

Table 3
2017 - 2018 Surety Estimate
Ruth Uranium ISR LQD Permit No. 631 / NRC License SUA 1548
Cameco Resources

Total Restoration and Reclamation Cost Estimate:	2017	<i>2016 Bond Estimate</i>
I. Equipment Removal and Disposal (I EQUIP Sheet)	\$66,802	\$65,993
II. Building Demolition and Disposal (II BLDGS Sheet)	\$109,308	\$105,820
III. Miscellaneous Reclamation (III MISC REC Sheet)	\$190,378	\$175,213
Subtotal Restoration and Reclamation Cost Estimate	\$366,488	\$347,026
Contractor Profit & Overhead ¹ 10% Calc'd for Master Costs		
Contingency ² 21.0%	\$76,963	\$71,834
TOTAL³, rounded up	\$443,500	\$418,900

1 - Per WDEQ/LQD Guideline No. 12, Section 12(b)

2 - Per WDEQ/LQD Guideline No. 12a, Section V. and NRC License Condition 9.5 (SUA-1548)

3 - Costs reflect both WDEQ & NRC requirements. No salvage value assumed.

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	2017 Estimate
I. EQUIPMENT REMOVAL AND LOADING	Process Building
A. Removal and Loading Costs	
1 Tankage	
Number of Tanks	6
Volume of Tank Construction Material (CF)	405
Tank Removal Cost	\$135.27
Subtotal Tankage Removal and Loading Costs	\$54,784
Total Equipment Removal and Loading Costs	\$54,784
B. Transportation and Disposal Costs (NRC-Licensed Facility)	
1 Tankage	
Volume of Tank Construction Material (CF)	405.0
Volume for Disposal Assuming Void Space (CF)	445.5
Transportation and Disposal Unit Cost (\$/CF)	\$14.52
Subtotal Tankage Transportation and Disposal Costs	\$6,469
Subtotal Equipment Transportation and Disposal Costs per Facility	\$6,469
Total Equipment Transportation and Disposal Costs	\$6,469
C. Health and Safety Costs	
1 Equipment Rental (Alpha, Gamma Surveys and Smear Samples)	
QTY. Weeks	2
Rental Rate	\$250
Subtotal Equipment	\$500
2 Soil Sampling and Monitoring	
Analytical Costs	\$372
Soil Samples and Monitoring	5
Subtotal Sampling	\$1,860
3 Labor (Health Physics Tech)	\$40
Hours	80
Subtotal Labor	\$3,189
Subtotal Health and Safety Costs	\$5,549
TOTAL EQUIPMENT REMOVAL + DISPOSAL	\$66,802

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II. BUILDING DEMOLITION AND DISPOSAL	2017 Estimate		
	Process Building	Warehouse Building	Generator Bldg.
A. Decontamination Costs			
1 Wall Decontamination			
Area to be Decontaminated (SF)	5,600	0	0
HCl Acid Wash, including labor (\$/SF)	\$0.92	\$0.92	\$0.92
Subtotal Wall Decontamination Costs	\$5,134	\$0	\$0
2 Concrete Floor Decontamination			
Area to be Decontaminated (SF)	4,000	0	0
HCl Acid Wash, including labor (\$/SF)	\$0.57	\$0.57	\$0.57
Subtotal Concrete Floor Decontamination Costs	\$2,289	\$0	\$0
Subtotal Decontamination Costs per Building	\$7,423	\$0	\$0
Total Decontamination Costs	\$7,423		
B. Demolition Costs			
1 Building			
Height of Building (ft)	20	10	10
Volume of Building (CF) to Demolish	80,000	7,480	990
Demolition Cost	\$0.328	\$0.328	\$0.328
Subtotal Building Demolition Costs	\$26,224	\$2,452	\$325
2 Concrete Floor			
Area of Concrete Floor (SF)	4,000	600	150
Demolition Cost	\$0.86	\$0.86	\$0.86
Subtotal Concrete Floor Demolition Costs	\$3,428	\$514	\$129
3 Concrete Footing			
Length of Concrete Footing (ft)	253	0	0
Demolition Cost	\$17.57	\$17.57	\$17.57
Subtotal Concrete Footing Demolition Costs	\$4,444	\$0	\$0
Subtotal Demolition Costs per Building	\$34,096	\$2,966	\$454
Total Demolition Costs	\$37,515		
C. Disposal Costs			
1 Building			
Volume of Building (CY) to Dispose	978	91	12
Off-Site County Landfill			
Percentage (%)	100	100	100
Total Volume for Disposal - Incl. 33% Factor (CY)	1300	122	16
Disposal Cost, Landfill (CY)	\$42.17	\$42.17	\$42.17
Subtotal County Facility Off-Site Disposal Costs	\$54,835	\$5,127	\$679
2 Concrete Floor			
Area of Concrete Floor (SF)	4,000	600	150
Average Thickness of Concrete Floor (ft)	0.75	0.75	0.75
Volume of Concrete Floor (CF)	3000	450	112.5
Volume of Concrete Floor (CY)	111	17	4
a. On-Site Concrete Disposal			
Percentage (%)	90	100	100
Volume for Disposal (CY)	100	17	4
Concrete Disposal On Site (CY)	\$9.68	\$9.68	\$9.68
Subtotal County Facility Off-Site Disposal Costs	\$968	\$161	\$40
C. 2 b. NRC-Licensed Disposal Facility			
Percentage (%)	10	0	0
Volume for Disposal (CF)	300	0	0
Transportation and Disposal Unit Cost (\$/CF)	\$7.32	\$7.32	\$7.32
Subtotal NRC-Licensed Facility Disposal Costs	\$2,197	\$0	\$0
Subtotal Concrete Floor Disposal Costs	\$3,165	\$161	\$40
3 Concrete Footing			
Length of Concrete Footing (ft)	253	0	0
Average Depth of Concrete Footing (ft)	4	4	4
Average Width of Concrete Footing (ft)	1	1	1
Volume of Concrete Footing (CF)	1012	0	0
Volume of Concrete Footing (CY)	37	0	0
Concrete Disposal On Site (CY)	\$9.68	\$9.68	\$9.68
Subtotal Concrete Footing Disposal Costs	\$363	\$0	\$0
Subtotal Disposal Costs per Building	\$58,363	\$5,288	\$719
Total Disposal Costs	\$64,370		
D. Health and Safety Costs			
			Included in "I EQUIP"
SUBTOTAL BUILDING DEMOLITION AND DISPOSAL COSTS	\$99,882	\$8,254	\$1,173
TOTAL BUILDING DEMOLITION AND DISPOSAL COSTS	\$109,308		

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III. MISCELLANEOUS RECLAMATION	2017 Estimate
A. CPF, Office Area Reclamation	
1 Ripping Overburden with Dozer	
Overburden Surface Area (acres)	2.0
<u>Ripping Cost (per acre)</u>	\$903.39
Subtotal Ripping Overburden Costs	\$1,807
2 Topsoil Application	
Area of surface disturbance (SF)	87120
Average thickness of topsoil (ft)	0.5
Average haul distance (ft)	2000
Surface grade (%)	0%
Volume of Topsoil (CY)	1,613
<u>Moving Materials (0% Grade)</u>	\$1.32
Subtotal Topsoil Application Costs	\$2,126
3 Discing/Seeding	
Surface Area (acres)	2
<u>Discing/Seeding Unit Cost (\$/acre)</u>	\$330
Subtotal Discing/Seeding Costs	\$660
Total CPP, Office, Yard Area Reclamation	\$4,593
B. Access Road Reclamation (includes culverts)	Road No. 1
1 Assumptions	
Surface grade	0%
Length of Road (ft)	5200
Width of Road (ft)	12
Area of road (acres)	1.4

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III. MISCELLANEOUS RECLAMATION	2017 Estimate
B. 2 Gravel Road Base Removal	
Average haul distance (ft)	5500
Gravel Road Base Width (ft)	12
Gravel Road Base Area (acres)	1.43
Average Road Base Depth (ft)	0.3
Volume of Road Base (CY)	770
Moving Materials (0% Grade)	\$1.02
Subtotal Gravel Road Base Removal Costs	\$784
3 Ripping Overburden with Dozer	
Overburden Surface Area (acres)	1.4
Ripping Cost (per acre)	\$903
Subtotal Ripping Overburden Costs	\$1,294
4 Topsoil Application	
Average haul distance (ft)	400
Topsoil Surface Area (SF)	62,400
Depth of Topsoil (ft)	0.67
Volume of Topsoil (CY)	1548
Moving Materials	\$0.85
Subtotal Topsoil Application Costs	\$1,312
5 Discing/Seeding	
Surface Area (acres)	1.4
Discing/Seeding Unit Cost (\$/acre)	\$330
Subtotal Discing/Seeding Costs	\$473
Multiplier for Projected Additions	1
Total Access Road Reclamation Costs	\$3,863

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III. MISCELLANEOUS RECLAMATION	2017 Estimate	
C. Pond Reclamation	2017 Estimate Pond No. 1	Estimate Pond No. 2
Settling Basin/Storage Ponds Reclamation		
1 Volume of By-product Material		
Area of Pond Bottom (SF)	33,000	27,000
Area with Fill (SF)	2,813	0
Average Fill Thickness (ft)	0.29	0
Volume of Fill (CY)	30	0
Remaining Area with Pond Residue (SF)	19,325	21,947
Average Pond Residue Thickness (in)	1	0.5
Volume of Pond Residue (CY)	60	34
Area of Liner (SF)	50,000	50,000
Thickness of Liner (in)	0.036	0.036
Volume of Liner (CY)	5.6	5.6
Volume of Liner Assuming 25% Void Space (CY)	6.9	6.9
Area of Contaminated Sump and Drain (SF)	0	1
Length of Sump and Drain (ft)	0	240
Volume of Sump and Drain (CY)	0	9
Diameter of Contaminated Soil (ft)	0	10
Contaminated Soil Thickness (in)	0	6
Volume of Contaminated Soil (CY)	0	1
Subtotal Volume By-product Material (CY)	97	51
2 Soil Sampling and Monitoring		
Non-invasive surface gamma survey	\$5,000	--
Physical Soil Samples (Ra226, U-nat, Pb-210, Th-230)	20	20
\$/Sample	\$545	\$545
Physical Soil Sampling and Monitoring Costs	\$10,900	\$10,900
Subtotal Soil Sampling & Monitoring	\$15,900	\$10,900

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III. MISCELLANEOUS RECLAMATION	2017 Estimate	
C. 3 Transportation & Disposal to 11e(2) Facility	Pond #1	Pond #2
Volume of Subsoil for Disposal (CY)	97	51
Transportation and Disposal Unit Cost (\$/CY)	\$392.07	\$392.07
Subtotal Byproduct Material Transportation + Disposal Costs	\$38,022	\$19,922
4 Liner/Subsoil Removal and Disposal		
Thickness of liner (ft)	0.0030	0.0030
Thickness of contaminated subsoil (ft)	0.083	0.042
Width of liner (ft)	--	--
Length of liner (ft)	--	--
Depth of Pond (ft)	15	15
Surface area of pond liner (SF)	50,000	50,000
a. Removal and Loading		
Volume of Liner (CY)	160	83
(Clay) Liner Removal and Loading Unit Cost (\$/CY)	\$4.24	\$4.24
Subtotal Liner Removal and Loading Costs	\$678	\$351
b. Transportation and Disposal		
Volume of Geotextile Liner (CF)	4,317	2,233
Transportation and Disposal Unit Cost (\$/CF)	\$5.80	\$5.80
Subtotal Liner Transportation and Disposal Costs	\$25,057	\$12,964
Subtotal Liner Removal and Disposal Costs	\$25,735	\$13,315
5 Grade and Contour		
Volume of Embankment Material (CY)	9,444	12,778
Average Grade (%)	0	0
Distance (ft)	500	500
Material Moving Unit Cost per WDEQ Guideline No.12, App.E (\$/CY)	\$0.847	\$0.847
Subtotal Grade and Contour Costs	\$7,999	\$10,823

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C. 6 Topsoil Application	Pond #1	Pond #2
Area of surface disturbance (SF)	50,000	50,000
Average thickness of topsoil (ft)	6	6
Average haul distance (ft)	500	500
Surface grade (%)	0%	0%
Volume of Topsoil (CY)	11,111	11,111
Topsoil Unit Cost per WDEQ Guideline No.12, App.C (\$/CY)	\$0.847	\$0.847
Subtotal Topsoil Application Costs	\$9,411	\$9,411
7 Revegetation		
Area of surface disturbance (acres)	1.1	1.1
Revegetation Unit Cost (\$/acre)	\$330	\$330
Subtotal Revegetation Costs	\$379	\$379
Subtotal Pond Reclamation	\$97,446	\$64,750
Total Ponds Reclamation	\$162,196	
D. Miscellaneous Well Abandonment	2016 Estimate	
A. Well Abandonment		
Number of Wells	3	
Average Depth (ft) per well	550	
Abandonment Cost per foot	\$11.00	
Small Site Grading and Seeding (<1000 SF) per site	\$55	
Remove and Dispose Casing (top few feet) per well	\$33	
Monitoring Well Concrete Pedestal Disposal per well	\$110	
Total Miscellaneous Well Abandonment	\$18,744	
E. Fence Removal		
Length of Fencing (ft)	2,880	
Fence Removal Costs	\$0.341	
Total Fence Removal Costs	\$982	
TOTAL MISCELLANEOUS RECLAMATION COSTS	\$190,378	

UNIT COST CALCULATIONS			
2017 - 2018 Surety Estimate			
Cameco Resources			
GROUNDWATER RESTORATION UNIT COSTS			
Wellfield Pumping			
Equipment			
	Wellfield Pump Sizes	5	hp
	Wellfield Pump Flow Rate	25	gpm
	kW to HP Conversion Factor	0.746	
	Cost of Electricity	\$0.0840	kWhr
	Efficiency	80%	
	Wellfield Pumping Cost	\$0.26	per kgal
Satellite Pumping			
Equipment			
	Satellite Pump Sizes	60	hp
	Satellite Pump Flow Rate	75	gpm
	kW to HP Conversion Factor	0.746	
	Cost of Electricity	\$0.0840	kWhr
	Efficiency	90%	
	Satellite Pumping Cost	\$0.93	per kgal
Deep Disposal Well Injection			
Equipment			
	Deep Disposal Well Pump Size	75	hp
	Deep Disposal Well Flow Rate	75	gpm
	kW to HP Conversion Factor	0.746	
	Cost of Electricity	\$0.0840	kWhr
	Efficiency	90%	
Reagent			
	Antiscalant Cost (Scaletrol)	\$0.0000	per lb
	Density of Water	8.34	lbs/gal
	Specific Gravity (Scaletrol)	1.284	
	Antiscalant Cost (Scaletrol)	\$0.00	per gal
	Antiscalant Dose (ScaleTrol)	0.0000048	gal/gal
	Deep Disposal Well Cost	\$1.16	per kgal
	Total Groundwater Sweep Costs	\$2.35	per kgal
Reverse Osmosis			
Equipment			
	System Capacity	250	gpm
	Unit Pump	60	hp
	Injection Pump	60	hp
	Waste Pump	15	hp
	kW to HP Conversion Factor	0.746	
	Cost of Electricity	\$0.0840	kWhr
	Efficiency	90%	

UNIT COST CALCULATIONS			
2017 - 2018 Surety Estimate			
Cameco Resources			
Reagents			
	Tripolyphosphate Usage Rate	0.00000130	lb/gal
	Tripolyphosphate Cost	\$0.0000	per lb
	EDTA Usage Rate	0.00000315	lb/gal
	EDTA Cost	\$0.0000	per lb
	Antiscalant Cost (Hypersperse)	\$0.0000	per lb
	Density of Water	8.34	lbs/gal
	Specific Gravity (Hypersperse)	1.124	
	Antiscalant Cost (Hypersperse)	\$0.0000	per gal
	Antiscalant Dose (Hypersperse)	0.0000036	gal/gal
	Sodium Sulfide Usage Rate	0.00017	lb/gal
	Sodium Sulfide Cost	\$0.0000	per lb
	RO Cost (without Reductant)	\$0.63	per kgal
	RO Cost (with Reductant)	\$0.63	per kgal
MIT Costs for Production Wells			
Equipment			
	Pulling Unit Hours	4	hrs/day
	Pulling Unit Cost	\$0.00	\$/hour
	MIT Unit Hours	8	hrs/day
	MIT Unit Cost	\$0.00	\$/hour
Labor			
	Required Hours	8	hrs/day
	Required Laborers	1.5	per day
	Labor Cost	\$35.26	\$/hour
Productivity		4	wells/day
	MIT Cost for Production Wells	\$105.79	per well
MIT Costs for Injection Wells			
Equipment			
	Pulling Unit Hours	0	hrs/day
	Pulling Unit Cost	\$0.00	\$/hour
	MIT Unit Hours	8	hrs/day
	MIT Unit Cost	\$0.00	\$/hour
Labor			
	Required Hours	8	hrs/day
	Required Laborers	1	per day
	Labor Cost	\$35.26	\$/hour
Productivity		4	wells/day
	MIT Cost for Injection Wells	\$70.53	per well
Booster Pump Operating Cost			
Equipment			
	Wellfield Pump Sizes	40	hp
	Number of Pumps Running (avg.)	2	per year
	Hours Running	24	per day
	kW to HP Conversion Factor	0.746	
	Cost of Electricity	\$0.0840	kWhr
	Efficiency	90%	
	Booster Pump Operating Costs	\$48,794	per year

UNIT COST CALCULATIONS			
2017 - 2018 Surety Estimate			
Cameco Resources			
WELL ABANDONMENT UNIT COSTS			
Removal of Contaminated Soil Around Wells			
Equipment			
	Cat 416 Backhoe Time	0.25	hours
	Cat 416 Backhoe Cost	\$29.89	per hour
Labor			
	Radiation Technician	0.25	hours
	Radiation Technician Cost	\$39.86	per hour
	Operator	0.25	hours
	Operator Cost	\$46.00	per hour
Disposal			
	ByProduct Disposal	0.37	cubic yard
	Disposal Cost (incl. Transport)	\$156.73	per cubic yard
	Removal of Contaminated Soil Cost	\$86.93	per well
DDW Pump Dismantling and Disposal			
Labor			
	Number of Laborers	2	per day
	Number of Pumps Dismantled	0.5	per day
	Hours Per Day	8	hours
	Laborers Cost	\$46.00	
Disposal			
	Volume of DDW Pump	240	ft ³
	ByProduct Disposal	\$7.32	per ft ³
	DDW Pump Dismantling and Disposal	\$3,230	per pump
WELLFIELD RECLAMATION COSTS			
Wellfield Piping Removal			
Equipment			
	Trackhoe	1	per day
	Trackhoe Cost	\$76.38	per hour
	Loader	1	per day
	Loader Cost	\$47.18	per hour
	Pickup Truck	1	per day
	Pickup Cost	\$20.67	per hour
	Chipper Cost	\$37.76	per hour
Labor			
	Backhoe Operator	\$46.00	per hour
	Loader Operator	\$46.00	per hour
	Laborer	\$35.26	per hour
	Hours Per Day	8	per day
Productivity			
	Piping Removal Cost	\$1.65	per foot of pipe
Production Pump Volume			
	Length	66	inches
	Diameter	3.8	inches
	Cubic Inch to Cubic Foot Conversion	0.0006	
	Production Pump Volume	0.43	cubic feet

UNIT COST CALCULATIONS			
2017 - 2018 Surety Estimate			
Cameco Resources			
Trunk Line Removal			
Equipment			
	Trackhoe	1	per day
	Trackhoe Cost	\$76.38	per hour
	Loader	1	per day
	Loader Cost	\$47.18	per hour
	Pickup Truck	1	per day
	Pickup Cost	\$20.67	per hour
	Chipper Cost	\$37.76	per hour
Labor			
	Trackhoe Operator	\$46.00	per hour
	Loader Operator	\$46.00	per hour
	Laborer	\$35.26	per hour
	Hours Per Day	8	per day
Productivity		750	ft/day
	Buried Piping Removal Cost	\$3.30	per foot of pipe
Removal of Well Head Covers			
	Volume of Well Head Cover (ft ³)	1.86	cubic feet
	Demolition Cost	\$0.328	per cubic ft
	Decontamination		
	Acid Usage	4.1	pounds per wellhead cover
	Hydrochloric Acid	\$0.1627	per lbs
Labor			
	Radiation Tech	\$39.86	per hour
	Operator	\$46.00	per hour
Productivity		10	wellheads per hour
Disposal			
	Void space	10%	
	Transportation and Disposal Cost	\$1.56	per ft3
	Removal of Well Head Cover Cost	\$13.06	per well
Header House Decontamination			
	Decontamination		
	Acid Usage	20	pounds per header house
	Hydrochloric Acid	\$0.1627	per pound
Labor			
	Radiation Tech	\$39.86	per hour
	Number of Operators	2	per day
	Operator	\$46.00	per hour
	Hours Per Day	8	per day
Productivity		1	header house per day
	Header House Decontamination Cost	\$ 779.06	per header house
Header House Heating			
	Heater Power Usage	12.5	kW
	Days Used	180	days per year
	Electricity Cost	\$0.0840	kWhr
	Header House Heating Cost	\$4,536	per year

UNIT COST CALCULATIONS			
2017 - 2018 Surety Estimate			
Cameco Resources			
WELLFIELD AND SATELLITE AND SURFACE RECLAMATION			
Wellfield Road Reclamation			
Gravel Road Base			
	Average Depth	0	feet
	Average Width	0	feet
	Material Moved (0% Grade)	\$1.02	bcy
	Cubic Yard to Cubic Feet Conversion	0.04	
Scarification of Road			
	Scarification Costs	\$55.22	per acre
	Average Width	12	feet
	Acre to Sq. Foot Conversion	2.30E-05	
Grading Cost			
	Topsoil Depth	0.67	feet
	Discing/Seeding Costs	\$330	per acre
	Linear Feet for Unit Cost	1000	feet
	Wellfield Road Reclamation Cost	\$426	per 1000 feet
EQUIPMENT COSTS			
Tank Removal			
Equipment			
	Loader	\$47.18	per hour
	Trackhoe	\$76.38	per hour
	Manlift	\$43.04	per hour
	Pickup	\$20.67	per hour
	Lift Truck	\$51.46	per hour
Labor			
	Number of Operators	4	
	Operator Cost	\$46.00	per hour
	Hours Per Day	8	per day
	Productivity	25	ft ³ /day
	Tank Removal Cost	\$135	per ft³
Pipe Removal			
Equipment			
	Manlift	\$43.04	per hour
	Pickup	\$20.67	per hour
	Lift Truck	\$51.46	per hour
	Chipper	\$37.76	per hour
Labor			
	Number of Operators	4	
	Operator Cost	\$46.00	per hour
	Hours Per Day	8	per day
	Productivity	300	ft/day
	Pipe Removal Cost (Inside Buildings)	\$8.98	per ft
Pump Removal			
Equipment			
	Pickup Truck	\$20.67	per hour
	Skid Steer	\$24.99	per hour
Labor			
	Number of Operators	2	
	Operator Cost	\$46.00	per hour
	Hours Per Day	8	per day
	Productivity	10	ft ³ /day
	Pump Removal	\$110.12	per ft³

UNIT COST CALCULATIONS			
2017 - 2018 Surety Estimate			
Cameco Resources			
Dryer Removal			
Equipment			
	Pickup Truck	\$20.67	per hour
	Lift Truck	\$51.46	per hour
Labor			
	Number of Operators	4	
	Operator Cost	\$46.00	per hour
	Hours Per Day	8	per day
Productivity		125	ft ³ /day
	Dryer Removal Cost	\$16.39	per ft³
RO and Degasser Removal			
Equipment			
	Pickup Truck	\$20.67	per hour
	Lift Truck	\$51.46	per hour
Labor			
	Number of Operators	2	
	Operator Cost	\$46.00	per hour
	Hours Per Day	8	per day
Productivity		250	ft ³ /day
	RO and Degasser Removal Cost	\$5.25	per ft³
BUILDING COSTS			
Acid Wash Walls			
Acid			
	Acid Usage	0.05	per square foot
	Hydrochloric Acid	\$0.1627	per pound
Equipment			
	Manlift	\$43.04	per hour
Labor			
	Laborer	2	people
	Laborer Cost	\$35.26	per hour
Productivity		125	square feet per hour
	Acid Wash Walls Cost	\$0.92	per square foot
Acid Wash Floors			
Acid			
	Acid Usage	0.05	per square foot
	Hydrochloric Acid	\$0.1627	per pound
Labor			
	Laborer	2	people
	Laborer Cost	\$35.26	per hour
Productivity		125	square feet per hour
	Acid Wash Floors Cost	\$0.57	per square foot
Electrical Power			
*Pumping Costs for Operating DDWs, RO, and Wellfield are included in GW Restoration Unit Costs			
Satellite - Typical			
	Miscellaneous Pumps, Fans, Sumps, etc.	22.5	HP
	Lighting	35.0625	kW (per square ft)
	kW to HP Conversion Factor	0.746	
	Electricity Cost	\$0.0840	per kWhr
	Efficiency Factor	90%	
	Operating Hours Per Year	8760	hours
	Satellite 2 Power Cost	\$36,916	per year

UNIT COST CALCULATIONS				
2017 - 2018 Surety Estimate				
Cameco Resources				
DDW - Typical				
	Miscellaneous Pumps, Fans, Sumps, etc.	2	HP	
	Lighting	0.49	kW	
	Heating	12.5	kW	
	kW to HP Conversion Factor	0.746	kW/hp	
	Electricity Cost	\$0.0840	per kWhr	
	Efficiency Factor	90%		
	Operating Hours Per Year	8760	hours	
	DDW Electrical Cost	\$5,948	per year	
MISCELLANEOUS RECLAMATION AND RESTORATION COSTS				
Liner and Subsoil Removal Costs				
Equipment				
	Trackhoe Cost	\$ 76.38	per hour	
	Loader Cost	\$47.18	per hour	
Labor				
	Operator	46.00	per hour	
Productivity		40	cubic yards/hour	
	Total Removal	\$ 4.24	per cubic yard	
Building Dimensions				
Buildings On-Site		Process Building	Warehouse Building	Generator Building
Assume Thickness of building material (ft)		0.75	0.5	0.5
Building Length (ft)		100	34	11
Building Width (ft)		40	22	9
Building Height (ft)		20	10	10
Volume of Building Materials (CY) [FEMA Demolition Est. Formula]		978	91	12
Volume for Disposal (assume 33% swell factor) (CY)		1300	122	16
EVAPORATION POND DECOMMISSIONING		Pond No. 1	Pond No. 2	
By-product Material Removal and Loading				
	Volume of By-product Material			
	Area of Pond Bottom (SF)	33,000	27,000	
	Area with Fill (SF)	2,813	0	
	Average Fill Thickness (ft)	0.29	0	
	Volume of Fill (CY)	30	0	
	Remaining Area with Pond Residue (SF)	19,325	21,947	
	Average Pond Residue Thickness (ft)	0.083	0.042	
	Volume of Pond Residue (CY)	60	34	
	Area of Liner (SF)	50,000	50,000	
	Thickness of Liner (in)	0.036	0.036	

Master Costs- December 2017
Surety Estimate 2017-2018 Update
Ruth Uranium Project - Cameco Resources

2013 Rate	Esc Rate (\$)	Net Benefits*	Units	Source		CPI Escalators (CPI-U, U.S. City Average)
Labor Costs						
Radiation Safety Officer	\$46.00	\$50.38	\$70.53	hour	2013 MSEC rates plus CPI 2013 to 2017	Denver CPI (2013 Annual) 230.8
Restoration Manager	\$40.00	\$43.81	\$61.33	hour	2013 MSEC rates plus CPI 2013 to 2017	Denver CIP (HALF 2017) 252.8
Operator/Laborer	\$26.00	\$28.47	\$39.86	hour	2013 MSEC rates plus CPI 2013 to 2017	2017 Escalator Factor (2013 to 2017) 1.10
Environmental Tech/HPT	\$30.00	\$32.85	\$46.00	hour	2013 MSEC rates plus CPI 2013 to 2017	Denver CPI (2014 Annual) 237.2
Maintenance Tech	\$23.00	\$25.19	\$35.26	hour	2013 MSEC rates plus CPI 2013 to 2017	Denver CPI (HALF 2017) 252.8
*Includes additional 40% net benefits based on InfoMine USA cost data for Surface Metal and Industrial Mineral Mines - Western U.S. (Table 5)						2017 Escalator Factor (2014 to 2017) 1.07
						Denver CPI (2015 Annual) 240.0
Utility Costs						
		Rate (\$)	Profit & Overhead	Units	Source	Denver CPI (HALF 2017) 252.8
Electrical Costs		\$0.0840	included	kWhr	Actual Average Costs-2017	2017 Escalator Factor (2015 to 2017) 1.05
Kilowatt to Horsepower		0.746	included	Kw/HP	N/A	Denver CPI (2016 Annual) 246.6
Efficiency - Downhole Pumps		80%	included	Percent	N/A	Denver CPI (HALF 2017) 252.8
Efficiency - Surface Pumps		90%	included	Percent	N/A	2017 Escalator Factor (2015 to 2017) 1.02
Chemical & Materials Costs						
	2015 Rate	Esc Rate (\$)	Profit & Overhead	Units	Source	
Hydrochloric Acid	\$0.1627	0.1667	included	pound	Actual Costs-2015 plus CPI 2015 to 2017	
Analytical Costs						
Guideline 8		Rate (\$)	Profit & Overhead	Units	Source*	
		\$372.00	included	analysis	Actual Costs 2017	
*Energy Laboratories, Inc., Casper, WY quotes, fee schedules and actual costs.						
Equipment Costs						
	2014 Rate	Rate (\$)	Profit & Overhead*	Units	Source	date
Bandit 1290XP Trailer Mounted Brush Chipper	\$34.33	\$36.58	\$37.76	hour	Equipment Watch** plus CPI 2014 to 2017	
Bobcat S250 Skid Steer Loader	\$22.72	\$24.21	\$24.99	hour	Equipment Watch** plus CPI 2014 to 2017	
Cat 320C L Trackhoe - 1.25 cu yd bucket	\$69.44	\$74.00	\$76.38	hour	Equipment Watch** plus CPI 2014 to 2017	
Cat 416E Backhoe	\$27.17	\$28.95	\$29.89	hour	Equipment Watch** plus CPI 2014 to 2017	
Cat 924H Loader - 2.4 cu yd bucket	\$42.89	\$45.70	\$47.18	hour	Equipment Watch** plus CPI 2014 to 2017	
GEHL DL-8 Rough Terrain Lift Truck	\$46.78	\$49.85	\$51.46	hour	Equipment Watch** plus CPI 2014 to 2017	
Manlift	\$39.13	\$41.70	\$43.04	hour	Equipment Watch** plus CPI 2014 to 2017	
Pick-up Truck 3/4 ton 4X4	\$18.79	\$20.02	\$20.67	hour	Equipment Watch** plus CPI 2014 to 2017	
*Includes additional 10% Profit & Overhead per WDEQ/LQD Guideline No. 12, Section 12(b)						
**Equipment Watch Rental Rate Blue Book: Volume 1						
Quoted Costs						
		Rate (\$)	Profit & Overhead	Units	Source	

**Master Costs- December 2017
Surety Estimate 2017-2018 Update
Ruth Uranium Project - Cameco Resources**

WDEQ/LQD Guideline No. 12: Draft October 2015	Appendix	Rate (\$)	Profit & Overhead*	Units	Source		
Moving Materials w. Scraper: 1-Way Distance 500 feet, 0% grade	Appendix C	\$0.770	\$0.847	bcy	Guideline-2/2017		
Moving Materials w. Scraper: 1-Way Distance 1,000 feet, 0% grade	Appendix C	\$0.925	\$1.018	bcy	Guideline-2/2017		
Moving Materials w. Scraper: 1-Way Distance 2,000 feet, 0% grade	Appendix C	\$1.198	\$1.318	bcy	Guideline-2/2017		
Moving Materials w. Dozer: 1-Way Distance 50 feet, 0% grade	Appendix E	\$0.114	\$0.125	lcy	Guideline-2/2017		
Moving Materials w. Dozer: 1-Way Distance 100 feet, 0% grade	Appendix E	\$1.930	\$2.123	lcy	Guideline-2/2017		
Moving Materials w. Dozer: 1-Way Distance 150 feet, 0% grade	Appendix E	\$0.251	\$0.276	lcy	Guideline-2/2017		
Grading Operating Costs	Appendix G	\$54.73	\$60.20	acre	Guideline-2/2017		
Fencing Removal	Appendix H	\$0.31	\$0.34	foot	Guideline-2/2017		
Ripping Operating Costs (Asphalt)	Appendix I	\$629.53	\$692.48	acre	Guideline-2/2017		
Ripping Operating Costs (Overburden)	Appendix I1	\$821.26	\$903.39	acre	Guideline-2/2017		
Building Demolition - Mixture of Types	Appendix K	\$0.298	\$0.328	ft3	Guideline-2/2017		
Building Demo Disposal (Average)	Appendix K	\$10.10	\$11.11	cy	Guideline-2/2017		
Concrete (Floor) Demolition - 6" Thick with Rebar	Appendix K	\$0.78	\$0.86	ft2	Guideline-2/2017		
Concrete (Footing) Demolition - 2' Thick, 3' Wide	Appendix K	\$15.97	\$17.57	linear foot	Guideline-2/2017		
Concrete Disposal On-Site	Appendix K	\$8.80	\$9.68	cy	Guideline-2/2017		
Drill Hole Abandonment: Wet Exploration Holes >25 holes	Appendix L	\$3.00	\$3.30	foot	Guideline-2/2017		
Well Abandonment: Monitor, Production, and Injection Wells	Appendix L	\$2.50	\$2.75	foot	Guideline-2/2017		
Well Abandonment: Artesian or Gassy Holes	Appendix L	\$10.00	\$11.00	ft	Guideline-2/2017		
Incidental Costs: Small Site Grading and Seeding (<1000 sq. feet)	Appendix L	\$50	\$55	site	Guideline-2/2017		
Incidental Costs: Capping	Appendix L	\$10	\$11	each	Guideline-2/2017		
Incidental Costs: Site Location	Appendix L	\$10	\$11	hole	Guideline-2/2017		
Incidental Costs: Remove Pump, Wiring, and Drop Pipe	Appendix L	\$0.40	\$0.44	foot	Guideline-2/2017		
Incidental Costs: Remove and Dispose Casing (top few feet)	Appendix L	\$30	\$33	well	Guideline-2/2017		
Incidental Costs: Monitoring Well Concrete Pedestal Disposal	Appendix L	\$100	\$110	each	Guideline-2/2017		
Mobilization Fee	Appendix L	\$1,000	\$1,100	Project	Guideline-2/2017		
Scarification Costs	Appendix P	\$50.20	\$55.22	acre	Guideline-2/2017		
Revegetation Costs-Total	Guideline 12A.II.i.	\$300	\$330.00	acre	Guideline 12 A-4/2017		
<i>*Includes additional 10% Profit & Overhead per WDEQ/LQD Guideline No. 12, Section 12(b)</i>							
Construction & Demolition Debris Transportation & Disposal Costs							
Building Volume for Disposal	0.33						
Void Factor (for disposal)	1.1						
	Disposal (\$/ton)	C&D (cy/ton)	Transport (\$/load)	C&D (cy/load)	Total (\$/cy)	Total (\$/ft3)	
C&D Debris (county landfill)	\$62.00	2	\$335.00	30	\$42.17	\$1.56	
<i>*Transportation and disposal costs based on actual costs (2013). Transportation and disposal costs include profit and overhead of service provider. Conversion factors of 2 cy/ton and 0.33 to account for air space in buildings based on FEMA - Debris Estimating Field Guide, FEMA 320, September 2010.</i>							
11e.(2) Byproduct Material Transportation & Disposal							
Load Correction Factor: Soil, sand, etc.	1.1						
Load Correction Factor: Process materials, etc.	0.42						
White Mesa	Disposal (\$/ton)	Disposal (\$/cy)	Volume (cy)	Transport (\$/cy)	Total (\$/cy)	Total (\$/ft3)	
Type I: Soil, sand, gravel, rock, concrete rubble, etc.	\$138.97	\$152.87	13.0	\$247.95	\$400.82	\$14.85	
Type II: Process material, pumps, motors, etc.	\$160.08	\$67.23	24.7	\$130.50	\$197.73	\$7.32	
Type II: Chipped piping	\$160.08	\$67.23	36.4	\$88.55	\$155.78	\$5.77	
Pathfinder							
Type I: Soil, sand, rock, gravel, demolition masonry, concrete rubble	N/A	\$130.00	13.0	\$26.73	\$156.73	\$5.80	
Type II: Other process waste, process equipment, etc.	N/A	\$378.00	24.7	\$14.07	\$392.07	\$14.52	
Type II: Chipped piping	N/A	\$378.00	36.4	\$9.55	\$387.55	\$14.35	
<i>*Transportation and disposal costs based on contract amounts as adjusted annually. Transportation and disposal costs include profit and overhead of service provider and include all unloading and decontamination fees, waste tax, fuel surcharges, etc. Transportation costs assume 1) one truck transports one 13-cy bin of Type I waste, 2) one truck transports one 24.7-cy bin of Type II process waste (including pumps, motors, etc.) and 3) one truck transports one 36.4-cy bin of Type II chipped piping waste.</i>							