

2022 FOX-3 ANNUAL NUNAVUT WATER BOARD REPORT

FOR THE NORTH WARNING SYSTEM

Contract # W8485-157352/001/NX
SOW Ref: 17.7

Document Number
17.7 NWB-F3-2022 , 30-Mar-2023

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EXECUTIVE SUMMARY

This 2022 Annual Report for the Nunavut Water Board (NWB) has been prepared by Nasittuq for the Department of National Defence (DND) in order to meet the requirements of the licence issued 08 June 2018, 8BC-FOD1828 – Type “B”, Part B “General Conditions”, paragraph 1 of its licence. This report covers 01 January to 31 December 2022.

As of 1-Aug-2022, Nasittuq is the Operations and Maintenance (O&M) Contractor for the North Warning System (NWS) including FOX-3, the unattended (unmanned) North Warning System radar site at Dewar Lakes, Nunavut. The site is visited quarterly by Nasittuq staff from FOX-M, Sanirajak (Hall Beach), Nunavut for preventive maintenance inspections and as required for other work.

A total of 46.2 cubic meters was drawn from the water lake. This is below the annual maximum of 3,000 cubic meters allowed by the licence.

No hazardous waste and waste oil were shipped off-site in 2022 due to the NWS contract transition. In 2023 hazardous waste and waste oil will be sent to an approved hazardous waste disposal site outside of Nunavut as required by the licence.

Non-hazardous domestic solid waste was disposed of through a contract with the Hamlet of Sanirajak at the local landfill. Nasittuq has documented authorization from the community for receiving the waste.

In 2022, a monitoring program was implemented at FOX-3 as required by the water licence, Part I. Rain and melt water that accumulated in the berms of fuel storage facilities was tested with hydrocarbon test strips and confirmed to be within effluent quality limits before the water was pumped out of the berms.

There was one spill (unauthorized discharge) to the environment at FOX-3 in 2022.

- 03-Aug-22, NT-NU Spill #2022-401: A leaking gasket on a fuel pump resulted in a spill of 50 L of Jet-A1. The impacted soil was excavated and backfilled with clean fill.

The Spill Contingency Plan was successfully implemented, and updated on 1-Aug-22.

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1.0 INTRODUCTION

This 2022 Annual Report for the Nunavut Water Board (NWB) has been prepared by Nasittuq for the Department of National Defence (DND) in order to meet the requirements of the licence, 8BC-FOD1828 – Type “B”, Part B “General Conditions”, paragraph 1 of its licence, issued 08 June 2018 and amended effective 14 April 2022. The amendment now allows for 3,000 cubic metres per year.

This report covers 01 January to 31 December 2022.

As of 1-Aug-2022, Nasittuq is the Operations and Maintenance (O&M) Contractor for the North Warning System (NWS), including FOX-3. An O&M contract transition occurred over the summer of 2022.

FOX-3 is an unattended (unmanned) North Warning System radar site located at Dewar Lakes, Nunavut. The site is visited quarterly by Nasittuq staff from FOX-M, Hall Beach, Nunavut for preventive maintenance inspections and as required for other work.

1.1 Report Details

Licensee:	Department of National Defence, Government of Canada
Licence:	8BC-FOD1828 – Type “B”
Location:	FOX-3 North Warning System Site, Dewar Lakes, Qikiqtani Region, Nunavut
Report Prepared by:	Alaina Leslie and reviewed by Don Beattie Nasittuq Corporation, 21-Mar-2023
Time period covered:	01 January to 31 December 2022

2.0 WATER USE

A total of **46.2 m³** of water was drawn from the supply lake in 2022. This is below the annual maximum of 3,000 m³ allowed by the licence.

See Table 2-1 for the volume of water usage at FOX-3 each month in 2022.

Table 2-1: Monthly Raw Water Usage at FOX-3 in 2022

Month	Raw water usage (m ³)
January	0
February	0
March	0
April	0
May	0
June	0
July	0
August	24.4
September	7.9
October	13.9
November	0
December	0
TOTAL	<u>46.2</u>

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3.0 HAZARDOUS WASTE AND WASTE OIL DISPOSAL

No hazardous waste and waste oil were shipped off-site in 2022 due to the NWS contract transition. In 2023 hazardous waste and waste oil will be sent to an approved hazardous waste disposal site outside of Nunavut as required by the licence.

4.0 NON-HAZARDOUS SOLID WASTE DISPOSAL

Non-hazardous domestic solid waste was disposed of through a contract with the Hamlet of Sanirajak at the local landfill. Nasittuq has documented authorization from the community for receiving the waste.

See **Table 4-1**, below, for the quantity of waste generated.

The FOX-3 landfill still exists, but no new materials have been landfilled in the reporting period. See **Annex B** for its location on-site.

Table 4-1: Non-hazardous Domestic Solid Waste Sent for Disposal from FOX-3 in 2022

Month	Waste Generated (kg)
January	0
February	0
March	0
April	0
May	0
June	0
July	0
August	82
September	181
October	45
November	0
December	0
TOTAL	308

5.0 MONITORING PROGRAM

In 2022, a monitoring program was implemented at FOX-3 as required by the water licence, Part I. The monitoring program included the following:

1. Volume of raw water drawn from the Water Supply Lake (FOD-1). The information from monitoring water use is shown in **Section 2.0 Water Use**. The water drawn was within the limit stated in the water licence.
2. Quality of sewage discharged from the final discharge point of the sewage disposal facility. The location of the sewage effluent outfall is shown in **Annex B**. A sump for the sewage outfall was constructed in 2010. The sewage outfall sump was not discharged in 2022 and therefore **Annex C** is left blank.

Monitoring Station FOD-2 was discontinued in water licence 8BC-FOD1828.

3. Accumulated rain and melt water contained in the berms of fuel storage facilities was analyzed using hydrocarbon test strips and confirmed within the effluent quality limits listed in the water licence, Part

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D prior to discharge (FOD-3). The coordinates and the results of the analysis are shown in **Annex D and Annex E**. All samples met the effluent requirements of the water licence, Part D.

4. Final Discharge Point from the Landfarm (FOD-4). The water accumulated in the landfarm was not discharged in 2022 and therefore no samples were collected..

6.0 SPILLS (UNAUTHORIZED DISCHARGES)

One spill to the environment occurred at FOX-3 in 2022. Table 7-1, below, describes the spill (unauthorized discharge) details.

The Spill Contingency Plan was successfully implemented.

Table 6-1: Unauthorized Discharges at FOX-3 in 2022

Date, NT-NU Spill #	Product	Quantity	Cause and follow-up action	On-site location
03-Aug-2022, Spill # 2022-401	JET-A1	50 L	This spill was reported on behalf of Lynden Air Cargo. A failed seal on a pump caused a spill of 50 L. The failed seal was repaired and the leak was stopped. Impacted gravel was removed for off-site disposal.	Airstrip Apron (68 37' 23" N, 71 08' 03" W)

7.0 REVISIONS TO THE SPILL CONTINGENCY PLAN

The Spill Contingency Plan was updated on **1-Aug-2022**. An updated copy of the Spill Contingency Plan has been submitted to the NWB with this annual report.

8.0 PROGRESSIVE RECLAMATION WORK UNDERTAKEN

No reclamation work was undertaken.

9.0 ACRONYMS

Table 9-1: Acronyms

Acronym	Definition
BTEX	benzene toluene ethylbenzene xylene
CCME	Canadian Council of Ministers of the Environment
DCC	Defence Construction Canada
DND	Department of National Defence
n.o.s.	not otherwise specified
NWB	Nunavut Water Board
NWS	North Warning System
O&M	Operations and Maintenance
PCB	Polychlorinated Biphenyl
PHC CWS	Canada-Wide Standards for Petroleum Hydrocarbons

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Acronym	Definition
SQG	Soil Quality Guidelines
TDGR	Transportation of Dangerous Goods Regulations
QA/QC	Quality Assurance/Quality Control

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ANNEX A. HAZARDOUS WASTE AND WASTE OIL DISPOSAL

n/a

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ANNEX B. LOCATION OF EFFLUENT OUTFALL AND LANDFILL WITH COORDINATES



Figure B-1: Coordinates of landfill: 68° 39' 1.50"N, 71° 14' 35.00"W



Figure B-2: Coordinates of Sewage Outfall Location: 68° 39' 6.38"N, 71° 14' 6.44"W

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ANNEX C. ANALYSIS OF DISCHARGED SEWAGE EFFLUENT

Monitoring Station FOD-2 was discontinued in water licence 8BC-FOD1828. The sewage outfall sump was not discharged in 2022 and therefore sampling was not required.

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ANNEX D. LOCATION OF BERMED FUEL STORAGE FACILITIES¹

Table D-1 contains the locations and sampling dates for the wastewater discharged from the bermed fuel storage facilities.

Table D-2: Location of Bermed Fuel Storage Facilities and Date Sampled in 2022

Berm	Location on-site	Discharge Latitude ²	Discharge Longitude	Date
DEW W22A&B	Summit	68°39'05.43"N	71°14'03.23"W	Jul-2022
DEW W22C&D	Summit	68°39'03.67"N	71°13'49.97"W	Jul-2022
DEW W20D&E	Airstrip	68°37'24.90"N	71°08'05.62"W	Jul-2022

¹ Effluent from bermed fuel storage facilities.

² Final discharge point of bermed fuel storage facility

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ANNEX E. ANALYSIS OF BERM WATER³

The berms at FOX-3 were sampled using hydrocarbon test strips as per the approved QA/QC Plan for Berm Water Sampling as stated in the water licence 8BC-FOD1929, PART D, Item 11. The photo log of the hydrocarbon test strips was misplaced due to the NWS contract transition.

³ Effluent from bermed fuel storage facilities.

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ANNEX F. MONITORING ACTIVITIES

n/a

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