July 2nd, 2015

Mr. Brady MacCarl
Technical Advisor
Nunavut Water Board
P.O Box 119
Gjoa Haven, Nunavut
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Subject: Water Licence Application for the Iqaluit International Airport Improvement Project Response to comments received from Nunavut Water Board and Aboriginal Affairs and Northern Development Canada 9th June 2015.

Dear Mr. MacCarl,

In response to your letter dated June 9th, 2015 please find enclosed revised and amended appendices (and text where required) for the Iqaluit International Airport Improvement Project Water Licence Application. Clarifications and additional documentation required have been included as appendices to this letter. The original Appendix references given to these files within our original application have been included in the filename to aid comparison and replacement if required.

You will find below a summary of the modifications that were made to the documents previously submitted. The text in italics is included within the body of documents included within our application and is shown here to aid cross referencing and review.

In response to comments from the Nunavut Water Board letter dated June 9th, 2015:

NWB #1 - Water and Sanitation Agreement (Camp).

Please find attached a signed copy of the Water and Sanitation Agreement signed by the City of Iqaluit and the Design-Builder as **Appendix 1** to this letter.

NWB #2 - Contaminated Soils

Section 3.2.6 of the Water Management Plan (revised document attached as **Appendix 2**) is amended to read as follows:

Should the soils to be dewatered be suspected, found, or known to be contaminated, then the materials will be placed on impermeable membranes and managed as per section 3.1.1.1 of the Soil and Groundwater Management Plan Addendum. Any contact water will be collected and tested. Should the water meet the discharge criteria in the permit, then the water will be discharged at the nearest approved discharge location. If the water does not respect the discharge criteria, then the water will be treated prior to its discharge.

A new section has been added to the Water Management Plan (new section number 3.2.7) as follows:

3.2.7 For details on the management of contaminated soils please refer to section 3.1.1.1 of the Soil and Ground Water Management Plan Addendum.

A new section has been added to the Soil and Groundwater Management Plan Addendum – attached as **Appendix 3** to this letter (new section number 3.1.1.1) as follows:

3.1 .1.1 Existing and Potentially Contaminated Areas

The contaminated soil identified in the SGMP has been excavated and moved to the containment cell or shipped south for disposal. The following areas are known to still contain contaminated soils:

- *Hydrocarbon Contaminated Soils from the footprint under LTU 1 (estimated at 900 m3). It is the intention of the Government of Nunavut and Transport Canada to manage these soils through remediation in a licensed land treatment unit.*

- *Drums containing hydrocarbon substances and soiled materials, metal parts and concrete wastes partially unearthed at on the projected Taxiway F footprint (referred as the Drum Cache 2).*

With the exception of the Drum Cache 2 discussed in the following section, all other areas are assumed to be free of contamination. However should any of the following signs of contamination be detected at the site then a sampling program will be initiated:

- *Odours;*
- *Soils staining or sheens;*
- *Buried debris.*

The sampling program will involve at a minimum analysis for the following parameters in the soil:

- *Total Petroleum Hydrocarbons;*
- *Polycyclic Aromatic Hydrocarbons;*
- *Benzene;*
- *Toluene;*
- *Xylene;*
- *Ethyl Benzene;*
- *Metals.*

Any water that comes into contact with contaminated or potentially contaminated soils will be assumed to be contaminated until either test results show that the water is not contaminated (in the case where it comes into contact with contaminated soils), or that the potentially contaminated soils are determined not to contain contamination based on analytical results from a laboratory. Once contamination in soils, water or debris (e.g. buried drums) is confirmed, a management plan will be submitted to the department at the Government of Nunavut responsible for managing the Iqaluit Airport Improvement Project for approval. The management plan will respect all of the guidelines and laws of the Territory of Nunavut as well as any requirements in the water licence from the Nunavut Water Board.

<u>NWB # 3 - Containment Cell's Cover</u>

A new section was added to the Water Management Plan – **Appendix 2** (section 3.3.5.4):

The contaminated soil containment cell top surface is covered with a geomembrane and sloped to

prevent any accumulation of water. Should water accumulate on the surface of the geomembrane, it will be treated as non-contaminated, as it has not come into contact with any contaminated materials.

NWB #4 - Fill Material

A New section has been added to the Soil and Groundwater Management Plan Addendum – **Appendix 3** to this letter (Section 2.5):

2.5 Site Grading Amendments

Section 4.1.4 of the original Soil and Groundwater Management Plan prepared by CRA, states that approximately 10,000 m3 of material will be used in a cut and fill method (meaning the soil will be excavated from one area at the airport (the cut) and used in another as backfill to bring the area up to grade (the fill)). This volume presents only the space that was available to encapsulate soil with contaminants that were to be managed through a Tier 3 Risk Based Approach, which required the soils to be buried 1 m deep. It was originally planned to use the soils from TP-15 (arsenic contamination) and TP-24 & the LTU's (Hydrocarbon contamination) in this manner. However, these soils have now been moved into the Containment Cell constructed on site under the Voluntary Abatement Notice. Areas of the site will be subject to a cut and fill, however all imported fill materials are being sourced from the quarry located next to the airport and crushed to achieve the gradations required for construction. The location of the quarry is shown in the figure in appendix D.

Furthermore a sketch illustrating the location of the Quarry is included in **Appendix 4** of this letter.

NWB #5 – Assessment of Mitigation Measures

Section 3.1 .6 of the Water Management Plan (**Appendix 2** of this letter**)** was deleted and replaced with the Surface Water Management Program. The deleted text read as follows:

Water will be visually inspected at the beginning of each work season to ensure that it is free of contaminants. Should the water be found to be contaminated, sources will be tested in the area, until a new source of water can be found.

The new section added to the Water Management Plan (Section 5) reads as follows:

5. SURFACE WATER MONITORING PROGRAM

5.1. In order to ensure that the project activities do not have a negative impact on the surface waters next to or in the project area, a surface water monitoring program will be conducted over the entire span of the project.

5.2. The following locations will be monitored at the start and end of every season. The coordinates of the monitoring points are included below and are good to within 10m:

- *Inflows:*
  - *Carney Creek Upstream Project Area*
    - *63°45'45"N, 68°33'1"W*
  - *Start of Inner Field Drainage Ditch*
    - *63°45'46"N, 68°33'59"W*
- *Outflows:*
  - *Carney Creek Downstream Project Area*

- *63°45'19"N, 68°32'23"W*

o *Inner Field Ditch Downstream Project Area*

- *63°45'9"N, 68°32'11 "W*

o *Southern Inner Field Downstream Project Area*

- *63°44'56"N, 68°31'57"W*

A figure showing the monitoring locations is presented in Appendix 8

5.3. In addition the following areas will be monitored, upstream and downstream of the works, prior to and immediately following the works:

- *Installation of the Arch Culverts in Carney Creek*
- *Installation of drainage culverts in existing water courses on the airport property*
- *Construction of the new fish habitat in the drainage ditch to the northeast of Carney Creek*

5.4. The surface water monitoring program will measure the following parameters in the water:

- *Total Petroleum Hydrocarbons*
- *Benzene, Toluene, Ethylbenzene, Xylene*
- *Biological Oxygen Demand*
- *Total Suspended Solids*
- *Ethylene Glycol*
- *Propylene Glycol*
- *Polycyclic Aromatic Hydrocarbons*
- *Metals*

NWB #6 Stored Soils

All references in the Water Management Plan – **Appendix 2** to 30 metres from any water body have been adjusted to 31 metres from the high water mark of any water body.

Additional information on water sources

The following text was added to the Water Management Plan – **Appendix 2** in section 1:

The planned water extraction points are shown in the figures in Appendix A. The drainage ditch located in the inner field will be the primary location of water extraction. There is sufficient water that flows through this ditch during the season to be able to provide the necessary water. A backup extraction source is provided in case the ditch dries up and is not able to provide a sufficient amount of water.

The coordinates of the water extraction points (within 10 m) are as follows:

- Inner Field Ditch Point 1: 63°45'16"N, 68°32'54"W;
- Inner Field Ditch Point 2: 63°45'8"N, 68°32'24"W;
- Backup Water Extraction Point: 63°45'55"N, 68°32'37"W.

The water drawn from the extraction point will be tested once prior to the start of use, and once per month while in use during the season to show that the water meets acceptable guidelines.

The tests will be for the following parameters:

- Total Petroleum Hydrocarbons;
- Benzene, Toluene, Ethylbenzene, Xylene;
- Ethylene Glycol;
- Propylene Glycol.

Analytical results from an accredited laboratory that shows that the water meets criteria are required before use of the water is initiated.

A plan has been added to Appendix A of the Water Management Plan that shows the location of a backup water source for the project.

Further to this we include in *Appendix 5* of this letter - an illustration of the location of the containment cell and the location of the water extraction points.

Following the Comments from AANDC in their letter dated June 8th, 2015 as attached to your correspondence we respond as follows:

AANDC #2 -Water Source

As mentioned in the discussion of Point 5 of the comments from the Nunavut Water Board a Monitoring Program has been prepared. The text of the modifications is available in the discussion of Point 5 from the Nunavut Water Board above. Further to this the water sources are identified in the plans presented in the Water Management Plan.

AANDC #3 - Water Quality Monitoring

As mentioned in the discussion of Point 5 of the comments from the Nunavut Water Board a Long Term Monitoring Plan **Appendix 6** has been prepared. The text of the modifications is available in the discussion of Point 5 from the Nunavut Water Board above.

AANDC #4 - Spill Contingency Plan

The use of drip trays was added to section 4 of the Spill Contingency Plan – **Appendix 7** as follows:

Refuelling activities will require the use of spill trays or must be done in an area that includes secondary containment to contain any spills that may occur.

Scenario #3 was modified to clarify that no refuelling activities will occur within 31 of the high water mark of a water body as follows:

Distance and direction to nearest receiving body of water: In general, heavy equipment works at least 31 metres away from the high water mark of any body of water, except for in water works. Fuel delivery will not be conducted when equipment is closer than 31 metres to the high water mark of any bodies of water. Any fuel spill at that distance would not rapidly reach the receptor. Should an incident occur over a culvert or a bridge (when a truck is crossing them) then the distance may be as short as a few meters

Telephone numbers were added to provide contacts for the people in Table 2. An incident and backup incident commander was named to have overall authority for spill response. These people were added to Table 2. The reference on page 12 was corrected and the fax number was corrected.

The AANDC contact was added and instruction to contact the airport authorities for any spill that could

have an impact on their operations as follows:

Additionally, the spill must be reported to AANDC to the following person:
Erik Allain
Manager Field Operations
Tel. (867) 975·4295
Fax: (867) 975-6445
Should the spill be of a nature, or in a location, that affects airport activities, the airport authorities will also be notified of the spill immediately following the notification to the Spill Report Line and AANDC.

AANDC # 5- Hazardous Waste Containment Area

The Bitumen Drum Storage Area was relocated to an area that is more than 31 m from the high water mark of any water bodies. The new location is shown in the updated plan in Appendix C of the Hazardous Waste Management Plan – **Appendix 8**.

The plan was updated to include the recommendations from the Nunavut Guideline for the management of hazardous waste materials as follows:

2.2.6 All storage locations for Hazardous Waste will be inspected once per week. Inspection reports will be completed and stored at the site office.

2.2. 7 Hazardous waste storage containers shall be placed so that each can readily and easily be inspected for signs of leakage, corrosion or deterioration. Leaking, corroded or deteriorated containers shall be immediately be removed and their contents transferred to a sound container.

2.2.8 All waste shall be temporarily stored on a firm working surface that is impervious to leaks while waiting for transport. If this is not possible the ground under the storage area will be sampled prior to the storage of hazardous waste and immediately following the removal of hazardous waste to show that the storage of the waste did not have a negative impact on the soil in the storage area. Sampling will be done according to the parameters presented in section 3.1.1 .1. Should products be stored with potential contaminants that have not been the subject of past sampling, then these parameters will also be sampled prior to and immediately following the temporary storage of the waste.

2.2.9 Records shall be maintained indicating the type and quantity of waste being stored along with the date, type and quantity of hazardous waste brought into or removed from the facility.

2.2.1 0 Drainage into and from the storage facility site should be controlled to prevent spills or leaks from leaving the site and to prevent run-off from entering the site.

2.2.11 Incompatible waste shall be stored in a manner that contact in the event of a spill or accidental release is not possible.

2.2.12 Emergency response plans shall be developed in cooperation with local emergency response personnel and emergency response equipment shall be locally available in the event of a spill, fire or other emergency situation.

AANDC #6- Monitoring Well Installations Next to the Containment Cell

The correction to the total length noted in the comment has been corrected. The instructions for the installation of the monitoring wells in bedrock less than 7 m has been updated as follows:

The installation shall be adjusted as needed to ensure that groundwater in the overburden material (on top of the bedrock) is intercepted by the slotted section of pipe. If necessary, the slotted section of the pipe can be brought closer to the ground surface. Caution shall be used to ensure that the bentonite plug does not obstruct the slotted pipe. At the same time, care must be taken to ensure that surface water does not short circuit the plug and enter directly into the monitoring well.

AANDC #7- Contaminated Groundwater in Area near Planned Arched Culvert

Section 3.1.1.5 of the Soil and Groundwater Management Plan addresses this issue as follows:

In the area where the arch culverts will be installed under the new parking lot, Polycyclic Aromatic Hydrocarbon contamination was found in the groundwater. The contaminated water will be managed as per the directions provided in section 5.4 of the Soil and Groundwater Management Plan prepared by CRA.

AANDC #8- Term of Licence

Although not specifically required as a response by NWB, we would like to request that the Licence be issued for longer than the recommendation made by AANDC in their letter. We request that the Licence be granted until at least the end of 2018. This will allow all construction activities to be completed, and if any re-visit is required during 2018 the same conditions, rights, and privileges will be afforded under the licence to allow any remedial works to be undertaken in a timely manner.

We hope the above responds to all the issues raised, if you require additional information, please do not hesitate to contact us.

Regards

John Wood

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