Ulu Exploration Site
Reclaim Estimate Basis of Costing

Summary

The Ulu Exploration ("Ulu") site is an advanced exploration property that has seen extensive exploration and development between 1989 and 2006, including 135,713 meters of core drilling and 1.7 kilometres of underground development. Bonito Capital Corporation ("BCC"), a wholly owned subsidiary of Elgin Mining, acquired the property in July 2011.

Ulu is located within the Kitikmeot Region of Nunavut, approximately 530 kilometres north of Yellowknife, and 155 kilometres north of the Lupin Gold Mine, the geographic center of the property is 66° 54'27" N / 110° 58'24W. The site consists of one renewable 21-year Crown mining lease covering 947.40 hectares. The lease predates the Nunavut Land Claims Agreement, so the terms of the lease are under the jurisdiction of the Canada Lands Act. The lease is surrounded by Inuit Owned Land surface and subsurface rights, which are owned by Nunavut Tunngavik Incorporated; the surface rights are administered by the Kitikmeot Inuit Association (KIA).

The Ulu site is completely self-contained with the exception of the transportation requirements for materials/supplies and workforce mobilization. There are three (3) main location areas as shown in Figure 2: Main Areas Ulu Site:

1. Ulu Camp which houses the residential complex consisting of Weatherhaven accommodations, vehicle repair shop, vehicle parking, power house, emergency generators, office and change rooms, fuel storage tank farm, freshwater system, sewage treatment plant and sewage line, incinerator, ore storage area, waste pad, mine portal, mine sump, and access roads;

2. Camp 3, which is comprised of fuel tank farm, explosives magazine, detonator magazine, quarry and borrow pit eskers; and

3. Airstrip

The site is accessible year round only by aircraft. Bulk items, if required, are brought on site via the winter road. During active exploration activity, all supplies are flown.

History

BHP Minerals Ltd. discovered gold mineralization on the Ulu gold property in 1989, and from discovery to 1994, delineated the extent of mineralization through a campaign of mapping, drilling, geophysical, geochemical and environmental surveys. Echo Bay Mines acquired Ulu in 1995. By 1997, an underground ramp and further development access was excavated, mineralized zones were crosscut by drifting, and significant underground and surface drilling was conducted. The project was shut down in 1997 due to low gold prices.

Kinross Gold Corporation acquired Ulu through a corporate merger in 2002, and subsequently sold it to Wolfden Resources Inc. in February 2004. Wolfden conducted a drilling campaign in 2004, and until 2006 attempted to gain access to the underground. In 2007, Wolfden was acquired by Zinifex of Australia, which subsequently merged with Oxiana Ltd. to become Oz Minerals, which was acquired by MMG Resources Ltd. in 2009.

Current Status

The Ulu exploration site consists of the following items:

- 50 person spring structure camp and kitchen
- Equipment workshop
- Water supply line
- Sewage (RBC) treatment system
- Adit and vent raise
- Underground development storage pad and development rock
- Bulk fuel storage tanks and associated piping
- Power house and equipment
- Working mobile fleet including drill jumbos, ore truck, grader, excavator, dozer, passenger bus, pickups, low bed truck and fuel supply truck
- Airstrip and roads
- Lined and bermed storage areas for fuel tanks
- Miscellaneous small equipment and spares
- Miscellaneous iron and steel scrap
- Miscellaneous wooden pallets

While under care and maintenance BCC:

- Manages snow and storm water in accordance with best management practices (BMPs);
- Maintains secondary containment in petroleum storage areas;
- Prevents the release of petroleum products;
- Implements Ulu Gold Project Spill Contingency Plan, as needed;
- Manages all wastes according to Ulu Gold Project Waste Management Plan;
- Inspects water and domestic sewage pipelines;
- Maintains environmental licenses, permits and authorizations;
- Conducts monitoring programs;
- Regularly reviews and updates contingency and management plans; and
- Continues to back haul as much waste and hazardous materials as possible each year during C&M.

Basis of Reclaim Estimate

A detailed review was undertaken at site by a Contractor experienced in completing reclamation work in Nunavut. The contractor (Delta/Carter) spent several days on site to examine equipment, review the status of the site and to review quantities, potential haul distances, availability to relocate suitable material underground and amount of material that would potentially have to be hauled offsite.

A critical aspect of this review was the state of existing equipment and whether there would be sufficient suitable equipment to perform the reclaim work in an effective, cost efficient manner.

Several suitable pieces are in working order and are available for use as is while several others are available with minimal upgrades and maintenance to perform the work required, these include:

- Front end loader
- Ore truck(s)
- Dozer with ripper
- Grader
- Fuel truck
- Light vehicles for transport
- Drill jumbo
- Scoop tram(s)

Furthermore, a vehicle repair shop complete with serviceable equipment is available to upgrade and maintain this equipment.

The estimate also reviewed the timeframe necessary to carry out the work in order to calculate mobilization and demobilization costs and the required manpower, flights, fuel requirements and camp operations.

Although several of the items at Ulu likely could be sold “as is – where is” since they are in good condition and likely a requirement at other northern exploration projects in the region it has been assumed that there is no salvage value.

The rates used in the estimate are all based on reasonable current rates for materials, labour, supplies and equipment in the north. A range has been included. However, this is a very compact and simple site. There are no major structures and no tailings dams or major storage areas.

Furthermore, there is little or no evidence of major soil contamination or acid or metals mine drainage.

Post Closure

Description of Proposed Reclamation Measures and Assumptions

The project description includes current site disturbance. The Ulu Project is located 155 km north of Lupin, which is 567 km north of Yellowknife. Access to Lupin is by the existing winter road. For this estimate it is assumed that no road exists between Ulu and Lupin so a winter road will be constructed and used over a 1 year period.

Portal Access

The estimate includes removal of approximately 40m3 of waste rock installed in the portal entrance when site was last in care and maintenance. The cost also included removal of any ice in the portal. The portal area will also be properly exhausted and ventilated during this time.

Equipment for Reclamation Work

As discussed above, there is more than sufficient equipment onsite to complete the work. Additional small equipment included in the estimate includes:

- Barrel crusher
- Small oxy/acythene burning equipment to remove structures etc.
- Small tools

Camp and Accommodations

The existing camp will be used during the reclamation work. This camp and kitchen were refurbished and updated in 2012.

Buildings and Equipment

The buildings and equipment include:

- Weather haven Camp (50 person)
- Kitchen
- Trailers
- Bone Yard
- Tank Farm and piping (All fuel tanks will be thoroughly cleaned prior to disposal)

The estimate also includes grading of these areas and also scarifying of roads and removal of culverts. All piping will be cut into sections, and cleaned prior to disposal.

Fuel

For reclamation purposed fuel will be brought to site. The estimate includes 110,000 litres of fuel.

Ore and Waste Rock Disposal

A total of 1,222 m3 of ore will be removed and placed underground. In addition, a certain percentage of the waste onsite is assumed placed underground. The mine plan shows that significant amount of waste developed and mined is non PAG rock. However, it is assumed that 25% of this waste will require disposal underground due to potential PAG. Therefore, a total of 12,000 m3 of ore and waste has been assumed disposed of underground. The unit costs for this work is high due to the need to segregate and place and is more double normal rates for loading and hauling waste rock .

Hydrocarbon Contaminated Soil

A total of 1,074 m3 of hydrocarbon contaminated soil will be disposed of underground.

Roads and Airstrip

There are 14 km of roads and a 1,200 m airstrip which will be required to be scarified and 6 culverts will be removed.

Portal and Vent Raise

Portal will be filled with suitable waste. The vent raise has been capped.

Post Closure Monitoring and Maintenance

Within the post closure phase the reclamation cost estimate includes:

- Water sampling
- Final site audit
- 5 post closure geotechnical inspections and reporting
- Inspections and repairs where necessary

The work and activities described above were to be completed to minimize the post closure liability. No long term monitoring is required of the waste rock or ore pads as this material has been relocated underground.

Contingency

A 15% contingency has been added to the cost estimate.

SUMMARY OF COSTS

Capital Costs

COMPONENT TYPE	COMPONENT NAME			TOTAL COST
OPEN PIT	0			$0
UNDERGROUND MINE	0			$230,850
TAILINGS	0			$0
ROCK PILE	0			$113,400
BUILDINGS AND EQUIPMENT	0			$385,400
CHEMICALS AND SOIL MANAGEMENT	0			$117,200
WATER MANAGEMENT	0			$4,800
MOBILIZATION/DEMOBILIZATION	0			$317,300
MONITORING AND MAINTENANCE	0			$65,000
POST-CLOSURE SITE MAINTENANCE				$120,217
	Ongoing Water Treatment Costs		$0	
	Annual post-closure cost		$26,250	
	Discount %	#Years		
	0.03	5		
SUBTOTAL				**$1,354,167**
PROJECT MANAGEMENT	3	% of subtotal		$40,625
ENGINEERING	3	% of subtotal		$40,625
CONTINGENCY	15	% of subtotal		$203,125
GRAND TOTAL - CAPITAL COSTS				**$1,638,542**

1 **Underground Mine Name** _____ **UG Mine #** ***1***

	ACTIVITY/MATERIAL	UNITS	QUANTITY	COST CODE	UNIT COST	COST
A	OBJECTIVE: CONTROL ACCESS					
	Fence	m		#N/A	0	$0
.	Signs	each		#N/A	0	$0
.	Ditch, mat'l A	m3		#N/A	0	$0
.	, mat'l B	m3		#N/A	0	$0
.	Berm	m3		#N/A	0	$0
.	Block adits	m3		#N/A	0	$0
.	Cap shaft	m3		#N/A	0	$0
.	Cap raise #1	m3	11	#N/A	2350	$25,850
.	Cap raise #2	m3		#N/A	0	$0
.	Backfill adits	m3		#N/A	0	$0
.	Backfill shaft	m3		#N/A	0	$0
.	Backfill raise #1	m3		#N/A	0	$0
.	Backfill raise #2	m3		#N/A	0	$0
.	Backfill open stopes	m3		#N/A	0	$0
.	Other		1	#N/A	5000	$5,000
B	OBJECTIVE: STABILIZE GROUND SURFACE					
.	Backfill mine	m3		#N/A	0	$0
.	Collapse crown pillar	m3		#N/A	0	$0
.	Contour, mat'l A	m3		#N/A	0	$0
.	, mat'l B	m3		#N/A	0	$0
.	Maintain dewatering (see "MONITORING/MAINTENANCE" costing component)			#N/A	0	
.	Other			#N/A	0	$0
C	OBJECTIVE: FLOOD MINE					
.	Remove waste and ice plug	each	1	#N/A	0	$200,000
.	Plug drillholes to surface	each		#N/A	0	$0
.	Grouting	m3		#N/A	0	$0
.	LIme addition, kg/m3 of water	tonne		#N/A	0	$0
.	Lime, purchase and shipping	tonne		#N/A	0	
D	OBJECTIVE: HAZARDOUS MATERIALS					
.	remove hazardous materials	each		#N/A	0	$0
.	remove/decontam. equipment	each		#N/A	0	$0
.	Other			#N/A	0	$0
E	SPECIALIZED ITEMS					$0
.				#N/A	0	
	Subtotal					$230,850

COMMENTS:

Equipment for this work is currentluy on-site and in working order

1 **Rock Pile Name:** **Rock Pile #:** ***1***

	ACTIVITY/MATERIAL	UNITS	QUANTITY	COST CODE	UNIT COST	COST
A	OBJECTIVE: STABILIZE SLOPES					
	Flatten slopes with dozer	m3	800	#N/A	13.25	$10,600
.	Divert runon, ditch mat'l A	m3	400	#N/A	12	$4,800
.	, ditch mat'l B	m3		#N/A	0	$0
.	Toe buttress, drain mat'l	m3		#N/A	0	$0
.	, fill mat'l A	m3	400	#N/A	5	$2,000
.	, fill mat'l B	m3		#N/A	0	$0
.	Other			#N/A	0	$0
B	OBJECTIVE: COVER DUMP					
.	Mat'l A	m3		#N/A	0	$0
.	Mat'l B	m3		#N/A	0	$0
.	Rip rap	m3		#N/A	0	$0
.	Vegetate	ha		#N/A	0	$0
.	Other			#N/A	0	$0
C	OBJECTIVE: RELOCATE DUMPS					
.	Remove ore and waste from Pad to Portal	m3	12000	#N/A	8	$96,000
.	Add lime	tonne		#N/A	0	$0
.	Contour reclaimed area	ha		#N/A	0	$0
.	Other			#N/A	0	$0
D	OBJECTIVE: COLLECT AND TREAT					
.	See "ONGOING TREATMENT" costing component			#N/A	0	$0
E	OBJECTIVE: DEVELOP WETLAND					
.	Earthworks, mat'l A	m3		#N/A	0	$0
.	, mat'l B	m3		#N/A	0	$0
.	Vegetate	ha		#N/A	0	$0
.	Other			#N/A	0	$0
F	SPECIALIZED ITEMS					
.				#N/A	0	$0
				#N/A	0	$0
	Subtotal					$113,400

COMMENTS:

Equipment suitable for all work is currently on-site and in working order

1 **Building / Equipment Name:** _____ **Bldg / Equip #:** ***1***

	ACTIVITY/MATERIAL	UNITS	QUANTITY	COST CODE	UNIT COST	COST
A	OBJECTIVE: DISPOSE MOBILE EQUIPMENT					
	Decontaminate and ship off-site	each		#N/A	0	$0
.	Decontaminate, dispose on-site	each		#N/A	0	$0
.	Other	each		#N/A	0	$0
B	OBJECTIVE: DISPOSE STATIONARY EQUIPMENT					
.	Decontaminate and ship off-site	each		#N/A	0	$0
.	Decontaminate, dispose on-site	each		#N/A	0	$0
.	Other	each		#N/A	0	$0
C	OBJECTIVE: DISPOSE ORE CONCENTRATION EQUIPMENT					
.	Decontaminate crushing plant	each		#N/A	0	$0
.	Decontaminate tanks & plumb.	each		#N/A	0	$0
.	Remove tanks & plumbing	each		#N/A	0	$0
.	Other			#N/A	0	$0
D	OBJECTIVE: DISPOSE WATER TREATMENT EQUIPMENT					
.	Decontaminate tanks & plumb.	each		#N/A	0	$0
.	Remove tanks & plumbing	each		#N/A	0	$0
.	Other			#N/A	0	$0
E	OBJECTIVE: DECONTAMINATE BUILDINGS & TANKS					
.	Process plant, chemicals	each		#N/A	0	$0
.	Maintenance plant, chemicals	each		#N/A	0	$0
.	Camp	each		#N/A	0	$0
.	Bulk fuel storage	each		#N/A	0	$0
.	Power plant	each		#N/A	0	$0
.	Explosives plant	each		#N/A	0	$0
F	OBJECTIVE: MOTHBALL BUILDINGS					
.	Building 1	m2		#N/A	0	$0
.	Building 2	m2		#N/A	0	$0
.	Building 3	m2		#N/A	0	$0
.	Building 4	m2		#N/A	0	$0
.	Building 5	m2		#N/A	0	$0
.	Other	m2		#N/A	0	$0
G	OBJECTIVE: REMOVE BUILDINGS					
.	Building 1-Ulu camp and Kitchens	each	1	#N/A	45000	$45,000
.	Building 2- Ulu Trailers	each	1	#N/A	45000	$45,000
.	Building 3	m2		#N/A	0	$0
.	Building 4	m2		#N/A	0	$0
.	Building 5	m2		#N/A	0	$0
.	Building 6	m2		#N/A	0	$0
.	Building 7	m2		#N/A	0	$0
.	Remove boneyard waste	each	1	#N/A	160000	$160,000
.	Other			#N/A	0	$0
H	OBJECTIVE: BREAK BASEMENT SLABS					
.	Building 1	m2		#N/A	0	$0
.	Building 2	m2		#N/A	0	$0
.	Building 3	m2		#N/A	0	$0
.	Building 4	m2		#N/A	0	$0
.	Building 5	m2		#N/A	0	$0
.	Other			#N/A	0	$0

1 **Building / Equipment Name:** _____ **Bldg / Equip #:** ***1***

	ACTIVITY/MATERIAL	UNITS	QUANTITY	COST CODE	UNIT COST	COST
I	OBJECTIVE: REMOVE TANK FARM					
.	Tank Farm 1 decontaminate	each	2	#N/A	7500	$15,000
.	, excavate & dispose	each	2	#N/A	44000	$88,000
.	small tanks, decontaminate	each	2	#N/A	3860	$7,720
.	, excavate & dispose	each	2	#N/A	1600	$3,200
.	Other			#N/A	0	$0
J	OBJECTIVE: LANDFILL FOR DEMOLITION WASTE					
.	Place soil cover	m3		#N/A	0	$0
.	Vegetate	ha		#N/A	0	$0
.	Landfill disposal fee	tonne		#N/A	0	$0
K	OBJECTIVE: GRADE AND CONTOUR					
.	Grade mill area	m2	26000	#N/A	0.06	$1,560
.	Place soil cover	m3		#N/A	0	$0
.	Rip rap on ditches	m3		#N/A	0	$0
.	Vegetate	ha		#N/A	0	$0
.	Other			#N/A	0	$0
L	OBJECTIVE: RECLAIM ROADS					
.	Scarify and install water breaks	km	12	#N/A	1660	$19,920
.	Vegetate	ha		#N/A	0	$0
.				#N/A	0	
K	SPECIALIZED ITEMS					
.				#N/A	0	
	Subtotal					$385,400

COMMENTS:

Road reclaim include Airstrip and also removing 6 Culverts. Equipment for this work is on site and in working order

1 Chemicals and Soil Contamination: *1*

	ACTIVITY/MATERIAL	UNITS	QUANTITY	COST CODE	UNIT COST	COST
	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.					
.						
A	LABORATORY CHEMICALS					
.		pallet		#N/A	0	$0
B	PCB, hauling	litre		#N/A	0	$0
.	PCB, disposal	litre		#N/A	0	$0
C	FUEL					
.	Type 1	kg		#N/A	0	$0
.	Type 2	kg		#N/A	0	$0
.	Type 3	kg		#N/A	0	
D	WASTE OIL					
.	Oils/lubricants - burn on-site	litre		#N/A	0	$0
.	Oils/lubricants - ship off-site	litre		#N/A	0	$0
.	Oils/lubricants - disposal fee	litre		#N/A	0	$0
E	PROCESS OR TREATMENT CHEMICALS					
.	Type 1	kg		#N/A	0	$0
.	Type 2	kg		#N/A	0	$0
.	Type 3	kg		#N/A	0	$0
.	Type 4	kg		#N/A	0	$0
F	EXPLOSIVES	kg		#N/A		$0
.						
G	CONTAMINATED SOILS					
.	Type 1, light fuel	m3	536	#N/A	100	$53,600
.	Type 2, heavy fuel and oil	m3	536	#N/A	100	$53,600
.	Type 3, metals	m3		#N/A	0	$0
H	Haz. Mat. testing & assessment					
.	Technician and analyses	each	1	#N/A	10000	$10,000
.	Drilling	each		#N/A	0	$0
.	Other			#N/A	0	$0
.	OTHER					
.				#N/A	0	$0
	Subtotal					$117,200

COMMENTS:

1 Water Management Project: _____ Project # *1*

	ACTIVITY/MATERIAL	UNITS	QUANTITY	COST CODE	UNIT COST	COST
A	OBJECTIVE: STABILIZE EMBANKMENT					
	Toe buttress, drain mat'l	m3		#N/A	0	$0
	, fill mat'l A	m3		#N/A	0	$0
	, fill mat'l B	m3		#N/A	0	$0
	Rip rap	m3		#N/A	0	$0
	Vegetate	ha		#N/A	0	$0
	Raise crest	m3		#N/A	0	$0
	Other			#N/A	0	$0
B	OBJECTIVE: UPGRADE SPILLWAY					
	Excavate channel, mat'l A	m3		#N/A	0	$0
	, mat'l B	m3		#N/A	0	$0
	Concrete	m3		#N/A	0	$0
	Rip rap	m3		#N/A	0	$0
	Other			#N/A	0	$0
C	OBJECTIVE: STABILIZE SEDIMENT CONTAINMENT PONDS					
	Place soil cover	m3		#N/A	0	$0
	Place geotextile	m2		#N/A	0	$0
	Vegetate	m3		#N/A	0	$0
	Other			#N/A	0	$0
D	OBJECTIVE: BREACH EMBANKMENT					
	Remove Fill	m3		#N/A	0	$0
	Other			#N/A	0	$0
E	OBJECTIVE: STABILIZE DITCHES					
	Flatten side slopes	m3		#N/A	0	$0
	Rip rap	m3		#N/A	0	$0
	Vegetate	ha		#N/A	0	$0
	Other			#N/A	0	$0
F	OBJECTIVE: BREACH DITCHES					
	Excavate	m3		#N/A	0	$0
	Backfill/recontour	m3		#N/A	0	$0
	Vegetate	ha		#N/A	0	$0
	Other			#N/A	0	$0
G	OBJECTIVE: REMOVE PIPELINES					
	Remove pipes	m	1150	#N/A	4	$4,600
	Concrete plug deep pipes	m3		#N/A	0	$0
	Other			#N/A	0	$0
H	OBJECTIVE: REMOVE STORAGE TANKS					
	Remove tanks & plumbing	m2		#N/A	0	$0
	Excavate & backfill	m3		#N/A	0	$0
	Other			#N/A	0	$0
I	OBJECTIVE: COLLECT DRAINAGE FOR TREATMENT					
	Excavate collection ditches	m3		#N/A	0	$0
	Rip rap ditches	m3		#N/A	0	$0
	Pipes	m		#N/A	0	$0
	Pumps	each	1	#N/A	200	$200
	Collect'n pond, exc. mat'l A	m3		#N/A	0	$0
	, exc. mat'l B	m3		#N/A	0	$0

1 **Water Management Project:** **Project # *1***

	ACTIVITY/MATERIAL	UNITS	QUANTITY	COST CODE	UNIT COST	COST
	Collect'n pond, fill mat'l A	m3		#N/A	0	$0
	, fill mat'l B	m3		#N/A	0	0
	Collect'n pond, liner	m2		#N/A	0	0
J	OBJECTIVE: TREAT DRAINAGE (see "ONGOING TREATMENT" for operating costs)					
	Build treatment plant lump sum			#N/A	0	0
				#N/A	0	0
	Subtotal					$4,800

COMMENTS:

1 **Mobilization Name:** **Mob # *1***

	ACTIVITY/MATERIAL	UNITS	QUANTITY	COST CODE	UNIT COST	COST
A	MOBILIZE HEAVY EQUIPMENT					
Equipment to regional centre						
.	Excavators	km		#N/A	0	$0
.	Dump trucks	km		#N/A	0	$0
.	Dozers	km		#N/A	0	$0
.	Demolition shears	km		#N/A	0	$0
Equipment, regional centre to site						
.	Excavators	km		#N/A	0	$0
.	Dump trucks	km		#N/A	0	$0
.	Dozers	km		#N/A	0	$0
.	Demolition shears	km		#N/A	0	$0
B	MOBILIZE CAMP			#N/A	0	$0
.						
C	MOBILIZE WORKERS	manday		#N/A	0	$0
.				#N/A	0	
D	MOBILIZE MISC. SUPPLIES					
.	Fuel	litre	110000	#N/A	1.43	$157,300
.	Minor tools and equipment	allowance		#N/A	0	$0
.	Truck tires	allowance		#N/A	0	$0
E	MOBILIZE & HOUSE WORKERS person days		1	#N/A	150000	$150,000
.						
.	WINTER ROAD					
.	Full winter use	km		#N/A	0	$0
.	Limited winter use	km		#N/A	0	$0
.				#N/A	0	$0
F	BONDING lump sum			#N/A	0	$0
.						
G	TAXES lump sum			#N/A	0	$0
.						
H	INSURANCE lump sum		1	#N/A	10000	$10,000
.						
	Subtotal					$317,300

COMMENTS:
Equipment is on site and in working order

1 Monitoring & Maintenance — Mon / Mtce # *1*

	ACTIVITY/MATERIAL	UNITS	QUANTITY per YEAR	COST CODE	UNIT COST	COST
A	OBJECTIVE: INSPECTIONS					
	Annual geotechnical insp.	each	5	#N/A	$7,000	$35,000
.	Survey inspection	each		#N/A	$0	$0
.	Water sampling	each	25	#N/A	$1,000	$25,000
.	Reporting	each	5	#N/A	$1,000	$5,000
.	Other			#N/A	$0	$0
B	OBJECTIVE: MAINTENANCE					
.	Security guard	month		#N/A	$0	$0
.	Accomodation	month		#N/A	$0	$0
.	Maintain pumping	month		#N/A	$0	$0
.	Clear spillway	each		#N/A	$0	$0
.	Other			#N/A	$0	$0
	Subtotal					$65,000

COMMENTS:
Above assumes 5 years post monitoring and inspection.

1 Post-Closure Site Maintenance

	ACTIVITY/MATERIAL	UNITS	QUANTITY	COST CODE	UNIT COST	COST
A	WATER TREATMENT					
	Total annual cost, unit cost from Ongoing Water Treatment		1		0	$0
B	Cover Maintenance					
	Repair erosion, remove trees	ha		#N/A	0	$0
C	Spillway Maintenance					
	Repair erosion	m3	250	#N/A	5	$1,250
	Clear spillway	each		#N/A	0	$0
	Other		1	#N/A	25000	$25,000
D	Other		1	#N/A	25000	$0

	Subtotal, Annual post-closure costs		$26,250
	Discount rate for calculation of net present value of post-closure cost, %	3.00%	
	Number of years of post-closure activity	5 years	
	Present Value of payment stream		$120,217

COMMENTS:

Unit Cost Table

ITEM	Detail	COST CODE	UNITS	LOW $	HIGH $	SPECIFIED $	
1	**excavate Rock, Bulk**						COMMENTS
	drill, blast, load short haul (<500m) Dump	RB1	m3	8.5	15	#N/A	quarry operations for bulk fill
	RB1 + long haul, up to 1500 m	RB2	m3	9	17	#N/A	
	RB1 + spread and compact	RB3	m3	9	13.25	#N/A	
	RB1 + long haul + spread and compact	RB4	m3	11	14	#N/A	
	RB1 + Specified activity	RBS	m3	#N/A	#N/A	#N/A	
2	**excavate Rock, Controlled**						
	drill, blast, load short haul (<500m) Dump	RC1	m3	20	40	#N/A	spillway excavation
	RC1 + long haul, up to 1500 m	RC2	m3	30	50	#N/A	
	RC1 + spread and compact	RC3	m3	9	18	#N/A	
	RC1 + long haul + spread and compact	RC4	m3	12	22	#N/A	
	RC1 + Specified activity	RCS	m3	#N/A	#N/A	132	$132/M3-drift excavation
3	**excavate Soil, Bulk**						
	excavate, load short haul (<500m) dump	SB1	m3	4	8	#N/A	LOW cost: excavation of loose soil, high volume
	SB1 + long haul, up to 1500 m	SB2	m3	6	9	#N/A	LOW cost: excavation of loose soil, 1.5 km haul, high volume
	SB1 + spread and compact	SB3	m3	5	7	#N/A	
	SB1 + long haul + spread and compact	SB4	m3	5	9	#N/A	LOW cost: excavation of loose soil, 1.5 km haul, high volume, const. of simple soil cover
	SB1 + Specified activity	SBS	m3	3	7	9.95	LOW cost: rehandle waste rock dump into pit, >500,000 m3, 2 km haul SPECIFIED cost: rehandle waste rock, haul 3 km, place & compact on dam
	Soil, tailings	SBT	m3	3	8		LOW cost: doze tailings, HIGH cost: excavate & short haul
4	**excavate Soil, Controlled**						
	excavate, load short haul (<500 m), dump	SC1	m3	6	9	#N/A	
	SC1 + long haul, up to 1500 m	SC2	m3	8	12	#N/A	
	SC1 + spread and compact	SC3	m3	6	12	#N/A	HIGH cost: for simple soil covers
	SC1 + long haul + spread and compact	SC4	m3	7	21	#N/A	HIGH cost: for complex covers & dam construction, spillway repair, LOW volume
	SC1 + Specified activity	SCS	m3	#N/A	#N/A	14.3	SPECIFIED cost: backfill adit with waste rock
	Geo-synthetics						
	geotextile, filter cloth	GST	M2	0.9	2	#N/A	FOB Edmonton, add shipping & installation
	geogrid	GSG	M2	4.3		#N/A	

Unit Cost Table

ITEM	Detail	COST CODE	UNITS	LOW $	HIGH $	SPECIFIED $	
	liner, HDPE	GSHDPE	M2	7		#N/A	
	liner, PVC	GSPVC	M2			#N/A	
	geosynthetic installation	GSI	m2	1.2	2	#N/A	
	bentonite soil ammendment	GSBA	tonne	300	330	#N/A	FOB Edmonton, add shipping & mixing
	Shaft, Raise & Portal Closures						
	Shaft & Raises	SR	m2	600	7000	#N/A	LOW cost: pre-cast concrete slabs, little site prep. HIGH cost: for hand construction, remote site
	Portals	POR	m3		250	55	HIGH cost: for excavate & backfill collapsed portal SPECIFIED cost: concrete for pressure plug
5	**Concrete work**						
	Small pour, no forms	CS	m3	400	700	#N/A	
	Large pour, no forms	CL	m3	350	600	#N/A	
	Small pour, Formed	CSF	m3	600	2800	#N/A	
	Large pour, Formed	CLF	m3	550	2500	#N/A	
6	**Vegetation**						
	Hydroseed, Flat	VHF	ha	1800	6000	#N/A	
	Hydroseed, Sloped	VHS	ha	2200	6500	#N/A	
	veg. Blanket/erosion mat	VB	ha	12000	14000	#N/A	
	Tree planting	VT	ha	10000	12000	#N/A	
	Wetland species	VW	ha	50000	75000	#N/A	
7	**Pumps**						
	Small, <	PS	each	3000	6000	#N/A	
	Large, >	PL	each	5000	9000	#N/A	
8	**PiPes**						
	Small, < 6 inch diameter	PPS	m	0.5	5	#N/A	LOW cost: pipe removal, HIGH cost: supply new pipe SPECIFIED: small, heat traced & insulated pipe
	Large, > 6 inch diameter	PPL	m	1	200	#N/A	LOW cost: pipe removal, HIGH cost: supply new 16in. Pipe add shipping & installation

Unit Cost Table

	ITEM	Detail	COST CODE	UNITS	LOW $	HIGH $	SPECIFIED $	
9	**pump sand BackFill**		BF	m3	5	15	#N/A	
10	**Fence**		F	m	10	150	#N/A	
11	**Signs**		S	each	10	30	#N/A	
12	**rock, Drill and Blast only**		DB	m3	10	35	#N/A	
	(flatten slope, collapse drift)							
13	**excavate Rip Rap**							
		drill, blast, load short haul (<500 m) dump and spread	RR1	m3	9.95	22	#N/A	HIGH cost: quarry & place rip rap in channel
		RR1 + long haul	RR2	m3	12	28	#N/A	
		excavate rock from waste dump, short haul, spread	RR3	m3	3.82	5.25	#N/A	LOW cost: removal of 18 in minus from dump, long haul and spread HIGH cost: removal of coarse rock from dump, long haul, armour spillway
		RR3 + long haul	RR4	m3	4.25	5.68	#N/A	
		specified rip rap source	RR5	m3	#N/A	#N/A	#N/A	
14	**Import LimeStone**		ILS	tonne	14	18	#N/A	
15	**Import LiMe**		ILM	tonne	150	600	#N/A	LOW cost: bulk shipping, high volume, FOB Vancouver/Edmonton HIGH cost: bags delivered to central Yukon, small volume
16	**Grouting**		G	m3	180	400	#N/A	HIGH cost: cement, FOB Yellowknife
17	**Dozing**							
		doze Rock piles	DR	m3	0.77	1.77	#N/A	LOW cost: doze crest off dump
		doze overburden/Soil piles	DS	m3	0.71	2.83	#N/A	HIGH cost: push up to 300 m
18								
							#N/A	
							#N/A	
19								
							#N/A	
							#N/A	
20								
				each	0	0	#N/A	
				each			#N/A	
21	**Buildings - Decontaminate**							

Unit Cost Table

ITEM	Detail	COST CODE	UNITS	LOW $	HIGH $	SPECIFIED $	
	Chemicals	BDC	m3	#N/A	#N/A	#N/A	
	Asbestos	BDA	m2	25	60	#N/A	LOW cost: removal of asbestos siding & flooring HIGH cost: removal of insulated pipes, friable asbestos
22	**Buildings - Remove** areas are per floor on 3 m average height						LOW cost: removal and on-site disposal - small wooden structures
	Wood - teardown	BRW1	m2	20	33	#N/A	
	Wood - burn	BRW2	m2	5	12	#N/A	
	Masonry	BRM	m2	23	35	#N/A	
	Concrete	BRC	m	30	55	6	LOW cost: removal of building perimeter walls, HIGH cost: per m3 for bulk concrete SPECIFIED cost: $/m2 to break floor slab
	Steel - teardown	BRS1	m2	35	55	240	SPECIFIED cost: demolition shear $/hour operating
	Steel - salvage	BRS2	m2	50	75	#N/A	
23	**Power & Pipe Lines**						
	Power lines, remove	POWR	each	2200	6000	#N/A	
						#N/A	
24	**Laboratory Chemicals**						
	Remove from site	LCR	pallet	1590	3000	#N/A	
	Dispose on site	LCD	each	#N/A	#N/A	#N/A	
25	**PCB - Remove from site**	PCBR	litre	50	65	#N/A	LOW cost: shipping, handling & disposal from Yellowknife
26	**Fuel**						
	Remove from site	FR	kg	0	1	#N/A	
	Burn on site	FB	kg	#N/A	#N/A	#N/A	
27	**Oil**						
	Remove from site	OR	litre	0.3	1	#N/A	
	Burn on site	OB	litre	0.3	0.5	#N/A	
28	**Process Chemicals**						
	Remove from site	PCR	kg	0.3	3	#N/A	
	Dispose on site	PCD	kg	#N/A	#N/A	#N/A	
29	**Explosives**						
	Remove from site	ER	kg	0	2	#N/A	
	Dispose on site	ED	kg	#N/A	#N/A	#N/A	

Unit Cost Table

ITEM	Detail	COST CODE	UNITS	LOW $	HIGH $	SPECIFIED $	
30	**Contaminated Soils**						
	Remediate on site	CSR	m3	35	130	#N/A	LOW cost: bio-remediate on-site. HIGH cost: ship off-site to landfil as haz. waste
	consolidate & cover	Use cost code items 1 - 4					
	cover in place	Use cost code items 1 - 4					
31	**Mobilize Heavy Equipment**						
	Road access	MHER	$/km	3	9	1.86	SPECIFIED cost: $/tonne/km in cargo plane
	Air access	MHEA	each	#N/A	#N/A	1250	SPECIFIED cost: helicopter cost, $/hr of operation
32	**Mobilize Camp**						
	<20 persons Road access	MC<R	each	#N/A	#N/A	#N/A	
	<20 persons Air access	MC<A	each	#N/A	#N/A	#N/A	
33	**Mobilize Workers**						
	mobilize	MM<	person	175	1100	#N/A	LOW cost: road access. HIGH cost: transport by Twin Otter aircraft
	>20 persons	MM>	person	1200	1400	#N/A	
34	**ACCoModation**	ACCM	month	1500	2200	#N/A	LOW cost, accom in existing camp, per man, HIGH cost: - supply new camp
35	**Mobilize Misc. Supplies**	MMS	each	#N/A	#N/A	#N/A	LOW cost: winter road - limited use, LOW snowfall
36	**Winter Road**	WR	km	1400	3600	#N/A	
37	**Visual site Inspection**	VI	each	3500	8000	10000	
38	**Survey site Inspection**	SI	each	#N/A	#N/A	#N/A	
39	**Water Sampling**	WS	each	5000	8000	#N/A	
40	**site inspection RePorT**	RPT	each	#N/A	10000	#N/A	
41	**Security Guard**	SG	pers/mc	5000	9000	#N/A	
42	**Maintain Pumping**	MP	month	3000	#N/A	#N/A	
43	**Clear SpillWay**	CSW	each	1700	4800	#N/A	
44	**Build Treatment Plant**						
	Small (< 1000 m3/d)	BTPS	lump su	2E+06	3E+06	#N/A	
	Large (> 1000 m3/d)	BTPL	lump su	2E+06	5.0E+6	#N/A	
45	**Operate Treatment Plant**	OTP	m3	0.4	2	#N/A	
46	**SCariFY road and install water breaks**	SCFY	km	3215	4500	#N/A	

Unit Cost Table

ITEM Detail	COST CODE	UNITS	LOW $	HIGH $	SPECIFIED $
water treatment chemicals					
ferric sulphate	ferric	kg	0.61		
ferrous sulphate	ferrous	kg	0.4		
lime	lime	kg	0.27		
hydrogen peroxide, 50%	hperox	kg	1.3		
Sodium Metabisulfate	Nametab	kg	0.9		
Caustic soda, 50%	caustic	kg	0.56		
Sulfuric acid, 93%	sulfuric	kg	0.24		
flocculant	flocc	kg	4.9		
copper sulphate	copper	kg			
typical shipping, to Whitehorse or Yellowknife		kg	0.065		