GENERAL RESPONSE PLAN

2008–2012

FOR THE REHABILITATION OF 18 "MAJOR" MINERAL EXPLORATION SITES IN NUNAVIK



Kativik Regional Government

Renewable Resources, Environmental and Land Use Planning Department

December 2007

GENERAL RESPONSE PLAN, PREPARATION

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1 INTRODUCTION

The *Agreement concerning the Clean-up in Nunavik of Abandoned Mineral Exploration Sites Classified as "Major"* is an initiative of the Kativik Regional Government (KRG), the Makivik Corporation, the Ministère des Ressources naturelles et de la Faune (natural resources and wildlife, MRNF) and the Fonds Restor-Action Nunavik (FRAN). The purpose of the Agreement is to ensure the clean-up of 18 "major" sites by March 31, 2012. These sites are described in the report entitled *Assessment and Prioritization of Abandoned Mining Exploration Sites in Nunavik: Final Report on a Two-Year Project (2001–2002)* that was produced by the KRG and the Makivik Corporation in March 2003. Maps identifying the 18 sites appear in Appendix A.

Further to clean-up work carried out in the summer of 2007, a summary report (KRG, 2007b) was submitted to the project partners. The report provides updated information for those sites where clean-up work is already underway as well as for those sites where clean-up work has yet to be initiated. The report served as a reference document for the preparation of the General Response Plan (GRP) for the rehabilitation of the 18 "major" sites. In addition, the GRP contains the revised cost of the project (RCP); based on the expertise acquired during earlier pilot projects (KRG, 2006 and 2007a) and the information contained in the summary report (KRG, 2007b), the budget proposed in *Remedial Measures and Completion of the Assessment of Nunavik's Abandoned Mining Exploration Sites* (Barrett and Lanari, 2003) has been revised.

The GRP contains the following sections: 1) the main conclusions of the summary report (KRG, 2007b), 2) a description of the clean-up work to be carried out by March 2012 at the 18 "major" sites, 3) a description of the human resources of the KRG, the project manager, 4) the proposed work schedule, 5) a few details concerning the communication of results, and 6) the revised 2008–2012 budget with the RCP.

2 SUMMARY OF 2007 WORK AND BUDGET

In the summer of 2007, 13 mineral exploration sites were inspected to ensure that the information available for each was up to date. One site (WHA-1) was not inspected and the four remaining sites were already in the process of being cleaned.

Of the 13 sites inspected, nine matched or were very similar to the description prepared during the 2001–2002 inventory (KAW-45, TQ-4, PJ-10, TW, WB-3, KV-1, SAL-1, SW-27, SW-42), one site has been transformed into an outfitting camp (TQ-1), two sites are in the process of being cleaned by Canadian Royalties (CR) (K-28, K-61) and the final site (WB-9), for which no inventory was prepared in 2001–2002, remained relatively unchanged. Although rehabilitation actions have been taken at the sites TQ-1, K-28 and K-61, further clean-up work is necessary including soil decontamination and the removal of empty barrels. As well, near the site TQ-1, there remain a large number of barrels containing diesel. These barrels were not identified in the 2001–2002 inventory, but have been taken into account in the GRP.

Among the four sites where clean-up work was carried out in 2007, work had already been carried out at three of the sites during earlier pilot projects. Following three summers of fieldwork at the site KAW-35, 87% of the 935 barrels and almost all the hazardous material and metal identified at the site have been transported to appropriate treatment and recycling centres. It was not however mentioned in the 2001–2002 inventory that acid mine drainage is

present at the site. Following two summers of fieldwork at the site PJ-1, all the residue found in abandoned barrels has been transferred into undamaged barrels. All empty barrels have also been cut up, stacked together (three barrels stacked inside another) and placed in strategic locations to be picked up by snowmobile and transported to Aupaluk in the winter. Almost all the identified hazardous material has been stored temporarily at the site. Following three summers of fieldwork at the site PJ-17, 94% of the 308 barrels, 33% of the 40 propane tanks and 76% of the metal debris have been removed from the site and transported to appropriate treatment and recycling centres. In the summer of 2007, clean-up work was initiated for the first time at the site SW-34. A total of 180 barrels scattered around the site were gathered together and residue was transferred into undamaged barrels. As well, between 150 and 200 other scattered barrels were moved in order to facilitate future fieldwork and 20 batteries were removed from the site.

The 2007 budget for site clean-up work and the validation of site inventories is shown in Table 1. In-kind contributions are indicated. Specifically, for the clean-up of the site SW-34, Xstrata provided accommodation, material transportation and labour services, as well as specialists. Canadian Helicopters provided transportation services to the site PJ-1 for media coverage on abandoned mineral exploration sites. No expenditures appear in the budget for the transportation and disposal of hazardous material from the sites PJ-1 and SW-34; the expenditures for the two sites are included in the budget for 2008 and subsequent years.

The expenditures incurred for the clean-up of the sites KAW-35 and PJ-1 during the 2005 and 2006 (KRG, 2006 and 2007a) are shown in Table 2.

Table 1: Budget for 2007

Revenue						
Northern Ecosystem Initiative						$50,000
MRNF						$115,000
FRAN						$115,000
Xstrata (in-kind)						$23,800
Canadian Helicopters (in-kind)						$7,650
Expenditures	**PJ-1**	**PJ-17**	**SW-34**	**KAW-35**	**Inventory**	**Total**
Wages						
Project co-ordinator	$4,000	$1,500	$1,500	$4,000	$4,400	$15,400
Environmental technician	$5,500			$5,200	$2,000	$12,700
Labour (communities)	$23,200		$2,940	$23,862	$580	$50,582
Technicians and specialists			$3200 (in-kind)		$550	$550
Equipment purchases	$18,515	$4,600		$1,955	$4,195	$29,265
Equipment rental	$2,125	$3,450		$2,930		$8,505
Food	$2,260		$1,050 (in-kind)	$3,590		$5,850
Gasoline	$4,798	$1,000		$430	$9,264	$15,492
Transportation logistics	$24,452	$7,000	$19,550 (in-kind)	$13,247	$41,103	$85,802
	$7,650 (in-kind)					
Hazardous material transportation		$2,700		$8,575		$11,275
Hazardous material disposal		$3,312		$8,942		$12,254
Travel expenses			$1,380	$3,410	$3,705	$8,495
Communications	$1,000	$1,000	$1,000	$1,000	$2,500	$6,500
Administration	$4,000	$3,000	$1,300	$4,000	$4,000	$16,300
Total expenditures	**$89,850**	**$27,562**	**$8,120**	**$81,141**	**$72,297**	**$278,970**
Total expenditures (+ in-kind contributions)	**$97,500**		**$31,920**			**$310,420**

Table 2: Budget for 2005 and 2006

Revenue				
Northern Ecosystem Initiative	$19,000	$31,190	$16,500	
MRNF	$50,000			
Expenditures	**KAW-35 (2005)**	**KAW-35 (2006)**	**PJ-1 (2006)**	**Total**
Wages				
Project co-ordinator	$7,000	$13,320	$13,500	$33,820
Environmental technician				
Labour (communities)	$24,467	$20,160	$14,400	$59,027
Technicians and specialists				
Equipment purchases	$4,065	$1,950	$3,100	$9,115
Equipment rental	$4,050	$6,700	$600	$11,350
Food	$4,725	$4,285	$4,500	$13,510
Gasoline	$390	$1,510	$3,000	$4,900
Transportation logistics	$14,693	$21,800	$18,050	$54,543
Hazardous material transportation	$4,450	$1,750	$1,750	$7,950
Hazardous material disposal	$1,485	$425	$500	$2,410
Travel expenses	$2,180	$7,035	$5,100	$14,315
Communications	$1,000	$1,500	$1,500	$4,000
Administration		$500	$500	$1,000
Total expenditures	**$68,505**	**$80,935**	**$66,500**	**$215,940**

3 WORK TO BE COMPLETED, 2008–2012

The clean-up work to be completed at all 18 “major” sites may be broken down into the following categories: 1) field logistics, 2) the transportation and disposal of hazardous material, 3) the management of combustible non-toxic material, 4) the management of non-combustible non-toxic material, 5) the treatment of contaminated soil, and 6) the treatment of mine tailings. For each of the categories of clean-up work, a table identifies the work to be completed and, when necessary, a detailed description is provided.

3.1 FIELD LOGISTICS

3.1.1 Summer

Summer fieldwork involves the cutting up and crushing of barrels, the transfer of residue to undamaged barrels, the gathering of hazardous material and waste to facilitate winter transportation activities, and the gathering of debris for local waste disposal areas. Table 3 provides a general description of summer field logistics. The proposed number of workdays and workers has been calculated taking into account the clean-up activities described immediately above and the scope of the work at each site. Further details concerning the management of hazardous material, combustible non-toxic material, and non-combustible non-toxic material are provided in sections 3.2, 3.3 and 3.4. The treatment of contaminated soil and, where applicable, acid mine drainage may be performed as other clean-up work is being carried out; to this end specialists will be required in the field. The participation and transportation of these specialists are taken into account in sections 3.5 and 3.6 but not in Table 3.

Land access to certain sites is possible after taking into account the distance between each site and the nearest village as well as topographical conditions. The sites PJ-17, TW and WB-3 are accessible by ATV, from Aupaluk, Kangirsuk and Kangiqsujuaq respectively. Notwithstanding, land access was not selected for the site WB-3 due to poor trail conditions. The method was specifically not advised by regular users of the trail. Regarding the site PJ-17, Cruise North Expeditions (CNE) has reiterated its willingness to participate in the clean-up of the site. Regarding the site TW, the conditions of the trail vary from year to year and will need to be checked.

For the sites PJ-1 and KAW-35, the number of workdays indicated in Table 3 is the total for the summers of 2008 and 2009 (refer to section 5). The number of workers indicated is the number required annually.

Table 3: Summer field logistics

Site	Workdays	Workers [1]	Worker community	Means of transportation	Number of return trips [2]	Accommodations
KAW-35	14	7	Kawawachik.	floatplane	8 (114 km)	temporary camp
KAW-45	1	7	Kawawachik.	floatplane	2 (166 km)	none
PJ-1	14	7	Tasiujaq /Aupaluk	helicopter	4 (481 km)	temporary camp
TQ-1	5	7	Kuujjuaq	helicopter	4 (152 km)	outfitter camp
TQ-4	5	7	Kuujjuaq	helicopter	6 (200 km)	temporary camp
PJ-10	7	7	Aupaluk	helicopter	2 (456 km)	temporary camp
PJ-17	4	5	Aupaluk	CNE	-	CNE
TW	7	7	Kangirsuk	helicopter /ATV	2 (500 km) 8 (20 km)	temporary camp /Kangirsuk
K-28	4	5	Kangiqsujuaq	helicopter /road	1 (140 km)	exploration camp (CR)
K-61	7	5	Kangiqsujuaq	helicopter /road	1 (140 km)	exploration camp (CR)
WB-3	4	7	Kangiqsujuaq	helicopter	2 (1070 km)	Pingualuit Park shelter
KV-1	2	5	Salluit	helicopter	4 (44 km)	none
SAL-1	10	5	Kangiqsujuaq /Salluit	helicopter	20 (102 km)	exploration camp (to be determined)
SW-27	7	5	Salluit	helicopter	4 (260 km)	temporary camp
SW-34	14	5	Kangiqsujuaq /Salluit	helicopter	28 (56 km)	exploration camp (Xstrata)
SW-42	7	5	Kangiqsujuaq /Salluit	helicopter	14 (84 km)	exploration camp (to be determined)
WB-9	7	5	Kangiqsujuaq /Salluit	helicopter	14 (76 km)	exploration camp (to be determined)
WHA-1	2	4	Umiujaq	helicopter	4 (77 km)	none

[1]: Including an environmental technician.

[2]: Transportation of labour and camp supplies. Does not take into account possible return trips between a village and the site when workers originate from a village other than Kuujjuaq, which is the helicopter's home base. Notwithstanding, transportation distances (indicated in parentheses) are calculated from Kuujjuaq and take into account return trips between the nearest village and the site (PJ-1, TQ-1, TQ-4, PJ-10, PJ-17, TW, WB-3, WHA-1). For the sites SAL-1, SW-27, SW-34, SW-42 and WB-9, transportation distances are calculated from the exploration camps. For the site KV-1, the transportation distance is calculated from the site SW-27.

3.1.2 Winter

Winter fieldwork involves the transportation of hazardous material and waste by snowmobile or Twin Otter, the transportation of heavy equipment at the site PJ-1, and the transportation of hazardous material and waste storage containers at the site SW-34. The latter two activities are described in more detail in sections 3.4.1 and 3.4.2, respectively. Table 4 provides a general description of winter field logistics. Local labour is proposed for snowmobile transportation activities and to ferry hazardous material and waste between the airport and a nearby temporary storage site prior to shipment south.

Generally speaking, sites located less than 150 km from the nearest village may be accessed by snowmobile. As with summer land access, snowmobile trail conditions must be taken into account when calculating distances. Four snowmobiles and four 14-ft sleds are proposed to transport barrels (crushed or containing residue or other waste). Each sled can carry approximately 2 m^2 of material.

Table 4: Winter field logistics

Site	Workdays (number of return trips)			Workers		Worker community
	Snow-mobile	Twin Otter	Other	Community	Other	
KAW-35	-	-	-	-		-
KAW-45	-	-	-	-		-
PJ-1	10 (10)		42 (20)	4	5	Aupaluk
TQ-1		5 (10)		4		Kuujjuaq
TQ-4	3 (3)			4		Kuujjuaq
PJ-10	10 (10)			4		Aupaluk
PJ-17	2 (3)			4		Aupaluk
TW	6 (6)			4		Kangirsuk
K-28	-	-	-	-		-
K-61	-	-	-	-		-
WB-3	2 (2)			4		Kangiqsujuaq
KV-1		1 (2)		2		Salluit
SAL-1		2 (4)		4		Salluit
SW-27		1 (2)		4		Salluit
SW-34			4 (6)		2	-
SW-42		1 (2)		4		Salluit
WB-9		2 (3)		4		Salluit
WHA-1	1 (1)			4		Umiujaq

3.2 TRANSPORTATION AND DISPOSAL OF HAZARDOUS MATERIAL

Table 5 shows the means of transportation proposed for each site as well as the material to be removed from each. The number of return trips necessary to remove hazardous material from the sites is indicated in section 3.4. All recoverable hazardous material (petroleum hydrocarbon and other residue) will be shipped to Veolia Environmental Services.

The transfer of residue to undamaged containers and labelling will be carried out during summer fieldwork. Except for the sites KAW-35 and KAW-45, hazardous and other material will be removed from the sites during winter fieldwork.

Table 5: Category of hazardous or other material and its transportation to a disposal centre

Site	Means of transportation		Quantity of hazardous or other material									
	From site to nearest village	From village to disposal centre	Diesel (L)	Anti-freeze (L)	Oil (L)	Naphta (L)	Grease (L)	Lithium grease tubes	Propane (tank)	Battery	Paint (L)	Extinguisher
KAW-35	floatplane	train/truck	150				40					2
KAW-45	floatplane	train/truck	150									
PJ-1	snowmobile	cargo (NEAS)	1230	205	3075		240	50	20	12	12	20
TQ-1	Twin Otter	cargo (NEAS)	16400									
TQ-4	snowmobile	cargo (NEAS)	150							1		
PJ-10	snowmobile	cargo (NEAS)	1400		280		40		5	1		
PJ-17	snowmobile	cargo (NEAS)							9			
TW	snowmobile	cargo (NEAS)	1230				60		4			1
K-28	truck	cargo (to be det.)							6			
K-61	truck	cargo (to be det.)					920				4	
WB-3	snowmobile	cargo (NEAS)	675									
KV-1	Twin Otter	cargo (NEAS)	50									
SAL-1	Twin Otter	cargo (NEAS)			205					3		
SW-27	Twin Otter	cargo (NEAS)	1650		26		260		1			
SW-34	container/ truck	cargo (Xstrata)	16400[1]			410						1
SW-42	Twin Otter	cargo (NEAS)	700				12					
WB-9	Twin Otter	cargo (NEAS)	280						9	1	24	3
WHA-1	snowmobile	cargo (NEAS)	410									

[1]: Estimated quantity.

3.3 MANAGEMENT OF COMBUSTIBLE NON-TOXIC MATERIAL

Combustible non-toxic material will be burnt at each site. This material includes wood as well as buildings constructed from wood, aluminium and mineral wool insulation. Pursuant to section 22 of the *Regulation respecting the Quality of the Atmosphere*, a certificate of authorization is required to burn wood, shacks and buildings. Prior to burning any building, all hazardous material must be removed including emergency lights (lead and Ni-Cd battery cells), smoke detectors, fluorescent ballast and fire system accumulators (Ni-Cd battery cells). Non-combustible material should also be removed including asphalt shingles, heating stoves, refrigerators, stove-ovens, bed frames, etc. Material remaining after burning (tin, glass wool, iron and wire) is managed with the other waste at the site. Related recommendations should be included in the inspection report expected from the Ministère du Développement durable, de l'Environnement et des Parcs (sustainable development, environment and parks, MDDEP).

It is also possible that petroleum hydrocarbons at the sites will be used to ignite combustible material. In such cases, a certificate of authorization will be required pursuant to section 23 of

the *Regulation respecting the Quality of the Atmosphere* for the open-air burning of petroleum hydrocarbons.

Table 6: Combustible material to be burnt or not

Site	Wood debris for burning	Estimated quantity (m^3)	Number of buildings (trailer, wooden shack with insulation)		Status of certificates of authorization
			Burn	Keep standing	
KAW-35	x	100	8	-	One application for all the sites (to be transmitted to the MDDEP before January 2008)
KAW-45	x	15	-	-	
PJ-1	x	60	5	-	
TQ-1	Outfitting				
TQ-4	x	12	-	2	
PJ-10	x	20	-	-	
PJ-17	x	15	-	1	
TW	x	40	-	-	
K-28	-	-	-	-	
K-61	x	50	-	-	
WB-3	x	20	-	-	
KV-1	x	5	-	-	
SAL-1	x	60	-	-	
SW-27	x	20	-	-	
SW-34	x	15	-	-	
SW-42	x	10	-	-	
WB-9	x	100	10	-	
WHA-1	x	50	-	-	

3.4 MANAGEMENT OF NON-COMBUSTIBLE NON-TOXIC MATERIAL

At most of the sites, non-combustible non-toxic material represents the greatest quantity of debris (empty barrels, equipment parts, domestic appliances, wire meshing, etc.) and is the least likely to be harmful to the environment or to jeopardize the health of animals and humans. Notwithstanding, such material adversely affects the appearance of the landscape. For this reason, wherever possible all waste will be removed from the sites. At the sites KAW-35 and PJ-1, the removal of material and heavy equipment will require more planning and ultimately be costlier. The situation at the site PJ-1 is described in more detail below. As well, certain material and heavy equipment at the sites KAW-35 and PJ-1 will be left behind, necessitating the creation of disposal areas for non-combustible non-toxic waste. Certificates of authorization are required to create waste disposal areas. At the site KAW-35, a waste disposal area has already been located taking into account MDDEP directives.

Batteries and oil will be extracted from the equipment in question and removed from the sites or stored in specially designed areas.

A helicopter will be used to transport the barrel compactor from site to site in the Ungava Trough area. Subsequently, the compactor will be transported by ship to the Labrador Trough area. The compacter can crush roughly 150 barrels per eight-hour workday.

The number of return-trips indicated in Table 7 includes the transportation of non-combustible non-toxic debris as well as hazardous material (section 3.2).

Table 7: Non-combustible non-toxic materials

Site	Workdays		Volume of waste (m^3)	Propane tanks (empty)	Heavy equipment[1]	Transport (empty barrels and other)			Location of waste disposal area
	Barrel crushing (if > than 60)	Barrel cutting without crushing				From site to nearest village	Number of return trips	From village to disposal centre	
KAW-35		-	100	-	2	floatplane	10	train/truck	55º23224 N 66º12248 W
KAW-45		1	5	-	-	floatplane	1	train/truck	
PJ-1		-	100	58	19	snowmobile other	10 20	cargo (NEAS)	To be det.
TQ-1		2	10	6	-	Twin Otter	10	cargo (NEAS)	
TQ-4	2		5	8	-	snowmobile	3	cargo (NEAS)	
PJ-10	1		25	10	-	snowmobile	10	cargo (NEAS)	
PJ-17		-	11	17	1	snowmobile	3	cargo (NEAS)	
TW	1		20	7	-	snowmobile	6	cargo (NEAS)	
K-28	CR		2	3	-	truck		cargo (to be det.)	
K-61	CR		75	-	2	truck		cargo (to be det.)	
WB-3	1		5	1	-	snowmobile	2	cargo (NEAS)	
KV-1		1	5	-	-	Twin Otter	2	cargo (NEAS)	
SAL-1	3		15	15	-	Twin Otter	4	cargo (NEAS)	
SW-27	1		15	-	-	Twin Otter	2	cargo (NEAS)	
SW-34	11		40	42	-	container/ truck	3	cargo (Xstrata)	
SW-42	1		10	-	-	Twin Otter		cargo (NEAS)	
WB-9	1		20	-	-	Twin Otter	3	cargo (NEAS)	
WHA-1		1	5	-	-	snowmobile	1	cargo (NEAS)	

[1]: Heavy equipment includes muskegs, trailers, tractors, conveyors and other mineral exploration equipment.

3.4.1 Site PJ-1

In sectors 4 and 5 of the site PJ-1, there are 19 pieces of equipment (crane, tractor, conveyor, rock crusher, generator, motor, etc.), two muskegs and nine 10,000-L reservoirs. These pieces of equipment are too heavy to be removed from the site by snowmobile and sled, but also too numerous to be left in the waste disposal area proposed for the site. Consequently, a mechanic, a welder and an operator will be called on to assist with the removal of the equipment from the site. The contract will be awarded to Georges Gagnon who is a foreman for the construction division of the Makivik Corporation and has the experience necessary to carry out this type of task in a remote region.

The ideal period for performing this task is December (2008), once the ground is frozen and covered with snow. Six weeks will be needed to carry out the work. Since the distance between Aupaluk and the site is 45 km, a temporary camp will be set up at the site.

A shovel and a tractor owned by the community will be driven from Aupaluk to the site PJ-1. The two vehicles will be used to dislodge the pieces of heavy equipment abandoned at the site and to transport them temporarily to Aupaluk. Metal meshing already present at the site will be used to construct large sleds to carry the heavy equipment. The 10,000-L reservoirs will be cut in half to carry various material. Approximately 20 return trips will be necessary to remove all the heavy equipment from the site.

Of the heavy equipment at the site, the crane and the two tractors will be reused in Aupaluk or could be shipped to another village for use. Following a thorough evaluation, any equipment which is no longer functional will be shipped to a recycling centre.

3.4.2 Site SW-34

In the winter of 2008, Xstrata Exploration staff will transport three containers from Cross Lake to Esker Lake (SW-34) using a tractor equipped with tracks (D8). In the summer of 2008, barrel crushing work will be carried out, and metal debris as well as crushed and non-crushed (containing residue) barrels will be prepared for removal from the site. For information purposes, one container holds roughly 80 barrels, 800 crushed barrels or 98 propane tanks. In the winter of 2009, the containers containing the barrels and metal debris will be removed from the site with a tractor equipped with tracks. The containers and their contents will subsequently be managed with the waste at the Raglan mine.

3.5 CONTAMINATED SOIL TREATMENT

The MDDEP inspection report of the sites PJ-1 and KAW-35 should be released only in the spring of 2008. The report will include recommendations concerning contaminated soil. As a result, some delay is expected in obtaining certificates of authorization for this work.

In the meantime, preliminary information has been obtained from an environmental consultant concerning the treatment of soil contaminated with petroleum hydrocarbons. The proposed rehabilitation method is on-site bio-treatment, involving the following steps: 1) excavation of all contaminated soil, 2) placement of soil on a moisture barrier, and 3) addition of nutrients, oxidizing agents and aeration ducts. Regardless of the scope of the contamination, only one treatment per site is necessary in this manner. On the other hand, monitoring of the treated soil should be performed the following year. Ideally, contaminated soil treatment should be carried out at the same time as other clean-up activities. Table 8 summarizes for each site the labour, return trips, and workdays needed to complete contaminated soil treatment. The means of transportation to each site from the nearest village is the same as indicated in section 3.1.1 (field logistics, summer), except for the site PJ-17 where ATVs could be used depending on trail conditions.

Table 8: Contaminated soil treatment

Site	Contamination area (m^2)	Workdays	Return trips[1]	Specialists
KAW-35	103	7	10	2
KAW-45	-	-	-	-
PJ-1	115	7	14	2
TQ-1	2	2	4	2
TQ-4	2	2	4	2
PJ-10	20	3	6	2
PJ-17	125	7	14	2
TW	2	2	4	2
K-28	15	3	1[2]	2
K-61	75	7	1[2]	2
WB-3	2,5	2	4	2
KV-1	2	2	4	2
SAL-1	-	-	-	-
SW-27	2,5	2	4	2
SW-34	90	7	14	2
SW-42	12	3	6	2
WB-9	25	3	6	2
WHA-1	6	2	4	2

[1]: Additional transportation not included in labour transportation (refer to section 3.1.1, fieldwork logistics, summer).
[2]: Does not include the transportation completed by truck from the CR camp at the site.

3.6 TREATMENT OF MINE TAILINGS (ACID MINE DRAINAGE)

Acid mine drainage has been identified at the site KAW-35. A water sample taken from the now-flooded mine workings revealed an acid pH of 3.27 (21.7ºC). Further analysis carried out by the MDDEP on a second water sample also revealed higher than normal levels of copper, nickel and iron (Martin Duclos, personal communication). As well, although pH levels of mine tailings at the site PJ-1 do not seem to indicate acid mine drainage (neutral pH), analysis carried out by the MDDEP nonetheless revealed higher than acceptable concentrations of heavy metals (Martin Duclos, personal communication). Analysis should also be performed on effluents near the mine tailings at the site TW. Table 9 shows the concentrations of metals found in effluent at the sites KAW-35 and PJ-1.

Table 9: Concentration of heavy metals in effluent at the sites KAW-35 and PJ-1

Site	Metals	Concentration (mg/L)	Standard (mg/L)[1]	
			Acceptable concentration	Acceptable concentration of a grab sample
KAW-35	Copper	0.42	0.3	0.6
	Iron	8.1	3.0	6.0
	Nickel	1.6	0.5	1.0
PJ-1	Copper	0.53	0.3	0.6
	Iron	5.0	3.0	6.0
	Nickel	0.6	0.5	1.0

[1]: Mining industry directive 019.

To mitigate acid mine drainage, contact between the tailings and both oxygen and precipitation must be eliminated. At the site KAW-35, two solutions are possible: 1) place the tailings in the existing test well, or 2) cover the tailings with a moisture barrier to eliminate contact with precipitation. The first solution could prove more costly given the absence of information about the well (orientation, dimensions, etc.). Moreover, the placement of tailings in the test well could cause already highly acidic water in the well to leak into the environment.

The company Golder Associates is experienced in dealing with acid mine drainage, and is already studying the situation at the site KAW-35. A service offer should be submitted to the project co-ordinator in the winter of 2008. An initial characterization phase is planned for the summer of 2008. It would also be appropriate to characterize the acid mine drainage, if applicable, at the sites PJ-1 and TW. Due to the inherent logistics, acid mine drainage treatment work will only be organized the year after the characterizations have been completed. A backhoe is furthermore required to manipulate mine tailings. The company Belham Ltd. possesses a backhoe that is specially designed for remote regions.

4 HUMAN RESOURCES

Except for the environmental consultants required for the treatment of contaminated soil and acid mine drainage, human resources for the project fall into two categories: 1) KRG employees, which is to say the project co-ordinator and environmental technicians, and 2) local workers. The project co-ordinator works full-time on the project while the environmental technicians only work full-time during the summer season. Experience acquired in the summer of 2007 suggests that at least two technicians are needed to complete the clean-up of all the sites according to the schedule. As was the case during the clean-up pilot projects and in the summer of 2007, local workers will also be hired to work on the project, meaning workers from the communities located closest to each site. Summer clean-up work at each site requires an environmental technician and between three and six workers. For their part, snowmobile transportation work and Twin Otter unloading work generally require four workers.

5 WORK SCHEDULE

Table 10 shows the proposed work schedule for the rehabilitation at the 18 sites between now and 2012. In order to stay on schedule, work should be carried out at three or four new sites every summer. In 2008 and 2009, the workload will be heavier, since it will also be necessary to complete the work undertaken at the sites PJ-1 and KAW-35. Activities planned for the summer of 2012 are also indicated in Table 10, even though the current agreement expires in March 2012. The 2012 summer work is intended solely to carry out the environmental monitoring of the contaminated soil treated the year before.

In the summer of 2008, priority will be given to completing summer clean-up work at the sites PJ-17 and SW-34, to continue the clean-up of the sites PJ-1 and KAW-35, and to start clean-up work at three new sites: KAW-45, WB-3 and SAL-1. The bio-treatment of contaminated soil, the gathering of non-combustible material, the crushing of barrels, the burning of buildings (only at the site KAW-35) and characterization analyses of acid mine drainage should all be carried out in the summer of 2008. For their part, the treatment of acid mine drainage at the site KAW-35, the creation of waste disposal areas at the sites PJ-1 and KAW-35, and the burning of buildings also at the site PJ-1 will have to wait for the summer of 2009. Rehabilitation work at the site

PJ-1 (scheduled for the winter of 2008–2009) should be completed before burning any buildings since two buildings are used during fieldwork.

Regarding the sites KAW-45 and WB-3, it should be possible to complete all summer clean-up work in the summer of 2008. Only one day will be necessary to clean up the site KAW-45 and this work may be completed immediately preceding or following work at the site KAW-35. The site WB-3 is situated between the village of Kangiqsujuaq and the Parc national des Pingualuit, at Lake Qulusuttalik, where a park shelter is to be constructed in the spring of 2008. For this reason, the rehabilitation of this site has been made a priority. In addition, workers will be able to take advantage of park facilities, reducing field logistics for this site. The final site (SAL-1) where clean-up work is scheduled in the summer of 2008 is located close to the site SW-34 and workers will be able to take advantage of Xstrata and/or Goldbrook facilities. This arrangement remains nonetheless to be confirmed and, as a result, there is a chance that summer clean-up work at this site may not be completed entirely in the summer of 2008.

In the summer of 2009, it would be appropriate to effect the clean-up of other sites in the Ungava Trough area, except for the sites K-61 and K-28. This approach will minimize heavy equipment transportation requirements, including the barrel compactor which is scheduled to be used in the same sector the preceding summer. Moreover, if exploration camp facilities can again be used, this will reduce fieldwork logistics for these sites and the KRG will be able to focus its attention on the sites PJ-1 and KAW-35 where temporary camps will be required in the summer of 2009 to complete clean-up work. Once the rehabilitation of the sites in the Ungava Trough area have been completed (WB-3, SW-34, SAL-1, SW-42, WB-9, SW-27 and KV-1), the barrel compactor will be transported to the villages of Aupaluk and Tasiujaq for clean-up work at the sites TQ-1, TQ-4 and PJ-10 in the summer of 2010. During work at the site TQ-1, workers will be able to use the outfitting facilities.

Finally, the summer of 2011 will be devoted to the sites K-61, K-28, TW and WHA-1. The sites K-61 and K-28 are located on the property of Canadian Royalties and their rehabilitation is already included in the company's abandoned mineral exploration site planning. Canadian Royalties possesses a barrel compactor and clean-up work at both these sites will be facilitated by road access and port facilities. As was indicated in section 3.6, the site TW should be inspected prior to clean-up work, in the summer of 2008 for example. Finally, two days will be necessary to clean up the site WHA-1, including the treatment of contaminated soil.

The proposed work schedule also identifies work to be carried out in the winter, based among other things on the availability of snowmobiles. The KRG possesses four snowmobiles intended essentially for use in the regions of Tasiujaq and Aupaluk in the winters of 2007–2008, 2008–2009 and 2010–2011 and in the region of Kangirsuk in the winter of 2010–2011. For the sites WB-3 and WHA-1, snowmobiles will have to be rented from residents in the nearest village.

Table 10: Rehabilitation work schedule for the 18 abandoned mineral exploration sites

Site	Winter 2007–2008	Summer 2008	Winter 2008–2009	Summer 2009	Winter 2009–2010	Summer 2010	Winter 2010–2011	Summer 2011	Winter 2011–2012	Summer 2012
KAW-35										
KAW-45										
PJ-1										
TQ-1										
TQ-4										
PJ-10										
PJ-17										
TW										
K-28										
K-61										
WB-3										
KV-1										
SAL-1										
SW-27										
SW-34										
SW-42										
WB-9										
WHA-1										

- Clean-up and treatment of contaminated soil and acid mine drainage, if applicable
- Winter transportation by snowmobile
- Winter transportation by Twin Otter
- Winter transportation, other than by snowmobile and Twin Otter
- Environmental monitoring of treated contaminated soil

6 COMMUNICATIONS

In the winter of 2012, visits to each of the communities that participated in the clean-up work will be organized in order to present the project, specifically the results of the rehabilitation work completed at each of the sites. A final report will be transmitted to the Inuit, Naskapi and Innu communities, and a follow-up meeting is planned with project partners.

7 BUDGET, 2008–2012

Based on the expertise acquired during earlier pilot projects (KRG, 2006 and 2007a) and during the 2007 summer clean-up work, as well as the information contained in the summary report on the 18 abandoned mineral exploration sites (KRG, 2007b), the budget proposed in the report *Remedial Measures and Completion of the Assessment of Nunavik's Abandoned Mining Exploration Sites* (Barrett and Lanari, 2003) was revised. In 2003, the costs of the project were estimated at $4.1 million. These costs included not only the rehabilitation of the 18 sites but the assessment of the 402 other mineral exploration sites identified by the Groupe d'études inuites et circumpolaires (Duhaime and Comtois, 2002) which have never be inspected. The RCP presented herein deals solely with the rehabilitation of the 18 sites covered under the agreement, excluding the costs incurred in previous years as shown in tables 1 and 2. The RCP totals $3,497,265.

Table 11 shows for each site, regardless of the year of clean-up work, the costs for each clean-up activity. Appendix B presents in detail the costs shown in Table 11. The RCP includes provisions of 15 to 30% mainly for the transportation and disposal or hazardous material and waste, as well as contaminated soil and acid mine drainage treatment. Regarding acid mine drainage, characterization costs for the three sites (KAW-35, PJ-1 and TW) and backhoe activities at one site (KAW-35) have been included in the RCP. For their part, acid mine drainage mitigation measures have not yet been planned. Unpredictable weather conditions in the North can also generate additional costs, which have been estimated in the RCP at 15%. Table 12 provides a breakdown of clean-up activity costs according to year.

According to the GRP and the RCP, the in-kind contributions of the Makivik Corporation between 2008 and 2012 are currently expected to reach $164,029, including the hazardous material and waste transportation services to be rendered by Nunavut Eastern Arctic Shipping (NEAS) and Air Inuit. Taking into account transportation provisions of 15 to 30% (or roughly $35,000), total transportation expenditures should be around $200,000. This total excludes the participation of Cruise North Expeditions, specifically at the site PJ-17. In 2008, the in-kind contributions of the Makivik Corporation are expected to be $40,000, barring unexpected costs.

From among the FRAN contributors, Xstrata and Canadian Helicopters have submitted in-kind contribution offers for the entire project. In 2008, Xstrata is planning an in-kind contribution of $41,700 for on-going work at the site SW-34. This contribution may be broken down as follows: 1) 14 days accommodations for three workers, $2,100; 2) 20 hours of helicopter time, $34,000; and 3) one Xstrata employee for 14 days; $5,600. As for Canadian Helicopters, 14.9 hours of flight time remain to be used over the course of project, $22,350. For the moment, no in-kind contribution from Canadian Helicopters is planned for 2008.

Table 11: Summary of clean-up costs at each abandoned mineral exploration site

	One-time costs	KAW 35	KAW 45	PJ 1	TQ 1	TQ 4	PJ 10	PJ 17	TW	K 28	K 61	WB 3	KV 1	SAL 1	SW 27	SW 34	SW 42	WHA 1	WB 9	Total	
TRANSPORT AND DISPOSAL - HAZARDOUS MATERIAL																					
Recovery centre		$484	$145	$6 349	$11 614	$176	$1 374	$160	$1 166	$107	$1 301	$581	$145	$125	$1 771	$11 767	$608	$290	$1 097	$39 260	$39 260
Transportation south (NEAS)		$0	$0	$2 803	$5 606	$53	$835	$138	$670	$92	$3 173	$231	$17	$75	$1 517	$5 747	$414	$96	$459	$21 928	$21 928
Transportation south (train)		$1 994	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1 994	$1 994
Subtotal		**$2 478**	**$145**	**$9 152**	**$17 220**	**$229**	**$2 209**	**$298**	**$1 836**	**$199**	**$4 474**	**$811**	**$162**	**$200**	**$3 288**	**$17 514**	**$1 022**	**$386**	**$1 557**	**$63 182**	**$63 182**
BARREL COMPACTOR																					
Purchase	**$26 105**																				**$26 105**
Operating costs		$0	$0	$0	$0	$3 358	$3 527	$0	$2 241	$0	$0	$1 508	$0	$1 007	$2 228	$1 030	$787	$0	$702	$16 389	$16 389
Subtotal		**$0**	**$0**	**$0**	**$0**	**$3 358**	**$3 527**	**$0**	**$2 241**	**$0**	**$0**	**$1 508**	**$0**	**$1 007**	**$2 228**	**$1 030**	**$787**	**$0**	**$702**	**$16 389**	**$42 494**
SUMMER CLEAN-UP, SOIL TREATMENT AND ACID DRAINAGE																					
Clean-up		$41 141	$6 739	$48 138	$17 193	$23 520	$25 030	$16 420	$25 785	$10 370	$14 330	$30 090	$4 969	$32 832	$20 298	$34 065	$21 464	$5 501	$21 204	$399 090	$399 090
Contaminated soil treatment		$39 985	$0	$33 368	$21 564	$23 046	$22 009	$28 170	$17 488	$20 265	$26 505	$19 891	$24 699	$0	$24 699	$32 323	$22 121	$21 968	$21 750	$399 852	$399 852
Acid mine drainage		$182 666	$0	$21 108	$0	$0	$0	$0	$18 606	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$222 381	$222 381
Environmental monitoring	**$10 000**	$8 106	$0	$2 481	$1 608	$1 608	$1 608	$2 481	$4 316	$4 316	$4 316	$7 831	$3 647	$0	$3 647	$7 831	$3 647	$2 212	$3 647	$63 301	**$73 301**
Subtotal		**$271 899**	**$6 739**	**$105 095**	**$40 365**	**$48 174**	**$48 648**	**$47 071**	**$66 194**	**$34 951**	**$45 151**	**$57 812**	**$33 315**	**$32 832**	**$48 644**	**$74 219**	**$47 232**	**$29 681**	**$46 601**	**$1 084 623**	**$1 094 623**
WINTER TRANSPORTATION																					
Snowmobile		$0	$0	$15 400	$0	$3 676	$9 200	$3 631	$5 978	$0	$0	$4 657	$0	$0	$0	$0	$0	$2 299	$0	$44 842	$44 842
Twin Otter		$0	$0	$0	$32 492	$0	$0	$0	$0	$0	$0	$0	$8 002	$21 567	$7 714	$0	$7 783	$0	$10 120	$87 678	$87 678
Other		$0	$0	$452 370	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$56 456	$0	$0	$0	$508 826	$508 826
Community costs		$3 400	$0	$0	$6 730	$0	$0	$0	$0	$0	$0	$0	$1 410	$3 460	$2 370	$0	$2 370	$0	$3 460	$23 200	$23 200
Subtotal		**$3 400**	**$0**	**$467 770**	**$39 222**	**$3 676**	**$9 200**	**$3 631**	**$5 978**	**$0**	**$0**	**$4 657**	**$9 412**	**$25 027**	**$10 084**	**$56 456**	**$10 153**	**$2 299**	**$13 580**	**$664 545**	**$664 545**
SUMMER TRANSPORTATION																					
Floatplane		$9 815	$1 312	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$11 127	$11 127
Transportation of waste to south (NEAS)		$0	$0	$10 204	$1 701	$1 701	$3 401	$3 401	$3 401	$0	$6 803	$3 401	$1 701	$3 401	$1 701	$10 204	$1 701	$0	$1 701	$54 423	$54 423
Subtotal		**$9 815**	**$1 312**	**$10 204**	**$1 701**	**$1 701**	**$3 401**	**$3 401**	**$3 401**	**$0**	**$6 803**	**$3 401**	**$1 701**	**$3 401**	**$1 701**	**$10 204**	**$1 701**	**$0**	**$1 701**	**$65 550**	**$65 550**
HUMAN RESOURCES																					
Environmental technicians (2)		$4 130	$1 140	$4 360	$6 190	$6 650	$7 110	$2 060	$5 570	$4 650	$5 340	$1 715	$3 845	$3 095	$5 225	$4 130	$5 225	$4 190	$5 225	$79 850	$79 850
Project co-ordinator		$5 715	$5 714	$5 715	$13 333	$13 333	$13 333	$5 714	$10 000	$10 000	$10 000	$5 714	$10 000	$5 715	$10 000	$5 714	$10 000	$10 000	$10 000	$160 000	$160 000
Travel expenses	**$99 840**	$280	$280	$560	$0	$560	$560	$560	$560	$280	$280	$140	$140	$140	$140	$280	$140	$560	$140	$5 600	**$105 440**
Subtotal		**$10 125**	**$7 134**	**$10 635**	**$19 523**	**$20 543**	**$21 003**	**$8 334**	**$16 130**	**$14 930**	**$15 620**	**$7 569**	**$13 985**	**$8 950**	**$15 365**	**$10 124**	**$15 365**	**$14 750**	**$15 365**	**$245 450**	**$345 290**
COMMUNICATIONS	**$62 047**																				**$62 047**
																					$62 047

		KAW 35	KAW 45	PJ 1	TQ 1	TQ 4	PJ 10	PJ 17	TW	K 28	K 61	WB 3	KV 1	SAL 1	SW 27	SW 34	SW 42	WHA 1	WB 9	Total	Total
COST PER SITE		$297 717	$15 330	$602 856	$118 031	$77 681	$87 989	$62 736	$95 781	$50 080	$72 049	$75 758	$58 575	$71 419	$81 309	$169 547	$76 259	$47 116	$79 505	**$2 139 739**	
ONE-TIME COSTS	**$197 992**																			**$197 992**	
SUBTOTAL																					**$2 337 731**
KRG ADMINISTRATION COSTS (10%)																					$233 773
HAZARDOUS MAT., SOIL TREATMENT AND ACID DRAINAGE (PROVISIONS, 15-30%)																					$575 102
WEATHER CONDITIONS (PROVISIONS, 15%)																					$350 660
TOTAL																					**$3 497 265**

Table 12: Breakdown of clean-up activity costs according to year

EXPENDITURES	2008	2009	2010	2011	2012	Total
TRANSPORT AND DISPOSAL - HAZARDOUS MATERIAL						
Recovery centre	$19,611	$3,621	$13,164	$2,864	$0	**$39,260**
Transportation south (NEAS)	$8,994	$2,407	$6,495	$4,031	$0	**$21,928**
Transportation south (train)	$1,994	$0	$0	$0	$0	**$1,994**
WINTER TRANSPORTATION						
Snowmobile	$19,031	$4,657	$0	$12,876	$8,277	**$44,842**
Twin Otter	$0	$21,567	$33,619	$32,492	$0	**$87,678**
Other	$480,598	$28,228	$0	$0	$0	**$508,826**
Community costs	$3,400	$3,460	$9,610	$6,730	$0	**$23,200**
SUMMER TRANSPORTATION						
Floatplane	$11,127	$0	$0	$0	$0	**$11,127**
Transportation of waste to south (NEAS)	$30,613	$6,803	$6,803	$10,204	$0	**$54,423**
SUMMER CLEAN-UP, SOIL TREATMENT AND ACID DRAINAGE						
Clean-up	$164,786	$112,574	$65,743	$55,987	$0	**$399,090**
Contaminated soil treatment	$153,737	$93,270	$66,619	$86,226	$0	**$399,852**
Acid mine drainage	$64,381	$158,000	$0	$0	$0	**$222,381**
Barrel compactor	$29,650	$3,717	$6,886	$2,241	$0	**$42,494**
Environmental monitoring	$0	$30,730	$16,588	$6,824	$19,159	**$73,301**
HUMAN RESOURCES	$87,831	$85,040	$86,029	$86,390	$0	**$345,290**
COMMUNICATIONS	$8,100	$8,100	$8,100	$8,100	$29,647	**$62,047**
Subtotal	**$1,083,853**	**$562,173**	**$319,655**	**$314,966**	**$57,083**	**$2,337,731**
KRG ADMINISTRATION COSTS (10%)	$108,385	$56,217	$31,965	$31,497	$5,708	**$233,773**
HAZARDOUS MAT., SOIL TREATMENT AND ACID DRAINAGE (PROVISIONS, 15-30%)	$270,963	$168,652	$63,931	$62,993	$8,562	**$575,102**
WEATHER CONDITIONS (PROVISIONS, 15%)	$162,578	$84,326	$47,948	$47,245	$8,562	**$350,660**
Total	**$1,625,780**	**$871,369**	**$463,500**	**$456,700**	**$79,916**	**$3,497,265**

8 CONCLUSIONS

The GRP identifies for each of the 18 sites covered under the agreement the rehabilitation work to be carried out, the schedule for this work and the related costs. In 2008, priority will be given to completing summer clean-up work at the sites PJ-17 and SW-34 and to continuing the clean-up of the sites PJ-1 and KAW-35, where work is scheduled to be completed in 2009. Clean-up work at all the sites, with the exception of PJ-1 and KAW-35, will require only a single summer–winter cycle. Environmental monitoring will nonetheless be necessary a year following the treatment of contaminated soil. Between three and four new sites will be cleaned each summer: KAW-45, WB-3 and SAL-1 in 2008; KV-1, SW-27, SW-42 and WB-9 in 2009; TQ-1, TQ-4 and PJ-10 in 2010; as well as TW, K-28, K-61 and WHA-1 in 2011. As indicated in the GRP, specialists will be needed to treat contaminated soil and acid mine drainage as well as for the transportation of the heavy equipment at the site PJ-1. KRG resources will include a project co-ordinator and two environmental technicians. Between 2008 and 2012, the GRP totals $3,497,265 while the costs incurred between 2005 and 2007 total $526,360. Together, the potential total cost for the rehabilitation of the 18 “major” sites will be $4,023,625. The GRP will be revised on the completion of work each year.

9 REFERENCES

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APPENDIX A

MAPS OF THE 18 "MAJOR" ABANDONED MINERAL EXPLORATION SITES

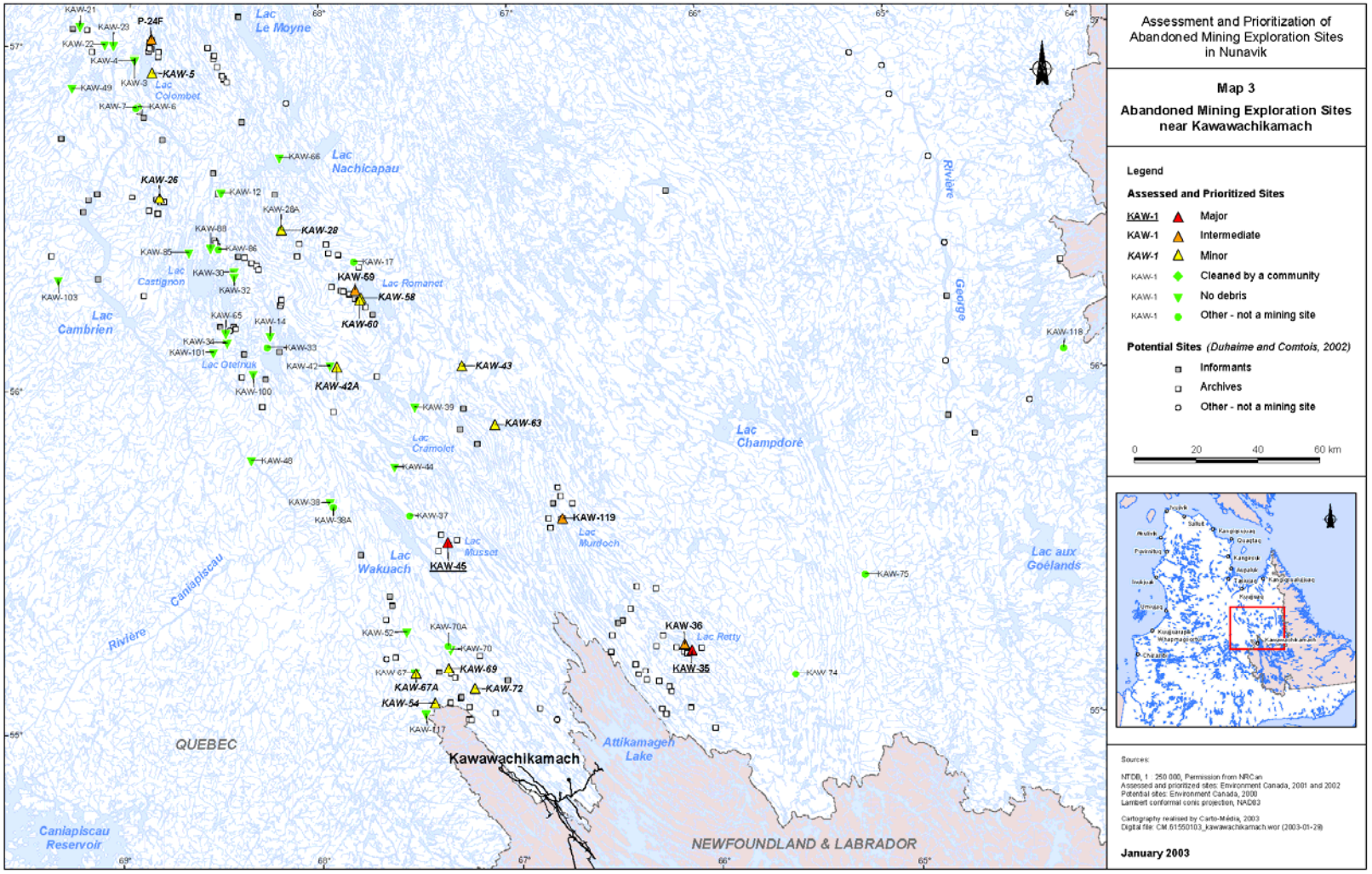

Figure 1: Labrador Trough. “Major” Abandoned Mineral Exploration Sites KAW-35 and KAW-45

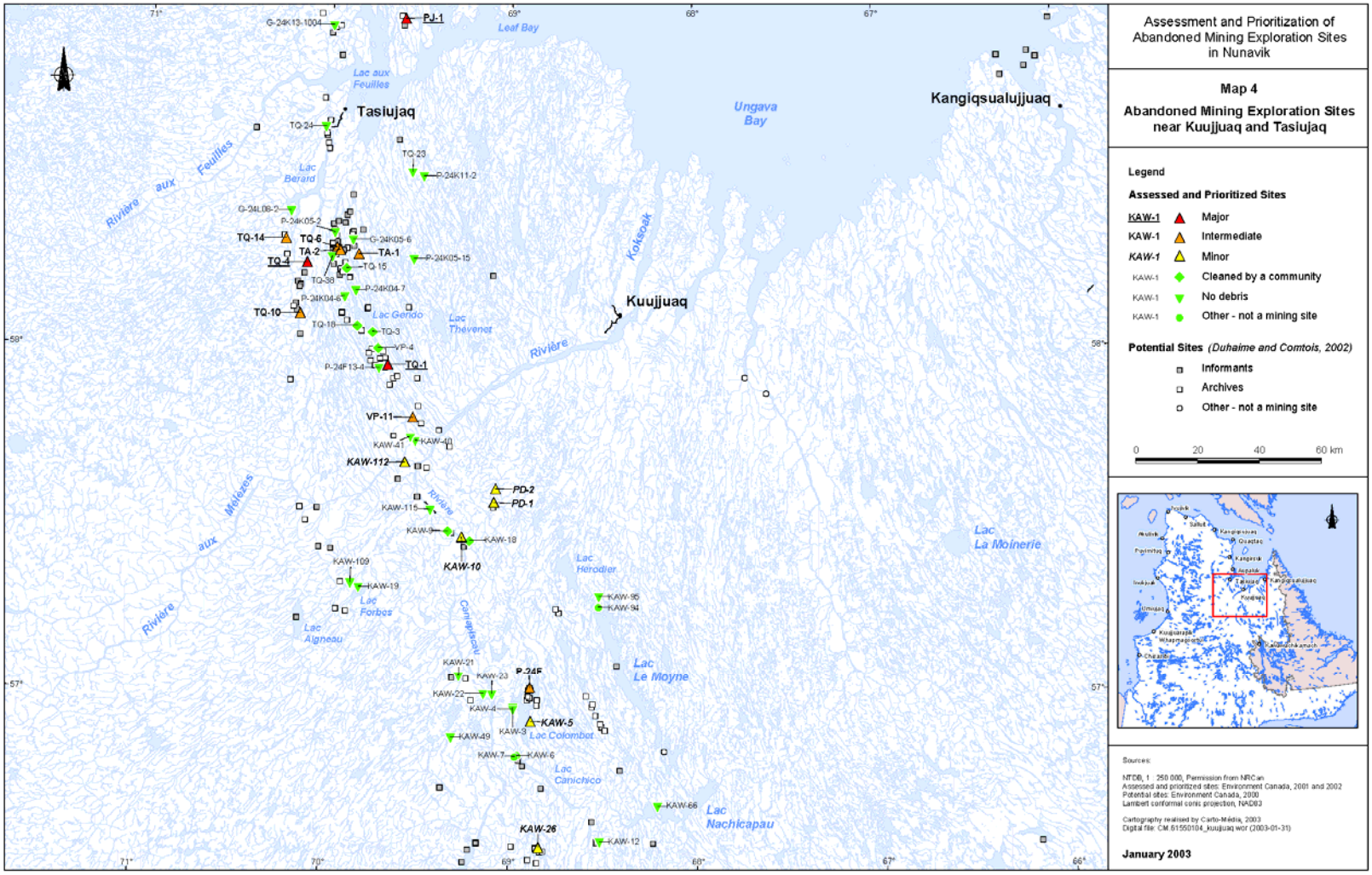

Figure 2: Labrador Trough. “Major” Abandoned Mineral Exploration Sites TQ-1, TQ-4 and PJ-1

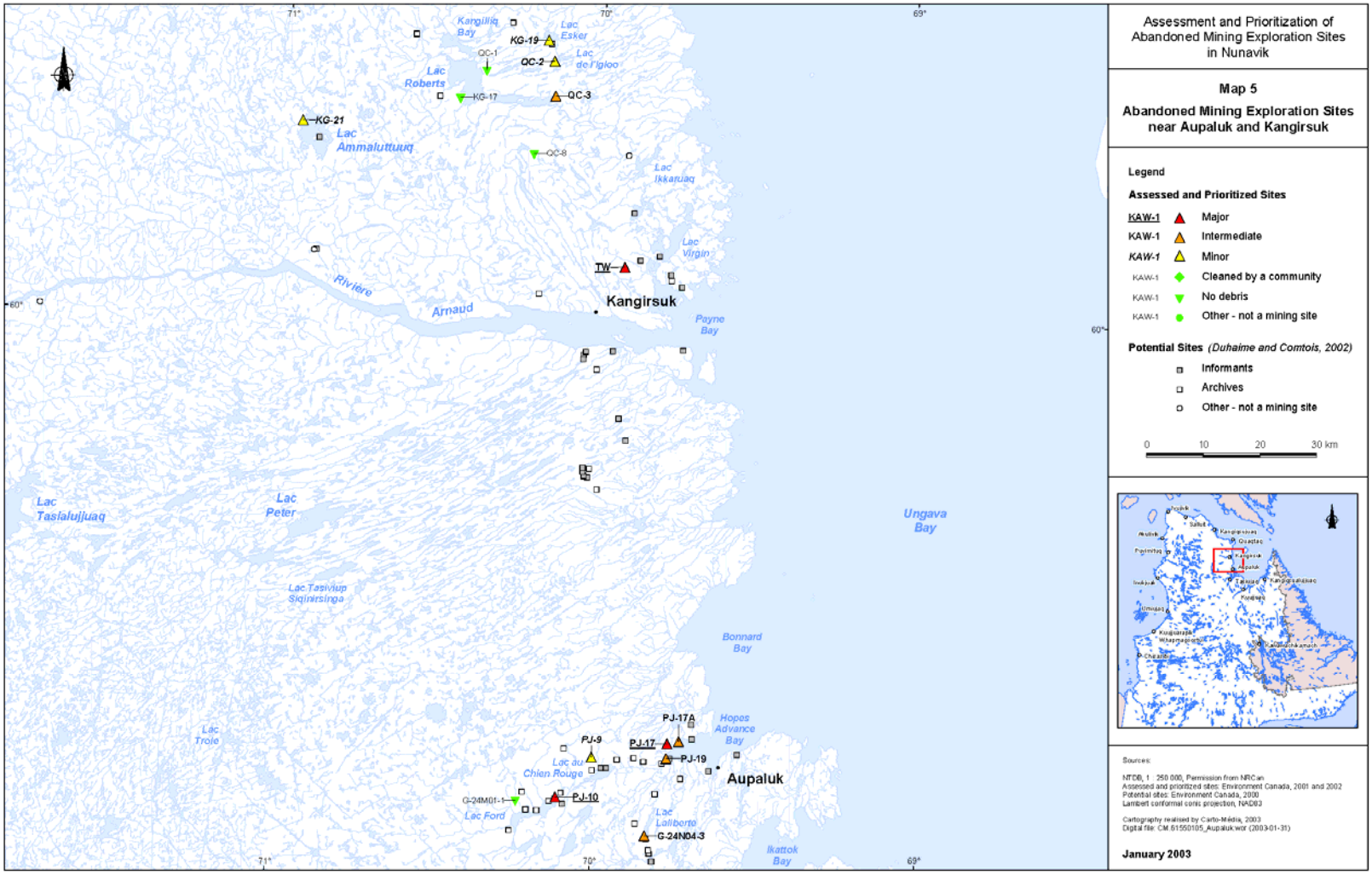

Figure 3: Labrador Trough. “Major” Abandoned Mineral Exploration Sites PJ-10, PJ-17 and TW

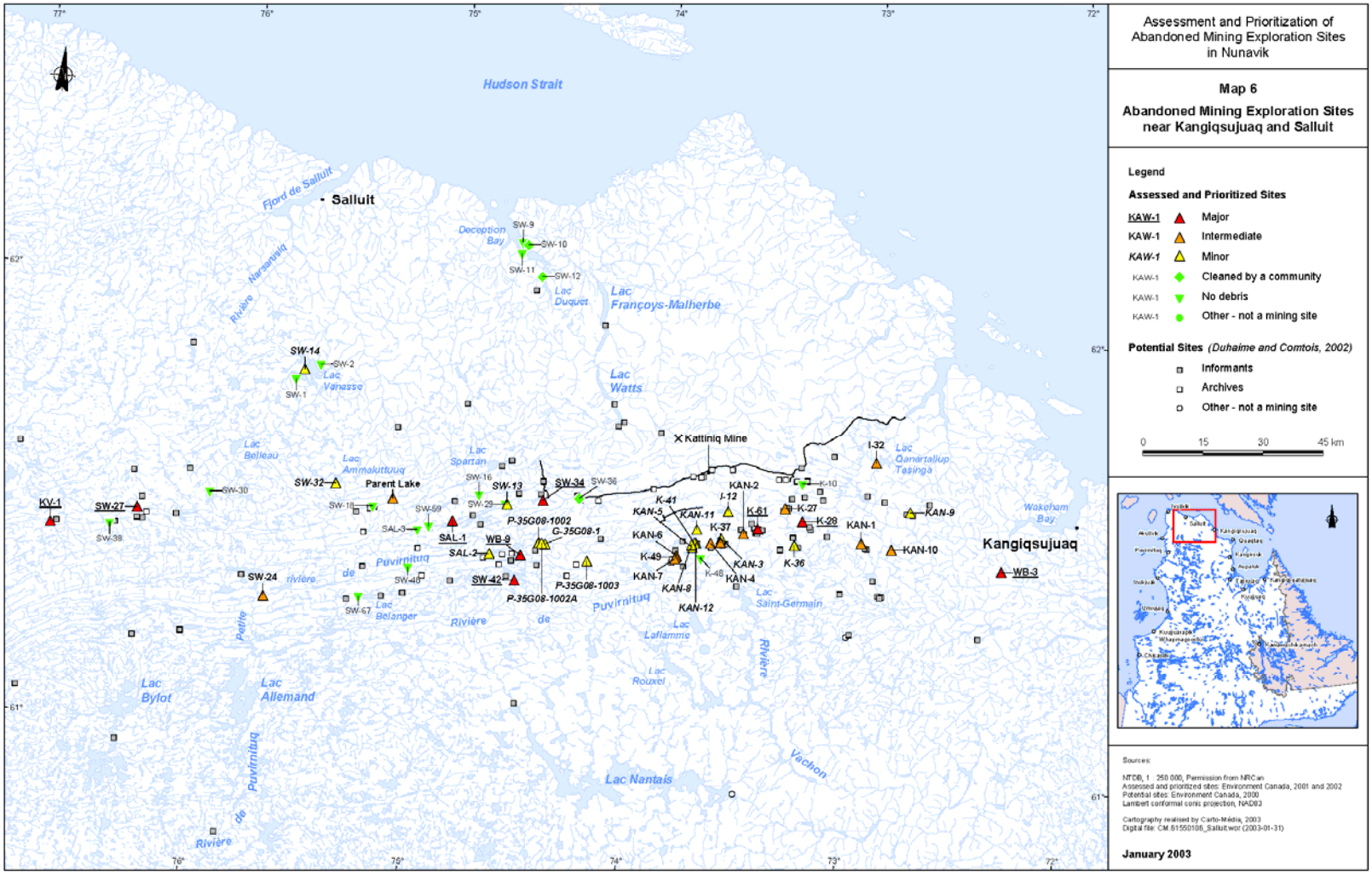

Figure 4: Ungava Trough. “Major” Abandoned Mineral Exploration Sites K-28, K-61, KV-1, SAL-1, SW-27, SW-34, WB-3 and WB-9

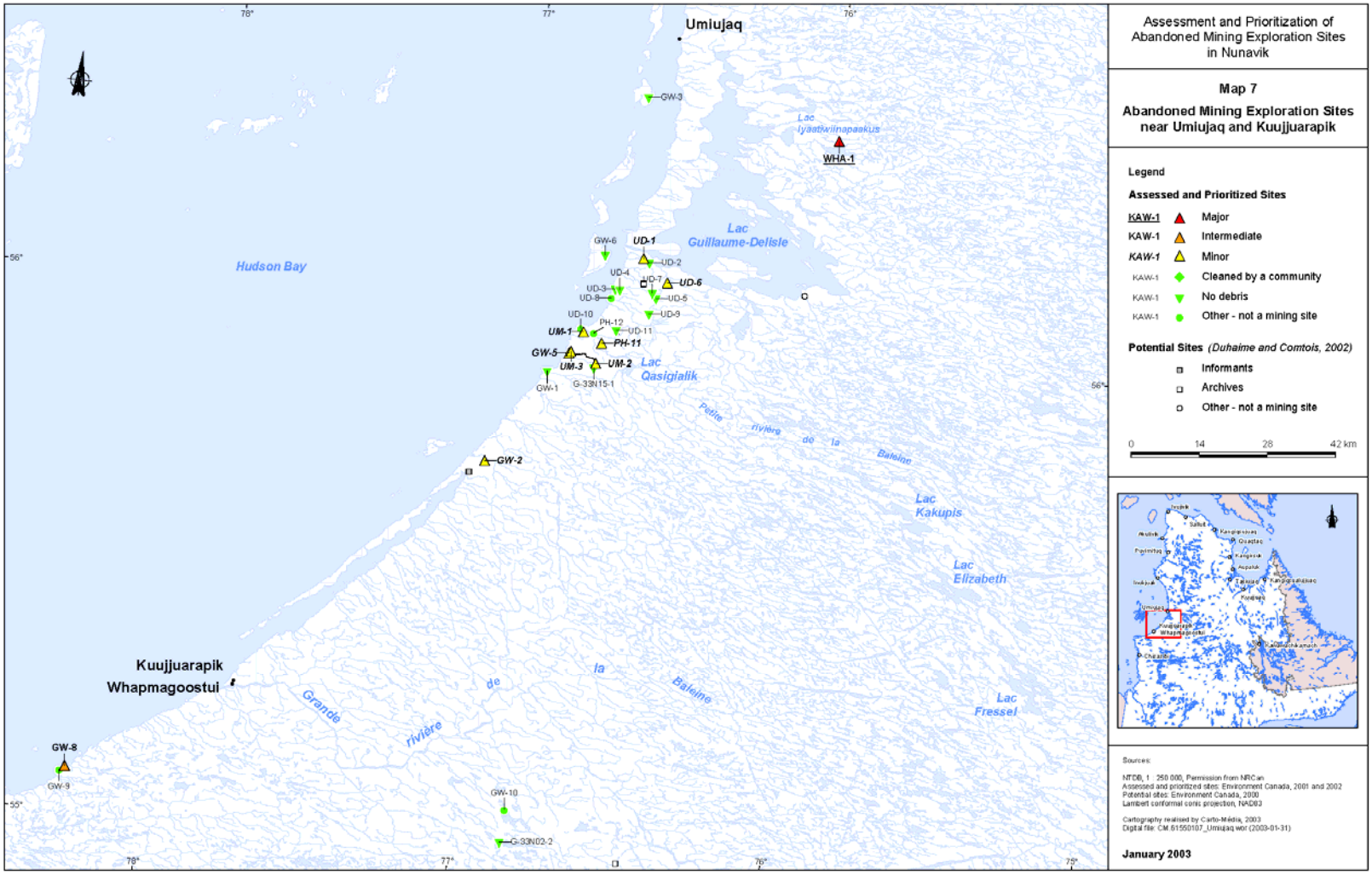

Figure 5: Hudson Bay. “Major” Abandoned Mineral Exploration Site WHA-1

APPENDIX B

TABLES OF DETAILED COSTS FOR CALCULATING THE REVISED COST OF THE PROJECT

Table B.1: Transportation and disposal of hazardous waste

	KAW 35	KAW 45	PJ 1	TQ 1	TQ 4	PJ 10	PJ 17	TW	K 28	K 61	WB 3	KV 1	SAL 1	SW 27	SW 34	SW 42	WHA 1	WB 9	Total
DIESEL (L)	150	150	1 230	16 400	150	1 400		1 230			675	50		1 650	16 400	700	280	410	40 875
Transport & Storage																			
barrels (minimum 1 barrel)	1	1	6	80	1	7		6			4	1		9	80	4	2	2	204
cost to store (per bar'l)	$122,50	$122,50	$122,50	$122,50	$122,50	$122,50		$122,50			$122,50	$122,50		$122,50	$122,50	$122,50	$122,50	$122,50	
+ 4% insurance	$4,90	$4,90	$29,40	$392,00	$4,90	$34,30		$29,40			$19,60	$4,90		$44,10	$392,00	$19,60	$9,80	$9,80	$999,60
subtotal	$127,40	$127,40	$764,40	$10 192,00	$127,40	$891,80		$764,40			$509,60	$127,40		$1 146,60	$10 192,00	$509,60	$254,80	$254,80	$25 989,60
GST (6%)	$7,64	$7,64	$45,86	$611,52	$7,64	$53,51		$45,86			$30,58	$7,64		$68,80	$611,52	$30,58	$15,29	$15,29	$1 559,38
QST (7,5%)	$10,13	$10,13	$60,77	$810,26	$10,13	$70,90		$60,77			$40,51	$10,13		$91,15	$810,26	$40,51	$20,26	$20,26	$2 066,17
subtotal	$145,17	$145,17	$871,03	$11 613,78	$145,17	$1 016,21		$871,03			$580,69	$145,17		$1 306,55	$11 613,78	$580,69	$290,34	$290,34	$29 615,15
Transport (NEAS)																			
tot. estimated weight (kilos)			1 230	16 400	150	1 400		1 230			675	50		1 650	16 400	700	280	410	40575
boat: $250,10/ ton, 25¢ per kilo			$307,50	$4 100,00	$37,50	$350,00		$307,50			$168,75	$12,50		$412,50	$4 100,00	$175,00	$70,00	$102,50	$10 143,75
+20% overload			$61,50	$820,00	$7,50	$70,00		$61,50			$33,75	$2,50		$82,50	$820,00	$35,00	$14,00	$20,50	$2 028,75
subtotal			$369,00	$4 920,00	$45,00	$420,00		$369,00			$202,50	$15,00		$495,00	$4 920,00	$210,00	$84,00	$123,00	$12 172,50
GST (6%)			$22,14	$295,20	$2,70	$25,20		$22,14			$12,15	$0,90		$29,70	$295,20	$12,60	$5,04	$7,38	$730,35
QST (7,5%)			$29,34	$391,14	$3,58	$33,39		$29,34			$16,10	$1,19		$39,35	$391,14	$16,70	$6,68	$9,78	$967,71
subtotal			$420,48	$5 606,34	$51,28	$478,59		$420,48			$230,75	$17,09		$564,05	$5 606,34	$239,30	$95,72	$140,16	$13 870,56
total	**$145,17**	**$145,17**	**$1 291,51**	**$17 220,12**	**$196,45**	**$1 494,80**		**$1 291,51**			**$811,44**	**$162,26**		**$1 870,60**	**$17 220,12**	**$819,98**	**$386,06**	**$430,50**	**$43 485,71**
ANTIFREEZE (L)			205																205
Transport & Storage																			
barrels (minimum 1 barrel)			1																1
cost to store (per bar'l)			$117,50																
+ 4% insurance			$4,70																$4,70
subtotal			$122,20																$122,20
GST (6%)			$7,33																
QST (7,5%)			$9,71																
subtotal			$139,25																
Transport (NEAS)																			
tot. estimated weight (kilos)			205																205
boat: $250,10/ ton, 25¢ per kilo			$51,25																$51,25
+20% overload			$10,25																$10,25
subtotal			$61,50																$61,50
GST (6%)			$3,69																$3,69
QST (7,5%)			$4,89																$4,89
subtotal			$70,08																$70,08
total			**$209,33**																**$209,33**
OIL (L)			3075			280							205	26					3 586
Transport & Storage																			
barrels (minimum 1 barrel)			15			2							1	1					19
cost to store (per bar'l)			$77,50			$77,50							$77,50	$77,50					
+ 4% insurance			$46,50			$6,20							$3,10	$3,10					$58,90
subtotal			$1 209,00			$161,20							$80,60	$80,60					$1 531,40
GST (6%)			$72,54			$9,67							$4,84	$4,84					$91,88
QST (7,5%)			$96,12			$12,82							$6,41	$6,41					$121,75
subtotal			$1 377,66			$183,69							$91,84	$91,84					$1 745,03
Transport (NEAS)																			
tot. estimated weight (kilos)			3075			280							205	26					3586
boat: $250,10/ ton, 25¢ per kilo			$768,75			$70,00							$51,25	$6,50					$896,50
+20% overload			$153,75			$14,00							$10,25	$1,30					$179,30
subtotal			$922,50			$84,00							$61,50	$7,80					$1 075,80
GST (6%)			$55,35			$5,04							$3,69	$0,47					$64,55
QST (7,5%)			$73,34			$6,68							$4,89	$0,62					$85,53
subtotal			$1 051,19			$95,72							$70,08	$8,89					$1 225,87
total			**$2 428,84**			**$279,41**							**$161,92**	**$100,73**					**$2 970,90**
NAPHTA (L)														410					410
Transport & Storage																			
barrels (minimum 1 barrel)														2					2
cost to store (per bar'l)														$122,50					
+ 4% insurance														$9,80					$9,80
subtotal														$9,80					$9,80
GST (6%)														$0,59					$0,59
QST (7,5%)														$0,78					$0,78
subtotal														$11,17					$11,17
Transport (NEAS)																			
tot. estimated weight (kilos)														410					410
boat: $250,10/ ton, 25¢ per kilo														$102,50					$102,50
+20% overload														$20,50					$20,50
subtotal														$123,00					$123,00
GST (6%)														$7,38					$7,38
QST (7,5%)														$9,78					$9,78
subtotal														$140,16					$140,16
total														**$151,33**					**$151,33**

Table B.1 (continued): Transportation and disposal of hazardous waste

	KAW 35	KAW 45	PJ 1	TQ 1	TQ 4	PJ 10	PJ 17	TW	K 28	K 61	WB 3	KV 1	SAL 1	SW 27	SW 34	SW 42	WHA 1	WB 9	Total
GREASE (L)	40		240			40		60		920				260		12			1 572
Transport & Storage																			
bidons (20L)	2		12			2		3		46				13		1			79
cost to store (per bidon)	$23,00		$23,00			$23,00		$23,00		$23,00				$23,00		$23,00			
+ 4% insurance	$1,84		$11,04			$1,84		$2,76		$42,32				$11,96		$0,92			$72,68
subtotal	$47,84		$287,04			$47,84		$71,76		$1 100,32				$310,96		$23,92			$1 889,68
GST (6%)	$2,87		$17,22			$2,87		$4,31		$66,02				$18,66		$1,44			$113,38
QST (7,5%)	$3,80		$22,82			$3,80		$5,70		$87,48				$24,72		$1,90			$150,23
subtotal	$54,51		$327,08			$54,51		$81,77		$1 253,81				$354,34		$27,26			$2 153,29
Transport (NEAS)																			
overpacks			$600,00			$150,00		$150,00		$2 400,00				$750,00		$150,00			$4 200,00
tot. estimated weight (kilos)			240			40		60		920				260		12			1 532
boat: $250,10/ ton, 25¢ per kilo			$60,00			$10,00		$15,00		$230,00				$65,00		$3,00			$383,00
subtotal			$660,00			$160,00		$165,00		$2 630,00				$815,00		$153,00			$4 583,00
GST (6%)			$39,60			$9,60		$9,90		$157,80				$48,90		$9,18			$274,98
QST (7,5%)			$52,47			$12,72		$13,12		$209,09				$64,79		$12,16			$364,35
subtotal			$752,07			$182,32		$188,02		$2 996,89				$928,69		$174,34			$5 222,33
total			**$1 079,15**			**$236,83**		**$269,79**		**$4 250,70**				**$1 283,03**		**$201,60**			**$7 321,11**
LITHIUM GREASE (#)			50																50
Transport & Storage																			
tubes			50																50
cost to store (per barrel)			$215,00																$215,00
+ 4% insurance			$8,60																$8,60
subtotal			$223,60																$223,60
GST (6%)			$13,42																$13,42
QST (7,5%)			$17,78																$17,78
subtotal			$254,79																$254,79
Transport (NEAS)																			
tot. estimated weight (kilos)			10																10
boat: $250,10/ ton, 25¢ per kilo			$2,50																$2,50
+20% overload			$0,50																$0,50
subtotal			$3,00																$3,00
GST (6%)			$0,18																$0,18
QST (7,5%)			$0,24																$0,24
subtotal			$3,42																$3,42
total			**$258,21**																**$258,21**
PROPANE (residue or full)			20			5	9	4	6					1				9	54
Transport & Storage																			
# cylindre (20 or 40 L)			20			5	9	4	6					1				9	54
cost to store (per cylinder)			$15,00			$15,00	$15,00	$15,00	$15,00					$15,00		$15,00		$15,00	$105,00
+ 4% insurance			$12,00			$3,00	$5,40	$2,40	$3,60					$0,60		$5,40		$5,40	$32,40
subtotal			$312,00			$78,00	$140,40	$62,40	$93,60					$15,60		$140,40		$140,40	$842,40
GST (6%)			$18,72			$4,68	$8,42	$3,74	$5,62					$0,94		$8,42		$8,42	$50,54
QST (7,5%)			$24,80			$6,20	$11,16	$4,96	$7,44					$1,24		$11,16		$11,16	$66,97
subtotal			$355,52			$88,88	$159,99	$71,10	$106,66					$17,78		$159,99		$159,99	$959,91
Transport (NEAS)																			
tot. estimated weight (kilos)			900			225	405	180	270					45		405		405	2 430
boat: $250,10/ ton, 25¢ per kilo			$225,00			$56,25	$101,25	$45,00	$67,50					$11,25		$101,25		$101,25	$607,50
+20% overload			$45,00			$11,25	$20,25	$9,00	$13,50					$2,25		$20,25		$20,25	$121,50
subtotal			$270,00			$67,50	$121,50	$54,00	$81,00					$13,50		$121,50		$121,50	$729,00
GST (6%)			$16,20			$4,05	$7,29	$3,24	$4,86					$0,81		$7,29		$7,29	$43,74
QST (7,5%)			$21,47			$5,37	$9,66	$4,29	$6,44					$1,07		$9,66		$9,66	$57,96
subtotal			$307,67			$76,92	$138,45	$61,53	$92,30					$15,38		$138,45		$138,45	$830,70
total			**$663,19**			**$165,80**	**$298,44**	**$132,64**	**$198,96**					**$33,16**		**$298,44**		**$298,44**	**$1 790,61**
BATTERIES (#)	12		1		1	1							3					1	18
kilos	60		5		5	5							15					5	90
Transport & Storage																			
cost to store (per kilo)	$0,19		$0,19		$0,19	$0,19							$0,19					$0,19	
subtotal	$11,40		$0,95		$0,95	$0,95							$2,85					$0,95	$17,10
plus UN reg'n barrel or palette	$100,00		$25,00		$25,00	$25,00							$25,00					$25,00	$200,00
subtotal	$111,40		$25,95		$25,95	$25,95							$27,85					$25,95	$217,10
+ 4% insurance	$4,46		$1,04		$1,04	$1,04							$1,11					$1,04	$8,68
subtotal	$115,86		$26,99		$26,99	$26,99							$28,96					$26,99	$225,78
GST (6%)	$6,95		$1,62		$1,62	$1,62							$1,74					$1,62	$13,55
QST (7,5%)	$9,21		$2,15		$2,15	$2,15							$2,30					$2,15	$17,95
subtotal	$132,02		$30,75		$30,75	$30,75							$33,00					$30,75	$257,28
Transport (NEAS)																			
tot. estimated weight (kilos)	60		5		5	5							15					5	$90,00
boat: $250,10/ ton, 25¢ per kilo	$15,00		$1,25		$1,25	$1,25							$3,75					$1,25	$22,50
+20% overload	$3,00		$0,25		$0,25	$0,25							$0,75					$0,25	$4,50
subtotal	$18,00		$1,50		$1,50	$1,50							$4,50					$1,50	$27,00
GST (6%)	$1,08		$0,09		$0,09	$0,09							$0,27					$0,09	$1,62
QST (7,5%)	$1,43		$0,12		$0,12	$0,12							$0,36					$0,12	$2,15
subtotal	$20,51		$1,71		$1,71	$1,71							$5,13					$1,71	$30,77
total	**$152,53**		**$32,46**		**$32,46**								**$38,13**					**$32,46**	**$288,05**

Table B.1 (continued): Transportation and disposal of hazardous waste

	KAW 35	KAW 45	PJ 1	TQ 1	TQ 4	PJ 10	PJ 17	TW	K 28	K 61	WB 3	KV 1	SAL 1	SW 27	SW 34	SW 42	WHA 1	WB 9	Total
PAINT (L)			12							4								24	40
Transport & Storage																			
bidons (20L)			1							1								2	4
cost to store (per bidon)			$40,00							$40,00								$80,00	$160,00
+ 4% insurance			$1,60							$1,60								$6,40	9,6
subtotal			$41,60							$41,60								$166,40	$249,60
GST (6%)			$2,50							$2,50								$9,98	$14,98
QST (7,5%)			$3,31							$3,31								$13,23	$19,84
subtotal			$47,40							$47,40								$189,61	$284,42
Transport (NEAS)																			
overpack			$150,00							$150,00								$150,00	$450,00
tot. estimated weight (kilos)			12							19								27	58
boat: $250,10/ ton, 25¢ per kilo			$3,00							$4,75								$6,75	$14,50
subtotal			$153,00							$154,75								$156,75	$464,50
GST (6%)			$9,18							$9,29								$9,41	$27,87
QST (7,5%)			$12,16							$12,30								$12,46	$36,93
subtotal			$174,34							$176,34								$178,62	$529,30
total			**$221,75**							**$223,74**								**$368,23**	**$813,72**
EXTINGUISHER (#)	2		20					1							1			3	27
Transport & Storage																			
extinguisher (#)	2		20					1							1			3	27
cost to store (per exting'r)	$120,00		$120,00					$120,00							$120,00			$120,00	
+ 4% insurance	$9,60		$96,00					$4,80							$4,80			$14,40	$129,60
subtotal	$249,60		$2 496,00					$124,80							$124,80			$374,40	$3 369,60
GST (6%)	$14,98		$149,76					$7,49							$7,49			$22,46	$202,18
QST (7,5%)	$19,84		$198,43					$9,92							$9,92			$29,76	$267,88
subtotal	$284,42		$2 844,19					$142,21							$142,21			$426,63	$3 839,66
Transport (NEAS)																			
tot. estimated weight (kilos)			100					5							5			15	125
boat: $250,10/ ton, 25¢ per kilo			$25,00					$1,25							$1,25			$3,75	$31,25
GST (6%)			$1,50					$0,08							$0,08			$0,23	$1,88
QST (7,5%)			$1,99					$0,10							$0,10			$0,30	$2,48
subtotal			$3,49					$0,17							$0,17			$0,52	$4,36
total			**$2 847,68**					**$142,38**							**$142,38**			**$427,15**	**$3 559,60**
Transport by truck $ train																			
Scheff. To Sept-Iles	$1 250,00																		$1 250,00
labour	$500,00																		$500,00
subtotal	$1 750,00																		$1 750,00
GST (6%)	$105,00																		$105,00
QST (7,5%)	$139,13																		$139,13
total	**$1 994,13**																		**$1 994,13**

TOTAL	KAW 35	KAW 45	PJ 1	TQ 1	TQ 4	PJ 10	PJ 17	TW	K 28	K 61	WB 3	KV 1	SAL 1	SW 27	SW 34	SW 42	WHA 1	WB 9	Total
Transport & Storage	$484,11	$145,17	$6 348,95	$11 613,78	$175,93	$1 374,04	$159,99	$1 166,12	$106,66	$1 301,22	$580,69	$145,17	$124,85	$1 770,51	$11 767,16	$607,95	$290,34	$1 097,32	$39 259,95
Transport (NEAS)	$0,00	$0,00	$2 803,24	$5 606,34	$52,99	$835,25	$138,45	$670,20	$92,30	$3 173,22	$230,75	$17,09	$75,21	$1 517,02	$5 746,67	$413,64	$95,72	$459,46	$21 927,54
Transport by truck $ train	$1 994,13																		$1 994,13
Grand total	**$2 478,23**	**$145,17**	**$9 152,19**	**$17 220,12**	**$228,91**	**$2 209,29**	**$298,44**	**$1 836,32**	**$198,96**	**$4 474,44**	**$811,44**	**$162,26**	**$200,06**	**$3 287,53**	**$17 513,83**	**$1 021,58**	**$386,06**	**$1 556,78**	**$63 181,62**

Table B.2: Winter and summer transportation

		KAW 35	KAW 45	PJ 1	TQ 1	TQ 4	PJ 10	PJ 17	TW	K 28	K 61	WB 3	KV 1	SAL 1	SW 27	SW 34	SW 42	WHA 1	WB 9	Total
GENERAL INFORMATION																				
nearest community		Kawawa...	Kawawa...	Tasiujaq/Aupaluk	Tasiujaq	Tasiujaq	Aupaluk	Aupaluk	Kangirsuk	Kangiq...	Kangiq...	Kangiq...	Salluit	Salluit	Salluit	Salluit	Salluit	Umiujaq	Kangiq...	
distance (kms return)		130	170	80	150	105	60	25	20	136	160	46	210	170	180	187	210	85	200	2324
add for difficult terrain		30	30	0	30	20	20	0	0	20	20	10	70	70	70	70	70	10	70	610
total kms		160	200	80	180	125	80	25	20	156	180	56	280	240	250	257	280	95	270	**2934**
min vol material (m3)		100	5	100	10	5	25	11	20	2	75	5	5	15	15	40	10	5	20	**468**
# barrels		125	19	260	120	159	82	18	83	140	-	85	30	340	95	1690	81	4	61	**3392**
note:		empty barrels not compacted	barrels not compacted	barrels not compacted	barrels with residues	barrels compacted if no residue	barrels compacted if no residue	barrels not compacted	barrels compacted if no residue	empty barrels not compacted	empty barrels not compacted	barrels compacted if no residue	empty barrels not compacted	barrels compacted if no residue	barrels compacted if no residue	barrels compacted if no residue	barrels compacted if no residue	empty barrels not compacted	barrels compacted if no residue	
Skidoo																				
number of skidoo	4																			
cost of maintenance	$9 130																			
number of qamutik 14' long	5																			
cost/qamutik	$1 200																			
subtotal	$6 000																			
transport Kuujj to Aupaluk (2 qamutik)	$200																			
total	**$15 330**																			
skidoo and/or qamutik shipping				Montréal to Aupaluk		Kangirsuk to Tasiujaq			Aupaluk to Kangirsuk											
cargo				$1 886,00		$2 000,00														
winter																				
distance (km)									100											100
team of 4									$640,00											$640,00
gas									$96,00											$96,00
meal									$140,00											$140,00
way back									$700,00											$700,00
subtotal				**$1 886,00**		**$2 000,00**			**$1 576,00**											**$5 462,00**
COSTS PER SITE																				
If by Skidoo:				barrels only																
estimated # of Trips				10		3	10	3	6			2						1		35
team of 4				$7 680,00		$3 200,00	$7 680,00	$3 200,00	$5 120,00			$2 560,00						$1 920,00		$31 360,00
skidoo rental												$1 200,00						$150,00		$1 350,00
gas				$120,00		$56,25	$120,00	$11,25	$18,00			$16,80						$14,25		$356,55
meals				$1 400,00		$420,00	$1 400,00	$420,00	$840,00			$280,00						$140,00		$4 900,00
qamutik rental												$600,00						$75,00		$675,00
subtotal				**$9 200,00**		**$3 676,25**	**$9 200,00**	**$3 631,25**	**$5 978,00**			**$4 656,80**						**$2 299,25**		**$38 641,55**
If by seaplane/Twin Otter:																				
Kuujjuarapik - Kuujjuaq					$10 705,00															$10 705,00
Kuujjuarapik - Salluit													$3 273,00	$13 091,00	$3 273,00	$3 273,00		$3 273,00	$26 183,00	
estimated # of Trips		10	1		10								2	4	2	2		3		74
estimated # of Days		10	1		5								1	2	1	1		2		23
from (to site)		Kawawa…	Kawawa…		Kuujjuaq								Salluit	Salluit	Salluit	Salluit		Salluit		
distance (kms return)		114	166		152								210	170	180	212		200		1 404
seaplane/Twin Otter rental		$8 400,00	$840,00		$18 834,40								$3 756,00	$7 120,00	$3 560,00	$3 560,00		$5 634,00		$51 704,40
gas		$213,75	$311,25		$285,00								$393,75	$318,75	$337,50	$397,50		$375,00		$2 632,50
GST (6%)		$516,83	$69,08		$1 147,16								$248,99	$446,33	$233,85	$237,45		$360,54		$3 260,21
QST (7,5%)		$684,79	$91,52		$1 519,99								$329,91	$591,38	$309,85	$314,62		$477,72		$4 319,78
subtotal		**$9 815,37**	**$1 311,85**		**$32 491,56**								**$8 001,64**	**$21 567,46**	**$7 714,20**	**$7 782,57**		**$10 120,26**		**$98 804,90**

Table B.2 (continued): Winter and summer transportation

		KAW 35	KAW 45	PJ 1	TQ 1	TQ 4	PJ 10	PJ 17	TW	K 28	K 61	WB 3	KV 1	SAL 1	SW 27	SW 34	SW 42	WHA 1	WB 9	Total
Else																				
winter transport																				
organized by G.Gagnon				$452 370,00																$452 370,00
Xtrata																$56 455,62				$56 455,62
Canadian Royalties (CR)																				
subtotal				**$452 370,00**												**$56 455,62**				**$508 825,62**
Community Costs																				
Naskapi																				
from kawawa…to Sept-Iles		$2 500,00																		$2 500,00
labour		$900,00																		$900,00
Inuit																				
number of person					4								2	4	4		4		4	22
labour @ 160/person/day					$4 480,00								$960,00	$2 560,00	$1 920,00		$1 920,00		$2 560,00	$14 400,00
truck: airport to cargo					$2 250,00								$450,00	$900,00	$450,00		$450,00		$900,00	$5 400,00
(rental/ driver/ gas)																				
subtotal		**$3 400,00**			**$6 730,00**								**$1 410,00**	**$3 460,00**	**$2 370,00**		**$2 370,00**		**$3 460,00**	**$23 200,00**
subtotal		**$13 215,37**		**$463 456,00**	**$39 221,56**	**$5 676,25**	**$9 200,00**	**$3 631,25**	**$7 554,00**			**$4 656,80**	**$9 411,64**	**$25 027,46**	**$10 084,20**		**$10 152,57**		**$13 580,26**	**$614 867,35**
TRANSPORT (NEAS)																				
village		Kawawa…	Kawawa…	Aupaluk	Kuujjuaq	Tasiujaq	Aupaluk	Aupaluk	Kangirsuk	CR	CR	Kangiq...	Salluit	Salluit	Salluit	Xstrata	Salluit	Umiujaq	Salluit	
volume materiel		100	5	100	10	5	25	11	20	2	75	5	5	15	15	40	10	5	20	468
volume empty barrel		31,25	4,75	59	-	7,95	4,1	4,5	4,15	7	-	4,25	7,5	17	4,75	104	4,05	1	3,05	268,3
total		131,25	9,75	159	10	12,95	29,1	15,5	24,15	9	75	9,25	12,5	32	19,75	144	14,05	6	23,05	736,3
# container 20'x8'x8' (36 m cube)				3	0,5	0,5	1	1	1	-	2	1	0,5	1	0,5	3	0,5	-	0,5	16
containers cost ($2985/container)				$8 955,00	$1 492,50	$1 492,50	$2 985,00	$2 985,00	$2 985,00		$5 970,00	$2 985,00	$1 492,50	$2 985,00	$1 492,50	$8 955,00	$1 492,50		$1 492,50	$47 760,00
GST (6%)				$537,30	$89,55	$89,55	$179,10	$179,10	$179,10		$358,20	$179,10	$89,55	$179,10	$89,55	$537,30	$89,55		$89,55	$2 865,60
QST (7,5%)				$711,92	$118,65	$118,65	$237,31	$237,31	$237,31		$474,62	$237,31	$118,65	$237,31	$118,65	$711,92	$118,65		$118,65	$3 796,92
subtotal				**$10 204,22**	**$1 700,70**	**$1 700,70**	**$3 401,41**	**$3 401,41**	**$3 401,41**		**$6 802,82**	**$3 401,41**	**$1 700,70**	**$3 401,41**	**$1 700,70**	**$10 204,22**	**$1 700,70**		**$1 700,70**	**$54 422,52**
TOTAL	**$15 330,00**	**$13 215,37**	**$1 311,85**	**$473 660,22**	**$40 922,26**	**$7 376,95**	**$12 601,41**	**$7 032,66**	**$10 955,41**	**$0,00**	**$6 802,82**	**$8 058,21**	**$11 112,34**	**$28 428,86**	**$11 784,91**	**$66 659,84**	**$11 853,28**	**$2 299,25**	**$15 280,96**	**$729 356,58**

NOTES:

Estimates: 24 compacted barrels fit on a qamutik 14' long
2 cubic meters of material fit on a qamutik
Gasoline cost estimated at $1.50 per litre
Return distances over 150 kms require a Twin Otter or seaplane
Seaplane rental estimated at $840 per trip (return)
If Twin Otter, based on Air Inuit quotation (2007)

Table B.3: Winter transportation of heavy equipment at the site PJ-1.

	PJ-1
TRANSPORT MACHINERY	
number of week	6
LABOUR	
2 operators	2
1 mecanician	1
1 welder	1
1 foreman	1
salary/week	$4 000,00
subtotal	**$120 000**
EQUIPMENT	
snowmobile	3
cost/week	$600
excavator	1
cost/week	$12 000
bulldozer	1
cost/week	$16 000
welder	1
cost/week	$1 000
generator	2
cost/week	$500
torch et saw	1
cost/week	$400
machinery reparation	$5 000
subtotal	**$198 200**
MEALS & ACCOMODATION	**$25 000**
TRAVEL EXPENSES	**$23 000**
LABOUR & EQUIPMENT CONTINGENCY 35%	**$86 170**
TOTAL	**$452 370**

Table B.4: Winter transportation of containers with hazardous material and waste from the site SW-34.

				SW-34
TRANSPORT CONTAINERS	in winter 2008	out winter 2009	out summer 2009 (cargo)	
number of days (in/out)	3	3	3	9
number of labour	2	2	2	6
labour ($500/day/person)	$3 000	$3 000	$3 000	$9 000
number of container	3	3	3	9
cost for the container	$9 750			$9 750
rental of the muskeg	$7 500	$7 500		$15 000
cargo ($5280/container)			$15 840	$15 840
20% overload Hazardous Material (1 container)			$1 056	$1 056
GST (6%)	$1 035	$450	$1 014	$2 499
QST (7,5%)	$1 371	$596	$1 343	$3 311
subtotal	$19 656	$8 546	$19 253	$47 456
TOTAL	**$22 656**	**$11 546**	**$22 253**	**$56 456**

Table B.5: Clean-up work by local communities

	KAW 35	KAW 45	PJ 1	TQ 1	TQ 4	PJ 10	PJ 17	TW	K 28	K 61	WB 3	KV 1	SAL 1	SW 27	SW 34	SW 42	WHA 1	WB 9	Total
SITE CLEANUP																			
year	2008	2008	2008	2010	2010	2010	2008	2011	2011	2011	2008	2009	2008	2009	2008	2009	2011	2009	
days on site	14	1	14	5	5	7	4	7	4	7	4	1	10	7	14	7	1	7	119
env. technician	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
number of labour	6	6	6	6	6	6	4	6	4	4	6	4	4	4	4	4	3	4	87
team leader	$2 880	$540	$2 880	$1 260	$1 260	$1 620	$1 080	$1 620	$1 080	$1 620	$1 080	$540	$2 160	$1 620	$2 880	$1 620	$540	$1 620	$27 900
team of labour	$15 360	$2 880	$15 360	$6 720	$6 720	$8 640	$3 840	$8 640	$3 840	$5 760	$5 760	$1 920	$7 680	$5 760	$10 240	$5 760	$1 440	$5 760	$122 080
meals	$4 900	$350	$4 900	$1 750	$1 750	$2 450	$1 000	$2 450	$1 000	$1 750	$1 400	$250	$2 500	$1 750	$3 500	$1 750	$180	$1 750	$35 380
misc. camp costs (equipment)	$9 600	$200	$8 000	$1 750	$3 000	$4 000	$0	$4 000	$1 000	$1 750	$3 000	$250	$2 500	$1 750	$3 500	$1 750	$200	$2 450	$48 700
subtotal	**$32 740**	**$3 970**	**$31 140**	**$11 480**	**$12 730**	**$16 710**	**$5 920**	**$16 710**	**$6 920**	**$10 880**	**$11 240**	**$2 960**	**$14 840**	**$10 880**	**$20 120**	**$10 880**	**$2 360**	**$11 580**	**$234 060**
TRANSPORT																			
from to site	Kawawa…	Kawawa…	Kuujj-Tasiujaq-Aupaluk	Kuujjuaq	Kuujjuaq	Kuujj-Aupaluk	Kuujj-Aupaluk	Kuujj - Kangirsuk	Kuujj-Kangiqsujuaq-CR camp		Kuujj-Kangiqsujuaq	SW-27	Xstrata/Goldbrook	Xstrata	Xstrata	Xstrata	Umiujaq	Xstrata	
seaplane or plane (# trips return)	8	2							1	1									
helicopter (# trips return)			4	4	6	2		2	1	1	2	4	20	4	28	14	4	14	110
distance (kms return)	114	166	481	152	200	456		500	140	140	1 070	44	102	260	56	84	77	76	
seaplane rental or travel airfare	$6 720	$1 680							$1 750	$1 750									$11 900
Cruise North Expeditions (CNE)							$10 000												
helicopter			$11 785	$3 724	$7 350	$5 586		$6 125	$858	$858	$13 108	$1 078	$12 495	$6 370	$9 604	$7 203	$1 887	$6 517	$94 546
gas	$214	$311	$2 694	$851	$1 680	$1 277		$1 400	$196	$196	$2 996	$246	$2 856	$1 456	$2 195	$1 646	$431	$1 490	$22 135
GST (6%)	$416	$119	$869	$275	$542	$412		$452	$63	$63	$966	$79	$921	$470	$708	$531	$139	$480	$7 505
QST (7,5%)	$551	$158	$1 151	$364	$718	$546		$598	$84	$84	$1 280	$105	$1 220	$622	$938	$704	$184	$637	$9 944
subtotal	**$7 901**	**$2 269**	**$16 498**	**$5 213**	**$10 290**	**$7 820**	**$10 000**	**$8 575**	**$2 950**	**$2 950**	**$18 350**	**$1 509**	**$17 492**	**$8 918**	**$13 445**	**$10 084**	**$2 641**	**$9 124**	**$156 030**
MISCELLANEOUS																			
communications (phone)	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	**$9 000**
TOTAL	**$41 141**	**$6 739**	**$48 138**	**$17 193**	**$23 520**	**$25 030**	**$16 420**	**$25 785**	**$10 370**	**$14 330**	**$30 090**	**$4 969**	**$32 832**	**$20 298**	**$34 065**	**$21 464**	**$5 501**	**$21 204**	**$399 090**

Table B.6: Soil contamination treatment

	KAW 35	KAW 45	PJ 1	TQ 1	TQ 4	PJ 10	PJ 17	TW	K 28	K 61	WB 3	KV 1	SAL 1	SW 27	SW 34	SW 42	WHA 1	WB 9	Total
SOIL REMEDIATION & TRANSPORT																			
soil contamination (m2)	103		115	2	2	20	125	2	15	75	2,5	2		2,5	90	12	6	25	599
preparation	$3 000		$3 000	$3 000	$3 000	$3 000	$3 000	$3 000	$3 000	$3 000	$3 000	$3 000		$3 000	$3 000	$3 000	$3 000	$3 000	$48 000
days (on site)	7		7	2	2	3	7	2	3	7	2	2		2	7	3	2	3	61
material cost (nutriment+material)	$5 000		$5 000	$5 000	$5 000	$5 000	$5 000	$5 000	$5 000	$5 000	$5 000	$5 000		$5 000	$5 000	$5 000	$5 000	$5 000	$80 000
analyse of soil sample	$1 000		$1 000	$1 000	$1 000	$1 000	$1 000	$1 000	$1 000	$1 000	$1 000	$1 000		$1 000	$1 000	$1 000	$1 000	$1 000	
shipping material	$2 000		$2 000	$2 000	$2 000	$2 000	$2 000	$2 000	$2 000	$2 000	$2 000	$2 000		$2 000	$2 000	$2 000	$2 000	$2 000	$32 000
number of specialized labour	2		2	2	2	2	2	2	2	2	2	2		2	2	2	2	2	2
specialized labour	$10 500		$7 000	$2 000	$2 000	$3 000	$7 000	$2 000	$3 000	$7 000	$2 000	$2 000		$2 000	$7 000	$3 000	$2 000	$3 000	$64 500
report	$3 750		$3 750	$3 750	$3 750	$3 750	$3 750	$3 750	$3 750	$3 750	$3 750	$3 750		$3 750	$3 750	$3 750	$3 750	$3 750	$3 750
travel to village	$4 000		$2 700	$2 000	$2 000	$2 800	$2 700	$2 000	$2 600	$2 600	$3 600	$1 800		$1 800	$3 600	$1 800	$4 720	$1 800	$42 520
accomodation	$2 800		$2 800	$800	$800	$1 200	$2 800	$800	$1 200	$2 800	$800	$800		$800	$2 800	$1 200	$800	$1 200	$24 400
meals	$1 120		$1 120	$320	$320	$480	$1 120	$320	$480	$1 120	$320	$320		$320	$1 120	$480	$320	$480	$9 760
subtotal	**$30 170**		**$25 370**	**$16 870**	**$16 870**	**$19 230**	**$25 370**	**$16 870**	**$19 030**	**$25 270**	**$18 470**	**$16 670**		**$16 670**	**$26 270**	**$18 230**	**$19 590**	**$18 230**	**$329 180**
from to site	Kawawa…		Aupaluk	Kuujjuaq	Kuujjuaq	Aupaluk	Aupaluk	Kangirsuk	Kangiqsujuaq	Kangiqsujuaq	Kangiqsujuaq	SW-27		Xstrata	Xstrata	Xstrata	Umiujaq	Xstrata	
seaplane (# trips return)	10																		10
helicopter (# trips return)			14	4	4	6		4	1	1	4	4		4	14	6	4	6	76
distance (kms return)	114		74	152	200	60		20	160	160	46	260		260	56	84	77	76	1799
seaplane rental	$8 400																		$8 400
ATV+trailers rental							$2 800												
helicopter			$6 346	$3 724	$4 900	$2 205		$490	$980	$980	$1 127	$6 370		$6 370	$4 802	$3 087	$1 887	$2 793	$46 060
gas	$214		$1 450	$851	$1 120	$504		$112	$224	$224	$258	$1 456		$1 456	$1 098	$706	$431	$638	$10 742
GST (6%)	$517		$87	$51	$67	$30		$7	$13	$13	$15	$87		$87	$66	$42	$26	$38	$1 149
QST (7,5%)	$685		$115	$68	$89	$40		$9	$18	$18	$20	$116		$116	$87	$56	$34	$51	$1 522
subtotal	**$9 815**		**$7 998**	**$4 694**	**$6 176**	**$2 779**		**$618**	**$1 235**	**$1 235**	**$1 421**	**$8 029**		**$8 029**	**$6 053**	**$3 891**	**$2 378**	**$3 520**	**$67 872**
TOTAL	**$39 985**		**$33 368**	**$21 564**	**$23 046**	**$22 009**	**$28 170**	**$17 488**	**$20 265**	**$26 505**	**$19 891**	**$24 699**		**$24 699**	**$32 323**	**$22 121**	**$21 968**	**$21 750**	**$399 852**

Table B.7: Acid mine drainage

	KAW 35	PJ 1	TW	Total
ACID MINE DRAINAGE				
Characterization				
preparation	$3 000	$3 000	$3 000	$9 000
days (on site)	3	3	3	$9
material cost	$5 000	$5 000	$5 000	$15 000
shipping material	$1 000	$1 000	$1 000	$3 000
number of specialized labour	2	2	2	$6
specialized labour	$3 000	$3 000	$3 000	$9 000
analysis and report	$4 000	$4 000	$4 000	$12 000
travel to village	$4 000	$3 000	$3 000	$10 000
accomodation	$1 200	$1 200	$1 200	$3 600
meals	$480	$480	$480	$1 440
subtotal	**$18 680**	**$17 680**	**$17 680**	**$54 040**
TRANSPORT				
from to site	Kawawa…	Aupaluk	Kangirsuk	
seaplane (# trips return)	6			6
helicopter (# trips return)		6	6	12
distance (kms return)	114	74	20	208
seaplane rental	$5 040			$5 040
helicopter		$2 720	$735	$3 455
gas	$214	$622	$168	$1 003
GST (6%)	$315	$37	$10	$363
QST (7,5%)	$418	$49	$13	$480
subtotal	**$5 987**	**$3 428**	**$926**	**$10 341**
subtotal	**$24 667**	**$21 108**	**$18 606**	**$64 381**
MACHINERY				
days on site	10			10
backhoe rental and labour (160$/hours)	$38 400			$38 400
GST (6%)	$2 304			$2 304
QST (7,5%)	$3 053			$3 053
subtotal	$43 757			$43 757
accomodation	$7 500			$7 500
meals	$2 400			$2 400
travel airfare	$7 800			$7 800
subtotal	$17 700			$17 700
transport to Sept-Iles (2 trips return)	$20 000			$20 000
labour to put the machine in the train	$3 840			$3 840
transport to Schefferville (2 trips return)	$10 000			$10 000
preparation (taken apart and put back)	$25 600			$25 600
GST (6%)	$3 566			$3 566
QST (7,5%)	$4 725			$4 725
subtotal	$67 732			$67 732
helicopter (# trips return)	28			28
distance (kms return)	120			120
helicopter	$20 580			$20 580
gas	$4 704			$4 704
GST (6%)	$1 517			$1 517
QST (7,5%)	$2 010			$2 010
subtotal	$28 811			$28 811
subtotal	**$158 000**			**$158 000**
TOTAL	**$182 666**	**$21 108**	**$18 606**	**$222 381**

Table B.8: Barrel compactor

		KAW 35	KAW 45	PJ 1	TQ 1	TQ 4	PJ 10	PJ 17	TW	K 28	K 61	WB 3	KV 1	SAL 1	SW 27	SW 34	SW 42	WHA 1	WB 9	Total
PURCHASE COMPACTOR																				
initial purchase cost	$20 000																			
freight	$3 000																			
subtotal	**$23 000**																			
GST (6%)	$1 380																			
QST (7,5%)	$1 725																			
subtotal	**$26 105**																			**$26 105**
TRANSPORT COMPACTOR																				
number of barrels		125	19	260	120	159	82	18	83	140	-	85	30	340	95	1690	81	4	61	**3392**
days work (10 hrs)						2	1		1			1		3	1	11	1		1	**22**
Helicoptor Transport																				
from (to site)						Kuujjuaq-Aupaluk	Kuujjuaq-Aupaluk	Xstrata - Kangiqsujuaq				Xstrata		Xstrata	Xstrata	Xstrata	Xstrata		Xstrata	
distance (km)						190	180	105				85		50	127	28	43		38	
helicoptor(in/out)						$2 328	$2 205	$1 286				$1 041		$613	$1 556	$343	$527		$466	
gas (in/out)						$532	$504	$294				$238		$140	$356	$78	$120		$106	
GST (6%)						$172	$163	$95				$77		$45	$115	$25	$39		$34	
QST (7,5%)						$227	$215	$126				$102		$60	$152	$34	$51		$45	
subtotal						$3 258	$3 087	$1 801				$1 458		$857	$2 178	$480	$737		$652	**$14 508**
Cargo transport																				
from to							Kangirsuk to Aupaluk	Kangiqsujuaq to Kangirsuk												
estimated weitght (kg)							775	775												
boat: $342,61/ ton, 34¢ per kilo							$343	$343												
GST (6%)							$21	$21												
QST (7,5%)							$27	$27												
subtotal							$390	$390												**$781**
Gas (for Compactor)						$100	$50	$50				$50		$150	$50	$550	$50		$50	**$1 100**
TOTAL	**$26 105**					**$3 358**	**$3 527**	**$2 241**				**$1 508**		**$1 007**	**$2 228**	**$1 030**	**$787**		**$702**	**$42 494**

NOTES

: Only site with ≥ 60 empty drums will require a Drum Compactor

: Cycle time is @ 3 mins per empty drum.

Table B.9: Environmental monitoring (soil contamination treatment).

	Kuujjuaq	Umiujaq	KAW 35	KAW 45	PJ 1	TQ 1	TQ 4	PJ 10	PJ 17	TW	K 28	K 61	WB 3	KV 1	SAL 1	SW 27	SW 34	SW 42	WHA 1	WB 9	Total
SITES ASSESSMENT	2009-2012	2012	2009		2009	2011	2011	2011	2009	2012	2012	2012	2009	2010		2010	2009	2010	2012	2010	
Soil remediation																					
from Kuujjuaq to site (hours)			5,5		1,4	0,9	0,9	0,9	1,4	2,5	2,5	2,5	5,3	2,3		2,3	5,3	2,3	1	2,3	39,2
helicopter			$5 390		$1 372	$882	$882	$882	$1 372	$2 483	$2 483	$2 483	$5 194	$2 205		$2 205	$5 194	$2 205	$980	$2 205	$38 416
gas			$1 232		$314	$202	$202	$202	$314	$567	$567	$567	$1 187	$504		$504	$1 187	$504	$224	$504	$8 781
GST (6%)			$397		$101	$65	$65	$65	$101	$183	$183	$183	$383	$163		$163	$383	$163	$72	$163	$2 832
QST (7,5%)			$526		$134	$86	$86	$86	$134	$242	$242	$242	$507	$215		$215	$507	$215	$96	$215	$3 752
travel aifare	$8 000	$2 000																			$10 000
travel expenses			$560		$560	$373	$373	$373	$560	$840	$840	$840	$560	$560		$560	$560	$560	$840	$560	$9 520
TOTAL	**$8 000**	**$2 000**	**$8 106**		**$2 481**	**$1 608**	**$1 608**	**$1 608**	**$2 481**	**$4 316**	**$4 316**	**$4 316**	**$7 831**	**$3 647**		**$3 647**	**$7 831**	**$3 647**	**$2 212**	**$3 647**	**$73 301**

Table B.10: Human resources (KRG)

	… to Kuujjuaq	KAW 35	KAW 45	PJ 1	TQ 1	TQ 4	PJ 10	PJ 17	TW	K 28	K 61	WB 3	KV 1	SAL 1	SW 27	SW 34	SW 42	WHA 1	WB 9	Total
KRG HUMAIN RESOURCES																				
year		2008	2008	2008	2010	2010	2010	2008	2011	2011	2011	2008	2009	2008	2009	2008	2009	2011	2009	
field days on site (summers)		14	1	14	5	5	7	4	7	4	7	4	1	10	7	14	7	1	7	119
travel days	14	1	1	2	0	2	2	2	2	1	1	0,5	0,5	0,5	0,5	1	0,5	2	0,5	34
subtotal	14	15	2	16	5	7	9	6	9	5	8	4,5	1,5	10,5	7,5	15	7,5	3	7,5	153
2 environmental technicians + 1 coordonator																				
env. tech. salary ($230/day on field - 10 hours -)		$3 450	$460	$3 680	$1 150	$1 610	$2 070	$1 380	$2 070	$1 150	$1 840	$1 035	$345	$2 415	$1 725	$3 450	$1 725	$690	$1 725	$31 970
env. tech. salary ($20/hours - 7 hours -)		$340	$340	$340	$2 520	$2 520	$2 520	$340	$1 750	$1 750	$1 750	$340	$1 750	$340	$1 750	$340	$1 750	$1 750	$1 750	$23 940
env. tech. salary ($20/hours - 7 hours -)		$340	$340	$340	$2 520	$2 520	$2 520	$340	$1 750	$1 750	$1 750	$340	$1 750	$340	$1 750	$340	$1 750	$1 750	$1 750	$23 940
project coordonator		$5 715	$5 714	$5 715	$13 333	$13 333	$13 333	$5 714	$10 000	$10 000	$10 000	$5 714	$10 000	$5 715	$10 000	$5 714	$10 000	$10 000	$10 000	$160 000
subtotal		**$9 845**	**$6 854**	**$10 075**	**$19 523**	**$19 983**	**$20 443**	**$7 774**	**$15 570**	**$14 650**	**$15 340**	**$7 429**	**$13 845**	**$8 810**	**$15 225**	**$9 844**	**$15 225**	**$14 190**	**$15 225**	**$239 850**
flight north (2 times per person)	$52 800																			$52 800
accommodation in communities	$33 600	$200	$200	$400	$0	$400	$400	$400	$400	$200	$200	$100	$100	$100	$100	$200	$100	$400	$100	$37 600
meals	$13 440	$80	$80	$160	$0	$160	$160	$160	$160	$80	$80	$40	$40	$40	$40	$80	$40	$160	$40	$15 040
subtotal	**$99 840**	**$280**	**$280**	**$560**	**$0**	**$560**	**$560**	**$560**	**$560**	**$280**	**$280**	**$140**	**$140**	**$140**	**$140**	**$280**	**$140**	**$560**	**$140**	**$105 440**
TOTAL	**$99 840**	**$10 125**	**$7 134**	**$10 635**	**$19 523**	**$20 543**	**$21 003**	**$8 334**	**$16 130**	**$14 930**	**$15 620**	**$7 569**	**$13 985**	**$8 950**	**$15 365**	**$10 124**	**$15 365**	**$14 750**	**$15 365**	**$345 290**

Table B.11: Communications

	Québec	Québec	Québec	Québec	Québec	Kuujjuaq	Tasiujaq	Aupaluk	Kangirsuk	Kangiqsujuaq	Salluit	Umiujaq	Kawawachikamach	Total
COMMUNICATION/REPORT														
year	2008	2009	2010	2011	2012	2012	2012	2012	2012	2012	2012	2012	2012	
KRG employee														
number of person	2	2	2	2	2	2	2	2	2	2	2	2	2	
number of days	2	2	2	2	2	2	2	2	2	2	2	2	2	18
airplane travel	$4 400	$4 400	$4 400	$4 400	$4 400	$4 400	$740	$692	$1 044	$952	$877	$1 752	$1 540	$16 397
accommodation	$480	$480	$480	$480	$480	$800	$800	$800	$800	$800	$800	$800	$800	$6 880
meals	$220	$220	$220	$220	$220	$220	$320	$320	$320	$320	$320	$320	$320	$2 680
subtotal	**$5 100**	**$5 100**	**$5 100**	**$5 100**	**$5 100**	**$5 420**	**$1 860**	**$1 812**	**$2 164**	**$2 072**	**$1 997**	**$2 872**	**$2 660**	**$25 957**
communication														
report to leave in communities					$60		$30	$30	$30	$30	$30	$30	$30	$270
equipment rental							$60	$60	$60	$60	$60	$60	$60	$420
subtotal					**$60**		**$90**	**$90**	**$90**	**$90**	**$90**	**$90**	**$90**	**$690**
annual report (PIG)														
translation cost (0,28$/word)	$3 000	$3 000	$3 000	$3 000										
final report														
translation cost (0,28$/word)					$3 000									$3 000
subtotal	**$3 000**	**$3 000**	**$3 000**	**$3 000**	**$3 000**									**$15 000**
TOTAL	**$8 100**	**$8 100**	**$8 100**	**$8 100**	**$8 160**	**$5 420**	**$1 950**	**$1 902**	**$2 254**	**$2 162**	**$2 087**	**$2 962**	**$2 750**	**$62 047**