



2020 ANNUAL NUNAVUT WATER BOARD

REPORT FOR FOX-3

FOR THE

North Warning System

Contract # W8485-100224/001/NX

SOW Ref: 16.F.5.d

Document Number

NWB-F3-2020, Rev 1, 18-Mar-2021

Prepared for
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EXECUTIVE SUMMARY IN ENGLISH FOLLOWS

2020 ፳፻፲፻ ዓ.ም. በኋላ የሚገኘው የገዢ ስራ በኋላ የሚገኘው (NWB) በኋላ የሚገኘው Raytheon Canada Limited (RC) ለመፈጸም የሚገኘው በኋላ የሚገኘው ስራ በኋላ የሚገኘው 08 ዓ.ም. 2018, 8BC-FOD1828 – ተመልከተው “B”, ሲሆን B “ከመፈጸም የሚገኘው ስራ በኋላ የሚገኘው”, በኋላ የሚገኘው 1 ሲሆን የሚገኘው የሚፈጸም ስራ በኋላ የሚገኘው 01 ዓ.ም. 2020 በኋላ የሚገኘው 31 ዓ.ም. 2020.

ԵՐԵՎԱՆ 142.3 ԲՀՀՆՀՀ ԻՇԱԾԱ ԱԽԾԱԾԱԿՀ ԱԼՎԱԾ ՀՐԴԱՐ. ՀԱՅ ՀՎՏՀԿ ՀՎԴՎԱԾ ՀՎԴՎԱԾ 1,440 ԲՀՀՆՀՀ ԻՇԱԾԱ ԱԽԾԱԾԱԿՀ.

RC 110947Z DEC 1944

ქართველი კულტურული მემკვიდრეობის დაცვის სამინისტრო



EXECUTIVE SUMMARY

This 2020 Annual Report for the Nunavut Water Board (NWB) has been prepared by Raytheon Canada (RC) for the Department of National Defence 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 2020.

RC is the Operation 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 RC staff from FOX-M, Hall Beach, Nunavut for preventive maintenance inspections and as required for other work.

A total of 142.3 cubic meters was drawn from the water lake. This is below the annual maximum of 1,440 cubic meters allowed by the licence.

As FOX-3 is a landlocked site, all hazardous waste, including waste oil, is transported to FOX-M before being shipped to an approved hazardous waste disposal site outside of Nunavut as required by the licence. The hazardous waste was shipped to Qikiqtaaluk Environmental, through their subcontractor Veolia, 2630, boul. Industriel, Chambly, QC J3L 4V2. A total of one crate and 19 drums of waste HAZMAT were shipped from FOX-3 in 2020.

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

In 2020, 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 2020.

- On 6-Apr-2020, the radiator on a heater on-site failed, resulting in a spill of approximately 50 L of glycol. The technicians shut down the radiator right away, stopping the spill. The spill leaked through the floor and made its way under the radiator building. Absorbent Pads were put down to contain the spill. The contaminated snow was removed and transferred into a salvage drum. The spill was remediated and is now closed.

The Spill Contingency Plan was updated on 6-Jan-2021.

The landfarm was sampled in 2020 and it was determined that tilling will continue in 2021.

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1.0 INTRODUCTION

This 2020 Annual Report for the Nunavut Water Board (NWB) has been prepared by Raytheon Canada (RC) 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 2020.

RC is the Operation and Maintenance (O&M) Contractor for the North Warning System (NWS), including FOX-3. FOX-3 is an unattended (unmanned) North Warning System radar site located at Dewar Lakes, Nunavut. The site is visited quarterly by RC 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
Raytheon Canada, 17-Mar-2021
Time period covered: 01 January to 31 December 2020

2.0 WATER USE

A total of 142.3 m³ of water was drawn from the supply lake in 2020. This is below the annual maximum of 1,440 m³ allowed by the licence.

See Table 2-1 for the volume of water usage at FOX-3 each month in 2020.

Table 2-1: Monthly Raw Water Usage at FOX-3 in 2020

| Month | Raw water usage (m ³) |
|--------------|-----------------------------------|
| January | 0 |
| February | 0 |
| March | 0 |
| April | 0 |
| May | 0 |
| June | 27.1 |
| July | 52.2 |
| August | 63.0 |
| September | 0 |
| October | 0 |
| November | 0 |
| December | 0 |
| TOTAL | 142.3 |

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3.0 HAZARDOUS WASTE AND WASTE OIL DISPOSAL

As FOX-3 is a landlocked site, all hazardous waste, including waste oil, is transported to FOX-M (Sanirajak) before being shipped to an approved hazardous waste disposal site outside of Nunavut as required by the licence. The hazardous waste was shipped to Qikiqtaaluk Environmental, through their subcontractor Veolia, 2630, boul. Industriel, Chambly, QC J3L 4V2.

See **Annex A** for the shipping documents including the completed movement documents for waste regulated under the Transportation of Dangerous Goods Regulations (TDGR) and NWS Manifests for non-regulated waste. A total of one crate and 19 drums of waste HAZMAT were shipped from FOX-3 in 2020.

Table 3-1: Hazardous Waste and Waste Oil Sent for Disposal from FOX-3 in 2020

| Description, TDG shipping name | Quantity | Movement Document or Manifest # |
|---|----------|---------------------------------|
| Waste Jet A1 fuel and water mixture | 9 Drums* | NWS Manifest 41718 |
| Waste fuel, aviation, turbine engine mixture | | |
| Waste Fuel, Aviation, Turbine Engine | 1 Drum | NWS Manifest 41718 |
| Waste batteries, wet, filled with acid | 1 Crate | NWS Manifest 41718 |
| Waste glycol (drum) | 2 Drums | NWS Manifest 41718 |
| Not TDG Regulated | | |
| Waste Jet A1 fuel soaked rags | 1 Drum | NWS Manifest 41718 |
| Waste solids containing flammable liquids, n.o.s (fuel, aviation, turbine engine) | | |
| Waste oil | 4 Drums | NWS Manifest 41718 |
| Not TDG regulated | | |
| Waste oily rags | 1 Drum** | NWS Manifest 41718 |
| Not TDG regulated** | | |
| Waste paint flammable | 1 Drum | NWS Manifest 41718 |
| Waste paint | | |

* 7 drums of Jet-A1 fuel and water mixture were included in the Shipper's Declaration as "waste fuel, aviation, turbine engine". The remaining two drums were not included on the Shipper's Declaration in error (but are included on the NWS Manifest).

** Oily rags are TDG regulated only when shipped by vessel.

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. RC has documented authorization from the community for receiving the waste.

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

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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 2020

| Month | Waste Generated (kg) |
|--------------|----------------------|
| January | 0 |
| February | 0 |
| March | 0 |
| April | 0 |
| May | 0 |
| June | 0 |
| July | 0 |
| August | 318 |
| September | 0 |
| October | 0 |
| November | 0 |
| December | 0 |
| TOTAL | 318 |

5.0 MONITORING PROGRAM

In 2020, 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 2020 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 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). No samples were taken in 2020.

6.0 SPILLS (UNAUTHORIZED DISCHARGES)

One spill to the environment occurred at FOX-3 in 2020 which consisted of 50 L of glycol solution. Table 7-1, below, describes the spill (unauthorized discharge) details.

The Spill Contingency Plan was successfully implemented.

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Table 6-1: Unauthorized Discharges at FOX-3 in 2020

| Date, NT-NU Spill # | Product | Quantity | Cause and follow-up action | On-site location |
|-----------------------------|---------|----------|---|---|
| 06-Apr-2020, Spill # 20-097 | Glycol | 50 L | <p>On 6-Apr-2020, the radiator on a heater on-site failed, resulting in a spill of approximately 50 L of glycol.</p> <p>The technicians shut down the radiator right away, stopping the spill. The spill leaked through the floor and made its way under the radiator building. Absorbent Pads were put down to contain the spill. The contaminated snow was removed and transferred into a salvage drum.</p> <p>The spill was remediated and closed.</p> | Mod 22 room #2 (68°39'2.12"N 71°13'57.77"W) |

7.0 REVISIONS TO THE SPILL CONTINGENCY PLAN

The Spill Contingency Plan was updated on 6-Jan-2021. An updated copy of the Spill Contingency Plan has been submitted to the NWB with this annual report.

8.0 PROGRESSIVE RECLAMATION WORK UNDERTAKEN

The landfarm was operated in 2020. A summary of the work completed in 2020 is included in **Annex F**.

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 |
| RC | Raytheon Canada |
| 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 IN 2020

The 2020 Movement Document for TDG Regulated waste and NWS Manifests for non-TDG Regulated waste (as previously described Table 4-1) are included in the following pages.

The following documents are enclosed.

1. Shipper's Declaration for Dangerous Goods – 30-June-2020
2. NWS Manifest 41718

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SHIPPER'S DECLARATION FOR DANGEROUS GOODS
DÉCLARATION DE L'EXPÉDITEUR DE MARCHANDISES DANGEREUSES

**Shipper
Expéditeur**
 Raytheon Canada Ltd.
 FOX-3
 Deux Lakes, NU

Air Waybill No.

No de L.T.A.

Page 1 of 1 Pages
 Page 1 de 1 pages

Shipper's Reference Number (optional)
 N° de référence de l'expéditeur (facultatif)

**Consignee
Destinataire**
 Raytheon Canada Ltd.
 FOX-M
 Hall Beach, NU
 XCA DKD

*Two completed and signed copies of this Declaration must be handed to the operator.
 Deux copies de cette déclaration doivent être remises à l'exploitant.*

TRANSPORT DETAILS
RENSEIGNEMENTS SUR LE TRANSPORT

*This shipment is within the limitations prescribed for: (delete non-applicable)
 Cette expédition est dans les limites autorisées pour: (biffer la mention inutile)*

Airport of Departure:
 Aéroport de départ:

Deux Lakes, NU

Airport of Destination:
 Aéroport de destination:

Hall Beach, NU

PASSENGER AND CARGO AIRCRAFT
 CARGO AIRCRAFT ONLY
 AÉRONEF PASSAGERS ET CARGO
 AÉRONEF CARGO SEULEMENT

WARNING

Failure to comply in all respects with the applicable Dangerous Goods Regulations may be in breach of the applicable law, subject to legal penalties.

AVERTISSEMENT

Le non-respect sur quelque point que ce soit de la Réglementation sur le transport des marchandises dangereuses peut constituer une infraction aux lois en vigueur, punissable par la loi.

Shipment type: (delete non-applicable) Type d'envoi: (biffer la mention inutile)

NON-RADIOACTIVE
 NON-RADIOACTIF

RADIOACTIVE
 RADIOACTIF

NATURE AND QUANTITY OF DANGEROUS GOODS / NATURE ET QUANTITÉ DE MARCHANDISES DANGEREUSES

| Dangerous Goods Identification / Identification des marchandises dangereuses | | | | Quantity and type of packing Quantité et type d'emballage | Packing Inst. Instructions d'emballage | Authorization Autorisation |
|--|---|--|---|--|---|-------------------------------|
| UN or ID No. Nº. UN ou ID. | Proper Shipping Name Désignation exacte d'expédition | Class or Division (Subsidiary Risk) Classe ou division (risque subsidiaire) | Packing Group Groupe d'emballage | | | |
| UN 2794 | Waste Batteries, Wet Filled With Acid | 8 | | 1 Crate x 816 kg | 870 | |
| UN 1863 | WASTE Fuel, Aviation, Turbine Engine | 3 | | 8 drums x 1640 L | 366 | |
| UN 1363 | WASTE Paint | 3 | II | 1 drum x 1 L | 353 | |
| UN 3175 | Waste Solids Containing Flammable Liquid, N.O.S. (Fuel, Aviation, Turbine Engine) | 4.1 | II | 1 drum x 45 kg | 445 | |

Additional Handling Information/ Renseignements complémentaires concernant la manutention

For emergency contact: 24-hour No.:

Pour urgence: Numéro 24 heures:

Conitec: 1-613-996-6666

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. I declare that all of the applicable air transport requirements have been met.

Je déclare par la présente que la désignation exacte d'expédition ci-dessus décrit avec précision et exactitude le contenu de cette expédition, qui est classifiée, emballée, marquée, étiquetée ou dotée d'une plaque-étiquette de danger et à tous égards en bon état pour le transport conformément à la réglementation internationale ou nationale applicable.

Je déclare que toutes les prescriptions requises pour le transport aérien ont été respectées.

Name/Title of Signatory / Nom/Titre du Signataire

Jerry Pichay
 Warehouseperson

Place and Date / Lieu et Date

Deux Lakes, NU 30-June-2020

Signature

(See warning above) (Voir avertissement ci-dessus)



SHIPPING MANIFEST

Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8

NON NEGOTIABLE

| Filled By: JPIALLAQ | | Date: Jun 30, 2020, 2:29 PM | Project ID: | Task ID: | | | |
|---|-------------|--|----------------------------------|----------------------|--|---------------|---------|
| | | | | TCN-41718 | | | |
| Ship To: LSS-F/FOX-M, HALL BEACH, DND Storeroom Raytheon Canada Limited, LSS Hall Beach: P.O. Box 46 Hall Beach, NU, X0A 0K0 867-928-8987 | | From: FOX-3, DEWAR LAKES, DND Storeroom Raytheon Canada Limited, NWS LSS Hall Beach, P.O. Box 46 Hall Beach, NU, X0A 0K0 867-928-8987 | | Priority 0 | | | |
| Attention: | | Attention: | | | | | |
| Carrier: | | Routing: | Waybill #: | Total Pcs. | | | |
| | | | | 21 | | | |
| | | | | 24,300 | | | |
| QTY Order | Type | Line Weight | Item | Description | WO or PO | B/Code or S/N | Remarks |
| 4 | 1500 LBS | 2006405 | WASTE - FUEL AND WATER MIXTURE | PALLET # 1 | ASSET# 352040, 352041, 352042, 352053 (48" x 47" x 43") | | |
| 2 | 1300 LBS | 2002344 | WASTE - GLYCOL (DRUM) | PALLET # 4 | ASSET # 347766, 339894 55" x 54" x 41". | | |
| 1 | 1000 LBS | 2002343 | WASTE - FUEL | PALLET # 6 | ASSET # 352279 | | |
| 1 | 1000 LBS | | | CRATE # 16 | CRATE CONTAINS GARABGE (72" x 48" x 57") | | |
| 1 | 1000 LBS | | | CRATE # 17 | CRATE CONTAINS GARABGE (72" x 48" x 57") | | |
| 1 | 700 LBS | 1003058 | DRUM, STORAGE, SHIPPING SALVAGE, | PALLET # 2 | 3 SALVAGE DRUMS (GARBAGE) (55" x 54" x 41") | | |
| 1 | 800 LBS | | | CRATE # 12 | CRATE CONTAINS GARABGE (72" x 48" x 57") | | |
| 1 | 1200 LBS | | | CRATE # 14 | CRATE CONTAINS STEEL SCRAP (72" x 48" x 57") | | |
| 1 | 900 LBS | | | CRATE # 15 | CRATE CONTAINS GARABGE (72" x 48" x 57") | | |
| 4 | 1600 LBS | 2002406 | WASTE - OIL, 45 GAL | PALLET # 7 | ASSET # 352926, 355088, 354034, 354030 | | |
| 1 | 800 LBS | 2006405 | WASTE - FUEL AND WATER MIXTURE | PALLET # 5 | ASSET # 352908 (55" x 54" x 41") | | |
| 1 | 900 LBS | | | CRATE # 10 | CRATE CONTAINS GARABGE (72" x 48" x 57") | | |
| 1 | 800 LBS | | | CRATE # 11 | CRATE CONTAINS GARABGE (72" x 48" x 57") | | |
| 1 | 1000 LBS | | | CRATE # 19 | CRATE CONTAINS GARABGE (72" x 48" x 57") | | |
| 13 | 1800 LBS | 2002347 | WASTE - BATTERIES, WET, FILLED | CRATE # 21 | ASSET # 355091 (72" x 48" x 57") | | |
| 1 | 2002355 | | WASTE - PAINT FLAMMABLE | PALLET # 3 | ASSET # 352348 | | |
| 1 | 3000731 | | WASTE - FUEL CONTAMINATED RAGS | PALLET # 5 | ASSET # 352495 | | |
| 1 | 2002505 | | WASTE - OILY RAGS | PALLET # 5 | ASSET # 354076 | | |
| 1 | 800 LBS | | | CRATE # 18 | CRATE CONTAINS GARABGE (72" x 48" x 57") | | |
| 1 | 1000 LBS | | | CRATE # 20 | CRATE CONTAINS GARABGE (72" x 48" x 57") | | |
| 4 | 1600 LBS | 2002406 | WASTE - OIL, 45 GAL | PALLET # 8 | ASSET # 352925, 352037, 352254, 344582 | | |
| 3 | 1700 LBS | 2006405 | WASTE - FUEL AND WATER MIXTURE | PALLET # 6 | ASSET # 352906, 352907, 344581 | | |
| 1 | 1300 LBS | | | CRATE # 13 | CRATE CONTAINS STEEL SCRAP (72" x 48" x 57") | | |
| 1 | 1003058 | | DRUM, STORAGE, SHIPPING SALVAGE, | PALLET # 4 | CONTAINS SEWAGE SUMP TANK | | |



SHIPPING MANIFEST

Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8

NON NEGOTIABLE

| | | | |
|-------------------------------|---------------------------------------|-------------|------------------|
| Filled By: JPIALLAQ | Date: Jun 30, 2020, 2:29 PM | Project ID: | Task ID: |
| | | | TCN-41718 |

| | | |
|---|--|----------------------|
| Ship To: LSS-F/FOX-M, HALL BEACH, DND Storeroom Raytheon Canada Limited, LSS Hall Beach: P.O. Box 46 Hall Beach, NU, X0A 0K0 867-928-8987 | From: FOX-3, DEWAR LAKES, DND Storeroom Raytheon Canada Limited, NWS LSS Hall Beach, P.O. Box 46 Hall Beach, NU, X0A 0K0 867-928-8987 | Priority 0 |
|---|--|----------------------|

| | |
|------------|--|
| Attention: | |
|------------|--|

| Carrier: | Routing: | Waybill #: | Total Pcs. | Total Weight: |
|----------|----------|------------|------------|---------------|
| | | | 21 | 24,300 |

| QTY Order | Type | Line Weight | Item | Description | WO or PO | B/Code or S/N | Remarks |
|--------------|-------------|----------------|----------------------------------|-------------|----------|---------------|---|
| 3 | 1400 LBS | 1003058 | DRUM, STORAGE, SHIPPING SALVAGE, | PALLET # 3 | | | 4 SALVAGE DRUMS OF SEWAGE SUMP TANK (55" x 54" x 41") |
| 1 | 1200 LBS | | | CRATE # 9 | | | CRATE CONTAINS GARABGE (72" x 48" x 57") |

NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.

| | |
|--------------|------|
| Received By: | Date |
| Received By: | Date |

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 2020 and therefore sampling was not required.

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Canada

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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 2020

| Berm | Location on-site | Discharge Latitude ² | Discharge Longitude | Date |
|------------|------------------|---------------------------------|---------------------|-------------|
| DEW W22A&B | Summit | 68°39'05.43"N | 71°14'03.23"W | 29-Jun-2020 |
| DEW W22C&D | Summit | 68°39'03.67"N | 71°13'49.97"W | 29-Jun-2020 |
| DEW W20D&E | Airstrip | 68°37'24.90"N | 71°08'05.62"W | 29-Jun-2020 |

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 is included in pages which follow.

The following documents are enclosed:

1. Hydrocarbon Test Strip Photo Log

³ Effluent from bermed fuel storage facilities.

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Photo Log of Hydrocarbon Test Strips



Photo E 1: Hydrocarbon test strips used in berm of tanks W22A & W22B (29-Jun-2020)



Photo E 2: Hydrocarbon test strips used in berm of tank W22C & W22D (29-Jun-2020)

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Photo E 3: Hydrocarbon test strips used in berm of tank W20D & W20E (29-Jun-2020)

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ANNEX F. MONITORING ACTIVITIES

The following memo was provided to RC by DND on 2-Feb-2021 regarding the landfarm activities at FOX-3 during the summer of 2020:

In December 2017, Canada assumed liability from the previous NWS O&M contractor for the spills resulting from a pipeline leak discovered in 2009 and a helicopter crash that occurred in 2013.

In summer 2018, Canada procured the services of Defence Construction Canada (DCC) to contract an environmental engineering firm to excavate both spill areas and treat the impacted soil in a land farm on site. The contractor mobilized to the site in late August 2018 and successfully excavated, backfilled, and compacted the spill areas and landfarmed the impacted soil. Confirmatory sampling from September 2018 showed that further tilling of the land farm is required.

In 2020, samples were taken but no tilling took place because of COVID-19 restrictions. Samples were compared to the Canadian Council of Ministers of the Environment (CCME) Soil Quality Guidelines (SQG) and the CCME Canada-wide Standard for Petroleum Hydrocarbons (PHC CWS) for coarse soil and commercial land-use. BTEX concentrations were below detection limits for all soil samples within the FOX-3 landfarm. All PHC concentrations were below guidelines with the exception of five soil samples that were above CCME PHC CWS for F2 (C10-C16) fractions.

The five soil sample results remaining above the guideline for PHC-F2 (C10-C16) indicate that further tilling and confirmatory sampling is recommended in order to close the FOX-3 landfarm. Tilling and sampling are planned for summer 2021. The goal is to reach the CCME SQG and CCME PHC CWS criteria for hydrocarbon remediation and decommission the land farm by the end of summer.

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