ABANDONMENT AND RESTORATION PLAN

ENVIRONMENTAL WASTE PROCESSING FACILITY 2020 AMENDMENT TO 1BR-THI2027

Manager of Licensing Nunavut Water Board PO Box 119 Gjoa Haven, Nunavut XOB 1JO

Tel.: (867) 360-6338 Fax: (867) 360-6369 Email: licensing@nwb-oen.ca



September 25, 2020





ABANDONMENT AND RESTORATION PLAN

Environmental Waste Processing Facility 2020 AMENDMENT TO 1BR-THI2027

Document presented to





Prepared and verified by:

Raquel Labranche, P.Eng.

Project Manager

NAPEG registrant #L4172

Approved by:

Jennifer Godin

Director



Environmental Waste Processing Facility Iqaluit, Nunavut

Qikiqtaaluk Environmental

Nunavut Water Board and Nunavut Impact Review Board

TABLE OF CONTENTS

1.	INTR	ODUCTION	1		
		LOCATION			
3.	EWP	F ACTIVITIES DESCRIPTION	3		
	3.1	Water Treatment	3		
	3.2	Soil Treatment	3		
	3.3	Hazardous Waste Management	3		
4.	FINA	L ABANDONMENT	4		
5.	MON	IITORING	5		
6.	ABANDONMENT AND RECLAMATION OF FORMER WASTE TRANSFER STATION				

Environmental Waste Processing Facility Iqaluit, Nunavut

Qikiqtaaluk Environmental

Nunavut Water Board and Nunavut Impact Review Board

LIST OF APPENDICES

APPENDIX A Project Licencing History

APPENDIX B AANDC Inspection Report

Environmental Waste Processing Facility Iqaluit, Nunavut

Qikiqtaaluk Environmental

Nunavut Water Board and Nunavut Impact Review Board

1. INTRODUCTION

On January 6, 2020, Qikiqtaaluk Environmental (QE) obtained a Nunavut Water Board (NWB) Renewal Amendment Licence No. 1BR-THI2027 for the operation of an Environmental Waste Processing Facility (EWPF) in Iqaluit, Nunavut. The project licencing history is presented in Appendix A. The EWPF's activities include management of hazardous and non-hazardous waste as well as storage and treatment of hydrocarbon contaminated water and soils that originate from various clients within the municipality of Iqaluit. QE's operations also generate some waste during its activities.

This reviewed Abandonment and Restoration Plan is part of an amendment approval request to expand QE's EWPF temporary storage and treatment capacity. Such an increase is necessary, considering QE's growth in business over the last years. The nature of QE's activities conducted at its EWPF does not change. The amendment solely aims at increasing the volumes of contaminated soil and water storage and treatment capacity through the construction of a new lined waterproof cell and a review of the waste management.

Environmental Waste Processing Facility Iqaluit, Nunavut

Qikiqtaaluk Environmental

Nunavut Water Board and Nunavut Impact Review Board

2. SITE LOCATION

The general goals of this plan are to:

- Ensure the long-term physical and chemical stability of the project areas to protect the environment and the public's health and safety;
- Enhance natural recovery of the disturbed areas to a state that is compatible with original conditions to allow for future use by people and wildlife;
- Ensure that the requirement for long-term maintenance and monitoring is minimized.

The purpose of this Abandonment and Restoration Plan is to address all EWPF activities.

Environmental Waste Processing Facility Iqaluit, Nunavut

Qikiqtaaluk Environmental

Nunavut Water Board and Nunavut Impact Review Board

3. EWPF ACTIVITIES DESCRIPTION

An amendment to 1BR-THI1722 for an increase in temporary storage and treatment capacity was submitted to the NWB for review and approval in 2019. The nature of the changes requested within the amendment is explained per sector of activity as presented below. A Renewal Licence, No. 1BR-THI2027 was received from NWB in January 2020.

3.1 Water Treatment

The water treatment unit (WTU) continues to be powered by electricity. Petroleum products recovered from water treatment activities are placed in drums, labelled and shipped to an authorized disposal facility in southern Canada. The treated water effluent is tested for water quality parameters included in the licence and disposed of at a pre-approved discharge location within the EWPF footprint, following compliance with discharge criteria. The previous system consisting of 4 holding tanks each with capacity ranging from 8,000 to 15,000 L, has been replaced with one larger holding basin with a capacity of 120,000 L. All factors have been taken into consideration by the engineering team to ensure the ideal flow rate for the water treatment and the proper management of the system pressures.

3.2 Soil Treatment

The temporary storage/pre-treatment capacity of contaminated soil on-site has been increased to 9,290 m3 and is treated using the same biological, chemical, and physical treatment techniques.

Soils contaminated with hydrocarbons are temporarily stockpiled in a lined and bermed storage/processing area with a capacity of 9,290 m3. There is also a 650 m2 processing area that will be used for the physical treatment of soils and will involve soil screening, to remove coarse materials, followed by washing of the screening rejects. Water from the washing process will be redirected to the WTU. The contaminated soils continue to be treated using the same biological, chemical, and physical treatment techniques that involve biological degradation methods (landfarming or biopiles) in a lined and bermed treatment area.

3.3 Hazardous Waste Management

Hazardous waste management activities conducted at the waste transfer facility include:

- Waste identification, segregation and consolidation;
- Volume reduction;
- Waste packaging and labelling; and,
- Temporary safe storage.

Annually, stored waste containers are shipped south to an authorized facility for final disposal.

Environmental Waste Processing Facility Iqaluit, Nunavut

Qikiqtaaluk Environmental

Nunavut Water Board and Nunavut Impact Review Board

4. FINAL ABANDONMENT

In the unlikely event that QE's treatment systems stop functioning or if QE decides to cease these activities and/or withdraw from this market, the water and soil treatment systems will be dismantled and removed from the site.

Spent water treatment filtration media will be containerized and shipped south for disposal in an authorized facility. If untreated water or soils remain once the activities are ceased, they will be transferred into drums or larger containers and shipped to an authorized facility in Iqaluit and/or in the south for final disposal.

Upon final abandonment, soils at the following locations will be sampled and analyzed to assess the quality and determine management options:

- Treated water discharge point;
- Area beneath the contaminated soil storage and processing area;
- Area beneath the contaminated soil treatment area;
- Hazardous waste storage and processing areas; and,
- Sediments at the bottom of the water holding basin.

The sediments at the bottom of the water holding basin will be sampled and analyzed. If contaminated soils or sediments are present, they will be excavated, containerized and shipped south for disposal at an authorized facility.

Stored hazardous waste containers will be shipped south to an authorized facility for final disposal. The empty hazardous waste storage containers will be cleaned, and, if required, decontaminated before removal from the site.

All other structures, including trailers and containers, will also be removed from the site.

Environmental Waste Processing Facility Iqaluit, Nunavut

Qikiqtaaluk Environmental

Nunavut Water Board and Nunavut Impact Review Board

5. MONITORING

Once activities on the site have ceased and all stored waste, contaminated water and contaminated soils have been removed from the site, no further monitoring will be required, as there will no longer be a source of contamination on the site.

Environmental Waste Processing Facility Iqaluit, Nunavut

Qikiqtaaluk Environmental

Nunavut Water Board and Nunavut Impact Review Board

6. ABANDONMENT AND RECLAMATION OF FORMER WASTE TRANSFER STATION

Prior to its current EWPF location, QE occupied a small part of Lot 3, Block 228 on the corner of Federal Road and Kakivak Court (coordinates 63° 45′ 44″N and 68° 32′ 41″W) owned by Qikiqtaaluk Corporation in Iqaluit, Nunavut (also referred to as "previous location"). This property is zoned for industrial use. QE's sister company, Qikiqtani Industry Ltd., has been operating its business on this lot for over 10 years. Amongst other things, they own, operate, store and repair vehicles and heavy equipment for civil works and snow clearing on this property. QE moved to its current location in the spring of 2016.

The following activities were conducted by QE at the previous location in 2014 and 2015:

- Receiving and handling waste materials contained primarily in 45-gallon drums;
- Consolidation of small containers (cans, bottles, pails, etc.) inside larger containers (drums, wranglers);
- > Packaging of drums and wranglers on pallets and strapped according to TDG regulations;
- Storage of waste drums and wranglers inside 20-ft marine containers prior to the next sealift;
- Treatment of oily water through a filtration system.

At that time, QE operated this facility under NWB Water Licence No. 1BR-THI1419, issued in August 2014.

The following figures show the approximate boundaries of the lot described above as well as the waste storage location, water treatment and water discharge location.

Environmental Waste Processing Facility Iqaluit, Nunavut

Qikiqtaaluk Environmental

Nunavut Water Board and Nunavut Impact Review Board

FIGURE 1Location of Former QE Waste Transfer Station

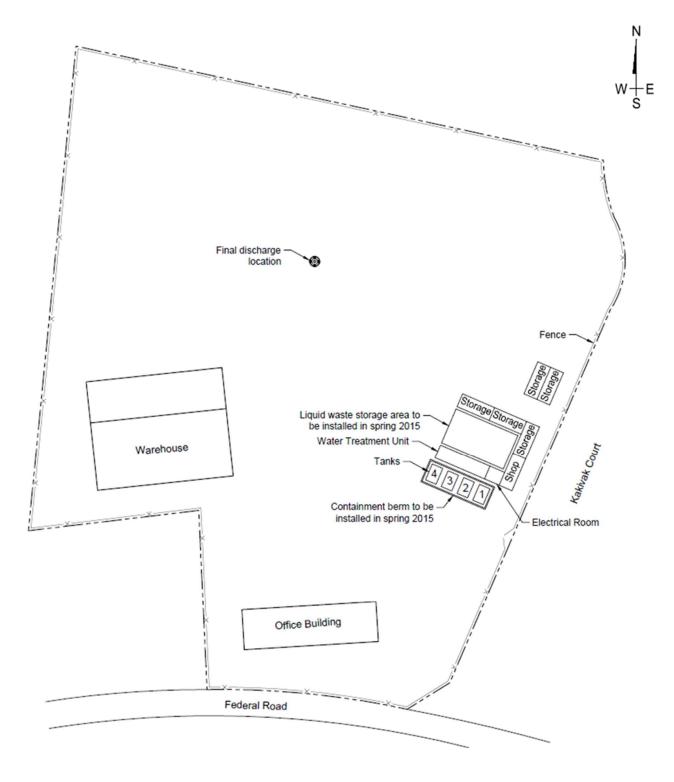


Environmental Waste Processing Facility Iqaluit, Nunavut

Qikiqtaaluk Environmental

Nunavut Water Board and Nunavut Impact Review Board

FIGURE 2
Location of Water Treatment Facility and Discharge Point



Environmental Waste Processing Facility Iqaluit, Nunavut

Qikiqtaaluk Environmental

Nunavut Water Board and Nunavut Impact Review Board

The following statement with regards to Abandonment and Restoration was submitted with the initial application for Licence No. 1BR-THI1419 as well as its amendement:

"In the case of abandonment due either to bankruptcy or major failure of the water treatment unit, the unit must be dismantled and the filtering media will need to be containerized for off-site disposal in an authorized facility. Similarly, any impacted untreated water or sludge will be containerized for off-site shipment and disposal. Water treatment facility components (pumps, oil/water separator, tanks) can be dismantled and sold for discarded in the landfill as non-hazardous waste.

Soils at the discharge point would need to be sampled to ensure they meet the guidelines established by the Government of Nunavut Department of Environment. Any impacted soils with concentrations in excess of the guidelines will need to be excavated, containerized and shipped to an authorized facility for disposal.

In addition, the existing stockpile of untreated and treated soils will have to be disposed of in an authorized facility. These soils will be packaged and shipped off-site for disposal in accordance with applicable regulations. The containment pads will be dismantled and the soils underneath will be sampled and managed according to the contaminants found.

Finally, any contaminated waste found on the site will need to be packaged, labelled and disposed of in accordance with applicable regulations."

When QE moved to its current location at 2027 Iqaluit Lane in 2016, the water treatment unit at the previous location was dismantled and moved to the new location along with unused filtering media and other supplies and components. Used filtering media and sludge was packaged according to TDG regulations to be shipped to the south for disposal in an authorized facility.

A pile of soil contaminated with hydrocarbons had been stored on a liner and covered with a tarp at the previous location. It was then completely moved to the current location to be treated. This soil pile was subjected to an AANDC inspection in 2015, and it was concluded that there were no concerns with the storage of this soil, and its activity did not require a water licence/amendment. A copy of the AANDC Inspection Report can be found in Appendix B.

The hazardous waste was stored in 20' containers, and those containers were all moved to the current location.

A soil sample was taken by QE at the water discharge point in 2014 and confirmed no adverse effects to the soil occurred due to the discharge. There are no records of the soil at the discharge point being sampled after the 2015 operating season. QE will sample the soils at this location and send them to an accredited laboratory for analysis. Once the analytical results are received, QE will transmit the results to the NWB and will communicate details of a remediation plan.



APPENDIX AProject Licencing History

Table 1
Project Licencing History

Licence Number	Date Issued	Comments
1BR-THI1419	20-Aug-14	Authorization to commercially treat hydrocarbon impacted water
1BR-THI1722	4-May-17	Authorization to commercially treat contaminated soil, contaminated water, and manage hazardous waste
1BR-THI1722 Amendment No. 1	15-Sep-17	Modification of discharge limits for the WTF'S treated effluent
1BR-THI2027	6-Jan-20	Modification of the deposit of waste





APPENDIX BAANDC Inspection Report



WATER LICENCE INSPECTION FORM

☑ Original☑ Follow-Up Report

Licensee			Licensee Rep	resentativ	re				
Qikiqtaaluk Envir	onment	tal	Olivier S	Simar	b				
Licence No. / Expiry			Representati	ve's Title					
1BR-THI1419			Project	Mana	ger				
Land / Other Authorizations									
None									
Date of Inspection			Inspector						
September 15, 20	015		Justin H	ACK					
Activities Inspected Camp/Municipality Roads/Hauling	Drilling Other:	☐ Mir	<u> </u>	ruction : Activitie	Rec s related to Wate	lamation er Treatment	☐ Fo	uel Storage	
Conditions: A - A	cceptable	C - Conce	ern U – Unaccepta	ıble	NA – Not A	pplicable	NI –	Not Insp	ected
Water Use	Condition	Comment Site Co	onditions	Condit ion	Comme Haz,	/Mat Manag	ement	Condition	Comment
Intake/Screen	NA	Water	Management Structures		Stor	age		Α	
Flow Measure. Device	NA	Culvert	ts / Bridges	NA	Spill	S		Α	
Source:	NA	Draina	ge	Α	Spill	Plan		Α	
Water Use:	А	Erosion	n / Sediment	Α					
Recirculation (y /n)	NA	Mitigat	Mitigation Measures		Adn	ninistrative			
		Reclam	nation Activities	NA	Reco	ords		NA	
		Materia	als Storage	Α	Rep	orts		NI	
Waste Disposal		Signage	e	Α	Plan	S		NI	
Waste Water	А				Noti	fications		Α	
Solid Waste	Α	Monito	oring		Oth	er			
Hazardous Waste	А	Sample	e Collection / Analysis	NI					
*T	he number	in the comments	s field will correspond wi	th specij	fic comments	provided bel	ow.		
Samples taken by Inspe	on(s):								
☐ Yes ⊠ No									
		•							
SECTION 1	Commen	ts	Non-Compliance wit	n Act or	Licence	A	ction Red	quired	

Background

Qikiqtaaluk Environmental was issued a waste disposal licence from the Nunavut Water Board on July 15, 2014. The Licensee is authorized to discharge water containing waste as long as it meets conditions contained within the licence.

Inspectors Statement

On September 15, 2015 a water licence inspection was conducted at Qikiqtaaluk Environmental's property in Iqaluit, NU as a follow-up to a report released by AANDC on September 1, 2015 entitled, "Review of Qikiqtaaluk Environmental Inc.'s Operation and management Plan for Water licence #1BR-THI1419 – Hydrocarbon impacted water treatment facility.

In the AANDC Review it was noted that there were activities occurring on site which may require a water licence that are not currently covered under licence 1BR-THI1419. These activities included the storage of two large piles of presumably contaminated soil on site, the storage of a larger pile of soil covered with tarps, and fuel storage contained outside of secondary containment.

Inspection

A follow-up Water Licence Inspection was completed on September 15, 2015.

Materials Storage:

- 1. "The two large piles of presumably contaminated soil" on site were inspected as recommended in the AANDC Report, Sept 1, 2015.
 - a. During the inspection on September 15, 2015 it was noted that these piles of soil were clean sand material. This was confirmed by Alex Brisco, Environmental Protection Officer from Government of Nunavut, Department of Environment during the Inspection.
 - b. This material is stockpiled by QE for the purposes of applying it to their parking lot when there are icy conditions.
 - There are no concerns with the storage of this soil and this activity does not require a water licence/amendment. It poses no risk to water and does not trigger section 12 of the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* (the Act) or its *Regulations*.
- 2. As recommended in the AANDC Report on Sept 1, 2015, the storage of the larger pile of soil covered by tarps was inspected because it may require a licence.





- During the inspection, it was confirmed by the Licensee that this soil was contaminated with hydrocarbons.
- b. However, it was noted that this soil was effectively covered within an appropriate liner to prevent any water from entering the stockpile.
- c. The soil was also appropriately lined to prevent any water from entering the stockpile and/or waste from leaving the stockpile.
- d. The facility showed no signs of performance issues and no signs of run-off were noted.
- e. It is determined that the Licensee has taken reasonable measures to prevent this contaminated soil from entering water.
- f. There are no concerns with the storage of this soil and this activity does not require a water licence/amendment to the current licence because it does not trigger any sections of the *Act* or its *Regulations*.

Hazardous Materials Storage

- 3. The AANDC report highlighted that drum caches were not in secondary containment.
 - a. During a site inspection, it was confirmed that drum caches were not in secondary containment.
 - b. However, there is no requirement within the licence or as part of the *Act* or its *Regulations* that requires this Licensee to ensure that fuel is within secondary containment.
 - c. There are no concerns related to the storage of fuel on site.

Waste Disposal

- 4. Discharge Point
 - a. The discharge point for the effluent was inspected.
 - b. No concerns related to erosion or sedimentation was noted at the point of discharge.
 - c. A soil sample was taken by the Licensee in 2014 after the discharge to confirm no adverse effects to the soil occurred due to discharge, as required in the water licence.
- 5. Concern was noted over the exceedances of Lead in the AANDC Inspection Report, Sept 1, 2015.
 - a. On August 4, 2014, in a report released by Exova on behalf of QE, samples did show an exceedance of lead by 0.001mg/L.
 - b. In a letter, sent to AANDC on September 25 2014, it was confirmed that this water was not discharged into the environment but it was re-treated. This email is attached to this inspection report.
 - c. The results from the retreated water show that the water has met discharge criteria.
 - d. Given the information provided by QE regrading this exceedance, there are no issues regarding the discharge of water by QE.
- 6. Concern was noted over the insufficient sampling in the AANDC Inspection Report, Sept 1, 2015.
 - a. During the inspection, it was confirmed that QE has approximately 60m³ of water storage capacity on site
 - b. As confirmed in an email written to AANDC, QE only discharged from their facility once during 2014 and has provided the required number of samples. This email is attached to this Inspection Report.
 - c. It is to be noted that QE operated in accordance with their water licence and there are no concerns regarding the number of samples QE analysed prior to discharge.

SECTION 2	Comments	Non-Comp	liance with Act or Licence	e	Action Required
Click here to ente	r text.				
Inspector's Name					
Justin Hack					
Signature					
Judan	Jul				
Date					
November 27,	2015				



Justin Hack - Re: QE Water Discharge 2014

From: "Andrew Keim" < Andrew.Keim@aandc-aadnc.gc.ca>

To: "Simard, Olivier" <osimard@qenv.ca>

Date: 9/25/2014 2:34 PM

Subject: Re: QE Water Discharge 2014

CC: "Allain, Erik" < Erik. Allain@aandc-aadnc.gc.ca>, "Beaulieu, Phyllis" < lic...

Good day Olivier,

Thank you for the up-date.

Please advise once you have started the discharge.

Please ensure you record and report the the amount discharged and the duration of the discharge.

Thank you

Andrew Keim

Water Resources Officer

Field Operations Unit

Aboriginal Affairs and Northern Development Canada

Nunavut Regional Office

P.O. Box 100

Iqaluit, Nunavut X0A 0H0

Andrew.Keim@aandc-aadnc.gc.ca

Phone: (867) 975-4289 Fax: (867) 979-6445 B.B (867) 222- 6488

>>> "Olivier Simard" <osimard@qenv.ca> 9/25/2014 12:05 PM >>>

De: Olivier Simard [mailto:osimard@genv.ca]

Envoyé: septembre 25 2014 10:32

À: gjohnson@qenv.ca

Objet: Est-ce que c'est correct comme ça?

Hi,

On the results we received 2014-08-13 (attached) only lead was over discharge criteria. We retreated the water and had it analysed for metals. Results we received 2014-09-09 (attached) show that lead has reached the discharge criteria. Following your written agreement, I will release the water at the discharge location (Lot 3) according to our NWB license.

Olivier Simard B.SC.

Project Manager - Northern Projects



1571B Kakivak Ct. PO Box 1228 Iqaluit, Nunavut X0A 0H0 Canada Cellular 867 222-8194

The present document is subject to our <u>information privacy policy</u>

available on our Web site.

Think about the environment, do you really need to print this message?

Justin Hack - TR: 2014 annual report 1BR-THI1419

From: "Olivier Simard" <osimard@qenv.ca>

To: "Justin Hack" < Justin. Hack@aandc-aadnc.gc.ca>

Date: 11/19/2015 3:03 PM

Subject: TR: 2014 annual report 1BR-THI1419

Attachments: image002.jpg; 20140909101148 0015.PDF; Re: QE Water Discharge 2014

Good afternoon Justin,

As per your questions regarding last year's report, after a small research I was able to find your answers. At the time, we were having discussions with Mr. Andrew Keim on the approval of a suitable discharge location for QE. We stored the treated water in our two holding tanks on stands (that you've seen during your visit) but also in two smaller tanks (Tank 1 & Tank 2), a "Roll-Off Tank" belonging to QIL and a water truck also belonging to QIL. The calculated volumes of each containers are:

- Tank on stand A = ≈12.00m³
- Tank on stand B = ≈18.00m³
- Tank $1 = 4.28 \text{m}^3$
- Tank $2 = 4.92m^3$
- Roll-Off Tank = ≈10.00m³
- Water Truck = ≈10.00m³

Should you wish to have pictures of the above or come see them for yourself just ask. Before taking the sample for analysis we "linked" all reservoirs with hoses and pumps and let the water circulates for a day in a closed loop **thus creating a single batch** that we discharged following Mr. Keim's approval.

As per your question regarding the lead, you will find attached a second set of results after the water received a second treatment to remove the exceeding lead. This result was provided to Mr. Keim before discharging (see email attached).

Should you have other questions please let me know.

Olivier Simard B.SC.

Project Manager - Northern Projects



1571B Kakivak Ct. PO Box 1228 Iqaluit, Nunavut X0A 0H0 Canada Cellular 867 222-8194

The present document is subject to our information privacy policy available on our Web site

Think about the environment, do you really need to print this message?



Water Resources Division Nunavut Regional Office Iqaluit, NU X0A 0H0

> Your file - Votre référence 1BR-THI1419

September 1, 2015

Our file - Notre référence CIDM #941498

Robin Ikkutisluk Acting Manager of Licensing Nunavut Water Board Gjoa Haven, NU X0E 1J0

Re: Aboriginal Affairs and Northern Development Canada's (AANDC) Review of Qikiqtaaluk Environmental Inc.'s Operation and Management Plan for Water Licence #1BR-THI1419 – Hydrocarbon impacted water treatment facility

Dear Ms. Ikkutisluk,

Thank-you for the email notice received on August 13, 2015 regarding the above mentioned plan.

AANDC Water Resources Division reviewed the operation and management plan submitted and the results of our review are provided in the enclosed memorandum for the Board's consideration. Comments have been provided pursuant to the Department's mandated responsibilities under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Department of Indian Affairs and Northern Development Act*.

Please do not hesitate to contact me at 867-975-3876 or <u>Sarah.Forte@aandcaadnc.gc.ca</u> for any additional information.

Regards,

Sarah Forté Water Management Coordinator

c.c.: Andrew Keim, Acting Manager of Water Resources, AANDC Nunavut Justin Hack, Water Resource Officer, AANDC Nunavut Erik Allain, Manager of Field Operations, AANDC Nunavut



Technical Review Memorandum

To: Robin Ikkutisluk – Acting Manager of Licensing, Nunavut Water Board

From: Sarah Forté – Water Management Coordinator, AANDC

Date: September 1, 2015

Re: Operation and Management Plan Submission for Water Licence #1BR-THI1419

Licensee: Qikiqtaaluk Environment Inc.

Project: Hydrocarbon Impacted Water Treatment Facility

Region: Qikiqtani

A. BACKGROUND INFORMATION

On August 13, 2015 the Nunavut Water Board provided notification to interested parties that Qikiqtaaluk Environment Inc. (the licensee) had submitted an Operation and Management Plan, as required in Part G Item 4 of their Type 'B' water licence #1BR-THI1419.

The licence was granted for treating hydrocarbon impacted water and snow at a facility located at 1571 Kakivak Court in Iqaluit and the Operation and Management Plan describes how the facility is to be run.

Interested parties were requested to review the Operation and Management Plan and provide comments by September 13, 2015.

B. EXPRESSION OF CONCERN

Aboriginal Affairs and Northern Development Canada (AANDC) is concerned that the Operation and Management Plan submitted by the licensee does not reflect the actual operations on site. Moreover, activities occurring site which may require a water licence are not currently covered under licence 1BR-THI1419.

On a visit to site on August 28^{th} 2015, we saw the berms to be constructed for secondary containment were not yet built and there were two very large piles of presumably contaminated soil on site. The first, which was uncovered and spilt over the property-line fence was approximately $25 \times 5 \times 3m$. The second pile was even larger and was covered by tarps. No secondary containment was present to keep leachate from these soil piles from contaminating water and AANDC believes they pose a threat to water quality. There is no watercourse within 100 m, but runoff from the property will eventually reach nearby water bodies.

IQALUIT#941498 - v1 Page 1 of 3

An additional source of concern is the lack of adequate water testing before discharge. According to the licence Part E Items 1, 10 and 11, prior to any planned discharge the effluent must be analysed to ensure it conforms to effluent quality limits. One sample should be taken per tank, provided the liquid in the tank is well mixed and the sample is representative. The 2014 annual report states 56.59 m³ of contaminated water was collected, treated and discharged in 2014 and provides analytical results for a single water sample. The stated liquid storage capacity for the facility is 30 m³ (section 1.1 of Plan), therefore an insufficient number of samples were collected and analysed because at least two discharge events would have been necessary if the liquid was stored in a single 30 m³ reservoir. Without adequate testing, it is not possible to determine the efficacy of the water treatment facility. AANDC is concerned that the licensee may be discharging water from its water treatment facility that does not meet effluent quality limits, in contravention to its licence.

C. RESULTS OF REVIEW

The Operation and Management Plan submitted was reviewed by comparing it to the requirements in Part G Item 4 of water licence #1BR-THI1419. On behalf of AANDC, the following comments and recommendations are submitted to the Nunavut Water Board for consideration:

1. Effluent quality limits and monitoring requirements

- Section 1.7 of the Plan submitted describes effluent parameters to be tested and the maximum limits as required in the licence. AANDC notes that the total lead concentration in the water sample analysis presented in appendix B exceeds the maximum allowable concentration.
- The location of the monitoring station established, THI-1, is not shown on the site plan provided. A single sampling station is insufficient to adequately ensure the effluent quality of several storage tanks.
 - AANDC recommends that monitoring station THI-1 be identified on the site plan and that the Plan describe how adequate monitoring will be done on the different storage tanks.
- The timing of the sampling and analysis with respect to discharge is unclear. Section 1.7 of the Plan states "One sample is collected at Monitoring Station THI-1 prior to each batch discharge event and prior to completion of discharge. The sample is to be analyzed for ..." The first sentence can be read as if it is necessary to take two samples. Only one is needed and it should be both collected and analysed prior to discharge. AANDC recommends that the wording of the Plan be clarified.

IQALUIT#941498 - v1 Page 2 of 3

2. Secondary containment provisions

- Section 1.3 of the Plan and Figure 1 describe two secondary containment areas
 with berms to be constructed in spring 2015. Apart from the approximate height
 of the berm around the liquid waste storage area, no information is available
 regarding the construction plans, dimensions or volumes of liquid stored. AANDC
 notes that the licensee is to provide as-built drawings and requests that they be
 made available for review.
- Section 1.2 of the Plan states "All fuel storage containers will be situated in a
 manner that allows easy access and removal of containers in the event of leaks
 or spills." During the visit to site, drum caches were not situated in secondary
 containment areas. AANDC recommends that all fuel storage containers and
 caches be in secondary containment and that the Plan clarify this point.

3. Petroleum hydrocarbon impacted soils

- Section 1.4 of the Plan states "Impacted soils are containerized and shipped for
 off-site disposal at authorized facilities or are disposed of at the Nunatta
 Environmental Services Landfarm Facility". AANDC notes that the general
 considerations of the licence mention contaminated soil as a waste type
 potentially generated by the Water Treatment Facility but the licence does not
 include authorization to accept or stockpile petroleum hydrocarbon impacted
 soils. The quantity of soil seen on site during the visit is unlikely to have been
 generated by the Water Treatment Facility.
- AANDC recommends that the licensee be required to amend their licence in order to accept or stockpile contaminated soils and provide plans for structures that will prevent stockpile leachate and contact water from being discharged without prior testing.

4. Facilities and equipment maintenance and inspection

Daily inspections are included in the Plan for fuel caches in excess of 20 drums.
 No other references to inspections or maintenance were found in the Plan.
 AANDC recommends that the licensee incorporate in the Plan the preventative measures they will take, as required in the licence.

D. CONCLUSION

AANDC recommends that the licensee be required to immediately submit a licence amendment application to reflect the activities on site. The application should include a revised Operation and Management Plan.

IQALUIT#941498 - v1 Page 3 of 3



IQALUIT OFFICE

2027 Iqaluit Lane P.O. Box 2110 Iqaluit, Nunavut XOA 0H0

T.: 866 634.6367 info@qenv.ca

MONTREAL OFFICE

9935 de Châteauneuf Street Entrance 1 – Suite 200 Brossard, Quebec J4Z 3V4 T.: 866 634.6367 info@qenv.ca

www.qenv.ca

