Tota	l	Re	esto	ra	tion	ı a	nd	Recla	an	nation C	ost Estima	nte				
I.		GF	ROU	ND	WA	T	ER I	REST	OF	RATION (	COST				\$9,122,444	
II.		EQ	UII	PM	ENT	R	EM	OVA	L ð	& DISPOS	AL COST				\$138,111	
III.		BU	ILI	DIN	G D	EN	моі	LITIO	N	AND DIS	POSAL CO	ST			\$1,741,239	
IV.		W	ELI	FI	ELD	B	UIL	DING	S a	& EQUIP	MENT REN	IOVAL & D	DISPOSAL (	COST	\$1,786,264	
v.		W	ELI	A	BAN	D	ONN	AENT	C	OST					\$1,698,078	
VI.		W	ELI	FI	ELD	A	ND	SATE	L	LITE SUR	FACE REC	CLAMATIO	N COST		\$263,283	
VII.		TO	)TA	LN	4ISC	CE	LLA	NEO	US	S RECLA	MATION C	OST			\$744,644	
		SU	BT	DT	AL I	RE	CL	AMA	ΓΙΟ	ON AND F	RESTORAT	TION COST	ESTIMATE	2	\$15,494,063	
					Δ		/INI	STRA						MS (25%)	\$3 873 516	
								5117-							\$5,675,510	
														TOTAL	\$19,367,578	
									•	TOTAL C	ALCULATI	ED SURETY	(IN 2006 C	OLLARS)	\$19,367,600	

#### RECURRING COST

ELECTRICAL	Item	Amount (\$	) Units	Cost Basis
AND UTILITY	Power Cost (current actual costs)	\$0.048	kw/hr	Cost of electricity from current contract - Pacific Power and Light
	Kilowatt to Horsepower Horsepower per anm	\$0.176 \$0.167	kw/hp hn/gnm	
	Per 1000 gallons pumped	\$0.600	per 1000 gal	
	Cost per Month (Central Plant and Main Office)	\$0	unit	
	Cost per Month (Satellite 1)	\$1,050	unit	
	Cost per Month (Satellite 3)	\$1,190	unit	
	Propane cost per month (Satellite 1 and 2)	\$680	unit	
	Propane cost per month (Satellite 3)	\$1,160	unit	
	Natural Gas cost per month (Satellite 2)	\$520	unit	
LABOR RATES				
	Operator	\$136.34	day	Labor costs from current in-field charges paid by PRI
	Environmental Manager	\$100,000	year	
	Maintenance Technician	\$34,000	year	
CHEMICAL				
chilishean	Reductant	\$0.30	per 1000 lb	Chemical costs from current PRI vendor purchase agreements
	Cement	\$7.62	sack	
	Plug Gel Hydrochloric Acid	\$6.45 \$0.1375	sack 1b	
	Elution Unit Chemical Cost	\$900	unit	
ANAL VEIGAL				
ANALYTICAL	Guideline 8	\$200	batch	Analytical costs from current contract with Energy Labs, Casper, Wyoming
	6 Parameters	\$70	batch	
	Irrigation Fluid	\$121	sample	
	Vegetation Samples Soils	\$121 \$174	sample	
	Soil Water Samples	\$121	sample	
	Other In-House (Radon, Biological, Soils, etc.)	\$50	batch	In-house estimate for material and labor
SPARE PARTS				
	Restoration Spare Parts	\$20,000	year	Costs for spare parts from operator experience
TRANSPORTATION				
AND DISPOSAL	11 - 2 Material Transmission	61.22		
	11 e2 Material Transport	\$1.33	cubic yard	Costs for Transportation and disposal from current contracts with NRC Licensed Facility and actual costs from transport contract
	Soil/Solid Waste Transport	\$1.33	cubic yard	Costs for Transportation and disposal from current contracts with NRC Licensed Facility
	Soil/Solid Waste Disposal	\$3.70	cubic yard	and actual costs from transport contract
	Soil/Solid Waste (non-contam., on-site)	\$1.25	cubic yard	In-house estimate based on material cost and labor
VEHICLE				
OPERATION	Unit Cost	\$20.21	unit	Cost per WDEO Guideline 12
DISMANTLING				
	Concrete Footer Demolition	\$12.22	cubic foot	Costs per WDEQ Guideline 12, App. K
	Concrete Floor Demolition	\$3.40	cubic foot	
DIANT				
DECONTAMINATION	I Contraction of the second			
AND DISPOSAL	Direct Disposed Blant Floor	\$1.25	aubia ward	Costs for Transmentation and Jamoral from summation and reaction with NDC Lineared Envillen
	Solution (HCL) Application Rate	\$1.25	square foot	Costs for Transportation and alsposal from current contracts with NRC Licensea Facility In-house estimate based on actual material cost
PIPE REMOVAL	2-inch SDR 13.5 ini, & prod. Removal	\$0.91	foot	Costs for pipe removal from operator experience
	Trunkline Removal	\$0.43	foot	Includes labor and equimpment
EQUIPMENT	0.7.11			
	Cat Trackhoe Shraddar	\$1,125	week	Costs for equipment rental from Wyoming Machinery, Casper, Wyoming. All inclusive (labor, repairs, fuel, and Mob) Fauinment owned by PPI
	Cat Motor Grader	\$814.22	acre	Costs per WDEQ Guideline 12, App. 11
	Drill Rig	\$110.00	hour	Costs for equipment from operator experience
	Hose Reel	\$45.00	hour	Costs for equipment from operator experience
	Cementer	\$45.00	hour	Costs for equipment from operator experience
	Scraper	\$814.22	acre	Costs per WDEQ Guideline 12, App. 11
	Pulling Reel	\$45.00	hour	Costs for equipment from operator experience
	Manlift Belly Dump	\$8,900.00	month	Costs for equipment from operator experience Costs for equipment from operator experience
	Beny Dump	\$100.00	noui	Costs for equipment from operation experience
RECLAMATION	Discing and Seeding	\$280	асте	Operator Experience based on Current Contractor Pricing
	Top Soil Application	\$0.71	acre	Costs per WDEQ Guideline 12, App. 11
МІТ				
	Mechanical Integrity Testing	\$188.17	well	Operator Experience based on Current Contractor Pricing

										Mine Unit-D	)		
Ground Water Restoration	Mine Unit-A	Mine Unit-B	Mine Unit-C	C-19N Pattern	C-Haul. Drifts	Mine Unit-D	Mine Unit-E	Mine Unit-F	Mine Unit-H	Ext.	Mine Unit-I	Mine Unit-J	Mine Unit-JA
PV Assumptions													
Wellfield Area (ff2)	151000	600000	1274000	32500		279500	994500	22/8000	1116000	21600	801221	1200000	400000
Wellfield Area (acres)	3 49	15.86	29.25	0.75	0.00	6.42	22.83	76.86	25.62	210000	6 20.46	27 55	400000
Affected Ore Zone Area (ff2)	151000	600000	1274000	32500	0.00	279500	994500	22/8000	1116000	21600	0 801221	1200000	400000
Avg. Completed Thickness	151900	15	12/4000	52500	0	279500	394500	5548000	1110000	210000	5 15	20000	400000
Porosity	0.27	0.27	0.27	0.27		0.27	0.27	0.27	0.27	0.2	7 0.27	0.27	0.27
Perimeter Injection Wells/ ft?	0.27	0.27	2.05E-04	0.27		2 54E-04	2.63E-04	2 00E-04	2 43E-04	2.45E-0	4 2.55E-04	2 55E-04	2.55E-04
Flare Factor	2.94	2.94	2.0512-04	2		2.541-04	2.0512-04	2.001-04	2.4512-04	2.4512-0	5 2.551-04	2.5512-04	2.551-04
Affected Volume (ff3)	6698790	30468690	38220000	975000	1360000	10481250	38785500	100440000	40176000	810000	33421163	6000000	2000000
Kgallons per Pore Volume	13529	61535	77189	1969	10173	21168	78331	202849	81139	16359	9 67497	121176	40392
Number of Patterns in Unit(s)				-									-
Current	31	141	196	5	0	43	153	465	155	30	0 124	120	0 0
Estimated next report period	0	0	0	0	0	0	0	0	0	(	0 0	(	40
Total Estimated	31	141	196	5	0	43	153	465	155	30	0 124	120	40
Number of Wells in Unit(s)													
Production Wells													
Current	27	141	190			43	119	459	154	30	0 125	118	0
Estimated next report period	0	0	0			0	0	0	0	(	0 0	0	40
Total Estimated	27	141	190			43	119	459	154	30	0 125	118	40
Injection Wells													
Current	50	319	343			74	212	873	316	6	7 236	240	0 0
Estimated next report period	0	0	0	We	ls	0	0	0	0	(	0 0	0	80
Total Estimated	50	319	343	inclu	ded	74	212	873	316	6	7 236	240	80
Monitor Wells				und	er								
Current	18	67	78	C-Wel	lfield	38	86	134	81	20	0 39	57	0
Estimated next report period	0	0	0			0	0	0	0	(	0 0	0	30
Total Estimated	18	67	78			38	86	134	81	20	0 39	57	30
Restoration Wells													
Current	13	30	19			0	0	15	0	(	0 0	0	0 0
Estimated next report period	0	0	0			0	0	0	0	(	0 0	0	0 0
Total Estimated	13	30	19					15	0	(	0 0	0	0 0
Number of Wells per Wellfield	108	557	630	0	0	155	417	1481	551	117	7 400	415	150
Total Number of Wells	3899												
Average Well Depth (ft)	500	450	550	550	550	600	550	650	500	600	0 650	540	540
I. Restoration Well Installation Costs													
Number of Restoration Wells	0	0	0	0	0	0	0	0	0	(	0 0	0	0
Well Installation Unit Cost (\$/Well)	\$4.000	\$4.000	\$4.000	\$4.000	\$4,000	\$4.000	\$4,000	\$4,000	\$4.000	\$4.000	\$4.000	\$4.000	\$4.000
Subtotal Restoration Well Installation Costs per Wellfield	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	S	0 \$0	SC	\$0
Total Restoration Well Installation Costs	\$0												

													Mine Unit-D			
Ground Wat	ter Restoration			Mine Unit-A	Mine Unit-B	Mine Unit-C	C-19N Pattern	C-Haul. Drifts	Mine Unit-D	Mine Unit-E	Mine Unit-F	Mine Unit-H	Ext.	Mine Unit-I	Mine Unit-J	Mine Unit-JA
II Cround	d Water Sween Cost	e														
PV'	s Required	.5		0	1	1	1	1	1	1	1	1	1	1	1	1
Tot	al K gals for Treatmer	nt		0	61535	77189	1969	10173	21168	78331	202849	81139	16359	67497	121176	40392
Gro	und Water Sween Ur	nit Cost (\$/K	(gal)	\$1.35	\$1.35	\$1.35	\$1.35	\$1.35	\$1.35	\$1.35	\$1.35	\$1.35	\$1.35	\$1.35	\$1.35	\$1.35
Subtota	Ground Water Swee	en Costs per	Wellfield	\$0	\$83.109	\$104 252	\$2,659	\$13,739	\$28,589	\$105 794	\$273 967	\$109.587	\$22,094	\$91.162	\$163.660	\$54 553
Total G	Ground Water Sweep	p Costs		\$1,053,165			-,		0-0,007				,->			
III. Reverse	e Osmosis Costs															
PV'	s Required			3	3	3	3	3	3	3	3	3	3	3	3	3
Tota	al Kgals for Treatmer	nt		40587	184604	231567	5907	30518	63504	234994	608546	243418	49076	202492	363528	121176
Rev	erse Osmosis Unit Co	ost (\$/Kgal)		\$0.96	\$0.96	\$0.96	\$0.96	\$0.96	\$0.96	\$0.96	\$0.96	\$0.96	\$0.96	\$0.96	\$0.96	\$0.96
Subtota	l Reverse Osmosis Co	osts per We	llfield	\$38,795	\$176,454	\$221,345	\$5,647	\$29,171	\$60,700	\$224,620	\$581,682	\$232,673	\$46,910	\$193,553	\$347,480	\$115,827
Total R	Reverse Osmosis Cos	sts		\$2,274,857												
IV Biorem	ediation/Chemical I	Reductant (	osts													
Tota	al Kgals for Treatmer	nt (2 Pore V	olumes)	0	123069	154378	3938	20346	42336	156662	405697	162279	32718	134995	242352	80784
Che	emical Reductant Uni	t Cost (\$/Ke	zal)	\$0.30	\$0.30	\$0.30	\$0.30	\$0.30	\$0.30	\$0.30	\$0.30	\$0.30	\$0.30	\$0.30	\$0.30	\$0.30
Sub	total Chemical Redu	ctant Costs r	per Wellfield	\$0	\$36 921	\$46 313	\$1.181	\$6 104	\$12,701	\$46 999	\$121 709	\$48 684	\$9.815	\$40.498	\$72.706	\$24 235
Total C	hemical Reductant	Costs		\$467,866		0.0,010	÷1,101	00,101	÷,/ • •	\$ j	<i></i> ,, <i></i> ,	0.0100	\$7,010	0.0,000		01.9200
V Elution	Coste															
v. Enution	tion Processing Costs															
A. Liu	Kaals/Elution Require	ed.		35000	35000	35000	35000	35000	35000	35000	35000	35000	35000	35000	35000	35000
	Number of Elutions	cu		55000	55000	9,000	1	1	25000	93000	23	0000	35000	55000	14	55000
- I	Processing Unit Cost	(\$/Elution)		\$900	\$900	\$900	\$900	\$900	\$900	\$900	\$900	\$900	\$900	5900	\$900	\$900
Sub	total Processing Cost	(s. Linuter)		\$900	\$6 300	\$8,100	\$900	\$900	\$1.800	\$8,100	\$20,700	\$8,100	\$1.800	\$7.200	\$12,600	\$4.500
B Dee	p Well Injection Cos	ts			00,000	40,200	47.00	47.00			4-0,700	40,100	01,000			,
I	Deep Well Injection V	Volume (Kg	als/Elution)	12	12	12	12	12	12	12	12	12	12	12	12	12
1	Total Kgals for Inject	ion		12	84	108	12	12	24	108	276	108	24	96	168	60
I	Deep Well Injection U	Unit Cost (\$	/Kgals)	\$4.22	\$4.22	\$4.22	\$4.22	\$4.22	\$4.22	\$4.22	\$4.22	\$4.22	\$4.22	\$4.22	\$4.22	\$4.22
Sub	ototal Deep Well Inject	ction Costs		\$51	\$355	\$456	\$51	\$51	\$101	\$456	\$1,166	\$456	\$101	\$406	\$710	\$253
Subtota	l Elution Costs per W	/ellfield		\$951	\$6,655	\$8,556	\$951	\$951	\$1,901	\$8,556	\$21,866	\$8,556	\$1,901	\$7,606	\$13,310	\$4,753
Total E	Elution Costs			\$86,513												
VI. Monito	oring and Sampling (	Costs														
A. Res	toration Well Sampli	ng														
Esti	imated Restoration Pe	eriod (Years	)	2	2	2	2	2	2	2	2	2	2	2	2	2
1. 1	Well Sampling prior t	to restoration	n start													
	# of Wells			0	20	31	5	7	9	31	21	12	4	6	6	6
	\$/sample			\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200

															Mine Unit-D			
Ground	Wat	er Restoration				Mine Unit-A	Mine Unit-B	Mine Unit-C	C-19N Pattern	C-Haul. Drifts	Mine Unit-D	Mine Unit-E	Mine Unit-F	Mine Unit-H	Ext.	Mine Unit-I	Mine Unit-J	Mine Unit-JA
	2 F	estoration Progress	Sampling															
		# of Wells	oumpring			0	20	31	5	7	9	31	21	12	4	6	12	12
		\$/sample				\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50
		Samples/Year				6	6	6	6	6	6	6	6	6	6	6	6	6
	3. U	JCL Sampling								-			-		-		-	
		# of Wells				0	70	78	5	20	29	55	89	69	16	33	69	69
		\$/sample				\$70	\$70	\$70	\$70	\$70	\$70	\$70	\$70	\$70	\$70	\$70	\$70	\$70
		Samples/Year				6	6	6	6	6	6	6	6	6	6	6	6	6
	Sub	total Restoration A	nalyses			\$0	\$74,800	\$90,320	\$8,200	\$22,400	\$31,560	\$71,000	\$91,560	\$67,560	\$16,640	\$32,520	\$66,360	\$66,360
В.	Sho	t-term Stability					,					· · · · · ·		,				
	I	stimated Stabilization	on Period (N	(Ionths)		12	12	12	12	12	12	12	12	12	12	12	12	12
	ŧ	of Wells				6	56	44	6	2	19	28	89	69	16	33	33	33
	S	amples/Year				6	6	6	6	6	6	6	6	6	6	6	6	6
	\$.	/sample				\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50
	ŧ	of Wells				5	20	31	6	2	9	31	21	12	4	6	6	6
	S	amples/Year				6	6	6	6	6	6	6	6	6	6	6	6	6
	\$3	/sample				\$70	\$70	\$70	\$70	\$70	\$70	\$70	\$70	\$70	\$70	\$70	\$70	\$70
	ŧ	of Wells				5	20	31	6	2	9	31	21	12	4	6	6	6
	S	amples/Year				2	2	2	2	2	2	2	2	2	2	2	2	2
	\$	/sample				\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200
	Sub	total Short-term Sta	bility Analy	ses		\$5,900	\$33,200	\$38,620	\$6,720	\$2,240	\$13,080	\$33,820	\$43,920	\$30,540	\$8,080	\$14,820	\$14,820	\$14,820
Sul	otota	Monitoring and Sar	mpling Cost	s per Wellfie	ld	\$5,900	\$108,000	\$128,940	\$14,920	\$24,640	\$44,640	\$104,820	\$135,480	\$98,100	\$24,720	\$47,340	\$81,180	\$81,180
To	tal M	lonitoring and Sam	pling Costs			\$899,860												
VII Me	char	ical Integrity Test	(MIT) Cost	le le														
· II. 1410	Five	Vear MIT Unit Cos	t (\$/well)	3		\$188	\$188	\$188	\$188	\$188	\$188	\$188	\$188	\$188	\$188	\$188	\$188	\$188
	Nur	ther of Wells (30%)	of Ini and R	est Wells)		0	0	109	\$100	0	22	64	266	95	20	71	72	24
Sul	tota	Mechanical Integri	ty Testing (	osts per Wel	lfield	\$0	\$0	\$20.435	\$0	\$0	\$4 177	\$11.967	\$50.128	\$17.838	\$3.782	\$13 322	\$13 548	\$4 516
To	tal N	echanical Integrity	v Testing C	ost		\$139,713	\$0	\$20,155	40	<b>\$</b> 0	φ1,177	\$11,707	\$50,120	\$11,000	\$5,762	010,022	\$15,510	\$1,510
		, and the second s	, and the second s															
TOTAL	RES	FORATION COSTS	S PER WEL	LFIELD		\$45,646	\$411,139	\$529,841	\$25,358	\$74,605	\$152,708	\$502,756	\$1,184,832	\$515,438	\$109,222	\$393,481	\$691,884	\$285,064
TOTAL	WE	LLFIELD RESTO	RATION C	OST		\$4,921,974												
VIII Bu	ildin	y Utility Costs				Central Plant	Main Office	Satellite No 1	Satellite No 2	Satellite No 3								
	Elec	tricity (\$/Month)				50	50	\$1.050	\$1 190	\$1.675								
	Prot	ane (\$/Month)				\$0	\$0	\$680	\$680	\$1.160								
	Nati	ral Gas (\$/Month)				\$0	\$0	\$000	\$520	\$0								
	Nur	ber of Months				0	60	6	48	48								
Sul	otota	Utility Costs per B	uilding			\$0	\$0	\$10.380	\$114.720	\$136,080								
То	tal B	uilding Utility Cost	ts			\$261,180			. ,									

Ground Water Restoration									
IX. Irrigation Maintenance and Monitoring Costs	Irrigator No.1	Irrigator No.2							
A Irrigation Maintenance and Repair									
Irrigation Operation Months/Year	6	i 6							
Cost per Month	\$667	\$667							
Total Number of Years	\$007	5							
Subtotal Maintenance and Renair Costs	\$20.010	\$20.010							
B Irrigation Monitoring and Sampling									
# of Irrigation Fluid Samples/Year	6	6							
Cost/sample (Energy Labs - Casper Wyoming)	\$121	\$121							
# of Vegetation Samples/Year	4	4							
Cost/sample (Energy Labs - Casper Wyoming)	\$121	\$121							
# of Soil Samples/Year	28	32	1						
Cost/sample (Energy Labs - Casper Wyoming)	\$174	\$174							
# of Soil Water Samples/Year	12	2 2							
Cost/sample (Energy Labs - Casper Wyoming)	\$121	\$121							
Total Number of Years	5								
Subtotal Sampling Costs	\$37.670	\$35.100							
Subtotal Maintenance and Monitoring Costs per Irrigator	\$57,680	\$55.110							
Total Irrigation Maintenance and Monitoring Costs	\$112,790	)							
	¢,···								
X. Capital Costs (RO Purchase)									
Purchase/Installation Costs for 1X400 gpm RO Capacity	\$600,000	)							
Total Capital Costs	\$600,000	)							
XI Vehicle Operation Costs									
Number of Pickun Trucks/Pulling Units (Gas)	10	)							
Unit Cost in \$/hr (WDEO Guideline No 12 Table D-1)	\$20.21								
Average Operating Time (Hrs/Year)	1000	)							
Total Number of Years (Average)	1000								
Total Vehicle Operation Costs	\$1,010,500								
	\$1,010,000								
XII. Labor Costs									
Number of Environmental Managers/RSOs	1								
\$/Year	\$100,000	)							
Number of Restoration Managers	1								
\$/Year	\$80,000	)							
Number of Environmental Technicians	2	2							
\$/Year	\$34,000	)							
Number of Operators/Laborers	7	1							
\$/Year	\$34,000	)							
Number of Maintenance Technicians	2	2							
\$/Year	\$34,000	)							
Number of Years	4	l .							
Total Labor Costs	\$2,216,000								
TOTAL GROUND WATER RESTORATION COSTS	\$9,122,444								
	····	.1	1 1	1	1	1	1 1	1	1

Fau			Removal and Loading	Control Plant	Satallita No. 1	Satallita No 2	Satallita No 3
Еqu	ıрш	ent		Central Flant	Satemite No.1	Satemite No.2	Satemite No.5
I.	Ren	nov	al and Loading Costs				
	A.	Та	nkage				
			Number of Tanks	26	8	14	18
			Volume of Tank Construction Material (ft <sup>3</sup> )	1028	162	290	397
		1.	Labor				
			Number of Persons	3	3	3	3
			Ft <sup>3</sup> /Day	25	25	25	25
			Number of Days	41	6	12	16
			\$/Day/Person	\$136	\$136	\$136	\$136
			Subtotal Labor Costs	\$16,770	\$2,454	\$4,908	\$6,544
		2.	Equipment				
			Number of Days	41	6	12	16
			\$/Day	\$338	\$338	\$338	\$338
			Subtotal Equipment Costs	\$13,858	\$2,028	\$4,056	\$5,408
		Su	btotal Tankage Removal and Loading Costs	\$30,628	\$4,482	\$8,964	\$11,952
	B.	P٧	'C Pipe				
			PVC Pipe Footage	5000	1000	4000	4000
			Average PVC Pipe Diameter (inches)	3	3	3	3
			Shredded PVC Pipe Volume Reduction (ft <sup>3</sup> /ft)	0.016	0.016	0.016	0.016
			Volume of Shredded PVC Pipe (ft <sup>3</sup> )	80	16	64	64
		1.	Labor				
			Number of Persons	2	2	2	2
			Ft/Day	200	200	200	200
			Number of Days	25	5	20	20
			\$/Day/Person	\$136	\$136	\$136	\$136
			Subtotal Labor Costs	\$6,817	\$1,363	\$5,454	\$5,454
		Su	btotal PVC Pipe Removal and Loading Costs	\$6,817	\$1,363	\$5,454	\$5,454
	C.	Pu	mps				
			Number of Pumps	50	10	14	13
			Average Volume (ft'/pump)	4.93	4.93	4.93	4.93
			Volume of Pumps (ft <sup>3</sup> )	246.5	49.3	69.02	64.09
		1.	Labor				
			Number of Persons	1	1	1	1
			Pumps/Day	2	2	2	2
			Number of Days	25	5	7	7
			\$/Day/Person	\$136	\$136	\$136	\$136
			Subtotal Labor Costs	\$3,409	\$682	\$954	\$954
		Su	btotal Pump Removal and Loading Costs	\$3,409	\$682	\$954	\$954
	D.	Dr	yer				-
		Dr	yer Volume (ft <sup>2</sup> )	885	0	0	0
		1.	Labor				
			Number of Persons	5	0	0	0
			Ft <sup>-</sup> /Day	175	0	0	0
			Number of Days	5	0	0	0
			\$/Day/Person	\$136	\$136	\$136	\$136
		T	I otal Labor Cost	\$3,409	\$0	\$0	\$0
	<b>F</b>	10	tal Dryer Dismantling and Loading Cost	\$3,409	\$0	\$0	\$0
	E.	RC	) Units	1	1		1

Fau	<b></b>		Demoval and Loading		Control Plant	Satallita No. 1	Satallita Na 2	Satallita No. 2
Ŀqu	ipme	спі	Number of PO Units			Satemie No.1	Satemite 110.2	Satemite No.5
-			Current		0	2	0	0
-			Diamand		0	3	0	0
			Planned $(0^3/DO H^{-1})$		0	0	1	250
		1	Average Volume (ff /RO Unit)		250	250	250	250
		1.	Labor					
			Number of Persons		2	2	2	2
			Number of Days		0	1.5	0.5	0.5
-			\$/Day/Person		\$136	\$136	\$136	\$136
			Subtotal Labor Costs		\$0	\$409	\$136	\$136
		Sι	btotal RO Unit Removal and Loading Costs		\$0	\$409	\$136	\$136
	Sub	tot	al Equipment Removal and Loading Costs per Facility		\$44,263	\$6,936	\$15,509	\$18,497
	Tota	al I	Equipment Removal and Loading Costs		\$85,204			
П.	Tra	nsj	portation and Disposal Costs (NRC-Licensed Facility)					
	A.	Тε	nkage					
			Volume of Tank Construction Material (ft <sup>3</sup> )		1028	162	290	397
			Volume for Disposal Assuming 10% Void Space (ft <sup>3</sup> )		1131	178	319	436
			Transportation and Disposal Unit Cost (\$/ft <sup>3</sup> )		\$12.33	\$12.33	\$12.33	\$12.33
		Sι	btotal Tankage Transportation and Disposal Costs		\$13,945	\$2,195	\$3,933	\$5,376
	B.	P١	/C Pipe					
			Volume of Shredded PVC Pipe (ft <sup>3</sup> )		80	16	64	64
			Volume for Disposal Assuming 10% Void Space (ft <sup>3</sup> )		88	18	70	70
			Transportation and Disposal Unit Cost (\$/ft <sup>3</sup> )		\$12.33	\$12.33	\$12.33	\$12.33
		Sι	btotal PVC Pipe Transportation and Disposal Costs		\$1.085	\$222	\$863	\$863
	C.	Ρı	mps					
			Volume of Pumps (ft <sup>3</sup> )		246.5	49.3	69.02	64.09
			Volume for Disposal Assuming 10% Void Space (ft <sup>3</sup> )		271	54	76	70
			Transportation and Disposal Unit Cost (\$/ft <sup>3</sup> )		\$12.33	\$12.33	\$12.33	\$12.33
		Sı	btotal Pump Transportation and Disposal Costs		\$3.341	\$666	\$937	\$863
	D	D	ver		++,++		4707	
	2.		Dryer Volume (ff <sup>3</sup> )		885	0	0	0
			Volume for Disposal Assuming Dryer Remains Intact (ft <sup>3</sup> )		885	0	0	0
			Transportation and Disposal Unit Cost (\$/ft <sup>3</sup> )		\$12.33	\$12.33	\$12.33	\$12.33
		Т	tal Dryer Transportation and Disposal Costs		\$10.912	\$0	\$0	\$0
	E	R	) Units		¢10,712		<b>\$</b> 0	<i><b></b></i>
			Volume of RO Units $(ft^3)$		0	750	250	250
			Volume for Disposal Assuming 50% Volume Reduction (f	ft <sup>3</sup> )	0	375	125	125
			Transportation and Disposal Unit Cost (\$/ft <sup>3</sup> )		\$12.33	\$12.33	\$12.33	\$12.33
		S1	btotal RO Unit Transportation and Disposal Costs		\$0	\$4.624	\$1.541	\$1.541
	Sub	tot	al Equipment Transportation and Disposal Costs per Facility	N/	\$20,283	\$7,024	\$1,341	\$1,541
	Tot	ոլ լ	Fauinment Transportation and Disposal Costs	y	\$29,283	\$7,707	\$7,274	\$6,045
	100	ai 1			\$52,907			
Ш.	Hea	lth	and Safety Costs					
L		Ra	idiation Safety Equipment Accounted for	r on BLDGS workbook,	\$0	\$0	\$0	\$0
	Tota	al I	Health and Safety Costs S	Section IV	\$0			
SUE	тот	ΓA	L EQUIPMENT REMOVAL AND DISPOSAL COSTS PE	ER FACILITY	\$73,546	\$14,643	\$22,783	\$27,140
TO	ſAL	E	UIPMENT REMOVAL AND DISPOSAL COSTS		\$138,111			, í

							Central	Dryer	Satellite	Satellite	Satellite	Sat. No.3	Yellow Cake	South	Suspended
Buildin	ıg De	emolitio	n and Disposal				Plant	Building	No. 1	No. 2	No. 3	Fab. Shop	Warehouse	Warehouse	Walkway
I De	aant	taminat	on Costs												
1. De	w		ntomination		-										
A.	vv a	A roa to	ha Daaantaminata	$d(\theta^2)$	-		121000	0	0	0	0	0	0	0	0
		HCLA.	id Week including	$\frac{u(n)}{v}$	-		\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	0 \$0.50	\$0.50	\$0.50	0 \$0.50
	C.	HCI AC		g labor (\$/It)			\$0.39	\$0.39	\$0.39	\$0.39	\$0.39	\$0.39	\$0.39	\$0.39	\$0.39
D	Su	blotal w		tion Costs			\$77,341	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
D.	CO	A man to	ha Daaantaminata	$d(\Omega^2)$			17920	0	(000	0(00	0(00	0	0	0	0
		Area to	be Decontaminate	a(n)			1/820	£0.21	6000	9600	9600	0 \$0.21	0 £0.21	0 60.21	0 60.21
	C.	HUI AC	ia wash, including	g labor (\$/10)	1		\$0.21	\$0.21	\$0.21	\$0.21	\$0.21	\$0.21	\$0.21	\$0.21	\$0.21
C	D	Diotal C	Initiation Conta	ontannnation C	JUSIS		\$5,708	30	\$1,240	\$1,998	\$1,990	30	\$0	\$0	\$0
U.	De	Tetel V	Injection Costs				121019	0	(	10	10	0	0	0	0
	_	Total K	gais for injection	C (OT L)			131018	0	64.22	10 © 4.22	10	0	0	0	0
	C.	Deep w	ell injection Unit	Cost (\$/Kgais)			\$4.22	\$4.22	\$4.22	\$4.22	\$4.22	\$4.22	\$4.22	\$4.22	\$4.22
	Su	btotal D	eep well injection	Costs			\$553,507	\$0	\$25	\$41	\$41	\$0	\$0	\$0	\$0
Su	btota	al Decor	tamination Costs	per Building			\$634,556	\$0	\$1,273	\$2,039	\$2,039	\$0	\$0	\$0	\$0
10	tal I	Jeconta	mination Costs				\$640,441								
II. De	moli	ition Co	sts												
A.	Bu	ilding													
		Assum	otions:												
		Dry	er bldg demolition	n unit cost of \$	$0.73/ft^3$ for a	dditional									
		radi	ation safety equip	ment	1										
		Volume	of Building (ft <sup>3</sup> )				794000	30720	192000	320000	320000	37560	91000	333000	5600
		Demoli	tion Unit Cost per	WDEO Guide	line No 12 A	pp K (\$/ft <sup>3</sup> )	\$0.178	\$0.178	\$0.178	\$0.178	\$0.178	\$0.178	\$0.178	\$0.178	\$0.178
	Su	btotal B	uilding Demolition	1 Costs	1	PF (+/ )	\$141.332	\$5.468	\$34.176	\$56,960	\$56.960	\$6.686	\$16,198	\$59.274	\$997
В	Co	ncrete F	loor	. 00505			\$111,552	\$5,100	<i>\$</i> 51,170	400,000	400,700	\$0,000	\$10,170	<i>\$657,27</i>	4777
5.		Area of	Concrete Floor (f	<sup>1</sup> )			23760	0	8000	12800	12800	0	6500	18000	0
		Demoli	tion Unit Cost per	WDEO Guide	line No 12 A	nn K $(\$/ft^2)$	\$3.40	\$3.40	\$3.40	\$3.40	\$3.40	\$3.40	\$3.40	\$3.40	\$3.40
		Unit Co	st in \$/ft <sup>2</sup> (July 19	98 dollars w/o	escalator)	pp (\$,)	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95
	Su	btotal C	oncrete Floor Den	polition Costs	esculatory		\$70,186	\$0	\$23,632	\$37.811	\$37.811	\$2.95	\$19.201	\$53,171	\$0
C	Co	ncrete F	ooting	lonuon eosia			\$70,100	40	425,052	\$57,011	457,011	<i>\$</i> 0	\$17,201	\$55,171	40
0.	00	Length	of Concrete Footi	ng (ff)			622	0	360	480	480	0	360	580	0
		Demoli	tion Unit Cost per	WDFO Guide	No 12 App	K (\$/lin_ft)	\$11.45	\$11.45	\$11.45	\$11.45	\$11.45	\$11.45	\$11.45	\$11.45	\$11.45
		Unit Co	et in \$/lin_ft (July	1998 dollars y	v/o escalator	<b>ix</b> (\$/1111.11)	\$9.95	\$9.95	\$9.95	\$9.95	\$9.95	\$9.95	\$9.95	\$9.95	\$0.05
	Su	btotal C	oncrete Footing D	emolition Cost	o cocalator		\$6.188	\$0.55	\$3.581	\$4 775	\$4.775	\$9.95	\$3.581	\$5.770	\$0.55
Su	btota	Dottar C	lition Costs per Bi	ulding	3		\$217.706	\$5 468	\$61.280	\$00.546	\$00 546	\$6.686	\$38.080	\$118 215	\$007
To	tol I	Domolit	intoli Costs per Bu	inung			\$217,700	\$5,408	301,389	\$99,540	\$99,540	\$0,080	\$38,980	\$110,215	\$771
10	nai i	7cmont					3707,075								
III. Di	spos	al Costs													
A.	Bu	ilding													
	Vo	olume of	Building (cy)				29407	1138	7111	11852	11852	1391	3370	12333	207
	1.	On-Site	:												
		Ass	umptions:												
			On-site disposal	cost of \$1.25/c	у										
		Per	centage (%)				100	0	100	100	100	100	100	100	100
		Vol	ume for Disposal (	cubic yards)			29407	0	7111	11852	11852	1391	3370	12333	207
		Dis	oosal 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			\$36,759	\$0	\$8,889	\$14,815	\$14,815	\$1,739	\$4,213	\$15,417	\$259
	2.	NRC-L	icensed Facility		1										-
		Per	centage (%)				0	100	0	0	0	0	0	0	0
		Vol	ume for Disposal (	(ft <sup>3</sup> )			0	2624	0	0	0	0	0	0	0
		Vol	ume for Disposal	Assuming 10%	Void Space	(ft <sup>3</sup> )	0	2886	0	0	0	0	0	0	0
		Tra	nsportation and Di	sposal Unit Co	st (\$/ft 3)		\$12.33	\$12.33	\$12.33	\$12.33	\$12.33	\$12.33	\$12.33	\$12.33	\$12.33
		Subtota	I NRC-Licensed F	acility Disposa	l Costs		\$0	\$35,584	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Su	btotal B	uilding Disposal C	Costs			\$36,759	\$35,584	\$8,889	\$14,815	\$14,815	\$1,739	\$4,213	\$15,417	\$259
B.	Co	oncrete I	loor												
		Area of	Concrete Floor (f	t <sup>2</sup> )			23760	0	8000	12800	12800	0	6500	18000	0

						Central	Dryer	Satellite	Satellite	Satellite	Sat. No.3	Yellow Cake	South	Suspended
Building	Dem	olition and	Disposal			Plant	Building	No. 1	No. 2	No. 3	Fab. Shop	Warehouse	Warehouse	Walkway
	A	verage Thic	kness of Cor	crete Floor (ft)		0.75	0	0.67	0.67	0.67	0	0.5	0.5	0
	V	olume of Co	oncrete Floor	$(\mathrm{ft}^3)$		17820	0	5360	8576	8576	0	3250	9000	0
	Ve	olume of Co	oncrete Floor	(cy)		660	0	199	318	318	0	120	333	0
	1. OI	n-Site												
		Percentag	e (%)			75	0	75	75	75	0	100	100	0
		Volume for	or Disposal (	cy)		495	0	149	238	238	0	120	333	0
		Disposal U	Unit Cost per	WDEQ Guideline No.1	2,App.K (\$/cy)	\$4.69	\$4.69	\$4.69	\$4.69	\$4.69	\$4.69	\$4.69	\$4.69	\$4.69
		Unit Cost	in \$/cy (July	1998 dollars w/o escala	or)	\$4.07	\$4.07	\$4.07	\$4.07	\$4.07	\$4.07	\$4.07	\$4.07	\$4.07
	Su	btotal On-S	Site Disposal	Costs		\$2,017	\$0	\$607	\$971	\$971	\$0	\$490	\$1,358	\$0
	2. NI	RC-License	d Facility											
		Assumption	ons:											
		Addi	tional \$2.00/	ft3 for segregation of con	crete									
		Percentag	e (%)			25	0	25	25	25	0	0	0	0
		Volume for	or Disposal (	ft <sup>3</sup> )		4455	0	1340	2144	2144	0	0	0	0
		Segregatio	on and Loadi	ng Unit Cost (\$/ft <sup>3</sup> )		\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
		Transport	ation and Dis	sposal Unit Cost (\$/ft 3)		\$12.33	\$12.33	\$12.33	\$12.33	\$12.33	\$12.33	\$12.33	\$12.33	\$12.33
	Su	ibtotal NRC	-Licensed Fa	acility Disposal Costs		\$63,840	\$0	\$19,202	\$30,724	\$30,724	\$0	\$0	\$0	\$0
	Subto	otal Concret	e Floor Disp	osal Costs		\$65,857	\$0	\$19,809	\$31,695	\$31,695	\$0	\$490	\$1,358	\$0
C.	Conc	rete Footing	5											
	Le	ength of Cor	ncrete Footin	g (ft)		622	0	360	480	480	0	360	580	0
	A	verage Dept	h of Concret	e Footing (ft)		4	4	4	4	4	4	4	4	0
	A	verage Widt	th of Concret	e Footing (ft)		1	1	1	1	1	1	1	1	0
	V	olume of Co	oncrete Footi	ng (ft <sup>3</sup> )		2488	0	1440	1920	1920	0	1440	2320	0
	Ve	olume of Co	oncrete Footi	ng (cy)		92	0	53	71	71	0	53	86	0
	Di	isposal Unit	Cost per WI	DEQ Guideline No.12,A	p.K (\$/cy)	\$4.69	\$4.69	\$4.69	\$4.69	\$4.69	\$4.69	\$4.69	\$4.69	\$4.69
	U	nit Cost in \$	/cy (July 199	98 dollars w/o escalator)		\$4.07	\$4.07	\$4.07	\$4.07	\$4.07	\$4.07	\$4.07	\$4.07	\$4.07
	Subto	otal Concret	e Footing Di	sposal Costs		\$375	\$0	\$217	\$290	\$290	\$0	\$217	\$350	\$0
Sub	total I	Disposal Co	sts per Build	ing		\$102,991	\$35,584	\$28,915	\$46,800	\$46,800	\$1,739	\$4,920	\$17,125	\$259
Tota	al Dis	posal Costs	6			\$301,093								
IV Hee	lth ar	nd Safatri (	osta											
IV. Hea	Dodie	tion Safety	Equipment I	SO removed per item o	st and generated	\$0	\$0	\$0	\$0	\$0	\$0	02	\$0	02
	one la	mp sup a	et! Estimate	d based on operating are	vience	\$10 < 10	\$0	50	\$0	30	30	\$0	30	\$0
Tot		and So	foty Costs	a based on operating exp	aicite	\$10,010								
SUDTO		and and Sa	DEMOLITI	ON AND DISDOGAL C	OFTE	\$055 252	\$41.052	\$01.577	\$140.205	\$149 295	\$9 125	\$42.000	\$125.240	¢1.256
TOTAL	DIT	DINC PE	MOLITION	UN AND DISPUSAL CO	7515	\$935,253	\$41,052	\$91,3//	\$148,385	\$148,385	\$8,425	\$43,900	\$155,340	\$1,236
TOTAL	ROU	DING DE	MOLITION	AND DISPUSAL CO	15	\$1,/41,239								

								Changehouse	Maintenance	Main	Office	Process/Fire	Potable	Potable Water	Central Plant
Buildin	g De	emolition a	nd D	isposal				and Lab Bldg.	Building	Office	Trailers	Water Bldg.	Water Bldg.	Tank Slab	Tank Slabs
L De	cont	taminatior	Cost	\$											
A.	W	all Deconta	minat	ion											
		Area to be	Deco	ntaminated	$f(ft^2)$			0	0	0	0	0	0	0	0
		HCl Acid	Wash	including	labor (\$/ft2)			\$0.59	\$0.59	\$0.59	\$0.59	\$0.59	\$0.59	\$0.59	\$0.59
	Su	ibtotal Wal	Deco	ontaminatio	on Costs			\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
B.	Co	oncrete Flo	or Dec	ontaminat	ion										
		Area to be	Deco	ntaminated	$d(ft^2)$			0	0	0	0	0	0	0	0
		HCl Acid	Wash	, including	labor (\$/ft <sup>2</sup> )			\$0.21	\$0.21	\$0.21	\$0.21	\$0.21	\$0.21	\$0.21	\$0.21
	Su	ibtotal Con	rete l	Floor Deco	ntamination C	osts		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
С.	De	eep Well In	jectio	n Costs											
		Total Kga	s for	Injection				0	0	0	0	0	0	0	0
		Deep Wel	Injec	tion Unit (	Cost (\$/Kgals)			\$4.22	\$4.22	\$4.22	\$4.22	\$4.22	\$4.22	\$4.22	\$4.22
	Su	ibtotal Deej	o Wel	Injection	Costs			\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sul	btota	al Decontai	ninati	on Costs p	er Building			\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
To	tal I	Decontami	natio	1 Costs											
IL De	mol	lition Costs													
A	Bu	uilding													
		Assumptio	ns:												
		Dryer	oldg.	demolition	unit cost of \$0	0.73/ft <sup>3</sup> for a	ditional								
		radiati	on saf	ety equipn	nent										
		Volume of	Buil	ting (ft <sup>3</sup> )				73000	27000	72000	20000	16500	6300	0	0
		Demolitio	n Unit	Cost per	WDEQ Guidel	ine No.12,A	op.K (\$/ft <sup>3</sup> )	\$0.178	\$0.178	\$0.178	\$0.178	\$0.178	\$0.178	\$0.178	\$0.178
	Su	ibtotal Buil	ding I	Demolition	Costs			\$12,994	\$4,806	\$12,816	\$3,560	\$2,937	\$1,121	\$0	\$0
В.	Co	oncrete Flo	or												
		Area of Co	oncret	e Floor (ft	2)			5400	2100	6000	0	800	180	1256	7854
		Demolitio	n Unit	Cost per V	WDEQ Guidel	ine No.12,A	pp.K (\$/ft <sup>2</sup> )	\$3.40	\$3.40	\$3.40	\$3.40	\$3.40	\$3.40	\$3.40	\$3.40
		Unit Cost	in \$/ft	<sup>2</sup> (July 199	98 dollars w/o	escalator)		\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95	\$2.95
	Su	ibtotal Con	crete l	Floor Dem	olition Costs			\$15,951	\$6,203	\$17,724	\$0	\$2,363	\$532	\$3,710	\$23,200
С.	Co	oncrete Foo	ting												
		Length of	Conci	ete Footin	g (ft)			300	200	340	0	120	54	0	0
		Demolitio	1 Uni	Cost per V	WDEQ Guide.	No.12,App.	K (\$/lin. ft)	\$11.45	\$11.45	\$11.45	\$11.45	\$11.45	\$11.45	\$11.45	\$11.45
		Unit Cost	in \$/li	n. ft (July	1998 dollars w	/o escalator)		\$9.95	\$9.95	\$9.95	\$9.95	\$9.95	\$9.95	\$9.95	\$9.95
	Su	ibtotal Con	crete l	Footing De	molition Costs	3		\$2,984	\$1,990	\$3,382	\$0	\$1,194	\$537	\$0	\$0
Sul	btota	al Demoliti	on Co	sts per Bui	lding			\$31,929	\$12,999	\$33,922	\$3,560	\$6,494	\$2,190	\$3,710	\$23,200
То	tal I	Demolition	Cost	8											
III. Dis	spos	sal Costs													
A.	Bu	uilding													
	Vc	olume of B	ildin	g (cy)				2704	1000	2667	741	611	233	0	0
	1.	On-Site													
		Assum	ption	3:											
		C	n-site	disposal c	ost of \$1.25/cy	y									
		Percer	tage (	%)				100	100	100	100	100	100	0	0
		Volum	e for	Disposal (o	cubic yards)			2704	1000	2667	741	611	233	0	0
		Dispos	al Un	it Cost (\$/d	cy)			\$1.25	\$1.25	\$1.25	\$1.25	\$1.25	\$1.25	\$1.25	\$1.25
		Subtotal C	n-Site	e Disposal	Costs			\$3,380	\$1,250	\$3,333	\$926	\$764	\$292	\$0	\$0
	2.	NRC-Lice	nsed l	Facility											
		Percer	tage (	%)	_			0	0	0	0	0	0	0	0
		Volum	e for	Disposal (1	ť)	L	-1	0	0	0	0	0	0	0	0
		Volum	e for	Disposal A	ssuming 10%	Void Space	(ft <sup>*</sup> )	0	0	0	0	0	0	0	0
		Transp	ortati	on and Dis	posal Unit Co	st (\$/ft ')		\$12.33	\$12.33	\$12.33	\$12.33	\$12.33	\$12.33	\$12.33	\$12.33
	_	Subtotal N	RC-L	icensed Fa	cility Disposa	I Costs		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Su	ibtotal Buil	ting I	Disposal Co	osts			\$3,380	\$1,250	\$3,333	\$926	\$764	\$292	\$0	\$0
В.	Co	oncrete Flo	or	T1 (2)						(000					
1	1	Area of Co	oncret	e Floor (ft	)	1		5400	2100	6000	0	800	180	1256	7854

	Changehouse	Maintenance	Main	Office	Process/Fire	Potable	Potable Water	Central Plant
Building Demolition and Disposal	and Lab Bldg.	Building	Office	Trailers	Water Bldg.	Water Bldg.	Tank Slab	Tank Slabs
Average Thickness of Concrete Floor (ft)	0.5	0.5	0.5	0	0.5	0.5	1	1
Volume of Concrete Floor (ft <sup>3</sup> )	2700	1050	3000	0	400	90	1256	7854
Volume of Concrete Floor (cy)	100	39	111	0	15	3	47	291
1. On-Site								
Percentage (%)	100	100	100	0	100	100	100	100
Volume for Disposal (cy)	100	39	111	0	15	3	47	291
Disposal Unit Cost per WDEQ Guideline No.12, App.K (\$/cy)	\$4.69	\$4.69	\$4.69	\$4.69	\$4.69	\$4.69	\$4.69	\$4.69
Unit Cost in \$/cy (July 1998 dollars w/o escalator)	\$4.07	\$4.07	\$4.07	\$4.07	\$4.07	\$4.07	\$4.07	\$4.07
Subtotal On-Site Disposal Costs	\$407	\$158	\$453	\$0	\$60	\$14	\$190	\$1,185
2. NRC-Licensed Facility								
Assumptions:								
Additional \$2.00/ft <sup>2</sup> for segregation of concrete								
Percentage (%)	0	0	0	0	0	0	0	0
Volume for Disposal (ft <sup>3</sup> )	0	0	0	0	0	0	0	0
Segregation and Loading Unit Cost (\$/ft <sup>3</sup> )	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Transportation and Disposal Unit Cost (\$/ft 3)	\$12.33	\$12.33	\$12.33	\$12.33	\$12.33	\$12.33	\$12.33	\$12.33
Subtotal NRC-Licensed Facility Disposal Costs	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal Concrete Floor Disposal Costs	\$407	\$158	\$453	\$0	\$60	\$14	\$190	\$1,185
C. Concrete Footing								
Length of Concrete Footing (ft)	300	200	340	0	120	54	0	0
Average Depth of Concrete Footing (ft)	4	4	4	0	4	4	4	4
Average Width of Concrete Footing (ft)	1	1	1	0	1	1	1	1
Volume of Concrete Footing (ff <sup>*</sup> )	1200	800	1360	0	480	216	0	0
Volume of Concrete Footing (cy)	44	30	50	0	18	8	0	0
Disposal Unit Cost per WDEQ Guideline No.12, App.K (\$/cy)	\$4.69	\$4.69	\$4.69	\$4.69	\$4.69	\$4.69	\$4.69	\$4.69
Unit Cost in \$/cy (July 1998 dollars w/o escalator)	\$4.07	\$4.07	\$4.07	\$4.07	\$4.07	\$4.07	\$4.07	\$4.07
Subtotal Concrete Footing Disposal Costs	\$181	\$121	\$205	\$0	\$72	\$33	\$0	\$0
Subtotal Disposal Costs per Building	\$3,968	\$1,529	\$3,991	\$926	\$896	\$339	\$190	\$1,185
l otal Disposal Costs								
IV. Health and Safety Costs								
Radiation Safety Equipment RSO removed per item cost and generated	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
one lump sum cost! Estimated based on operating experience								
Total Health and Safety Costs								
SUBTOTAL BUILDING DEMOLITION AND DISPOSAL COSTS	\$35,897	\$14,528	\$37,913	\$4,486	\$7,390	\$2,529	\$3,900	\$24,385
TOTAL BUILDING DEMOLITION AND DISPOSAL COSTS								

Vellfield Buildings and Equipment Removal and Disposal	Mine Unit-A	Mine Unit-B	Mine Unit-C	Mine Unit-D	Mine Unit-E	Mine Unit-F	Mine Unit-H	Mine Unit-D Ext.	Mine Unit-I	Mine Unit-J	Mine Unit-JA
Wellfield Piping     Assumptions:     Number of Header Houses per Wellfield	5	18	20	4	15	43	10	3	6		2
Length of Piping per Header House (ft) Total Length of Piping (ft)	15000 75000	15000 270000	15000 300000	15000	15000 225000	15000 645000	15000 150000	15000 45000	15000 90000	12500 87500	15000 30000
A. Removal and Loading Wellfield Piping Removal Unit Cost (5/th of pipe) Subtotal Wellfield Piping Removal and Loading Costs	\$0.42 \$31,500	\$0.42 \$113,400	\$0.42 \$126,000	\$0.42 \$25,200	\$0.42 \$94,500	\$0.42 \$270,900	\$0.42 \$63,000	\$0.42 \$18,900	\$0.42 \$37,800	\$0.42 \$36,750	\$0.42 \$12,600
B. Transport and Disposal Costs (NRC-Licensed Facility)     Average Diameter of Piping (inches)     EDimed Volvma Reducting (0790)	2	2	2	2	2	2	2	2	2	2	2
Chipped Volume per Wellfield (ft <sup>*</sup> ) Volume for Disposal Assuming 10% Void Space (ft <sup>*</sup> )	375	1350	1500	300	1125	3225	750	225	450	437.5	150
Transportation and Disposal Unit Cost (S'R') Subtoal Welffield Piping Transport and Disposal Costs Welffield Piping Cost on Welffield	\$12.33 \$5,092 \$36.502	\$12.33 \$18,310 \$131,710	\$12.33 \$20,345 \$146.345	\$12.33 \$4,069 \$29.260	\$12.33 \$15,265 \$100.765	\$12.33 \$43,747 \$314,647	\$12.33 \$10,172 \$73,173	\$12.33 \$3,058 \$31.059	\$12.33 \$6,103 \$43.903	\$12.33 \$5,931 \$42.681	\$12,33 \$2,034 \$14,634
C Carpito Costs	\$50,000	3151,710	3140,24	327,207	3107,703	3714,047	373,172	321,770	345,765		313,024
BFI Containers (2@57,500.00 each) (Operator Owned) Total Wellfield Piping Costs	\$15,600 \$1,014,676	-									
I. Well Pumps and Tubing Assumptions: But any output included under around water rationation labor ports But and tubing removal water around water rationation labor ports But any output and tubing and tubing removal water rationation labor ports But any output and tubing and tubing removal water rationation labor ports But any output any output and tubing any output any											
Funn and uning remova costs includes under product water resonantin and costs     [60% of production/injection wells contain pumps and/or tubing     A. Pump and Tubing Transportation and Disposal											
Number of Production Wells Number of Injection Wells I Pounder of Injection Wells I Pounder Volume	27	141 319	190 343	43	119 212	459 873	154 316	30 67	125 236	122 234	40
Number of Production Wells with Pumps           Average Pump Volume (R <sup>1</sup> )	16	85 1	114	26 1	71	275	92 1	18 1	75 1	73	24
Pump Volume per Wellfield (ff') 2 Tubing Volume I Accumption:	16	85	114	26	71	275	92	18	75	73	24
Average tubing length/wellfield based on average well depth minus 25 ft Number of Production Wells with Tubing	16	85	114	26	71	275	92	18	75	73	24
Number of Injection Wells with Tubing Average Tubing Length per Well (ft) Tubing Length eer Wellfield (ft)	30 475 21850	191 425 117300	206 525 168000	44 575 40250	127 525 103950	524 625 499375	190 475 133950	40 575 33350	142 625 135625	140 515 109695	48 515 37080
Diameter of Production Well Fiberglass Tubing (inches) Diameter of Injection Well HDPE Tubing (inches)	2	2	2	2	2	2	2 1.25	2	2	2	2
Chipped Volume Reduction (ft /ft)   Chipped Volume per Wellfield (ft /   Volume of Pump and Tubing (ft /)	0.005 109 125	0.005 587 672	0.005 840 954	0.005 201 227	0.005 520 591	0.005 2497 2772	0.005 670 762	0.005 167 185	0.005 678 753	0.005 548 621	0.005 185 209
Volume for Disposal Assuming 10% Void Space (ft <sup>2</sup> ) Transportation and Disposal Unit Cost (\$7ft <sup>3</sup> )	138 \$12.33	739 \$12.33	1045 \$12.33	250 \$12.33	650 \$12.33	3049 \$12.33	838 \$12.33	204 \$12.33	828 \$12.33	683 \$12.33	230 \$12.33
Sustoial Pump and Tutung Transport and Disposal Costs Pump and Tubing Costs per Wellfield Total Pume and Tubing Costs	\$1,702 \$1,702 \$106,754	\$9,112 \$9,112	\$12,934 \$12,934	\$3,083	\$8,015	\$37,594	\$10,333	\$2,515 \$2,515	\$10,209	58,421	\$2,836
II. Buried Trunkline Assumptions:	A/B-Wellfields			D/E-Wellfield							
A/B-Wellfields use the same trunkline D/E-Wellfields use the same trunkline		-									
A. Removal and Loading Main Pipeline Removal Unit Cost (\$/ft of trench)	\$0.84	-	\$0.84	\$0.84		\$0.84	\$0.84	\$0.84	\$0.84	\$0.84	\$0.84
Subtotal Trunkline Removal and Loading Costs B. Transport and Disposal Costs (NRC-Licensed Facility) Costs (NRC-Licensed Facility)	\$5,460		\$4,956	\$10,080		\$9,828	\$11,088	\$4,620	\$9,030	\$2,100	\$0
Piping Length (ft) Chipped Volume Reduction (ft /ft)	6500 0.022	-	5900	12000		11700	13200	5500 0.022	10750	0	0.022
Chipped Volume (R*) 2. [6* HDPE Trunkline	143		129.8	264		257.4	290.4	121	236.5	0	0
Chipped Volume Reduction (B //B) Chipped Volume (B <sup>4</sup> )	0.078		0.078	0.078		0.078	0.078	0.078	0.078	0.078	0.078
3 10° HDPE Trankline Piping Length (ft)	13000		0	0		0	0	0	750	2000	0
Chipped Volume (ft <sup>2</sup> ) Chipped Volume (ft <sup>2</sup> ) 4. [12] HDPE Trunkline	3601	-	0.277	0.2//		0.277	0.2//	0.277	207.75	554	0.277
Piping Length (ft) Chipped Volume Reduction (ft <sup>1</sup> /ft)	0.293		11800 0.293	24000 0.293		0.293	0.293	0.293	0.293	2000 0.293	0.293
S. 14* HDPE Trankline Figure 2.14* HDPE	0		5457.4	0032		23400	26400	0	8500		0
Chipped Volume Reduction (ft <sup>-/</sup> /ft) Chipped Volume (ft <sup>-/</sup> )	0.359		0.359	0.359		0.359 8400.6	0.359 9477.6	0.359	0.359 3051.5	0.359	0.359
Piping Length (ft)     Chipped Volume Reduction (ft //ft)	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47
Chipped Volume (R <sup>1</sup> )      Total Trankline Chipped Volume (R <sup>1</sup> )      Notes for Diversel According (R <sup>1</sup> )      Notes for Diversel According (R <sup>1</sup> )	0 3744 4119	0	0 3587.2 2046	0 7296	0	0 8658 9524	0 9768 10745	0 979	0 3729.75 4103	0	0
Transportation and Disposal Units (Cot (SW)) Subtoul Transport and Disposal Units (Cot (SW))	\$12.33 \$50,775		\$12.33 \$48,654	\$12.33 \$98,961		\$12.33 \$117,431	\$12.33 \$132,486	\$12.33 \$13,279	\$12.33 \$50,590	\$12.33 \$15,462	\$12.33 \$0
Trunkline Decommissioning Costs per Welffield Total Trunkline Decommissioning Costs	\$56,235 \$584,800		\$53,610	\$109,041		\$127,259	\$143,574	\$17,899	\$59,620	\$17,562	\$0
V. Well Houses Total Quantity Avenase Well House Volume (ff)	90 1.86	490	552	117	331	1347	470	97	361	213	72
A. Removal Total Volume (R')	167.4	911.4	1026.72	217.62	615.66	2505.42	874.2	180.42	671.46	396.18	133.92
Demolition Unit Cost per WDEQ Guideline No. 12 App. K (Sil') Subtotal Well House Demolition Costs B. Survey and Decontamination	\$0.171 \$29	\$0.171 \$156	\$0.171 \$176	\$0.171	\$0.171 \$105	\$0.171 \$428	\$0.171 \$149	\$0.171 \$31	\$0.171 \$115	\$0.171 \$68	\$0.171 \$23
Assumptions: Cost per Well House	\$3.97	\$3.97	\$3.97	\$3.97	\$3.97	\$3.97	\$3.97	\$3.97	\$3.97	\$3.97	\$3.97
Suboul Survey and Deconumnation Costs C. Disposal Total Volume (cy)	\$337	31,943	32,192	3465	23	33,348	31,800	3383	31,433	15	5
Volume for Disposal Assuming 10% Void Space (cy) Transportation and Disposal Unit Cost (S/R)	7 \$12.33	37 \$12.33	42	9 \$12.33	25 \$12.33	102 \$12.33	36 \$12.33	7 \$12.33	27 \$12.33	16 \$12.33	5 \$12.33
Well House Removal and Disposal Costs per Wellfield Total Well House Removal and Disposal Costs per	\$472 \$21,613	\$2,557	\$2,886	\$613	\$1,727	\$7,034	\$2,459	\$502	\$1,881	\$1,111	\$371
T. Header Houses	5	18	20	4	15	43	10	3	6	9	2
Average Header House Volume (ff) A. Removal Total Volume (ff)	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5
Demolition Unit Cost per WDEQ Guideline No.12 App.K (\$10') Subtoal Building Demolition Costs	\$0.178 \$11	\$0.178 \$40	\$0.178 \$45	\$0.178 \$9	\$0.178	\$0.178 \$96	\$0.178 \$22	\$0.178 \$7	\$0.178 \$13	\$0.178	\$0.178 \$4
B. [Survey and Decontamination Assumptions:	6317	\$117	\$217	\$117	\$115	\$21.7	\$117	\$317	\$317	6117	\$217
Subtoal Survey and Decontamination Costs C. Disposal	\$1,558	\$5,610	\$6,233	\$1,247	\$4,675	\$13,401	\$3,116	\$935	\$1,870	\$2,805	\$623
Total Volume (cy) Volume for Disposal Assuming 10% Void Space (cy) Disposal Unit Coat ner WDEO Guideline No.12 Ann K (Key)	3	8 9 \$6.10	9 10 5/6 10	2	7 8 5(- 30	20 22 \$6 10	5 5 \$4 20	2	3 \$6.10	4 5 \$4.30	1
Subtotal On-Site Disposal Costs Header House Removal and Disposal Costs per Wellfield	\$19 \$1,588	\$58 \$5,708	\$64 \$6,341	\$13 \$1,269	\$51 \$4,759	\$141 \$13,637	\$32 \$3,170	\$13 \$954	\$1,903 \$1,903	\$32 \$2,857	56 \$634
Total Header House Removal and Disposal Costs	\$42,821										
OTAL RENIGVAL AND DISPUSAL COSIS PER WELLFIELD TOTAL WELLFIELD BUILDINGS AND EQUIPMENT REMOVAL AND DISPOSAL COSTS	\$96,590	\$149,087	\$222,116	\$143,275	\$124,267	\$200,171	\$232,708	\$43,829	\$117,515	\$72,632	\$18,474

								Mine Unit-D			
Well Abandonment	Mine Unit-A	Mine Unit-B	Mine Unit-C	Mine Unit-D	Mine Unit-E	Mine Unit-F	Mine Unit-H	Ext.	Mine Unit-I	Mine Unit-J	Mine Unit-JA
I. Well Abandonment (Wellfields)											
# of Production Wells	0	141	190	43	119	459	154	30	125	120	40
# of Injection Wells	0	319	343	74	212	873	316	67	236	240	80
# of Monitoring Wells	0	67	78	38	86	134	81	20	39	41	10
#of Restoration Wells	0	30	19	0	0	15	0	0	0	0	0
Total Number of Wells	0	557	630	155	417	1481	551	117	400	401	130
Average Diameter of Casing (inches)	5	5	5	5	5	5	5	5	5	5	4.5
Average Depth (ft)	500	450	550	600	550	650	500	600	650	540	500
Well Abandonment Unit Cost (\$/well)	\$339	\$333	\$344	\$349	\$344	\$355	\$339	\$349	\$355	\$344	\$339
Subtotal Abandonment Cost per Wellfield	\$0	\$185,687	\$216,701	\$54,137	\$143,435	\$525,118	\$186,607	\$40,865	\$141,828	\$137,932	\$44,027
Total Wellfield Abandonment Costs	\$1,676,337										
II Waste Disposal Well Abandonment	Morton No 1-20	Vollman No 33-27	(Construction not	anticinated)							
A Well Phoging		· • • • • • • • • • • • • • • • • • • •	(construction not	untresputed)							
Drill Rig Operation (\$/hr)	150	0									
Number of Hours	31	0									
Drill Rig Operating Costs	\$4.650	\$0									
Cementing Costs	\$7,500	\$0									
Equipment Transport Costs	\$1,000	\$0									
Well Cap Welding Costs	\$1.000	\$0									
Brine Makeup and Injection Costs	\$1,500	\$0									
Subtotal Well Plugging Costs per Well	\$15,650	\$0									
B. Pump Dismantling and Decontamination											
Number of Persons	2	0									
Number of Pumps	2	0									
Pumps/Day	0.5	0									
Number of Days	4	0									
\$/Day/Person	\$136	\$0									
Subtotal Dismantling and Decon Costs per Well	\$1,091	\$0									
C. Tubing String Disposal (NRC-Licensed Facility)											
Length of Tubing String (ft)	9000	0									
Diameter of Tubing String (inches)	2.875	0									
Volume of Tubing String (ft)	406	0									
Transportation and Disposal Unit Cost (\$/ff)	\$12.33	\$0.00									
Subtotal Tubing String Disposal Costs per Well	\$5,000	\$0									
Subtotal Waste Disposal Well Abandonment Costs per Well	\$21,741	\$0								-	
Total Waste Disposal Well Abandonment Costs	\$21,741										
TOTAL WELL ADANDONMENT COSTS	61 (00 050										
101AL WELL ABANDONMENT COSTS	\$1,698,078										
	1										

												Mine Unit-D				
Wellf	ïeld a	and Satellite Surface Reclamation	on			Mine Unit-A/B	Mine Unit-C	Mine Unit-D	Mine Unit-E	Mine Unit-F	Mine Unit-H	Ext.	Mine Unit-I	Mine Unit-J	Mine Unit-JA	
T	Wol	lifield Battorn Area Baslamatia														-
1.	we	Pattern Area (acres)				20	31	6.5	23	77	26	5	21	28	(	<u>,                                     </u>
		Disking/Seeding Unit Cost (\$/20	<b>7</b> 0)			\$280	\$280	\$280	\$280	\$280	\$280	\$280	\$280	\$280	\$280	<u> </u>
	Sub	total Pattern Area Reclamation C	oste per We	lfield		\$200	\$280	\$1,820	\$6.440	\$21.560	\$7.280	\$1.400	\$5,880	\$7.840	\$280	1
	Tot	al Wellfield Pattern Area Recla	mation Cos	ts		\$66,500	\$8,080	\$1,820	30,440	\$21,500	\$7,280	\$1,400	\$5,880	\$7,840		1
	100		ination Cos			\$00,500										+
II.	Wel	llfield Road Reclamation														
	А.	Road Construction Before Janua	ry 1, 1997													_
		Length of Wellfield Roads (1	000 ft)			12.2	11.3	2.4	13.3	15	0	0	0	0	0	1
		Wellfield Road Reclamation	Unit Cost (\$	/1000 ft)		\$828	\$828	\$828	\$828	\$828	\$828	\$828	\$828	\$828	\$828	·
		Subtotal Pre-1997 Wellfield Roa	id Reclamati	on Costs		\$10,102	\$9,356	\$1,987	\$11,012	\$12,420	\$0	\$0	\$0	\$0	\$0	1
	B.	Road Construction After January	/ 1, 1997													_
		Length of Wellfield Roads (1	000 ft)			0.6	0	0	0	3	15.7	5	5	5	1	
		Wellfield Road Reclamation	Unit Cost (\$	/1000 ft)		\$426	\$426	\$426	\$426	\$426	\$426	\$426	\$426	\$426	\$426	1
		Subtotal Post-1997 Wellfield Ro	ad Reclamat	ion Costs		\$256	\$0	\$0	\$0	\$1,278	\$6,688	\$2,130	\$2,130	\$2,130	\$426	1
	Sub	total Road Reclamation Costs per	r Wellfield			\$10,358	\$9,356	\$1,987	\$11,012	\$13,698	\$6,688	\$2,130	\$2,130	\$2,130	\$426	1
	Tot	al Wellfield Road Reclamation	Costs			\$59,915										_
SUB	OTA	L SURFACE RECLAMATION	COSTS PEI	<b>WELLFIE</b>	LD	\$15 958	\$18.036	\$3 807	\$17 452	\$35 258	\$13.968	\$3 530	\$8.010	\$9 970	\$426	;
TOT	AL W	VELLFIELD SURFACE RECL	AMATION	COSTS	T	\$126,415	010,000	40,007	,					*/,//*		+
	1															1
III.	Sate	ellite Area Reclamation				Satellite No.1	Satellite No.2	Satellite No.3								_
		Assumptions:				-										_
		Area of Disturbance (acres)	1(0)			1	1	1								_
		Average Depth of Stripped T	opsoil (ft)			I	0.67	0.67								_
		Surface Grade: Level Ground	1			1000										_
		Average Length of Topsoil H	laul (ft)			1000	500	500								_
		A. Ripping Overburden with Do	zer	1° N. 10	A 11 (0) \	#014.00	0014.00	6014.00								
		Ripping Unit Cost per W	DEQ Guide	line No.12, .	App.11 (\$/acre)	\$814.22	\$814.22	\$814.22								_
		Subtotal Ripping Costs				\$814.00	\$814.00	\$814								_
		B. Topsoil Application with Scr	aper			1(12	1001	1001								+-
		Application Unit Cost no	WDEO C	sidalina No	12 Ann C (\$/m)	1013	1081	1081								+
		Subtatal Tangail Application	Costs	indenne No.	12, App.C (\$/cy)	\$0.71	\$0.71	\$0.71								+
		C Dissing and Sanding	Cosis			\$1,143	\$/0/	\$/0/								+
		C. Discing and Seeding	act (\$/aara)			\$0	\$280	\$280								+
		Subtatal Disaing/Saading Ca	ost (s/acte)			50	\$280	\$280								+
		Subtotal Surface Reclamation Co	sis nete nor Sato	llite		\$1 050	\$280	\$280								+
	Tot	al Satallita Building Area Baala	motion Cor	te		\$1,939	\$1,001	\$1,001								+
	100	ai Satenite Dununig Area Keela	mation Cos			\$3,001									<u> </u>	+
IV	S	face Reclamation				+									<u> </u>	+
1.4	Sur. ∆	Removal and disposal of contam	inated soil a	round walls											<u> </u>	+
	<b>n</b> .	Volume of contaminated soil	(0 37 vd2 ~	er injection	and production well - estimate)	100	107	42	122	402	174	26	124	120	A/	1
		Disposal of contaminated soil	$1(\frac{1}{\sqrt{2}})$	s ner Bynrod	high production wen - estimate)	\$12.33	\$12.33	\$12.22	\$12.23	\$12.33	\$12.33	\$12.33	\$12.33	\$12.32	\$12.33	; <del>†</del>
		Equipment (Backhoe \$65/br)	. (#/yd <i>3)</i> (A:	, per Byprou	and material contract)	\$6 457 43	\$6 409 33	\$1 406 93	\$3 980 28	\$16 017 30	\$5 651 75	\$1 166 43	\$4 341 03	\$4 304 95	\$1 443 00	,t
		Labor (1 man-hour (\$17 br) r	her 2 Yd3 - 4	stimate)	1	\$1 688 97	\$1,676.20	\$367.07	\$1,041,00	\$4 189 14	\$1 478 15	\$305.07	\$1 135 35	\$1 125 01	\$377 40	,t-
		Subtotal removal and disposal of	f contaminat	ed soil	1	\$ 158.67	8 007 0/	1 787 22	5 033 60	20 218 77	7 142 23	1 483 82	5 488 70	5 443 10	1 832 73	; <del>†</del>
	+	Subional removal and aisposal of	, contaminat	cu son	Total	64 686 92	0,077.94	1,707.22	5,055.00	20,210.//	7,172.23	1,705.02	5,400.70	5,775.19	1,052.75	+
	B	Recontour and seeding			10001	04,000.82									<u> </u>	+
	D.	Recontour and seeding (set §	(280/acre)		1	\$280.00	\$280.00	\$280.00	\$280.00	\$280.00	\$280.00	\$280.00	\$280.00	\$280.00	\$280.00	, <del> </del> _
-	+	Subtotal Recontour and Seeding	200/acre)			±200.00	\$20.00 \$280	1820	6440	21560	7280	1/100	5880	7840	\$200.00	t -
	+	Subjour Accontour and Security			Total	66500	3080	1820	0440	21500	7280	1400	5880	/840	0	+
	+			Total Surfa	ce Reclamation	131 186 92									<u> </u>	+
	+			1 otal oulla		151,100.82									<u> </u>	+
тот	AT 33	VELLEIELD AND SATELLIT	E SUREAC	F RECLAN	IATION COSTS	\$763 792									<u> </u>	+
101		ELETIELD AND SATELEIT	L SURFAC	E RECLAN		\$205,205										+
	1		1	1	1	1	1		1		1 1				1	1

Misco	ellar	ieo	us Reclamation				
I.	CP	F/O	effice Area Reclamation				
		As	sumptions				
			Concrete, asphalt, and building material used to backfill low areas				
			No topsoil salvaged or applied (area is pre-law)				
	Α	Rit	CPF/Office area = 10 acres				
	11.	Кц	Assumptions				
			Average haul distance (ft)	500			
			Surface grade (%)	0%			
			Average Thickness of Asphalt (ft)	0.5			
			Rinning Unit Cost per WDEO Guideline No. 12 App L (\$/acre)	\$474.92			
			Volume of Asphalt (cy)	2743			
			Hauling Unit Cost per WDEQ Guideline No.12, App.C (\$/cy)	\$0.60			
		To	tal Asphalt Ripping and Hauling Cost	\$3,260			
	В.	B0 1	Trow Cover				
		1.	Assumptions				
			Surface area of borrow area (acres)	3			
			Six inches of topsoil removed and replaced at borrow area				
			Volume of topsoil (cy)	2420			
			Topsoil Removal/Replacement per WDEQ Guideline No.12, App.C (\$/cy)	\$1.12			
		2	Borrow Application	\$2,710			
			Assumptions				
			Final borrow cover depth will range from 0 to 4 ft, average = 1 ft				
			Average haul distance = 1000 ft				
			Surface grade (%)	0%			
			Borrow Cover Unit Cost per WDEO Guideline No 12 App C (\$/cy)	\$0.70			
			Total Borrow Application Cost	\$11,293			
		To	tal Borrow Cover Cost	\$14,003			
	C.	Dis	scing/Seeding				
			Assumptions Includes disaine/seeding of homey area (2 agree)				
			Surface Area (acres)	13			
			Discing/Seeding Unit Cost (\$/acre)	\$280			
		То	tal Discing/Seeding Costs	\$3,640			
	Tot	al (	CPF/Office Area Reclamation	\$20,903			
II.	Acc	ess	Road Reclamation	<b>CPF/Office</b> Area	Sat No. 1	Sat No. 3	<b>Connecting Road</b>
	A.	As	sumptions				
			CPF/Office Area Road is pre-law (no topsoil applied)	50/	00/	09/	00/
		Le	noth of road (miles)	2.5	0%	1	2
		Av	erage road width (ft)	25	30	30	30
	B.	Rip	pping and Hauling Asphalt				
			Assumptions				
			Average haul distance (miles)	1.25	0	0	0
			Asphalt Surface Area (acres)	7.6	0.0	0.0	0.0
			Ripping Unit Cost per WDEQ Guideline No.12, App.I (\$/acre)	\$474.92	\$474.92	\$474.92	\$474.92
			Volume of Asphalt (cy)	6111	0	0	0
		0.1	Hauling Unit Cost per WDEQ Guideline No.12, App.C (\$/cy)	\$1.91	\$1.91	\$1.91	\$1.91
	B	Su	btotal Asphalt Ripping and Hauling Costs	\$15,270	\$0	\$0	\$0
	D.	01	Assumptions				
			Average haul distance (ft)	0	1000	1000	1000
			Gravel Road Base Width (ft)	0	14	14	14
			Gravel Road Base Area (acres)	0.0	5.1	1.7	3.4
		_	Average Road Base Depin (II)       Volume of Road Base (cv)	0	0.5	0.5	0.5
		_	Removal Unit Cost per WDEO Guideline No.12, App.C (\$/cv)	\$0.87	\$0.87	\$0.87	\$0.87
		Su	btotal Gravel Road Base Removal Costs	\$0	\$3,573	\$1,191	\$2,382
	C.	Rip	oping Overburden with Dozer				
			Overburden Surface Area (acres)	0.0	10.9	3.6	7.3
		Sul	htotal Rinning Overburden Costs	\$814.22	\$814.22 \$8.882	\$814.22	\$814.22
	D.	To	psoil Application	50	\$0,082	\$2,701	\$5,922
			Assumptions				
	_		Average haul distance (ft)	0	5000	1500	1500

Misc	ellan	eous	s Reclamation								
		Т	opsoil Surface	Area (ft <sup>2</sup> )				0	475200	158400	316800
			Pepth of Topsoil	1 (ft)				0	0.5	0.5	0.5
			onume of Tops	oil (cy)	Constants	No 12	nn C (\$/ay)	0	8800	2933	5867
		1 Subt	opson Onit Cos	nlication C	losts	ne 1NO.12, 1	spp.c (ø/cy)	\$0.71	\$0.71	\$2.083	\$0.71 \$4.165
	E.	Disc	ing/Seeding	runon C				50	φ0,240	ψ2,003	φτ,105
	-	A	ssumptions	1							
		S	urface Area (ac	res)				7.6	10.9	3.6	7.3
		D	Discing/Seeding	Unit Cost	(\$/acre)			\$280	\$280	\$280	\$280
		Subt	otal Discing/Se	eding Cost	s			\$2,121	\$3,055	\$1,018	\$2,036
	Sub	otal	Reclamation Co	osts per Ac	Cess Road			\$17,391	\$21,758	\$7,253	\$14,505
	101	II AC	cess Roau Rec	lamation				\$00,907			
								SAT2 to SAT1	SAT3 to SAT2	H-WF Rest.	
III.	Was	itewa	ater Pipeline R	eclamation	n			ww Pipeline	PSK	Bypass	
	A.	I	ength of HDPF	Pine Tren	ch (ft)			24000	22000	2200	
		N	Iain Pipeline Ro	emoval Un	it Cost (\$/f	t of trench		\$0.42	\$0.42	\$0.42	
		Subt	otal Pipeline Re	emoval Cos	sts			\$10,080	\$9,240	\$924	
	B.	Pipe	line Transportat	tion and Di	sposal (NR	C-License	d Facility)				
		Р	ipe Diameter (i	nches)	L ,			3	4	3	
		C	hipped Volume	e Reduction	n (fť/ft)	(63)		0.022	0.032	0.022	
		S	uptotal Volume	e of Shredd	ed PVC Pij	$\frac{pe(tt)}{(t)(t)^3}$		528	7/04	48.4	
	_	1 Subt	tansportation a	ind Disposa	u Unit Cost	. (\$/IL)		\$12.33	\$12.33	\$12.33	
	C.	Disc	ing/Seeding	isposar COS				\$0,510	\$0,08U	\$397	
		A	ssumptions:								
			Width of Pip	eline Tren	ch (ft)			10	10	8	
			Area of Pipe	line Trencl	h (acres)			5.5	5.1	0.4	
		D	Discing/Seeding	Unit Cost	(\$/acre)			\$280	\$280	\$280	
	0.1	Subt	otal Discing/Se	eding Cost	S I			\$1,543	\$1,414	\$113	
	Sub Tot	otal	Acciamation Co	osts per Pip	mation Co	ete		\$18,155	\$19,334	\$1,034	
	100		astewater i ipe			313		\$55,101			
IV.	Rad	ium	Settling Basin	Reclamat	ion			E. Radium Pond	W. Radium Pond	l	
	A.	5011 N	Sampling and N	Samples				10	10		
		\$	/Sample	Jumpies				\$50	\$50		
		Subt	otal Soil Sampl	ing and Mo	onitoring C	osts		\$500	\$500		
	C.	Grad	le and Contour								
			Volume of F	mbankmen	nt Material	(CY)		6,400	6,400		
			Average Gra	ide (%)				0	0		
			Material Mo	ving Unit (	Cost per W	DEO Guid	eline No. 12 Ann F. (\$/cv)	\$0.092	\$0.092		
		S	ubtotal Grade a	nd Contou	r Costs		(\$, cy)	\$589	\$589		
	C.	Tops	soil Application								
		A	ssumptions:								
			Area of surfa	ace disturba	ance (ft <sup>2</sup> )			37500	37500		
		-	Average thic	kness of to	psoil (ft)			1	1		
		+	Average hau	ll distance (	π)			2000	2000		
		v	olume of Tope	oil (cv)				1 380	1 389		
		T	opsoil Unit Cos	st per WDF	EQ Guideli	ne No.12	App.C (\$/cy)	\$0.71	\$0.71		
		Subt	otal Topsoil Ap	plication C	Costs	,.	/	\$986	\$986		
	D.	Disc	ing/Seeding								
		A	ssumptions:								
		-	Area of surfa	ace disturba	ance (acres	)		1	1		
		L Sub+	otal Discing/Seeding	Unit Cost	(\$/acre)			\$280	\$280		
	Sub	otal	Reclamation Co	osts per Ra	dium Pond			\$2.355	\$2.355		
	Tota	l Ra	dium Settling	Basin Rec	lamation (	Costs		\$4,710	÷,500		
v	Pur	re St	torage Reserve	ir Reclam	ation			PSR_1	PSP_2		
*.	A	se oi Soil	Sampling and A	Analysis Co	osts			\$3 000	\$3 000		
	B.	Leac	hate Collection	System Re	emoval Cos	sts		\$5,000	\$0		
	C.	Tops	soil/Subsoil App	olication							
		A	ssumptions:								
			Average hau	l distance (	(ft)			1000	150		
		τ	Surface grad	le(%)	(01)			0%	0%		
		T	onsoil/Subsoil	Unit Cost r	(cy) per WDFO	Guideline	No 12 App C (\$/ev)	\$3000	/4000 \$0.71		
		T	opsoil/Subsoil	Unit Cost r	ber WDEO	Guideline	No.12, App.E (\$/cv)	\$0.194	\$0.194		
		1	Unit Cost in	\$/cv (July	1998 dolla	rs w/o esca	lator)	\$0.17	\$0.17		

Mise	مالم	nears Reclamation			
wiisc	CIIAI	Subtotal Topsoil/Subsoil Application Costs per Reservoir	\$72.920	\$65.013	
	D.	Discing/Seeding	\$72,520	\$00,015	
		Surface Area (acres)	6	32	
		Discing/Seeding Unit Cost (\$/acre)	\$280	\$280	
		Subtotal Discing/Seeding Costs	\$1,680	\$8,960	
	Sub	ototal Reclamation Costs per Reservoir	\$82,600	\$76,973	
	Tot	al Purge Storage Reservoir Reclamation Costs	\$159,573		
VI.	Irri	igation Area Reclamation	Irrigator No. 1A	Irrigator No. 2	
	А.	Irrigation Equipment Removal Costs	\$2,000	\$2,000	
	B.	Plowing			
		Assumptions:			
		Plowing Unit Cost (\$/acre)	\$30	\$30	
		Irrigation Area (acres)	55	116	
		Number of Cultivations	2	2	
	0	Subtotal Plowing Costs	\$3,300	\$6,960	
	C.	Discing/Seeding	\$280	\$280	<u> </u>
		Subtotal Discing/Seeding Costs	\$280	\$280	
	Sub	station Costs per Irrigation Area	\$15,400	\$41 440	
	Tot	al Irrigation Area Reclamation Costs	\$62,140	φ11,110	<u> </u>
	_		+;		
VII.	Dri	lling Fluid Storage Cell Reclamation			<u> </u>
		Assumptions:			
	_	Each cell is 100 ft (width) by 100 ft (length) by 10 ft (depth)	2704		L
		Surface area disturbance associated with each cell (acres)	3/04		
		A verage haul distance (ff)	500		
		Surface grade (%)	0		
	A.	Topsoil/Subsoil Application			
		Topsoil/Subsoil Unit Cost per WDEQ Guideline No.12, App.C (\$/cy)	\$0.71		
		Topsoil/Subsoil Application Costs per Storage Cell	\$2,630		
	B.	Discing/Seeding			
		Discing/Seeding Unit Cost (\$/acre)	\$280		
		Subtotal Discing/Seeding Costs	\$280		
	Sub	ototal Reclamation Costs per Storage Cell	\$2,910		
	Tot	al Number of Storage Cells	5		
	lot	al Drilling Fluid Storage Cell Reclamation Costs	\$14,550		<u> </u>
VIII.	Rev	vegetation of Exxon Reclaimed Lands			
		Assumptions:			
		Reseeding potential areas of erosion (\$/acre)	\$280		
	an c	Surface Area (acres)	217		
	Tot	al Exxon Reclaimed Lands Revegetation Costs	\$60,760		
IX.	Pot	ential Mitigation Plan For Irrigator No.1A (Requested by WDEQ-LQD)			
		Assumptions:			
		Harvesting grass for 2 years will further reduce Se levels in vegetation.			<u> </u>
		Harvest grass for 2 years (a) \$2000/year.	\$4,000		
		Analyze Se in grass for 2 years (0)\$105/sample X 4 samples X 2 yrs.	\$1,320		
		Analyze be in soli 101.2 years $(y,y)$ /4/sample A 28 samples A 2 yrs.	\$9,744		<u> </u>
		If desired nlow disk and reseed area with alfalfa @ cost of \$4400	\$0,000		
	Tot	al Potential Mitigation Plan Costs- Call \$30.000	\$30.000		
<b>N</b> 7	D (		\$20,000		
х.	Pot	ential Mitigation Plan For Irrigator No.2 (Requested by WDEQ-LQD)			
		Assumptions. Harvesting grass for 2 years will further reduce Se levels in vegetation			
		Harvest grass for 2 years @ \$4000/year	\$8,000		
		Analyze Se in grass for 2 years @\$165/sample X 4 samples X 2 yrs	\$1,320		
		Analyze Se in soil for 2 years @\$174/sample X 32 samples X 2 yrs.	\$11,136		
		Add 1 ft. of Se free water to 116 acre irrigation area @ cost of \$12000.	\$12,000		
		If desired, plow, disk and reseed area with alfalfa @ cost of \$8800.	\$8,800		 
	Tot	al Potential Mitigation Plan Costs- Call \$42,000	\$42,000		 
XI	Pot	ential Mitigation Plan for Shallow Well Casing Leak Investigation			 
	1.00	Assumptions:			
		Investigation and potential mitigation plan as of June 2002.			
		Assume cost of \$250,000.			 
	Tot	al Preliminary Cost	\$250,000		 
TOT	A.T.		0744744		
		INTER THE ADDRESS BELL ADDRESS DATE IN CLASS	N/44 644		

#### CLAY LINER REMOVAL AND LOADING

Clay Liner Removal and Loading Cost				
Labor =	17 per hour			Based on current labor rates
Trackhoe =	\$ 1,125.00 per week or	\$ 28.13	per hour	All Inclusive, based on current rental rates
Belly Dump with Operator =	\$ 100.00 per hour			Based on current contractor pricing
Belly Dump Size =	20 cubic yards			
Disposal Rate =	40 yards/hour			Estimate based on experience
TOTAL REMOVAL AND LOADING	\$ 3.63 per cubic yard			

#### WELLFIELD BUILDING REMOVAL AND DEMO

Cost per W	Vell Head Cover		
	Env. Scanner =	17 per hour	Based on current labor rates
	Operator =	17 per hour	Based on current labor rates
	Total Wellhead Covers =	2300	
	HCI 35% Cost =	\$ 0.137 per pound	Based on current Univar costs for bulk HCI - April 2007
	Acid Usage Rate =	4.1 pounds per wellhead cover	Estimate based on experience
	Acid Unit Cost =	\$ 0.56 per wellhead cover	
	Total Labor Rate =	\$ 39.70 per hour	
	Cleaning Rate	 10 wellheads per hour	Estimate based on experience
	Survey / Decon.	\$ 3.97 per wellhead cover	
Cost per H	leader House		
	Env. Scanner =	17 per hour	Based on current labor rates
	Operator =	17 per hour	Based on current labor rates
	Number of Operators =	2	Based on experience
	HCI 35% Cost =	\$ 0.137 per pound	Based on current Univar costs for bulk HCI - April 2007
	Acid Usage Rate =	20 pounds per header house	Estimate
	Acid Unit Cost =	\$ 2.74 per header house	
	Total Labor Rate =	\$ 311.64 per hour	
	Cleaning Rate	1 header house per day	Estimate based on experience
	a (n		

ACID WASH								
Current acid cost is \$2	75/ ton or .13	75pe	r lb.					
Commercial Concentra	ated acid is 37	7%						
Assume a 10% wash s	olution the pr	ice of	f the wash s	olution is \$	.012 per gal	lon		
Assume that .25 gallor	of acid wash	n is us	ed per sq ft	. to clean w	alls.			
Assume that 1 gallon of	of acid wash is	s use	d per sq ft. t	o clean floo	ors.			
Using the square foota	ge supplied i	n the	bond the fo	llowing assu	umptions we	ere used to		
generate the cost per s	square ft mult	iplier.						
Using the CPP IX and	Plant square	foota	ges the ass	umption is a	as follows			
Acid Wash	(Walls)	1						
Labor	2	Men		Bond CPP	IX and CPF	<sup>2</sup> sq. footage	9	
Rate	\$17	hr.						
Lime March iff Danstal	20	8hr.	Days					
Man Lift Rental	\$8,900.00	Mon	in 🗌					
Labor Coat par ag ft	¢0.54							
	\$0.04							
Consumables	\$0.003 \$0.05							
Consumables	ψ0.00							
Total	\$0.59							
Total	φ0.00							
Acid Wash	(Floors)							
Labor	2	Men		Bond CPP	IX and CPF	sq. footage	Э	
Rate	\$17	hr.						
Time	15	8hr.	Days					
	<u> </u>							
Labor Cost per sq. ft.	\$0.15							
Acid	\$0.01							
Consumables	\$0.05							
Total	¢0.04							
TUIAI	\$U.21							
					1			

RADIUM TREATMENT		
Assumptions:		
<ol> <li>Based on actual 1998 operating costs from Satellite No. 2</li> </ol>	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

GROU	NDWA	TER	SV	VEEP (	GWS	)											
Assun	nption	s:															
1.	All pur	mps a	are	5 hp pu	impin	g a	t 5.0	gpm									
2.	Cost c	of elec	ctric	city from	ו Rec	urr	ing C	ost S	She	et							
3.	All wa	ter pı	Imp	oed is d	ispos	ed	at W	DW v	vith	n a 20 h	p pum	р					
4.	Repai	r and	ma	intenar	nce co	osta	s esti	mate	d a	t \$0.50/	/1000	ga	llo	ns, Opera	tor E	xperience	
5.	Proce	ss sa	mp	ling and	d ana	lysi	s cos	sts es	tim	ated at	\$0.03	8/10	000	0 gallons,	Ope	rator Exper	ience
6.	Labor	costs	ar	e not in	clude	d											
Wellfie	eld Pur	nping	g C	osts pe	er 100	00	Gallo	ons									
	1000	gal	x	5	hp	x	1	hr	x	0.746	kwh	x	\$	0.048	= \$	0.60	
				5	gpm	$\sim$	60	min	~	h	0			kwh	Ψ	0.00	
Pumpi	ing to V	WDW	Co	osts pe	r 100	0 0	Gallo	ns									
	1000	gal	x	75	hp	x	1	hr	x	0.746	kwh	x	\$	0.048	= \$	0 22	
				200	gpm		60	min		h	C			kwh	Ť		
L		<u> </u>							L								
Repair	r and N	lainte	ena	nce Co	osts p	per	1000	) Gal	lon	S					= \$	0.5	
		L			<u> </u>	L		<u> </u>							-		
Proces	ss San	npling	g ai	nd Ana	lysis	Co	osts	per 1	000	0 Gallo	ns				= \$	0.03	
															-		
ΤΟΤΑΙ		COS	TS	PER 1	000 (	GA	LLO	NS .							= \$	1.35	

REVER	RSE O	SMOS	SIS (RO	)						
				Í						
Assum	ption	s:								
1.	Cost	of elec	tricity fr	om	Recu	urring Cost	Sheet			
2.	75%	berme	ate/25%	6 re	eject s	plit				
3.	Memb	orane	life of 5	yea	ars wi	th a cost of	\$700	per memb	orane element	
4.	Incluc	les co	st of pu	mp	ing fro	om wellfield	to RC	) Unit		
5.	Proce	ess sar	npling a	and	analy	/sis costs e	stima	ted at \$0.0	03/1000 gallons - Operator Expe	rience
6.	Labor	<sup>·</sup> costs	are not	t ind	cludeo	t				
Revers	se Osr	nosis	Costs	per	· 1000	Gallons			Chemical Costs	
	Electr	icity					= \$	0.48		
	Cherr	nicals					= \$	\$0.13	Scale Inhibitor	\$2.00
	Memb	orane	Replace	eme	ent		= \$	\$0.06	Dose Rate	6.75
	Repa	ir and	Mainter	nan	ce		= \$	0.26	RO Flow	400
	Proce	ess Sa	mpling	anc	l Anal	ysis	= \$	0.03		
									lbs scale/1000gal	0.056330727
TOTAL	<u>- RO C</u>	OSTS	PER 1	00	0 GAI	LLONS	= \$	0.96		
									Cost per 1000 gal	\$0.11
									Cleaning Chemicals	0.02
									Total Chemical Cost	\$0.13
									Membrane Replacement	
									For 400gpm RO	400
									· · · · · ·	
									Number of membranes	96
									Cost per Membrane	\$600.00
									Years of Life	5
									Labor to Change Membrane	\$480.00
					<u> </u>					<u> </u>
									Cost per 1000 gai	\$0.06
					<u> </u>					
					<u> </u>					
					<u> </u>					



REVI	ERSE OSMOSIS (RO) pg 2				
	Electrical Costs				
	for 400gpm RO				
	Mine Unit				
	Charge Pumps				
	Mine Unit Feed	Motor HP	Motor Quantity	кW	
	Deen Disposal Charge Pump	3	40	89.52	
		50		74.6	
		60	1	14.76	
		60	1	44.70	
		00	Total Installed I/M	44.70	
				255.04	
			O a star sa blava	11 1100	
			Cost per Hour	11.4138	
			<u> </u>		
			Cost pre 1000gal	0.475575	
	<u> </u>				

CHEMICAL REDUCTANT       Image: Constraint of the second sec															
Assun	nptions	s:													
1.	Bioren	nediat	tior	n is utili	zed										
2.	Based	l on a	ctu	al ope	rating		osts d	luring	res	toration act	ivitie	s			
3.	Added	I the c	os	t of usi	ng ch	ee	se wł	ney							
ΤΟΤΑΙ		MICA	LR	EDUC	TAN	ГС	OST	S PEF	R K	gal				= \$	\$0.30

DEEP	WELL	INJE	СТ	ION													
Assun	nptions	S:															
1.	Pump	75 h	рр	umpi	ng at	45	gpn	1									
2.	Cost o	of elec	ctric	city =	\$0.03	/kv	vh										
3.	Repair	r and	ma	inten	ance	cos	sts b	ased on	av	erage ir	njectio	n١	/ol	ume of 8,0	,000	000 gallons	s per year
4.	Repair	r and	ma	inten	ance	cos	sts e	stimated	at	\$.50/10	000 ga	allo	ns				
5.	Chem	ical co	ost	s bas	ed on	av	era	ge injectio	on	volume	of 8,0	000	),0	00 gallons	per	year	
6.	Labor	costs	ar	e not	incluc	led											
	Vaste Disposal Pumping Costs per 1000 Gallons																
Waste	Dispo	sal P	um	ping	Cost	s p	er 1	000 Gal	lor	IS							
			^	45	gpm	~	60	min	~	hp	о С	^		kwh	-Ψ	0.00	
Repai	r and N	lainte	ena	nce (	Costs	pe	er 10	000 Gallo	ons	5					= \$	\$0.50	
Chem	ical Co	sts p	er	1000	Gallo	ns									= \$	2.73	
	Scale	Inhibi	tor				= \$	1.20									
	Corros	sion Ir	hil	oitor			= \$	1.16									
	Oxyge	en Sca	ave	nger			= \$	0.37									
ΤΟΤΑ		P WEI	LL	INJE	стю	N C	cos	TS PER	10	00 GAL	LONS	S			= \$	4.22	



					1	1							1
WELL	ABAN	DONI	VIENI										
Assum	ption	s:											
1	Typic	al 8 h	our wo	orki	ng c	lay							
2	Track	hoe fo	or 8.0 h	r/da	ay to	dig an	d recla	im pit					
3	Use h	iose re	eel for a	8 hr	/day	to pull	equip	ment fro	om well				
4	Use c	emen	ter for	8.0	hr/da	ay to pi	ump ce	ement/p	olug gel				
5	Use to	ow vel	hicle fo	r 8.	0 hr/	day to	tow ho	se reel	and ce	me	nter		
6	Labor	for ba	ackhoe	, hc	se r	eel, cer	menter	will rec	quire 3	wor	kers at 8.0 h	nr/day	
	Mater	ials in	clude 7	7.5 :	sack	s of ce	ment/1	00 ft ar	nd 1 sa	ck c	of plug gel/1	00 ft of 5" w	ell casing.
	Cost	of cerr	nent is	\$7.6	62 ai	nd plug	gel co	ost is \$6	6.45/sad	ck.			
	Ceme	ent cos	sts for 2	200	7 = (	GCC Da	akota (	Cement	t; Plug g	gel	costs for 20	07 = Caspe	r Well Produ
	Fixed	Costs	5										
	Track	hoe											
		8	hours	Х	\$	28.13	per ho	our		=\$	225.00		
	Hose	Reel/	Tow Ve	ehic	le								
		8	hours	Х	\$	45	per ho	our		=\$	360.00		
	Ceme	enter											
		8	hours	Х	\$	45	per ho	Sur		=\$	360.00		
	Tow \	/ehicle	Э										
		8	hours	Х	\$	45	per ho	Sur		=\$	360.00		
	Labor	•					·						
3	men=	24	man	Х	\$	17	per m	an		=\$	409.02		
			hours				hour						
			Total I	Fixe	d Co	osts pe	r 8.0 h	r/day		=\$	1714.02		
	Varia	ble Co	osts		(per	<sup>-</sup> 100 ft	of wel	depth)	)				
	Mater	ials											
		7.5	sack c	em	ent	Х	\$	7.62	per	=\$	57.15		
			per 10	)0 fe	et				sack				
			-										
		1	sack p	blug	gel	Х	\$	6.45	per ho	=\$	6.45		
			per 10	)0 fe	eet				plug				
		l				1	1						

WELL ABANDONMENT Page 2         Image: I						1							
VELL ABANDONMENT Page 2         Image 2 <thimage 2<="" th="">         Image 2         <thimage 2<="" <="" th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></thimage></thimage>													
Total materials Cost (per 100 ft of well depth)       \$ 63.60         Total number of wells completed per/day       6         6       6         6       6         6       6         6       6         6       6         6       6         6       6         6       6         6       6         6       6         6       6         6       6         6       6         6       6         6       6         6       6         6       6         6       6         7       7         7       7         7       7         7       7         7       7         7       6         7       6         7       7         7       7         7       5         7       5         7       5         8       360         8       7         8       6         8       6         8 <t< td=""><td>WELL</td><td>ABAN</td><td>IDONI</td><td>MENI</td><td>Pag</td><td>je 2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	WELL	ABAN	IDONI	MENI	Pag	je 2							
Total materials Cost (per 100 ft of well depth)       \$ 63.60         Total number of wells completed per/day       <         6       6         Cost per Well per Unit of Average Depth          Well Depth (ft)          Well Depth (ft)       =         Well Depth (ft)       =         Solo       =\$ 333         Solo       =\$ 344         Solo       =\$ 344         Solo       =\$ 344         Solo       =\$ 355         Solo       =\$ 366         Solo       =\$ 365         Solo       =\$ 376													
Total number of wells completed per/day       Image: Completed per/day       Image: Completed per/day         Cost per Well per Unit of Average Depth       Image: Completed per/day       Image: Completed per/day         Cost per Well per Unit of Average Depth       Image: Completed per/day       Image: Completed per/day         Image: Cost per Well per Unit of Average Depth       Image: Cost per Well per Unit of Average Depth       Image: Cost per Well per Unit of Average Depth         Image: Cost per Well per Unit of Average Depth       Image: Cost per Well per Unit of Average Depth       Image: Cost per Well per Unit of Average Depth       Image: Cost per Well per Unit of Average Depth         Image: Cost per Well per Unit of Average Depth       Image: Cost per Well per Unit of Average Depth       Image: Cost per Well per Unit of Average Depth       Image: Cost per Well per Unit of Average Depth       Image: Cost per Well per Unit of Average Depth       Image: Cost per Well per Unit of Average Depth       Image: Cost per Well per Unit of Average Depth       Image: Cost per Well per Unit of Average Depth       Image: Cost per Well per Unit of Average Depth       Image: Cost per Well per Unit of Average Depth       Image: Cost per Well per Unit of Average Depth       Image: Cost per Well per Vision Depth of Average Depth       Image: Cost per Vision Depth of Average Depth of Average Depth       Image: Cost per Vision Depth of Average Depth o		Total	mate	rials C	ost	(per	r 100 ft	of we	ell dept	h)	\$	63.60	
6       6		Total	numbe	er of w	ells	com	pleted	per/da	ay				
Cost per Well per Unit of Average Depth       Image: Cost per Well per Unit of Average Depth       Image: Cost per Well per Unit of Average Depth         Image: Cost per Well per Unit of Average Depth       Image: Cost per Well per Unit of Average Depth       Image: Cost per Well per Unit of Average Depth       Image: Cost per Well per Unit of Average Depth         Image: Cost per Well per Unit of Average Depth       Image: Cost per Well per Unit of Average Depth       Image: Cost per Well per Unit of Average Depth       Image: Cost per Well per Unit of Average Depth         Image: Cost per Well per Unit of Average Depth       Image: Cost per Well per Unit of Average Depth       Image: Cost per Well per				6									
Image: Solution of the second state		Cost	per W	ell pe	r Ur	nit of	f Avera	ge De	pth				
Well Depth (ft)       =\$ 333         Well Depth (ft)       =\$ 333         Solo       =\$ 333         Solo       =\$ 333         Solo       =\$ 339         Solo       =\$ 339         Solo       =\$ 344         Solo       =\$ 349         Solo       =\$ 355         Solo       =\$ 360         Solo       =\$ 360         Solo       =\$ 365         Solo       =\$ 370         Solo       =\$ 376         Solo       =\$ 381									ſ				
Image: style styl						Wel	I Dept	h (ft)					
Image: style styl							450				=\$	333	
Image: style styl							500				=\$	339	
Image: Constraint of the second system of							550				=\$	344	
Image: Constraint of the state of the s							600				=\$	349	
Image: state of the state o							650				=\$	355	
750     =\$ 365       800     =\$ 370       850     =\$ 376       900     =\$ 381							700				=\$	360	
800     =\$ 370       850     =\$ 376       900     =\$ 381							750				=\$	365	
850         =\$ 376           900         =\$ 381							800				=\$	370	
900 =\$ 381							850				=\$	376	
							900				=\$	381	
950 =\$ 386							950				=\$	386	





FIVE Y	EAR I	MECH	ANICAL I	NTE	GR	ITY TE	STS	G (MIT	)					
Assum	ption	s:												
1	Pullin	g Unit	for 8.0 hr	/day	, per	Recur	ring	Cost	She	eet				
2	MIT L	Jnit for	<sup>r</sup> 8.0 hr/da	y pe	er Re	ecurring	g Co	ost Sh	eet					
3	Labor	for op	peration of	f pul	ling	unit wil	l red	quire 2	2 w	orke	ers at \$17/	hr		
4	Labor	for op	peration of	f MI	T Ur	nit will r	equi	ire 1 v	vorł	ker a	at \$17/hr			
5	Avera	ige we	ells plugge	d pe	er da	ayis 6								
MIT Co	osts pe	er We												
Equipr	nent:													
	Pullin	g Unit												
		8	hours	Х	\$	45	per	hour				=\$	360.00	
	MIT U	Jnit												
		8	hours	Х	\$	45	per	hour				=\$	360.00	
Labor:														
	Pullin	g Unit												
		8	hours	Х	\$	17.04	per	hour	Х	2	workers	=\$	\$272.68	
	MIT U	Jnit												
		8	hours	Х	\$	17.04	per	hour				=\$	136.34	
						TO	ΓAL	MIT	COS	ST	PER DAY	=\$	1129.00	
	Wells	Comp	oleted			6	per	day						
								-						
							MI	т со	STS	S PI	ER WELL	=\$	188.17	

MAIN	PIPELI	NE R	EMOV	AL										
													-	
Assum	ption	s:												
1.	Trenc	hing v	vith tra	ckho	be a	t 750 ft/da	iy							
2.	Pipeli	ne ext	ractior	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 all ind	clusi	ve fuel	, mair	ntena	ance, mob			
5.	Track	hoe o	peratio	n re	quir	es 1 work	er a	t \$17/h	our					
6.	Pipeli	ne ext	ractior	n rec	quire	s 2 worke	rs a	it \$17/h	iour (i	n ad	dition to tr	ackhoe op	erator)	
7.	Pipeli	nes re	moved	d sin	nuta	neously								
8.	Includ	les rer	noval	of m	anh	oles								
9.	Opera	ating s	chedu	le: 8	hrs	/day, 5 da	ys/v	veek						
Main P	Pipelin	e Ren	noval (	Cost	ts p	er ft of Tr	enc	h						
Equipr	nent													
	Track	hoe												
		\$	1125	x	1	week	x	1	days	=\$	0.30			
		We	eek		5	days	~	750	ft					
Labor														
	Track	hoe C	Operat	ion										
		\$	17	x	8	man hrs	х	1	days	=\$	0.18		_	
		ma	n hr		1	day		750	ft				_	
	Pipeli	ine Ex	tractio	on									_	
		\$	17	х	16	man hrs	х	2	day	=\$	0.36		_	
		ma	n hr		1	day		750	ft				_	
							<u> </u>							
MAIN	PIPE		REMO	VAL	. CO	ST PER I	-т С	OF TRE	ENCH	=\$	0.84			

WELL	FIELD F	PIPIN	G REN	/0\	/AL									
Assum	nptions	:												
1.	Trench	ning v	vith bao	ckho	be at	t 1500 ft/d	lay							
2.	Pipelin	e ext	raction	an	d ba	ckfilling w	ith b	ackhoe	e at 150	0/day	/			
3.	Backho	oe re	ntal: \$1	1,12	5/we	eek, all ind	clusi	ve fuel	, mainte	nanc	e, mob			
4.	Backho	oe op	peratior	n ree	quire	es 1 worke	er at	\$17/hc	our - CB					
5.	Pipelin	e ext	raction	rec	quire	s 2 worke	ers a	t \$17/h	our (in a	additi	on to track	thoe operation	ator)	
6.	Operat	ting s	chedul	e: 8	hrs	/day, 5 da	iys/w	/eek						
Main P	Pipeline	Rem	noval C	Cos	ts po	er ft of Pi	ре							
<b>_</b> .														
Equipr	nent													
	Васкп	oe	4405							-	0.45			
		\$	1125	Х	1	week	х	1	days	=\$	0.15			
		We	ек		5	days		1500	π					
							-							
Labor														
Labor	Backh	<u>00 0</u>	norati	on										
	Dackii	5	17		8	man hrs		1	davs	=\$	0.09			
	-	ma	n hr	Х	1	dav	Х	1500	ft	Ψ	0.00			
	Pipelir	ne Ex	tractio	on										
		\$	17		16	man hrs		1	dav	=\$	0.18			
		ma	n hr	Х	1	dav	Х	1500	ft					
	MAIN	PIPE	LINE	RE	NON	AL COST	ΓΡΕ	R FT C	<b>DF PIPE</b>	=\$	0.420			

WELLF			REC		ΙΑΤΙΟ	DN													
				T															
Assum	ptions	(Roads	s co	nst	ructer	d befo	ore Ja	nuarv	/ 1	. 199	97):						-		
1.	Gravel	road ba	ase	rem	oved	at cos	t of \$0	0.866	/cv	/100	0 ft ()	ND	EQ Guide	line	No. 12. Ap	p. C. Level Grou	und. 500 ft h	aul)	
2.	Gravel	road b	ase:	ave	erade	depth	= 0.25	5 ft. a	ver	ade	width	า =	10 ft			,			
3	Roads	scarifie	d pr	ior t	in tops	soil ar	plicati	on at	CO	st of	\$41	87	acre (WD	FQ	Guideline N	lo 12 Appendix	(P)		
4	Gradin	a of sca	arifie	d rc	ads n	prior to	tonsc	oil ann	olic	ation	n at c	ost	of \$45.65	/acr		Guideline No. 12	Appendix	G)	
5	Topsoi	l annlie	d at	COS	t of \$(	3 866/	$\frac{10000}{100}$	$\frac{1000}{100}$ ft (	W		Guid	eli	ne No 12	Anr		Ground 500 ft h	aul)	5)	
6	Strinne	n applie ad tonse	nil a	vera		-nth =	0.671	ft ave	ra		idth =	= 2	5 ft	1.66					
	Discino	n/seedir		ost o	of \$28	0/acr	e is ha	ised o	nu n a	actu:	al cor	ntra	ctor costs				-		
1.	Diooing	,	. <u></u>	1	л ф <u>г</u> о														
	Gravel	Road F	Rase	Re	mova	I Cost	s ner	1000	ft c	of Ro	ad						-		
	Giuvei	1000	ft		0.25	ft	10	ft		1	cv		\$0.87				-		
		1000		×—	0.20	<sup>n</sup> X			Х	27	ft <sup>3</sup>	X	φ0.07 CV	= \$	80		-		
	Scarific	ration (	Coste	s ne	r 100(	) ft of	Road			21			Uy				-		
	oounin	1000	ft	, pc	25	ft	1	acre					\$41 87				-		
		1000		×—	20	<sup>n</sup> X	43	56F+	04	ft <sup>2</sup>	Х		acre	= \$	24		-		
-	Gradin	a Costs	: ner	100	00 ft c	f Roa	d			11			uore				-		
-	ordain	1000	ft		25	ft	1	acre					\$45.65				-		
-		1000		×–		X	43	56F+	04	ft <sup>2</sup>	Х		acre	= \$	26		-		
-	Topsoi	Applic	ation		osts pr	er 100	0 ft of	Road	1	11			4010				-		
-	ropoor	1000	ft		0.67	ft	25	ft	-	1	CV		\$0.87				-		
-		1000		×–	0.07	X			Х	27	ft <sup>3</sup>	Х	φ0.01 CV	= \$	537		-		
	Discino	i/Seedi		`oet	s nor	1000 -	ft of P	heo		21			Cy				-		
	Discilit	1000	ff	,031	25 PEI	ft	1	acre					\$280				-		
		1000	<u> </u>	x—	25	<sup>n</sup> X	4.2	FEEL	04	<b>n</b> 2	Х		ψ200	= \$	161		-		
				_			4.3	50E+	04	π			acre						
	TOTAL		EIE.																
	TUTAL				RUAL					202	15 PI			_ *	000				
		1000 F	10	FR	UAD	( BEF	URE .	JANU		KT 1	, 199	()		= \$	828				
Accum	ntiona	(Bood)		net	ruoto	d offo	r lanı	1004	1	007	\. \.								
ASSUII	Crovel	(Ruaus		nsu	not be		Janu		, 1	991	<i>)</i> .								
1.	Boodo	TUau Da	d pr	vin t			nligati	on at	~~~	ot of	¢26	20/			Quideline N	o 12 Appondiv			
2.	Gradin	a of so	u pi arifio	d rc	o lope	sui ap	topsc	ul ann		ation	φου. Later	SU/	of \$38.45			uideline No. 12	<u>Appendix (</u>	<u> </u>	
3.	Topooi	y or sca		000	t of ¢(							lind	UI \$30.45/			round 500 ft ha		3)	
4.	Ctrippe			COS		J.00/C	y/1000					20	# NO. 12, F	۹p.	C, Level G	100110, 500 11 118	.ur)		
5. 6	Discipe		л. а		st ¢20		0.4 IL,	, aver	ay		un –	20	ntor conto						
0.	Discing	/seeuii	ig cu	JSU	1 קבט		= 15 Da	seu u				lua							
	Scarifi	nation (	`octo		r 1000		Road		-			-							
	Scanne	1000	ff	s he	2001	ff	1 1	acro	-			-	\$/1 97						
		1000	<u>.</u>	x—	20	<sup>n</sup> X	4.0	acie	~ 4	<b>c</b> <sub>1</sub> 2	Х		φ41.07	= \$	19				
	Cra d'in			. 10	00 # -	f Da -	4.3	50E+	04	π		-	acre						
	Gradin	g Costs	s per	100	JUITO	of Roa	d						<b>*</b> 4 5 0 5						
		1000	π	x—	20	πx	1	acre		2	х		\$45.65	= \$	21				
							4.3	56E+	04	ft∠			acre	+					
	Topsoi	I Applic	atior	n Co	osts pe	er 100	0 ft of	Road	ł										
		1000	ft .	x–	0.40	ft x	20	ft	x	1	су	x	\$0.87	= \$	257				
										27	ft <sup>3</sup>	$\left  \right\rangle$	су	Ψ					
	Discing	g/Seedi	ng C	cost	s per	1000	ft of R	oad											
		1000	ft .	γL	20	ft 🗸	1	acre			v		\$280	- ¢	120				
			7	$^{-}$		7^	4.3	56E+	04	ft <sup>2</sup>	^		acre	- <b>\$</b>	123				
				Τ													1		
	ΤΟΤΑΙ	WELL	FIE	LD	ROAD	D REC	LAM	ATIO	N C	COS	TS PI	ĒR					1		
		1000 F	то	FR	OAD	(AFT	ER JA	ANUA	R١	<b>′ 1</b> , '	1997)			= \$	426				
				Τ															
								1											

BYPR	DDUCT MA	TERIA	L TRANSP	ORT	TION	AND DISPO	SAL					
Assum	ptions:											
1.	Based on a	ctual 2	2007 contrac	cted c	osts fo	r transportati	on to	and	disposal at an			
	NRC-licens	ed dis	posal facility	/. Byp	roduct	disposal cos	ts as	per o	contract are di	fferent betw	een materia	ls & soils
2.	Includes pr	ofit for	transporter	and c	lisposa	al facility.						
3.	All types of	waste	shipped vi	bulk c	ontain	er (30-yd <sup>3</sup> du	mpste	er or	30-yd <sup>3</sup> dump f	truck).		
			••				·			Í		
		Trans	portation C	ost		Disposal C	ost		Total			
			\$ 1.33	/ft <sup>3</sup>	+	\$ 11.00	/ft <sup>3</sup>	=	\$ 12.33	/ft <sup>3</sup>		
								=	\$ 12.33	/ft <sup>3</sup>		
		Soils	Transporta	tion (	<u>Cost</u>	Disposal Co	<u>sts</u>					
			\$ 1.33			\$3.70	/ft <sup>3</sup>					
		=	\$35.91	/yd <sup>3</sup>	+ =	\$100.00	/yd <sup>3</sup>	=	\$135.91	/yd³		



DISKING/S	SEEDING							
Assumption	ons:							
1.	Based on a	actual contra	actor costs i	n 200	7			
2.	Drill Seedir	ng \$250/Acr	e - based o	n cont	racto	r estamate 6	/2007	
3.	Seed cost	\$30/Acre - E	Based on 5/	07 see	ed co	sts at SRHU	Р	
TOTAL DI	SKING/SEE	DING COS	TS PER AC	CRE	= \$	280.00		





PORE VOL	UME AND	RESTORA	TION TIMIN	IG CA	LCULA	TION										
Assumptio	ns:															
1.	Pore Volum	nes require	d for wellfiel	d resor	ration a	re conserv	atively esti	mated fro	m Table 3-2, I	Lewis Wa	ater Consultants	s, Inc., Oct. 1999 (	below)			
2.	Restoration	n Target is F	Return to Cl	ass of	Use, Cla	ass I Grou	Indwater (V	VDEQ)								
3.	Conservativ	vely Assum	ies 1PV gro	undwat	ter swee	ep, 3PVs I	RO with Re	ductant a	dded to final 2	PVs of P	RO stream (4P)	/'s total )				
4.	Restoration	n Timing is o	conservative	ely esti	mated a	at 2 years	for all wellfi	elds base	d on 400 gpm	n sweep r	rate and largest	wellfield affected	volume (We	llfield 15) at Sn	hith Ranch.	
		. Burnthata				<b>.</b>		1	I	I	1 1	Ļ				
	Table 3-2	2. Predicte	a weimeia	1 Rest	toration	1 I iming										
	_				N.L		Time Dec	اد مداد د			Ni-makan of	Time Description	. –			
	_	De	otoration To	ract	Nurr Doro V		to Moot	juired Forgot	Destaration T	oract	Number of	to Most Torgo				
	- Constitu	iont /	Dookgroups	iyei N	to Mor	ot Torget	(Deceline		(Class of us	aiyei	to Moot Torget	(Close of Llos) de				
-	Constitu	uenii (	Баскугоцис	1)	to mee	et Target	(Daseline	), uays	(Class of us	)	to meet rarget	(Class-01-0se),08	ays			
-	- 11		0 168			3.2	150	<b>`</b>	5		1.8	86				
	-Se		0.001			3.2	150	)	0.01		2.3	109				
	- Ci		4 176			44	210	)	250		0	0				
	- SO.		113 125			3.8	170	, ,	250		25	117				
	- HCO.		229 104			2.2	100	, ,	200		2.0					
			220.194			2.0	103	2	na		na	na				
			72.017		2	3.8	1/5	1	na		na	na				
			22.525			3.2	14	1	0.05		0	0				
	- <sup>7,3</sup>		0.001			32	150	י ז	0.05		0	0	-			
	– Fe		0.065			0	0	,	0.3		0	õ				
	 Mn		0.022			4.4	210	)	0.05		3.4	160				
	Mg		17.364		;	3.2	150	)	na		na	na				
	ĸ		7.269		;	3.2	150	)	na		na	na				
	F		0.322		;	3.2	150	)	2.4		na	na				
	SiO <sub>2</sub>		16.975		;	3.2	150	)	na		na	na				
	Zn		0.010		;	3.2	150	)	5		0	0				
	_															
	<sup>a</sup> standa	ards listed a	are for Wyor	ning Cl	lass I gr	round wate	er, although	baseline	wellfield							
	ground	water does	not meet th	is stan	dard du	le to exces	ssive radiun	n.	-							



Abbreviations/Acronyms						
	-					
\$	Dollars					
\$/Kgal	Dollars per 1000	gallons				
avg	average					
ft	feet					
ft2	square feet					
ft3	cubic feet					
gal	gallon					
gpm	gallons per minute					
H&S	Health and Safet	у				
H2S	Hydrogen Sulfide					
H2SO4	Sulfuric Acid					
HCl	Hydrochloric Ac	id				
Нр	Horsepower					
Kgal	1000 gallons					
Kwh	Kilowatt-hours					
NaOH	Caustic Soda					
OD	Outside Diameter					
PPE	personal protecti	ve equipment				
PV	Pore Volume Est	imate				
reqm't	requirement					
RO	Reverse Osmosis					
WDW	Waste Disposal Well					
yd3	cubic yards					
yr	year					