REHABILITATION OF ABANDONED MINERAL EXPLORATION SITES IN NUNAVIK

2016-2017
ACTIVITY REPORT

Kativik Regional Government

Renewable Resources, Environment, Lands and Parks Department

April 2017

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In 2016-2017 the community of Salluit for their participation during the cleanup efforts at SW-27, SW-14 and with facilitating the storage of materials over the winter.

The community of Kuujjuaq contributed to the project again this year during the cleanup at site PD-2, KUJ-2, and the storage of material during the winter months.

Mining companies currently active in Nunavik, especially Canadian Royalties and Glencore, should furthermore be recognized for their continued cleanup initiatives on numerous sites located on or near their claims.

The KRG would like to thank Nunavik Rotors for its continued professionalism and expertise throughout the transportation of material and employees during fieldwork and inspections.

Finally, the KRG would like to underline the continued financial and technical support it receives from the Makivik Corporation, the Ministère de l'Énergie et des Ressources naturelles (Energy and Natural Resources, MERN) and the Fonds Restor-Action Nunavik.

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1 INTRODUCTION

In 2001 and 2002, a verification of 193 possible abandoned mineral exploration sites was performed in the region of Nunavik. 90 of these sites were confirmed as such: 18 were classified as requiring major cleanup work, 27 needing intermediate cleanup work and 45 would require minor cleanup work.

In order to assist in the rehabilitation of abandoned mineral exploration sites in Nunavik, dating as far back as several decades, the mining industry recognized the need for action and in 2007, created the Fonds Restor-Action Nunavik (FRAN). In October 2007, the KRG, Makivik Corporation, the MERN and the FRAN signed a formal contribution agreement that made it possible to move forward with the cleanup of the eighteen sites requiring major cleanup, using the expertise developed during previous pilot projects undertaken by the KRG in 2005 and 2006. In 2012, this agreement was extended to allow for the rehabilitation work to continue and to include the group of sites requiring intermediate cleanup. In March 2017, a second addendum to the original agreement was signed by the four partners allowing for work to continue further, until March 2019.

In January 2012, a report was published that provides, in greater detail, the history of this project and summarizes the rehabilitation work undertaken on a number of abandoned mineral exploration sites in Nunavik over a seven-year period, from 2005-2011 (KRG, 2012a). This report is available for download at http://osiskogr.com/en/fonds-restor-action-nunavik-2/reports.

In 2016-2017, cleanup work continued in the Nunavik region and the following report describes the rehabilitation activities carried out on the five sites known as: PD-2, KUJ-2, SW-14, SW-27, and PJ-1 (Aupaluk) as well as in the community of Salluit. Appendix 1 includes five maps that indicate these and all the 90 confirmed abandoned mineral exploration sites in relation to nearby communities in Nunavik.

2 CONTRIBUTION AGREEMENT

In March 2017, a second amendment to the agreement concerning the cleanup of abandoned mineral exploration sites in Nunavik was signed allowing for rehabilitation activities to be extended until March 31, 2019. The funding provided for in this agreement has been and continues to be used to carry out the rehabilitation of sites requiring major and intermediate cleanup. The project's Steering Committee will decide which sites requiring minor cleanup will be rehabilitated on a case by case basis. The cost of the cleanup work in 2016-2017 was estimated at four hundred and ten thousand, eight hundred and forty-five dollars ($410,845).

As per the agreement, the KRG is responsible for the management and logistics of the cleanup work carried out on all sites covered under the contribution agreement. The

KRG is also responsible for drafting a timetable and anticipated budget for each year of work and for ensuring that the concerned Inuit communities are adequately informed of the cleanup being performed.

The Makivik Corporation contributes to the project by way of in-kind contribution in the form of marine and air transportation services for materials and labour to a maximum of two hundred thousand dollars ($200,000).

In the first agreement (2007-2012), the FRAN participated through a financial and in-kind contribution of seven hundred and fifty thousand dollars ($750,000). In the renewed agreement (2012-2017), the FRAN again contributed through a maximum financial and in-kind contribution of seven hundred and fifty thousand dollars ($750,000). Although it has reached its maximum financial contribution, FRAN continues to provide technical support and is an important contributor to the extension of the project.

The MERN provides an important financial contribution, covering the entire lifespan of the project, of which the maximum is four million, one hundred thousand dollars ($4.1 M).

3 SUMMARY OF PREVIOUS WORK

Since the launch of the rehabilitation project, 16 of the 18 sites requiring major cleanup have been completed. This work has been undertaken in collaboration with various Inuit communities in Nunavik, the Naskapi Nation of Kawawachikamach, the Innu Nation of Matimekush Lac-John, various active mining companies in the region and other Northern organizations. Table 1 provides a summary of the quantities of the waste removed from these sites from 2005-2016.

In 2011, the KRG Project Coordinator undertook inspections on a second group of sites classified as requiring intermediate cleanup. These 27 sites contain similar items found on the sites requiring major cleanup, only to a lesser extent. From 2006 to 2015 the KRG, various active mining companies and Cruise North Expeditions have initiated and completed cleanup on 25 of these sites. Table 2 provides a summary of the quantities of the waste removed from these sites from 2006-2016.

During the 2011 inspections, 4 previously unknown sites were identified as potential abandoned mineral exploration sites. After verification by the MERN, 2 of these sites were determined as still active and 2 as indeed abandoned. These abandoned sites are located in the Kuujjuaq Sector and will be given the names KUJ-1 and KUJ-2 and have been added to the list of sites requiring minor cleanup. In 2016, the KRG field technician and workers from the community of Kuujjuaq undertook work of site KUJ-2 and another minor site known as PD-2. A third minor site known as SW-14 in the Salluit sector was also completed this year. Furthermore, minor sites KAW-112 and

PJ-9 were inspected and confirmed as completed. Table 3 provides a summary of the quantities of the waste removed from these 5 sites in 2016. Table 4 indicates the current status for all the sites requiring major, intermediate and minor cleanup to date.

Table 1 Quantities of Waste Removed from 18 Abandoned Mineral Exploration Sites Classified as Requiring Major Cleanup Work, 2005-2016

Sector/ Site	Buildings burned or demolished (no.)	Equipment (no.)	Propane tanks (no.)	Reservoirs (no.)	Barrels (no.)	Diesel or other fuel (L)	Motor oil (L)	Grease	Other hazardous material	Transformers (T) or batteries (B) (no.)	Pipes, core trays, wood (m^3)	Debris (m^3)
Kawawachikamach												
KAW-35	19	1 muskeg + various	0	5	1000	4000	0	0	Acid, solvents, paint, oil filters, extinguishers	15 B	500+	200+
KAW-45	5	0	0	0	12	30	0	0	Naptha	0	15+	5+
Tasiujaq												
PJ-1	3 + 5 platforms	30	80	10	403	5100	54	5 kg	Paint, antifreeze, extinguishers	2 T 20 B	150+	200+
TQ-1	0	1 snowmobile	6	0	30	500	0	0	0	1 B	20+	40+
TQ-4	2	1 drill	8	0	156	200	0	0	0	0	10+	10+
Aupaluk												
PJ-10	1 platform	0	15	1	74	1400	280	40 L	0	1 B	50+	25+
PJ-17	11	11	40	0	285	500	2000	1 pail	0	1 T; 6 B	75+	100+
Kangirsuk												
TW	2 platforms	1 pipe threader	11	0	83	1230	0	110 L 2 kg	0	0	30+	20+
Kangiqsujuaq												
K-28	1 tent	1 motor	15	2	70	2000	0	0	$CaCl_2$	0	30+	25+
K-61	12	11	18	1	3600	5000	2	900 L	Acid, paint	5 B	150+	75+
WB-3	0	0	1	0	85	675	0	0	0	0	20+	5+
Salluit												
KV-1	0	0	0	0	50	0	0	0	0	0	30+	30+
SAL-1	6	0	15	0	336	1000	27	0	0	4 B	50+	10+
SW-27*	0	1 small tractor + various	0	0	115	1000	15	11 pails	0	0	100 +	50+
SW-34	1 platform	0	42	0	1500	1000	0	0	Acid, powder, oil filters	20 B	50+	70+
SW-42	1	0	0	0	45	1000	12	0	0	0	10+	10+
WB-9	11	0	10	3	82	1300	10	0	fire extinguishers, cleaners, tar	1 B	100+	100+
Umiujaq												
WHA-1*	9	0	0	0	28	280	0	0	Cleaners	0	50+	5+
TOTAL	**-**	**-**	**261**	**22**	**7 954**	**26 215**	**2 400**	**>1 275 L**	**-**	**3 T; 73 B**	**1 440+**	**980+**

*To be completed

Table 2 Quantities of Waste Removed from 27 Abandoned Mineral Exploration Sites Classified as Requiring Intermediate Cleanup Work, 2006-2016

Sector/ Site	Equipment (no.)	Propane tanks (no.)	Barrels (no.)	Diesel or other fuel (L)	Other hazardous material	Batteries (no.)	Debris
Kawawachikamach							
KAW-36			40	400			Wooden platform, plastic core trays, drilling pipes, old dumpsite, wood and metal debris
KAW-119			11				2 wooden platforms
KAW-59			3	100			4 wooden platforms 1 stove, 1 tarp, 1 canoe wood and metal debris
Kuujjuaq							
Gerido Lake		4	300	8 600			1 plastic reservoir 1 boat
P-24F		30 (small)	60	200			Wood and metal debris 2 stoves and pipes small dump site aluminium core trays
Tasiujaq							
TA-1		2	9				Wood debris Small dumpsite
TA-2			18				Aluminium core trays
TQ-6		2	10				3 stoves and pipes drilling pipes wood and metal debris small dumpsite cables and wires
TQ-10			1				3 large bladder 2 motors, tools metal debris
TQ-14		5	11			3	Drill rods, hoses
VP-11			20				Wooden debris from 3 collapsed buildings
Aupaluk							
G-2404-3		4	50				Bed frames, tent poles, dumpsite
PJ-17 A		5	64			3	
PJ-19			63				
Kangirsuk							
QC-3		0	22				Small debris, 20 drill rods
Kangiqsujuaq							
I-32		1	30	820			1 dumpsite
K-27			20				Wood, wiring, piping
K-37	1 water heater		14				
K-49	1 plane	14	45				1 stove, piping, wood, wood and metal debris
KAN-1	1 helicopter		12	820		1	Helicopter debris (metal)
KAN-2	2 tripods, 1 drill, 1 motor, 1 winch				$CaCl_2$		50 pipes
KAN-4			75				
KAN-6	INUIT CAMP						
KAN-7	muskeg	18	75				2 oxygen tanks, metal, wood
KAN-10		1	25				Metal and wood, core trays
Salluit							
Parent Lake			4	400			
SW-24	TO BE COMPLETED						
Umiujaq/Kuujjuarapik							
GW-8	TO BE COMPLETED						
TOTAL	**-**	**86**	**982**	**11 340**	**-**	**7**	

Table 3 Quantities of Waste Removed from 3 Abandoned Mineral Exploration Sites Classified as Requiring Minor Cleanup Work in 2016

Material / Sector/Site	Equipment (no.)	Propane tanks (no.)	Barrels (no.)	Diesel or other fuel (L)	Other hazardous material	Batteries (no.)	Debris
Kuujjuaq							
PD-2			24				5 bed frames, 50 core boxes, stoves & pipes
KUJ-2				5,000			3 Quatrex bags, 2 water reservoirs
KAW-112			5				2 Quatrex bags, 1 water reservoir
Salluit							
SW-14		3	24				2 Quatrex bags
Aupaluk							
PJ-19			13				
TOTAL	**-**	**3**	**66**	**5,000**	**-**	**-**	

Table 4 Status of Abandoned Mineral Exploration Sites Requiring Major, Intermediate and Minor Cleanup Work

Site Name	Latitude	Longitude	Status
SITES REQUIRING MAJOR CLEANUP			
KAW-45	55° 33.68' N	67° 21.20' W	Cleaned
KAW-35	55° 13.94' N	66° 07.27' W	Cleaned
PJ-1	58° 57.71' N	69° 35.85' W	Cleaned
TQ-1	57º 57.68' N	69 º 40.16' W	Cleaned
TQ-4	58º 15.23' N	70º 07.20' W	Cleaned
PJ-17	59° 20.29' N	69° 45.93' W	Cleaned
PJ-10	59° 15.07' N	70° 06.52' W	Cleaned
TW	60° 05.45' N	69° 55.48' W	Cleaned
K-28	61 º 34.65' N	73 º 14.75' W	Cleaned
K-61	61 º 33.25' N	73 º 27.25' W	Cleaned
WB-3	61 º 29.41' N	72 º 18.09' W	Cleaned
KV-1	61 º 25.64' N	76 º 45.46' W	Cleaned
SAL-1	61 º 31.14' N	74 º 53.01' W	Cleaned
SW-34	61 º 34.90' N	74 º 28.12' W	Cleaned
SW-27	61 º 28.76' N	76 º 22.93' W	Partially Cleaned
SW-42	61 º 23.92' N	74 º 34.40' W	Cleaned
WB-9	61 º 27.35' N	74 º 33.22' W	Partially cleaned
WHA-1	56º 24.06' N	75º 59.40' W	Cleaned
SITES REQURING INTERMEDIATE CLEANUP			
KAW-36	55° 15.02'	66° 09.46'	Cleaned
KAW-59	56° 17.80'	67° 49.00'	Cleaned
KAW-119	57° 37.48'	66° 45.77'	Cleaned
P-24F	57° 01.54'	68° 53.20'	Cleaned
TA-1	58° 16.80'	69° 50.19'	Cleaned
TA-2	58° 17.48'	69° 56.34'	Cleaned
TQ-6	58° 17.92'	69° 57.37'	Cleaned
TQ-10	58° 06.36'	70° 09.10'	Cleaned
TQ-14	58° 19.36'	70° 14.30'	Cleaned
VP-11	57° 48.59'	69° 31.75'	Cleaned
G-24N04-3	59° 11.57'	69° 49.86'	Cleaned
PJ-17A	59° 20.54'	69° 43.81'	Cleaned
PJ-19	59° 18.91'	69° 46.06'	Cleaned
QC-3	60° 21.55'	70° 09.33'	Cleaned
I-32	61° 43.12'	72° 54.94'	Cleaned

K-27	61° 36.24’	73° 19.89’	Cleaned
K-37	61° 31.07’	73° 37.44’	Cleaned
K-49	61° 28.70’	73° 49.70’	Cleaned
KAN-1	61° 32.19’	72° 57.90’	Cleaned
KAN-2	61° 32.51’	73° 31.11’	Cleaned
KAN-4	61° 30.92’	73° 40.18’	Cleaned
KAN-6	61° 28.94’	73° 49.50’	Cleaned
KAN-7	61° 28.48’	73° 49.93’	Cleaned
KAN-10	61° 31.58’	72° 49.30’	Cleaned
Parent Lake	61° 33.43’	75 10.36’	Cleaned
SW-24	61° 18.75’	75° 44.00’	Untouched
GW-8	55° 05.09’	78° 15.51’	Untouched
SITES REQUIRING MINOR CLEANUP			
KAW-28	57° 28.27’	68° 11.97’	To be confirmed
KAW-42A	56° 04.54’	67° 54.89’	To be confirmed
KAW-43	56° 04.43’	67° 15.96’	To be confirmed
KAW-54	55° 05.67’	67° 25.79’	To be confirmed
KAW-58	56° 16.45’	67° 47.21’	To be confirmed
KAW-60	56° 16.07’	67° 47.53’	To be confirmed
KAW-63	55° 54.17’	67° 06.03’	To be confirmed
KAW-67A	55° 10.89’	67° 31.49’	To be confirmed
KAW-69	55° 11.75’	67° 21.51’	To be confirmed
KAW-72	55° 08.10’	67° 13.65’	To be confirmed
KAW-5	56° 55.67’	68° 52.92’	To be confirmed
KAW-10	57° 27.76’	69° 15.49’	To be confirmed
KAW-26	56° 33.84’	68° 50.32’	To be confirmed
KAW-112	57° 40.68’	69° 34.16’	Cleaned
PD-1	57° 33.79’	69° 05.10’	Untouched
PD-2	57° 05.67’	69° 04.56’	Cleaned
PJ-9	59° 18.91’	69° 59.94’	Cleaned
KG-19	60° 26.79’	70° 10.85’	To be confirmed
KG-21	60° 18.63’	70° 57.45’	To be confirmed
QC-2	60° 24.82’	70° 09.67’	To be confirmed
I-12	61° 35.32’	73 35.85’	To be confirmed
K-36	61° 31.39’	73 16.63’	To be confirmed
K-41	61° 30.79’	73 44.74’	To be confirmed
KAN-3	61° 31.63’	73° 37.28’	To be confirmed
KAN-5	61° 30.19’	73° 45.28’	To be confirmed
KAN-8	61° 30.55’	73° 45.45’	To be confirmed
KAN-9	61° 36.73’	72° 44.56’	To be confirmed
KAN-11	61° 32.62’	73° 37.27’	To be confirmed
KAN-12	61° 30.77’	73° 44.28’	To be confirmed
G-35G08-1	61° 29.08’	74 26.55’	To be confirmed
P-35G08-1002	61° 29.22’	74° 28.35’	To be confirmed
P-35G08-1002A	61° 29.18’	74° 27.55’	To be confirmed
P-35G08-1003	61° 27.28’	74° 14.48’	To be confirmed
SAL-2	61° 27.19’	74° 41.97’	To be confirmed
SW-13	61° 34.00’	74° 38.14’	To be confirmed
SW-14	61° 49.64’	75° 38.63’	Cleaned
SW-32	61° 34.73’	75° 26.75’	To be confirmed
GW-5	55° 57.49’	76° 47.97’	To be confirmed
PH-11	55° 58.97’	76° 41.79’	To be confirmed
UD-1	56° 08.80’	76° 35.40’	To be confirmed
UD-6	56° 06.41’	76° 30.23’	To be confirmed
UM-1	55° 59.99’	76° 45.59’	To be confirmed
UM-2	55° 56.67’	76° 42.50’	To be confirmed
UM-3	55° 57.68’	76° 47.59’	To be confirmed
GW-2	55° 44.48’	77° 01.95’	To be confirmed
KUJ-1	57° 48.20.5’	69° 29.45.7’	Untouched
KUJ-2	61°34.64.4’	72°45.22.9’	Cleaned

4 GENERAL RESPONSE PLAN, 2017-2019

The *Agreement Concerning the Cleanup in Nunavik of Abandoned Mineral Exploration Sites Classified as "Major",* originally signed in 2007 was amended in April 2012 to allow for funding to be continued for rehabilitation activities being carried out on abandoned mineral exploration sites in Nunavik. This funding was earmarked to complete cleanup work on the remaining sites requiring major cleanup as well as the cleanup of sites classified as requiring intermediate work. In 2017, a second addendum was signed and the 2017-2019 General Response Plan was prepared and contains the following sections: a description of the cleanup work to be carried out before March 2019; the proposed work schedule; the proposed budget for the work; a description of human resources; and a few details concerning the communication of results. A summary of the GRP is provided below. It is important to note that at the end of each year, the GRP is adjusted to better reflect the reality of the cleanup situation.

4.1 WORK TO BE COMPLETED UNDER THE GRP

In drafting the GRP, the work to be completed was 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, and 4) the management of non-combustible non-toxic material. Below is a brief summary of those categories.

4.1.1 Field Logistics

Summer is the busiest and most productive cleanup season. It allows workers easier access to the material on the sites and a greater number of daylight hours to operate. Summer fieldwork involves the cutting up and crushing of barrels, the transfer of residues to undamaged barrels, the gathering of hazardous material and waste, gathering of general debris, gathering and burning of combustible material, and facilitating, if necessary, the transportation of these materials during the winter.

Access by land, via all-terrain vehicle or boat, may be possible after taking into account the distance between each site and the nearest villages as well as topographical conditions. However, generally speaking, most sites are accessed by helicopter or float plane. Winter work involves the transportation of materials if the sites are within proximity to a village and accessible by snowmobile.

4.1.2 Transportation and Disposal of Hazardous Waste

All recoverable hazardous materials are sent to an appropriate recovery facility south of the province via marine transportation. The transfer of residues to undamaged marine containers, labeling and preparing of the material for transportation is carried out during summer fieldwork.

4.1.3 Management of Combustible Non-Toxic Material

Combustible non-toxic material is burned or left to decompose at each site. This material includes wood as well as buildings constructed from wood, aluminum 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 materials are removed including emergency lights (lead and Ni-Cd battery cells), smoke detectors, fluorescent ballasts and fire system accumulators (Ni-Cd battery cells). Non-combustible material is 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 non-combustible, non-toxic waste at the site. 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, which the KRG obtained in 2008.

4.1.4 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, core trays, 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 is removed from the sites. Batteries, oil, antifreeze and tires will be removed from equipment, transported from the sites and treated as hazardous material.

4.2 WORK SCHEDULE

Table 5 outlines the proposed work schedule for rehabilitation activities at the remaining sites requiring major and intermediate work, between April 1, 2012 and March 31, 2019. In order to facilitate the work, cleanup activities will be carried out, when possible, on sites located in the same sector.

Table 5 Tentative Work Schedule for 2012-2017 Cleanup Activities

Year / Site	Summer 2012	Summer 2013	Summer 2014	Summer 2015	Summer 2016	Summer 2017	Summer 2018	Winter 2018-2019
MAJOR SITES								
SW-34								
SW-27								
WB-9								
KV-1								
KAW-35								
PJ-1								
INTERMEDIATE SITES								
KAW-36								Summary Report 2012-2019
KAW-59								
KAW-119								
P-24F								
TA-1								
TA-2								
TQ-6								
TQ-10								
TQ-14								
VP-11								
G-24N04-3								
PJ-19								
QC-3								
KAN-10	CR							
KAN-2	CR							
KAN-7	CR							
Parent Lake								
SW-24								
GW-8								
MINOR SITES								
Inspection								
Cleanup (if necessary)								

4.3 BUDGET PROVISIONS, 2017-2019

Table 6 indicates the projected yearly budget, as set out on the 2017-2019 GRP, for carrying out rehabilitation work on the remaining abandoned mineral exploration sites requiring major and intermediate work, as identified in the 2001-2002 inventory. It should be noted that adjustments to the budget are made at the end of each cleanup season to better reflect the work remaining on sites and in communities.

Table 6 Projected Yearly Budget for 2012-2017 Rehabilitation Activities

YEAR	2017-2018	2018-2019	TOTAL
EXPENSES			
Coordinator salary (General Contract)	$50,000	$40,000	$80,000
Technician salary and benefits	$30,000	$20,000	$50,000
Worker salaries	$45,000	$20,000	$65,000
Professional/Technical salaries (General Contract)	$0,000	$0	$0
Transportation of waste (via south)	$35,000	$15,000	$50,000
Transportation of material/employees	$80,000	$50,000	$110,000
Disposal of waste (General Contract)	$10,000	$0	$0
Travel Airfare	$38,000	$25,000	$58,000
Travel Expenses	$15,000	$5,000	$18,000
Material/Equipment	$20,000	$5,000	$25,000
Communication and translation	$2,500	$3,000	$5,000
KRG training costs (Human Resources)	$7,000	$6,000	$12,000
Sub-total	**$332,500**	**$189,000**	**$483,000**
Administration (12%)	$39,900	$22,680	$57,960
Weather Condition Provision (15%)	$49,875	$28,350	$72,450
TOTAL	**$422,275**	**$240,030**	**$662,305**

4.4 HUMAN RESOURCES

Human resources for the project fall into two categories: 1) KRG employees, which is to say the project coordinator and environmental or field technicians, and 2) local workers.

The project coordinator works full-time on the project while the environmental technician or field supervisor works part-time during the summer season and winter season if necessary. Experience acquired in the previous work terms suggests that it is absolutely necessary to have one and in some case two technicians on site to complete the cleanup according to the schedule and to allow for more consistent logistical planning by the coordinator.

Local workers are hired to work on the project from the communities located closest to each site. This not only creates jobs, but it also contributes to increasing local know-how regarding contaminated site restoration and environmental project management. The Northern Villages are central to providing local workers for the rehabilitation work, including the payment of the workers' wages. The amounts paid to these workers are subsequently invoiced to the KRG who reimburses all related costs. This cooperation is extremely effective and permits the hiring of individuals

who are recognized in their communities. This kind of experience is also highly sought-after by mineral exploration companies during the cleanup of their sites and could therefore lead to future work.

Worker safety is also an important issue for those involved in rehabilitating the abandoned mineral exploration sites in Nunavik. Most of the sites are in isolated locations that cannot easily be reached from nearby villages. In summer, workers are usually transported by helicopter or floatplane. In some cases, the transporter does not remain at the site, therefore emergency planning is important. It is essential that each work team have an emergency plan and adequate communication systems to contact help, if necessary.

4.5 COMMUNICATIONS

At the beginning of each year, a letter is sent to each of the Northern Villages asking for their participation in the project and providing information regarding the work to take place on the sites near their community. At the end of each year, an activity report is sent to each of the partners involved in the cleanup work including those providing financial or in-kind contributions.

5 DESCRIPTION OF 2016-2017 REHABILITATION WORK

This section provides an updated description of the sites where cleanup work was carried out during the 2016-2017 season. In 2011, an inspection of these site was undertaken and data collected to better understand the type of work, manpower and equipment required and to estimate a timeframe for rehabilitation.

This year, the rehabilitation of sites PD-2, KUJ-2, and SW-14 was completed. Work was undertaken in the community of Aupaluk to prepare material for transportation by ship. Finally, work was also carried out on the site requiring major cleanup known as SW-27. The work undertaken on each site is described in Section 5.1 with supporting photographs available in Appendix 2.

It should be noted that in 2016 a field technician was hired to supervise the work on most of the sites and in some communities when necessary. Richard Knoxleet, who has many years of experience in the Nunavik region, was asked to fulfil the role as field technician for a fourth year. Nancy Dea remained as project coordinator in 2016-2017.

5.1 DESCRIPTION OF WORK

Tasiujaq Sector

PJ-1

The abandoned mineral exploration site PJ-1 (58º 57.71' N, 69º 35.85' W) is located between the communities of Aupaluk and Tasiujaq (Map 4). The site covers more than 3 km^2 and is comprised of nine sectors. The 2001-2002 inventory ranked this site number one in importance for major rehabilitation. Extensive work has been completed on this site since 2006, including several winter terms. The final material was removed from PJ-1 in the summer of 2011 and was stored in the community of Aupaluk. In 2011 and 2012 approximately 36 pieces of equipment and machinery, totalling 117 tonnes, as well as several marine containers carrying 30 tonnes of scrap metal, were transported by ship to a metal recovery facility in the south. In 2013, 2 marine containers were removed from Aupaluk weighing 16 tonnes. In 2014, a total volume of 82 tonnes was transported to a recovery facility. In 2015, one open-top container was shipped from Aupaluk with 15 tonnes of material.

In October 2016, the community of Aupaluk assisted in preparing the final open-top container for transportation. 6 tonnes of material was loaded onto the cargo ship thus marking the final shipment from the community of Aupaluk. In total, approximately 266 tonnes of material, which had been removed from various site including PJ-1, PJ-17, PJ-10 and PJ-19, was transported from Aupaluk via ship, to a recycling facility in Montréal.

With no material remaining in Aupaluk, PJ-1 is now considered as complete and photos can be found in Appendix 2.

PJ-9

The abandoned mineral exploration site known at PJ-9 (59° 18.91' N, 69° 59.94' W) is located 22 km west of Aupaluk, along the shores of Red Dog Lake (Map 5). This site is categorized as requiring minor cleanup.

During cleanup work on other sites in this area, the field technician took the opportunity to inspect PJ-9. He found it to already have been cleaned. It is suspected that the mining company Oceanic Iron Ore may have undertaken the rehabilitation during its exploration activities in the area. The site is now complete and photos of this work can be found in Appendix 2.

Kuujjuaq Sector

PD-2

The abandoned mineral exploration site known as PD-2 (57° 36.15' N, 69° 04.56' W) is located 74 km southwest of Kuujjuaq. The debris at this site is located in one general area and is considered as a site requiring minor cleanup (Map 4).
In June 2016, the field technician and 2 workers from Kuujjuaq undertook rehabilitation activities on the site. It was a one-day campaign and in which they removed 24 empty drums, 5 metal bed frames, 50 core boxes and 3 stoves and stove pipes. This material was transported to Kuujjuaq by helicopter and stored in a marine container. The container is scheduled to be shipped in 2017. The site is now complete and photos of this work can be found in Appendix 2.

KUJ-2

The abandoned mineral exploration site known as KUJ-2 (57° 48.20.5' N, 69° 29.45.7' W) was discovered during territorial inspections in 2011. It is located approximately 70 km west of Kuujjuaq, on the shores of Lac Livaudiere (Map 4). It is considered to be a site requiring minor cleanup.

In June 2016, the field technician and 2 workers from Kuujjuaq undertook rehabilitation activities on the site. It was a one-day campaign in which they removed 25 full drums, 3 Quatrex bags of debris, and 2 water reservoirs filled with hoses and debris. This material was transported to Kuujjuaq by helicopter and stored in a marine container. The container is scheduled to be shipped in 2017. The site is now complete and photos of this work can be found in Appendix 2.

Salluit Sector

SW-27

The abandoned mineral exploration site SW-27 (61°28.76' N, 76°22.93' W) is located roughly 90 km south-southwest of Salluit (Map 6). The 2001-2002 inventory ranks this site 12th in importance for major rehabilitation work. The site covers 0.2 km^2 and although originally thought to comprise four sectors, five sectors were actually found on site. Before rehabilitation activities, SW-27 contained a significant quantity of residual material and hydrocarbons residue: roughly 1650 L of diesel, 260 L of grease and 26 L of oil. Although covering only 2.5 m^2, hydrocarbon soil contamination is still very evident. Open or damaged barrels of grease were also observed.

In 2015, the Project Coordinator and workers from the community of Salluit undertook an intense cleanup campaign at all 5 sectors on this site. All material from each sector was transported by helicopter to Sector 5 while combustible material was burned in each sector

In August, 2016, the Field Technician supervised the transportation of the material stored in Sector 5 to the community of Salluit. A helicopter transported the material

to Salluit where it was stored in a marine container. Due to time constraints, only 90% of the material was removed. Table 7 shows the material both removed and remaining on site.

Pictures of this work can be found in Appendix 2. Work will continue of this site in 2017 and is described in Section 6 of this report.

Table 7 Material Removed and Remaining at Site SW-27

Type of Material	**Quantity**
MATERIAL REMOVED	
Empty drums	60
Full drums	1
Crushed drums	28
Drums filled with small debris	22
Small white bags filled with debris	3
Wooden box filled with debris	3
Drill rods	4,000 pounds
Aluminium towers	2,000 pounds
Pails of grease	11
Pails of oil	2
Aluminium core trays	40
Machinery parts (ie, blades, engines, generators, small trailer)	9
Steel bed frames	10
Stoves	1
Water heater	1
MATERIAL REMAINING	
Full drums	1
Drums with fuel residue	2
Stoves	1
Drill rods	1,000 pounds

SW-14

The site known as SW-14 is located south of Salluit (61° 49.64' N, 75° 38.63' W) and falls under the category of requiring minor cleanup (Map 4).

In July 2016, the field technician along with 4 workers from the community of Salluit undertook one day of work at this site. They removed 2 Quatrex bags filled with debris, 24 empty drums and 3 propane tanks. All the material was transported by helicopter to the community of Salluit, where it was stored in a marine container. The containers will be shipped to a recovery facility in 2017. The site is now complete and photos of this work can be found in Appendix 2.

5.2 2015-2016 EXPENDITURES

Table 8 indicates the calculated expenditures during the fieldwork undertaken in the 2016-2017 season. Some expenses were under or over-estimated from previous cost assessments due to weather conditions and less days spent on some sites.

Table 8 2016-2017 Expenditures

INCOME	
KRG surplus	$103 005
MERN income	$153 920
FRAN income	$0
Other	$0
TOTAL	**$256 925**

IN-KIND CONTRIBUTION	
TOTAL	**$0**

EXPENDITURES*	**2016**
Travel & Accommodations	$77 459
General Contracts	$101 415
Salaries & Fringe Benefits	$0
Purchase of Materials	$4 855
Administrative Charges	$2 069
TOTAL:	**$185 798**

*Source: 2016 KRG Financial Statement

6 DESCRIPTION OF 2017-2018 REHABILITATION WORK

In March, 2017, a second amendment to the agreement concerning the cleanup of abandoned mineral exploration sites in Nunavik was signed by the project partners. This amendment will allow for rehabilitation activities to be extended until March 31, 2019. The funding will be used to carry out the rehabilitation of the remaining 2 sites requiring major cleanup and the 2 sites requiring intermediate cleanup. In order to validate cleanup priorities on sites requiring minor cleanup inspections will take place in each sector during fieldwork on nearby sites.

The following section describes the work planned for the 2017-2018 season. Photographs of these sites can be found in Appendix 3.

Salluit Sector

WB-9

After having burned all combustible material on site in 2015, a final sweep of the site will be necessary in 2017 to remove any smaller debris that may have been difficult to see while buildings burned or smoldered. In collaboration with the Northern Village of Salluit, a team of workers, accompanied by a field supervisor, will need to spend 1-2 days on site collecting the debris and preparing it for transportation by helicopter. A magnet has been purchased and will be used in order to collect smaller debris such as nails and screws. Conditional to a repeat partnership Glencore Canada Corporation, this material will need to be transported, by helicopter, to their East Lake facility and stored in marine containers where it will be shipped to a recycling facility in Montréal. The KRG will need to communicate with Glencore regarding this work and organize any necessary logistics.

SW-27

All material remaining at site SW-27 is located in Sector 5. In collaboration with the Northern Village of Salluit, workers and a supervisor will need 1 day to prepare this material to be transported by helicopter to Salluit where it can be packaged in marine containers for further transportation by ship to an appropriate recycling facility.

SW-24

Site SW-24 falls under the category of sites requiring intermediate cleanup (Map 4), however it is not specifically one single site. Several hundred drums and propane tanks have been spotted along the *Petite rivière de Puvirnituq* during previous inspections and by various Inuit informants in the past. Most barrels are located in the downstream portion of the river on the south shore.

This site will prove a challenge, as it will require a team to navigate the river's shoreline over a long distance to collect the drums. In 2017, the KRG will need to work closely with the partners involved to ensure this is done effectively and efficiently. A thorough inspection of this site should be done at the beginning of the cleanup season. It may be possible to transport the drums and other material to WB-9, due to its proximity, and can then be packaged for transportation by helicopter to an appropriate location. Conditional to a repeat partnership with Glencore Canada Corporation, this material could be transported, by helicopter, to their East Lake facility and stored in marine containers where it will be shipped to a recycling facility in Montréal. The KRG will need to communicate with Glencore regarding this work and organize any necessary logistics.

Kuujjuaraapik Sector

GW-8

The site GW-8 is located south-west of the community of Kuujjuaraapik (55° 05.09' N,

78° 15.51’ W) and falls under the category of requiring intermediate cleanup (Map 4).

The 2001-2002 inventory noted that 25 drums and a snowmobile are located at this site, however, no follow-up inspections have ever been done.

In 2017, a team from the village of Kuujjuaraapik and a supervisor will need a 1 or 2-day campaign to remove the debris and have it brought to the community by helicopter, or boat if accessible. The material will be stored in a marine container, already available, and shipped to an appropriate recycling facility. KRG will need to undertake the necessary logistics to ensure the site is completed.

6.1 PROJECTED BUDGET FOR 2017-2018

Table 9 indicates the projected budget for carrying out the final rehabilitation work on sites WB-9 and SW-27, the cleanup activities at sites SW-24 and GW-8, as well as work required in the villages of Kuujjuaq and Salluit to prepare material for transportation.

Table 9 Projected 2017-2018 Budget

INCOME	
KRG surplus 2016	$0
MERN income	$422,275
FRAN income	$0
Other	$0
TOTAL	**$422,275**

IN-KIND CONTRIBUTION								
Site	**WB-9**	**SW-27**	**SW-24**	**GW-8**	**Kuujjuaq**	**Salluit**	**Minor Sites**	**Total**
Glencore	assistance							$10,000
Canadian Royalties		assistance						$10,000
Makivik (NEAS)								$0
TOTAL	**$10,000**	**$10,000**	**$0**	**$0**	**$0**	**$0**		**$20,000**

EXPENSES								
Site	**WB-9**	**SW-27**	**SW-24**	**GW-8**	**Kuujjuaq**	**Salluit**		**Total**
Coordinator salary (General Contract)	$5,000	$5,000	$10,000	$5,000	$5,000	$10,000	$10,000	**$50,000**
Technician salary and benefits	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	**$0**	**$30,000**
Worker salaries	$5,000	$15,000	$15,000	$10,000	$0	$0	$0	**$45,000**
Professional/Technical salaries (General Contract)	$0	$0	$0	$0	$0	$0	$0	**$0**
Transportation of waste (via south)	$0	$0	$10,000	$5,000	$10,000	$10,000	$0	**$35,000**
Transportation of material/workers	$10,000	$20,000	$20,000	$10,000			$20,000	**$80,000**
Disposal of waste (General Contract)	$0	$0	$5,000	$5,000	$0	$0	$0	**$10,000**
Travel Airfare	$5,000	$5,000	$10,000	$5,000	$3,000	$5,000	$5,000	**$38,000**
Travel Expenses	$2,000	$3,000	$3,000	$2,000	$1,000	$2,000	$2,000	**$15,000**
Material/Equipment	$5,000	$5,000	$5,000	$5,000	$0	$0	$0	**$20,000**
Communication and translation	$500	$500	$500	$500	$0	$0	$500	**$2,500**
KRG training costs (Human Resources)	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	**$7,000**
Sub-total	**$38,500**	**$59,500**	**$84,500**	**$53,500**	**$25,000**	**$33,000**	**$38,500**	**$332,500**
Administration (12%)	$4,620	$7,140	$10,140	$6,420	$3,000	$3,960	$4,620	**$39,900**
Weather condition provision (15%)	$5,775	$8,925	$12,675	$8,025	$3,750	$4,950	$5,775	**$49,875**
TOTAL	**$48,895**	**$75,565**	**$106,315**	**$67,945**	**$31,750**	**$41,910**	**$48,895**	**$422,275**

7 REFERENCES

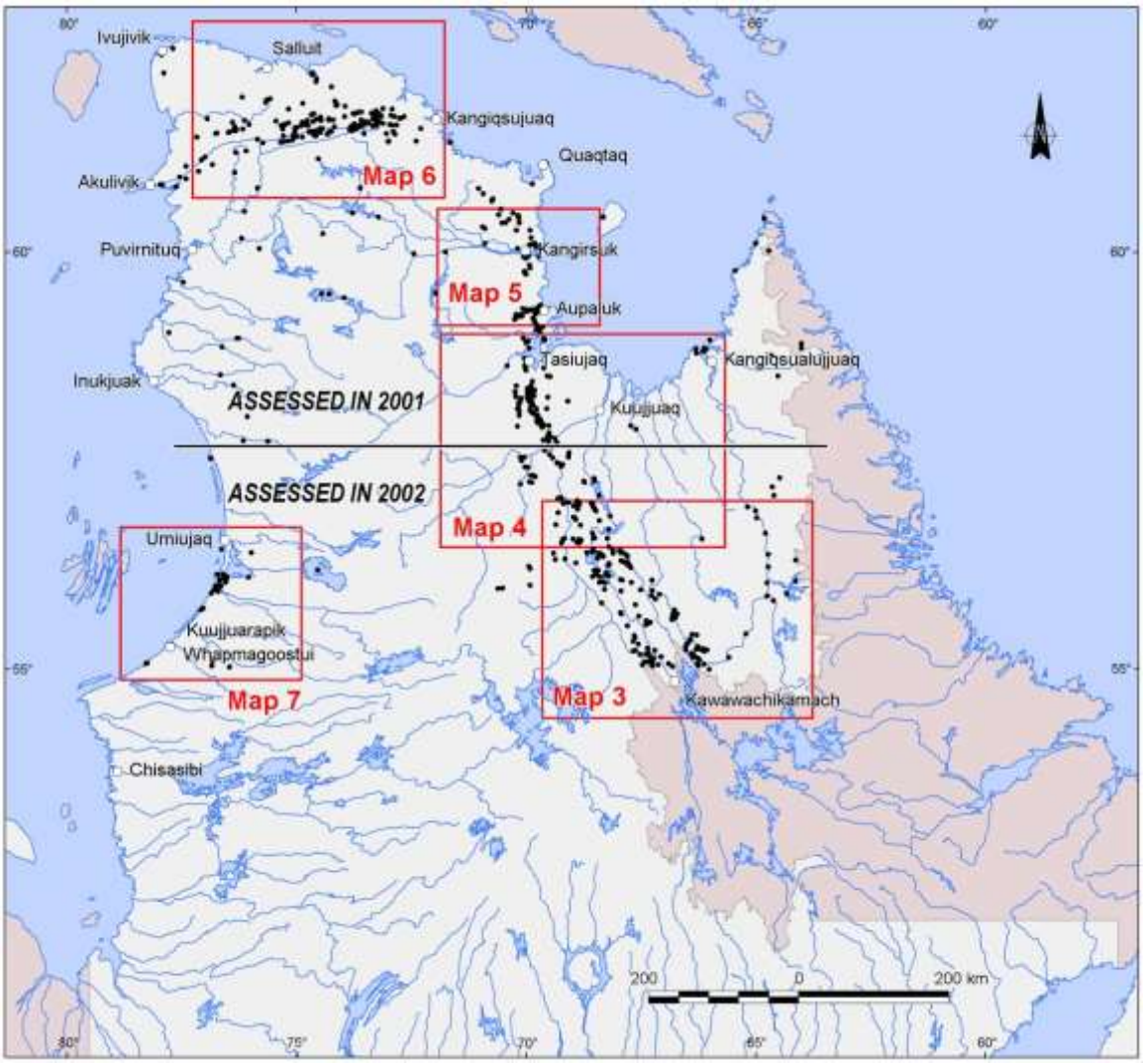
Kativik Regional Government. 2012a. *Abandoned Mineral Exploration Sites in Nunavik Rehabilitation Project. 2005-2012 Summary Report and Update of the General Response Plan*. Renewable Resources, Environment, Lands and Parks Department of the Kativik Regional Government, Kuujjuaq. 322 p. and appendices.

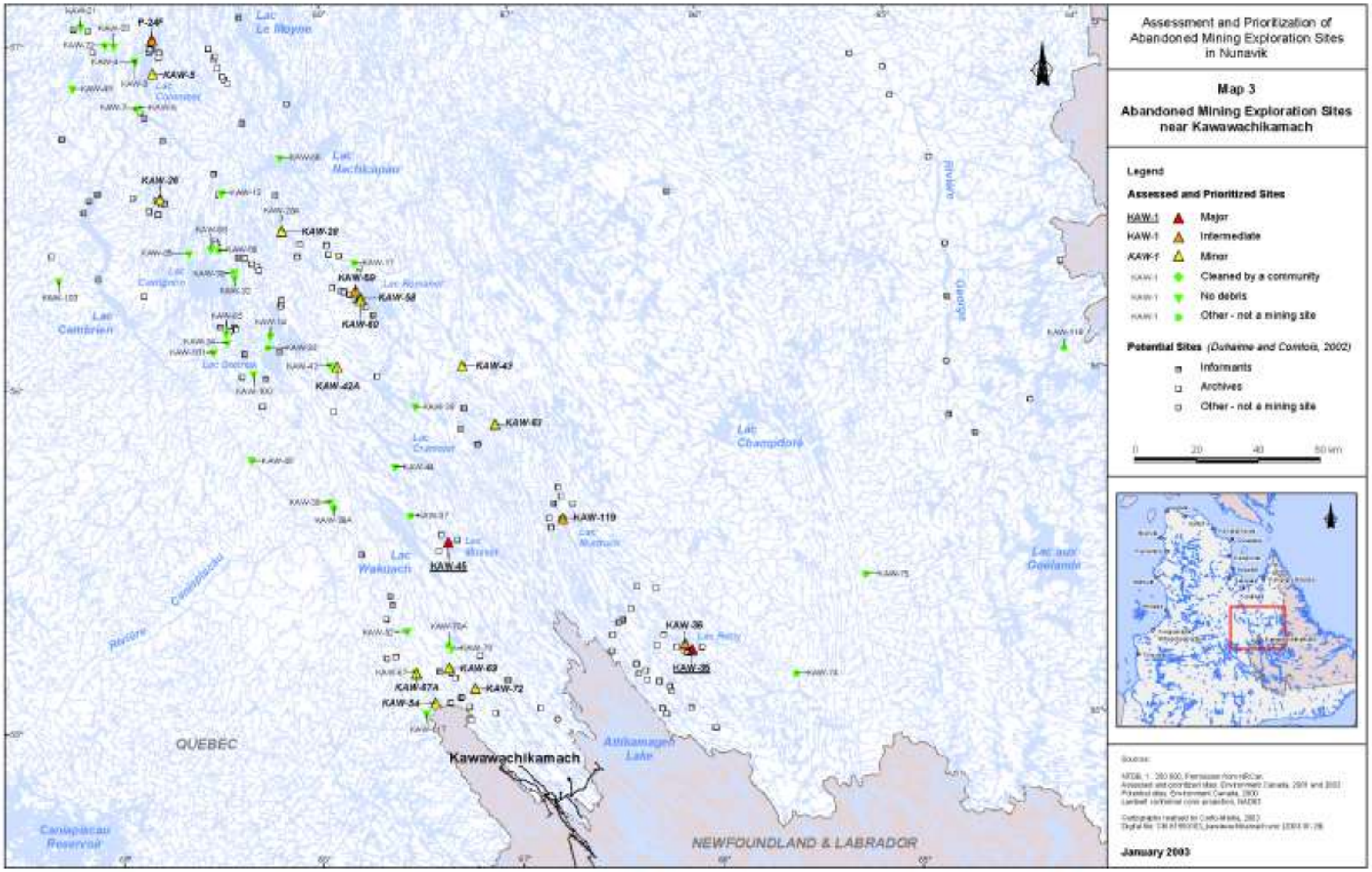
Kativik Regional Government. 2012b. *General Response Plan, 2012-2017: For the Rehabilitation of Abandoned Mineral Exploration Sites in Nunavik.* Renewable Resources, Environment, Lands and Parks Department of the Kativik Regional Government, Kuujjuaq. 12 p.

APPENDIX 1

Maps Showing the Locations of Abandoned Mineral Exploration Sites in Nunavik

LIST OF MAPS


Ivujivik
Salluit
Kangiqsujuaq
Quaqtaq
Akulivik
Map 6
Puvirnituq
Kangirsuk
Map 5
Aupaluk
Tasiujaq
Kangiqsualujjuaq
Inukjuak
ASSESSED IN 2001
Kuujjuaq
ASSESSED IN 2002
Map 4
Umiujaq
Kuujjuarapik
Whapmagoostui
Map 7
Map 3
Kawawachikamach
Chisasibi
200
0
200 km


Assessment and Prioritization of Abandoned Mining Exploration Sites in Nunavik
Map 3
Abandoned Mining Exploration Sites near Kawawachikamach
Legend
Assessed and Prioritized Sites
KAW-1 Major
KAW-1 Intermediate
KAW-1 Minor
KAW-1 Cleaned by a community
KAW-1 No debris
KAW-1 Other - not a mining site
Potential Sites (Duhaime and Comtois, 2002)
Informants
Archives
Other - not a mining site
0 20 40 60 km
January 2003
Lac Le Moyne
Lac Nachikapau
Lac Cambrien
Lac Champdore
Lac Wakuach
Lac aux Goélands
Attikamagen Lake
Caniapiscau Reservoir
QUEBEC
NEWFOUNDLAND & LABRADOR
Kawawachikamach
KAW-5
KAW-26
KAW-29
KAW-59
KAW-58
KAW-60
KAW-42A
KAW-43
KAW-63
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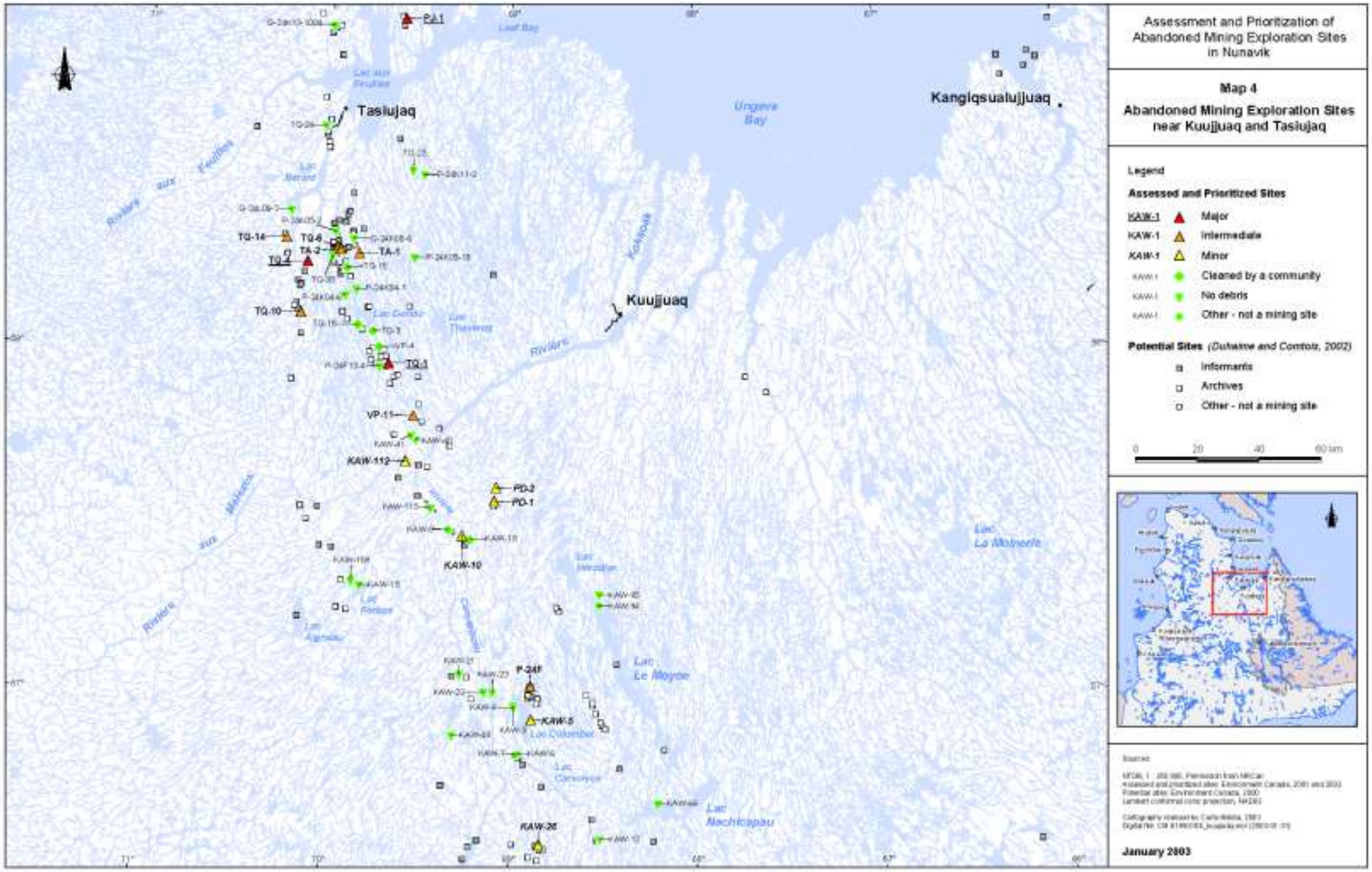
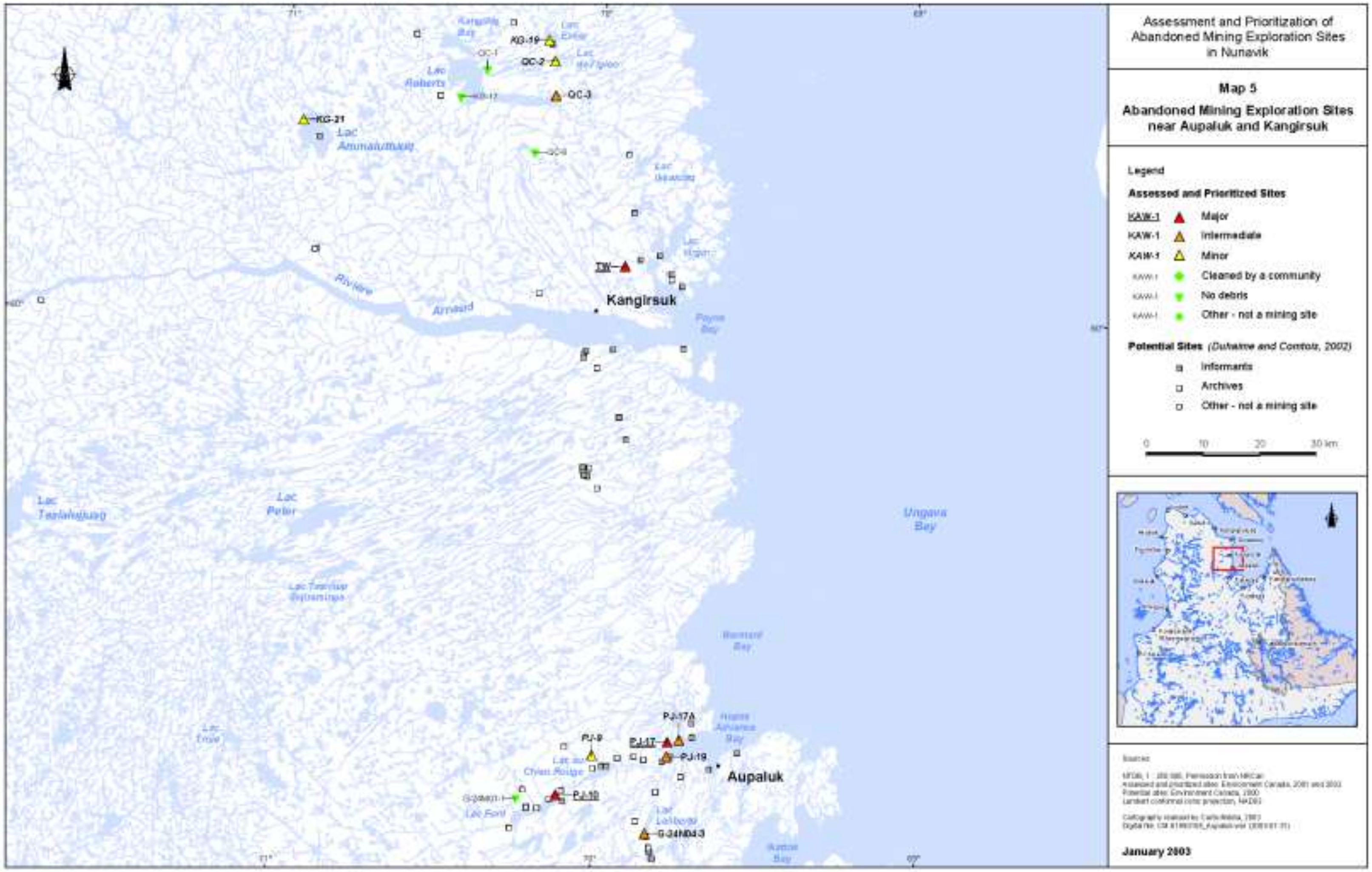
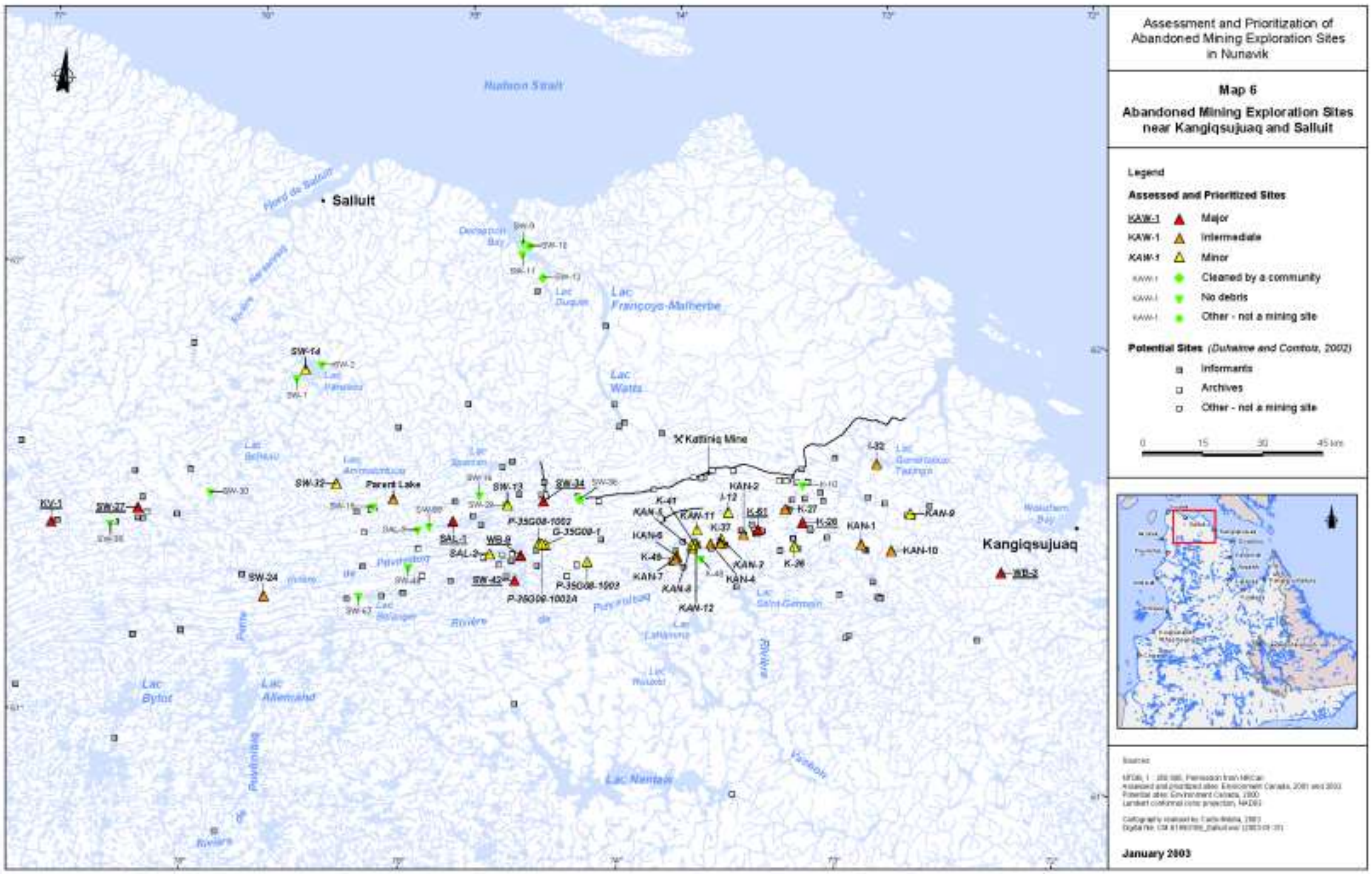
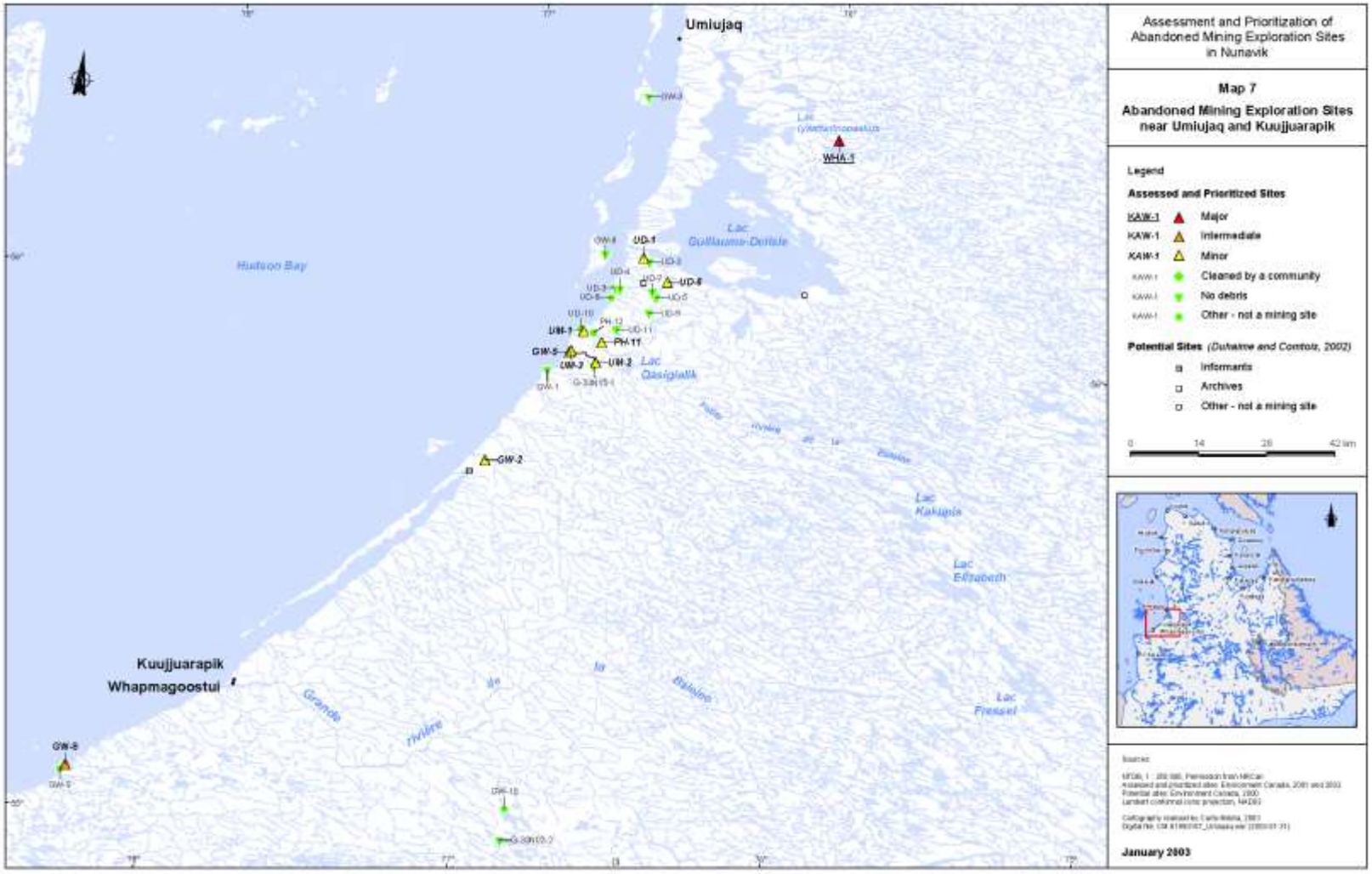
KAW-69
KAW-67A
KAW-72
KAW-54


Assessment and Prioritization of Abandoned Mining Exploration Sites in Nunavik
Map 4
Abandoned Mining Exploration Sites near Kuujjuaq and Tasiujaq
Legend
Assessed and Prioritized Sites
KAW-1 Major
KAW-1 Intermediate
KAW-1 Minor
Cleaned by a community
No debris
Other - not a mining site
Potential Sites (Duhaime and Comtois, 2002)
Informants
Archives
Other - not a mining site
0 20 40 60 km
Tasiujaq
Kuujjuaq
Kangiqsualujjuaq
Ungava Bay
Lac Le Moyne
Lac La Moinerie
Lac Nachicapau
KAW-112
KAW-10
KAW-5
KAW-26
P-24F
PD-2
PD-1
VP-11
TQ-14
TQ-6
TA-2
TA-1
TQ-10
TQ-1
PA-1
Sources:
January 2003


Assessment and Prioritization of Abandoned Mining Exploration Sites in Nunavik
Map 5
Abandoned Mining Exploration Sites near Aupaluk and Kangirsuk
Legend
Assessed and Prioritized Sites
KAW-1 Major
KAW-1 Intermediate
KAW-1 Minor
KAW-1 Cleaned by a community
KAW-1 No debris
KAW-1 Other - not a mining site
Potential Sites (Duhaime and Comtois, 2002)
Informants
Archives
Other - not a mining site
0 10 20 30 km
January 2003
Kangirsuk
Aupaluk
Ungava Bay
KG-21
KG-19
QC-2
QC-3
PJ-17A
PJ-17
PJ-19
PJ-9
PJ-10
G-24N04-3


Assessment and Prioritization of Abandoned Mining Exploration Sites in Nunavik
Map 6
Abandoned Mining Exploration Sites near Kangiqsujuaq and Salluit
Legend
Assessed and Prioritized Sites
KAW-1 Major
KAW-1 Intermediate
KAW-1 Minor
Cleaned by a community
No debris
Other - not a mining site
Potential Sites (Duhaime and Comtois, 2002)
Informants
Archives
Other - not a mining site
January 2003
Hudson Strait
Salluit
Kangiqsujuaq
Parent Lake
Katinniq Mine
Lac Françoys-Malherbe
Lac Nantais
Lac Bylot
Lac Allemand


Umiujaq
WHA-1
Lac Guillaume-Delisle
Hudson Bay
UD-1
UD-6
PH-11
UM-1
UM-2
GW-5
GW-2
Lac Qasigialik
Lac Kakiqris
Lac Elizabeth
Lac Fressel
Kuujjuarapik
Whapmagoostui
GW-8
Assessment and Prioritization of Abandoned Mining Exploration Sites in Nunavik
Map 7
Abandoned Mining Exploration Sites near Umiujaq and Kuujjuarapik
Legend
Assessed and Prioritized Sites
KAW-1 Major
KAW-1 Intermediate
KAW-1 Minor
Cleaned by a community
No debris
Other - not a mining site
Potential Sites (Duhaime and Comtois, 2002)
Informants
Archives
Other - not a mining site
0 14 28 42 km
January 2003

APPENDIX 2

Photographs of Sites on Which Rehabilitation Work was Undertaken in 2016-2017

Figure 1: Container of material shipped from Aupaluk, July 2016

Figure 2: Damaged container shipped from Aupaluk, July 2016

Figure 3: Site PJ-9, after rehabilitation activities, July 2016

Figure 4: Site PD-2 during 2011 inspections

Figure 5: Site PD-2 during rehabilitation activities, August 2016

Figure 5: Site PD-2, after rehabilitation activities, August 2016

Figure 6: Material found at site KUJ-2, August 2016

Figure 7: Site KUJ-2, after rehabilitation activities, August 2016

Figure 8: Site SW-27, before rehabilitation activities, July 2016

Figure 9: Site SW-27 during rehabilitation activities, July 2016

Figure 11: Site SW-14 during 2001 inspections

Figure 12: Site SW-14 during 2001 inspections

Figure 13: Site SW-14, after cleanup, September 2016

Figure 14: Site SW-14, after cleanup, September 2016

APPENDIX 3

Photographs of Sites on Which Rehabilitation Work Will Take Place in 2017-2018

Figure 15: Site WB-9, September 2015

Figure 16: Site WB-9, September 2015

Figure17: Material removed from Site SW-27 being stored in Salluit, July 2016

Figure 18: Material remaining at Site SW-27, July 2016

Figure 19: Group of barrels and debris along the little Puvirnituq River, September 2016

Figure 20: Group of barrels and debris along the little Puvirnituq River, September 2016

Figure 21: Site GW-8, September 2002