IQALUIT INTERNATIONAL AIRPORT IMPROVEMENT PROJECT
Iqaluit, NU - Canada

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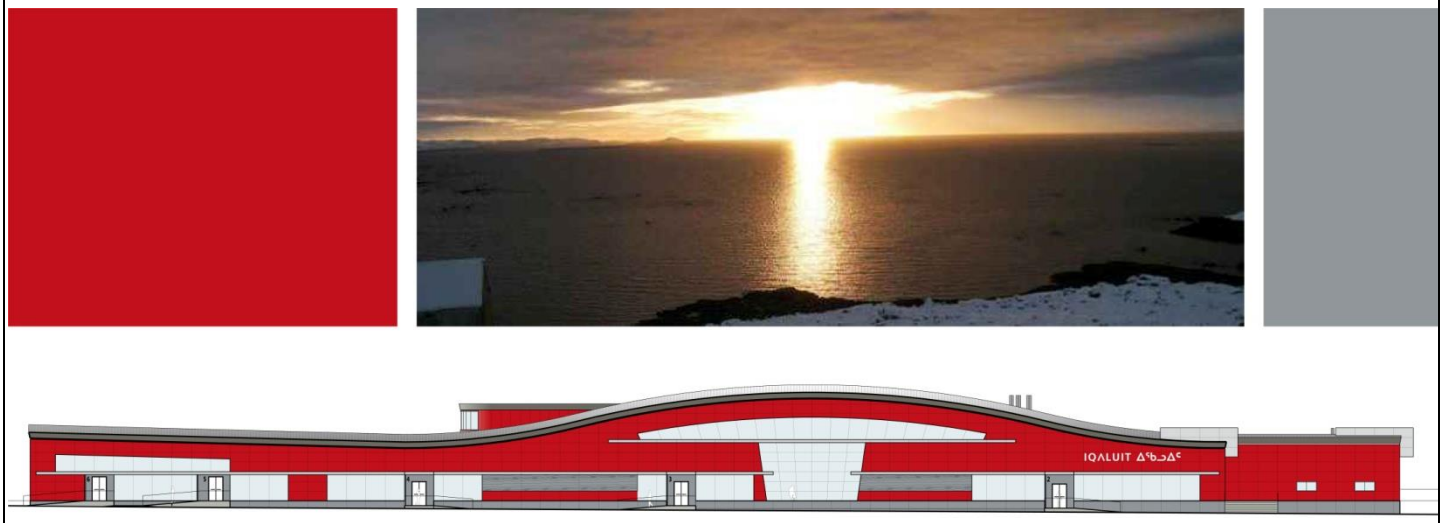

ORIGINATOR

ARCTIC INFRASTRUCTURE LIMITED PARTNERSHIP

TITLE

Nunavut Water Board Annual Environmental Report 2016

Prepared by Michel Boulianne Environmental Monitor AILP	Reviewed by Bindu Sankunny Quality Director Bouygues/Sintra	Verified by Patrice Richard Deputy Project Director Bouygues-Sintra	Reviewed by Pedram Roshani Site Quality Manager Bouygues/Sintra	Approved by Oliver Walon Project Director Bouygues/Sintra	Approved by John Wood CEO AILP

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REVISION STATUS

REV	DESCRIPTION OF CHANGES	PAGE/SECTION	DATE
0	First Issue	All	2017-03-31
1	First Issue		2017-04-25

The following files are attached to the report as Appendices:

A. AILP_2016 Daily Water Consumption from IIA-2
B. Qikiqtaaluk Environmental_2016 Drum Cache 2 (Taxiway F) Summary Report
C. Qikiqtaaluk Environmental_2016 Water Quality Monitoring
D. Qikiqtaaluk Environmental_2016 Monitoring Wells Report
E. City of Iqaluit_2016 Records of Confirmation of Proper Disposal of Backhauled Wastes
F. Qikiqtaaluk Environmental_2015 QA-QC Procedures for Sampling Program
G. Qikiqtaaluk Environmental_2016 Cell Cover Report

Contents

1. SUMMARY

On August 11th, 2015, Arctic Infrastructure Limited Partnership obtained a type B Nunavut Water Board water licence for the implementation of the Iqaluit International Airport Improvement Project (IIAIP). This annual report logs actions and procedures that followed the licence released to AILP for the reporting period of 2016:

Firstly, a new cover of the impermeable containment cell enclosing petroleum hydrocarbons and arsenic impacted soils was installed. This geomembrane cover which is made of a durable material was placed over the previous temporary cover. This work was completed in July 2016.

Secondly, the 2016 water consumption to support construction activities, as described under the licence, secured from one source at the inner-field of the airport, amounted to a total volume of 4,166 m^3 through the period from June to August. The water was used on Site for spraying over aggregates (to reach engineering specifications) and for dust suppression.

Thirdly, water samplings performed on Site showed that the Project did not affect the quality of any water body with contaminants.

Lastly, internal audits were performed to improve the application of the licence's requirements. All petroleum contaminated materials, other than aggregates, were shipped down South to licensed disposal facilities.

AILP believes that the water use and wastes management performed in 2016 were well under control and compliant with the licence conditions which are further described in this report and supported by the associated appendices.

2. 1BR-IIA1518 ANNUAL REPORT LICENCE CONDITIONS

2.1. Timetable Update - NWB Water Licence Type B #1BR-IIA1518

An official 2016 timetable with the actual dates of completion is presented here:

	Start	Finish
Taxiway F Soil sampling	31/07/16	31/07/16
Taxiway F Environmental remediation works	13/09/15	16/08/16
Taxiway F Environmental remediation (ship hazardous material down South to a licensed facility)	09/10/15	09/11/16
Water Samplings for at water extraction points	14/06/16	05/10/16
Monitoring for well sampling	26/08/16	26/08/16
Water sampling upstream and downstream of civil works	14/06/16	05/10/16
Containment Cell Cover replacement	16/10/15	15/07/16

Table 1: 2016 Timetable Update – NWB Water Licence Type B #1BR-IIA1518

2.2. Soil and Groundwater Management Plan (SGMP) Updates

No updates were brought to the SGMP and its associated plans as the construction activities remained the same essentially as in 2015.

2.3. Water Use

2.3.1. Daily, Monthly and Annual Quantities of Water Obtained from All Sources

Water used during the 2016 construction season for the Civil component of the International Iqaluit Airport Improvement Project was in majority consumed from the Iqaluit airport extraction location IIA-2.

Table 2 summarizes the water use throughout the 2016 construction season for the IIAIP. The total consumption of water from the identified source is equal to 4,166 m^3 over a period of 87 days. Details of the daily consumption can be found in the report enclosed in Appendix A.

Month	Quantity (m^3)	Source
June	1,226	IIA-2
July	1,849	IIA-2
August	1,091	IIA-2
TOTAL	4,166	IIA-2

Table 2: Volume of extracted water from a source under the licence

2.4. Water Flow

2.4.1. Daily Water Flow

Daily water flow was not calculated for 2016 since no construction activities were performed in a water course during the reporting period.

2.5. Monitoring Program

2.5.1. Soil Sampling

2.5.1.1. Containment Cell

No soil sampling was performed over the Site's containment cell as it was sealed with a new cover.

2.5.1.2. Drum Cache 2 (Taxiway F)

In 2016, bitumen drums, soiled materials, metal debris and various wastes (concrete and wood) were screened and sorted over the footprint of the construction of the new Taxiway F:

- Waste wood and metal parts were transported for temporary storage at the *Qikiqtaaluk Environmental* storage site since the City of Iqaluit landfill was temporarily closed (Appendix B). Once allowed by the City the wastes were then transferred to the local landfill during the summer time.

- Soils over the construction's footprint were sampled to assess the possibility of any contaminant being above environmental guidelines. Analytic results revealed that 5 soil piles out of the 10 that were stocked did not respect the guideline levels. Consequently, naphthalene and phenanthrene contaminated materials were partly added to a holding basin located inside the airport fence line and a remaining volume of 90 m^3 was moved over an impermeable membrane and covered with a waterproof tarp until the Government of Nunavut directs the management of this remaining pile. Otherwise, soils that respected guideline values were subsequently used as backfill (please see report enclosed in Appendix B).

2.5.2. Water Sampling

In 2016, sampling of the Project's locations for water extraction, water courses monitoring program, and groundwater monitoring program was performed by the environmental consultant *Qikiqtaaluk Environmental*. Results from the water quality monitoring programs showed that the construction activities did not bring an adverse effect to the waters' quality (please see the summary of the results in the Table below and the report enclosed in Appendix C).

All four (4) monitoring well samplings respected all guideline values provided in the Project's water licence (please see the summary of the results in the Table below and the report enclosed in Appendix D).

Monitoring Station	Description	Frequency (date)	Contaminants	
IIA-1a; IIA-1b; IIA-1c; IIA-1d; IIA-1e; IIA-1f	Discharge Points for Holding Basins	NO DISCHARGE under the licence	NOT APPLICABLE	
IIA-2	Inner Field Ditch Point 1 Water Source	2016-07-07	Iron	Volume of water use: 4,166 m^3
		2016-10-05	Copper and Iron	
IIA-3	Inner Field Ditch Point 2 Water Source	Water source was not used	No sampling	
IIA-4	Backup Water Extraction Point	2016-06-14	None*	
		2016-07-20		
		2016-08-27		
		2016-10-05		
IIA-4.1	Backup Water Extraction Point	2016-06-14	None*	
		2016-07-20		
		2016-08-27		
		2016-10-05	Iron	
IIA-4.2	Backup Water Extraction Point	2016-06-14	None*	
		2016-07-20		
		2016-08-27		
		2016-10-05		
IIA-5	Carney Creek Upstream Project Area	2016-06-14	Aluminium	
		2016-10-05	None*	

Monitoring Station	Description	Frequency (date)	Contaminants
IIA-6	Start of Inner Field Drainage Ditch	2016-06-15	None*
		2016-10-05	Iron
IIA-7 (*ARCH BL)*	Carney Creek Downstream Project Area	2016-06-14	Aluminium and Zinc
		2016-10-05	Zinc
IIA-8	Inner Field Ditch Downstream Project Area	2016-06-14	Iron and Zinc
		2016-10-05	Iron and Zinc
IIA-9	Southern Inner Field Downstream Project Area	2016-06-14	Fluoranthene, Iron and Zinc
		2016-10-05	Iron and Zinc
IIA-10	Groundwater monitoring station located beside and northwest of Containment Cell (MW1)	2016-08-26	None*
IIA-11	Groundwater monitoring station located beside and northeast of Containment Cell (MW2)		
IIA-12	Groundwater monitoring station located beside and southeast of Containment Cell (MW3)		
IIA-13	Groundwater monitoring station located beside and southwest of Containment Cell (MW4)		

*Note: Respected all guideline values provided for the IIAIP water licence 1BR-IIA1518

Table 3: Water Quality Monitoring Program Results

2.5.3. Water Holding Basins Sampling

Two holding basins, built on the inner-field premises, were utilised for impacted soils containment that pertained to the Drum Cache no. 2 (reference: 1BR-IIA1518 *SGMP*). No water sampling was performed nor required to this date.

2.5.4. Review and Analysis of data generated under the Monitoring Program

Data from the monitoring program found and referred in this report was reviewed by all IIAIP parties including the Government of Nunavut.

2.5.5. Summary of any Abandonment and Restoration Work

No abandonment or restoration work was completed in 2016.

2.5.6. Updates or Revisions to Plans

As previously commented in section 2.2, no updates nor revisions were required to SGMP and its associated plans

2.5.7. List of Unauthorized Discharges and Summary of Follow-up Actions Taken

To our knowledge, no unauthorized discharges occurred in 2016 within the IIAIP boundary.

2.5.8. Description of any Trenches and Sumps Excavated

No trenches, other than to install culverts as part of the Project, nor sumps to divert surface waters, were excavated in 2016 within the IIAIP boundary.

2.5.9. Public Consultation and Participation Report

No public consultation and participation report in 2016.

2.5.10. Brief summary of Work Done to Address Concerns or Deficiencies

An internal audit on the NWB water licence compliance was completed and reported to the Government of Nunavut in September of 2015. Regarding the outcome of the audit, specific spill training for employees was performed in 2016. Also, the secondary containments issue for some very small fuel portable containers was corrected in 2016.

Furthermore, an additional internal audit concerning AILP's NWB type B water licence was performed in September 2016. Results were reported to the Government of Nunavut. The audit report concluded that compliance with the license requirements is well managed.

2.5.11. Any other Details on Water Use or Waste Disposal

No additional details on water use or waste disposal other than previously mentioned.

2.6. Plans review

To our knowledge, no changes in operation and technology ensued in 2016 that would require review of any plans.

2.7. Records of all Waste Backhauled and Records of Confirmation of Proper Disposal of Backhauled Waste

The disposal records for backhauled wastes to the City of Iqaluit waste disposal site are enclosed in Appendix E. Also, the following Table describes the types of waste that were hauled to the landfill. Any contaminated soil or material have been or will be shipped down south (Appendix E).

Waste Type	Volume (m^3)	Date
General Garbage	10	June 30th, 2016
Non-contaminated construction fill	10	July 23rd, 2016
Non-contaminated construction fill	10	August 19th, 2016
Wood	10	August 23rd, 2016
Wood	10	September 6th, 2016
Metal	10	September 8th, 2016

Wood	10	September 14th, 2016
Non-contaminated construction fill	5	September 15th, 2016
Total General Garbage	10	
Total Non-contaminated construction fill	25	
Total Wood	30	
Total Metal	10	

2.8. Fill Material Laboratory Analysis

No laboratory analysis was required for the use of fill material before or during the Project. The construction material is extracted from a neighbouring foothill which does not contain any clay.

2.9. Changes or Updates to the Plans Referred to in Part J of the c*onditions applying to the licence monitoring program*

No changes or updates to the plans referred to in part J of the *1BR-IIA1518* NWB type B Water Licence.

2.10. QA/QC Plan

Qikiqtaaluk Environmental plan for quality assurance and control (QA/QC) is presented in the Appendix F.

2.11. Report of the Engineer's Inspection Carried Out Under Part J, Item 18

The report on the final cell cover construction can be found in the 2016 report (Appendix G).