HRI Churchrock Project
Section 17 Wellfield Equipment Tabulation

# H. Houses	# Injectors	# Extractors	# Feet 2"	# Feet 10"	# Feet 14"	Gravel Road
1	21	18	4240	360		
2	21	18	12210	520		
3	19	21	9640	580		
4	23	26	6780	1080		
5	16	30	3150	340		
6	13	18	2750	280		
Totals	113	113	38770	3160	4500	2250

Pipe Wall Volume Data

Outside Diameter (in)	Area Inside OD (ft2)	Wall Volume SDR17 (ft3/ft)
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

Ground Water Restoration

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

ZONE	Area (ft2)	Tk (ft)	Vol (ft3)	Por	gal/ft3	PV (gal)	H-PIF	V-PIF	CPV (gal)	9 X CPV
D	123,023	7.5	922,673	0.25	7.48	1,725,398	1.5	1.3	3,364,525	30,280,727
UUPC	22,665	8.5	192,653	0.25	7.48	360,260	1.5	1.3	702,507	6,322,566
UPC	113,140	7.3	825,922	0.25	7.48	1,544,474	1.5	1.3	3,011,725	27,105,521
LPC	50,751	8	406,008	0.25	7.48	759,235	1.5	1.3	1,480,508	13,324,574
UA	36,220	5.6	202,832	0.25	7.48	379,296	1.5	1.3	739,627	6,656,642
LA	161,163	8.2	1,321,537	0.25	7.48	2,471,273	1.5	1.3	4,818,983	43,370,849
UB	160,090	9.1	1,456,819	0.25	7.48	2,724,252	1.5	1.3	5,312,290	47,810,614
LUB	186,430	8.5	1,584,655	0.25	7.48	2,963,305	1.5	1.3	5,778,444	52,006,000
LB	175,981	10.6	1,865,399	0.25	7.48	3,488,295	1.5	1.3	6,802,176	61,219,584
UC	181,120	9.1	1,648,192	0.25	7.48	3,082,119	1.5	1.3	6,010,132	54,091,189
ULC	107,214	6.8	729,055	0.25	7.48	1,363,333	1.5	1.3	2,658,500	23,926,498
LC	169,010	6.5	1,098,565	0.25	7.48	2,054,317	1.5	1.3	4,005,917	36,053,255
UD	142,694	8.6	1,227,168	0.25	7.48	2,294,805	1.5	1.3	4,474,870	40,273,826
MD	75,350	11.2	843,920	0.25	7.48	1,578,130	1.5	1.3	3,077,354	27,696,189
LD	170,394	11.2	1,908,413	0.25	7.48	3,568,732	1.5	1.3	6,959,027	62,631,245
UE	265,391	10.2	2,706,988	0.25	7.48	5,062,068	1.5	1.3	9,871,032	88,839,292
LE	361,312	7.7	2,782,102	0.25	7.48	5,202,531	1.5	1.3	10,144,936	91,304,428
SEC. 17 TOTALS	2,501,948		21,722,900			40,621,823			79,212,556	712,913,000

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

Number of Wells

Extraction Wells

Header House 1	18
Header House 2	18
Header House 3	21
Header House 4	26
Header House 5	30
Header House 6	18
Total	131

Injection Wells

Header House 1	21
Header House 2	21
Header House 3	19
Header House 4	23
Header House 5	16
Header House 6	13
Total	113

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

	Weekly	Daily	Hourly	Per Foot
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

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 worders 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

	Weekly	Daily	Hourly	Per Foot
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	
Total Per Foot Cost				$0.36

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

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

	Width (ft)	Acres	$/Acres	Total
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 DISCING/SEEDING COSTS PER ACRE = $200.00

Revised October 15, 2010

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 capa
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.

	Unit Shipment Cost	Units/Drum	Drums/Truck	Total $/ft3
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 concreteand other bulk wastes

	Unit Shipment Cost	Ft3/Truck	Total $/ft3
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 theWaste 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.

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

LABOR SUMMARIES

Rev. March 16, 2001

		Number	Hourly Rate	Yearly Salary	Annual	Monthly
Management and Accounting						
Salaried	Operations Manager	1	-	$120,000	$120,000	$10,000
Salaried	Environmental Manager	1	-	$105,000	$105,000	$8,750
Salaried	Accounting Manager			$105,000	$105,000	$8,750
Salaried	Accountant		-	$65,000	$65,000	$5,417
Plant Personnel						
Salaried	Plant Superintendent		-	$85,000	$85,000	$7,083
Salaried	Plant Engineer		-	$45,000	$45,000	$3,750
Salaried	Radiation Officer	1	-	$30,000	$30,000	$2,500
Salaried	Chemist	1	-	$46,000	$46,000	$3,833
Salaried	Plant Foreman		-	$28,000	$28,000	$2,333
Salaried	Maintenance Foreman		-	$28,000	$28,000	$2,333
Wage	Lab Technicans		$9.62	-	$20,010	$1,667
Wage	Secretary		$9.62	-	$20,010	$1,667
Wage	Electrician	1	$14.43	-	$30,014	$2,501
Wage	Apprentice Electrican		$12.01	-	$24,981	$2,082
Wage	Plant Operator	1	$11.54	-	$24,003	$2,000
Wage	Assistance Plant Operator		$11.54	-	$24,003	$2,000
Wage	Dryer Operator		$11.54	-	$24,003	$2,000
Wage	Maintenance		$11.54	-	$24,003	$2,000
Wellfield Personnel						
Salaried	Wellfield Superintendent		-	$41,200	$41,200	$3,433
Salaried	Drilling Engineer		-	$40,500	$40,500	$3,375
Salaried	Foreman	1	-	$28,000	$28,000	$2,333
Wage	Truck Driver	1	$11.54	-	$24,003	$2,000
Wage	Electrician		$14.43	-	$30,014	$2,501
Salaried	Data Entry Clerk		-	$20,000	$20,000	$1,667
Wage	Secretary			$20,000	$20,000	$1,667
Wage	Logger		$12.01	-	$24,981	$2,082
Wage	Wellfield Operators	1	$11.50	-	$23,920	$1,993
Wage	Assistant Wellfield Operator		$11.50	-	$23,920	$1,993
Wage	Balancer		$11.50	-	$23,920	$1,993
Wage	Environmental Sampler		$11.50	-	$23,920	$1,993
Wage	Pump Hoist Operators	1	$11.50	-	$23,920	$1,993
Wage	Backhoe Operator		$10.49	-	$21,819	$1,818
Wage	Maintenance		$11.50	-	$23,920	$1,993
Wage	Casing Crew		$11.50	-	$23,920	$1,993
Engineering & Geologic Personnel						
Salaried	Chief Engineer		-	$66,000	$66,000	$5,500
Salaried	RESERVOIR ENGINEER		-	$60,000	$60,000	$5,000
Salaried	Senior Geologist	1	-	$58,000	$58,000	$4,833
Salaried	Geologist		-	$48,800	$48,800	$4,067
Salaried	Logging Supervisor		-	$35,000	$35,000	$2,917
Wage	Secretary			$20,000	$20,000	$1,667
Wage	Surveyor		$12.02	-	$25,002	$2,083
Wage	Assistant Surveyor		$12.02	-	$25,002	$2,083
Wage	Logger		$10.49	-	$21,819	$1,818

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 (yd3/mo)*	87
Solids (ft3/mo)	2,355
Unit disposal cost ($/ft3)	$2.78
Monthly disposal cost ($)	**$6,541**

*1 yd3 ~ 1 ton

CHURCHROCK SECTION 17 GROUNDWATER RESTORATION AND DECOMMISSIONING COSTS

Rev. August 1, 2001

COSTS ASSOCIATED WITH RO AND BRINE CONCENTRATION OPERATION AND MAINTENANCE

	Period (Sect. 8 Overlap)	5/6	6/6	7/6	8/6	9/6	10/6	11/6	12/6	1/7	2/7	3/7	4/7
	Period (Stand Alone)	1/2	2/2	3/2	4/2	5/2	6/2	7/2	8/2	9/2	10/2	11/2	12/2
1	***Management and Accounting***												
2	Operations Manager	1	1	1	1	1	1	1	1	1	1	1	1
3	Environmental Manager	1	1	1	1	1	1	1	1	1	1	1	1
4	***Plant Personnel***												
5	Radiation Officer	1	1	1	1	1	1	1	1	1	1	1	1
6	Chemist	1	1	1	1	1	1	1	1	1	1	1	1
7	Electrician	1	1	1	1	1	1	1	1	1	1	1	1
8	Plant Operator	1	1	1	1	1	1	1	1	1	1	1	1
9	***Wellfield Personnel***												
10	Foreman	1	1	1	1	1	1	1	1	1	1	1	1
11	Truck Driver	1	1	1	1	1	1	1	1	1	1	1	1
12	Wellfield Operators	1	1	1	1	1	1	1	1	1	1	1	1
13	Pump Hoist Operators	1	1	1	1	1	1	1	1	1	1	1	1
14	***Engineering & Geologic Personnel***												
15	Senior Geologist	1	1	1	1	1	1	1	1	1	1	1	1
16													
17	***Total Employees***	11	11	11	11	11	11	11	11	11	11	11	11
18													
19	***Operations Statistics***												
20	Reverse Osmosis Treatment												
21	GPM RO Capacity	580	580	580	580	580	580	580	580	580	580	580	580
22	GPM RO Product	464	464	464	464	464	464	464	464	464	464	464	464
23	GPM RO Reject	116	116	116	116	116	116	116	116	116	116	116	116
24	MM Gals, RO Processed - Month	25,891,200	24,220,800	25,891,200	25,056,000	25,891,200	25,056,000	25,891,200	25,891,200	25,056,000	25,891,200	25,056,000	25,891,200
25	MM Gals, RO Permiate - Month	20,712,960	19,376,640	20,712,960	20,044,800	20,712,960	20,044,800	20,712,960	20,712,960	20,044,800	20,712,960	20,044,800	20,712,960
26	MM Gals, RO Reject - Month	5,178,240	4,844,160	5,178,240	5,011,200	5,178,240	5,011,200	5,178,240	5,178,240	5,011,200	5,178,240	5,011,200	5,178,240
27	Brine Concentration												
28	GPM BC Capacity	125	125	125	125	125	125	125	125	125	125	125	125
29	GPM Distillate	113.5	113.5	113.5	113.5	113.5	113.5	113.5	113.5	113.5	113.5	113.5	113.5
30	GPM Brine	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
31	MM Gals, BC Capacity - Month	5,580,000	5,220,000	5,580,000	5,400,000	5,580,000	5,400,000	5,580,000	5,580,000	5,400,000	5,580,000	5,400,000	5,580,000
32	MM Gals, Distillate - Month	5,066,640	4,739,760	5,066,640	4,903,200	5,066,640	4,903,200	5,066,640	5,066,640	4,903,200	5,066,640	4,903,200	5,066,640
33	MM Gals, Brine - Month	111,600	104,400	111,600	108,000	111,600	108,000	111,600	111,600	108,000	111,600	108,000	111,600
34	Process Results												
35	Beginning Gallons (9 PV Eq.)	408,547,400	382,767,800	358,651,400	332,871,800	307,923,800	282,144,200	257,196,200	231,416,600	205,637,000	180,689,000	154,909,400	129,961,400
36	Beginning PV	5.16	4.83	4.53	4.20	3.89	3.56	3.25	2.92	2.60	2.28	1.96	1.64
37	Gallons Processes Month	25,779,600	24,116,400	25,779,600	24,948,000	25,779,600	24,948,000	25,779,600	25,779,600	24,948,000	25,779,600	24,948,000	25,779,600
38	PV Processed Month	0.33	0.30	0.33	0.31	0.33	0.31	0.33	0.33	0.31	0.33	0.31	0.33
39	Cumulative Gallons Processed	330,145,200	354,261,600	380,041,200	404,989,200	430,768,800	455,716,800	481,496,400	507,276,000	532,224,000	558,003,600	582,951,600	608,731,200
40	Cumulative PV Processed	4.17	4.47	4.80	5.11	5.44	5.75	6.08	6.40	6.72	7.04	7.36	7.68
41	Remaining Gallons to Process	382,767,800	358,651,400	332,871,800	307,923,800	282,144,200	257,196,200	231,416,600	205,637,000	180,689,000	154,909,400	129,961,400	104,181,800
42	Remaining PV to Process	4.83	4.53	4.20	3.89	3.56	3.25	2.92	2.60	2.28	1.96	1.64	1.32
43	***ESTIMATED COST DETAIL***												
44													
45	Description	---GW Restoration Operations---											
46	-------												
47	Salaries-Direct	$32,250	$32,250	$32,250	$32,250	$32,250	$32,250	$32,250	$32,250	$32,250	$32,250	$32,250	$32,250
48	Wages-Direct	$10,487	$10,487	$10,487	$10,487	$10,487	$10,487	$10,487	$10,487	$10,487	$10,487	$10,487	$10,487
49	Insurance-Workmans Compensation	$1,368	$1,368	$1,368	$1,368	$1,368	$1,368	$1,368	$1,368	$1,368	$1,368	$1,368	$1,368
50	Payroll Taxes	$2,992	$2,992	$2,992	$2,992	$2,992	$2,992	$2,992	$2,992	$2,992	$2,992	$2,992	$2,992
51	Medical Insurance	$4,274	$4,274	$4,274	$4,274	$4,274	$4,274	$4,274	$4,274	$4,274	$4,274	$4,274	$4,274
52	401K Contributions	$1,068	$1,068	$1,068	$1,068	$1,068	$1,068	$1,068	$1,068	$1,068	$1,068	$1,068	$1,068
53	Telephone/Telegraph	$1,250	$1,250	$1,250	$1,250	$1,250	$1,250	$1,250	$1,250	$1,250	$1,250	$1,250	$1,250
54	Postage/Freight	$150	$150	$150	$150	$150	$150	$150	$150	$150	$150	$150	$150
55	Copy Equipment	$300	$300	$300	$300	$300	$300	$300	$300	$300	$300	$300	$300
56	Other Equipment & Rental	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200
57	Office Supplies	$250	$250	$250	$250	$250	$250	$250	$250	$250	$250	$250	$250
58	Office Equipment Maintenance	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50
59	Data Processing	$150	$150	$150	$150	$150	$150	$150	$150	$150	$150	$150	$150
60	Maps	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50
61	Drafting & Printing	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50
62	Transportation - Air & Car	$850	$850	$850	$850	$850	$850	$850	$850	$850	$850	$850	$850
63	Meals & Entertainment	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200
64	Misc. Travel Expense	$300	$300	$300	$300	$300	$300	$300	$300	$300	$300	$300	$300
65	Env-Depreciable Equipment	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100
66	Env-Operational Analyses	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000
67	Environmental - Miscellaneous	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200
68	Safety	$250	$250	$250	$250	$250	$250	$250	$250	$250	$250	$250	$250
69	Backhoe Maintenance	$700	$700	$700	$700	$700	$700	$700	$700	$700	$700	$700	$700
70	Misc. Chemicals	$2,450	$2,450	$2,450	$2,450	$2,450	$2,450	$2,450	$2,450	$2,450	$2,450	$2,450	$2,450
71	Utilities - Electric, Wellfield	$12,053	$12,053	$12,053	$12,053	$12,053	$12,053	$12,053	$12,053	$12,053	$12,053	$12,053	$12,053
72	Utilities - Electric, Brine Concentrator	$32,850	$32,850	$32,850	$32,850	$32,850	$32,850	$32,850	$32,850	$32,850	$32,850	$32,850	$32,850
73	Utilities - Electric, Plant and RO	$5,896	$5,896	$5,896	$5,896	$5,896	$5,896	$5,896	$5,896	$5,896	$5,896	$5,896	$5,896
74	Submersible Pumps	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500
75	Submersible Motors	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500
76	Field Piping & Valves	$400	$400	$400	$400	$400	$400	$400	$400	$400	$400	$400	$400
77	Meters	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50
78	Misc. Field	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100
79	Handtools	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100
80	Plant Piping & Valves	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200
81	Plant Brine Conc Inst.	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50
82	Pumps	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500
83	Plant Electrical	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100
84	Filters	$1,100	$1,100	$1,100	$1,100	$1,100	$1,100	$1,100	$1,100	$1,100	$1,100	$1,100	$1,100
85	Evaporation Ponds	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50	$50
86	Roads	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100
87	Gas, Oil, Grease	$1,150	$1,150	$1,150	$1,150	$1,150	$1,150	$1,150	$1,150	$1,150	$1,150	$1,150	$1,150
88	Disposal - B.C. Soilds	$6,541	$6,541	$6,541	$6,541	$6,541	$6,541	$6,541	$6,541	$6,541	$6,541	$6,541	$6,541
89	RO Unit	$250	$250	$250	$250	$250	$250	$250	$250	$250	$250	$250	$250
90	Lab Supplies	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100	$100
91	RO Membrane	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000
92	Field Equip. Repairs & Maint.	$150	$150	$150	$150	$150	$150	$150	$150	$150	$150	$150	$150
93	Vehicle Repairs & Maint.	$550	$550	$550	$550	$550	$550	$550	$550	$550	$550	$550	$550
94	Vehicles - Pickups	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500
95	Vehicles - Tractors & Trucks	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000
96	Vehicles - Automobiles	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500
97													
98	Monthly Total	$130,228	$130,228	$130,228	$130,228	$130,228	$130,228	$130,228	$130,228	$130,228	$130,228	$130,228	$130,228
99	Cumulative Total	$1,692,969	$1,823,198	$1,953,426	$2,083,654	$2,213,883	$2,344,111	$2,474,340	$2,604,568	$2,734,796	$2,865,025	$2,995,253	$3,125,482
100	Period Days	31	29	31	30	31	30	31	31	30	31	30	31

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 (28)				
	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)		4.4		
	1	Well Sampling prior to restoration start			
		# of wells	28		
		$/sample	$380	$10,640	
	2	Restoration progress sampling			
		# of wells	28		
		$/sample	$120		
		Samples/year	1	$13,440	
B.	Stability				
		Estimated stabilization period (months)	6		
		# of wells	28		
		Sample freq. mos.	2		
		$/sample	$380		
		Total		$31,920	
Total monitoring and sampling costs					**$56,000**

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CHURCHROCK SECTION 17 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	6
5. Engineer/gelolgist - 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 800 ft hole	$450.00
9. Pump Hoist Contractor per well for cementing 800 ft hole	$375.00
10. Wellfield acreage fully developed	40 ac.
11. Assume Cement Mixture will be 12.5 ppg with 2% gel	
12. SX required for 800 ft (6" csg) of 12.5 ppg cement with 2% Gel (without shrinkage factor)	75.3
13. SX gel required for 75.3 SX Cmt (without shrinkage factor)	2.8
14. SX required for 800 ft (5" csg) of 12.5 ppg cement with 2% Gel (without shrinkage factor)	52.3
15. SX gel required for 52.3 SX Cmt (without shrinkage factor)	1.9

Unit of Measure	IN	# of Wells	FT	CU YD	CUFT	BBLS	SXS	SXS	w/o shrinkage	with shrinkage	BACKHOE				
ITEM	WELL DIAMETER	QTY	AVERAGE DEPTH	HOLE VOLUME	HOLE VOLUME	CEMENT REQ'D (w/shrinkage)	CEMENT REQ'D (wo/shringage)	GEL $ / well (wo/shrinkage)	CEMENT & GEL $ / well	CEMENT & GEL $ / well	$ / well Assume 10 hr days	ENG/GEOL $ / well	Contract Cementer for Mixing/Pumping Cement	Contract Pump Hoist to Cmt well ($ / well)	TOTAL PER HOLE
Injectors	6	113	900	6.542	176.6	37.7	84.7	3.2	$596.23	$715.47	$62.92	$32.05	$506	$421.88	$1,738.56
Extractors	6	131	900	6.542	176.6	37.7	84.7	3.2	$596.23	$715.47	$62.92	$32.05	$506	$421.88	$1,738.56
Deep Monitor	5	17	1000	5.048	136.3	29.1	94.1	3.5	$662.47	$794.97	$62.92	$32.05	$563	$468.75	$1,921.19
Brushy Monitor	5	7	800	4.038	109.0	23.3	75.3	2.8	$529.98	$635.97	$62.92	$32.05	$450	$375.00	$1,555.94
Dakota Monitor	5	4	700	3.533	95.4	20.4	65.9	2.5	$463.73	$556.48	$62.92	$32.05	$394	$328.13	$1,373.32
Recapture Monitor	5	4	1100	5.552	149.9	32.0	103.5	3.9	$728.72	$874.47	$62.92	$32.05	$619	$515.63	$2,103.81
Section 8 Total															

III.	**Buried Trunkline**			
	Length of trunkline trench (ft)		2250	
	A.	Removal and Loading		
		Main pipeline removal unit cost ($/ft of trench)	$0.45	
		Subtotal trunkline removal and loading costs	$1,013	
	B.	Pipe cutting		
		Number of operators	2	
		Operator hourly rate	$15	
		Feet pipe per hour	100	
		Subtotal cutting cost	$675	
	C.	Transport and disposal costs (NRC-licensed facility)		
		1 10" HDPE trunkline		
		Piping length (ft)	1580	
		Inj and ext length	3160	
		Cut volume (ft^3/ft)	0.14	
		Cut volume (ft^3)	442	
		2 14" HDPE trunkline		
		Piping length (ft)	2250	
		Inj and ext length	4500	
		Cut volume (ft^3/ft)	0.24	
		Cut volume (ft^3)	1067	
		Total trunkline chipped volume (ft^3)	1509	
		Volume for disposal assuming 50% void space (ft^3)	2263	
		Transportation and disposal unit cost ($/$ft^3$)	**$3.85**	
		Subtotal trunkline transport and disposal costs	**$8,714**	
	Trunkline decommissioning costs			**$10,401**
IV.	**Well Houses**			
	Total quantity		40	
	Average well house volume (ft^3)		12.5	
	A.	Removal		
		Total volume (ft^3)	500	
		Demolition unit cost per WDEQ Guideline No. 12 ($/$ft^3$)	$0.15	
		Subtotal well house demolition costs	$76	
	B.	Survey and decontamination		
		Assumptions:		
		Cost per well house	$5	
		Subtotal Survey and decontamination costs	$200	
	C.	Disposal		
		Total volume (yd3)	19	
		Volume for disposal assuming 10% void space (cy)	20	
		Unrestricted disposal cost of 26.7 $/yd3	$27.00	
		Subtotal unrestricted disposal costs	$530	
	Well house removal and disposal per wellfield			$806

Wellfield Surface Reclamation

	Description	Unit	Total
I.	**Wellfield Area Reclamation**		
	Wellfields area (acres)	28	
	Disking/seeding unit cost ($/acre)	$200	
	Subtotal reclamation costs for wellfield		$5,600
II.	**Wellfield Road Reclamation**		
	Length of wellfield roads (1000 ft)	2.25	
	Wellfield road reclamation unit cost ($/1000 ft)	$690	
	Subtotal wellfield road reclamation costs		$1,553
TOTAL WELLFIELD AND SATELLITE SURFACE RECLAMATION COSTS			**$7,153**

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HRI CROWNPOINT URANIUM PROJECT
Financial Assurance Plan for Churchrock Section 17
Summary

Category	Project Total	Contingency/ Profit 15%	Contingency/ Profit 25%
Groundwater Restoration	$4,089,818	$613,473	
Groundwater Stability Analysis	$56,000	$8,400	
Well Plugging	$474,648	$71,197	
Wellfield D & D	$58,879		$14,720
Surface Reclamation	$7,153		$1,788
Totals	$4,686,497	$693,070	$16,508
Contingency/Profit			$709,578
Total Surety Proposed			$5,396,075

ABBREVIATIONS/ACRONYMS

$	Dollars
$/Kgal	Dollars per 1000 gallons
avg	average
BBLS	42 Gallon Barrel
ft	feet
ft2	square feet
ft3/CU FT	cubic feet
gal	gallons
gpm	gallons per minute
H&S	Health and Safety
H2S	Hydrogen Sulfide
H2SO4	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