TION						Τ							
Assum	ptions	(Road	ls co	nstruc	ted	before	e Janu	ary	/ 1,	1997):							
1.	Gravel	road b	base r	emov	ed at	cost o	of \$0.8	6/c	y/10	00 ft	(W	DEQ Gu	ideli	ne No. 12,	App. C, Level G	round, 500	ft haul)	
2.	Gravel	road b	ase:	avera	ge de	epth =	0.25 ft	t, av	vera	ige w	idth	n = 10 ft						
3.	Roads	scarifi	ed pri	or to t	opso	il appl	ication	at	cos	t of \$	41.	87/acre	(WD	EQ Guidel	ine No. 12, App	endix P)		
4.	Gradin	g of sc	arifie	d road	ls prie	or to to	opsoil a	app	olica	tion a	at co	ost of \$4	5.65	acre (WD	EQ Guideline No	 12, Apper 	ndix G)	
5.	Topsoi	l applie	ed at (cost o	f \$0.8	366/ <mark>cy</mark>	/1000	ft (\	WD	EQ G	Guid	eline No	. <mark>12</mark> ,	App. C, Le	evel Ground, 50	0 ft haul)		
6.	Strippe	d tops	oil: av	/erage	e dep	th = 0	.67 ft,	ave	erage	e wid	th =	= 25 ft						
7.	Discing	/seedi	ing co	ost of S	\$235/	acre i	s base	d o	n ac	ctual	con	tractor c	osts					
	Gravel	Road	Base	Remo	oval (Costs	per 10	00 1	ft of	Road	d							
		1000	ft 、	0.25	ft	x 1	0 ft	x	1	су	x	\$0.87	2 = \$	80				
			· /	`		^		^	27	ft ³	^	су	-ψ	0				
	Scarific	cation (Costs	per 1	000 f	t of R	bad											
		1000	ft >	25	ft	x	1 acre	!		x		\$41.87	= \$	24				
			ľ	`		4.	356E+	04	ft ²	~		acre	Ψ					
	Gradin	g Cost	s per	1000	ft of I	Road												
		1000	ft >	25	ft	x	1 acre	1		x		\$45.65	= \$	26				
				-		4.	356E+	04	ft∠			acre						
	Topsoi	I Applie	catior	Cost:	s per	1000	ft of R	oac	t t									
		1000	ft >	0.67	ft	x 2	5 ft	x	1	cy	x	\$0.87	= \$	537				
									27	ft°		су						
	Discing	/Seed	ing C	osts p	er 10	00 ft (of Roa	d										
		1000	ft >	(25	ft	x —	1 acre	1	_	x		\$235	= \$	135				
				•		4.	356E+	04	ft∠	~		acre						
-	TOTAL	. WEL		_D RC	DAD	RECL		101		OSTS	S PI	ER						
		1000	FTO	ROA	ND (E	BEFO	RE JA	NU	AR	Y 1, 1	199	7)	= \$	802				
A	ntiono	(Deed			tod	-	lanua		40	07).								
ASSUIT	Gravel	(Road b		vill pot	thor		anua	ry 1	1, 19	97):								
1.	Boade	coarifi	od pri	or to t			-u ication	at	000	t of ¢	11	87/20ro			ina Na. 12. Ann	andix D)		
2.	Gradin	a of sc	eu pri	d road	le nri	or to to	nsoil	ann	lica	tion a	at co	orracie	5 65		FO Guideline N	12 Anner	ndix G)	
4	Tonsoi	l annlie	ed at	cost o	f \$0 8	36/cv/	1000 fl	· (\\			lide	line No	12 4		el Ground 500	ft haul)		
5	Strippe	d tons	oil: av	/erade	den	th = 0	4 ft a	ver	ade	width	າ =	20 ft	· , /					
6	Discinc	/seedi	ing co	st of S	6235/	acre i	s base	d o	n ac	ctual	con	tractor c	osts	L				
			Г Г							1								
	Scarific	cation (Costs	per 1	000 f	t of Re	bad			1								
		1000	ft 、	, 20	ft	~	1 acre			v		\$41.87	_ ^	10				
			'		-	^ 4.	356E+	04	ft ²	×		acre	= \$	19				
	Gradin	g Cost	s per	1000	ft of I	Road				1								
		1000	ft .	, 20	ft	~	1 acre					\$45.65	-					
			<u>ا ا</u>		-	X 4	356E+	04	ft ²	X		acre	= \$	21				
	Topsoi	Applio	cation	Cost	s per	1000	ft of R	oac	 J	1								
		1000	ft .	, 0.40	ft	2	0 ft		1	с٧		\$0.86	-	0.5.5				
		,		(×—–	1	X	27	ft ³	X	CV	= \$	255				
	Discino	/Seed	ina C	osts n	er 10	00 ft (of Roa	d		1		,						
		1000	ft	. 20	ft		1 acre	Ĩ				\$235	- I					
		,		(X 4	356F+	04	ft ²	X		acre	= \$	108				
						+				1								
	ΤΟΤΑΙ	WEL	LFIEI	DRC	DAD I	RECL		101		OSTS	S PI	ER						
		1000	FT OI	F ROA	D (A	\FTE	R JAN	UA	RY	1, 19	97		= \$	403				

BYPRO	ODUCT MA	TERIA	AL TI	RANSF	PORT	ATION	I AN	ND DISF	POSA	L				
Assum	ptions:													
1.	Based on a	actual	2001	-2002	contra	acted c	ost	s for trar	sport	atio	n to a	nd dispos	sal at an	
	NRC-licens	sed dis	sposa	al facilit	y.									
2.	Includes pr	rofit foi	r tran	sporter	r and	dispos	al fa	acility.						
3.	All types of	f waste	e ship	oped vi	bulk	contair	her	(30-yd ³ (dump	ster	or 30-	-yd ³ dum	p truck).	
4.	Each shipr	nent c	ontai	ns 30,0)00 lb	s of m	ater	ial.						
		Trans	spor	tation (Cost		Di	sposal	Cost			Total		
			\$	1.00	/ft ³	+	\$	11.00	/ft ³	=	\$	12.00	/ft ³	
										=	\$	12.00	/ft ³	

DISKING/S	SEEDING							
Assumptio	ons:							
1.	Based on a	actual contra	actor costs i	n 2000	6			
2.	Disking cos	st \$55/Acre						
3.	Seeding co	ost based or	n drill seedir	ng - se	ed co	ost based or	n type,	
	availability,	over all cos	st of \$180.0	0/Acre	•			
TOTAL DI	SKING/SEE	DING COS	TS PER AC	RE	= \$	235		

Abbreviations/Ac	eronyms	
\$	Dollars	
\$/Kgal	Dollars per 1000) gallons
avg	average	
ft	feet	
ft2	square feet	
ft3	cubic feet	
gal	gallon	
gpm	gallons per minu	ite
H&S	Health and Safet	ty
H2S	Hydrogen Sulfic	le
H2SO4	Sulfuric Acid	
HC1	Hydrochloric Ac	cid
Нр	Horsepower	
Kgal	1000 gallons	
Kwh	Kilowatt-hours	
NaOH	Caustic Soda	
OD	Outside Diamete	er
PPE	personal protect	ive equipment
PV	Pore Volume Es	timate
reqm't	requirement	
RO	Reverse Osmosi	S
WDW	Waste Disposal	Well
yd3	cubic yards	
yr	year	