Sinanni inc.

March 24, 2004

Philippe di Pizzo
Executive Director
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU X0E 1J0
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RE: NWB Permit No. NWB5RES9803 - NWB5RES0308 - Annual Report

Mr di Pizzo:

On behalf of INAC and Qikiqtaaluk Corporation, please find enclosed three (3) copies of the annual report prepared in accordance to the General Conditions of the waters licences for the Resolution Island project. A copy of *Summary of Technical Activities 2003 - Resolution Island Project* prepared by QC/Sinanni, supporting the annual report, is also provided. Also as a supporting document, a copy of *Scientific Investigations - Resolution Island 2003* prepared by Queen's University ASU, not yet published, will be provided in the next few weeks. We will soon forward to your attention the Inuktitut translation of the executive summaries of all above mentioned reports.

Should you have any questions regarding the submitted documents, please contact us.

Sincerely,

Philippe Simon, P.Eng., Ph.D.

cc Harry Flaherty, Director, Environmental Services
Lou Spagnuolo, INAC, Iqaluit

ANNUAL REPORT

Water Licence No. NWB5RES9803
&
No. NWB5RES0308

RESOLUTION ISLAND PROJECT

Resolution Island, Nunavut

Report submitted to:

NUNAVUT WATER BOARD

by:

Indian and Northern Affairs Canada
Affaires indiennes et du Nord Canada

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QIKIQTAALUK CORPORATION

Sinanni inc.

March 2004

EXECUTIVE SUMMARY

For the Resolution Island Project, Qikiqtaaluk Corporation (QC) held on behalf of Indian and Northern Affairs Canada (INAC) a Water Licence (NWB5RES9803) that expired July 31, 2003. An other license (NWB5RES0308) was recently issued directly to INAC by the Nunavut Water Board (NWB) on August 29, 2003 to cover the remaining activities of the same project. The annual report, as per compliance with both licenses, presents various information in the following sections:

a. Fresh Water Quantities
b. Sewage Water Quantities
c. Waste Discharge
d. Summary of Construction Work
e. Surveillance Network Program
f. Environmental Monitoring Program
g. Anticipated Work
h. Studies Requested
i. Unauthorized Discharges
j. Communication Exercises
k. Operation and Maintenance Plan
l. Contingency Plan Revisions
m. Trenches and Sumps
n. Clean Up Procedures
o. Public Consultation
p. Concerns Addressed
q. Other Details
r. Inuktitut Executive Summary

In reference to this annual report, several documents are appended. In summary, all conditions of the Water Licence were complied with.

GENERAL CONDITIONS

As licensees, Qikiqtaaluk Corporation (QC) and Indian and Northern Affairs Canada (INAC) have implemented various procedures to comply with conditions described in the Water Licences (issued July 31st 1998 and August 29th, 2003) related to the Resolution Island Project. The following document summarizes water use data and describes various activities conducted on-site as required by the General Conditions of the Permit.

a. Fresh Water Quantities

Lower Lake, used as the water supply lake, is located in a relatively undisturbed area (Lower Lake borrow pit nearby was last used in 2001) at approximately 3.2 km (in a straight line) from camp and 1.6 km from the nearest traffic and construction activities. During the work season fresh water was pumped from the supply lake into an 11 m^3 water truck and delivered to 3 (5,265-litre) polyethylene tanks located in the core camp. Fresh water was mainly used for sanitary and kitchen uses and for fire drills. The following table presents the monthly and annual quantities of fresh water used for the project. Estimates are based on the average number of truck loads per week.

Period	June	July	August	September
Water volume used (m^3)	120	440	495	230
Total volume (m^3)	1285			

The NWB5RES9803 permit stipulates that no more than 400 m^3 of fresh water per month be used, Furthermore, the NWB5RES0308 permit requires that up to 20 m^3 of fresh water per day (i.e. 600 m^3/month) be used. Apart from the month of July where the volume exceeded the former license's requirement mainly due to the increase number of workers in the camp, these requirements were met.

b. Sewage Water Quantities

Sewage water was discharged from the core camp through a single pipe into the sewage lagoon. Monthly and annual estimates are presented in the following table.

Period	June	July	August	September
Sewage volume generated (m^3)	95	345	415	180
Total volume (m^3)	1025			

c. Waste Discharge

Solid waste produced during on-site activities was transferred to a covered metal vault outside the core camp on a daily basis and incinerated using a double chamber forced-air Westland incinerator. Solid waste mainly originated from the kitchen operations and from discarded packaging of materials and supplies. The following table presents the monthly and annual quantities of solid waste managed during the 2003 field season at Resolution Island. Estimates are based on the assumption that every person in the camp generated, on average, approximately 2.5 kg of solid waste per day. An unexpected and additional volume of waste was produced at the beginning of the season due to polar bear damages to the camp. It was estimated that approximately 0.5 Ton of waste (damaged freezers, kitchen supplies, etc.) were produced in addition to the normal activity in June.

Period	June	July	August	September
Waste generated (M.T.)	1.19	4.65	5.04	1.22
Total (M.T.)	12.10			

d. Summary of Construction Work

Construction activities conducted at Resolution Island during the 2003 season are summarized in a report submitted to Indian and Northern Affairs Canada (INAC) in February 2004 by Qikiqtaaluk Corporation and Sinanni Inc. (see appended document: *Summary of Technical Activities - 2003 - Resolution Island Project*).

e. Surveillance Network Program

Field activities that could generate environmental impacts have been evaluated and are presented in the document entitled *Environmental Screening Report* submitted with the permit application. As part of the Surveillance Network Program (SNP), water from the new supply lake (sampling station # RES-1) was sampled and analyzed. Runoff water from both active solid waste disposal sites (sampling stations # RES-4 and # RES-5) could not be sampled and analyzed because no water was found to discharge from these sites.

The SNP analytical results are presented in Table I at the end of this document. These results can also be found in the document entitled *Resolution Island 2003 - Scientific Investigations* prepared by Queen's University Analytical Services Unit (ASU) (see appended document). Furthermore, the Quality Assurance and Quality Control (QA/QC) program used for the SNP is also included in this appended document.

Because of low pH values in the drinking water, pH adjustment was carried out throughout the

season by adding sodium carbonate to the camp water storage tanks thereby increasing the pH value to within the required range of 6.5 - 8.5.

f. Environmental Monitoring Program

Details of the Environmental Monitoring Program conducted during the 2003 season are described in the document entitled *Resolution Island 2003 - Scientific Investigations* prepared by Queen's University ASU (see appended document). Also, a description of the anticipated long-term monitoring program was submitted to the NWB on December 31, 2003.

g. Anticipated Work

The tasks anticipated for the 2004 field season are listed below:

Logistics

- Mobilization and demobilization: mobilize mid-June, demobilize mid-September
- Purchasing / acquisition: additional equipment as required
- Sea lifts: return the 838 empty containers to site as soon as possible – remove filled containers in September.
- Fuel re-supply: add fuel to the tanks as required such that there is an adequate amount for completion of the project.

Contaminated Soil Excavation

- S1/S4 Beach: commence PCB contaminated soil excavation – all levels of PCB contamination can be excavated as convenient – CEPA soil to containers, Tier II to Tier II landfill, Tier I to beach non-hazardous landfill.
- S1/S4 Valley and Buildings Area: excavate and transport Tier II soil and debris to Tier II landfill when it is ready to receive material – excavate Tier I material and transport to camp non-hazardous landfill.
- Excavate fuel contaminated soil and landfarm.

CEPA Soil Containerisation

- Previously containerised CEPA material: as time permits containerize CEPA soil from miscellaneous containers to standard containers – sort out barrels from Iqaluit and containerize soil.
- From excavation work: containerize CEPA soil.

Clean Fill

- Production of at least 25000 m^3 of gravel from borrow sources around the site or as shot rock by blasting.

Old Landfill Remediation

- Beach dumps: as time permits excavate Tier II soil and transport to Tier II landfill – excavate Tier I soil and take to beach non-hazardous landfill.
- Maintenance dump: excavate cobalt contaminated soil to Tier II landfill – close dump by adding some fill and recontouring.
- North slope dump: no work planned

- PCL dump: no work planned

New Landfills

- Core camp non-hazardous landfill: add Tier I soil and debris from camp and maintenance areas – cover at end of season
- Beach non-hazardous landfill: add Tier I soil and debris from beach area – cover at end of season
- Tier II landfill: add Tier II material as per specifications.

Physical Debris

- Barrels and their contents: consolidate any new barrel contents found; shred any empty barrels located.
- Other materials management.

Waste Fuel Incineration

- set up one incinerator, dispose of waste fuel.

Other Tasks

- Training: on-the-job as available.
- ASU work: carry out analyses and mapping as required plus usual annual tasks – conduct research and prototype testing to support permanent barrier installation.
- Install monitoring wells at the new Tier II landfill.
- Carry out "as convenient" tasks as time and equipment permit.

h. Studies Requested

No studies related to waste disposal, water use or reclamation were requested by the Board.

I. Unauthorized Discharges

No unauthorized discharges of liquid or solid waste were observed and/or recorded during the 2003 field season at Resolution Island. However, an accidental discharge (*i.e.*, spill) of fuel occurred on snow underneath a building. Approximately 63 m^2 of surface was affected. The incident was immediately reported to the Government of Nunavut Environmental Protection Service. The entire volume of spilled fuel were recovered.

j. Communication Exercises

All site workers (including sub-contractors) were instructed on camp rules and safety requirements. Drills were conducted for fire emergency and spill prevention events. Fire safety and spill contingency plans were implemented.

k. Operation and Maintenance Plan

Details of the operation and maintenance (O&M) plan were initially presented in the project Specifications and Environmental Protection Plan submitted with the first permit application in 1998. No major revisions to the initial plan have been implemented.

l. Contingency Plan Revisions

Details of the contingency plan were initially presented in the project Specifications and Environmental Protection Plan and submitted with the permit application. A Spill Contingency plan was submitted to NWB in September 1998 and was revised at the end of the 1999 field season and resubmitted. Further revisions were added during the 2001 season and an improved version was submitted to the NWB in October 2001.

m. Trenches and Sumps

No new trenches or sumps were excavated during the 2003 season.

n. Clean Up Procedures

During the 2003 season, remedial activities included:

- PCB Clean Up: Complete the removal of CEPA PCB soil from the S1/S4 valley; excavate CEPA PCB soil from the Airstrip dump and the DND helipad; remove PCB CEPA, Tier II and Tier I soils from the former Main PCB storage building.

- PCB Containerization and Storage: Thawing of the CEPA soil stockpile inside the Main PCB storage building; containerize PCB CEPA soil from the Main PCB storage building and the B2 storage building; empty old (1.6 m^3 and 3.1 m^3) CEPA soil containers into B2 building; repair old 3.1 m^3 steel containers according to EIS specifications.

- Other Clean Up Activities: Clean up and cover Airstrip dump; clean up debris from Maintenance dump; excavate hydrocarbon contaminated soils from collapsed POL tank area, west beach POL tank area, and incineration area; demolition of Main PCB storage building; removal of old water and power lines.

- Drums and POL Management: Incinerate grease and other waste POL products; wash empty drums and treat oily water; demobilize incineration equipment; containerization of existing waste drums according to new transportation regulations and ship south for disposal.

- Tier II Landfill: Quarrying and screening of gravel at Radio Hill and Airstrip borrow pits;

construction of landfill berm core (north, east, and south sides); installation of monitoring wells; partial removal of central bedrock outcrop; installation of soil testing lab.

- PCB Off-Site Shipment and Disposal: Shipment of 838 containers (i.e. 4190 Tons) of PCB contaminated soil to the Bennett disposal facility in Quebec. More details on this activity can be found in a report submitted by INAC to NIRB on January 20, 2004 (Progress Report on "The Clean up of PCBs at Resolution Island", NIRB App. #98D01N074).

Otherwise, details on these activities are summarized in a report submitted to Indian and Northern Affairs Canada in February 2004 by Qikiqtaaluk Corporation and Sinanni Inc. (see appended document: *Summary of Technical Activities - 2003 - Resolution Island Project*).

o. Public Consultation

A public consultation was held with local organizations and residents of Kimmirut, a nearby communities. Minutes of the consultation are presented below:

Resolution Island Project
Community Consultations - Kimmirut
Minutes of Proceedings

Date:	**Attendance:**		**Location:** Kimmirut,
April 7, 2003	Stephen Traynor, INAC (chair)	ST	Community Centre Gym
Time:	Chris Giroux, QC	CG	
10:00 AM - 12:00	Allison Rutter, ASU	AR	
1:00 - 3:00 PM	Karl Côté, Sinanni (minutes)	KC	
	Seemeega Akpik (translator)		
	15 residents from Kimmirut	R	

Line	Items Discussed	Initials
1	ST: Opening statement and welcome address. ST, AR, KC, CG: Presentation of Resolution Island (RI) Project Management Team members present.	
2	KC, CG: General presentation on Resolution Island project, site, 2002 field season activities, training and employment opportunities. Described soil containers used for the shipment of PCB CEPA soils. Mentioned that Mathew Tikivik from Kimmirut was trained to operate and supervize waste oil incineration operations. Mentioned that QC achieved 85% Inuit employment on RI.	

Line	Items Discussed	Initials
3	R: After you empty the waste oil drums for incineration, what is done with the empty containers? CG: The empty drums are cleaned in a drum washing station, then they are shredded and placed in a waste landfill.	
4	R: After the site is completely cleaned up, will there remain any PCBs? AR: Yes, some small amounts of PCBs will remain in the cracks and crevasses that cannot be reached. We will install barriers between the former contaminated areas and the beach to prevent any remaining PCBs from reaching the ocean.	
5	R: How do you know if you have removed all the contamination? AR: We test the soil after excavation to confirm that we meet the cleanup levels set by the government.	
6	CG, KC: Presentation of a video on Resolution Island produced by AERO for QC following the 2001 field season.	
7	R: When did the DEW line begin operating and when did it end? CG: It began in the 1950s and ended in the 1970s, for a period of approximately 20 years.	
8	R: The RI field seasons are short and that does not allow someone to make enough money to support his family for a very long period of time let alone the rest of the year. Will the government provide more funds so the workers can earn more money? ST: During the previous years the work seasons were shorter than expected because of budget cuts. However, this year the Canadian government has recognized the importance of the RI project and has committed more funds in order for us to complete the project in 3 years. The 2003 field season will be longer, and more workers will be required. This will result in longer work periods for the workers and therefore better salaries.	
9	AR: General presentation of the RI project, Queen's University ASU role in the project, the early years of the project, site investigations, environmental testing and materials sampling (wood, concrete, soil, plants, and water), main clean up activities carried out since the beginning of the project.	
	Lunch break 12:00 - 1:00	
10	KC: General presentation on Resolution Island project, site, 2002 field season activities, training and employment opportunities. Information presented during the morning session presented again for new people attending the consultations.	

Line	Items Discussed	Initials
11	CG, KC: Presentation of various courses and certifications provided to workers prior to and during employment, as well as on the job training and job opportunities (field season duration, worker schedules, and rotations). Mentioned the story of Eelow Ejetsiak, who started working at RI as general labourer, was promoted to heavy equipment operator the following seasons, obtained helicopter pilot training during the off-season, was trained as co-pilot during the RI 2002 season and was then hired as full-time helicopter pilot by Great Slave Helicopters in Yellowknife.	
12	R: Is it possible to work more than 14 days before going on the 7 day break? CG: Yes, the 14/7 schedule is for juniors, depending on the age group, the level of experience, the job position and what the workers want, it is possible for people to stay longer on site and work for longer periods of time.	
13	R: What salary is paid to the workers? CG: It all depends on position and experience.	
14	R: Do workers have to pay for their transport to Resolution Island? CG: No, transport from Kimmirut to Iqaluit and Resolution Island is paid by QC.	
15	R: Do workers have to pay for their hotel stay in Iqaluit? CG: No, QC also pays for that.	
16	R: What training and experience is required to be hired for RI? CG: It depends on the position you are applying for, but you should include all the certificates you have with your application. KC: The more experience and training certificates you have the better your chances of being hired as a ticketed tradesman, or operator, but QC also hires people with no experience as junior workers in order to give them their first job, and some good experience.	
17	R: White people often write on their applications what they know and what they learned as if it was a real work experience, Inuit are honest and only write their real work experiences on their work applications. Because of this we are disadvantaged. ST: INAC and QC entered into a partnership to make sure that Inuit employment was maximized. In fact, this partnership has resulted in some of the best local and Inuit employment results in Northern Canada, compared to other parnerships between INAC and other aboriginal organizations. CG: we only hire people from down south if we cannot find someone with the qualifications and experience in Nunavut.	
18	CG: Presentation of 2003 workplan, schedule of activities, and proposed tasks.	

Line	Items Discussed	Initials
19	R: Do you hire bear monitors on site? CG: Yes, we have a full time bear monitor on site, and sometimes we use a second one if a team is working in an isolated area. Each work crew also has a radio and a bear banger for safety and protection.	
20	CG: Second presentation of the video on Resolution Island produced by AERO for QC following the 2001 field season.	
	Consultations adjourned at 3:00 PM	

p. Concerns Addressed

No concerns or deficiencies related to the project were addressed during this past year.

q. Other Details

No other details on water use or waste disposal were requested by the Board.

r. Inuktitut Executive Summary

The executive summary in Inuktitut of *Resolution Island Water Licence Annual Report 2003*, INAC/QC/Sinanni, is presented at the beginning of this report. The executive summary in Inuktitut of *Summary of Technical Activities - 2003 - Resolution Island Project*, QC/Sinanni, is presented as part of that report and attached to the current document. The executive summary of *Resolution Island 2003 - Scientific Investigations*, Queen's University ASU is being translated in Inuktitut and will be forwarded to NWB within the next few weeks.

TABLE I: SNP Sampling Results

Parameter	Units	CCME Water Quality Guidelines	Station Numbers (top) / Sample ID (bottom)				
			RES-1	RES-2[1]	RES-3[1]	RES-4[2]	RES-5[2]
			W004	-	-	-	-
Copper	mg/L	1	0.14	-	-	-	-
Iron	mg/L	0.3	< 0.05	-	-	-	-
Lead	mg/L	0.01	< 0.005	-	-	-	-
Manganese	mg/L	0.05	0.08	-	-	-	-
Mercury	mg/L	0.001	< 0.0005	-	-	-	-
Cadmium	mg/L	0.005	< 0.001	-	-	-	-
Nickel	mg/L	-	0.095	-	-	-	-
Chromium	mg/L	0.05	< 0.005	-	-	-	-
Cobalt	mg/L	-	0.022	-	-	-	-
Zinc	mg/L	5	0.039	-	-	-	-
Phenols	µg/L	-	< 1.0	-	-	-	-
pH	-	6.5-8.5	4.6	-	-	-	-
TSS	mg/L	< 500	< 2.0	-	-	-	-
Nitrate	mg/L	< 10[3]	< 0.05	-	-	-	-
Nitrite	mg/L	< 1.0[3]	< 0.05	-	-	-	-
Oil and Grease	mg/L	-	< 1.0	-	-	-	-
BOD	mg/L	-	3.0	-	-	-	-
Faecal Coliforms	Cts/100	0[3]	<10; <10	-	-	-	-

TSS: Total Suspended Solids
BOD: Biological Oxygen Demand

Notes: Certificate of analysis presented on following page
[1] Sampling and analysis not required
[2] No sampling and analysis carried out because of absence of runoff water at these sampling locations
[3] Ontario Ministry of the Environment (MOE) criteria

Analytical Services Unit
School of Environmental Studies
Biosciences Complex
Queen's University, Kingston, Ontario, Canada K7L 3N6
Tel 613 533-2642 Fax 613 533-2897

ASU #: 6314
Client: DIAND

Report I.D. RI Lake Water ASU6314
Date Submitted: 29-Jul-03
Date Analysis Initiated: 29-Jul-03
Date Reported: 16-Aug-03
Matrix: Water

Method: Standard Methods

Parameter	Units	RI03-W002	BLANK	QC	QC TARGET
Copper	mg/L	0.14	<0.005	2.23	2.20
Iron	mg/L	<0.05	<0.05	16.1	16.0
Lead	mg/L	<0.005	<0.005	2.29	2.20
Manganese	mg/L	0.08	<0.05	2.27	2.20
Mercury	mg/L	<0.0005	<0.0005	0.0022	0.0020
Cadmium	mg/L	<0.001	<0.001	0.43	0.40
Nickel	mg/L	0.095	<0.005	2.29	2.20
Chromium	mg/L	<0.005	<0.005	0.40	0.40
Cobalt	mg/L	<0.022	<0.005	2.15	2.20
Zinc	mg/L	0.039	<0.010	1.25	1.20
Phenols	ug/L	<1.0	<1.0	9.1	10.0
pH	-	4.6	-	-	-
TSS	mg/L	<2.0	-	-	-
Nitrate	mg/L	<0.05	<0.05	1.10	1.00
Nitrite	mg/L	<0.05	<0.05	0.94	1.00
Oil and Grease	mg/L	<1.0	<1.0	12.1	15.6
BOD	mg/L	3	<3	-	-
Faecal Coliforms	Cts/100 mL	<10; <10	-	-	-

Prepared by: Mary Andrews

Authorization:

John S. Poland, D. Phil
Director