



2015 ANNUAL NUNAVUT WATER BOARD REPORT FOR CAM-M FOR THE North Warning System

Contract # W8485-100224/001/NX
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Prepared for
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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 When the revised document is issued, the previous issue is automatically superseded.

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1	17-Mar-2016	-	-	Initial Document Release.
Document Title: 2015 Annual Nunavut Water Board Report for CAM-M				Document Number: FM-EHS-13



EXECUTIVE SUMMARY

This 2015 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 Nunavut Water Board licence issued 10 September 2009 3BC-CAM0919 – Type “B”, Part B. General Conditions, paragraph 1. This report covers the period from 01 January to 31 December 2015.

RCL is the Operation and Maintenance (O&M) Contractor for the North Warning System (NWS), including CAM-M. CAM-M is the attended (manned) NWS radar site located at Cambridge Bay, Nunavut. The site population increases due to project activity at CAM-M or at other radar sites that CAM-M supports.

The water usage for CAM-M in 2015 was 2,087.2 cubic meters. This is an average of 5.7 cubic meters per day, below the maximum of 10 cubic meters per day allowed by the licence. On occasion, more than the daily maximum was drawn due to increased site activity. The licensee has made application to the NWB in order to change the water usage metric from a daily value to an annual value aligning the CAM-M NWB licence with the other 5 NWB licenced NWS sites.

Sewage at CAM-M is processed by the tertiary wastewater treatment system. Some of the treated effluent is recycled as on site urinal/toilet flush water. The discharged treated effluent is of potable water quality. A sample of the treated effluent was sent for laboratory analysis each month in 2015.

Samples of the water contained in the berms of fuel storage facilities was sent for laboratory analysis and confirmed to be within effluent quality limits of the NWB licence 3BC-CAM0919, Part D, item 10 before the water was pumped out of the berms.

Hazardous waste was removed from CAM-M for disposal outside of Nunavut. The waste went to Safety Kleen, 2730 boulevard Industriel, Chambly, QC, J3L 4V2. The hazardous waste consisted of 118 drums of assorted waste (oil, fuel, paint, etc.) and 2 crates of batteries.

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

Two outdoor spills occurred at CAM-M in 2015. The spills were:

- a. NT-NU Spill Report # 15-054. On 17 Feb 2015, site personnel discovered that approximately 0.5 liters of hydraulic fluid had leaked from a loose connector on the loader. The hydraulic fluid was contained by ice and snow and did not penetrate to the ground. The impacted snow and ice were removed and placed in a container for future disposal at a licensed hazardous waste disposal facility outside of Nunavut.
- b. NT-NU Spill Report # 15-385. On 15 September 2015, site personnel found 2 L of glycol indoors and determined that the source was a loose clamp on the diesel generator. The clamp was tightened, stopping the leak. The spill was cleaned up indoors, staff checked under the building train, and found soil/gravel impacted by approximately 1 L of glycol. The impacted soil/gravel was placed in a container for future disposal at a licensed hazardous waste disposal facility outside of Nunavut.

The Spill Contingency Plan was successfully implemented.

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Document Number: FM-EHS-13

Revision No. 1

Effective Date: 17-Mar-2016

Page: v - vi



TABLE OF CONTENTS

1.0	Introduction	1
1.1	Report Details.....	1
2.0	Water Use	1
3.0	Treated Sewage Discharge	2
4.0	Hazardous Waste and Waste Oil Disposal	3
5.0	Non-hazardous Solid Waste Disposal.....	5
6.0	Monitoring Program	5
7.0	Spills (Unauthorized Discharges).....	6
8.0	Revisions to the Spill Contingency Plan.....	6
9.0	Progressive Reclamation Work Undertaken	6
10.0	Acronyms	7
	Annex A - Hazardous Waste and Waste Oil Disposal in 2015.....	8
	Annex B - Treated Sewage Effluent Outfall (CDL-2) Location with Coordinates	22
	Annex C - Analysis of Treated Sewage Effluent	23
	Annex D - Location of Berm Fuel Storage Facilities with Coordinates	48
	Annex E - Analysis of Berm Water (Effluent from Berm Fuel Storage Facilities).....	49

TABLES

Table 2-1	Monthly Raw Water Usage at CAM-M in 2015	2
Table 3-1	Monthly and Annual Volume of Sewage and Grey Water Treated at CAM-M in 2015	3
Table 4-1	Hazardous Waste and Waste Oil Sent for Disposal from CAM-M in 2015	3
Table 5-1	Non-hazardous Domestic Solid Waste Sent for Disposal from CAM-M in 2015.....	5
Table 7-1	Outdoor Spills Reported at CAM-M in 2015.....	6
Table C-1	Summary of Analysis of Treated Sewage Effluent at CAM-M in 2015.....	23
Table E-1	Analysis of Berm Water at CAM-M in 2015	49

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1.0 INTRODUCTION

This 2015 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-CAM0919 – Type “B”, Part B. General Conditions, paragraph 1. This report covers the period from 01 January to 31 December 2015.

RCL is the Operation and Maintenance (O&M) Contractor for the North Warning System (NWS), including CAM-M. CAM-M is the attended (manned) NWS radar site located at Cambridge Bay, Nunavut. The site population increases due to project activity at CAM-M or at other radar sites that CAM-M supports.

1.1 REPORT DETAILS

Licensee:	Department of National Defence, Government of Canada
Licence:	3BC-CAM0919 – Type “B”
Location:	CAM-M North Warning System Site, Cambridge Bay, Kitikmeot Region, Nunavut
Report prepared by:	Raytheon Canada Limited, 17-Mar-2016
Time Period Covered:	01 January to 31 December 2015

2.0 WATER USE

The water usage from January to December averaged 5.7 cubic meters per day which is below the maximum of 10 cubic meters per day allowed by the licence. See Table 2-1 for raw water usage. On occasion, more than the daily maximum was drawn due to increased site activity. The daily maximum was exceeded due to:

1. the simultaneous occurrence of: the backwash of Cycle-let membranes, backwash of raw water treatment system membranes, and filling of the raw water tank; and
2. heavy site loading in April 2015.

The average daily usage is below the daily maximum and the licensee has made application to the NWB about changing the water usage metric from a daily value to an annual value aligning the CAM-M NWB licence with the other 5 NWB licenced NWS sites.

**Table 2-1 Monthly Raw Water Usage at CAM-M in 2015**

Month	Raw water usage in cubic metres (m ³)
January	208.6
February	190.0
March	211.2
April	346.3
May	172.2
June	192.6
July	179.9
August	144.9
September	127.3
October	102.0
November	123.2
December	89.2
TOTAL	2,087.2

3.0 TREATED SEWAGE DISCHARGE

At CAM-M, the sewage and grey water were both processed through a *Cycle-let*® advanced tertiary wastewater treatment system. The system was maintained by RCL in 2015. Some of the treated water is recycled as urinal/toilet flush water; the remainder is discharged at the designated outfall and is potable water quality. See Table 3-1, for the volume of sewage and grey water treated by the *Cycle-let*® system.

**Table 3-1 Monthly and Annual Volume of Sewage and Grey Water Treated at CAM-M in 2015**

Month	Volume of sewage and greywater treated then discharged or recycled in cubic metres (m ³)
January	108.8
February	98.3
March	108.8
April	105.3
May	108.8
June	105.3
July	108.8
August	108.8
September	154.0
October	132.5
November	135.9
December	118.2
Total	1,393.9

4.0 HAZARDOUS WASTE AND WASTE OIL DISPOSAL

Hazardous waste and waste oil were sent to an approved hazardous waste disposal site outside of Nunavut as required by the licence. The hazardous waste was shipped to Safety Kleen, 2730 boulevard Industriel, Chambly, QC, J3L 4V2.

See Table 4-1 for the list of items sent for disposal.

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.

Table 4-1 Hazardous Waste and Waste Oil Sent for Disposal from CAM-M in 2015

Site	Description, TDG shipping name	Quantity	Movement Document or Manifest #
CAM-M	Waste Activated Carbon Filter Not TDG Regulated	12 Drums	NWS Manifest 34344, 34346, 34358
CAM-M	Waste Batteries, Wet, Filled with Acid	1 Crate	Movement Document 2581510-1
CAM-M	Waste Batteries, Wet, Non-Spillable	1 Crate	Movement Document 2581510-1

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Site	Description, TDG shipping name	Quantity	Movement Document or Manifest #
CAM-M	Waste Glycol Not TDG Regulated	1 Drum	NWS Manifest 34341
CAM-M	Waste Jet A1 Fuel Waste Fuel, Aviation, Turbine Engine	10 Drums	Movement Document 2581509-3
CAM-M	Waste Jet A1 Fuel Filters Waste Solids Containing Flammable Liquid, N.O.S. (Fuel, Aviation, Turbine Engine)	3 Drums	Movement Document 2581509-3
CAM-M	Waste Jet A1 Fuel Impacted Soil Waste Solids Containing Flammable Liquid, N.O.S. (Fuel, Aviation, Turbine Engine)	1 Drum	Movement Document 2581509-3
CAM-M	Waste Jet A1 Fuel Mixture Waste Fuel, Aviation, Turbine Engine Mixture	1 Drum	Movement Document 2581509-3
CAM-M	Waste Lithium Batteries	1 Drum	Movement Document 2581510-1
CAM-M	Waste Oil Not TDG Regulated	60 Drums	NWS Manifest 34336, 34337, 34338, 34339, 34340, 34341, 34348, 34350, 34351, 34352, 34353, 34354, 34356, 34359, 34366, 34369
CAM-M	Waste Oil Filters	8 Drums	NWS Manifest 34333, 34334, 34335, 34361
CAM-M	Waste Oil Impacted Soil Not TDG Regulated	1 Drums	NWS Manifest 34368
CAM-M	Waste Oil Soaked Absorbent Not TDG Regulated	4 Drums	NWS Manifest 34333, 34361, 34368
CAM-M	Waste Oily Rags Waste Solids Containing Flammable Liquid, N.O.S. (Fuel, Aviation, Turbine Engine)	12 Drums ¹	Movement Document 2581509-3
CAM-M	Waste Paint	1 Drum	Movement Document 2581509-3
CAM-M	Waste Paint Related Materials	2 Drums	Movement Document 2581509-3
CAM-M	Waste Lighting Ballasts Containing PCBs Waste Polychlorinated Biphenyls, Solid	1 Drum	Movement Document 2581510-1

¹ 4 of these drums were sent as Not TDG Regulated as they contained no Jet A1 Fuel

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5.0 NON-HAZARDOUS SOLID WASTE DISPOSAL

Non-hazardous domestic solid waste was disposed of at the local landfill through a contract with the Municipality of Cambridge Bay. RCL has documented authorization from the community for receiving the waste. See Table 5-1 for the quantity of non-hazardous waste generated.

Table 5-1 Non-hazardous Domestic Solid Waste Sent for Disposal from CAM-M in 2015

Month	Waste Generated (kg)
January	717
February	1,204
March	1,257
April	953
May	1,445
June	1,100
July	1,125
August	1,125
September	906
October	1,237
November	1,132
December	840
Total	13,040

6.0 MONITORING PROGRAM

See **Annex B** for the location of the treated sewage effluent outfall, CDL-2, with co-ordinates.

See **Annex C** for analysis of the treated sewage effluent.

See **Annex D** for the list of bermed fuel storage facilities, CDL-3, with co-ordinates.

See **Annex E** for analysis of berm water (water contained in the berms of fuel storage facilities). The results were confirmed to be within effluent quality limits of the NWB licence 3BC-CAM0919, Part D, item 10 before the water was pumped out of the berms.



7.0 SPILLS (UNAUTHORIZED DISCHARGES)

Table 7-1 Outdoor Spills Reported at CAM-M in 2015

Date, Spill #	Product	Quantity	Cause and follow-up action	On-site Location
17 Feb 2015, Spill # 15-054	Hydraulic Fluid	0.5 L	On 17 February 2015, site personnel discovered that approximately 0.5 L of hydraulic fluid had leaked from a loose connector on the loader. The hydraulic fluid was contained by ice and snow and did not penetrate to the ground. The impacted snow and ice were removed and placed in a container for future disposal at a licensed hazardous waste disposal facility outside of Nunavut.	Between A-Train and B-Train (69°06'09.94"N, 105°07'01.63"W)
15 Sep 2015, Spill # 15-385	Glycol	3 L	On 15 September 2015, Staff found 2 L of glycol indoors and determined that the source was a loose clamp on the diesel generator. The clamp was tightened, stopping the leak. The spill was cleaned up indoors, staff checked under the building train, and found soil/gravel impacted by approximately 1 L of glycol. The impacted soil/gravel was placed in a container for future disposal at a licensed hazardous waste disposal facility outside of Nunavut.	Under building Train (69°06'58.3"N 105°07'11.6"W)

8.0 REVISIONS TO THE SPILL CONTINGENCY PLAN

The Spill Contingency Plan was successfully implemented. There were no revisions to the Spill Contingency Plan in 2015.

9.0 PROGRESSIVE RECLAMATION WORK UNDERTAKEN

None undertaken.



10.0 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



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ANNEX A - HAZARDOUS WASTE AND WASTE OIL DISPOSAL IN 2015

2015 Movement Documents for TDG Regulated waste and NWS Manifests for non-TDG Regulated waste.

MOVEMENT DOCUMENT / MANIFEST DOCUMENT DE MOUVEMENT / MANIFESTE

This Movement document conforms to all federal and provincial transport and environmental legislation.
Ce document de mouvement manifeste est conforme aux législations fédérale et provinciale sur l'environnement et le transport.

Movement Document / Manifest Reference No.
N° de référence du document de mouvement manifeste

2581509-3

A Generator / consigneur Producteur / expéditeur Registration No. / Provincial ID No. N° d'identification - d'éc. provincial NUG100003		B Carrier Transporteur Registration No. / Provincial ID No. N° d'identification - d'éc. provincial ()		25 Reference No. of other movement document(s) used / N° de référence des autres documents de mouvement manifeste utilisés ()	
Company name / Nom de l'entreprise DEPARTMENT OF NATIONAL DEFENCE 96RCL 22 Wing Bldg 109 Hornell Heights ON POTH0 2581509-3		Company name / Nom de l'entreprise ()		C Receiver / consignee Récepteur / destinataire Registration No. / Provincial ID No. N° d'identification - d'éc. provincial ()	
Shipping site address / Adresse du lieu d'expédition NWS LSS - Cambridge Bay Cambridge Bay NU X6B0C0		Shipping site address / Adresse postale ()		Receiver / consignee information same as in Part A Les renseignements du récepteur / destinataire sont les mêmes qu'à la Partie A <input type="checkbox"/> Yes / Oui <input type="checkbox"/> No, complete the box below / Non, remplir la case ci-dessous	
Intended Receiver / consignee Récepteur / destinataire prévu SAFETY KLEEN 27011824-1 675 route 33ville Ste Catherine QC J5C1B6		Intended Receiver / consignee Récepteur / destinataire prévu ()		Company name / Nom de l'entreprise ()	
Receiving site address / Adresse du lieu de destination 2730 boulevard Industriel Chambly QC J3L4Y2		Receiving site address / Adresse du lieu de destination ()		Date received / Date de réception Year / Année Month / Mois Day / Jour Time / Heure ()	
Prox. code ()		Prox. code ()		Waste or recyclable material to be transferred, specify hazardous company name / Si les déchets ou matériaux recyclables doivent être transférés, préciser le nom de l'entreprise ()	
Shipping name Appellation réglementaire WASTE FUEL AVIATION Turbine 3		UN No. UN1863		Quantity shipped Quantité expédiée 1800 L	
WASTE FUEL AVIATION Turbine 3		UN No. UN1863		Quantity shipped Quantité expédiée 180 L	
WASTE SOLIDS CONTAINING FLAMMABLE 4.1		UN No. UN3175		Quantity shipped Quantité expédiée 1112 KG	
WASTE PAINT 3		UN No. UN1263		Quantity shipped Quantité expédiée 4 L	
Notice No. N° de notification Flash Point 38°C		Notice No. N° de notification ()		Handling code "Other" (specify) Si code de manipulation « autre » (spécifier) ()	
Shipment Type Flash Point 38°C		Shipment Type ()		Receiver / consignee certification: I certify that the information contained in Part C is correct and complete. Attestation de récepteur / destinataire: J'atteste que tous les renseignements à la partie C sont exacts et complets. Signature: ()	
International use only		International use only		Special handling / Manipulation spéciale <input type="checkbox"/> Attached / Ci-joint <input type="checkbox"/> As follows / Comme: ()	
24 hour Number: 705 494 2011 ext 3400		USE IN CASE OF A Dangerous Goods Emergency PER SHEPPARD		Date shipped / Date d'expédition Year / Année Month / Mois Day / Jour Time / Heure 251114 2011 09 28 11 21	

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Instructions au verso

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MOVEMENT DOCUMENT / MANIFEST
DOCUMENT DE MOUVEMENT / MANIFESTE

2581510-1

This Movement document/manifest contains information that is subject to the Access to Information Act and the Privacy Act.
Ce document de mouvement/manifester contient des renseignements personnels et des renseignements protégés par la Loi sur l'accès à l'information et la Loi sur la protection des renseignements personnels.

Movement Document / Manifest Reference No.
N° de référence du document de mouvement/manifester

A Generator / consigneur Producteur / expéditeur Registration No. / Provincial ID No. N° d'identification - d'ID provincial NUG-100003		B Carrier Transporteur Registration No. / Provincial ID No. N° d'identification - d'ID provincial		C Receiver / consignee Réceptionnaire / destinataire Registration No. / Provincial ID No. N° d'identification - d'ID provincial	
Company name / Nom de l'entreprise Debris International Defense (RC) 2240g Ridge 109, Horneville Heights, ON L1M 1P0 Tel. No. / N° de tél. 705 494 2011		Company name / Nom de l'entreprise		Receiver / consignee information same as Part A Les renseignements du récepteur/destinataire sont les mêmes qu'à la Partie A <input type="checkbox"/> Yes / Oui <input type="checkbox"/> No, complete the box below / Non, complétez la case ci-dessous	
Shipping site address / Adresse du lieu de chargement NWS LSS - Cambridge Bay City / Ville Cambridge Bay NV X0B0C0		Vehicle / Véhicule Trailer - Pol car No. 1 T-transport - remorque Trailer - Pol car No. 2 T-transport - remorque		Company name / Nom de l'entreprise	
Intended Recipient / destinataire SAFETYKIGEN 27011824-1 Mailing address / Adresse postale 6850th 132 Ville Ste-Catherine QC J5B0B6 Tel. No. / N° de tél.		Port of entry / Point d'entrée International use only Port of exit / Point de sortie International use only		Mailing address / Adresse postale	
Receiving site address / Adresse du lieu de destination 230 boulevard Industriel City / Ville CHAMBLY QC J3L4V2		Carrier Declaration / Déclaration du transporteur I certify that the information contained in Part A is correct and complete. I hereby declare that the contents of this movement document are true and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/conditioned, and are in all respects in proper condition for transport according to applicable international and national government regulations. Je certifie que les renseignements contenus à la partie A sont exacts et complets. Je déclare que les contenus de ce document de mouvement/manifester sont vrais et décrits avec précision au-dessus par le nom de chargement approprié, et qu'ils sont classifiés, emballés, marqués et étiquetés, et qu'ils sont en toutes circonstances en condition adéquate pour être transportés conformément aux règlements internationaux et nationaux applicables.		Date received / Date de réception Year / Année Month / Mois Day / Jour Time / Heure AM / PM	
Prev. code Code préc.		Shipping name Appellation/désignation		Quantity received Quantité reçue	
8		Waste Batteries used Filled with Acid		187 KG	
8		Waste Batteries used not Seillable		590 KG	
9		Waste Polychlorinated Biphenyls Solid		323 Kg	
9		Waste Lithium Metal Batteries		52 Kg	
Police No. N° de police		Police No. N° de police		Police No. N° de police	
11		12		13	
14		15		16	
17		18		19	
20		21		22	
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SHIPPING MANIFEST							
Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8				NON NEGOTIABLE			
Filled By: PSHEPPARD		Date: Jul 30, 2015 1:54 PM		TCN-34333			
Ship To: CLEAN HARBORS CANADA INC. 2730 BOULEVARD INDUSTRIEL CHAMBLY, QC, J3L 4V2 CA		From: LSS-C/CAM-M CAMBRIDGE BAY, DND Storeroom Raytheon Canada Limited, LSS Cambridge Bay: P.O. Box 1239 Cambridge Bay, NU, X0B 0C0 867-983-2112			Priority 0		
Attention:		Attention:					
Carrier: NEAS	Routing:	Waybill #:	Total Pcs. 1	Total Weight: 1267 LBS			
QTY Order	Type	Line Weight	Item	Description	WO or PO	B/Code or S/N	Remarks
1			2002357	WASTE - FUEL CONTAMINATED SOIL			ASSET 327906
1			3006639	WASTE - OIL SOAKED ABSORBENT			ASSET 330986
1			2002356	WASTE - OIL FILTERS (DRUM)			ASSET 331174
1			2003635	WASTE - FUEL FILTERS (DRUM)			ASSET 331309
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.						Received By: _____ Date: _____	
						Received By: _____ Date: _____	

SHIPPING MANIFEST							
Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8				NON NEGOTIABLE			
Filled By: PSHEPPARD		Date: Jul 30, 2015 3:53 PM		TCN-34334			
Ship To: CLEAN HARBORS CANADA INC. 2730 BOULEVARD INDUSTRIEL CHAMBLY, QC, J3L 4V2 CA		From: LSS-C/CAM-M CAMBRIDGE BAY, DND Storeroom Raytheon Canada Limited, LSS Cambridge Bay: P.O. Box 1239 Cambridge Bay, NU, X0B 0C0 867-983-2112			Priority 0		
Attention:		Attention:					
Carrier: NEAS	Routing:	Waybill #:	Total Pcs. 1	Total Weight: 847 LBS			
QTY Order	Type	Line Weight	Item	Description	WO or PO	B/Code or S/N	Remarks
1			2002356	WASTE - OIL FILTERS (DRUM)			ASSET 331518
3			2002505	WASTE - OILY RAGS			ASSET 328573 / 331311 / 327905
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.						Received By: _____ Date: _____	
						Received By: _____ Date: _____	

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SHIPPING MANIFEST							
Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8					NON NEGOTIABLE		
Filled By: PSHEPPARD		Date: Jul 30, 2015 4:03 PM		TCN-34335			
Ship To: CLEAN HARBORS CANADA INC. 2730 BOULEVARD INDUSTRIEL CHAMBLY, QC, J3L 4V2 CA		From: LSS-C/CAM-M CAMBRIDGE BAY, DND Storeroom Raytheon Canada Limited, LSS Cambridge Bay: P.O. Box 1239 Cambridge Bay, NU, X0B 0C0 867-983-2112			Priority 0		
Attention:		Attention:					
Carrier: NEAS		Routing:		Waybill #:	Total Pcs. 1	Total Weight: 847 LBS	
QTY Order	Type	Line Weight	Item	Description	WO or PO	B/Code or S/N	Remarks
4			2002356	WASTE - OIL FILTERS (DRUM)			ASSET 331310 / 326499 / 330443 / 327106
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.							
Received By:				Date			
Received By:				Date			

SHIPPING MANIFEST							
Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8					NON NEGOTIABLE		
Filled By: PSHEPPARD		Date: Jul 30, 2015 4:17 PM		TCN-34336			
Ship To: CLEAN HARBORS CANADA INC. 2730 BOULEVARD INDUSTRIEL CHAMBLY, QC, J3L 4V2 CA		From: LSS-C/CAM-M CAMBRIDGE BAY, DND Storeroom Raytheon Canada Limited, LSS Cambridge Bay: P.O. Box 1239 Cambridge Bay, NU, X0B 0C0 867-983-2112			Priority 0		
Attention:		Attention:					
Carrier: NEAS		Routing:		Waybill #:	Total Pcs. 1	Total Weight: 1816 LBS	
QTY Order	Type	Line Weight	Item	Description	WO or PO	B/Code or S/N	Remarks
4			2002406	WASTE - OIL (45 GALLON DRUM)			ASSET 329552 / 325609 / 329549 / 322269
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.							
Received By:				Date			
Received By:				Date			

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SOW REF: 16.F.5.d

SHIPPING MANIFEST							
Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8						NON NEGOTIABLE	
Filled By: PSHEPPARD		Date: Jul 30, 2015 4:23 PM		TCN-34337			
Ship To: CLEAN HARBORS CANADA INC. 2730 BOULEVARD INDUSTRIEL CHAMBLY, QC, J3L 4V2 CA		From: LSS-C/CAM-M CAMBRIDGE BAY, DND Storeroom Raytheon Canada Limited, LSS Cambridge Bay: P.O. Box 1239 Cambridge Bay, NU, X0B 0C0 867-983-2112			Priority 0		
Attention:				Attention:			
Carrier: NEAS		Routing:		Waybill #:	Total Pcs. 1	Total Weight: 1553 LBS	
QTY Order	Type	Line Weight	Item	Description	WO or PO	B/Code or S/N	Remarks
4			2002406	WASTE - OIL (45 GALLON DRUM)			ASSET 327904 / 329548 / 326152 / 326262

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

Received By: _____ Date: _____

Received By: _____ Date: _____

SHIPPING MANIFEST							
Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8						NON NEGOTIABLE	
Filled By: PSHEPPARD		Date: Jul 30, 2015 5:55 PM		TCN-34338			
Ship To: CLEAN HARBORS CANADA INC. 2730 BOULEVARD INDUSTRIEL CHAMBLY, QC, J3L 4V2 CA		From: LSS-C/CAM-M CAMBRIDGE BAY, DND Storeroom Raytheon Canada Limited, LSS Cambridge Bay: P.O. Box 1239 Cambridge Bay, NU, X0B 0C0 867-983-2112			Priority 0		
Attention:				Attention:			
Carrier: NEAS		Routing:		Waybill #:	Total Pcs. 1	Total Weight: 1573 LBS	
QTY Order	Type	Line Weight	Item	Description	WO or PO	B/Code or S/N	Remarks
4			2002406	WASTE - OIL (45 GALLON DRUM)			ASSET 330746 / 327247 / 328725 / 326533

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

Received By: _____ Date: _____

Received By: _____ Date: _____

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SOW REF: 16.F.5.d

SHIPPING MANIFEST					
Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8				NON NEGOTIABLE	
Filled By: PSHEPPARD		Date: Jul 30, 2015 6:01 PM		TCN-34339	
Ship To: CLEAN HARBORS CANADA INC. 2730 BOULEVARD INDUSTRIEL CHAMBLY, QC, J3L 4V2 CA		From: LSS-C/CAM-M CAMBRIDGE BAY, DND Storeroom Raytheon Canada Limited, LSS Cambridge Bay: P.O. Box 1239 Cambridge Bay, NU, X0B 0C0 867-983-2112			Priority 0
Attention:		Attention:			
Carrier: NEAS	Routing:	Waybill #:	Total Pcs. 1	Total Weight: 1688 LBS	
QTY Order	Type	Line Weight	Item	Description	WO or PO B/Code or S/N Remarks
4		2002406		WASTE - OIL (45 GALLON DRUM)	ASSET 331289 / 331290 / 331291 / 330713
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.					
Received By:			Date		
Received By:			Date		

SHIPPING MANIFEST					
Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8				NON NEGOTIABLE	
Filled By: PSHEPPARD		Date: Jul 30, 2015 6:07 PM		TCN-34340	
Ship To: CLEAN HARBORS CANADA INC. 2730 BOULEVARD INDUSTRIEL CHAMBLY, QC, J3L 4V2 CA		From: LSS-C/CAM-M CAMBRIDGE BAY, DND Storeroom Raytheon Canada Limited, LSS Cambridge Bay: P.O. Box 1239 Cambridge Bay, NU, X0B 0C0 867-983-2112			Priority 0
Attention:		Attention:			
Carrier: NEAS	Routing:	Waybill #:	Total Pcs. 1	Total Weight: 1740 LBS	
QTY Order	Type	Line Weight	Item	Description	WO or PO B/Code or S/N Remarks
4		2002406		WASTE - OIL (45 GALLON DRUM)	ASSET 330431 / 330433 / 330432 / 329551
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.					
Received By:			Date		
Received By:			Date		

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SOW REF: 16.F.5.d

SHIPPING MANIFEST							
Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8				NON NEGOTIABLE			
Filled By: PSHEPPARD		Date: Jul 30, 2015 6:14 PM		TCN-34341			
Ship To: CLEAN HARBORS CANADA INC. 2730 BOULEVARD INDUSTRIEL CHAMBLY, QC, J3L 4V2 CA		From: LSS-C/CAM-M CAMBRIDGE BAY, DND Storeroom Raytheon Canada Limited, LSS Cambridge Bay: P.O. Box 1239 Cambridge Bay, NU, X0B 0C0 867-983-2112			Priority 0		
Attention:		Attention:					
Carrier: NEAS	Routing:	Waybill #:	Total Pcs. 1	Total Weight: 1710 LBS			
QTY Order	Type	Line Weight	Item	Description	WO or PO	B/Code or S/N	Remarks
1			2002344	WASTE - GLYCOL (DRUM)			ASSET 322452
3			2002406	WASTE - OIL (45 GALLON DRUM)			ASSET 330601 / 331295 / 330603
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.							
Received By:				Date			
Received By:				Date			

SHIPPING MANIFEST							
Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8				NON NEGOTIABLE			
Filled By: PSHEPPARD		Date: Jul 31, 2015 10:47 AM		TCN-34344			
Ship To: CLEAN HARBORS CANADA INC. 2730 BOULEVARD INDUSTRIEL CHAMBLY, QC, J3L 4V2 CA		From: LSS-C/CAM-M CAMBRIDGE BAY, DND Storeroom Raytheon Canada Limited, LSS Cambridge Bay: P.O. Box 1239 Cambridge Bay, NU, X0B 0C0 867-983-2112			Priority 0		
Attention:		Attention:					
Carrier: NEAS	Routing:	Waybill #:	Total Pcs. 1	Total Weight: 1500 LBS			
QTY Order	Type	Line Weight	Item	Description	WO or PO	B/Code or S/N	Remarks
4			2002351	WASTE - ACTIVATED CARBON FILTE			asset 331326 / 331054 / 331325 / 331327
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.							
Received By:				Date			
Received By:				Date			

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UNCLASSIFIED

SOW REF: 16.F.5.d

SHIPPING MANIFEST					
Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8				NON NEGOTIABLE	
Filled By: PSHEPPARD		Date: Jul 31, 2015 12:36 PM		TCN-34346	
Ship To: CLEAN HARBORS CANADA INC. 2730 BOULEVARD INDUSTRIEL CHAMBLY, QC, J3L 4V2 CA		From: LSS-C/CAM-M CAMBRIDGE BAY, DND Storeroom Raytheon Canada Limited, LSS Cambridge Bay: P.O. Box 1239 Cambridge Bay, NU, X0B 0C0 867-983-2112			Priority 0
Attention:		Attention:			
Carrier: NEAS	Routing:	Waybill #:	Total Pcs. 1	Total Weight: 2218 LBS	
QTY Order	Type	Line Weight	Item	Description	WO or PO B/Code or S/N Remarks
4		2002351		WASTE - ACTIVATED CARBON FILTE	ASSET 331053 / 327281 / 327820 / 328416
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.					
Received By:			Date		
Received By:			Date		

SHIPPING MANIFEST					
Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8				NON NEGOTIABLE	
Filled By: PSHEPPARD		Date: Jul 31, 2015 12:58 PM		TCN-34348	
Ship To: CLEAN HARBORS CANADA INC. 2730 BOULEVARD INDUSTRIEL CHAMBLY, QC, J3L 4V2 CA		From: LSS-C/CAM-M CAMBRIDGE BAY, DND Storeroom Raytheon Canada Limited, LSS Cambridge Bay: P.O. Box 1239 Cambridge Bay, NU, X0B 0C0 867-983-2112			Priority 0
Attention:		Attention:			
Carrier: NEAS	Routing:	Waybill #:	Total Pcs. 1	Total Weight: 1806 LBS	
QTY Order	Type	Line Weight	Item	Description	WO or PO B/Code or S/N Remarks
4		2002406		WASTE - OIL (45 GALLON DRUM)	ASSET 330712 / 330710 / 330602 / 330711
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.					
Received By:			Date		
Received By:			Date		

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SOW REF: 16.F.5.d

SHIPPING MANIFEST							
Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8				NON NEGOTIABLE			
Filled By: PSHEPPARD		Date: Jul 31, 2015 1:04 PM		TCN-34350			
Ship To: CLEAN HARBORS CANADA INC. 2730 BOULEVARD INDUSTRIEL CHAMBLY, QC, J3L 4V2 CA		From: LSS-C/CAM-M CAMBRIDGE BAY, DND Storeroom Raytheon Canada Limited, LSS Cambridge Bay: P.O. Box 1239 Cambridge Bay, NU, X0B 0C0 867-983-2112			Priority 0		
Attention:		Attention:					
Carrier: NEAS	Routing:	Waybill #:	Total Pcs. 1	Total Weight: 1610 LBS			
QTY Order	Type	Line Weight	Item	Description	WO or PO	B/Code or S/N	Remarks
4		2002406		WASTE - OIL (45 GALLON DRUM)			ASSET 327282 / 330434 / 328685 / 330253
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.							
				Received By:		Date	
				Received By:		Date	

SHIPPING MANIFEST							
Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8				NON NEGOTIABLE			
Filled By: PSHEPPARD		Date: Jul 31, 2015 1:10 PM		TCN-34351			
Ship To: CLEAN HARBORS CANADA INC. 2730 BOULEVARD INDUSTRIEL CHAMBLY, QC, J3L 4V2 CA		From: LSS-C/CAM-M CAMBRIDGE BAY, DND Storeroom Raytheon Canada Limited, LSS Cambridge Bay: P.O. Box 1239 Cambridge Bay, NU, X0B 0C0 867-983-2112			Priority 0		
Attention:		Attention:					
Carrier: NEAS	Routing:	Waybill #:	Total Pcs. 1	Total Weight: 1640 LBS			
QTY Order	Type	Line Weight	Item	Description	WO or PO	B/Code or S/N	Remarks
4		2002406		WASTE - OIL (45 GALLON DRUM)			ASSET 325028 / 328490 / 322221 / 327415
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.							
				Received By:		Date	
				Received By:		Date	

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SOW REF: 16.F.5.d



SHIPPING MANIFEST

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

NON NEGOTIABLE

Filled By: PSHEPPARD		Date: Jul 31, 2015 1:19 PM		TCN-34352			
Ship To: CLEAN HARBORS CANADA INC. 2730 BOULEVARD INDUSTRIEL CHAMBLY, QC, J3L 4V2 CA		From: LSS-C/CAM-M CAMBRIDGE BAY, DND Storeroom Raytheon Canada Limited, LSS Cambridge Bay: P.O. Box 1239 Cambridge Bay, NU, X0B 0C0 867-983-2112			Priority 0		
Attention:		Attention:					
Carrier: NEAS		Routing:		Waybill #:	Total Pcs. 1		
					Total Weight: 1906 LBS		
QTY Order	Type	Line Weight	Item	Description	WO or PO	B/Code or S/N	Remarks
4			2002406	WASTE - OIL (45 GALLON DRUM)			ASSET 329550 / 325815 / 326325 / 325166

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

Received By:	Date
Received By:	Date



SHIPPING MANIFEST

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

NON NEGOTIABLE

Filled By: PSHEPPARD		Date: Jul 31, 2015 1:26 PM		TCN-34353			
Ship To: CLEAN HARBORS CANADA INC. 2730 BOULEVARD INDUSTRIEL CHAMBLY, QC, J3L 4V2 CA		From: LSS-C/CAM-M CAMBRIDGE BAY, DND Storeroom Raytheon Canada Limited, LSS Cambridge Bay: P.O. Box 1239 Cambridge Bay, NU, X0B 0C0 867-983-2112			Priority 0		
Attention:		Attention:					
Carrier: NEAS		Routing:		Waybill #:	Total Pcs. 1		
					Total Weight: 1543 LBS		
QTY Order	Type	Line Weight	Item	Description	WO or PO	B/Code or S/N	Remarks
4			2002406	WASTE - OIL (45 GALLON DRUM)			ASSET 332017 / 331761 / 330191 / 332016

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

Received By:	Date
Received By:	Date

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SOW REF: 16.F.5.d

SHIPPING MANIFEST					
Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8				NON NEGOTIABLE	
Filled By: PSHEPPARD		Date: Jul 31, 2015 1:31 PM		TCN-34354	
Ship To: CLEAN HARBORS CANADA INC. 2730 BOULEVARD INDUSTRIEL CHAMBLY, QC, J3L 4V2 CA		From: LSS-C/CAM-M CAMBRIDGE BAY, DND Storeroom Raytheon Canada Limited, LSS Cambridge Bay: P.O. Box 1239 Cambridge Bay, NU, X0B 0C0 867-983-2112		Priority 0	
Attention:		Attention:			
Carrier: NEAS	Routing:	Waybill #:	Total Pcs. 1	Total Weight: 1527 LBS	
QTY Order	Type	Line Weight	Item	Description	WO or PO B/Code or S/N Remarks
4		2002406		WASTE - OIL (45 GALLON DRUM)	ASSET 326500 / 331755 / 331977 / 331473
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.					
Received By:			Date		
Received By:			Date		

SHIPPING MANIFEST					
Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8				NON NEGOTIABLE	
Filled By: PSHEPPARD		Date: Jul 31, 2015 1:46 PM		TCN-34356	
Ship To: CLEAN HARBORS CANADA INC. 2730 BOULEVARD INDUSTRIEL CHAMBLY, QC, J3L 4V2 CA		From: LSS-C/CAM-M CAMBRIDGE BAY, DND Storeroom Raytheon Canada Limited, LSS Cambridge Bay: P.O. Box 1239 Cambridge Bay, NU, X0B 0C0 867-983-2112		Priority 0	
Attention:		Attention:			
Carrier: NEAS	Routing:	Waybill #:	Total Pcs. 1	Total Weight: 1515 LBS	
QTY Order	Type	Line Weight	Item	Description	WO or PO B/Code or S/N Remarks
4		2002406		WASTE - OIL (45 GALLON DRUM)	ASSET 330747 / 331296 / 331923 / 331922
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.					
Received By:			Date		
Received By:			Date		

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SOW REF: 16.F.5.d

SHIPPING MANIFEST					
Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8				NON NEGOTIABLE	
Filled By: PSHEPPARD		Date: Jul 31, 2015 4:07 PM		TCN-34358	
Ship To: CLEAN HARBORS CANADA INC. 2730 BOULEVARD INDUSTRIEL CHAMBLY, QC, J3L 4V2 CA		From: LSS-C/CAM-M CAMBRIDGE BAY, DND Storeroom Raytheon Canada Limited, LSS Cambridge Bay: P.O. Box 1239 Cambridge Bay, NU, X0B 0C0 867-983-2112		Priority 0	
Attention:		Attention:			
Carrier: NEAS		Routing:		Waybill #:	Total Pcs. 1
					Total Weight: 1315 LBS
QTY Order	Type	Line Weight	Item	Description	WO or PO B/Code or S/N Remarks
4			2002351	WASTE - ACTIVATED CARBON FILTE	ASSET 331055 / 331770 / 331771 / 331769
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.					
Received By:				Date	
Received By:				Date	

SHIPPING MANIFEST					
Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8				NON NEGOTIABLE	
Filled By: PSHEPPARD		Date: Jul 31, 2015 4:11 PM		TCN-34359	
Ship To: CLEAN HARBORS CANADA INC. 2730 BOULEVARD INDUSTRIEL CHAMBLY, QC, J3L 4V2 CA		From: LSS-C/CAM-M CAMBRIDGE BAY, DND Storeroom Raytheon Canada Limited, LSS Cambridge Bay: P.O. Box 1239 Cambridge Bay, NU, X0B 0C0 867-983-2112		Priority 0	
Attention:		Attention:			
Carrier: NEAS		Routing:		Waybill #:	Total Pcs. 1
					Total Weight: 1270 LBS
QTY Order	Type	Line Weight	Item	Description	WO or PO B/Code or S/N Remarks
4			2002406	WASTE - OIL (45 GALLON DRUM)	ASSET 331943 / 320263 / 300442 / 331176
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.					
Received By:				Date	
Received By:				Date	

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SOW REF: 16.F.5.d

SHIPPING MANIFEST							
Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8						NON NEGOTIABLE	
Filed By: PSHEPPARD		Date: Jul 31, 2015 4:23 PM		TCN-34361			
Ship To:		CLEAN HARBORS CANADA INC. 2730 BOULEVARD INDUSTRIEL CHAMBLY, QC, J3L 4V2 CA		From:		LSS-C/CAM-M CAMBRIDGE BAY, DND Storeroom Raytheon Canada Limited, LSS Cambridge Bay: P.O. Box 1239 Cambridge Bay, NU, X0B 0C0 867-983-2112	
Attention:				Attention:		Priority 0	
Carrier:		Routing:		Waybill #:		Total Pcs.	
NEAS						1	
Total Weight:		1325 LBS					
QTY	Type	Line	Item	Description	WO or PO	B/Code or S/N	Remarks
2			3006639	WASTE - OIL SOAKED ABSORBENT			ASSET 330987 / 330988
2			2002356	WASTE - OIL FILTERS (DRUM)			ASSET 331571 / 331998
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.							
Received By:				Date			
Received By:				Date			

SHIPPING MANIFEST							
Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8						NON NEGOTIABLE	
Filed By: PSHEPPARD		Date: Aug 3, 2015 11:49 AM		TCN-34366			
Ship To:		CLEAN HARBORS CANADA INC. 2730 BOULEVARD INDUSTRIEL CHAMBLY, QC, J3L 4V2 CA		From:		LSS-C/CAM-M CAMBRIDGE BAY, DND Storeroom Raytheon Canada Limited, LSS Cambridge Bay: P.O. Box 1239 Cambridge Bay, NU, X0B 0C0 867-983-2112	
Attention:				Attention:		Priority 0	
Carrier:		Routing:		Waybill #:		Total Pcs.	
NEAS						1	
Total Weight:		542 LBS					
QTY	Type	Line	Item	Description	WO or PO	B/Code or S/N	Remarks
1			2002406	WASTE - OIL (45 GALLON DRUM)	NON REGULATED		ASSET 332020
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.							
Received By:				Date			
Received By:				Date			

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SOW REF: 16.F.5.d

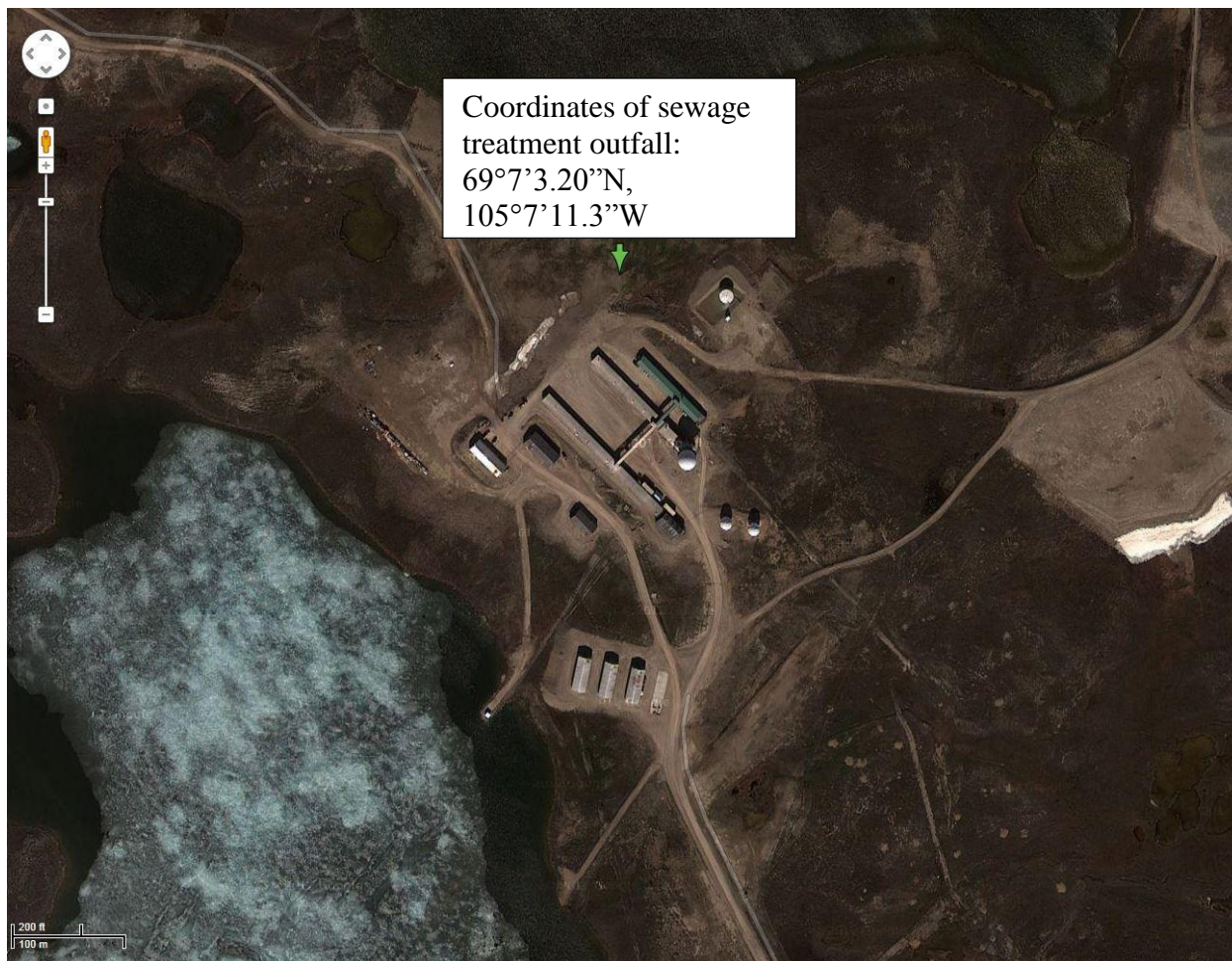
SHIPPING MANIFEST							
Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8					NON NEGOTIABLE		
Filed By: PSHEPPARD		Date: Aug 3, 2015 12:45 PM		TCN-34368			
Ship To: CLEAN HARBORS CANADA INC. 2730 BOULEVARD INDUSTRIEL CHAMBLY, QC, J3L 4V2 CA		From: LSS-C/CAM-M CAMBRIDGE BAY, DND Storeroom Raytheon Canada Limited, LSS Cambridge Bay: P.O. Box 1239 Cambridge Bay, NU, X0B 0C0 867-983-2112			Priority 0		
Attention:				Attention:			
Carrier: NEAS		Routing:		Waybill #:	Total Pcs. 1	Total Weight: 460 LBS	
QTY Order	Type	Line Weight	Item	Description	WO or PO	B/Code or S/N	Remarks
1			2008310	WASTE - OIL CONTAMINATED SOIL	NON- REGULATED		ASSET 331093
1			3006639	WASTE - OIL SOAKED ABSORBENT	NON- REGULATED		ASSET 331094
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.					Received By:		Date
					Received By:		Date

SHIPPING MANIFEST							
Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8					NON NEGOTIABLE		
Filed By: PSHEPPARD		Date: Aug 3, 2015 12:52 PM		TCN-34369			
Ship To: CLEAN HARBORS CANADA INC. 2730 BOULEVARD INDUSTRIEL CHAMBLY, QC, J3L 4V2 CA		From: LSS-C/CAM-M CAMBRIDGE BAY, DND Storeroom Raytheon Canada Limited, LSS Cambridge Bay: P.O. Box 1239 Cambridge Bay, NU, X0B 0C0 867-983-2112			Priority 0		
Attention:				Attention:			
Carrier: NEAS		Routing:		Waybill #:	Total Pcs. 1	Total Weight: 1930 LBS	
QTY Order	Type	Line Weight	Item	Description	WO or PO	B/Code or S/N	Remarks
4			2002406	WASTE - OIL (45 GALLON DRUM)	NON- REGULATED		ASSET 331021 / 331978 / 329898 / 331976
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.					Received By:		Date
					Received By:		Date

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ANNEX B - TREATED SEWAGE EFFLUENT OUTFALL (CDL-2) LOCATION WITH COORDINATES



Coordinates of sewage treatment outfall: 69°7'3.20"N, 105°7'11.3"W

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**ANNEX C - ANALYSIS OF TREATED SEWAGE EFFLUENT****Table C-1 Summary of Analysis of Treated Sewage Effluent at CAM-M in 2015**

Sample Date	Parameter				
	pH	Oil and Grease (Present - P / Absent - A)	Biological Oxygen Demand (mg/L)	Total Suspended Solids (mg/L)	Faecal Coliforms ²
Maximum Concentration	6.0 to 9.0 (pH units)	No visible sheen	120 mg/L	180 mg/L	10,000 CFU/100 mL
20-Jan-2015	8.14	A	1	<2	Not available. ³
17-Feb-2015	7.74	A	2	<2	0.0
2-Mar-2015	7.88	A	2	<2	<10
20-Apr-2015	7.93	A	3	<2	143.0
19-May-2015	8.07	A	11	<1	1.3
25-Jun-2015	8.06	A	9	3	4.3
12-Aug-2015 ⁴	7.14	A	<1	<1	0.3
31-Aug-2015	7.28	A	<1	<3	2.3
24-Sep-2015	7.31	A	<1	<2	0.0
27-Oct-2015	7.24	A	<6	<2	32.0
24-Nov-2015	5.79 ⁵	A	<1	<2	13.3
14-Dec-2015	6.34	A	2	<3	7.0

² This column contains the average of the Cyclet 1A, Cyclet 1B, and Cyclet 1C.

³ Samples frozen solid when arrived at the laboratory, so the samples could not be analyzed for Faecal Coliforms.

⁴ Two sewage samples were taken in August 2015 as no samples were taken in July.

⁵ The INAC Water Resources Officer was notified of this result and the follow-up actions taken to correct it on 14Dec2015.

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Raytheon
Canada Limited

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January 2015 – Page 1 of 1.

EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis

Client: Canadian Base Operators
400 Cooper St., Suite 3000
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#:
Invoice to: Canadian Base Operators

Report Number: 1501455
Date Submitted: 2015-01-29
Date Reported: 2015-02-09
Project: CAM - MAIN
COC #: 177055

		Lab I.D.		Sample Matrix	
		Sample Type		Sampling Date	
		Sample I.D.			
Group	Analyte	MRL	Units	Guideline	
General Chemistry	pH	1.00			8.14
	Total Suspended Solids	2	mg/L		<2
Nutrients	BOD5	1	mg/L		1
Oil & Grease	Oil & Grease - Mineral	1	mg/L		<1
	Oil & Grease - Non-mineral	1	mg/L		<1
	Oil & Grease - Total	1	mg/L		<1
Visible Sheen	Visible Sheen		P/A		A

Guideline =*** = Guideline Exceedence**

All analysis completed in Ottawa, Ontario (unless otherwise indicated by ** which indicates analysis was completed in Mississauga, Ontario).
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Page 2 of 3

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Page: 24 - 55

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February 2015 – Page 1 of 2

EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St., Suite 3000
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#:
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1503960
Date Submitted: 2015-03-16
Date Reported: 2015-03-23
Project: CAM-Main
COC #: 177038

		Lab I.D.		Sample Matrix	
		Sample Type		Sample I.D.	
		Sampling Date		Sample I.D.	
Group	Analyte	MRL	Units	Guideline	
General Chemistry	pH	1.00			7.74
	Total Suspended Solids	2	mg/L		<2
Nutrients	BOD5	1	mg/L		2
	Oil & Grease - Mineral	1	mg/L		<1
Oil & Grease	Oil & Grease - Non-mineral	1	mg/L		<1
	Oil & Grease - Total	1	mg/L		<1
Visible Sheen	Visible Sheen		P/A		No

Guideline =*** = Guideline Exceedence**

All analysis completed in Ottawa, Ontario (unless otherwise indicated by ** which indicates analysis was completed in Mississauga, Ontario).
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

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Page 2 of 3

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Revision No. 1

Effective Date: 17-Mar-2016

Page: 25 - 55

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February 2015 – Page 2 of 2

EXOVA ENVIRONMENTAL ONTARIO**Certificate of Analysis**

Client: Raytheon Canada Limited Ottawa
400 Cooper St., Suite 3000
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#:
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1503957
Date Submitted: 2015-03-16
Date Reported: 2015-03-16
Project: CAM-Main
COC #: 177038

					Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1164168 Sewage 2015-02-17 CAM-M Cyclet 1A	1164169 Sewage 2015-02-17 CAM-M Cyclet 1B	1164170 Sewage 2015-02-17 CAM-M Cyclet 1C
Group	Analyte	MRL	Units	Guideline				
Microbiology	Faecal Coliforms	0	ct/100mL			0	0	0

Guideline =*** = Guideline Exceedence**

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146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

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Page 2 of 2

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Document Number: FM-EHS-13

Revision No. 1

Effective Date: 17-Mar-2016

Page: 26 - 55

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March 2015 – Page 1 of 2

EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St., Suite 3000
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#:
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1503499
Date Submitted: 2015-03-06
Date Reported: 2015-03-19
Project: CAM-Main
COC #: 177056

					Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
					1163080 Wastewater 2015-03-02 Cam-M-Cyclot 1
Group	Analyte	MRL	Units	Guideline	
General Chemistry	pH	1.00			7.88
	Total Suspended Solids	2	mg/L		<2
Nutrients	BOD5	1	mg/L		2
Oil & Grease	Oil & Grease - Mineral	1	mg/L		<1
	Oil & Grease - Non-mineral	1	mg/L		<1
	Oil & Grease - Total	1	mg/L		<1
Visible Sheen	Visible Sheen		P/A		A

Guideline =*** = Guideline Exceedence**

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Methods references and/or additional QA/QC information available on request.

146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

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Page 2 of 3

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Revision No. 1

Effective Date: 17-Mar-2016

Page: 27 - 55

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EXOVA ENVIRONMENTAL ONTARIO**Certificate of Analysis**

Client: Raytheon Canada Limited Ottawa
400 Cooper St., Suite 3000
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#:
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1503504
Date Submitted: 2015-03-06
Date Reported: 2015-03-19
Project: CAM-MAIN
COC #: 177056

Group	Analyte	MRL	Units	Guideline	1163087 Sewage	1163088 Sewage	1163089 Sewage
					2015-03-02 CAM-M Cycled 1A	2015-03-02 CAM-M Cycled 1B	2015-03-02 CAM-M Cycled 1C
Microbiology	Faecal Coliforms	0	ct/100mL		<10	<10	10

Guideline =*** = Guideline Exceedence**

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Methods references and/or additional QA/QC information available on request.

146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

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Page 2 of 2

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Document Number: FM-EHS-13

Revision No. 1

Effective Date: 17-Mar-2016

Page: 28 - 55

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April 2015 – Page 1 of 2

EXOVA ENVIRONMENTAL ONTARIO**Certificate of Analysis**

Client: Raytheon Canada Limited Ottawa
400 Cooper St., Suite 3000
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#: 15-00345-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1506743
Date Submitted: 2015-04-29
Date Reported: 2015-05-05
Project: CAM-Main
COC #: 177036

					Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
					1170963 Wastewater 2015-04-20 CAM-M Cycled 1
Group	Analyte	MRL	Units	Guideline	
General Chemistry	pH	1.00			7.93
	Total Suspended Solids	2	mg/L		<2
Nutrients	BOD5	1	mg/L		3
Oil & Grease	Oil & Grease - Mineral	1	mg/L		<1
	Oil & Grease - Non-mineral	1	mg/L		<1
	Oil & Grease - Total	1	mg/L		<1
Visible Sheen	Visible Sheen		P/A		A

Guideline =*** = Guideline Exceedence**

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Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Page 2 of 3

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EXOVA ENVIRONMENTAL ONTARIO**Certificate of Analysis**

Client: Raytheon Canada Limited Ottawa
400 Cooper St., Suite 3000
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#:
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1506732
Date Submitted: 2015-04-29
Date Reported: 2015-04-30
Project: CAM-Main
COC #: 177036

				Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1170938 Sewage	1170939 Sewage	1170940 Sewage
Group	Analyte	MRL	Units		2015-04-20 Cam-M Cyclot 1A	2015-04-20 Cam-M Cyclot 1B	2015-04-20 Cam-M Cyclot 1C
Guideline							
Microbiology	Faecal Coliforms	0	ct/100mL		110	168	151

Guideline =*** = Guideline Exceedence**

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Methods references and/or additional QA/QC information available on request.

146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Page 2 of 2

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Revision No. 1

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Page: 30 - 55

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EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#: 15-00345-OT
Invoice to: Raytheon Canada Limited

Report Number: 1509210
Date Submitted: 2015-05-29
Date Reported: 2015-09-28
Project:
COC #: 177052

Group		Analyte	MRL	Units	Guideline
General Chemistry		pH	1.00		8.07
		Total Suspended Solids	1	mg/L	<1
Nutrients		BOD5	1	mg/L	11
Oil & Grease		Oil & Grease - Mineral	1	mg/L	<1
		Oil & Grease - Non-mineral	1	mg/L	2
		Oil & Grease - Total	1	mg/L	2
Visible Sheen		Visible Sheen		P/A	A

Lab I.D.
Sample Matrix
Sample Type
Sampling Date
Sample I.D.

1177517
Wastewater

2015-05-19
Cam Main Cyclot 1

Guideline =*** = Guideline Exceedence**

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Methods references and/or additional QA/QC information available on request.

146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Page 2 of 4

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Document Number: FM-EHS-13

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Page: 31 - 55

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May 2015 – Page 2 of 2

EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis



Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#:
Invoice to: Raytheon Canada Limited

Report Number: 1509211
Date Submitted: 2015-05-29
Date Reported: 2015-05-31
Project:
COC #: 177052

					Lab I.D.	1177518	1177519	1177520
					Sample Matrix	Wastewater	Wastewater	Wastewater
					Sample Type	-	-	-
					Sampling Date	2015-05-19	2015-05-19	2015-05-19
					Sample I.D.	Cam Main Cyclot 1A	Cam Main Cyclot 1B	Cam Main Cyclot 1C
Group	Analyte	MRL	Units	Guideline				
Microbiology	Faecal Coliforms	0	ct/100mL		3	1	0	

Guideline =

*** = Guideline Exceedence**

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Methods references and/or additional QA/QC information available on request.

146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

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June 2015 – Page 1 of 2

EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#: 15-00345-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1512222
Date Submitted: 2015-06-30
Date Reported: 2015-07-14
Project: CAM-Main
COC #: 177057

		Lab I.D.		Sample Matrix	
		Sample Type		Sampling Date	
		Sample I.D.		CAM-Main Cycle1	
Group	Analyte	MRL	Units	Guideline	
General Chemistry	pH	1.00			8.06
	Total Suspended Solids	1	mg/L		3
Oil & Grease	Oil & Grease - Mineral	1.0	mg/L		<1.0
	Oil & Grease - Non-mineral	1.0	mg/L		<1.0
	Oil & Grease - Total	1.0	mg/L		<1.0
Subcontract	BOD5	1	mg/L		9

Guideline =*** = Guideline Exceedence**

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Methods references and/or additional QA/QC information available on request.

146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Page 2 of 3

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Page: 33 - 55

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June 2015 – Page 2 of 2

EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis



Client: Canadian Base Operators
400 Cooper St., Suite 3000
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#:
Invoice to: Canadian Base Operators

Report Number: 1512074
Date Submitted: 2015-06-30
Date Reported: 2015-07-01
Project:
COC #: 177057

					Lab I.D.	1185128	1185129	1185130
					Sample Matrix	Sewage	Sewage	Sewage
					Sample Type			
					Sampling Date	2015-06-25	2015-06-25	2015-06-25
					Sample I.D.	CAM-M Exact 1A	CAM-M Exact 1B	CAM-M Exact 1C
Group	Analyte	MRL	Units	Guideline				
Microbiology	Faecal Coliforms	0	ct/100mL			5	4	4

Guideline =

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146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

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Page 2 of 2

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July 2015 – Page 1 of 2

EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis



Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#:
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1516523
Date Submitted: 2015-08-21
Date Reported: 2015-08-31
Project: CAM-MAIN
COC #: 178219

Group		Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
General Chemistry		pH	1.00			1196895 Sewage
		Total Suspended Solids	1	mg/L		2015-08-12 CAM-MAIN Cyclot 1
Subcontract		BOD5	1	mg/L		
		Oil & Grease - Mineral	1	mg/L		
		Oil & Grease - Non-mineral	1	mg/L		
		Oil & Grease - Total	1	mg/L		
Visible Sheen		Visible Sheen		P/A		A

Guideline =

*** = Guideline Exceedence**

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Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Page 2 of 4

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Page: 35 - 55

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July 2015 – Page 2 of 2

EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis

Client: Canadian Base Operators
400 Cooper St., Suite 3000
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#:
Invoice to: Canadian Base Operators

Report Number: 1516526
Date Submitted: 2015-08-21
Date Reported: 2015-08-22
Project: Cam-Main
COC #: 178219

Group	Analyte	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sampling Date	Sample I.D.
					1196899	Water			
Microbiology	Faecal Coliforms	0	ct/100mL		2015-08-12	Cam-main Cyclot 1A	2015-08-12	Cam-main Cyclot 1B	2015-08-12
					1	0	0		

Guideline =*** = Guideline Exceedence**

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Methods references and/or additional QA/QC information available on request.

146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Page 2 of 2

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Page: 36 - 55

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EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#:
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1517893
Date Submitted: 2015-09-10
Date Reported: 2015-09-24
Project:
COC #: 178216

Group		Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
General Chemistry		pH	1.00			1200476 Sewage
		Total Suspended Solids	3	mg/L		2015-08-31 CAM-M-Cyclot 1
Subcontract		BOD5	1	mg/L		
		Oil & Grease - Mineral	1	mg/L		
		Oil & Grease - Non-mineral	1	mg/L		
		Oil & Grease - Total	1	mg/L		
Visible Sheen		Visible Sheen		P/A		A

Guideline =*** = Guideline Exceedence**

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Methods references and/or additional QA/QC information available on request.

146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

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Page: 37 - 55

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EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis



Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#:
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1517947
Date Submitted: 2015-09-10
Date Reported: 2015-09-11
Project:
COC #: 178216

					Lab I.D.	1200605	1200606	1200607
					Sample Matrix	Water	Water	Water
					Sample Type	-	-	-
					Sampling Date	2015-08-31	2015-08-31	2015-08-31
					Sample I.D.	CAM-M Cyclot 1A	CAM-M Cyclot 1B	CAM-M Cyclot 1C
Group	Analyte	MRL	Units	Guideline				
Microbiology	Faecal Coliforms	0	ct/100mL		3	1	3	

Guideline =

*** = Guideline Exceedence**

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Methods references and/or additional QA/QC information available on request.

146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Page 2 of 2

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EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#: 15-00345-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1519293
Date Submitted: 2015-09-29
Date Reported: 2015-10-06
Project: CAM-MAIN
COC #: 178218

Group		Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
General Chemistry		pH	1.00			1204355 Sewage
		Total Suspended Solids	2	mg/L		2015-09-24 CAM-M Cycled 1
Subcontract		BOD5	1	mg/L		
		Oil & Grease - Mineral	1	mg/L		
		Oil & Grease - Non-mineral	1	mg/L		
		Oil & Grease - Total	1	mg/L		
Visible Sheen		Visible Sheen		P/A		

Guideline =*** = Guideline Exceedence**

All analysis completed in Ottawa, Ontario (unless otherwise indicated by ** which indicates analysis was completed in Mississauga, Ontario).
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Page 2 of 4

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Page: 39 - 55

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September 2015 – Page 2 of 2

EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#: 15-00345-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1519276
Date Submitted: 2015-09-29
Date Reported: 2015-09-30
Project: CAM-MAIN
COC #: 178218

					Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1204302 Sewage	1204303 Sewage	1204304 Sewage
Group	Analyte	MRL	Units	Guideline		2015-09-24 CAM-M Cycle 1A	2015-09-24 CAM-M Cycle 1B	2015-09-24 CAM-M Cycle 1C
Microbiology	Faecal Coliforms	0	ct/100mL		0	0	0	

Guideline =*** = Guideline Exceedence**

All analysis completed in Ottawa, Ontario (unless otherwise indicated by ** which indicates analysis was completed in Mississauga, Ontario).

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

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EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#:
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1522126
Date Submitted: 2015-11-05
Date Reported: 2015-11-12
Project: CAM-Main
COC #: 178215

					Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
					1212122 Wastewater 2015-10-27 CAM-Main Cycled 1
Group	Analyte	MRL	Units	Guideline	
General Chemistry	pH	1.00			7.24
	Total Suspended Solids	1	mg/L		<2
Subcontract	BOD ₅	6	mg/L		<6
	Oil & Grease - Mineral	1	mg/L		<1
	Oil & Grease - Non-mineral	1	mg/L		<1
	Oil & Grease - Total	1	mg/L		<1
Visible Sheen	Visible Sheen		P/A		A

Guideline =*** = Guideline Exceedence**

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Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

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Page: 41 - 55

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EXOVA ENVIRONMENTAL ONTARIO

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Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#:
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1522153
Date Submitted: 2015-11-05
Date Reported: 2015-11-06
Project: Cam-Main
COC #: 178215

					Lab I.D.	1212188	1212189	1212190
					Sample Matrix	Wastewater	Wastewater	Wastewater
					Sample Type			
					Sampling Date	2015-10-27	2015-10-27	2015-10-27
					Sample I.D.	Cam-Main Cyclot 1A	Cam-Main Cyclot 1B	Cam-Main Cyclot 1C
Group	Analyte	MRL	Units	Guideline				
Microbiology	Faecal Coliforms	0	ct/100mL			33	37	26

Guideline =

*** = Guideline Exceedence**

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Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

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EXOVA ENVIRONMENTAL ONTARIO

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Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#: 15-00345-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1523655
Date Submitted: 2015-12-01
Date Reported: 2015-12-08
Project: CAM-MAIN
COC #: 178212

Group		Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
General Chemistry		pH	1.00			1217013 Sewage
		Total Suspended Solids	1	mg/L		2015-11-24 CAM-MAIN CYCLET
Oil & Grease Subcontract		Visible Sheen		A/P		
		BOD5	1	mg/L		
		Oil & Grease - Mineral	1	mg/L		
		Oil & Grease - Non-mineral	1	mg/L		
		Oil & Grease - Total	1	mg/L		

Guideline = * = Guideline Exceedence
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Methods references and/or additional QA/QC information available on request.
146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

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EXOVA ENVIRONMENTAL ONTARIO

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Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#:
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1523670
Date Submitted: 2015-12-01
Date Reported: 2015-12-02
Project: CAM-MAIN
COC #: 176212

					Lab I.D.	1217051	1217052	1217053
					Sample Matrix	Sewage	Sewage	Sewage
					Sample Type	-	-	-
					Sampling Date	2015-11-24	2015-11-24	2015-11-24
					Sample I.D.	CAM-MAIN Cyclot 1A	CAM-MAIN Cyclot 1B	CAM-MAIN Cyclot 1C
Group	Analyte	MRL	Units	Guideline				
Microbiology	Faecal Coliforms	0	ct/100mL	Water		12	13	15

Guideline =

*** = Guideline Exceedence**

All analysis completed in Ottawa, Ontario (unless otherwise indicated by ** which indicates analysis was completed in Mississauga, Ontario).
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PW/QO = Provincial Water Quality Guideline, IPW/QO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

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Page: 44 - 55

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November 2015 – Page 3 of 3

Contact with INAC Water Resources Officer about the pH result including the follow-up actions



Re: CAM-M Sewage pH Nov 2015

Justin Hack to: william.wyman

Cc: IAN.CREIGHTON3, SCOTT.CHARLAND, don.beattie

12/14/2015 08:52 AM

[Show Details](#)

Thank you for the notification Will.

>>> <william.wyman@raytheon.com> 12/11/2015 6:59 AM >>>

Hello Justin,

Our staff were monitoring the sewage treatment plant at CAM-M and found that the pH probe was malfunctioning. A new pH probe was ordered and the pH was monitored on-site using pH test strips. Once the new pH probe arrived on-site it was installed and the system returned to normal. If the pH of the material in the treatment system is out of the acceptable range the pH probe calls for material to correct this (e.g. if the pH is low, the system will call for pH 12 liquid to correct this) allowing the biomass to most effectively treat the sewage.

As a result of the malfunctioning pH probe the pH for November was outside of the 6 to 9 range allowed by the site's water licence. The lab result for the pH was 5.79, but as above the system has returned to normal operation.

Please let me know if you have any questions about this.

Regards,

Will Wyman, EP(CEA)
Environmental Specialist
North Warning System
Raytheon Canada
Raytheon Company

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December 2015 – Page 1 of 2

EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#: 15-00345-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1524879
Date Submitted: 2015-12-21
Date Reported: 2015-12-30
Project: CAM-MAIN
COC #: 178221

Group		Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
General Chemistry		pH	1.00			1220097 Sewage
		Total Suspended Solids	1	mg/L		2015-12-14 CAM MAIN CYCLET
PHC (Hydrocarbons)		Visible Sheen	0	A/P		
		BOD5	1	mg/L		
Subcontract		Oil & Grease - Mineral	1	mg/L		
		Oil & Grease - Non-mineral	1	mg/L		
		Oil & Grease - Total	1	mg/L		

Guideline = * = Guideline Exceedence
All analysis completed in Ottawa, Ontario (unless otherwise indicated by ** which indicates analysis was completed in Mississauga, Ontario).
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

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EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis



Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#:
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1524878
Date Submitted: 2015-12-21
Date Reported: 2015-12-22
Project: CAM-MAIN
COC #: 178221

Group	Analyte	MRL	Units	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D. Guideline	1220094 Sewage	1220095 Sewage	1220096 Sewage
					2015-12-14 CAM-MAIN CYCLET A	2015-12-14 CAM-MAIN CYCLET B	2015-12-14 CAM-MAIN CYCLET C
Others	Faecal Coliforms	0	ct/100mL		3	8	10

Guideline = * = Guideline Exceedence
All analysis completed in Ottawa, Ontario (unless otherwise indicated by ** which indicates analysis was completed in Mississauga, Ontario).
Results relate only to the parameters tested on the samples submitted.
Analytical Method: AMB/COLM1
additional QA/QC information available on request.
146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

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ANNEX D - LOCATION OF BERMED FUEL STORAGE FACILITIES WITH COORDINATES

Licence	Location	Monitoring Station # (Final discharge point of bermed fuel storage facility)	Berm's location on-site	Berm's coordinates
3BC- CAM0919 Type "B"	CAM-M North Warning System Site, Cambridge Bay, Victoria Island, Kitikmeot Region, Nunavut	CDL-3	Summit, berm of tank W22A	69° 07' 03" N 105° 07' 03" W
			Airfield (near hangar) berm of tanks W20B and W20C	69° 06' 12" N 105° 07' 35" W
			Beach, berm of tanks W20D and W22C	69° 06' 11" N 105° 05' 49" W

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ANNEX E - ANALYSIS OF BERM WATER (EFFLUENT FROM BERMED FUEL STORAGE FACILITIES)

Table E-1 Analysis of Berm Water at CAM-M in 2015

Site Berm Date	Maximum Concentration of any Grab Sample (µg/L)	CAM-M W22A 17-Jun- 2015	CAM-M W20B&C 17-Jun- 2015	CAM-M W20D&W22C 17-Jun-2015
pH	6 to 9	7.58	7.79	7.73
Oil and Grease (ug/L)	5000	<1000	<1000	<1000
Arsenic (total) (ug/L)	100	<20	<20	<20
Cadmium (dissolved) (ug/L)	10	<0.1	<0.1	<0.1
Chromium (dissolved) (ug/L)	100	<1	<1	<1
Cobalt (dissolved) (ug/L)	50	<0.2	<0.2	<0.2
Copper (dissolved) (ug/L)	200	5	5	8
Lead (dissolved) (ug/L)	50	<1	<1	<1
Mercury (total) (ug/L)	0.6	<0.1	<0.1	<0.1
Nickel (dissolved) (ug/L)	200	<5	<5	<5
PCB (total) (ug/L)	1000	<0.1	<0.1	<0.1
Phenols (ug/L)	20	<2	<2	<2
Zinc (total) (ug/L)	500	<40	80	<40
Benzene (ug/L)	370	<0.5	<0.5	<0.5
Toluene (ug/L)	2	<0.5	<0.5	<0.5
Ethyl benzene (ug/L)	90	<0.5	<0.5	<0.5

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17-Jun-2015

Summit, Berm of tank W22A

Page 1 of 2

EXOVA ENVIRONMENTAL ONTARIO		Certificate of Analysis		EXOVA	
Client: Raytheon Canada Limited Ottawa 400 Cooper St. Ottawa, ON K2P 2H8 Attention: Mr. Will Wyman PO#: 15-00345-OT Invoice to: Raytheon Canada Limited Ottawa		Report Number: 1511734 Date Submitted: 2015-06-26 Date Reported: 2015-07-08 Project: W 22 A COC #: 170392			
		Lab I.D. 1184414 Sample Matrix Wastewater Sample Type Sampling Date 2015-06-17 Sample I.D. ML-W 22 A-1			
Group	Analyte	MRL	Units	Guideline	
General Chemistry	pH	1.00			7.58
Mercury	Hg	0.0001	mg/L		<0.0001
Metals	Aqua-Regia Digest				Y
	As	0.02	mg/L		<0.02
	Zn	0.04	mg/L		<0.04
Oil & Grease	Oil & Grease - Total	1	mg/L		<1
PCBs	Polychlorinated Biphenyls (PCBs)	0.1	ug/L		<0.1
Phenols-4AAP	Phenols	0.002	mg/L		<0.002
VOCs	Benzene	0.5	ug/L		<0.5
	Ethylbenzene	0.5	ug/L		<0.5
	Toluene	0.5	ug/L		<0.5
VOCs Surrogates (%)	Toluene-d8	0	%		93

Guideline = * = Guideline Exceedence
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Methods references and/or additional QA/QC information available on request.

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Summit, Berm of tank W22A

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EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis



Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#: 15-00345-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1511742
Date Submitted: 2015-06-26
Date Reported: 2015-07-02
Project: W 22 A
COC #: 170392

				Lab I.D.	1184422
				Sample Matrix	Wastewater
				Sample Type	
				Sampling Date	2015-06-17
				Sample I.D.	ML-W 22 A-1 Diss Metals
Group	Analyte	MRL	Units	Guideline	
Metals	Cd	0.0001	mg/L		<0.0001
	Co	0.0002	mg/L		<0.0002
	Cr	0.001	mg/L		<0.001
	Cu	0.001	mg/L		0.005
	Ni	0.005	mg/L		<0.005
	Pb	0.001	mg/L		<0.001

Guideline = * = Guideline Exceedence
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Results relate only to the parameters listed on the samples submitted.
Methods references and/or additional QA/QC information available on request.
146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

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17-Jun-2015

Airfield (near hangar), Berm of tanks W20B and W20C

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EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#: 15-00345-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1511735
Date Submitted: 2015-06-26
Date Reported: 2015-07-14
Project: W 22 A
COC #: 170382

					Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
					1184415 Wastewater 2015-06-17 ML-W 20 B C-1
Group	Analyte	MRL	Units	Guideline	
General Chemistry	pH	1.00			7.79
Mercury	Hg	0.0001	mg/L		<0.0001
Metals	Aqua-Regia Digest				Y
	As	0.02	mg/L		<0.02
	Zn	0.04	mg/L		0.08
Oil & Grease	Oil & Grease - Total	1.0	mg/L		<1.0
PCBs	Polychlorinated Biphenyls (PCBs)	0.1	ug/L		<0.1
Phenols-4AAP	Phenols	0.002	mg/L		<0.002
VOCs	Benzene	0.5	ug/L		<0.5
	Ethylbenzene	0.5	ug/L		<0.5
	Toluene	0.5	ug/L		<0.5
VOCs Surrogates (%)	Toluene-d8	0	%		98

Guideline = * = Guideline Exceedence
All analysis completed in Ottawa, Ontario (unless otherwise indicated by "" which indicates analysis was completed in Mississauga, Ontario).
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.
146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

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Airfield (near hangar), Berm of tanks W20B and W20C

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EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis



Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#: 15-00345-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1511743
Date Submitted: 2015-06-26
Date Reported: 2015-07-02
Project: W 20 B
COC #: 170382

					Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
					1184423 Wastewater 2015-06-17 ML-W 20 B C-1 Diss Metals
Group	Analyte	MRL	Units	Guideline	
Metals	Cd	0.0001	mg/L		<0.0001
	Co	0.0002	mg/L		<0.0002
	Cr	0.001	mg/L		<0.001
	Cu	0.001	mg/L		0.005
	Ni	0.005	mg/L		<0.005
	Pb	0.001	mg/L		<0.001

Guideline = * = Guideline Exceedence
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Methods references and/or additional QA/QC information available on request.
146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

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Beach, Berm of tanks W20D & W22C

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Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#: 15-00345-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1511733
Date Submitted: 2015-06-26
Date Reported: 2015-07-08
Project: W 20 D
COC #: 170387

					Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
					1184413 Wastewater 2015-06-17 ML-W 20 D W22 C-1
Group	Analyte	MRL	Units	Guideline	
General Chemistry	pH	1.00			7.73
Mercury	Hg	0.0001	mg/L		<0.0001
Metals	Aqua-Regia Digest				Y
	As	0.02	mg/L		<0.02
	Zn	0.04	mg/L		<0.04
Oil & Grease	Oil & Grease - Total	1	mg/L		<1
PCBs	Polychlorinated Biphenyls (PCBs)	0.1	ug/L		<0.1
Phenols-4AAP	Phenols	0.002	mg/L		<0.002
VOCs	Benzene	0.5	ug/L		<0.5
	Ethylbenzene	0.5	ug/L		<0.5
	Toluene	0.5	ug/L		<0.5
VOCs Surrogates (%)	Toluene-d8	0	%		96

Guideline = * = Guideline Exceedence
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Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.
146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

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17-Jun-2015

Beach, Berm of tanks W20D & W22C

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EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis



Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#: 15-00345-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1511741
Date Submitted: 2015-06-26
Date Reported: 2015-07-02
Project: W 20 D
COC #: 170387

					Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
					1184421 Wastewater 2015-06-17 ML-W 20 D W22 C-1 Diss Metals
Group	Analyte	MRL	Units	Guideline	
Metals	Cd	0.0001	mg/L		<0.0001
	Co	0.0002	mg/L		<0.0002
	Cr	0.001	mg/L		<0.001
	Cu	0.001	mg/L		0.008
	Ni	0.005	mg/L		<0.005
	Pb	0.001	mg/L		<0.001

Guideline = * = Guideline Exceedence
All analysis completed in Ottawa, Ontario (unless otherwise indicated by ** which indicates analysis was completed in Mississauga, Ontario).
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.
146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Page 2 of 3

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