

**HRI Crownpoint
Wellfield Equipment Tabulation**

# H. Houses	# Injectors	# Extractors	# Feet 2"	# Feet 10"	# Feet 14"	Gravel Road
1	2	6	4125			
2	27	33	13490			
3	6	10	7200			
4	19	25	14715			
5	4	4	1325			
6	21	21	14315			
7	24	44	39095			
8	9	15	7660			
9	19	24	13620			
10	26	45	19105			
11	7	9	6110			
12	29	29	13755			
13	25	35	20145			
14	9	7	4850			
15	22	21	9700			
16	14	16	5325			
17	7	18	4205			
18	9	9	2750			
19	26	32	10660			
20	21	24	9245			
21	16	9	5070			
22	17	30	9225			
23	0	5	2200			
24	12	19	7925			
25	9	8	3225			
26	5	6	2250			
27	2	1	600			
28	14	24	7350			
Totals	401	529	259240	51000	11000	5000

Total wellfield acreage = 181

Dokota wells = 45

Monitor Wells = 39

Pipe Wall Volume Data

<u>Outside Diameter (in)</u>	<u>Area Inside OD (ft²)</u>	<u>Wall Volume SDR17 (ft³/ft)</u>
2	0.022	0.012
2.5	0.034	
3	0.049	0.018
3.5	0.067	
4	0.087	
4.5	0.110	
5	0.136	
5.5	0.165	
6	0.196	
6.5	0.230	
7	0.267	
7.5	0.307	
8	0.349	
8.5	0.394	
9	0.442	
9.486	0.491	
9.5	0.492	
10	0.545	0.140
10.5	0.601	
10.75	0.630	
11	0.660	
11.5	0.721	
12	0.785	
12.353	0.832	
12.5	0.852	
13	0.922	
13.5	0.994	
14	1.069	0.237
14.5	1.147	
15	1.227	
15.5	1.310	
	Wall Tk	
14 " SDR 17		0.824
10 " SDR 17		0.632

**PROGRAM TO CALCULATE THE VOLUME CONTAINED WITHIN
A RECTANGULAR POND WITH KNOWN SLOPE AND DEPTH**

ALL DIMENSIONS ARE IN FEET

THE TOP OF THE POND MEASUREMENTS ARE:

LENGTH	350
WIDTH	350
DEPTH	20
SLOPE	3

W= BOTTOM WIDTH	230
L= BOTTOM LENGTH	230

DEPTH	GALLONS	CUBIC FEET	CUBIC YARDS
0.50	200,438	26,797	992
1.00	406,104	54,292	2,011
1.50	617,066	82,496	3,055
2.00	833,392	111,416	4,127
2.50	1,055,148	141,063	5,225
3.00	1,282,401	171,444	6,350
3.50	1,515,220	202,570	7,503
4.00	1,753,671	234,448	8,683
4.50	1,997,822	267,089	9,892
5.00	2,247,740	300,500	11,130
5.50	2,503,492	334,692	12,396
6.00	2,765,147	369,672	13,692
6.50	3,032,770	405,451	15,017
7.00	3,306,429	442,036	16,372
7.50	3,586,193	479,438	17,757
8.00	3,872,127	517,664	19,173
8.50	4,164,299	556,725	20,619
9.00	4,462,777	596,628	22,097
9.50	4,767,629	637,384	23,607
10.00	5,078,920	679,000	25,148

Liner Size 375X375

**PROGRAM TO CALCULATE THE VOLUME CONTAINED WITHIN
A RECTANGULAR POND WITH KNOWN SLOPE AND DEPTH**

ALL DIMENSIONS ARE IN FEET

THE TOP OF THE POND MEASUREMENTS ARE:

LENGTH	120
WIDTH	120
DEPTH	10
SLOPE	3

W= BOTTOM WIDTH	60
L= BOTTOM LENGTH	60

DEPTH	GALLONS	CUBIC FEET	CUBIC YARDS
0.50	14,148	1,892	70
1.00	29,711	3,972	147
1.50	46,754	6,251	232
2.00	65,345	8,736	324
2.50	85,553	11,438	424
3.00	107,443	14,364	532
3.50	131,083	17,525	649
4.00	156,541	20,928	775
4.50	183,885	24,584	911
5.00	213,180	28,500	1,056
5.50	244,495	32,687	1,211
6.00	277,897	37,152	1,376
6.50	313,453	41,906	1,552
7.00	351,231	46,956	1,739
7.50	391,298	52,313	1,938
8.00	433,720	57,984	2,148
8.50	478,567	63,980	2,370
9.00	525,904	70,308	2,604
9.50	575,799	76,979	2,851
10.00	628,320	84,000	3,111

November 19, 2001

Liner Size

150X150

Ground Water Restoration

PV Assumptions - 9 pore volumes required pursuant to license condition 9.5

SE/4

ZONE	Area (ft2)	Tk (ft)	Vol (ft3)	Por	gal/ft3	PV (gal)	H-PIF	V-PIF	CPV (gal)	9 X CPV
UA	168,000	12	2,016,000	0.25	7.48	3,769,920	1.5	1.3	7,351,344	66,162,096
ULA	630,000	9.6	6,048,000	0.25	7.48	11,309,760	1.5	1.3	22,054,032	198,486,288
MLA	260,000	8.6	2,236,000	0.25	7.48	4,181,320	1.5	1.3	8,153,574	73,382,166
ULB	350,000	11.9	4,165,000	0.25	7.48	7,788,550	1.5	1.3	15,187,673	136,689,053
LB	182,000	9.8	1,783,600	0.25	7.48	3,335,332	1.5	1.3	6,503,897	58,535,077
UUC	675,000	7.6	5,130,000	0.25	7.48	9,593,100	1.5	1.3	18,706,545	168,358,905
MC	840,000	12.2	10,248,000	0.25	7.48	19,163,760	1.5	1.3	37,369,332	336,323,988
ULC	992,000	11.8	11,705,600	0.25	7.48	21,889,472	1.5	1.3	42,684,470	384,160,234
LLC	754,000	7.3	5,504,200	0.25	7.48	10,292,854	1.5	1.3	20,071,065	180,639,588
TOTALS	4,851,000		48,836,400			91,324,068			178,081,933	1,602,737,393

SW/4

ZONE	Area (ft2)	Tk (ft)	Vol (ft3)	Por	gal/ft3	PV (gal)	H-PIF	V-PIF	CPV (gal)	9 X CPV
LA	308,000	8.8	2,710,400	0.25	7.48	5,068,448	1.5	1.3	9,883,474	88,951,262
ULB	270,000	6.2	1,674,000	0.25	7.48	3,130,380	1.5	1.3	6,104,241	54,938,169
LB	437,000	7.5	3,277,500	0.25	7.48	6,128,925	1.5	1.3	11,951,404	107,562,634
UUC	256,000	6.5	1,664,000	0.25	7.48	3,111,680	1.5	1.3	6,067,776	54,609,984
MC	465,000	12.7	5,905,500	0.25	7.48	11,043,285	1.5	1.3	21,534,406	193,809,652
TOTALS	1,736,000		15,231,400			28,482,718			55,541,300	499,871,701

TOTAL CROWNPOINT 6,587,000 64,067,800 119,806,786 233,623,233 2,102,609,094

Area - Area of cut off grade mineralization
 Tk - Thickness of cut off grade mineralization
 Por - Estimated porosity of the rock
 PV - Straight pore volume without any correction
 H-PIF - Horizontal pore volume increase factor
 V-PIF - Vertical pore volume increase factor
 CPV - Corrected pore volume

MAIN PIPELINE REMOVAL**Assumptions:**

1. Trenching with trackhoe at 1,500 ft/day
2. Pipeline extraction and backfilling with trackhoe at 1500 ft/day
3. Trackhoe rental: \$1600/week
4. Fuel cost: \$9/operating hour
5. Trackhoe operation requires one worker at \$15/hour
6. Pipeline extraction requires 2 workers at \$15/hour (in addition to trackhoe operator)
7. Pipelines removed simultaneously
8. Includes removal of manholes
9. Operating schedule: 8 hours/day, 5 days/week

Main Pipeline Removal Costs per ft of Pipe**Equipment & Fuel**

	<u>Weekly</u>	<u>Daily</u>	<u>Hourly</u>	<u>Per Foot</u>
Trackhoe	\$1,200.00	\$240.00	\$30.00	\$0.16
Fuel		\$72.00	\$9.00	\$0.05

Labor

Trackhoe operator		\$120.00	\$15.00	\$0.08
Pipeline extractors (2)		\$240.00	\$30.00	\$0.16

Total Per Foot Cost				\$0.45
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WELLFIELD PIPING REMOVAL

Assumptions:

1. Trenching with backhoe at 1500 ft/day
2. Pipeline extraction and backfilling with backhoe at 1500 ft/day
3. Backhoe rental: \$750/week
4. Fuel cost: \$9/operating hour
5. Backhoe operation requires 1 worker at \$15/hour
6. Pipeline extraction requires 2 workers at \$15/hour (in addition to trackhoe operator)
7. Operating schedule: 8 hrs/day, 5 days/week

Wellfield Pipeline Removal Costs per ft of Pipe**Equipment & Fuel**

	<u>Weekly</u>	<u>Daily</u>	<u>Hourly</u>	<u>Per Foot</u>
Backhoe	\$550.00	\$110.00	\$13.75	\$0.07
Fuel		\$72.00	\$9.00	\$0.05

Labor

Backhoe operator		\$120.00	\$15.00	\$0.08
Pipeline extractors (2)		\$240.00	\$30.00	\$0.16

Totals			\$67.75	
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Total Per Foot Cost				\$0.36
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WELLFIELD ROAD RECLAMATION

Assumptions:

1. Gravel road base removed at cost of \$0.60/cy/1000 ft (WDEQ Guideline No. 12, Appendix C)
2. Gravel road base: average depth = 0.5 ft, average width = 15 ft
3. Roads scarified prior to topsoil application at cost of \$30.51/acre (WDEQ Guideline No. 12, Appendix P)
4. Grading of scarified roads prior to topsoil application at cost of \$33.27/acre (WDEQ Guideline No. 12, Appendix G)
5. Topsoil applied at cost or \$0.60/cy/1000 ft (WDEQ Guideline No. 12, Appendix C, surface grade: level ground)
6. Stripped topsoil: average depth = 0.67 ft, average width = 25 ft
7. Discing/seeding cost of \$200/acre

Costs per 1000 ft of road

	<u>Width (ft)</u>	<u>Thick (ft.)</u>	<u>Yd3</u>	<u>\$/Yd3</u>	<u>Total</u>
Road base removal	15	0.5	278	\$0.60	\$166.67
Topsoil application	25	0.67	620	\$0.60	\$372.22

	<u>Width (ft)</u>	<u>Acres</u>	<u>\$/Acres</u>	<u>Total</u>
Scarification	25	0.6	\$30.51	\$17.51
Grading	25	0.6	\$33.27	\$19.09
Disking/seeding	25	0.6	\$200.00	\$114.78

TOTAL WELLFIELD ROAD RECLAMATION \$690.28

DISKING/SEEDING

Assumption:

1. Based on actual contractor costs

TOTAL DISKING/SEEDING COSTS PER ACRE = \$200.00

TRANSPORTATION AND DISPOSAL

11.e.2 By-Product Material Transportation Disposal Costs per Ft3

Assumptions:

1. Based on contract costs for transportation to and disposal at the IUC White Mesa Mill near Blanding Utah
2. Transportation assumed a 200 mile trip at \$4.76 per mile, \$952 per trip. Bulk truck capacity 30 yds³. Drum truck capacity 64 yds³.
3. All 11.e.2 disposal fees are based upon actual current contract rates at Texas ISR facilities as itemized in 4 & 5 below
4. Drummed waste. \$2,866 per shipment of 64 drums, 7.35 cu. ft. per drum, \$6.09 per cubic foot.
5. Bulk waste. \$1975.45 per shipment of 30 cu. yds. , \$2.44 per cu. ft.
6. Per truck site unloading (\$135.00) and decontamination (\$150.00) amounts are specified in URI's current disposal site

Type of Waste: Sludge, resin, and other by-product type wastes shipped in drums.

	<u>Unit Shipment</u>			
	<u>Cost</u>	<u>Units/Drum</u>	<u>Drums/Truck</u>	<u>Total \$/ft3</u>
Disposal fee	\$2,866.00	7.35	64	\$6.09
Shipping	\$952.00			\$2.02
Site unloading	\$135.00			\$0.28
Site scanning	\$150.00			\$0.31
Total shipping and disposal				\$8.71

Type of waste: Soil, sand, demolished concrete and other bulk wastes

	<u>Unit Shipment</u>		
	<u>Cost</u>	<u>Ft3/Truck</u>	<u>Total \$/ft3</u>
Disposal fee	\$1,975.45	810	\$2.44
Shipping	\$952.00	810	\$1.18
Site unloading	\$45.00	810	\$0.06
Site scanning	\$150.00	810	\$0.19
Total shipping and disposal			\$3.85

Unrestricted Material Transportation Disposal Costs per ton

Assumptions:

1. Based on public costs disposal at the Waste Management Red Rocks Landfill. 24 \$/ton
2. 1 ton is equal to 1 yd³
2. Transportation assumed a 30 mile trip at \$2.00 per mile. Bulk truck capacity 20 yds³.

	<u>Unit Cost</u>	<u>Total \$/yds3</u>
Disposal fee (ton)	\$24.00	\$24.00
Shipping (truck trip)	\$60.00	\$3.00
Total shipping and disposal (yd3)		\$27.00

	A	B	C	D	E	F	G	H	I	J	
1	November 19, 2001										
2	LABOR SUMMARIES										
3											
4											
5											
6											
7											
8	Management and Accounting										
9	Salaried		Operations Manager			1	-	\$120,000	\$120,000	\$10,000	
10	Salaried		Environmental Manager			1	-	\$105,000	\$105,000	\$8,750	
11	Salaried		Accounting Manager					\$105,000	\$105,000	\$8,750	
12	Salaried		Accountant				-	\$65,000	\$65,000	\$5,417	
13	Plant Personnel										
14	Salaried		Plant Superintendent				-	\$85,000	\$85,000	\$7,083	
15	Salaried		Plant Engineer				-	\$45,000	\$45,000	\$3,750	
16	Salaried		Radiation Officer			1	-	\$30,000	\$30,000	\$2,500	
17	Salaried		Chemist			1	-	\$46,000	\$46,000	\$3,833	
18	Salaried		Plant Foreman				-	\$28,000	\$28,000	\$2,333	
19	Salaried		Maintenance Foreman				-	\$28,000	\$28,000	\$2,333	
20	Wage		Lab Technicans				\$9.62	-	\$20,010	\$1,667	
21	Wage		Secretary				\$9.62	-	\$20,010	\$1,667	
22	Wage		Electrician			1	\$14.43	-	\$30,014	\$2,501	
23	Wage		Apprentice Electrician				\$12.01	-	\$24,981	\$2,082	
24	Wage		Plant Operator			1	\$11.54	-	\$24,003	\$2,000	
25	Wage		Assistance Plant Operator				\$11.54	-	\$24,003	\$2,000	
26	Wage		Dryer Operator				\$11.54	-	\$24,003	\$2,000	
27	Wage		Maintenance				\$11.54	-	\$24,003	\$2,000	
28	Wellfield Personnel										
29	Salaried		Wellfield Superintendent				-	\$41,200	\$41,200	\$3,433	
30	Salaried		Drilling Engineer				-	\$40,500	\$40,500	\$3,375	
31	Salaried		Foreman			1	-	\$28,000	\$28,000	\$2,333	
32	Wage		Truck Driver			1	\$11.54	-	\$24,003	\$2,000	
33	Wage		Electrician				\$14.43	-	\$30,014	\$2,501	
34	Salaried		Data Entry Clerk				-	\$20,000	\$20,000	\$1,667	
35	Wage		Secretary					\$20,000	\$20,000	\$1,667	
36	Wage		Logger				\$12.01	-	\$24,981	\$2,082	
37	Wage		Wellfield Operators			1	\$11.50	-	\$23,920	\$1,993	
38	Wage		Assistant Wellfield Operator				\$11.50	-	\$23,920	\$1,993	
39	Wage		Balancer				\$11.50	-	\$23,920	\$1,993	
40	Wage		Environmental Sampler				\$11.50	-	\$23,920	\$1,993	
41	Wage		Pump Hoist Operators			1	\$11.50	-	\$23,920	\$1,993	
42	Wage		Backhoe Operator				\$10.49	-	\$21,819	\$1,818	
43	Wage		Maintenance				\$11.50	-	\$23,920	\$1,993	
44	Wage		Casing Crew				\$11.50	-	\$23,920	\$1,993	
45	Engineering & Geologic Personnel										
46	Salaried		Chief Engineer				-	\$66,000	\$66,000	\$5,500	
47	Salaried		RESERVOIR ENGINEER				-	\$60,000	\$60,000	\$5,000	
48	Salaried		Senior Geologist			1	-	\$58,000	\$58,000	\$4,833	
49	Salaried		Geologist				-	\$48,800	\$48,800	\$4,067	
50	Salaried		Logging Supervisor				-	\$35,000	\$35,000	\$2,917	
51	Wage		Secretary					\$20,000	\$20,000	\$1,667	
52	Wage		Surveyor				\$12.02	-	\$25,002	\$2,083	
53	Wage		Assistant Surveyor				\$12.02	-	\$25,002	\$2,083	
54	Wage		Logger				\$10.49	-	\$21,819	\$1,818	
55											
56	Total #					11					

Calculation of BC Solids Produced

Flow (g/min)	580
Flow (l/min)	2,195
Flow (l/d)	3,161,232
Solids (g/l)	4
Solids (g/d)	12,644,928
Solids (g/mo)	384,616,560
Solids (kg/mo)	384,617
Solids (lb/mo)	174,429
Solids (yd ³ /mo)*	87
Solids (ft ³ /mo)	2,355
Unit disposal cost (\$/ft ³)	\$2.78
Monthly disposal cost (\$)	\$6,546

*1 yd³ ~ 1 ton

**CROWNPOINT SEC, 24 GROUNDWATER RESTORATION AND DECOMMISSIONING COSTS
COSTS ASSOCIATED WITH RO AND BRINE CONCENTRATION OPERATION AND MAINTENANCE**

November 19, 2001

Period	1/8	2/8	3/8	4/8	5/8	6/8	7/8	8/8
1 Management and Accounting								
2 Operations Manager	1	1	1	1	1	1	1	1
3 Environmental Manager	1	1	1	1	1	1	1	1
4 Plant Personnel								
5 Radiation Officer	1	1	1	1	1	1	1	1
6 Chemist	1	1	1	1	1	1	1	1
7 Electrician								
8 Plant Operator								
9 Wellfield Personnel								
10 Foreman	1	1	1	1	1	1	1	1
11 Truck Driver								
12 Wellfield Operators								
13 Pump Hoist Operators								
14 Engineering & Geologic Personnel								
15 Senior Geologist								
16								
17 Total Employees	5	5	5	5	5	5	5	5
18								
19 Operations Statistics								
20 Reverse Osmosis Treatment								
21 GPM RO Capacity								
22 GPM RO Product								
23 GPM RO Reject								
24 MM Gals, RO Processed - Month								
25 MM Gals, RO Permate - Month								
26 MM Gals, RO Reject - Month								
27 Brine Concentration								
28 GPM BC Capacity								
29 GPM Distillate								
30 GPM Brine								
31 MM Gals, BC Capacity - Month								
32 MM Gals, Distillate - Month								
33 MM Gals, Brine - Month								
34 Process Results								
35 Beginning Gallons (9 PV Eq.)								
36 Beginning PV								
37 Gallons Processed Month								
38 PV Processed Month								
39 Cumulative Gallons Processed								
40 Cumulative PV Processed								
41 Remaining Gallons to Process								
42 Remaining PV to Process								
43 ESTIMATED COST DETAIL								
44								
45 Description	-----Final Decontamination, Decommissioning and Reclamation-----							
46								
47 Salaries-Direct	\$27,417	\$27,417	\$27,417	\$27,417	\$27,417	\$27,417	\$27,417	\$27,417
48 Wages-Direct	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
49 Insurance-Workmans Compensation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
50 Payroll Taxes	\$900	\$900	\$900	\$900	\$900	\$900	\$900	\$900
51 Medical Insurance	\$4200	\$4200	\$4200	\$4200	\$4200	\$4200	\$4200	\$4200
52 401K Contributions	\$4000	\$4000	\$4000	\$4000	\$4000	\$4000	\$4000	\$4000
53 Telephone/Telegraph	\$950	\$950	\$950	\$950	\$950	\$950	\$950	\$950
54 Postage/Freight	\$175	\$175	\$175	\$175	\$175	\$175	\$175	\$175
55 Copy Equipment	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300
56 Other Equipment & Rental	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200
57 Office Supplies	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150
58 Office Equipment Maintenance	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50
59 Data Processing								
60 Maps					\$1,000	\$1,000	\$1,000	\$1,000
61 Drafting & Printing						\$2,500	\$2,500	\$2,500
62 Transportation - Air & Car	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300
63 Meals & Entertainment	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300
64 Misc. Travel Expense	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300
65 Env-Depreciable Equipment								
66 Env-Operational Analyses								
67 Environmental - Miscellaneous								
68 Safety								
69 Backhoe Maintenance								
70 Misc. Chemicals								
71 Utilities - Electric, Wellfield								
72 Utilities - Electric, Brine Concentrator								
73 Utilities - Electric, Plant and RO								
74 Submersible Pumps								
75 Submersible Motors								
76 Field Piping & Valves								
77 Meters								
78 Misc. Field								
79 Handtools								
80 Plant Piping & Valves								
81 Plant Brine Conc Inst.								
82 Pumps								
83 Plant Electrical								
84 Filters								
85 Evaporation Ponds								
86 Roads								
87 Gas, Oil, Grease								
88 Disposal - B.C. Solids								
89 RO Unit								
90 Lab Supplies								
91 RO Membrane								
92 Field Equip. Repairs & Maint.								
93 Vehicle Repairs & Maint.								
94 Vehicles - Pickups								
95 Vehicles - Tractors & Trucks								
96 Vehicles - Automobiles								
97								
98 Monthly Total	\$43,242	\$43,242	\$43,242	\$43,242	\$46,742	\$46,742	\$46,742	\$46,742
99 Cumulative Total	\$10,427,378	\$10,470,620	\$10,513,862	\$10,557,104	\$10,603,846	\$10,650,588	\$10,697,330	\$10,744,072
100 Period Days	31	30	31	31	30	31	30	31

D & D COSTS ARE ITEMIZED ON A TASK BASIS

GROUND WATER RESTORATION Sampling

		Units	Sub Total	Total
Assumptions:				
	Labor from staff			
	Routine monitoring is covered in the restoration budget			
	One baseline well sampled per acre of wellfield			
	One sample taken before restoration starts			
	Baseline wells sampled once per year during restoration			
	Stability samples taken every 2 months for six months			
I	Monitoring and sampling costs			
	A. Restoration well sampling			
	Estimated restoration period (years)	7		
	1 Well Sampling prior to restoration start			
	# of wells	181		
	\$/sample	\$380	\$68,780	
	2 Restoration progress sampling			
	# of wells	181		
	\$/sample	\$120		
	Samples/year	1	\$152,040	
	B. Stability			
	Estimated stabilization period (months)	6		
	# of wells	181		
	Sample freq. mos.	2		
	\$/sample	\$380		
	Total		\$206,340	
	Total monitoring and sampling costs			\$427,160

CROWNPOINT WELL PLUGGING AND ABANDONMENT

Assumptions

- 1. Cement shrinkage 120%
- 2. Cement cost per 94 pound sack \$6.83
- 3. Cost for Gel per 50 pound sack \$5.60
- 4. Holes Plugged per day 4
- 5. Engineer/geologist - per year (assume 20% time for this project) \$50,000.00
- 6. Backhoe & operator - per hour \$37.75
- 8. Cementer Contractor per well for cementing 2000 ft hole \$850.00
- 9. Rig Contractor per well for cementing 2000 ft hole \$1,050.00
- 10. Wellfield acreage fully developed 40 ac.
- 11. Assume Cement Mixture will be 12.5 ppg with 2% gel
- 12. SX required for 2000 ft (6" csg) of 12.5 ppg cement with 2% Gel (without shrinkage factor) 188.3
- 13. SX gel required for 188.3 SX Cmt (without shrinkage factor) 7.1
- 14. SX required for 2000 ft (5" csg) of 12.5 ppg cement with 2% Gel (without shrinkage factor) 130.7
- 15. SX gel required for 52.3 SX Cmt (without shrinkage factor) 4.9

Unit of Measure	IN	# of Wells	FT	CU YD	CUFT	BBLS	SXS	SXS	w/o shrinkage	with shrinkage	BACKHOE				
ITEM	WELL	QTY	AVERAGE	HOLE	HOLE	CEMENT	CEMENT	GEL	CEMENT & GEL	CEMENT & GEL	\$ / well	ENG/GEOL	Contract Cemente	Contract Rig	TOTAL
	DIAMETER		DEPTH	VOLUME	VOLUME	REQ'D	REQ'D	REQ'D	\$ / well	\$ / well	Assume 10 hr days	\$ / well	Mixing/Pumping Cement	to Cmt well (\$ / well)	PER HOLE
						(w/shrinkage)	(wo/shrinkage)	(wo/shrinkage)	(w/shrinkage)	(wo/shrinkage)					
Injectors	6	401	2200	15.991	431.8	92.3	207.1	7.8	\$1,458.43	\$1,750.12	\$94.38	\$48.08	\$935	\$1,155.00	\$3,982.57
Extractors	6	529	2200	15.991	431.8	92.3	207.1	7.8	\$1,458.43	\$1,750.12	\$94.38	\$48.08	\$935	\$1,155.00	\$3,982.57
Deep Monitor	5	39	2200	11.105	299.8	64.1	143.8	7.8	\$1,025.69	\$1,230.82	\$94.38	\$48.08	\$935	\$1,155.00	\$3,463.27
Brushy Monitor															
Dakota Monitor	5	45	1800	9.086	245.3	52.4	117.6	6.4	\$839.20	\$1,007.04	\$94.38	\$48.08	\$765	\$945.00	\$2,859.49
Recapture Monitor															
Section 8 Total															

PROCESS EQUIPMENT REMOVAL AND DISPOSAL

		<u>Satellite</u>	<u>Totals</u>
I.	Removal and Loading Costs		
A.	Tankage		
	Number of tanks	29	
	Volume of tank construction material (ft ³)	1300	
	1 Labor		
	Number of persons	3	
	Ft ³ /day	50	
	Number of days	26	
	\$/day/person	\$120	
	Subtotal labor costs	\$9,360	
	2 Equipment (hydraulic shear)		
	Number of days	26	
	\$/Day - \$300	\$300	
	Subtotal equipment costs	\$7,800	
	Subtotal tankage removal and loading costs	\$17,160	
B.	PVC pipe		
	PVC pipe footage	3000	
	Average PVC pipe diameter (inches)	3	
	PVC pipe material volume (ft ³ /ft)	0.018	
	Volume of compacted PVC pipe w/100 % void (ft ³)	108	
	1 Labor		
	Number of persons	2	
	Ft/day	200	
	Number of days	15	
	\$/day/person	\$120	
	Subtotal labor costs	\$3,600	
	2 Pipe crushing		
	Number of persons	2	
	\$/hr./person	\$15	
	Feet pipe per hour	300	
	Subtotal pipe crushing	\$300	
	Subtotal PVC pipe removal and loading costs	\$3,900	
C.	Pumps		
	Number of pumps	29	
	Average volume (ft ³ /pump)	5	
	Volume of pumps (ft ³)	145	
	1 Labor		
	Number of persons	1	
	Pumps/day	2	
	Number of days	14.5	
	\$/day/person	\$120	
	Subtotal pump removal and loading costs	\$1,740	
D.	Reverse osmosis equipment		
	RO (ft ³)	1000	

VI. Header Houses			
	Total quantity	28	
	Average header house volume (ft ³)	1600	
A.	Removal		
	Total volume (ft ³)	44800	
	Demolition unit cost per WDEQ Guideline No. 12 (\$/ft ³)	\$0.15	
	Subtotal building demolition costs	\$6,810	
B.	Survey and decontamination		
	Assumptions:		
	Cost per header house	\$200	
	Subtotal survey and decontamination costs	\$5,600	
C.	Disposal		
	Total volume (cy) assume 10% building volume	166	
	Volume for disposal assuming 10% void space (cy)	183	
	Unrestricted disposal cost of 26.7 \$/yd ³	\$27.00	
	Subtotal on-site disposal costs	\$4,928	
	Header house removal and disposal costs per wellfield		\$17,338
V. Soil			
	Assumptions:		
	Acres of wellfield.	181	
	Surveys by staff.		
	Depth of contaminated soil (in)	2	
	Percent of wellfield contaminated	1	
	Soil analysis each	\$100	
A.	Survey costs		
	400 soil sample analysis	\$40,000	
	Flags, and supplies	\$4,000	
	Subtotal survey costs	\$44,000	
B.	Disposal costs		
	Backhoe three week	\$4,530	
	Volume to disposal	13141	
	NRC disposal unit cost (ft ³)	\$3.85	
	Subtotal NRC-licensed facility disposal costs	\$50,591	
	Wellfield soil D & D costs		\$94,591
	TOTAL WELLFIELD BUILDINGS AND EQUIPMENT REMOVAL AND DISPOSAL COSTS		\$419,192

Building and Demolition and Disposal

Assumptions:

Crownpoint offices will be left intact after the project ends

	<u>Description</u>	<u>Satellite</u>	<u>Cost</u>
I.	Decontamination Costs		
A.	Wall decontamination		
	Area to be decontaminated (ft ²)	12167	
	Application rate (gallons/ft)	1	
	HCl acid wash, including labor (\$/gallon)	\$0.50	
	Subtotal wall decontamination costs	\$6,083	\$6,083
B.	Concrete floor decontamination		
	Area to be decontaminated (ft ²)	10491	
	Application rate (gallons/ft)	4	
	HCl acid wash, including labor (\$/gallon)	\$0.50	
	Subtotal concrete floor decontamination costs	\$20,982	\$20,982
II.	Demolition Costs		
A.	Building		
	Dryer bldg. demolition unit cost of \$0.75/ft ³ for additional radiation safety precautions.		
	Volume of building (ft ³)	209820	
	Demolition unit cost per WDEQ Guideline No. 12 (\$/ft ³)	\$0.15	
	Dryer building demolition unit cost (\$/ft ³)		
	Subtotal building demolition costs	\$31,893	\$31,893
B.	Concrete floor		
	Area of concrete floor (ft ²)	10491	
	Demolition unit cost (ft ³) per local estimate	\$1.20	
	Subtotal concrete floor demolition costs	\$12,589	\$12,589
III.	Disposal Costs		
A.	Building		
	Volume of building (cy)	7771	
	1 Unrestricted		
	Unrestricted disposal cost of 26.7 \$/yd ³	\$27.00	
	Building will collapse to 10% of standing volume	777	
	Percentage (%) on site	100	
	Subtotal unrestricted disposal costs	\$20,982	\$20,982
B.	Concrete floor		
	Area of concrete floor (ft ²)	10491	
	Average Thickness of concrete floor (ft)	0.5	
	Volume of concrete floor (ft ³)	5246	
	Volume of concrete floor (cy)	194	
	1 Unrestricted		
	Percentage (%)	100	
	Volume for disposal (ft ³)	194	
	Disposal unit cost \$/cy	\$27.00	
	Subtotal on-site disposal costs	\$5,246	\$5,246
III.	Health and Safety Costs		
	Total health and safety costs		\$1,000
TOTAL BUILDING DEMOLITION AND DISPOSAL COSTS			\$98,775

Wellfield and Satellite Surface Reclamation

	<u>Description</u>	<u>Unit</u>	<u>Total</u>
I.	Wellfield Area Reclamation		
	Wellfields rea (acres)	181	
	Disking/seeding unit cost (\$/acre)	\$200	
	Subtotal reclamation costs for wellfield		\$36,200
II.	Wellfield Road Reclamation		
	Length of wellfield roads (1000 ft)	5	
	Wellfield road reclamation unit cost (\$/1000 ft)	\$690	
	Subtotal wellfield road reclamation costs		\$3,450
III.	Pond Decommissioning (2 X 350')		
	Assumptions:		
	Sediment disposal of 6 inches (ft3)	26797	
	Pond dimension are 350 ft x 350 ft. x 20 ft. or 3 acres	3	
	Disposal of inner and outer liners		
	Soil below the liners is not contaminated		
	Folded liner volume each (ft3).	2700	
	Backhoe hourly rate (w/operator)	\$37.75	
	Buldozer hourly rate (w/operator)	\$37.75	
A.	Removal and loading		
	1 Equipment		
	Number of backhoes	1	
	Number of hours	40	
	Number of bulldozers	1	
	Number of hours	40	
	2 Labor		
	Number of persons	3	
	Number of hours	40	
	\$/hr/person	\$15.00	
	Total removal and loading costs		\$4,820.00
B.	Transportation and disposal		
	Transportation and disposal unit costs (\$/ft3)	\$3.85	
	Total transportation and disposal costs (sediment and 1 liner)		\$113,563
	Subtotal pond reclamation costs (1 ponds)		\$118,383
	Subtotal pond reclamation costs (1 ponds)		\$236,767
IV.	Soil		
	Assumptions:		
	Acres of plant area	6	
	Surveys by staff		
	Depth of contaminated soil (in)	2	
	Percent of wellfield contaminated	1	
	Soil analysis each	\$100	
A.	Survey costs		
	50 soil sample analysis	\$5,000	
	Flags, and supplies	\$250	
	Subtotal survey costs	\$5,250	
B.	Disposal costs		
	Backhoe one week	\$1,510	
	Volume to disposal	436	
	NRC disposal unit cost (ft3)	\$3.85	
	Subtotal NRC-licensed facility disposal costs	\$1,677	
	Plant area soil D & D costs		\$6,927
V	Final Satellite Area Reclamation		
	Assumptions:		
	Area of disturbance (acres)	10	
A.	Ripping overburden with dozer		
	Ripping unit cost per WDEQ Guideline No. 12, App.11 (\$/acre)	\$581.67	
	Subtotal ripping costs	\$5,817	
B.	Disking and seeding		
	Disking/seeding unit cost (\$/acre)	\$200.00	
	Subtotal disking/seeding costs	\$2,000	
	Subtotal surface reclamation costs		\$7,817
TOTAL WELLFIELD AND SATELLITE SURFACE RECLAMATION COSTS			\$291,161

HRI CROWNPOINT URANIUM PROJECT
Financial Assurance Plan for the Crownpoint Site
Summary

Category	Project Total	Contingency/ Profit 15%	Contingency/ Profit 25%
Groundwater Restoration	\$10,890,592	\$1,633,589	
Groundwater Stability Analysis	\$427,160	\$64,074	
Well Plugging	\$3,967,537	\$595,131	
Equipment Removal	\$62,019	\$9,303	
Wellfield D & D	\$419,192		\$104,798
Building D & D	\$98,775		\$24,694
Surface Reclamation	\$291,161		\$72,790
Totals	\$16,156,435	\$2,302,096	\$202,282
Contingency/Profit			\$2,504,378
Total Surety			\$18,660,813

November 19, 2001

HRI CROWNPOINT URANIUM PROJECT
Financial Assurance Plan
Project Summary

Category	Project Total	Contingency/ Profit	Totals
Churchrock Section 8	\$8,593,794	\$1,345,278	\$9,939,072
Churchrock Section 17	\$4,686,497	\$709,578	\$5,396,075
Unit 1	\$11,618,016	\$1,792,017	\$13,410,033
Crownpoint	\$16,156,435	\$2,504,378	\$18,660,813
Totals	\$41,054,742	\$5,720,472	\$47,405,994

ABBREVIATIONS/ACRONYMS

\$	Dollars
\$/Kgal	Dollars per 1000 gallons
avg	average
BBLs	42 Gallon Barrel
ft	feet
ft ²	square feet
ft³/CU FT	cubic feet
gal	gallons
gpm	gallons per minute
H&S	Health and Safety
H ₂ S	Hydrogen Sulfide
H ₂ SO ₄	Sulfuric Acid
HCl	Hydrochloric Acid
Hp	Horsepower
Kgal	1000 gallons
Kwh	Kilowatt-hours
HaOH	Caustic Soda
OD	Outside Diameter
PPE	personal protective equipment
PV	Pore Volume
reqm't	requirement
RO	Reverse Osmosis
SXS	sacks (94 lbs. cement, 50 lbs. gel)
WDEQ	Wyoming Department of Environmental Quality
WDW	Waste Disposal Well