



March 15<sup>th</sup>, 2014

To: Sonia Aredes  
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Nunavut Water Board  
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**RE: File No. 1BR-THI----: Type «B» Application by Qikiqtaaluk Environmental Inc. for a Hydrocarbon Impacted Water Treatment Project**

### **Supplementary Information Requirements**

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Ms. Aredes,

Qikiqtaaluk Environmental would like to thank you for forwarding the request for supplemental information to us. You will find attached to this document a revised application form with the additional information requested in part A of Appendix A. Please note that QE does not store any contaminated soil related to this undertaking, it is delivered to Nunatta Environmental Services for treatment on their remediation pads.

Below you will find the additional information requested in Part B of Appendix A.

### **Map**

A map at a 1: 50,000 scale based on the National Topographic Series (NTS) is provided with the updated application that indicates the location of the treatment facility and (probable) discharge point location.

In addition, the following details on the site topography and hydrology are indicated:

- Waste and treated waste storage locations;
  - Waste and treated waste is stored where the treatment unit is located. The property is located at 1571 Kakivak Crescent. The yard where the treatment unit and waste storage takes place is fenced. New plans are included in the updated application that shows details of where waste is stored.
- Adjacent surface water bodies to the treatment facility;
- Facility site access routes; and,
  - The site is accessed via public roads in the city. The property where our operations take place is located at the end of Federal Road in Iqaluit.
- Traditional land use areas i.e. recreation, camping, fishing, etc.
  - The property where our operations take place is located in an industrial park at the end of federal road. A map that shows the zoning of the surrounding properties is included in the updated water licence.

## **Location and boundaries**

Below you will find the location and boundaries by latitude and longitude locations requested:

- The treatment facility
  - 63°45'42.55"N, 68°32'40.12"W
  - 63°45'44.45"N, 68°32'36.11"W
  - 63°45'45.34"N, 68°32'35.56"W
  - 63°45'46.94"N, 63°45'46.94"N
  - 63°45'44.58"N, 68°32'44.03"W
  - 63°45'44.15"N, 68°32'41.70"W
  - 63°45'43.11"N, 68°32'42.67"W
- The proposed discharge location(s)
  - 63°45'52.41"N, 68°32'36.77"W
- Environmental monitoring points
  - 63°45'52.76"N, 68°32'36.45"W

## **Water Treatment Plant Facility**

Detailed drawings of the water treatment unit that includes the design details, including the dimensions and materials of construction of main treatment facility components are included in the updated water licence.

The treatment system is installed in a 40 foot insulated marine container with a steel frame. The outside of the container is covered in steel sheets. The walls are made with stainless steel and the floor with aluminium. Holes have been cut into the sides of the container to allow for ventilation. One brings fresh air into the container and a fan pushes air outside of the container at the opposite end, on the opposite wall. The container has a heater to prevent freezing inside of the container when the treatment system is used during the spring and the fall, when temperatures drop below freezing at night.

The container has been divided into two sections by a sealed dividing wall constructed of wood. Electrical wiring and air hoses pass through the dividing wall. The wall is needed to prevent any explosives vapours from reaching the electrical panels in the electrical room.

The water treatment unit operates as follows:

- Contaminated water is allowed to settle in holding tanks located next to the water treatment unit;
- The oil is skimmed off the top using a vacuum unit;
- The remaining contaminated water is then pumped into the oil/water separator using a diaphragm pump. The oil water separator is constructed of steel, and has steel baffles that collect free product at the surface of each section while allowing the water to flow through underneath the baffles and out of the unit. The free product floating on the top of the separator is collected using hydrophobic absorbent materials. The separator is painted and is inspected annually for signs of corrosion;
- Once the water leaves the separator it flows into a plastic 1,000 litre holding tank (commonly called a tote tank which is used for liquid transport and storage) so that the operator can verify that a majority of the free product has been removed;

- The water is pumped out of the holding tank, using a diaphragm pump, and through a bag filter to remove any particulate matter. The bag filter is a steel canister that may be equipped with filters that vary between 0.1 microns and 10 microns depending on the types and quantity of sediment present in the contaminated water. Usually, the system is operated with a 0.5 micron or 1 micron filter;
- The water then flows through 2 filters containing Ultra Sorption filter media (a patented filter media developed by our partner Sanexen). The Ultra Sorption filters remove a majority of the free and emulsified hydrocarbons in the water;
- Finally the water is passed through 2 activated carbon filters for a final absorption of any remaining hydrocarbons; and,
- In the final step, the water is collected in another plastic tote tank for visual inspection before it is pumped, using a diaphragm pump, into a clean holding tank for sampling.

All hoses and fittings used in the treatment unit are oil resistant. The treatment side of the marine container is outfitted with explosion proof electrical equipment to reduce the chance of any accidental ignition of any vapours that may be present.

The entire system is automated and equipped with high-level shut-off switches, which close valves and shut of the pumps when the high level is reached in the oil/water separator, and the two plastic holding tanks inside the marine container. This prevents water from overflowing from any of the steps of the treatment system. Furthermore, the container is equipped with manual emergency shut-off switches that can be activated by the operator at anytime should an emergency arise.

## **Storage Tanks**

### **Hydrocarbon Impacted Water Storage Tanks**

QE currently has 2 steel tanks for holding hydrocarbon impacted water:

- 11,000 litre capacity cylindrical steel tank, painted for corrosion control
- 12,000 litre capacity cylindrical steel tank, painted for corrosion control with secondary containment compartment

These tanks are not connected in any way. The tanks are emptied and cleaned at the end of each season and inspected for corrosion.

### **Treated Water Storage Tanks**

QE currently has 2 stainless steel tanks for holding treated water. These tanks were removed from trucks and the inlets and outlets were modified to meet our needs:

- 13,000 litres oval shaped tank painted white and blue on the outside
- 8,000 litres oval shaped tank painted white and blue on the outside

These tanks will be connected together with a hose and filled simultaneously. This will be done to reduce the number of water samples that will need to be collected for testing for discharge criteria. Water will be sampled once the tanks are full, or on the 15<sup>th</sup> of September (whichever



comes first) to see if it meets discharge criteria.

### **Other Storage Capacity**

In addition to the tanks mentioned above QE also has two plastic holding tanks that each have a volume of 4,000 litres that can be used to store water.

QE will also be setting up basins to melt any snow and ice contaminated from a spill of hydrocarbons on an as needed basis. The basins will be constructed of berms and a base of compacted screened gravel mixed with sand with a 1.45 mm thick HDPE Geomembrane that has been welded by a certified membrane welder (if required) placed over the top to make it water tight. Berms will be a minimum of 2 feet high. Any temporary basins will never be filled more than 80% of its capacity in liquid. These temporary storage basins will be removed at the end of each season to prevent the accumulation of water when not in use or needed. At no time will QE store more water at its site then we are able to treat during a season.

### **Waste Oil and Storage Tanks and Associated Treatment Waste**

Any waste hydrocarbons collected from the treatment process will be collected into compliant drums for storage and disposal within 1 calendar year or the next sealift backhauling waste, whichever is sooner. The drums are strapped onto pallets for shipment and the contents are clearly identified. They are stored at our operational facility

All of the solid waste (filter media, hydrophilic absorbent) are put into waste wranglers similar to a QUATREX-27. A woven mesh bag with cardboard supports on each side and a 6 mil internal yellow membrane bag. This waste is also disposed of within 1 calendar year or the next sealift backhauling waste.

This completes the additional information requested in your letter. Should you require any additional clarifications please do not hesitate to contact the undersigned.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Greg Johnson', is written over the typed name and title.

Greg Johnson, Director  
Qikiqtaaluk Environmental Inc.

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