



November 30, 2012

U.S. Nuclear Regulatory Commission  
Attn: Douglas Mandeville  
11545 Rockville Pike  
Two White Flint North, Mailstop T8 F5  
Rockville, MD 20852-2738

**CAMECO RESOURCES**  
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RE: License SUA-1548, Docket No. 40-8964  
2013-14 Surety Estimate, North Butte Satellite Facility

Dear Mr. Mandeville:

Pursuant to License Condition 9.5, Power Resources, Inc. d/b/a Cameco Resources (Cameco) is herein providing (2) copies of the proposed surety for 2013-14 Year 1 Mining Operations Reclamation Surety Bond Estimate to the Wyoming Department of Equality/Land Quality Division (DEQ/LQD) in the amount of \$14,688,342 for the North Butte ISR Uranium Project.

Included with this submittal are responses to comments received from NRC on prior surety submittals for the North Butte ISR facility and general comments for all projects. Cameco has included a CD of the estimated surety for clarification of formulas and cost used in the calculation. Cameco request that this CD remain confidential.

If you have any questions or comments on the surety estimate please call Jeanie Wolford in the Casper office at 307-333-7644 or by email at [Jeanie\\_wolford@cameco.com](mailto:Jeanie_wolford@cameco.com).

Sincerely,  
CAMECO RESOURCES

Josh Leftwich  
Director of Safety, Health, Environment, & Quality

Attachment: WDEQ/LQD 2013-14 Surety Estimate Update, hard copy and disc

cc: Document Control Desk, NRC  
File NB NB4.3.4.2  
SHEQ System

JL:jmw

**APPENDIX B****2013-2014 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	\$136,053
PART II. BUILDING DEMOLITION AND DISPOSAL COST	\$749,368
PART III. WELLFIELD BUILDINGS & EQUIPMENT REMOVAL & DISPOSAL COST	\$934,622
PART IV. WELL & BOREHOLE ABANDONMENT COST	\$3,644,059
PART V. MISCELLANEOUS SURFACE RECLAMATION COST	\$1,227,941
PART VI. GROUND WATER RESTORATION	\$4,919,295
SUBTOTAL RECLAMATION COST ESTIMATE	\$11,611,338
CONTRACTOR PROFIT, OVERHEAD, MOBILIZATION, DEMOBILIZATION COSTS (10%) *	\$1,161,134
SUBTOTAL	\$12,772,472
ADDITIONAL MISCELLANEOUS AND UNKNOWN COSTS (15%) **	\$1,915,871
<b>TOTAL CALCULATED SURETY (IN 2012 DOLLARS)</b>	<b>\$14,688,342</b>
<b>Current 2012 Surety</b>	<b>\$10,359,901</b>
<b>Request for Surety Increase</b>	<b>\$4,328,441</b>

\* 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)

**NOTE: Salvage value is not included in any cost estimates.**

**APPENDIX B**

**2013-2014 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

<b>PART I: PROCESS EQUIPMENT REMOVAL &amp; DISPOSAL</b>	<b>Satellite Plant</b>
<b>A. Removal and Loading Costs</b>	
<i>1. Tankage</i>	
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)	\$267
<b>Subtotal Labor Costs</b>	<b>\$38,419</b>
Number of Days	48
Cat 924G Loader	\$52.56
Crane Rental with Operator	\$132.85
Equipment Cost - \$/Day	\$1,483
<b>Subtotal Equipment Costs</b>	<b>\$71,197.44</b>
<b>Subtotal Tankage Removal and Loading Costs</b>	<b>\$109,617</b>
<i>2. PVC Pipe</i>	
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	1
Ft/Day	300
Number of Days	20
Labor Costs (per 8 hr day)	\$267
<b>Subtotal Labor Costs</b>	<b>\$5,336</b>
b. Shredding Costs	
Pipe Shredding Unit Cost (\$/diameter-in-ft)	\$0.052
<b>Subtotal Shredding Costs</b>	<b>\$1,248</b>
<b>Subtotal PVC Pipe Removal and Loading Costs</b>	<b>\$6,584</b>
<i>3. Pumps</i>	
Number of Pumps	16
Average Volume (ft3/pump)	4.93
Volume of Pumps (ft3)	78.88
a. Labor	
Number of Persons	2
Pumps/Day	2
Number of Days	8
\$/Day/Person	\$267
<b>Subtotal Pump Removal and Loading Costs</b>	<b>\$4,269</b>

**APPENDIX B****2013-2014 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**

<b>PART I: PROCESS EQUIPMENT REMOVAL &amp; DISPOSAL</b>	<b>Satellite Plant</b>
<b>4. RO Units</b>	
Volume (ft3)	250
<b>a. Labor</b>	
Number of Persons	2
Ft3/Day	175
Number of Days	1
Labor Costs (per 8 hr day)	\$267
<b>Subtotal Labor Costs</b>	<b>\$533.60</b>
<b>Number of Days</b>	<b>1</b>
Cat 416 Backhoe	\$52.56
Crane Rental with Operator	\$132.85
Equipment Cost - \$/Day	\$1,483.28
<b>Subtotal Equipment Costs</b>	<b>\$1,483.28</b>
<b>Total Equipment Removal and Loading Costs</b>	<b>\$122,486</b>
<b>B. Transportation and Disposal Costs (NRC-Licensed Facility)</b>	
<b>1. Tankage</b>	
Volume of Tank Construction Material (ft3)	1190
Volume for Disposal Assuming 10% Void Space (ft3)	1309
Transportation and Disposal Unit Cost (\$/ft3)	\$7.74
<b>Subtotal Tankage Transportation and Disposal Costs</b>	<b>\$10,136</b>
<b>2. PVC Pipe</b>	
Volume of Shredded PVC Pipe (ft3)	96
Volume for Disposal Assuming 10% Void Space (ft3)	106
Transportation and Disposal Unit Cost (\$/ft3)	\$7.74
<b>Subtotal PVC Pipe Transportation and Disposal Costs</b>	<b>\$821</b>
<b>3. Pumps</b>	
Volume of Pumps (ft3)	78.88
Volume for Disposal Assuming 10% Void Space (ft3)	87
Transportation and Disposal Unit Cost (\$/ft3)	\$7.74
<b>Subtotal PVC Pipe Transportation and Disposal Costs</b>	<b>\$674</b>
<b>4. RO Units</b>	
Volume of RO Units (ft3)	250
Transportation and Disposal Unit Cost (\$/ft3)	\$7.74
<b>Subtotal Tankage Transportation and Disposal Costs</b>	<b>\$1,936</b>
<b>Total Equipment Transportation and Disposal Costs</b>	<b>\$13,567</b>
<b>TOTAL EQUIPMENT REMOVAL + DISPOSAL COSTS</b>	<b>\$136,053</b>

## APPENDIX B

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

North Butte ISR Project - WDEQ Permit No. 632 Update

<b>PART II: BUILDING DEMOLITION &amp; DISPOSAL</b>	<b>Satellite Bldg/Support Office spaces</b>	<b>DDW 1 Bldg</b>
<b>A. Decontamination Costs</b>		
<i>1. Wall Decontamination</i>		
Area to be Decontaminated (ft2)	0	880
HCl Acid Wash (\$/per sq ft.)	\$1.022	\$1.022
Subtotal Wall Decontamination Costs	\$0	\$899
<i>2. Concrete Floor Decontamination</i>		
Area to be Decontaminated (ft2)	17,164	480
HCl Acid Wash (\$/per sq ft.)	\$0.756	\$0.756
Subtotal Concrete Floor Decontamination Costs	\$12,980	\$363
Subtotal Decontamination Costs per Building	\$12,980	\$1,262
<b>Total Decontamination Costs</b>		<b>\$14,242</b>
<b>B. Demolition Costs</b>		
<i>1. Building</i>		
Assume:		
Total Building Volume	538,158	4,800
Demolition Unit Cost per WDEQ Guideline No.12, App.K (\$/ft3)	\$0.278	\$0.278
Subtotal Building Demolition Costs	\$149,511	\$1,334
<i>2. Concrete Floor</i>		
Area of Concrete Floor (ft2)	17,164	480
Demolition Unit Cost per WDEQ Guideline No.12, App.K (\$/ft2)	\$5.31	\$5.31
Subtotal Concrete Floor Demolition Costs	\$91,096	\$2,548
<i>3. Concrete Footing</i>		
Length of Concrete Footing (ft)	596	88
Demolition Unit Cost per WDEQ Guideline No.12, App.K (\$/lin. ft)	\$19.78	\$19.78
Subtotal Concrete Footing Demolition Costs	\$11,784	\$1,741
Subtotal Demolition Costs per Building	\$252,391	\$5,623
<b>Total Demolition Costs</b>		<b>\$258,014</b>
<b>C. Disposal Costs</b>		
<i>1. Building</i>		
Volume of Building (cy) Building Construction and Demolition	2,317	178
a. Landfill		
Assume:		
Cost to haul to landfill		
Total Trips @12(cy) each	193	15
Dump Truck (Guideline 12 Table D-1 10/12 cy)	\$77.78	\$77.78
Transportation(assume 2 trips per 12hr. Day)	\$90,125	\$6,914
Disposal Unit Cost (\$/ton)(Guideline No. 12 App. K)	\$78.56	\$78.56
Percentage (%)	100	100
Converted C&D waste volume to tons (.24 tons/cy) <sup>1</sup>	556	43
Subtotal Disposal Costs	<b>\$133,817</b>	<b>\$10,266</b>

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	Satellite Bldg/Support Office spaces	DDW 1 Bldg
<b>PART II: BUILDING DEMOLITION &amp; DISPOSAL</b>		
b. 11e.(2) Byproduct Materials		
Percentage (%)	0	0
Volume for Disposal (ft3)	0	0
Volume for Disposal Assuming 10% Void Space (ft3)	0	0
Transportation and Disposal Unit Cost (\$/ft3)	\$7.74	\$7.74
Subtotal 11e.(2) Byproduct Materials	\$0	\$0
Subtotal Building Disposal Costs	<b>\$133,817</b>	<b>\$10,266</b>
<b>2. Concrete Floor</b>		
Area of Concrete Floor (ft2)	17,164	480
Average Thickness of Concrete Floor (ft)	0.833	0.833
Volume of Concrete Floor (ft3)( with .54 void factor)	26,477	740
Volume of Concrete Floor (cy)	981	27
a. Municipal Landfill		
Percentage (%)	75	75
Volume for Disposal (cy)	735	21
Tons of Concrete	800	22
Cost to load Dump Trucks		
Loader (Guideline 12 App. J), CAT 980G Front-end Loader	\$115.98	\$115.98
Cost per cy, assume 1.5min dump time+58.5min standby for 12cy load	\$9.67	\$9.67
Load Cost	\$7,108	\$199
Cost to haul to landfill		
Total Trips @12(cy) each	61	2
Dump Truck (Guideline 12 Table D-1 10/12 cy)	\$77.78	\$77.78
Transportation(assume 2 trips per 12hr. Day)	\$28,603	\$800
Disposal Unit Cost per WDEQ Guideline No.12, App.K (\$/ton)	\$78.56	\$78.56
Subtotal Landfill Disposal Costs	<b>\$98,572</b>	<b>\$2,757</b>
b. 11e.(2) Byproduct Materials		
Assume:		
Additional \$2.00/ft3 for segregation of concrete		
Percentage (%)	25	25
Volume for Disposal (ft3)	6619	185
Segregation and Loading Unit Cost (\$/ft3)	\$5.00	\$5.00
Transportation and Disposal Unit Cost (\$/ft3)	\$11.14	\$11.14
Subtotal 11e.(2) Byproduct Materials	<b>\$106,850</b>	<b>\$2,988</b>
Subtotal Concrete Floor Disposal Costs	<b>\$205,423</b>	<b>\$5,745</b>

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	Satellite Bldg/Support Office spaces	DDW 1 Bldg
<b>PART II: BUILDING DEMOLITION &amp; DISPOSAL</b>		
<b>3. Concrete Footing</b>		
Length of Concrete Footing (ft)	596	88
Average Depth of Concrete Footing (ft)	4	4
Average Width of Concrete Footing (ft)	0.75	0.75
Volume of Concrete Footing (ft3) (with 0.54 void factor)	3309	489
Volume of Concrete Footing (cy)	123	18
Tons of Concrete	133	20
Cost to load Dump Trucks		
Loader (Guideline 12 App. J), CAT 980G Front-end Loader	\$115.98	\$115.98
Cost per cy, assume 1.5min dump time+58.5min standby for 12cy load	\$9.67	\$9.67
Load Cost	\$1,185	\$175
Cost to haul to landfill		
Total Trips @12(cy) each	10	2
Dump Truck (Guideline 12 Table D-1 10/12 cy)	\$77.78	\$77.78
Transportation(assume 2 trips per 12hr. Day)	\$4,767	\$704
Disposal Unit Cost per WDEQ Guideline No.12, App.K (\$/ton)	\$78.56	\$78.56
Subtotal Concrete Footing Disposal Costs	\$10,476	\$1,548
Subtotal Disposal Costs per Building	\$456,566	\$20,547
<b>Total Disposal Costs</b>		<b>\$477,112</b>
<b>D. Health and Safety Costs</b>		
<b>Total Health and Safety Costs - Accounted for on: VI. GW REST</b>		
<b>TOTAL BUILDING DEMOLITION AND DISPOSAL COSTS</b>		<b>\$749,368</b>

1. Florida Dept. Environmental Protection: Converting C&D Debris from Volume to Weight, -  
a Fact Sheet for C&D Debris Facility Operators  
[[www.floridacenter.org/publications/C&Dconversion..html](http://www.floridacenter.org/publications/C&Dconversion..html)]

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## 2013-2014 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

<b>PART III: WELLFIELD BLDGS., EQUIPMENT REMOVAL &amp; DISPOSAL</b>	<b>Mine Unit No.1</b>	<b>Mine Unit No.2</b>
<b>A. Mine Unit Piping</b>		
Assume:		
Number of Header Houses	10	5
Approximate Length of Piping per Header House (ft) (avg. 46 wells per with 300 ft pipeline/well)	13,800	13,800
Approximate Total Length of Piping (ft.)	138,000	69,000
<b>1. Removal and Loading</b>		
Trench Length - (usually run multiple pipes in trench assume 1/4 pipe length)	34,500	17,250
Wellfield Piping Removal Unit Cost (\$/ft of pipe)	\$2.36	\$2.36
<b>Subtotal Wellfield Piping Removal and Loading Costs</b>	<b>\$325,680</b>	<b>\$162,840</b>
<b>2. Shredding Costs</b>		
Assume:		
Length of Piping per Header House (ft)	13,800	13,800
Total Length of Piping (ft)	138000	69000
Average Diameter of Piping (inches)	2	2
HDPE Pipe Shredding Unit Cost (\$/diameter-in-ft)	\$0.104	\$0.104
<b>Subtotal Shredding Costs</b>	<b>\$28,704</b>	<b>\$14,352</b>
<b>3. Transport and Disposal Costs (NRC-Licensed Facility)</b>		
Chipped Volume Reduction (ft3/ft)	0.007	0.007
Chipped Volume per Wellfield (ft3)	945.993	472.996
Volume for Disposal Assuming 10% Void Space (ft3)	1041	520
Transportation and Disposal Unit Cost - 11e.(2) (\$/ft3)	\$7.74	\$7.74
	\$8,061	\$4,026
<b>Total Wellfield Piping Removal and Disposal Costs</b>	<b>\$362,445</b>	<b>\$181,218</b>
<b>B. Well Pumps and Tubing</b>		
Assume:		
Average tubing length/wellfield based on average well depth minus 25 ft		
<b>1. Shredding Costs</b>		
Number of Production Wells with Tubing	187	140
Number of Injection Wells with Tubing	297	300
Average Tubing Length per Well (ft)	655	725
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)	\$0.104	\$0.104
<b>Subtotal Shredding Costs</b>	<b>\$50,766</b>	<b>\$49,387</b>
<b>2. Pump and Tubing Transportation and Disposal</b>		
<b>a. Pump Volume</b>		
Number of Production Wells with Pumps	187	140
Average Pump Volume (ft3)	1	1
Pump Volume per Wellfield (ft3)	187	140
<b>b. Tubing Volume</b>		
Tubing Length per Wellfield (ft)	317,020	319,000
Chipped Volume Reduction (ft3/ft)	0.007	0.007
Chipped Volume per Wellfield (ft3)	2,173	2,187
Volume of Pump and Tubing (ft3)	2,360	2,327
Volume for Disposal Assuming 10% Void Space (ft3)	2,596	2,560
Transportation and Disposal Unit Cost - 11e.(2) (\$/ft3)	\$7.74	\$7.74
<b>Subtotal Pump and Tubing Transport and Disposal Costs</b>	<b>\$20,101</b>	<b>\$19,823</b>
<b>Total Well Pumps and Tubing Removal and Disposal Costs</b>	<b>\$70,867</b>	<b>\$69,210</b>



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PART III: WELLFIELD BLDGS., EQUIPMENT REMOVAL & DISPOSAL	Mine Unit No.1	Mine Unit No.2
<b>C. Buried Trunkline</b>		
Assume:		
Length of Trunkline Trench (ft)	7500	3500
<b>1. Removal and Loading</b>		
Main Pipeline Removal Unit Cost (\$/ft of trench)	\$2.36	\$2.36
Subtotal Trunkline Removal and Loading Costs	\$17,700	\$8,260
<b>2. Shredding Costs</b>		
Diameter of HDPE Piping (in)	2	2
Total Length of 2" HDPE Piping (ft)	7,500	2,000
Diameter of HDPE Piping (in)	3	3
Total Length of 3" HDPE Piping (ft)	7,500	2,000
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	1,500
Diameter of HDPE Piping (in)	8	8
Total Length of 8" HDPE Piping (ft)	18,400	1,000
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	0
Diameter of HDPE Piping (in)	24	24
Total Length of 24" HDPE Piping (ft)	0	0
HDPE Pipe Shredding Unit Cost (\$/diameter-in-ft)	\$0.104	\$0.104
Subtotal Shredding Costs	\$52,905	\$2,808

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<b>PART III: WELLFIELD BLDGS., EQUIPMENT REMOVAL &amp; DISPOSAL</b>		<b>Mine Unit No.1</b>	<b>Mine Unit No.2</b>
<b>3. Transport and Disposal Costs</b>			
a.	2" HDPE Trunkline		
	Piping Length (ft)	7,500	2,000
	Chipped Volume Reduction (ft3/ft)	0.01	0.01
	Chipped Volume (ft3)	80.41	21.44
b	3" HDPE Trunkline		
	Piping Length (ft)	7500	2000
	Chipped Volume Reduction (ft3/ft)	0.02	0.02
	Chipped Volume (ft3)	174.64	46.57
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	1500
	Chipped Volume Reduction (ft3/ft)	0.08	0.08
	Chipped Volume (ft3)	333.57	125.09
e	8" HDPE Trunkline		
	Piping Length (ft)	18400	1000
	Chipped Volume Reduction (ft3/ft)	0.14	0.14
	Chipped Volume (ft3)	2599.96	141.30
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	0
	Chipped Volume Reduction (ft3/ft)	0.72	0.72
	Chipped Volume (ft3)	10817.18	0.00
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	334.40
Transportation and Disposal Unit Cost - 11e.(2) (\$/ft3)		15406	368
		\$7.74	\$7.74
Subtotal Trunkline Transport and Disposal Costs		<b>\$119,291</b>	<b>\$2,849</b>
Total Trunkline Removal and Disposal Costs		<b>\$189,896</b>	<b>\$13,917</b>

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<b>PART III: WELLFIELD BLDGS., EQUIPMENT REMOVAL &amp; DISPOSAL</b>	<b>Mine Unit No.1</b>	<b>Mine Unit No.2</b>
<b>D. Well Covers</b>		
Total Quantity	484	440
Average Well Cover Volume (ft3)	1.86	1.86
<b>1. Removal</b>		
Total Volume (ft3)	900	818
Demolition Unit Cost per WDEQ Guideline No.12, App.K (\$/ft3)	\$0.278	\$0.278
Subtotal Well Cover Demolition Costs	<b>\$250</b>	<b>\$227</b>
<b>2. Survey and Decontamination</b>		
Assume:		
Cost per Well Cover (based on actual cost per SRH accounting)	\$8.07	\$8.07
Subtotal Survey and Decontamination Costs	<b>\$3,906</b>	<b>\$3,551</b>
<b>3. Disposal</b>		
Total Volume (cy)	33	30
Cost to haul to landfill		
Total Trips @12(cy) each	3	3
Dump Truck (Guideline 12 Table D-1 10/12 cy)	\$77.78	\$77.78
Transportation(assume 2 trips per 12hr. Day)	\$1,296	\$1,178
Disposal Unit Cost (\$/ton)(Guideline No. 12 App. K)	\$78.56	\$78.56
Percentage (%)	100	100
Converted C&D waste volume to tons (.24 tons/cy) <sup>1</sup>	8	2
Subtotal Disposal Costs	<b>\$1,925</b>	<b>\$1,330</b>
<b>Total Well Cover Removal and Disposal Costs</b>	<b>\$6,081</b>	<b>\$5,108</b>

## APPENDIX B

### 2013-2014 YEAR 1 MINING OPERATIONS RECLAMATION SURETY BOND ESTIMATE

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<b>PART III: WELLFIELD BLDGS., EQUIPMENT REMOVAL &amp; DISPOSAL</b>	<b>Mine Unit No.1</b>	<b>Mine Unit No.2</b>
<b>E. Header Houses</b>		
Total Quantity	10	5
Average Header House Volume (ft3)	800	800
<b>1. Removal</b>		
Total Volume (ft3)	8000	4000
Demolition Unit Cost per WDEQ Guideline No.12, App.K (\$/ft3)	\$0.278	\$0.278
Subtotal Building Demolition Costs	\$2,223	\$1,111
<b>2. Survey and Decontamination</b>		
Assume:		
Cost per Header House	\$568	\$568
Subtotal Survey and Decontamination Costs	\$5,680	\$2,840
<b>3. Disposal</b>		
Total Volume (cy)	296	148
Volume for Disposal Assuming 10% Void Space (cy)	326	133
Cost to haul to landfill		
Total Trips @12(cy) each	27	12
Dump Truck (Guideline 12 Table D-1 10/12 cy)	\$77.78	\$77.78
Transportation(assume 2 trips per 12hr. Day)	\$12,678	\$5,761
Disposal Unit Cost (\$/ton)(Guideline No. 12 App. K)	\$78.56	\$78.56
Percentage (%)	100	100
Converted C&D waste volume to tons (.24 tons/cy) <sup>1</sup>	71	0
Subtotal Off-Site Disposal Costs	\$18,264	\$5,761
<b>Total Header House Removal + Disposal Costs</b>	<b>\$26,167</b>	<b>\$9,712</b>
<b>SUBTOTAL WELLFIELD BUILDINGS AND EQUIPMENT REMOVAL + DISPOSAL COSTS</b>	<b>\$655,456</b>	<b>\$279,166</b>
<b>F. Health and Safety Costs</b>		
<b>Total Health and Safety Costs - Accounted for on GW REST</b>		
<b>TOTAL WELLFIELD BUILDINGS AND EQUIPMENT REMOVAL + DISPOSAL COSTS</b>		<b>\$934,622</b>

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#### PART IV: WELL & BOREHOLE ABANDONMENT

<b>A. Well Abandonment (Wellfields)</b>	<b>Mine Unit No.1</b>	<b>Mine Unit No.2</b>
# of Production Wells	187	140
# of Injection Wells	297	300
# of Monitoring Wells	58	80
# of Restoration Wells	0	0
# water supply wells	0	0
Well Abandonment (w/ pump) Unit Cost (\$/ft. of well)	\$2.90	\$2.90
Well Abandonment Unit Cost (\$/ft. of well)	\$2.50	\$2.50
Incidental Costs (seeding, removal of top few feet of casing)	\$80.00	\$80.00
Total Number of Wells	542	520
Average Diameter of Casing (inches)	5	5
Average Depth (ft)	680	750
Total Mine Unit Well Depth (ft), wells with pumps	166,600	105,000
Total Mine Unit Well Depth (ft), all others	201,960	285,000
	<b>\$1,026,760</b>	<b>\$1,052,200</b>
<b>Subtotal Abandonment Cost - Wellfields</b>		<b>\$2,078,960</b>
<b>B. Removal of Contaminated Soil Around Wells, 11e.(2).</b>		
# of Production and Injection Wells	484	440
Cost per well (\$/well)	\$78.26	\$78.26
	<b>\$37,878</b>	<b>\$34,434</b>
<b>Subtotal Removal of Soil Around Wells</b>		<b>\$72,312</b>
<b>C. Well Abandonment</b>	<b>Miscellaneous Wells</b>	
# of Miscellaneous Water Supply Wells	2	
# of Miscellaneous Monitoring Wells	57	
Average Depth (ft)	650	
Well Abandonment (w/ pump) Unit Cost (\$/ft. of well)	\$2.90	
Well Abandonment Unit Cost (\$/ft. of well)	\$2.50	
Sealing of wells (depth*cost*qty)		\$96,395
Incidental Costs (seeding, removal of top few feet of casing)	\$80.00	\$4,720.00
40% of Reclamation Costs (GL 12 Appendix L, footnote 6)	\$20.00	
Plugged and Abandoned Wells - Surface Cost 40% (2012)	30	\$600
<b>Subtotal Well Abandonment (Miscellaneous)</b>		<b>\$101,715</b>
<b>D. Delineation Hole Abandonment</b>		
# of Projected Holes - 2013	500	
Average Depth (ft)	750	
Hole Abandonment Unit Cost (\$/ft of hole)	\$3.00	
Mobilization		\$1,000
Sealing of boreholes (depth*cost*qty)		\$1,125,000
Reclamation Cost per hole (Equipment, materials, labor)	\$70.00	\$35,000.00
40% of Reclamation Costs (GL 12 Appendix L, footnote 6)	\$20.00	
Plugged and Abandoned Boreholes - Surface Cost 40% (2011)	500	\$10,000.00
Plugged and Abandoned Boreholes - Surface Cost 40% (2012)	500	\$10,000.00
<b>Subtotal Hole Abandonment Costs</b>		<b>\$1,181,000</b>
<b>Abandonment Unit Cost per Hole (materials, equip, labor)</b>	<b>\$2,322.00</b>	

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**PART IV: WELL & BOREHOLE ABANDONMENT**

<b>E. Waste Disposal Injection Well Abandonment</b>	<b>DDW 1</b>	
<b>1. Well Sealing</b>		
Assume: TD = 8559' FedBY2 TD = 8570' FedBY1,		
Sealing cost per foot	\$11.91	
Subtotal Plugging Costs per Well (in UIC permit)	\$102,069	
<b>2. Pump Dismantling and Decontamination</b>		
Number of Persons	2	
Number of Pumps	2	
Pumps/Day	0.5	
Number of Days	4	
\$/Day/Person	\$184	
Subtotal Dismantling and Decon Costs per Well	\$1,472.00	
<b>3. Tubing String Disposal (NRC-Licensed Facility)</b>		
Length of Tubing String (ft)	8,570	
Diameter of Tubing String (inches)	2.875	
Volume of Tubing String (ft <sup>3</sup> )	386	
Transportation and Disposal Unit Cost (\$/ft <sup>3</sup> )	\$7.74	
Subtotal Tubing String Disposal Costs per Well	\$2,990	
Subtotal Waste Disposal Well Abandonment Costs per Well	\$106,531	
Subtotal Waste Disposal Well Abandonment Costs	\$210,071	
<b>TOTAL WELL ABANDONMENT COSTS</b>		<b>\$3,644,059</b>

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### PART V: MISCELLANEOUS SURFACE RECLAMATION

	Mine Unit No.1	Mine Unit No.2
<b>A. Wellfield Pattern Area Reclamation</b>		
Assume:		
Disking/Seeding Unit Cost Based on Actual Contractor Costs		
Pattern Area (acres)	30.91	21.65
Wellfield Pattern Area Disking/Seeding Unit Cost (\$/acre)	\$606	\$606
Subtotal Pattern Area Reclamation Costs per Wellfield	\$18,731	\$13,120
<b>Total Wellfield Pattern Area Reclamation Costs</b>		<b>\$31,851</b>
<b>B. Wellfield Road Reclamation</b>		
Length of Wellfield Roads (1000 ft.)	20	20
Wellfield Road Reclamation Unit Cost (\$/1000 ft.)	\$808	\$808
Subtotal Road Reclamation Costs per Wellfield	\$16,160	\$16,160
<b>Total Wellfield Road Reclamation Costs</b>		<b>\$32,320</b>
<b>C. Header House Surface Reclamation</b>		
Assume:		
Number of Header Houses	10	5
Area of Disturbance per Header House (ft <sup>2</sup> )	1000	1000
Total Area of Disturbance (acres)	0.23	0.11
Average Depth of Stripped Topsoil (ft.)	1	1
Surface Grade: Level Ground		
Average Length of Topsoil Haul (ft.)	1000	1000
<b>1. Ripping Overburden with Dozer</b>		
Ripping Unit Cost per WDEQ Guideline No.12, App.I1 (\$/acre)	\$1,209.63	\$1,209.63
Subtotal Ripping Costs	\$278	\$133
<b>2. Topsoil Application with Scraper</b>		
Volume of Topsoil Removed (cy)	258	258
Application Unit Cost per WDEQ Guideline No.12, App.C (\$/cy)	\$1.28	\$1.28
Subtotal Topsoil Application Costs	\$330	\$330
<b>3. Disking and Seeding</b>		
Disking/Seeding Unit Cost (\$/acre)	\$606	\$606
Subtotal Disking/Seeding Costs	\$139	\$67
Subtotal Header House Reclamation Costs per Wellfield	\$747	\$530
<b>Subtotal Header House Reclamation Costs</b>		<b>\$1,277</b>
<b>TOTAL WELLFIELD SURFACE RECLAMATION COSTS</b>		<b>\$65,448</b>
<b>D. Miscellaneous Surface Disturbance Reclamation</b>		
	<b>Satellite Area Reclamation</b>	<b>Miscellaneous Staging Areas</b>
<b>1. Topsoil Application</b>		
Assume:		
Average haul distance (ft.)	2000	2000
Surface grade: Level ground		
Topsoil Surface Area (acres)	21	21
Average Depth of Topsoil (ft.)	0.5	0.5
Volume of Topsoil (cy)	16940	16940
Topsoil Unit Cost per WDEQ Guideline No.12, App.C (\$/cy)	\$1.67	\$1.67
<b>Total Topsoil Application Cost</b>	<b>\$28,290</b>	<b>\$28,290</b>
<b>2. Disking/Seeding</b>		
Surface Area (acres)	5	10
Disking/Seeding Unit Cost (\$/acre)	\$606	\$606
Total Disking/Seeding Costs	\$3,030	\$6,060
<b>Subtotal Satellite Plant/Office Area Reclamation</b>	<b>\$31,320</b>	<b>\$34,350</b>
<b>Total Miscellaneous Surface Disturbance Reclamation</b>		<b>\$65,670</b>

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#### PART V: MISCELLANEOUS SURFACE RECLAMATION

	North Uranium Road
<b>E. Access Road Reclamation</b>	
Assume	
Surface grade: Level ground	0-4%
Length of road (miles)	2.30
Average road width (ft.)	25
<b>1. Gravel Road Base Removal</b>	
Assume	
Average haul distance (ft.)	1000
Gravel Road Base Width (ft.)	25
Average Road Base Depth (ft.)	0.5
Volume of Road Base (cy)	5630
Removal Unit Cost per WDEQ Guideline No.12, App.C (\$/cy)	\$1.28
Subtotal Gravel Road Base Removal Costs	\$7,206
<b>2. Ripping Overburden with Dozer</b>	
Overburden Surface Area (acres)	7
Ripping Unit Cost per WDEQ Guideline No.12, App.I1 (\$/acre)	\$881.07
Subtotal Ripping Overburden Costs	\$6,167
<b>3. Topsoil Application</b>	
Assume	
Average haul distance (ft.)	1000
Topsoil Surface Area (ft2)	304013
Depth of Topsoil (ft.)	0.5
Volume of Topsoil (cy)	5630
Topsoil Unit Cost per WDEQ Guideline No.12, App.C (\$/cy)	\$1.28
Subtotal Topsoil Application Costs	\$7,206
<b>4. Disking/Seeding</b>	
Surface Area (acres)	7
Disking/Seeding Unit Cost (\$/acre)	\$606
Subtotal Disking/Seeding Costs	\$4,242
<b>Total Access Road Reclamation Costs</b>	<b>\$24,821</b>
<b>F. Surge Pond Reclamation</b>	<b>Ponds 1 and 2</b>
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
Tackhoe Operation Unit Cost	
<b>1. Liner &amp; Sludge Removal and Loading, 11e.(2)</b>	
<b>a. Equipment</b>	
Number of Trackhoes	1
ft3/hr.	300
Number of Hours	272
\$/hr./Trackhoe	\$100.85
Equipment Costs	\$27,431
<b>b. Labor</b>	
Number of Persons	2
Number of Hours	272
\$/hr./Person(operator)	\$38
\$/hr./Person (laborer)	\$33
Labor Costs	\$19,326
Subtotal Liner & Sludge Removal and Loading Costs	\$46,757



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#### PART V: MISCELLANEOUS SURFACE RECLAMATION

##### 2. Transportation and Disposal (NRC-Licensed Facility)

Transportation and Disposal Unit Cost (\$/ft3)	\$11.14
Subtotal Transportation and Disposal Costs	\$910,029

##### 3. Leak Detection Piping Removal and Loading, 11e.(2)

Assume:

Piping Removal Unit Cost same as for Well fields (\$/ft.)	\$2.36
Length of Piping (ft.)	400

##### a. Piping Removal and Loading Costs

Total Length of Piping (ft.)	400
Subtotal Piping Removal and Loading Costs	\$944

##### b. Shredding Costs

Average Diameter of Piping (inches)	2
PVC Pipe Shredding Unit Cost (\$/diameter-in-ft.)	\$0.052
Subtotal Pipe Shredding Costs	\$104

##### 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)	\$7.74

Subtotal Piping Transport and Disposal Costs	\$31
Subtotal Leak Detection Piping Removal and Disposal Costs	\$1,079

##### 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)	\$1.28
Subtotal Soil Replacement Costs	\$51,626

##### 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 \$1,011,006**

#### G. Miscellaneous

##### 1. Water Tank Pad

Concrete Pad (2)	
Area of Concrete Pad	556
Demolition Unit Cost per WDEQ Guideline No.12, App.K (\$/ft2)	\$5.54
Subtotal Concrete pad removal	\$3,080

##### 2. Water Tanks

Tank Demo and Removal - 2 50,0000 gallon tanks

Tank volume	100000
Demolition Unit Cost per WDEQ Guideline No.12, App.K (\$/ft3)	\$0.29
Subtotal Tank Demolition Costs	\$29,000

##### 3. O<sub>2</sub> Pad Satellite

Concrete Floor	
Area of Concrete Floor (ft2)	663
Demolition Unit Cost per WDEQ Guideline No.12, App.K (\$/ft2)	\$5.54
Subtotal Concrete Floor Demolition Costs	\$3,673

##### 4. CO<sub>2</sub> Pad Satellite

Concrete Floor	
Area of Concrete Floor (ft2)	732
Demolition Unit Cost per WDEQ Guideline No.12, App.K (\$/ft2)	\$5.54
Subtotal Concrete Floor Demolition Costs	\$4,055

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#### PART V: MISCELLANEOUS SURFACE RECLAMATION

##### 5. Silo Pad

Concrete Floor		
Area of Concrete Floor (ft2)	452	
Demolition Unit Cost per WDEQ Guideline No.12,App.K (\$/ft2)	\$5.54	
Subtotal Concrete Floor Demolition Costs	\$2,504	
Concrete Pedestal		
Area of Pedestal (ft2)	576	
Demolition Unit Cost per WDEQ Guide. No.12,App.K (\$/lin. ft.)	\$5.54	
Subtotal Concrete pedestal Demolition Costs	\$3,191	

##### 6. Acid Tank Pad

Concrete Floor		
Area of Concrete Floor (ft2)	625	
Demolition Unit Cost per WDEQ Guideline No.12,App.K (\$/ft2)	\$5.54	
Subtotal Concrete Floor Demolition Costs	\$3,463	
Containment Wall		
Area of Wall (ft2)	600	
Demolition Unit Cost per WDEQ Guide. No.12,App.K (\$/lin. ft.)	\$5.54	
Subtotal Concrete pedestal Demolition Costs	\$3,324	

##### 6. Disposal Cost of Demolition Debris

Concrete Volume (in truck) -cy	234	
Tank Demolished volume -cy	370	
Total Volume of Concrete Footing (cy)	604	
Tons of Concrete	657	
Cost to load dump trucks		
Loader (Guideline 12 App. J), CAT 980G Front End Loader	\$115.98	
Cost per cy, assume 1.5min dump time+58.5min standby for 12cy load	\$9.67	
Load Cost	\$5,836.94	
Cost to Haul to landfill		
Total Trips @12(cy) each	50	
Dump Truck (Guideline 12 App. J)	\$77.78	
Transportation (assume 2 trips per 12 hr. day)	\$23,487	
Disposal Unit Cost per WDEQ Guideline No.12, App.K (\$/ton)	\$78.56	
Subtotal Disposal Costs	\$80,940.52	

##### 7. Fence Removal

	All Fencing	
Total Length of Fence (ft.)	13,779	
Fence Removal Cost	\$0.32	
Subtotal Fence Removal	\$4,409	
Total Miscellaneous Costs	\$126,444	

#### TOTAL MISCELLANEOUS SURFACE RECLAMATION COSTS

\$1,227,941

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<b>PART VI: GROUND WATER RESTORATION</b>		<b>Mine Unit No.1</b>
<b>Assumptions:</b>		
Number of Patterns in Unit(s)		
	Estimated after Year 1	187
	Total	187
Pore Volumes of Affected Ground Water in Unit(s)		
Contacted Pore Volume (CPV)		
	Estimated after Year 1 (Kgal)	61,200
	Total (Kgal)	61,200
Wellfield Area (ft <sup>2</sup> )		1,346,400
Formation Thickness (ft)		15
Porosity, percent		0.27
	PPV Estimated after Year 1 (Kgal)	40,800
	Total (Kgal)	40,800
Flare Factor = CPV/PPV		1.50
Number of Wells in Unit(s)		
Production Wells		187
	Total	187
Injection Wells		297
	Total	297
<b>Total Production Wells and Injection Wells</b>		<b>484</b>
M-Wells		28
MP-Wells		16
MO-Wells		10
Trend Wells		4
MU-Wells		0
Pumping test well		1
	Subtotal MU 1	59
	<b>Total Monitor Wells</b>	<b>59</b>
	Total Number of Wells - MU1	543
	<b>Total Number of Wells within Unit(s)</b>	<b>543</b>
Average Well Depth (ft)		680
<b>A. Ground Water Sweep (GWS) Costs</b>		
Assume:		
Contacted Pore Volumes Removed (CPVs)		1.0
Required GWS Volume (Kgal/pattern)		327
Total Volume for GWS (Kgal)		61,200
No. of Wells		5
Pumping Rate of Each Well (gpm)		12
Total GWS Rate (gpm)		60
Projected Time Line (years)(before starting RO)		0.5
GWS and DDW Cost (\$/Kgal)		\$2.24
	Subtotal Ground Water Sweep Costs per Wellfield	\$137,073
	<b>Total Ground Water Sweep Costs</b>	<b>\$137,073</b>

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<b>PART VI: GROUND WATER RESTORATION</b>	<b>Mine Unit No.1</b>
<b>B. Reverse Osmosis Costs</b>	
Assume:	
Contacted Pore Volumes (CPVs) Removed	2
Required RO Sweep Volume (Kgal/pattern)	655
Total Volume for RO (Kgal)	122,400
No. of Wells	25
Pumping Rate of Each Well (gpm)	12
Total RO Sweep Rate (gpm)	300
Projected Time Line (years)	0.8
Reverse Osmosis Unit Cost (\$/Kgal)	\$0.76
DDW Water Cost (\$/Kgal)	\$2.07
Subtotal Reverse Osmosis Costs per Wellfield	\$144,100
<b>Total Reverse Osmosis Costs</b>	<b>\$144,100</b>
<b>C. Reverse Osmosis and Chemical Reductant Costs</b>	
Assume:	
Contacted Pore Volumes (CPVs) Removed	6
Required RO + Reductant Volume (Kgal/pattern)	1,964
Total Volume for RO + Reductant (Kgal)	367,200
No. of Wells	25
Pumping Rate of Each Well (gpm)	12
Total Rate (gpm)	300
Projected Time Line (years)	2.3
RO + Chemical Reductant Unit Cost (\$/Kgal)	\$0.81
DDW Water Disposal Cost (\$/Kgal)	\$1.90
Subtotal Chemical Reductant Costs per Wellfield	\$438,723
<b>Total Reductant Costs</b>	<b>\$438,723</b>
<b>D. Monitoring and Sampling Costs</b>	
<b>1. Restoration Well Sampling</b>	
Estimated Restoration Period (Years)	3.6
a. Well Sampling prior to restoration start	
# of Wells	16
\$/sample	\$337
b. Restoration Progress Sampling	
# of MP-Wells	16
\$/sample	\$100
Samples/Year	6
c. Excursion Monitoring	
# of M, MO and MU-Wells	38
Samples/Year	6
\$/sample	\$100
Sub-total Restoration Analyses	\$122,032

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<b>PART VI: GROUND WATER RESTORATION</b>	<b>Mine Unit No.1</b>
<b>2. Short-Term Stability</b>	
Estimated Stabilization Period (Years)	1
# of M Wells	28
Samples/year	6
\$/sample	\$100
# of MP-Wells	16
Samples/Year	3
\$/sample	\$337
Sub-total Stability Analyses	\$32,976
Subtotal Monitoring and Sampling Costs per Wellfield	\$155,008
<b>Total Monitoring and Sampling Costs</b>	<b>\$155,008</b>
<b>E. Mechanical Integrity Test (MIT) Costs</b>	
Five-Year MIT Unit Cost (\$/well)	\$267
Number of Wells (All of Inj., prod., mon., and trend wells)	546
Subtotal Mechanical Integrity Testing Costs per Wellfield	\$145,766
<b>Total Mechanical Integrity Testing Cost</b>	<b>\$145,766</b>
<b>TOTAL RESTORATION COST PER WELLFIELD</b>	<b>\$1,020,671</b>
<b>TOTAL WELLFIELD RESTORATION COST</b>	<b>\$1,020,671</b>
<b>F. Building Utility Costs</b>	
2013 Projected costs; actual costs to be added after year one operations	
Electricity (\$/Month)	\$1,200
Propane (\$/Month)	\$3,000
Number of Months	55.2
Subtotal Utility Costs per Building	\$231,840
<b>Total Building Utility Costs</b>	<b>\$231,840</b>
<b>G. Vehicle Operation Costs</b>	
Number of Pickup Trucks/Pulling Units (Gas)	3
Operating Unit Cost in \$/hr (WDEQ Guideline No.12)	\$32.91
Average Operating Time (Hrs/Year)	1000
Total Number of Years (Average)	4.6
<b>Total Vehicle Operation Costs</b>	<b>\$454,158</b>
<b>H. Supervisory/Technical Support Labor Costs (For all Reclamation)</b>	
Restoration/RSO Manager	1
\$/Year	\$105,357
Environmental/HPT Technician	1
\$/Year	\$72,245
Operators	6
\$/Year	\$78,265
Number of Years	4.6
<b>Total Labor Costs</b>	<b>\$2,337,721</b>
<b>TOTAL GROUND WATER RESTORATION COSTS</b>	<b>\$4,919,295</b>

**TABLE RP-4A**  
**Reclamation Cost Estimate**  
**Detailed Assumptions and Calculations**

Mine Unit Data						
		Mine Unit 1	Mine Unit 2	Mine Unit 3	Mine Unit 4	Mine Unit 5
Flare Factor		1.5				0
Wellfield Area (ft2)		1,346,400	1,008,000	0	0	0
Wellfield Area (acres)		30.91	21.65	0.00	0.00	0.00
Affected Ore Zone Area (ft2)		1,346,400	1,008,000	0	0	0
Avg. Completed Thickness		15.0	20.0	20.0	20.0	20.0
Porosity		0.27	0.27	0.27	0.27	0.27
Affected Volume (ft3)		30,294,000	0	0	0	0
Kgallons per Pore Volume		61,182	0	0	0	0
Number of Patterns in Unit(s)						
	Current	0	0	0	0	0
	Estimated next report	187	140	0	0	0
	Total Estimated	187	140	0	0	0
Number of Wells in Unit(s)						
Production Wells						
	Current	0	0	0	0	0
	Estimated next report	187	140	0	0	0
	Total Estimated	187	140	0	0	0
Injection Wells						
	Current	0	0	0	0	0
	Estimated next report	297	300	0	0	0
	Total Estimated	297	300	0	0	0
Monitor Wells						
	Current	58	0	0	0	0
	Estimated next report	0	80	0	0	0
	Total Estimated	58	80	0	0	0
M-Wells		28		0	0	0
MP-Wells		16		0	0	0
MO-Wells		10		0	0	0
MU-Wells		0		0	0	0
Trend Wells		4		0	0	0
Restoration Wells						
	Current	0	0	0	0	0
	Estimated next report	0	0	0	0	0
	Total Estimated	0	0	0	0	0
Other Wells (Pumping Test Well, etc.)						
	Current	1	0	0	0	0
	Estimated next report	0	0	0	0	0
	Total Estimated	1	0	0	0	0
Number of Wells per Wellfield		543	520	0	0	0
Total Number of Wells		1063				
Average Well Depth (ft)		680	750	0	0	0
Average Diameter of Casing (inches)		5	5	5	5	5
Delineation Holes Estimated Next Report Period		386	500	0	0	0
Length of Fencing (ft)		0	0		0	0
Number of Deep Disposal Wells		2				
Number of Header Houses		10	5			

**TABLE RP-4A**  
**Reclamation Cost Estimate**  
**Detailed Assumptions and Calculations**

<b>Electrical Costs</b>		<b>2012 Actual</b>	
Power cost		\$0.0554	kwHr
Kilowatt to Horsepower		0.746	Kw/HP
Horsepower per gallon per minute		0.167	HP/gpm
Natural Gas		\$4.94	per MMBTU
Propane		\$26.06	per MMBTU

<b>Labor Rates</b>					
<b>Latest Available for 2012 year, Wyoming, Mountain States Employers Council, 2010</b>					
		<b>Inc 42% benefits</b>			
			(i.e., overhead)		
Environmental Manager/RSO		\$43.00	\$62.35	hour	
Restoration Manager/Hydrologist		\$35.00	\$50.75	hour	
Operator		\$26.00	\$37.70	hour	
Laborer		\$23.00	\$33.35	hour	
Engineer		\$36.00	\$52.20	hour	
Radiation/Environmental Engineering Technician		\$24.00	\$34.80	hour	
2,080 working hours in a year		173	hours per month		

<b>Chemical Costs (Cost derived from SRH actual costs)</b>		<b>2012 Actual</b>	
Antiscalant for RO (HyperSpense)		\$34.58	gal
Antiscalant for RO (ScaleTrol)		\$43.59	gal
Sodium Sulfide		\$0.51	pound
Methanol		\$2.43	gal
Cement		\$9.17	sack
Bentonite Tubes		\$2.90	tube
Plug Gel		\$8.00	sack
Well Cap		\$7.50	each
Hydrochloric Acid		\$0.20	pound
<b>Analytical Costs</b>			
Guideline 8 (contract lab adjusted for current contract cost)		\$337.00	analysis
6 parameter (in-house) Est Rate (CPI)		\$100.00	analysis
Other (radon, bio, etc.) Est Rate (CPI)		\$1,000.00	month

**TABLE RP-4A**  
**Reclamation Cost Estimate**  
**Detailed Assumptions and Calculations**

<b>Equipment Costs</b>						
<b>Equipment</b>	<b>Base Rental Rate (\$/hr)</b>	<b>Labor Costs (\$/hr)</b>	<b>Repair Reserve Costs (\$/hr)</b>	<b>Fuel Costs (\$/hr)</b>	<b>Mob &amp; Demob (\$/hr)</b>	<b>Total (\$/hr)</b>
Cat 924G Loader	\$52.56	N/A	inc	inc	inc.	\$52.56
Cat 416 Backhoe	\$35.84	N/A	inc	inc	inc.	\$35.84
Trailer Mounted Brush Chipper	\$37.60	N/A	inc	inc	inc	\$37.60
Cat D8T Bulldozer, Semi-U	\$207.17	N/A	inc	inc	inc.	\$207.17
Pulling Unit	\$37.83	inc	inc	inc	inc	\$37.83
MIT Unit	\$30.42	N/A	inc	inc	inc	\$30.42
Drill Rig (workover, repair, P&A) w	\$200.00	inc	inc	inc	inc	\$200.00
Goose Neck Trailer	\$17.61	N/A	inc	inc	inc.	\$17.61
Manlift Rental	\$53.10	inc	inc	inc	inc	\$53.10
Cementer	\$14.30	N/A	inc	inc	inc.	\$14.30
Crane Rental with Operator	\$132.85	inc	inc	inc	inc	\$132.85
Cat 320C L Trackhoe	\$100.85	N/A	inc	inc	inc	\$100.85
Concrete Jaws Labounty - CP-	\$18.22	N/A	inc	inc	inc	\$18.22
Pick-up Truck 3/4 ton 4X4	\$32.91	N/A	inc	inc	inc	\$32.91
Bobcat S250 Skid Steer Loader	\$35.55	N/A	inc	inc	inc	\$35.55
Cat 14H Grader - 14' Blade	\$117.73	N/A	inc	inc	inc	\$117.73
Cat 615C Elevating Scarper	\$189.21	N/A	inc	inc	inc	\$189.21
Trailer Mounted Brush Chipper	\$37.60	N/A	inc	inc	inc	\$37.60
Basis:						
Drill rig based on current 2010 contracts						
Equipment costs are FHWA rates, from the Equipment Watch Rental Rate Blue Book, dated June 7, 2012. Rate is the monthly ownership cost divided by 176 plus the hourly estimated operating cost and is the standard used by the DOT for contractors. Copies of these rates used are kept on-site.						
				\$3.230	gallon	
				\$3.000	gallon	



**TABLE RP-4A**  
**Reclamation Cost Estimate**  
**Detailed Assumptions and Calculations**

**Waste Disposal Costs**

**Disposal Costs are Based on the Current Contract With Denison Mines good through 2015**

**Transportation is Calculated from SRH**

Waste Form	Fee		Density Correction Factor (Tons/Yd3)	Fee per Cubic Yard	Transport Cost		Total Transportation and Disposal
Soil, Concrete, Bulk Byproduct Material	\$147.76	per Ton	1.1	\$162.54	\$138.30	per Yd3	\$300.84
							\$11.14
Unpackaged Bulk Byproduct Material (e.g., pipe)	\$168.49	per Ton	0.42	\$70.77	\$138.30	per Yd3	\$209.07
							\$7.74
Solid Waste (landfill)	\$0.00827	per Lb			Incl.	per Lb	\$0.00827
Solid Waste (landfill)	\$133.75	per Load			Incl.	per Load	\$133.75
Void Factor (for disposal)	1.25						
Transportation Cost per load	\$2,800	yrds/load	30	yd			
Bin Rental (90 days @ \$13.00 per day)	\$1,170						
Decontamination Fee	\$170	per Load					
Unloading Fee	\$165	per Load					
Total Transportation	\$4,305						
Load Correction Factors - difference between solid material and when it is broken because of air							
	Pounds/CY						
Material	Solid (bank)	Broken (Loose)	% Dif	Load Factor			
Granite	4536	2781	39%	0.61			
Limestone	4401	2619	40%	0.60			
Sandstone	3915	2538	35%	0.65			
Concrete	3996	2176	46%	0.54			
Sand & gravel	2700	2400	11%	0.89			

<b>Guideline No. 12 Unit Costs (Includes Profit) VS. 11/2012</b>					
<b>Paragraph 12, Miscellaneous (Administrative, Overhead and Contingency)</b>					
Extrapolated percentage based on numbers provided				15	percent
<b>App K, Cost Estimates for Demolition and Removal of Railroad Spurs and Facilities Buildings</b>					
Task	Cost per unit	Regional Cost Adjustment		Adjusted Cost per Unit	
Mixture of Types	\$0.29 ft3	0.958		\$0.278 ft3	
Explosive Demolition, Concrete or	0.29 ft3	0.958		\$0.278 ft3	
Disposal (Average)	9.92 cy	0.958		\$9.503 cy	
City Landfill Dump Charges	\$82.00 ton	0.958		\$78.556 ton	
Concrete Footings and Foundations		0.958		\$0.000	
6" Thick with Rebar	5.54 ft2	0.958		\$5.307 ft2	
Footings - 2' Thick, 3' Wide	20.65 lin. ft.	0.958		\$19.783 lin. ft.	
Concrete Disposal On-Site	8.61 cy	0.958		\$8.248 cy	
Caterpillar 980G Front End Loader (GL 12 App. J)	115.98 hr				
Dumptruck (10-12 yd3) (GL 12 App. J)	77.78 hr				
City Landfill Dump Charges x density correction factor		0.42		\$34.44	
				Operating Cost per bank (in situ) cubic yards	
<b>App C, Calculations for Moving Materials with a Caterpillar 637G Push-Pull Scraper Fleet</b>					
One-Way Distance 500 feet, 0% grade				\$1.080 bcy	
One-Way Distance 1,000 feet, 0% grade				\$1.280 bcy	
One-Way Distance 2,000 feet, 0% grade				\$1.670 bcy	
One-Way Distance 6,500 feet, 5% grade, resisting				\$3.245 bcy	

**TABLE RP-4A**  
**Reclamation Cost Estimate**  
**Detailed Assumptions and Calculations**

App E, Calculations for Moving Material with a Caterpillar D9R Dozer				Operating Cost per	
Distance 50 feet				\$0.160	icy
App H, Cost Estimates for Handling Wire Fencing and Electrical Power Lines					
Fencing Removal				\$0.32	linear foot
App I, Cost Estimate for Ripping Asphalt Using a Caterpillar D9R Dozer				Operating Cost	
				\$881.07	per acre
App I1, Cost Estimate for Ripping Overburden Using a Caterpillar D10T Dozer				Operating Costs	
	0.27	acre/hour		\$326.60	per hour
				\$1,209.63	per acre
Well Covers (Actual Costs -HUP)				\$8.07	
<b>Guideline No. 12 Unit Costs (Includes Profit) VS. 10/2012</b>					
App J, Cost Estimate for Removing one 20' Section of CMP				Operating Cost	
App L, Abandonment and Sealing of Cased Drill Holes and Monitor Wells					
Small Site Grading				\$50.00	per site
Large Site Grading				\$3,000.00	acre
Caps				\$10.00	ea
Mobilization Fee				\$1,000.00	Prj
Location Fee				\$10.00	site
App. O Cost to Remove One Meteorological Station				\$999.80	per site
App P, Cost Estimates for Scarification of Compacted Surfaces Using Cat. 16H Grader				Operating Costs	
	2.9	acre/hour		\$200.17	per hour
				\$69.02	per acre
<b>Table D-1 (GL 12)</b>					
<b>Vehicle Operating Costs</b>					
Pickup (Gas)	\$32.91				
<b>Table D-1 Operating Costs and Adjusted Costs</b>					
Dump Truck 10-12 CY	\$77.78				
Pickup (Diesel)	27.47				
<b>Seeding Unit Costs</b>					
Disking / Seeding/Topsoil Costs		2010 Actual			
Seed cost		\$65.99	per acre		
Hay Mulch Crimped and Tackifier Soil Amendment		\$540	per acre		
Seed and Mulch		\$606	per acre		
Depth of Topsoil		0.5	feet		