TECHNICAL MEMORANDUM

DATE December 2, 2014 **PROJECT No.** 1411866

TO Ryan VanEngen
Agnico Eagle Mines Ltd.

CC John Hull, Ingrid Martinez, Ben Riddell

FROM Rachel Lee Gould **EMAIL** RLGould@Golder.com

MEADOWBANK GOLD PROJECT – UPDATE TO 2014 INTERIM CLOSURE AND RECLAMATION PLAN COST ESTIMATE USING RECLAIM 7.0

1.0 INTRODUCTION

This memorandum presents an updated closure and reclamation financial security cost estimate which has been prepared using RECLAIM Version 7.0, March 2014 for permanent closure of the Meadowbank Gold Project. A printout of the linked EXCEL spread-sheets from the RECLAIM model for the revised closure budget estimate is attached. This technical memorandum is intended to be read in conjunction with Meadowbank Gold Project Interim Closure and Reclamation Plan (ICRP) (Golder, 2014) and is an amendment to Sections 4.3 and 4.4, and Appendix I of the ICRP.

2.0 RECLAIM VERSION 7.0

The RECLAIM model used for estimating the reclamation costs for mine sites in Northern Canada has been updated from its previous version (6.1) to version 7.0 by Brodie Consulting Ltd. (BCL) on behalf of Aboriginal Affairs and Northern Development Canada (AANDC). RECLAIM Version 7.0 provides updated typical unit costs, as well as a relocation of post-closure monitoring and maintenance costs under indirect costs and the inclusion of an interim care and maintenance provision under direct costs.

In general, unit costs have been increased from RECLAIM version 6.1 to version 7.0; however, some unit costs relating to labour have been reduced.

RECLAIM version 7.0 now includes an interim care and maintenance provision. The manual distributed with RECLAIM (Brodie, 2014) describes the interim care and maintenance provision as providing for care and maintenance of a mine for a number of years prior to commencing the planned closure activities. This cost would include personnel and equipment to maintain facilities, any necessary ongoing water treatment activities, and continued geotechnical and environmental monitoring as required under license/permit agreements.

CANADA'S BEST MANAGED COMPANIES Platinum member

Golder, Golder Associates and the GA globe design are trademarks of Golder Associates Corporation.

3.0 SUMMARY OF UPDATED CLOSURE COST ESTIMATE

Specific assumptions and quantities used for the financial security cost estimate have been previously reported under Appendix I of the Meadowbank Gold Project Interim Closure and Reclamation Plan (Golder, 2014). No changes have been made to assumptions or quantities previously reported. The only changes are related to adjustments in RECLAIM unit costs between the previously used version 6.1 and the current version 7.0, and a relocation of the water treatment cost from surface and groundwater management to post-closure monitoring and maintenance as directed by Reclaim version 7.0.

In a few limited cases, unit rates previously used from RECLAIM version 6.1 are no longer provided in version 7.0. In these cases equivalent applicable unit rates have been selected from RECLAIM version 7.0.

Closure activities are planned to commence immediately following the end of mining operations so no period of interim care and maintenance has been accounted for in this cost estimate.

The updated closure and reclamation cost estimate for the Meadowbank Gold Project using RECLAIM version 7.0 is $84,869,488. A detailed breakdown of closure costs by mine component for the Meadowbank Gold Project is included in the attached RECLAIM spreadsheet, and is summarized in Table 1.

Table 1: Summary Financial Security Cost Estimate

Cost Item	Subtotal
Direct Costs	
Open Pit	$5,400
Tailings Storage Facility	$38,716,200
Portage Waste Rock Storage Facility	$6,0004,827
Building, Equipment and Infrastructure:	
Meadowbank	$7,919,428
Baker Lake	$1,664,270
AWPAR	$991,072
Chemicals and Contaminated Soil Management	$1,208,184
Surface and Groundwater Management	$5,198,311
Subtotal Direct Costs	**$61,707,692**
Indirect Costs	
Mobilization/Demobilization	$4,762,500
Post-Closure Monitoring and Maintenance	$2,972,373
Engineering (5% of direct costs)	$3,085,385
Project Management (5% of direct costs)	$3,085,385
Contingency (15% of direct costs)	$9,256,154
Subtotal Indirect Costs	**$23,161,796**
GRAND TOTAL	**$84,869,488**

4.0 COMPARISON WITH RECLAIM VERSION 6.1 ESTIMATE

Updating the closure and remediation financial security cost estimate to RECLAIM version 7.0 results in an estimated financial security grand total of $84,869,488, resulting in an increase of $11,202,841 over the RECLAIM version 6.1 previously reported total of $73,666,647 (Golder 2014).

Table 2 lists key differences between this cost estimate and the previous cost estimate developed with RECLAIM version 6.1. Most significant to this financial security cost estimate are the changes to unit rates for bulk soil excavation and placement and site accommodations (accounting for combined increase of $10.3 million in direct costs), as follows:

- Bulk soil excavation and placement (cost code SB3L) which has been increased from $4.16 to $5.10 per m^3, for an increase of over $6.4 million in direct costs relating to tailings and waste rock cover, and an increase of over $1.6 million in indirect costs (project management, engineering, and contingency).
- Site accommodations (cost code ACCML) which has been increased from $1,483.19 per man-month ($48.76 per man-day) to $100 per man-day, for an increase of over $2.3 million in indirect costs.

Table 2: Comparison of Estimated Closure Costs

Component Type	Primary Differences	RECLAIM V6.1 Cost Estimate	RECLAIM V7.0 Cost Estimate	Percent Change (%)
Open Pit	- 9.5% increase in dozing unit rate.	$4,930	$5,400	9.5
Tailings Storage Facility	- 22.7% and 8.7% increase in short and long haul bulk fill placement unit rates, respectively.	$32,601,912	$38,716,200	18.8
Portage Waste Rock Storage Facility	- 22.7% increase in short haul bulk fill placement unit rate.	$4,895,039	$6,004,827	22.7
Buildings, Equipment and Infrastructure:				
Meadowbank	- 13.8% and 9.6% increase in steel structure demolition low and high unit rates, respectively.	$7,183,919	$7,919,428	10.2
Baker Lake	- 9.6% increase in steel structure demolition high unit rate - 8.6% increase in Scarifying unit rate.	$1,526,529	$1,664,270	9.0
AWPAR	- 8.6% increase in Scarifying unit rate. - Drill/blast unit rate removed, replaced with drill/blast/load/short haul, 28.0% decrease.	$1,061,664	$991,072	(6.6)
Chemicals and Soil Management	- 9.3% and 8.5% increase in oil and process chemical removal unit rates, respectively.	$1,116,487	$1,208,184	8.2
Water Management	- 23.7% decrease in skilled labour unit rate.	$6,963,875	$5,198,311	(25.4)
Subtotal Capital Costs		**$55,354,355**	**$61,707,692**	**11.5**
Mobilization/Demobilization	- 100.5% increase in accommodation costs.	$2,424,791	$4,762,500	96.4
Post Closure Monitoring and Maintenance[1]	- 100.5% increase in accommodation costs.	$1,639,130[1]	$2,972,373	81.3[1]
PROJECT MANAGEMENT	5% - Similar assumptions[1]	$2,849,674	$3,085,385	8.3
ENGINEERING	5% - Similar assumptions[1]	$2,849,674	$3,085,385	8.3
CONTINGENCY	15% - Similar assumptions[1]	$8,549,023	$9,256,154	8.3
GRAND TOTAL - CAPITAL COSTS		**$73,666,647**	**$84,869,488**	**15.2**

Notes: [1]RECLAIM V6.1 assumes post closure monitoring and maintenance to be a capital cost, including it in contingency, project management, and engineering calculation; RECLAIM V7.0 assumes it to be an indirect cost and therefore is not included in calculating these costs.

5.0 CLOSURE

We trust this memorandum meets your immediate requirements. Should you have any questions or require further clarification, please do not hesitate to contact the undersigned.

Yours very truly,

GOLDER ASSOCIATES LTD.

Ben Riddell
Geotechnical Engineer-in-Training

John Hull, P. Eng. (NU/NWT)
Principal

BRR/IM/RLG/JH/ng

ATTACHMENTS:

1411866 AEM-MBK Cost Update using Reclaim 7.0.xlsm

REFERENCES

Brodie (Brodie Consulting Ltd.). 2014. RECLAIM 7 Manual. Prepared for Aboriginal Affairs and Northern Development Canada – Water Resources Division. Prepared by Brodie Consulting Ltd., March.

Golder (Golder Associates Ltd.). 2014. Meadowbank Gold Project – Interim Closure and Reclamation Plan. Prepared for Agnico Eagle Mines Limited – Meadowbank Division. Prepared by Golder Associates Ltd., January.

n:\active\2014\1167\1411866 aem-mbk cost update-nunavut\reports\final\1411866 aem-mbk icrp cost estimate update 2dec2014.docx

APPENDIX A

1411866 AEM-MBK Cost Update using Reclaim 7.0.xlsm)

SUMMARY OF COSTS

CAPITAL COSTS	COMPONENT NAME	COST	LAND LIABILITY	WATER LIABILITY
OPEN PIT	Portage/Goose	$5,400	$5,400	$0
	Vault	$0	$0	$0
UNDERGROUND MINE		$0	$0	$0
TAILINGS FACILITY		$38,716,200	$9,671,000	$29,045,200
ROCK PILE	Portage	$6,004,827	$0	$6,004,827
	Vault Area	$0	$0	$0
BUILDINGS AND EQUIPMENT	Meadowbank	$7,919,428	$7,771,016	$148,412
	Baker Lake	$1,664,270	$1,664,270	$0
	AWPAR	$991,072	$616,072	$375,000
CHEMICALS AND CONTAMINATED SOIL MANAGEMEN		$1,208,184	$70,975	$1,137,209
SURFACE AND GROUNDWATER MANAGEMENT		$5,198,311	-	$5,198,311
INTERIM CARE AND MAINTENANCE		$0	-	$0
	SUBTOTAL: Capital Costs	**$61,707,692**	**$19,798,733**	**$41,908,959**
	PERCENT OF SUBTOTAL		**32%**	**68%**

INDIRECT COSTS		COST	LAND LIABILITY	WATER LIABILITY
MOBILIZATION/DEMOBILIZATION		$4,762,500	$1,528,034	$3,234,466
POST-CLOSURE MONITORING AND MAINTENANCE		$2,972,373	$953,677	$2,018,696
ENGINEERING	5%	$3,085,385	$989,937	$2,095,448
PROJECT MANAGEMENT	5%	$3,085,385	$989,937	$2,095,448
HEALTH AND SAFETY PLANS/MONITORING & QA/QC	0%	$0	$0	$0
BONDING/INSURANCE	0%	$0	$0	$0
CONTINGENCY	15%	$9,256,154	$2,969,810	$6,286,344
MARKET PRICE FACTOR ADJUSTMENT	0%	$0	$0	$0
	SUBTOTAL: Indirect Costs	**$23,161,796**	**$7,431,395**	**$15,730,401**

TOTAL COSTS	**$84,869,488**	**$27,230,128**	**$57,639,360**

2 **Open Pit Name:** **Portage/Goose** **Pit # *1***

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
CONTROL ACCESS									
Berm at crest and Rock barricade at ramp		m3	2250	DRH	$2.40	$5,400	100%	$5,400	$0
Other				#N/A	$0.00	$0		$0	$0
					Total	$5,400		$5,400	$0
					% of Total			100%	0%

Open Pit Name: **Vault** **Pit # *2***

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
CONTROL ACCESS									
					Total	$0		$0	$0
					% of Total			#DIV/0!	#DIV/0!

1 **Tailings Impoundment Name:** **Pond # *1***

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
COVER TAILINGS - North Cell									
NPAG UM waste rock cover (4 m thick)		m3	5640000	SB3L	$5.10	$28,764,000	25%	$7,191,000	$21,573,000
COVER TAILINGS - South Cell									
NPAG UM waste rock cover (4 m thick)		m3	1800000	SB4L	$5.50	$9,900,000	25%	$2,475,000	$7,425,000
BREACH SADDLE DAM 3									
Excavate Channel		m3	7000	SB2L	$4.60	$32,200	0%	$0	$32,200
REMOVE TAILINGS DISCHARGE									
Removing Piping		m	10000	PSRL	$1.00	$10,000	25%	$2,500	$7,500
Dismantle Booster Pump		Allow	1	#N/A	10000.00	$10,000	25%	$2,500	$7,500
TREAT SEEPAGE - see "Water Management" and "Water Treatment"									
					Total	$38,716,200		$9,671,000	$29,045,200
					% of Total			25%	75%

* for construction of passive treatment system refer to "Water Management"

2 **Rock Pile Name:** **Portage**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
COVER ROCK PILE									
NPAG UM waste rock cover (4 m thick)		m3	1176417	SB3L	$5.10	$5,999,727	0%	$0	$5,999,727
Other				#N/A	$0.00	$0		$0	$0
COVER SUMPS									
NPAG UM waste rock cover (4 m thick)		m3	1000	SB3L	$5.10	$5,100	0%	$0	$5,100
Other				#N/A	$0.00	$0		$0	$0
					Total	$6,004,827		$0	$6,004,827
					% of Total			0%	100%

* For construction of passive treatment system refer to "Water Management". ARD/ML seepage treatment becomes post-closure water treatment cost

**Heap leach ARD/ML seepage treatment becomes post-closure water treatment cost

Rock Pile Name: **Vault Area** ***1***

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
COVER ROCK PILE									
NPAG UM waste rock cover (4 m thick)		m3		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
COVER SUMPS									
NPAG UM waste rock cover (4 m thick)		m3		#N/A	$0.00	$0		$0	$0
Other		m3		#N/A	$0.00	$0		$0	$0
					Total	$0		$0	$0
					% of Total			0%	0%

* For construction of passive treatment system refer to "Water Management". ARD/ML seepage treatment becomes post-closure water treatment cost

**Heap leach ARD/ML seepage treatment becomes post-closure water treatment cost

3 **Building / Equip Name:** **Meadowbank** **Bldg / Equip #:** ***1***

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
DISPOSE MOBILE EQUIPMENT									
Decontaminate and dispose on-site		manhours	988	MECHL	$49.00	$48,412	0%	$0	$48,412
REMOVE BUILDINGS - see note below									
Mill Complex:									
Mill		m2	37800	BRS1H	$65.00	$2,457,000	100%	$2,457,000	$0
Leech Tanks		m2	12500	BRS1H	$65.00	$812,500	100%	$812,500	$0
Primary and Secondary Crusher		m2	740	BRS1H	$65.00	$48,100	100%	$48,100	$0
Pebble Crusher		m2	650	BRS1H	$65.00	$42,250	100%	$42,250	$0
Conveyors		m2	1950	BRS1H	$65.00	$126,750	100%	$126,750	$0
Assay Lab		m2	440	BRS1L	$45.00	$19,800	100%	$19,800	$0
Accomodation Complex (Inc. Nova Camp)		m2	17005	BRS1L	$45.00	$765,225	100%	$765,225	$0
Services Building		m2	13080	BRS1L	$45.00	$588,600	100%	$588,600	$0
Site Services Building		m2	500	BRS1L	$45.00	$22,500	100%	$22,500	$0
Dome Warehouse		m2	2854	BRS1L	$45.00	$128,430	100%	$128,430	$0
Ore Dome		m2	21000	BRS1L	$45.00	$945,000	100%	$945,000	$0
Power Plant		m2	7455	BRS1H	$65.00	$484,575	100%	$484,575	$0
Cat Warehouse		m2	2690	BRS1L	$45.00	$121,050	100%	$121,050	$0
Toromont Facilities		m2	925	BRS1L	$45.00	$41,625	100%	$41,625	$0
Fountain Tire		m2	330	BRS1L	$45.00	$14,850	100%	$14,850	$0
White Coverall		m2	2790	BRS1L	$45.00	$125,550	100%	$125,550	$0
Batch Plant		m2	2100	BRS1L	$45.00	$94,500	100%	$94,500	$0
Environmental Office		m2	140	BRS1L	$45.00	$6,300	100%	$6,300	$0
Dike Dewatering Shop		m2	755	BRS1L	$45.00	$33,975	100%	$33,975	$0
Incinerator		m2	280	BRS1L	$45.00	$12,600	100%	$12,600	$0
Talbon Shop		m2	235	BRS1L	$45.00	$10,575	100%	$10,575	$0
Blue Coverall		m2	710	BRS1L	$45.00	$31,950	100%	$31,950	$0
Gate House		m2	100	BRS1L	$45.00	$4,500	100%	$4,500	$0
Fuel Dispensing Station		m2	165	BRS1H	$65.00	$10,725	100%	$10,725	$0
Emulsion Plant		m2	2000	BRS1H	$65.00	$130,000	100%	$130,000	$0
Bulk Fuel Tank		m2	1910	BRS1H	$65.00	$124,150	100%	$124,150	$0
BREAK BASEMENT SLABS									
Puncture Concrete Foundations		m2	25211	BRCS	$6.00	$151,266	100%	$151,266	$0
RECLAIM ROADS, LAYDOWN AREA & AIRSTRIP									
Remove culverts/Install Water Breaks		allow	1	#N/A	$100,000	$100,000	0%	$0	$100,000
Scarify airstriip		ha	3.5	SCFYL	$4,300	$15,050	100%	$15,050	$0
Scarify access roads (~10 m x 10 km)		ha	10	SCFYL	$4,300	$43,000	100%	$43,000	$0
Scarify haul roads (~25 m x 14.5 km)		ha	36.3	SCFYL	$4,300	$156,090	100%	$156,090	$0
Scarify Portage/Mill Disturbed Area		ha	40.6	SCFYL	$4,300	$174,580	100%	$174,580	$0
Scarify Vault Disturbed Area		ha	6.5	SCFYL	$4,300	$27,950	100%	$27,950	$0
SPECIALIZED ITEMS									
Dispose of misc. debris and laydown area refuse				#N/A	$0.00	$0		$0	$0
					Total	$7,919,428		$7,771,016	$148,412
					% of Total			98%	2%

Note: Unit costs are based on 3m high, single storey building. Scale larger building areas accordingly. E.g. 10m high building multiply area by 3.3 (10/3)

Building / Equip Name: **Baker Lake** **Bldg / Equip #:** ***2***

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
REMOVE BUILDINGS - see note below									
10,000,000L Diesel Fuel Tanks		m2	21180	BRS1H	$65.00	$1,376,700	100%	$1,376,700	$0
100,000L Jet Fuel Tanks		m2	800	BRS1L	$45.00	$36,000	100%	$36,000	$0
BREAK BASEMENT SLABS									
Puncture Concrete Foundations		m2	6095	BRCS	$6.00	$36,570	100%	$36,570	$0
RECLAIM ROADS, LAYDOWN AREA									
Scarify laydown areas		ha	50	SCFYL	$4,300	$215,000	100%	$215,000	$0
					Total	$1,664,270		$1,664,270	$0
					% of Total			100%	0%

Note: Unit costs are based on 3m high, single storey building. Scale larger building areas accordingly. E.g. 10m high building multiply area by 3.3 (10/3)

Building / Equip Name: **AWPAR** **Bldg / Equip #:** ***3***

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
RECLAIM QUARRIEST									
Drill and blast slopes to 1:1		m3	14319	RB3H	$17.80	$254,872	100%	$254,872	$0
RECLAIM ROADS									
Remove culverts		each	15	#N/A	$10,000	$150,000	0%	$0	$150,000
Remove bridges		each	9	#N/A	$25,000	$225,000	0%	$0	$225,000
Scarify and install water breaks		ha	84	SCFYL	$4,300.00	$361,200	100%	$361,200	$0
					Total	$991,072		$616,072	$375,000
					% of Total			62%	38%

Note: Unit costs are based on 3m high, single storey building. Scale larger building areas accordingly. E.g. 10m high building multiply area by 3.3 (10/3)

1 **Chemicals/Soil Area Name:**

Note: The procedures, equipment and packaging for clean up and removal of chemicals or contaminated soils are highly dependent on the nature of the chemicals and their existing state of containment. Government guidelines should be consulted on an individual chemical basis. Any estimate made here should be considered very rough unless specific evaluations have been conducted.

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
HAZARDOUS MATERIALS REMOVAL									
Fuel - Type 1, eg fuel dregs (1% storage)		litre	338000	ORL	$0.43	$145,340	0%	$0	$145,340
Mill & Water Treatment Reagents		kg	285614.3	PCRH	$2.50	$714,036	0%	$0	$714,036
Waste oils		litre	325161.3	ORL	$0.43	$139,819	0%	$0	$139,819
Waste Oils/Oily Water		litre	7741.935	ORL	$0.43	$3,329	0%	$0	$3,329
Glycol		kg	15483.87	PCRH	$2.50	$38,710	0%	$0	$38,710
Assay & environmental lab reagents		kg	10000	PCRH	$2.50	$25,000	0%	$0	$25,000
CONTAMINATED SOILS									
ESA investigation - Phase 1		each	1	#N/A	$7,500	$7,500	50%	$3,750	$3,750
ESA investigation - Phase 2		each	1	#N/A	$50,000	$50,000	50%	$25,000	$25,000
CONTAMINATED SOIL REMEDIATION									
Excavate, load, haul to landfarm		m3	1500	SC4l	$9.30	$13,950	50%	$6,975	$6,975
Remediate on-site in landfarm		m3	1500	CSRL	$47.00	$70,500	50%	$35,250	$35,250
OTHER									
				#N/A	$0.00	$0		$0	$0
				Total		$1,208,184		$70,975	$1,137,209
				% of Total				6%	94%

1 **Capital Expenditures and Short Term Water Treatment identified in 'Instructions' worksheet**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
FLOOD PITS						
Repurpose/Install dewatering pumps and piping for pit flooding		Allow	1	#N/A	100000	$100,000
Pumped pit flooding water (Third portage Lake and Reclaim Pond)		m3	36440000	#N/A	0.02	$728,800
Pumped pit flooding water (Wally Lake)		m3	29260000	#N/A	0.02	$585,200
Pump maintenance and operation (10 yrs)						
Maintain pumps (2 skilled labourer x 12hr days, 4months/yr, 10yrs)		manhours	29280	LAB-SH	$49.60	$1,452,288
Annual Pump Servicing (2 x Manufacturer Consultant x 7days/year)		manhours	1680	LAB-SS	$120.00	$201,600
Pump Servicing Travel Allowance (Round Trip Flight/person)		visits	20	#N/A	2500.00	$50,000
Camp Accomodations		days	2440.00	ACCML	$100.00	$244,000
BREACH DYKE EMBANKMENT						
Breach Bay-Goose Dike		m3	53400	SB2L	$4.60	$245,640
Breach South Camp Dike		m3	29050	SB2L	$4.60	$133,630
Breach Vault Dike		m3	30000	SB2L	$4.60	$138,000
CONSTRUCT TEMPORARY WATER TREATMENT PLANT (If Necessary)						
Storage, Prep and Reactor Tanks/Silos		Allow	1		$450,000	$450,000
Mech. Equip. (Metering Pumps and Air)		Allow	1		$200,000	$200,000
Piping		%	30		$195,000	$195,000
Electrical		%	15		$97,500	$97,500
Instrumentation and Controls		%	15		$97,500	$97,500
Equipment Installation Costs		%	35		$227,500	$227,500
DECOMMISION TEMPORARY WATER TREATMENT PLANT (If Necessary)						
Decontaminate and dispose equipment on site		manhours	50	LAB-USL	$31.00	$1,550
Camp Accomodations		days	45.00	ACCML	$100.00	$4,500
Demolish Structure		m2	1000	BRS1L	$45.00	$45,000
Scarify Footprint		ha	0.1	SCFYH	$6,030.00	$603
					Total	$5,198,311

For cost of long-term/post-closure water treatment see "WATER TREATMENT" Worksheet"

1 **Post Closure Water Treatment - Identified as long term/post-closure in 'Instructions' worksheet**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
Operate Temporary Water Treatment Plant (for 5 years, if necessary)						
Reagent Allowance		allow	1	#N/A	100000	$100,000
Direct Pumping cost		m3	220000	#N/A	0.02	$4,400
Skilled Labourer (1 skilled labourers X 12hr/day, 6 Months/year)		manhours	2196	OPER-WT	$59.86	$131,453
Annual Treatment Plant Servicing (2 Consultants x 7days/year)		manhours	168	LAB-SS	$120.00	$20,160
Treatment Plant Servicing Travel Allowance (Round Trip Flight/person)		visits	2	#N/A	2500.00	$5,000
Camp Accomodations		days	380.03	ACCML	$100.00	$38,003
					Annual water treatment costs	$299,016
Number of years of water treatment		years	5			
					Total	$1,495,078

1 **Interim Care and Maintenance**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
INTERIM CARE & MAINTENANCE						
Maintenance and Surveillance				#N/A	$63,200	$0
Monitoring and inspection				#N/A	$93,921	$0
Water treatment				#N/A	$299,016	$0
other		each		#N/A	0	$0
				Annual	Interim C&M Cost	$0
Number of years of ICM		years	2.00		**Total**	$0

1 **Post-Closure Monitoring & Maintenance:**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
MONITORING & INSPECTIONS 2018 - 2020						
Water Quality Monitoring						
Baker Lake - Group 6 & 7		each	3	#N/A	$225	$675
AWPAR - Group 1		each	1.6	#N/A	$150	$240
Dikes - Seeps - Goup 1		each	48	#N/A	$150	$7,200
Pits/Pit Lakes - Portage and Goose - Groups 3		each	2	#N/A	$125	$250
Pits/Pit Lakes - Vault - Groups 3 & 4		each	6	#N/A	$275	$1,650
Pits/Pit Lakes - Groundwater - Group 3		each	3	#N/A	$125	$375
WRF Portage - Group 3 & total metals		each	1	#N/A	$275	$275
WRF Vault- Group 3 & total metals		each	12	#N/A	$275	$3,300
WRF Vault and Portage seeps - Group 1		each	24	#N/A	$15	$360
TSF - Runoff - Group 3 & total metals & cyanide		each	0.5	#N/A	$275	$138
TSF - Groundwater - Group 3		each	2	#N/A	$125	$250
Water Diversion Ditches - Group 5		each	24	#N/A	$150	$3,600
Receiving Lakes - Approx group 4		each	124	#N/A	$275	$34,100
Receiving Lakes - Phytoplankton		each	24	#N/A	$100	$2,400
Receiving Lakes - Sediment Quality		each	21.66667	#N/A	$300	$6,500
Receiving Lakes - Benthic Community		each	21.66667	#N/A	$200	$4,333
Landfarm - BTEX, Pb, oil & grease)		each	1	#N/A	$75	$75
Annual Water QualityReporting		each	1	RPTS	$10,000	$10,000
Geotechnical Stability Monitoring						
Annual Geotechnical Inspections		each	1	#N/A	$13,200	$13,200
Annual Geotechnical Reporting		each	1	RPTL	$5,000	$5,000
Subtotal, Annual post-closure costs						$93,921
Discount rate for calculation of net present value of post-closure cost, %				5.00%		
Start Year / End Year			2018	2020	years	
Number of years of post-closure activity				2		
Present Value of payment stream (at Year 2018)						$174,637
MONITORING & INSPECTIONS 2020 - 2028						
Water Quality Monitoring						
AWPAR - Group 1		each	1.6	#N/A	$150	$240
Dikes - Seeps - Goup 1		each	48	#N/A	$150	$7,200
Pits/Pit Lakes - Portage and Goos - Groups 3		each	1	#N/A	$125	$125
Pits/Pit Lakes - Vault - Groups 3 & 4		each	6	#N/A	$275	$1,650
Pits/Pit Lakes - Groundwater - Group 3		each	3	#N/A	$125	$375
WRF Portage - Group 3 & total metals		each	1	#N/A	$275	$275
WRF Vault- Group 3 & total metals		each	2	#N/A	$275	$550
WRF Vault and Portage seeps - Group 1		each	2	#N/A	$15	$30
TSF - Runoff - MMER & Nitrogen		each	1	#N/A	$150	$150
TSF - Groundwater - Group 3		each	2	#N/A	$125	$250
Receiving Lakes - Approx group 4		each	124	#N/A	$275	$34,100
Receiving Lakes - Phytoplankton		each	24	#N/A	$100	$2,400
Receiving Lakes - Sediment Quality		each	21.66667	#N/A	$300	$6,500
Receiving Lakes - Benthic Community		each	21.66667	#N/A	$200	$4,333
Annual Water QualityReporting		each	1	RPTS	$10,000	$10,000
Geotechnical Stability Monitoring						
Annual Geotechnical Inspections		each	1	#N/A	$13,200	$13,200
Annual Geotechnical Reporting		each	1	RPTL	$5,000	$5,000
Subtotal, Annual post-closure costs						$86,378
Discount rate for calculation of net present value of post-closure cost, %				5.00%		
Start Year / End Year			2020	2028	years	
Number of years of post-closure activity				8		
Present Value of payment stream (at Year 2018)						$506,378
MONITORING & INSPECTIONS 2028 - 2030						
Water Quality Monitoring						
AWPAR - Group 1		each	1.6	#N/A	$150	$240
Pits/Pit Lakes - Vault - Groups 3 & 4		each	4	#N/A	$275	$1,100
Pits/Pit Lakes - Portage, Vault - Full suite		each	2	#N/A	$350	$700
Receiving Lakes - Approx group 4		each	124	#N/A	$275	$34,100
Receiving Lakes - Phytoplankton		each	24	#N/A	$100	$2,400
Receiving Lakes - Sediment Quality		each	21.66667	#N/A	$300	$6,500
Receiving Lakes - Benthic Community		each	21.66667	#N/A	$200	$4,333
Annual Water QualityReporting		each	1	RPTS	$10,000	$10,000
Geotechnical Stability Monitoring						
Annual Geotechnical Inspections		each	0.5	#N/A	$13,200	$6,600
Annual Geotechnical Reporting		each	0.5	RPTL	$5,000	$2,500
Subtotal, Annual post-closure costs						$68,473
Discount rate for calculation of net present value of post-closure cost, %				5.00%		
Start Year / End Year			2028	2030	years	
Number of years of post-closure activity				2		
Present Value of payment stream (at Year 2018)						$78,163
MONITORING & INSPECTIONS 2030 - 2034						
Water Quality Monitoring						
AWPAR - Group 1		each	1.6	#N/A	$150	$240
Pits/Pit Lakes - Vault - Groups 3 & 4		each	4	#N/A	$275	$1,100
Pits/Pit Lakes - Portage, Vault - Full suite		each	2	#N/A	$350	$700
Annual Water QualityReporting		each	1	RPTS	$10,000	$10,000
Geotechnical Stability Monitoring						
Annual Geotechnical Inspections		each	0.5	#N/A	$13,200	$6,600
Annual Geotechnical Reporting		each	0.5	RPTL	$5,000	$2,500
Subtotal, Annual post-closure costs						$21,140
Discount rate for calculation of net present value of post-closure cost, %				5.00%		
Start Year / End Year			2030	2034	years	
Number of years of post-closure activity				4		
Present Value of payment stream (at Year 2018)						$41,741
MONITORING & INSPECTIONS 2034 - 2040						
Water Quality Monitoring						
AWPAR - Group 1		each	1.6	#N/A	$150	$240
Annual Water QualityReporting		each	1	RPTS	$10,000	$10,000
Geotechnical Stability Monitoring						
Annual Geotechnical Inspections		each	0.5	#N/A	$13,200	$6,600
Annual Geotechnical Reporting		each	0.5	RPTL	$5,000	$2,500
Subtotal, Annual post-closure costs						$19,340
Discount rate for calculation of net present value of post-closure cost, %				5.00%		
Start Year / End Year			2034	2040	years	
Number of years of post-closure activity				6		
Present Value of payment stream (at Year 2018)						$44,970
POST CLOSURE MAINTENANCE AND SURVEILLANCE 2018 - 2040						
Site care-taker		manhours	480	OPERH	$65	$31,200
Site Vehicle and equipment		allow	1	#N/A	20000.00	$20,000
Accommodations		mandays	20.000	ACCML	$100	$2,000
Site Maintenance		allow	1	#N/A	10000.00	$10,000
Subtotal, Annual post-closure costs						$63,200
Discount rate for calculation of net present value of post-closure cost, %				5.00%		
Start Year / End Year			2018	2040	years	
Number of years of post-closure activity				22		
Present Value of payment stream (at Year 2018)						$831,902
POST-CLOSURE WATER TREATMENT (for 5 years, if necessary)						
Annual water treatment cost, from "Water Treatment"						$299,016
Subtotal, Annual post-closure costs						$299,015.6
Discount rate for calculation of net present value of post-closure cost, %				5.00%		
Number of years of post-closure activity				5	years	
Present Value of payment stream (at Year 2018)						$1,294,581
				Total		$2,972,373

*Regulatory costs - annual reporting, management plans, progress reports etc.

1 **Mobilization/Demobilization:**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
MOBILIZE HEAVY EQUIPMENT						
Barge to/from Baker Lake		each	2	#N/A	100000	$200,000
MOBILIZE AND HOUSE WORKERS						
Maintain Camp Accomodations		days	45625	accml	100	$4,562,500
					Total	**$4,762,500**

Unit Cost Table (for refining unit costs see "Estimator" worksheet)

Filter by unit

ITEM	Detail	COST CODE	UNITS	LOW $	HIGH $	SPECIFIED $	COMMENTS
Accomodation							
		ACCM	manday	100.00	175.00		
Buildings - Decontaminate							
	Asbestos	BDA	m2	25.60	51.20		Low: removal of asbestos siding & flooring; High: removal of insulated pipes, friable asbestos
Buildings - Remove							Unit costs are based on 3m high, single storey building. Scale areas accordingly.
	Wood	BRW	m2	27.50	41.00		
	Concrete	BRC	m2	40.00	65.00	6.00	Specified: puncture concrete foundation slabs
	Steel - teardown	BRS1	m2	45.00	65.00		
	Steel - for salvage	BRS2	m2	67.00	100.00		
Concrete work							
	Small pour	CSF	m3	426.50	639.75		Low: YK; High=1.5xLow
	Large pour	CLF	m3	353.50	530.25	2,130.00	Specified: concrete crown pillar
Contaminated Soils							
	ESA Phase 1	CS1	each	7500.00			Low: small, "clean" site
	ESA Phase 1	CS2	each	50000.00			Low: small, "clean" site
	Remediate on site	CSR	m3	47.00	146.00		
Dozing							
	doze rock piles	DR	m3	1.05	2.40		Low cost: doze crest off dump
	doze overburden/soil piles	DS	m3	0.95	3.80		High cost: push up to 300 m
Excavate Rock; Low Spec's and QA/QC							
	drill/blast/load/short haul	RB1	m3	11.40	17.05		Low:quarry operations for bulk fill
	drill/blast/load/long haul	RB2	m3	12.05	17.80		
	RB1 + spread and compact	RB3	m3	12.05	17.80		
	RB2 + spread and compact	RB4	m3	12.50	30.75		
	Specified activity	RBS	m3				
Excavate Rock; High Spec's and QA/QC							(e.g. ditch/spillway excavation)
	drill/blast/load/short haul	RC1	m3	12.05	17.80		Low:foundation excavation;High:spillway excavation
	drill/blast/load/long haul	RC2	m3	12.70	18.40		
	RC1 + spread and compact	RC3	m3	12.70	18.40		e,g, cover construction
	RC2 + spread and compact	RC4	m3	13.50	19.20		e,g, cover construction
	Specified activity	RCS	m3			175.00	Specified-drift excavation
Excavate Rip Rap							
	drill/blast/load/short haul/place	RR1	m3	13.50	17.75		High: quarry & place rip rap in channel
	drill/blast/load/long haul/place	RR2	m3	14.20	20.65		
	source is waste dump/short haul	RR3	m3	7.00			cost includes sorting
	source is waste dump/long haul	RR4	m3	7.60			
	Specified activity	RRS	m3				
Excavate Soil; Low Spec's and QA/QC							
	clear & grub	SBC	m2	3.40	5.00		
	excavate/load/short haul	SB1	m3	4.30	5.90		
	excavate/load/long haul	SB2	m3	4.60	7.30		
	SB1 + spread and compact	SB3	m3	5.10	8.90		Low: non-engineered; High:engineered
	SB2 + spread and compact	SB4	m3	5.50	11.00		Low: non-engineered; High:engineered
	Specified activity	SBS	m3	3.20	6.30		Low: rehandle waste rock dump by dozing; High:rehandle waste rock by hauling
	Tailings	SBT	m3	1.35	3.70	15.50	High:contour surface - wet or frozen; Specified:haul/place wet infill
Excavate Soil, High Spec's and QA/QC							
	excavate/load/short haul	SC1	m3	6.80	9.30		
	excavate/load/long haul	SC2	m3	7.10	11.75		
	SC1 + spread and compact	SC3	m3	8.90	14.20		Low: non-engineered; High:engineered
	SC2 + spread and compact	SC4	m3	9.30	23.20		Low: non-engineered; High:engineered (e.g. complex covers, low volume dam construction)
	Specified activity	SCS	m3			18.80	Backfill adit with waste rock
Fence							
		FNC	m	13.55	203.00		
Fuel and Electricity							
	Fuel cost - gas	FCG	litre	1.05	1.40		
	Fuel cost - diesel	FCD	litre	0.99	1.39		
	Fuel mobilization	FCM	litre	0.22	0.42		High: winter road usage
	Electricity	FCE	kW-h	0.17	0.19	0.49	Low and High:Yellowknife; Specified:diesel generator
Geo-Synthetics							
	geotextile	GST	m2	3.44			Supply and install
	geogrid	GSG	m2	5.75			
	liner, HDPE	GSHDPE	m2	7.95			Supply and install; large quantity
	liner, ES3	GSES3	m2	20.20			FOB Yellowknife
	geosynthetic installation	GSI	m2	3.16	14.00		Low:geotextile; High:ES3 or HDPE
	bentonite soil ammendment	GSBA	tonne	308.30	348.50		FOB Edmonton, add shipping & mixing
Grouting (/m3 of rock grouted)							
		grout	m3	236.55	286.75		High: cement, FOB Yellowknife

Unit Cost Table (for refining unit costs see "Estimator" worksheet)

Filter by unit

Labour & Equipment Rates						
Site manager	sman	$/hr	125.00	152.00		
Supervisor	super	$/hr	52.00	91.84		
Registered engineer	eng	$/hr	95.00	220.00		
Environmental coordinator	envco	$/hr	74.16	130.00		
Evironmental technologist	envtech	$/hr	36.00			
Electrician	elec	$/hr	74.00	95.00		
Journeyman - various	journey	$/hr	44.00	71.79		
Labour - skilled	lab-s	$/hr	41.00	49.60	120.00	Specified - Skilled Manufacturer Mechanic
Labour - unskilled	lab-us	$/hr	31.00	43.98		
Equipment operator	oper	$/hr	41.00	65.00		
Heavy duty mechanic	mech	$/hr	49.00	72.85		
Water treatment plant operator	oper-wt	$/hr	41.00	59.86		
Security / first aid	safety	$/hr	36.00	66.97		
Administative staff	admin	$/hr	38.00	57.89		
Equipment rates include operator and fuel						
Loader - 4 cu.yd (3.06m3)	load-s	$/hr	175.00			
Loader - 7 cu.yd (5.35m3)	load-l	$/hr	315.00			
Excavator - 26.76-30.84 tonnes	exc-s	$/hr	190.00			
Excavator - 68.95+tonnes	exc-l	$/hr	420.00			
Grader	grad	$/hr	190.00			
Dump truck off hwy 30-50 tonnes	truck-s	$/hr	225.00			
Dump truck off hwy 55-75 tonnes	truck-l	$/hr	300.00			
dozer, small	dozers	$/hr	205.00	260.00		
dozer, large	dozerl	$/hr	490.00	565.00		
smooth drum compactor	comp	$/hr	155.00			
scooptram, 6 yd3 bucket	scoop	$/hr	170.00			
flat bed truck with hiab	hiab	$/hr	155.00			
fuel truck	ftruck	$/hr	150.00			
water truck	wtruck	$/hr	58.00	150.00		
Mobilize Heavy Equipment						
Road access	MHER	kmtonne	3.40	10.25	391.00	SPECIFIED cost: Mob/Demob from/to baker lake (115km)
Air access	MHEA	kmtonne	12.00			cargo rate>500lb
Mobilize Camp						
Road access	MCR	each	50000.00			refurbish existing camp
Mobilize Workers						
flight	MW	each	4500.00	9100.00		Low:e.g. 8 passenger; High: Dash 7
Oil Removal						
oil removal	OR	litre	0.43	1.20		Low:waste oil heater; High: ship offsite
PCB Removal						
Remove from site	PCBR	litre	40.20	46.90		Low: shipping, handling & disposal from Yellowknife
Pipes, small (<6in dia.)						
remove/dispose on site	PSR	m	1.00	24.00		Low: remove/dispose on site; High: remove/re-use
supply	PSS	m	6.10	11.10		Low:supply; High:supply and ship
install	PSI	m	25.00			
Pipes, large (>6in dia.)						
remove/dispose on site	PLR	m	22.00	72.00		Low: remove/dispose on site; High: remove/re-use
supply	PLS	m	129.00	143.00		Low:supply; High:supply and ship
install	PLI	m	50.00			
Power Lines						
remove/dispose on site	POWR	m	25.50			
Process Chemicals						
Remove from site	PCR	kg	0.45	2.50		Low: shipping, handling & disposal from Yellowknife
Pumps						
Pump capital cost	PC	each	195000.00			
Pump shipping	PS	each	2500.00			
Pump operating cost	POC	m3	0.12			pump operating costs should be calculated based on pump capacity, fuel costs, etc.
Pump maintenance	PM	allow	25000.00			
Pump sand BackFill						
	PBF	m3	85.00	300.00		
Scarify - road/mine site						
	SCFY	ha	4300	6030	2150	
Shaft, Raise & Portal Closures						
Shaft & Raises	SR	m2	645.00	2132.00		Low:pre-cast concrete slabs, little site prep. Area=shaft+>1m all around
Portals	POR	m3	18.80	250.00	1200.00	Low:unit cost code SCS;High:excavate & backfill collapsed portal;Spec: installed pressure plug
Site Inspection Report						
	RPT	each	5000.00	20000.00	10000.00	LOW:annual monitoring report SPECIFIED: annual water quality report
SpillWay - Clear						
	SW	each	3000.00	7000.00		
Survey/Instrumentation						
	SI	each	1800.00	3600.00		2 person crew
Treatment Plant - Construct						
Small (< 1000 m3/d)	TPS	lump sum	9000000	15000000		
Large (> 1000 m3/d)	TPL	lump sum	15000000	46000000		
Constructed Wetland	CWTS	ha	200000	300000		

Unit Cost Table (for refining unit costs see "Estimator" worksheet)

	Filter by unit					
Treatment Plant - Operate						
	TPO	m3	0.35	2.00		
Treatment Chemicals						
ferric sulphate	ferric	kg	1.19			
ferrous sulphate	ferrous	kg	1.32			
lime	lime	kg	0.56			
hydrogen peroxide, 35%	hperox	kg	1.50			
Sodium Metabisulfate	Nametab	kg	1.18			
Caustic soda, 50%	caustic	kg	0.74			
Sulfuric acid, 93%	sulfuric	kg	0.31			
flocculant	flocc	kg	6.00			
copper sulphate	copper	kg				
shipping	shipping	kg	0.20			
Vegetation						
Hydroseed, Flat	VHF	ha	4000.00			
Hydroseed, Sloped	VHS	ha	4500.00			
Veg. blanket/erosion mat	VB	ha	13000.00			
Tree planting	VT	ha	2600.00	6000.00		
Wetland species	VW	ha			47.72	Specified= /m3, Wetland Growth Media Substrate mixed and installed (sand, biochar and fertilizer, woodchips)
Water Sampling/Analysis/Reporting						
	WS	each	7000.00	10000.00		
Winter Road						
Construction	WRC	km	2000.00	11500.00		
Usage	WRU	kmtonne	0.29			