Department of Environmental Quality

To protect, conserve and enhance the quality of Wyoming's environment for the benefit of current and future generations.

Matthew H. Mead, Governor

John Corra, Director

March 19, 2012

Mr. Josh Leftwich
Cameco Resources, Inc.
20210 Carey Ave., Suite 600
Cheyenne, WY 82001

RE: North Butte ISL Operation, Permit No. 632; 2011 Annual Report

Dear Mr. Leftwich:

I have reviewed the 2011 Annual Report for the North Butte Project which was received January 30, 2012, under cover of your letter dated January 27, 2012. This memo replaces the review memo sent to you under cover of my letter of March 6, 2012. As was pointed out by Jeanne Wolford of Cameco, I inadvertently reviewed an outdated copy of the bond estimate, rather than the bond estimate included with your January 27, 2012, letter and Report. Please accept my apologies for that mistake.

As noted in the enclosed review memo, the January 27, 2012, estimate did not have most of the problems I identified with the old report, such as referencing an out-dated Guideline 12 bond cost reference. It did have a few errors or omissions that I list in my attached memo. More explanations within the spreadsheet are needed.

If you wish a digital copy of the spreadsheet I used in my review, please contact me or email me at glenn.mooney@wyo.gov and I will email it to you.

I will finalize the annual report review and bonding recommendations following the annual inspection. I will contact you about the annual inspection when workload and weather permit.

Please feel free to call or write if you have any questions.

Sincerely,

Glenn Mooney
Senior Geologist

MEM 3/22/12

2100 West 5th Street • SHERIDAN, WY 82801
(307) 673-9337 • FAX (307) 672-2213

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Attachment

cc: Cheyenne File
US Nuclear Regulatory Commission, Mail Stop T-7J8, Washington, DC 20555-0001
w/attach.

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MEMORANDUM

TO: File, Cameco Resources, Inc. 2011 Annual Report for the North Butte ISL Project, Permit No. 632

FROM: Glenn Mooney GM

DATE: March 19, 2012

SUBJECT: Revised Review of 2011 Annual Report

Introduction

The 2011 Annual Report for PRI's North Butte ISL Operations was received January 30, 2012, under cover of Josh Leftwich's letter dated January 27, 2012. A review memo was sent to Cameco under cover of my letter of March 6, 2012. On March 15, 2012, a telephone call from Jeanne Wolford of Cameco disclosed that I had inadvertently reviewed an older version of the bond estimate and not the estimate included with the 2011 Annual Report.

Following is a review of the bond estimate included with the 2011 Annual Report.

Bond Review

A review of the bond estimate included with the Annual Report was conducted. The estimates costs were compared with the costs included in the most recent Guideline 12 (Nov. 2011).

The following comments were generated:

I. Part I, Process Equipment Removal and Disposal – *I Proces Equip Worksheet*

A. Removal and Loading Costs

More information is needed in this section to fully explain what equipment is being used and what costs are being used. It only by delving deep into the digital version of the spreadsheet can these be identified. It is only by referencing the digital spreadsheet can it be found that both the costs for a loader and crane are included in this section.

4. RO Units

There should be costs included for the crane or loader needed to get this equipment on a truck. Then, once on a truck, where are the ro units to be hauled and at what cost? No changes were made to the spreadsheet.

II. Part II. Building Demolition and Disposal – *II BLDG demol Worksheet*

B. Demolition Costs

1. Building

Demolition costs

MTK 3/22/12

Why has the description of this building been changed to area and amount for this building been changed to 49,080 ft3? The volume of the building, according to the SatellDimens worksheet remains at 524,800 ft3. This latter amount was entered into the spreadsheet.

C. Disposal Costs

1. Building

Costs for the dump truck were increased, but not to the new Guideline 12 cost as advertised, which should have been $77.62/hr., but to $75.29/hr. The former amount was entered into the spreadsheet.

2. Concrete Floor

The cost for the Cat 980G loader was listed as coming from Guideline 12, Appendix J which was $116.22/hour, but a lesser cost of $112.73 was used. The former amount was entered into the spreadsheet.

Costs for the dump truck were increased, but not to the new Guideline 12 cost as advertised, which should have been $77.62/hr., but to $75.29/hr. The former amount was entered into the spreadsheet.

3. Concrete Footing

The cost for the Cat 980G loader was listed as coming from Guideline 12, Appendix J which was $116.22/hour, but a lesser cost of $112.73 was given. The former amount was entered into the spreadsheet.

Costs for the dump truck were increased, but not to the new Guideline 12 cost as advertised which should have been $77.62/hr., but to $75.29/hr. The former amount was entered into the spreadsheet.

III. Part III. Wellfield Bldgs., Equipment Removal and Disposal – *III WF EQUIP Worksheet*

D. Well Covers

3. Disposal

The costs for the dump truck were incorrect at $116.22/hr. instead of $77.62/hr. The problem was that the cost referenced cell B139 in the MasterCosts worksheet which is for a Cat 980G loader. The correct cell is B140. The correct reference was entered into the spreadsheet.

E. Header houses

3. Disposal

These disposal costs were questionable because at $8.87/cy. this indicates on-site disposal. However, the subtotal below indicates this is intended to be off-site disposal which is $79.54/cy. The latter amount was entered into the spreadsheet.

IV. Part V. Miscellaneous Surface Reclamation – *V MISC RECLAM Worksheet*

C. Header House Surface Reclamation

1. Ripping with Dozer

This cost is reduced from $1,104.19/hr. to $867.49/hr. because the higher

cost involved the use of a D-10, an inappropriate machine for this site. A Cat D-9 from Appendix I of Guideline 12 is substituted. This cost is for ripping asphalt which is more difficult to rip, but ripping of overburden would be done deeper, so the two factors should average out. The latter amount was entered into the spreadsheet.

D. Satellite Plant Area Reclamation

1. Topsoil Application

The application cost of $1.27/cy. was used, but this is for a 1000 ft. haul. The average haul distance is given as 2000 ft. so this cost should be $1.65/cy. The latter amount was entered into the spreadsheet.

E. Access Road Reclamation

2. Ripping Overburden with Dozer

This cost is reduced from $1,104.19/hr. to $867.49/hr. for the same reason as described above in Section IV.C.1. The latter amount was entered into the spreadsheet.

The revised spreadsheet is attached

The end result of my alterations is that the total required bond amount has changed from Cameco's estimate of $10,155,015.00 to $10,363,327.00, an increase of $208,312.00. The missing information and costs in Part I.A. above are felt to be minor enough to be put off until the 2012 Report and estimate. And also as noted above, more explanations are needed in the body of the spreadsheet so that it understandable without referencing the digital form of the estimate.

Bond

The existing bond for Permit No. 631 is Letter of Credit No. [redacted] written by the Scotia Bank/The Bank of Nova Scotia in the amount of $6,773,000.00 and another Letter of Credit No. [redacted] written by the Royal Bank of Canada in the amount of $1,745,000.00. Together, they total $8,518,000.00.

\gm

Attachment

cc: Cheyenne File w/attach.

APPENDIX B

2012-13 YEAR 1 MINING OPERATIONS RECLAMATION SURETY BOND ESTIMATE

WDEQ Permit No. 632 Annual Report / NRC SUA-1548

North Butte ISR Project - WDEQ Permit No. 632 Update

TOTAL RECLAMATION COST ESTIMATE

PART I. PROCESS EQUIPMENT REMOVAL & DISPOSAL COST	$111,165
PART II. BUILDING DEMOLITION AND DISPOSAL COST	$705,405
PART III. WELLFIELD BUILDINGS & EQUIPMENT REMOVAL & DISPOSAL COST	$933,066
PART IV. WELL & BOREHOLE ABANDONMENT COST	$5,590,562
PART V. MISCELLANEOUS SURFACE RECLAMATION COST	$852,155
SUBTOTAL RECLAMATION COST ESTIMATE	$8,192,353
CONTRACTOR PROFIT, OVERHEAD, MOBILIZATION, DEMOBILIZATION COSTS (10%) *	$819,235
SUBTOTAL	$9,011,589
ADDITIONAL MISCELLANEOUS AND UNKNOWN COSTS (15%) **	$1,351,738
TOTAL CALCULATED SURETY (IN 2012 DOLLARS)	**$10,363,327**

* Based on WDEQ-LQD Guideline No. 12, Section II(B)(12)(b)

** Based on WDEQ-LQD Guideline No. 12, Sections II(B)(12)(except b) and (13)

APPENDIX B
2012-13 YEAR 1 MINING OPERATIONS RECLAMATION SURETY BOND ESTIMATE
WDEQ Permit No. 632 Annual Report / NRC SUA-1548
North Butte ISR Project - WDEQ Permit No. 632 Update

PART I: PROCESS EQUIPMENT REMOVAL & DISPOSAL	Satellite Plant
A. Removal and Loading Costs	
1. Tankage	
Number of Tanks	25
Volume of Tank Construction Material (ft3)	1190
a. Labor	
Number of Persons	3
Ft3/Day	25
Number of Days	48
Labor Costs (per 8 hr day)	$138
Subtotal Labor Costs	**$19,849**
Number of Days	48
$/Day	$1,515
Subtotal Equipment Costs	**$72,732**
Subtotal Tankage Removal and Loading Costs	**$92,581**
2. PVC Pipe	
PVC Pipe Footage	6000
Average PVC Pipe Diameter (inches)	4
Shredded PVC Pipe Volume Reduction (ft3/ft)	0.016
Volume of Shredded PVC Pipe (ft3)	96
a. Labor	
Number of Persons	2
Ft/Day	300
Number of Days	20
Labor Costs (per 8 hr day)	$138
Subtotal Labor Costs	**$5,514**
b. Shredding Costs	
Pipe Shredding Unit Cost ($/diameter-in-ft)	$0.028
Subtotal Shredding Costs	**$672**
Subtotal PVC Pipe Removal and Loading Costs	**$6,186**
3. Pumps	
Number of Pumps	16
Average Volume (ft3/pump)	4.93
Volume of Pumps (ft3)	78.88
a. Labor	
Number of Persons	1
Pumps/Day	2
Number of Days	8
$/Day/Person	$138
Subtotal Pump Removal and Loading Costs	**$1,103**
4. RO Units	
Volume (ft3)	250

APPENDIX B
2012-13 YEAR 1 MINING OPERATIONS RECLAMATION SURETY BOND ESTIMATE
WDEQ Permit No. 632 Annual Report / NRC SUA-1548
North Butte ISR Project - WDEQ Permit No. 632 Update

PART I: PROCESS EQUIPMENT REMOVAL & DISPOSAL	Satellite Plant
a. Labor	
Number of Persons	2
Ft3/Day	175
Number of Days	1
Labor Costs (per 8 hr day)	$138
Subtotal Labor Costs	**$275.68**
Total Equipment Removal and Loading Costs	**$100,145**
B. Transportation and Disposal Costs (NRC-Licensed Facility)	
1. Tankage	
Volume of Tank Construction Material (ft3)	1190
Volume for Disposal Assuming 10% Void Space (ft3)	1309
Transportation and Disposal Unit Cost ($/ft3)	$7.34
Subtotal Tankage Transportation and Disposal Costs	**$9,604**
2. PVC Pipe	
Volume of Shredded PVC Pipe (ft3)	96
Volume for Disposal Assuming 10% Void Space (ft3)	106
Transportation and Disposal Unit Cost ($/ft3)	$7.34
Subtotal PVC Pipe Transportation and Disposal Costs	**$778**
3. Pumps	
Volume of Pumps (ft3)	78.88
Volume for Disposal Assuming 10% Void Space (ft3)	87
Transportation and Disposal Unit Cost ($/ft3)	$7.34
Subtotal PVC Pipe Transportation and Disposal Costs	**$638**
Total Equipment Transportation and Disposal Costs	**$11,020**
TOTAL EQUIPMENT REMOVAL + DISPOSAL COSTS	**$111,165**

APPENDIX B

2012-13 YEAR 1 MINING OPERATIONS RECLAMATION SURETY BOND ESTIMATE

WDEQ Permit No. 632 Annual Report / NRC SUA-1548

North Butte ISR Project - WDEQ Permit No. 632 Update

Mod. 3/19/2012 by Glenn Mooney

PART II: BUILDING DEMOLITION & DISPOSAL	Satellite Bldg	DDW 1 Bldg	DDW 2 Bldg
A. Decontamination Costs			
1. Wall Decontamination			
Area to be Decontaminated (ft2)	0	704	704
HCl Acid Wash ($/per sq ft.)	$0.971	$0.971	$0.971
Subtotal Wall Decontamination Costs	$0	$683	$683
2. Concrete Floor Decontamination	80		
Area to be Decontaminated (ft2)	19200	480	480
HCl Acid Wash ($/Gallon)	$0.440	$0.440	$0.440
Subtotal Concrete Floor Decontamination Costs	$8,443	$211	$211
Subtotal Decontamination Costs per Building	$8,443	$894	$894
Total Decontamination Costs			**$10,231**
B. Demolition Costs			
1. Building			
Assume:			
Total Building Surface Area	524,800	4,800	4,800
Demolition Unit Cost per WDEQ Guideline No.12, App.K ($/ft3)	$0.262	$0.262	$0.262
Subtotal Building Demolition Costs	$137,445	$1,257	$1,257
2. Concrete Floor			
Area of Concrete Floor (ft2)	25,600	480	480
Demolition Unit Cost per WDEQ Guideline No.12, App.K ($/ft2)	$5.27	$5.27	$5.27
Subtotal Concrete Floor Demolition Costs	$134,838	$2,528	$2,528
3. Concrete Footing			
Length of Concrete Footing (ft)	960	88	88
Demolition Unit Cost per WDEQ Guideline No.12, App.K ($/lin. ft)	$19.25	$19.25	$19.25
Subtotal Concrete Footing Demolition Costs	$18,484	$1,694	$1,694
Subtotal Demolition Costs per Building	$290,767	$5,479	$5,479
Total Demolition Costs			**$301,725**
C. Disposal Costs			
1. Building			
Volume of Building (cy) Building Construction and Demolition	1,222	178	178
a. Landfill			
Assume:			
Cost to haul to landfill			
Total Trips @12(cy) each	102	15	15
Dump Truck (Guideline 12 App. J $/hr)	$77.62	$77.62	$77.62
Transportation(assume 2 trips per 12hr. Day)	$47,434	$6,900	$6,900
Disposal Unit Cost ($/ton)(Guideline No. 12 App. K)	$79.54	$79.54	$79.54
Percentage (%)	100	100	100
Converted C&D waste volume to tons (.24 tons/cy)[1]	293	43	43
Subtotal Disposal Costs	$70,766	$10,293	$10,293
b. 11e.(2) Byproduct Materials			
Percentage (%)	0	0	0
Volume for Disposal (ft3)	0	0	0
Volume for Disposal Assuming 10% Void Space (ft3)	0	0	0
Transportation and Disposal Unit Cost ($/ft3)	$7.34	$7.34	$7.34
Subtotal 11e.(2) Byproduct Materials	$0	$0	$0
Subtotal Building Disposal Costs	**$70,766**	**$10,293**	**$10,293**

APPENDIX B

2012-13 YEAR 1 MINING OPERATIONS RECLAMATION SURETY BOND ESTIMATE

WDEQ Permit No. 632 Annual Report / NRC SUA-1548

North Butte ISR Project - WDEQ Permit No. 632 Update

Mod. 3/19/2012 by Glenn Mooney

PART II: BUILDING DEMOLITION & DISPOSAL	Satellite Bldg	DDW 1 Bldg	DDW 2 Bldg
2. Concrete Floor			
Area of Concrete Floor (ft2)	25600	480	480
Average Thickness of Concrete Floor (ft)	0.833	0.833	0.833
Volume of Concrete Floor (ft3)(with .54 void factor)	39490.37037	740	740
Volume of Concrete Floor (cy)	1463	27	27
a. Municipal Landfill			
Percentage (%)	75	75	75
Volume for Disposal (cy)	1097	21	21
Tons of Concrete	1,193	22	22
Cost to load Dump Trucks			
Loader (Guideline 12 App. J), CAT 980G Front-end Loader	$116.22	$116.22	$116.22
Cost per cy, assume 1.5min dump time+58.5min standby for 12cy load	$ 9.69	$ 9.69	$ 9.69
Load Cost	$10,624	$199	$199
Cost to haul to landfill			
Total Trips @12(cy) each	91	2	2
Dump Truck (Guideline 12 App. J)	$77.62	$77.62	$77.62
Transportation(assume 2 trips per 12hr. Day)	$42,573	$798	$798
Disposal Unit Cost per WDEQ Guideline No.12, App.K ($/ton)	$79.54	$79.54	$79.54
Subtotal Landfill Disposal Costs	**$148,127**	**$2,777**	**$2,777**
b. 11e.(2) Byproduct Materials			
Assume:			
Additional $2.00/ft3 for segregation of concrete			
Percentage (%)	25	25	25
Volume for Disposal (ft3)	9873	185	185
Segregation and Loading Unit Cost ($/ft3)	$5.00	$5.00	$5.00
Transportation and Disposal Unit Cost ($/ft3)	$7.51	$7.51	$7.51
Subtotal 11e.(2) Byproduct Materials	$123,554	$2,317	$2,317
Subtotal Concrete Floor Disposal Costs	**$271,681**	**$5,094**	**$5,094**
3. Concrete Footing			
Length of Concrete Footing (ft)	960	88	88
Average Depth of Concrete Footing (ft)	4	4	4
Average Width of Concrete Footing (ft)	0.75	0.75	0.75
Volume of Concrete Footing (ft3) (with 0.54 void factor)	5333	489	489
Volume of Concrete Footing (cy)	198	18	18
Tons of Concrete	215	20	20
Cost to load Dump Trucks			
Loader (Guideline 12 App. J), 5cy bucket	$112.73	$112.73	$112.73
Cost per cy, assume 1.5min dump time+58.5min standby for 12cy load	$ 9.39	$ 9.39	$ 9.39
Load Cost	$1,856	$170	$170
Cost to haul to landfill			
Total Trips @12(cy) each	16	2	2
Dump Truck (Guideline 12 App. J)	$77.62	$77.62	$77.62
Transportation(assume 2 trips per 12hr. Day)	$7,666	$703	$703
Disposal Unit Cost per WDEQ Guideline No.12, App.K ($/ton)	$79.54	$79.54	$79.54
Subtotal Concrete Footing Disposal Costs	$17,094	$1,567	$1,567
Subtotal Disposal Costs per Building	$359,541	$16,954	$16,954
Total Disposal Costs			**$393,449**
SUBTOTAL BUILDING DEMOLITION AND DISPOSAL COSTS	$658,751	$23,327	$23,327
TOTAL BUILDING DEMOLITION AND DISPOSAL COSTS			**$705,405**

APPENDIX B
2012-13 YEAR 1 MINING OPERATIONS RECLAMATION SURETY BOND ESTIMATE
WDEQ Permit No. 632 Annual Report / NRC SUA-1548
North Butte ISR Project - WDEQ Permit No. 632 Update

PART III: WELLFIELD BLDGS., EQUIPMENT REMOVAL & DISPOSAL	Mine Unit No.1	Mine Unit No.2
A. Mine Unit Piping		
Assume:		
Number of Header Houses	9	5
Approximate Length of Piping per Header House (ft)	13,800	13,800
(avg. 46 wells per with 300 ft pipeline/well)		
Approximate Total Length of Piping (ft.)	124,200	69,000
1. Removal and Loading		
Trench Length -	31,050	17,250
(usually run multiple pipes in trench assume 1/4 pipe length)		
Wellfield Piping Removal Unit Cost ($/ft of pipe)	$2.30	$2.30
Subtotal Wellfield Piping Removal and Loading Costs	**$285,660**	**$158,700**
2. Shredding Costs		
Assume:		
Length of Piping per Header House (ft)	13,800	13,800
Total Length of Piping (ft)	124200	69000
Average Diameter of Piping (inches)	2	2
HDPE Pipe Shredding Unit Cost ($/diameter-in-ft)	$0.057	$0.057
Subtotal Shredding Costs	**$14,159**	**$7,866**
3. Transport and Disposal Costs (NRC-Licensed Facility)		
Chipped Volume Reduction (ft3/ft)	0.005	0.005
Chipped Volume per Wellfield (ft3)	621	345
Volume for Disposal Assuming 10% Void Space (ft3)	683	380
Transportation and Disposal Unit Cost ($/ft3)	$7.34	$7.34
	$5,011	$2,788
Total Wellfield Piping Removal and Disposal Costs	**$304,830**	**$169,354**
B. Well Pumps and Tubing		
Assume:		
Average tubing length/wellfield based on average well depth minus 25 ft		
1. Shredding Costs		
Number of Production Wells with Tubing	140	140
Number of Injection Wells with Tubing	300	300
Average Tubing Length per Well (ft)	650	650
Diameter of Production Well Fiberglass Tubing (inches)	2	2
Diameter of Injection Well HDPE Tubing (inches)	1.25	1.25
HDPE Pipe Shredding Unit Cost ($/diameter-in-ft)	$0.057	$0.057
Subtotal Shredding Costs	**$24,268**	**$24,268**
2. Pump and Tubing Transportation and Disposal		
a. Pump Volume		
Number of Production Wells with Pumps	140	140
Average Pump Volume (ft3)	1	1
Pump Volume per Wellfield (ft3)	140	140
b. Tubing Volume		
Tubing Length per Wellfield (ft)	286,000	286,000
Chipped Volume Reduction (ft3/ft)	0.007	0.007
Chipped Volume per Wellfield (ft3)	2,002	2,002
Volume of Pump and Tubing (ft3)	2,142	2,142
Volume for Disposal Assuming 10% Void Space (ft3)	2,356	2,356
Transportation and Disposal Unit Cost ($/ft3)	$7.34	$7.34
Subtotal Pump and Tubing Transport and Disposal Costs	**$17,286**	**$17,286**
Total Well Pumps and Tubing Removal and Disposal Costs	**$41,554**	**$41,554**

APPENDIX B
2012-13 YEAR 1 MINING OPERATIONS RECLAMATION SURETY BOND ESTIMATE
WDEQ Permit No. 632 Annual Report / NRC SUA-1548
North Butte ISR Project - WDEQ Permit No. 632 Update

PART III: WELLFIELD BLDGS., EQUIPMENT REMOVAL & DISPOSAL	Mine Unit No.1	Mine Unit No.2
C. Buried Trunkline		
Assume:		
Length of Trunkline Trench (ft)	7500	7500
1. Removal and Loading		
Main Pipeline Removal Unit Cost ($/ft of trench)	$2.30	$2.30
Subtotal Trunkline Removal and Loading Costs	$17,250	$17,250
2. Shredding Costs		
Diameter of HDPE Piping (in)	2	2
Total Length of 2" HDPE Piping (ft)	7,500	7,500
Diameter of HDPE Piping (in)	3	3
Total Length of 3" HDPE Piping (ft)	7,500	7,500
Diameter of HDPE Piping (in)	4	4
Total Length of 4" HDPE Piping (ft)	0	0
Diameter of HDPE Piping (in)	6	6
Total Length of 6" HDPE Piping (ft)	4,000	4,000
Diameter of HDPE Piping (in)	8	8
Total Length of 8" HDPE Piping (ft)	18,400	18,400
Diameter of HDPE Piping (in)	10	10
Total Length of 10" HDPE Piping (ft)	0	0
Diameter of HDPE Piping (in)	12	12
Total Length of 12" HDPE Piping (ft)	0	0
Diameter of HDPE Piping (in)	14	14
Total Length of 14" HDPE Piping (ft)	0	0
Diameter of HDPE Piping (in)	16	16
Total Length of 16" HDPE Piping (ft)	0	0
Diameter of HDPE Piping (in)	18	18
Total Length of 18" HDPE Piping (ft)	0	0
Diameter of HDPE Piping (in)	20	20
Total Length of 20" HDPE Piping (ft)	15,000	15,000
Diameter of HDPE Piping (in)	24	24
Total Length of 24" HDPE Piping (ft)	0	0
HDPE Pipe Shredding Unit Cost ($/diameter-in-ft)	$0.057	$0.057
Subtotal Shredding Costs	**$28,996**	**$28,996**
3. Transport and Disposal Costs		
a. 2" HDPE Trunkline		
Piping Length (ft)	7,500	7,500
Chipped Volume Reduction (ft3/ft)	0.01	0.01
Chipped Volume (ft3)	80.41	80.41
b 3" HDPE Trunkline		
Piping Length (ft)	7500	7500
Chipped Volume Reduction (ft3/ft)	0.02	0.02
Chipped Volume (ft3)	174.64	174.64
c 4" HDPE Trunkline		
Piping Length (ft)	0	0
Chipped Volume Reduction (ft3/ft)	0.04	0.04
Chipped Volume (ft3)	0.00	0.00
d 6" HDPE Trunkline		
Piping Length (ft)	4000	4000
Chipped Volume Reduction (ft3/ft)	0.08	0.08
Chipped Volume (ft3)	333.57	333.57
e 8" HDPE Trunkline		
Piping Length (ft)	18400	18400

PART III: WELLFIELD BLDGS., EQUIPMENT REMOVAL & DISPOSAL		Mine Unit No.1	Mine Unit No.2
	Chipped Volume Reduction (ft3/ft)	0.14	0.14
	Chipped Volume (ft3)	2599.96	2599.96
f	10" HDPE Trunkline		
	Piping Length (ft)	0	0
	Chipped Volume Reduction (ft3/ft)	0.22	0.22
	Chipped Volume (ft3)	0.00	0.00
g	12" HDPE Trunkline		
	Piping Length (ft)	0	0
	Chipped Volume Reduction (ft3/ft)	0.31	0.31
	Chipped Volume (ft3)	0.00	0.00
h	14" HDPE Trunkline		
	Piping Length (ft)	0	0
	Chipped Volume Reduction (ft3/ft)	0.37	0.37
	Chipped Volume (ft3)	0.00	0.00
i	16" HDPE Trunkline		
	Piping Length (ft)	0	0
	Chipped Volume Reduction (ft3/ft)	0.49	0.49
	Chipped Volume (ft3)	0.00	0.00
j	18" HDPE Trunkline		
	Piping Length (ft)	0	0
	Chipped Volume Reduction (ft3/ft)	0.62	0.62
	Chipped Volume (ft3)	0.00	0.00
k	20" HDPE Trunkline		
	Piping Length (ft)	15,000	15,000
	Chipped Volume Reduction (ft3/ft)	0.72	0.72
	Chipped Volume (ft3)	10817.18	10817.18
l	24" HDPE Trunkline		
	Piping Length (ft)	0	0
	Chipped Volume Reduction (ft3/ft)	1.04	1.04
	Chipped Volume (ft3)	0.00	0.00
Total Trunkline Chipped Volume (ft3)			
Volume for Disposal Assuming 10% Void Space (ft3)		14005.76	14005.76
Transportation and Disposal Unit Cost ($/ft3)		15406	15406
		$7.34	$7.34
	Subtotal Trunkline Transport and Disposal Costs	**$113,034**	**$113,034**
	Total Trunkline Removal and Disposal Costs	**$159,280**	**$159,280**
D. Well Covers			
Total Quantity		440	440
Average Well Cover Volume (ft3)		1.86	1.86
1. Removal			
Total Volume (ft3)		818	818
Demolition Unit Cost per WDEQ Guideline No.12, App.K ($/ft3)		$0.262	$0.262
	Subtotal Well Cover Demolition Costs	**$214**	**$214**
2. Survey and Decontamination			
Assume:			
Cost per Well Cover		$7	$7
	Subtotal Survey and Decontamination Costs	**$2,886**	**$2,886**
3. Disposal			
Total Volume (cy)		30	30
Cost to haul to landfill			
Total Trips @12(cy) each		3	3

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PART III: WELLFIELD BLDGS., EQUIPMENT REMOVAL & DISPOSAL	Mine Unit No.1	Mine Unit No.2
Dump Truck (Guideline 12 App. J)	$77.62	$77.62
Transportation(assume 2 trips per 12hr. Day)	$1,176	$1,176
Disposal Unit Cost ($/ton)(Guideline No. 12 App. K)	$79.54	$79.54
Percentage (%)	100	100
Converted C&D waste volume to tons (.24 tons/cy)[1]	2	2
Subtotal Disposal Costs	**$1,929**	**$1,929**
Total Well Cover Removal and Disposal Costs	**$5,029**	**$5,029**
E. Header Houses		
Total Quantity	9	5
Average Header House Volume (ft3)	800	800
1. Removal		
Total Volume (ft3)	7200	4000
Demolition Unit Cost per WDEQ Guideline No.12, App.K ($/ft3)	$0.262	$0.262
Subtotal Building Demolition Costs	$1,886	$1,048
2. Survey and Decontamination		
Assume:		
Cost per Header House	$568	$568
Subtotal Survey and Decontamination Costs	$5,112	$2,840
3. Disposal		
Total Volume (cy)	267	148
Volume for Disposal Assuming 10% Void Space (cy)	293	163
Disposal Unit Cost per WDEQ Guideline No.12, App.K ($/cy)	$79.54	$79.54
Subtotal Off-Site Disposal Costs	$23,305	$12,965
Total Header House Removal + Disposal Costs	**$30,303**	**$16,853**
SUBTOTAL WELLFIELD BUILDINGS AND EQUIPMENT REMOVAL + DISPOSAL COSTS	**$540,996**	**$392,070**
TOTAL WELLFIELD BUILDINGS AND EQUIPMENT REMOVAL + DISPOSAL COSTS		**$933,066**

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PART IV: WELL & BOREHOLE ABANDONMENT	Mine Unit No.1	Mine Unit No.2
A. Well Abandonment (Wellfields)		
# of Production Wells	140	140
Cost to plug and abandon Production wells ($/LF)	$ 6.28	$ 6.28
# of Injection Wells	300	300
Cost to plug and abandon Injection wells ($/LF)	$ 4.00	$ 4.00
# of Monitoring Wells	80	80
Cost to plug and abandon Monitoring wells ($/LF)	$ 4.00	$ 4.00
#of Restoration Wells	0	0
Cost to plug and abandon Restoration wells ($/LF)	$ 6.28	$ 6.28
# water supply wells	1	1
Cost to plug and abandon Water Supply wells ($/LF)	$ 6.28	$ 6.28
Total Number of Wells	521	521
Average Diameter of Casing (inches)	5	5
Average Depth (ft)	650	650
	$1,563,562	**$1,563,562**
Subtotal Abandonment Cost - Wellfields		**$3,127,124**
B. Removal of Contaminated Soil Around Wells		
# of Production and Injection Wells	440	440
Cost per well ($/well)	$162.15	$162.15
	$71,346	**$71,346**
Subtotal Removal of Soil Around Wells		**$142,692**
C. Delineation Hole Abandonment		
# of Projected Holes	500	500
Average Depth (ft)		650
Hole Abandonment Unit Cost ($/ft of hole)		$6.28
Site Reclamation ($/site)	$66.37	$66.37
	$33,183	**$2,074,183**
Subtotal Hole Abandonment per Wellfield		**$2,107,365**
D. Waste Disposal Injection Well Abandonment	**DDW 1**	**DDW 2**
1. Well Sealing		
Assume: TD = 8559' FedBY2 TD = 8570' FedBY1,		
Sealing cost per foot (in UIC permit)	$11.91	$11.91
Subtotal Plugging Costs per Well (in UIC permit)	$102,069	$102,069
2. Pump Dismantling and Decontamination		
Number of Persons	2	2
Number of Pumps	2	2
Pumps/Day	0.5	0.5
Number of Days	4	4
$/Day/Person	$224	$224
Subtotal Dismantling and Decon Costs per Well	$1,788.80	$1,788.80
3. Tubing String Disposal (NRC-Licensed Facility)		
Length of Tubing String (ft)	8,570	8,570
Diameter of Tubing String (inches)	2.875	2.875
Volume of Tubing String (ft^3)	386	386
Transportation and Disposal Unit Cost ($/$ft^3$)	$7.34	$7.34
Subtotal Tubing String Disposal Costs per Well	$2,833	$2,833
Subtotal Waste Disposal Well Abandonment Costs per Well	$106,691	$106,691
Subtotal Waste Disposal Well Abandonment Costs		**$213,381**

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PART IV: WELL & BOREHOLE ABANDONMENT	Mine Unit No.1	Mine Unit No.2
TOTAL WELL ABANDONMENT COSTS		$5,590,562

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PART V: MISCELLANEOUS SURFACE RECLAMATION	
A. Wellfield Pattern Area Reclamation	
Assume:	
Disking/Seeding Unit Cost Based on Actual Contractor Costs	
Pattern Area (acres)	23.53
Wellfield Pattern Area Disking/Seeding Unit Cost ($/acre)	$606
Subtotal Pattern Area Reclamation Costs per Wellfield	$14,257
Total Wellfield Pattern Area Reclamation Costs	**$14,257**
B. Wellfield Road Reclamation	
Length of Wellfield Roads (1000 ft)	20
Wellfield Road Reclamation Unit Cost ($/1000 ft)	$805
Subtotal Road Reclamation Costs per Wellfield	$16,100
Total Wellfield Road Reclamation Costs	**$16,100**
C. Header House Surface Reclamation	
Assume:	
Number of Header Houses	14
Area of Disturbance per Header House (ft2)	1000
Total Area of Disturbance (acres)	0.32
Average Depth of Stripped Topsoil (ft)	1
Surface Grade: Level Ground	
Average Length of Topsoil Haul (ft)	1000
1. Ripping Overburden with Dozer	
Ripping Unit Cost per WDEQ Guideline No.12, App.I1 ($/acre)	$867.49
Subtotal Ripping Costs	$278
2. Topsoil Application with Scraper	
Volume of Topsoil Removed (cy)	258
Application Unit Cost per WDEQ Guideline No.12, App.C ($/cy)	$1.27
Subtotal Topsoil Application Costs	**$329**
3. Disking and Seeding	
Disking/Seeding Unit Cost ($/acre)	$606
Subtotal Disking/Seeding Costs	$194
Subtotal Header House Reclamation Costs per Wellfield	$472
Header House Reclamation Costs per Wellfield	**$472**
TOTAL WELLFIELD SURFACE RECLAMATION COSTS	**$30,829**
D. Satellite Plant Area Reclamation	**Satellite Area**
1. Topsoil Application	
Assume:	
Average haul distance (ft)	2000
Surface grade: Level ground	
Topsoil Surface Area (acres)	21
Average Depth of Topsoil (ft)	0.5
Volume of Topsoil (cy)	16940
Topsoil Unit Cost per WDEQ Guideline No.12, App.C ($/cy)	$1.65
Total Topsoil Application Cost	**$27,968**
2. Disking/Seeding	
Surface Area (acres)	5
Disking/Seeding Unit Cost ($/acre)	$606
Total Disking/Seeding Costs	$3,030

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Satellite Plant/Office Area Reclamation	**$30,998**
E. Access Road Reclamation	**Main Access Road**
Assume	
Surface grade: Level ground	
Length of road (miles)	6
Average road width (ft)	25
1. Gravel Road Base Removal	
Assume	
Average haul distance (ft)	1000
Gravel Road Base Width (ft)	25
Average Road Base Depth (ft)	0.5
Volume of Road Base (cy)	14667
Removal Unit Cost per WDEQ Guideline No.12, App.C ($/cy)	$1.27
Subtotal Gravel Road Base Removal Costs	**$18,685**
2. Ripping Overburden with Dozer	
Overburden Surface Area (acres)	18
Ripping Unit Cost per WDEQ Guideline No.12, App.I1 ($/acre)	$1,195.44
Subtotal Ripping Overburden Costs	**$21,518**
3. Topsoil Application	
Assume	
Average haul distance (ft)	1000
Topsoil Surface Area (ft2)	792000
Depth of Topsoil (ft)	0.5
Volume of Topsoil (cy)	14667
Topsoil Unit Cost per WDEQ Guideline No.12, App.C ($/cy)	$1.27
Subtotal Topsoil Application Costs	$18,685
4. Disking/Seeding	
Surface Area (acres)	18
Disking/Seeding Unit Cost ($/acre)	$606
Subtotal Disking/Seeding Costs	$10,908
Total Access Road Reclamation Costs	**$69,796**
F. Surge Pond Reclamation	**Ponds 1 and 2**
Assume:	
Total Pond Surface Acres	2.5
Average Thickness of Liner and Sludge (in)	3
Average Thickness of Contaminated Soil (in)	6
Volume of Byproduct Material (ft3)	81675
Backhoe Operation Unit Cost	
1. Liner & Sludge Removal and Loading	
a. Equipment	
Number of Backhoes	1
ft3/hr	300
Number of Hours	272
$/hr/Backhoe	$149.14
Equipment Costs	$40,566
b. Labor	
Number of Persons	2
Number of Hours	272
$/hr/Person(operator)	$28

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PART V: MISCELLANEOUS SURFACE RECLAMATION	
$/hr/Person (laborer)	$17
Labor Costs	$12,289
Subtotal Liner & Sludge Removal and Loading Costs	**$52,855**
2. Transportation and Disposal (NRC-Licensed Facility)	
Transportation and Disposal Unit Cost ($/ft3)	$7.51
Subtotal Transportation and Disposal Costs	**$613,773**
3. Leak Detection Piping Removal and Loading	
Assume:	
Piping Removal Unit Cost same as for Well fields ($/ft)	$2.30
Length of Piping (ft)	400
a. Piping Removal and Loading Costs	
Total Length of Piping (ft)	400
Subtotal Piping Removal and Loading Costs	$920
b. Shredding Costs	
Average Diameter of Piping (inches)	2
PVC Pipe Shredding Unit Cost ($/diameter-in-ft)	$0.028
Subtotal Pipe Shredding Costs	$56
c. Transport and Disposal Costs (NRC-Licensed Facility)	
Chipped Volume Reduction (ft3/ft)	0.01
Chipped Volume (ft3)	4
Volume for Disposal Assuming 10% Void Space (ft3)	4
Transportation and Disposal Unit Cost ($/ft3)	$7.34
Subtotal Piping Transport and Disposal Costs	**$29**
Subtotal Leak Detection Piping Removal and Disposal Costs	**$1,005**
4. Replacement of Excavated Soil	
Assume:	
Includes replacement of topsoil and subsoil	
Surface Grade: Level ground	
Average Haul Distance (ft)	1000
Surface Area (acres)	2.5
Average Depth of Excavated Soil (ft)	10.0
Volume of Topsoil (cy)	40333
Soil Replacement Unit Cost per WDEQ Guideline No.12, App.C ($/cy)	$1.27
Subtotal Soil Replacement Costs	$51,384
5. Disking/Seeding	
Surface Area (acres)	2.5
Disking/Seeding Unit Cost ($/acre)	$606
Subtotal Disking/Seeding Costs	$1,515
Total Evaporation Pond Reclamation Costs	**$720,532**
TOTAL MISCELLANEOUS SURFACE RECLAMATION COSTS	**$852,155**