



UNCLASSIFIED

SOW REF: 16.F.5.d



# **2014 ANNUAL NUNAVUT WATER BOARD REPORT FOR BAF-3**

## **FOR THE North Warning System**

Contract # W8485-100224/001/NX  
CDRL 16.F.5.d

Document Number  
FM-EHS-13, Rev 1, 16-Mar-2015

**Prepared for**  
**North Warning System & Assoc. Projects**  
Aerospace Equipment Program Directorate  
455 Blvd de la Carrière  
11th floor  
Gatineau, Québec  
K1A 0K2

**Prepared by**  
**Raytheon**  
**Canada Limited**  
400 Cooper Street  
Suite 3000  
Ottawa, ON, K2P 2H8

**Warning: Information Subject to Export Control Laws** — This document (and/or software, if applicable) may contain export-restricted data whose export/transfer/disclosure is restricted by U.S. and Canadian law. Dissemination to non U.S. persons whether in United States or abroad requires an export license or other authorizations from the United States and Canadian Governments.

**UNCONTROLLED WHEN PRINTED**



## CHANGE HISTORY

This sheet is a record of each issue of this document. When the revised document is issued, the previous issue is automatically superseded.

Version	Date	Configuration Management	Pages Changed	Reason for Change
1	16-Mar-2015	-	-	Initial Document Release.
<b>Document Title:</b> 2014 Annual Nunavut Water Board Report for BAF-3				<b>Document Number:</b> FM-EHS-13



## EXECUTIVE SUMMARY

This 2014 Annual Report for the Nunavut Water Board (NWB) has been prepared by Raytheon Canada Limited (RCL) for the Department of National Defence in order to meet the requirements of the licence issued 10 September 2009 3BC-BAF0919 – Type “B”, Part B. General Conditions, paragraph 1. This report covers the period from 01 January to 31 December 2014.

The Operation and Maintenance (O&M) Contractor for the North Warning System (NWS) changed in 2014. Nasittuq was the O&M Contractor of the NWS from 01 January to 31 July 2014 and had Care, Custody, and Control (CC&C) of the site. On 01 August 2014, RCL became the O&M Contractor and took over CC&C of the NWS sites, including the BAF-3 Long Range Radar site.

BAF-3 is an unattended (unmanned) North Warning System radar site located on Brevoort Island, Nunavut. The site is visited quarterly for preventive maintenance inspections and as required for other work by O&M Contractor staff based out of the Logistics Support Site – Iqaluit (LSS-Q), Iqaluit, Nunavut.

A total of 45.9 cubic meters was drawn from the water supply lake. This is below the annual maximum of 1,750 cubic meters allowed by the current licence.

There is no analysis of effluent from bermed fuel storage facilities (berm water) because there are no longer bermed fuel storage facilities on-site. The beach tanks which were in a berm were demolished in 2012. The summit tanks which were in a berm were demolished in 2013.

No hazardous waste and waste oil were disposed of in 2014.

Non-hazardous domestic solid waste was flown out to the Logistics Support Site – Iqaluit and disposed of at Iqaluit’s landfill. RCL has documented authorization from the community for receiving the waste.

Two outdoor spills occurred. The spill were:

- a. NT-NU Spill Line Report # 14-355. On 01 October 2014, RCL Bulk Fuel Technicians discovered two leaking valve stems. It was determined that the cause of the leak was loose valve packing in the valves. The valve packing was tightened and the leaking stopped. Technicians attempted to clean up the spilled fuel, but the ground was frozen solid. Any remaining impacted soil will be removed in the spring, once the soil thaws.
- b. NT-NU Spill Line Report # 14-357. On 03 October 2014 Bulk Fuel Technicians were on site and had completed the fuel transfer from the beach tanks to the summit tanks. The technicians were draining the beach to summit line when the temporary hose connecting the pump house to the beach tanks came apart. Valves were immediately closed, stopping the spill. The spill was cleaned-up as much as possible. Any remaining impacted soil will be removed in the spring, once the soil thaws.

The Spill Contingency Plan was revised. The table of fuel tanks (Appendix 8) was updated.

2014 was Year 8 of the remediation and monitoring of the January 2007 Jet A1 fuel spill (reported in the 2007 Annual Report). Bad weather prevented Stantec Consulting Limited from flying to the site in July to conduct a monitoring visit.

[illegible][illegible][illegible]

45.9 ስርዓቱ ለጋራ ልማት ለሚገባው ለሀገራችን ርዕሰ ከተማ በዋናው የጋራ ልማት ስራ ለሚገኝ የጋራ ልማት ስራ 1,750 ስርዓቱ ለጋራ ልማት.

[illegible][illegible][illegible]

$L^{\dot{\varphi}^b} \sigma^b \quad \rho^b d^c \quad d\Delta^{\varphi^b} C^{\varphi^b} b c \triangleright^{\varphi^b} \triangleright^{\varphi^b}. \quad d\Delta \sigma^b \quad \triangleright d\Delta^{\varphi^b} j c \triangleright^{\varphi^b} \triangleright^{\varphi^b}.$

- [illegible]

**UNCONTROLLED WHEN PRINTED**



**SOW REF: 16.F.5.d**

[illegible]

Copyright © Her Majesty the Queen in right of Canada (2015)



## TABLE OF CONTENTS

1.0	Introduction .....	1
1.1	Report Details.....	1
2.0	Water Use .....	1
3.0	Hazardous Waste and Waste Oil Disposal .....	2
4.0	Non-hazardous Solid Waste Disposal.....	3
5.0	Monitoring Program .....	3
6.0	Spills (Unauthorized Discharges).....	4
7.0	Revisions to the Spill Contingency Plan.....	4
8.0	Progressive reclamation work undertaken .....	5
9.0	Acronyms .....	5
	Annex A – Hazardous Waste and Waste Oil Disposal in 2014 .....	6
	Annex B - BAF-3 - Location of Landfill with Co-ordinates .....	7
	Annex C - BAF-3 - Sewage Outfall Location (BAF-2) with Co-ordinates.....	8
	Annex D - BAF-3 - Analysis of Sewage Effluent .....	9
	Annex E - BAF-3 - Bermed Fuel Storage Facilities with Co-ordinates .....	10
	Annex F - BAF-3 - Analysis of Berm Water (Effluent from Bermed Fuel Storage Facilities).....	11
	Annex G - BAF-3 - Monitoring Activities of 2007 Jet A1 Fuel Spill .....	12

## TABLES

Table 2-1	Monthly Raw Water Usage at BAF-3 in 2014 .....	2
Table 3-1	Hazardous Waste and Waste Oil Sent for Disposal from BAF-3 in 2014 .....	2
Table 4-1	Non-hazardous Domestic Solid Waste Sent for Disposal from BAF-3 in 2014.....	3
Table 7-1	Outdoor Spills Reported at BAF-3 in 2014 .....	4

UNCONTROLLED WHEN PRINTED



## 1.0 INTRODUCTION

This 2014 Annual Report for the Nunavut Water Board (NWB) has been prepared by Raytheon Canada Limited (RCL) for the Department of National Defence in order to meet the requirements of the licence issued 10 September 2009 3BC-BAF0919 – Type “B”, Part B. General Conditions, paragraph 1. This report covers the period from 01 January to 31 December 2014.

The Operation and Maintenance (O&M) Contractor for the North Warning System (NWS) changed in 2014. Nasittuq was the O&M Contractor of the NWS from 01 January to 31 July 2014 and had Care, Custody, and Control (CC&C) of the site. On 01 August 2014, RCL became the O&M Contractor and took over CC&C of the NWS sites, including the BAF-3 Long Range Radar site.

BAF-3 is an unattended (unmanned) North Warning System radar site located on Brevoort Island, Nunavut. The site is visited quarterly for preventive maintenance inspections and as required for other work by O&M Contractor staff based out of the Logistics Support Site – Iqaluit (LSS-Q), Iqaluit, Nunavut.

### 1.1 REPORT DETAILS

Licensee:	Department of National Defence, Government of Canada
Licence:	3BC-BAF0919 – Type “B”
Location:	BAF-3 North Warning System Site, Brevoort Island, Qikiqtani Region, Nunavut
Report prepared by:	Raytheon Canada Limited, 16-Mar-2015
Time Period Covered:	01 January to 31 December 2014

## 2.0 WATER USE

A total of 45.9 cubic meters was drawn from the water supply lake. This is below the annual maximum of 1,750 cubic meters allowed by the current licence. See Table 2-1 for the volume of raw water drawn.

**Table 2-1 Monthly Raw Water Usage at BAF-3 in 2014**

Month	Raw water drawn in cubic meters (m <sup>3</sup> )	Company with CC&C of the site
January	0	Nasittuq Corporation
February	0	Nasittuq Corporation
March	0	Nasittuq Corporation
April	0	Nasittuq Corporation
May	0	Nasittuq Corporation
June	29.5	Nasittuq Corporation
July	0	Nasittuq Corporation
August	16.4	RCL
September	0	RCL
October	0	RCL
November	0	RCL
December	0	RCL
<b>TOTAL</b>	<b>45.9</b>	

### 3.0 HAZARDOUS WASTE AND WASTE OIL DISPOSAL

No hazardous waste and waste oil were disposed of in 2014. Therefore Table 3-1 is blank and Annex A for the shipping documents is blank. (Shipping documents include the completed movement documents for waste regulated under the Transportation of Dangerous Goods Regulations (TDGR) and Manifests for non-regulated waste).

**Table 3-1 Hazardous Waste and Waste Oil Sent for Disposal from BAF-3 in 2014**

Site	Description, TDG shipping name	Quantity	Movement Document or Manifest #
BAF-3	No hazardous waste or waste oil was disposed of in 2014.	0	N/A





SOW REF: 16.F.5.d

## 4.0 NON-HAZARDOUS SOLID WASTE DISPOSAL

Non-hazardous domestic solid waste was flown out to the Logistics Support Site – Iqaluit and disposed of at Iqaluit's landfill. RCL has documented authorization from the community for receiving the waste. See Table 4-1 for the quantity of waste generated.

**Table 4-1 Non-hazardous Domestic Solid Waste Sent for Disposal from BAF-3 in 2014**

Month	Waste Generated (kg)	Company with CC&C of the site
January	21	Nasittuq Corporation
February	0	Nasittuq Corporation
March	77	Nasittuq Corporation
April	58	Nasittuq Corporation
May	12	Nasittuq Corporation
June	26	Nasittuq Corporation
July	0	Nasittuq Corporation
August	635	RCL
September	0	RCL
October	0	RCL
November	544	RCL
December	0	RCL
<b>Total</b>	<b>1,373</b>	

## 5.0 MONITORING PROGRAM

See **Annex C** for the location of the sewage effluent outfall, BAF-2, with co-ordinates. A sump for the sewage outfall was built in 2010.

**Annex D** is blank. The sump for the sewage outfall was not pumped out therefore no samples were taken for laboratory analysis.

**Annex E** lists the bermed fuel storage facilities, Monitoring Station # BAF-4 with co-ordinates that used to exist on-site. Fuel tanks within the berms were demolished in 2012 and 2013, therefore no effluent (berm water) samples were taken in 2014.

**Annex F** is blank. There was no analysis of effluent from bermed fuel storage facilities at BAF-3 in 2014.

**Annex G** is blank. Bad weather prevented Stantec Consulting Limited from flying to the site in July to conduct monitoring visit #1. Therefore no samples were taken of untreated effluent from the mid-site biopiles, the final discharge point from the landfarm (Monitoring Station # BAF-3), and from the biopile monitoring wells (Monitoring Station # BAF-5).

UNCONTROLLED WHEN PRINTED



## 6.0 SPILLS (UNAUTHORIZED DISCHARGES)

Two outdoor spills occurred. See Table 6-1 for details.

**Table 6-1 Outdoor Spills Reported at BAF-3 in 2014**

Date, Spill #	Product	Quantity	Cause and follow-up action	Location at BAF-3
01 Oct 2014 NT-NU Spill # 14-355	Jet A1 fuel	Unknown	<p>On 01 October 2014, RCL Bulk Fuel Technicians discovered two leaking valve stems. It was determined that the cause of the leak was loose valve packing in the valves. The valve packing was tightened and the leaking stopped. Technicians attempted to clean up the spilled fuel, but the ground was frozen solid. The surface of the spill was cleaned as much as possible.</p> <p>The remaining contaminated soil will be removed in the spring, once the soil thaws.</p>	Summit, pipeline near pumphouse
03 Oct 2014 NT-NU Spill # 14-357	Jet A1 fuel	300 litres	<p>On 03 October 2014 Bulk Fuel Technicians were on site and had completed the fuel transfer from the beach tanks to the summit tanks. The technicians were draining the beach to summit line when the temporary hose connecting the pumphouse to the beach tanks came apart. Valves were immediately closed, stopping the spill. Much of the spill was contained in the port-a-berm that had been placed under the connection point, but fuel overfilled the berm. Fuel contaminated snow and ice were placed in drums. Fuel was soaked up using sorbents and the sorbents were also placed in drums. It was determined that the temporary pipe came apart because the overfill protection in the tanks was jammed closed.</p> <p>The remaining contaminated soil will be removed in the spring, once the soil thaws.</p>	Next to beach pump house

## 7.0 REVISIONS TO THE SPILL CONTINGENCY PLAN

The Spill Contingency Plan was revised. The table of fuel tanks (Appendix 8) was updated.



## 8.0 PROGRESSIVE RECLAMATION WORK UNDERTAKEN

2014 was Year 8 of the remediation and monitoring of the January 2007 Jet A1 fuel spill (reported in the 2007 Annual Report).

Bad weather prevented Stantec Consulting Limited from flying to the site in July to conduct a monitoring visit.

## 9.0 ACRONYMS

Acronym	Definition
CC&C	Care, Custody, and Control
DEG	Diesel Engine Generator
DND	Department of National Defence
NWB	Nunavut Water Board
NWS	North Warning System
NWSO	North Warning System Office
O&M	Operations and Maintenance
PCB	Polychlorinated Biphenyl
RCL	Raytheon Canada Limited
TDGR	Transportation of Dangerous Goods Regulations



SOW REF: 16.F.5.d

## ANNEX A – HAZARDOUS WASTE AND WASTE OIL DISPOSAL IN 2014

This annex has been left blank as no hazardous waste or waste oil were disposed of in 2014. Therefore there are no shipping documents for Annex A.



SOW REF: 16.F.5.d

## ANNEX B - BAF-3 - LOCATION OF LANDFILL WITH CO-ORDINATES



Coordinates of Landfill Location: 63° 20' 30.00"N, 64° 10' 02.00"W

UNCONTROLLED WHEN PRINTED



UNCLASSIFIED

SOW REF: 16.F.5.d

## ANNEX C - BAF-3 - SEWAGE OUTFALL LOCATION (BAF-2) WITH CO-ORDINATES



Coordinates of Sewage Outfall Location (BAF-2): 63° 20' 21.40"N, 64° 09' 26.63"W

UNCONTROLLED WHEN PRINTED





SOW REF: 16.F.5.d

## ANNEX D - BAF-3 - ANALYSIS OF SEWAGE EFFLUENT

The sump of the sewage outfall was not pumped out therefore no samples were taken for laboratory analysis. This Annex has been left blank because there are no results to report.

UNCONTROLLED WHEN PRINTED



UNCLASSIFIED

SOW REF: 16.F.5.d

## ANNEX E - BAF-3 - BERMED FUEL STORAGE FACILITIES WITH CO-ORDINATES

Licence	Location	Monitoring Station # (Final discharge point of bermed fuel storage facility)	Berm's location on-site	Berm's co-ordinates
3BC- BAF0919 Type "B"	BAF-3 North Warning System Site, Brevoort Island, Qikiqtani Region, Nunavut	BAF-4	Summit, berm of former tanks W22A and W22B.  Note: Tanks W22A and W22B were demolished in 2013 and the berm was breached with an engineered breach.	63° 20' 23" N 64° 09' 18" W
			Beach, berm of former tanks W22C and W22D.  Note: Tanks W22C and W22D were demolished in 2012 and the berm was left intact.	63° 19' 52" N 64° 10' 40" W

UNCONTROLLED WHEN PRINTED





SOW REF: 16.F.5.d

## **ANNEX F - BAF-3 - ANALYSIS OF BERM WATER (EFFLUENT FROM BERMED FUEL STORAGE FACILITIES)**

There is no analysis of effluent from bermed fuel storage facilities (berm water) because there are no longer bermed fuel storage facilities on-site. The beach tanks which were in a berm were demolished in 2012. The summit tanks which were in a berm were demolished in 2013.

As there are no berms that contain fuel tanks at BAF-3, this annex has been intentionally left blank.

**UNCONTROLLED WHEN PRINTED**



SOW REF: 16.F.5.d

## **ANNEX G - BAF-3 - MONITORING ACTIVITIES OF 2007 JET A1 FUEL SPILL**

2014 (Year 8) Remediation and Monitoring Activities of 2007 Jet A1 Fuel Spill. Bad weather prevented Stantec Consulting Limited from flying to the site in July to conduct monitoring visit #1.

As no monitoring activities were completed, this annex has been left blank.

**UNCONTROLLED WHEN PRINTED**