

**RETURN BIDS TO:**  
**RETOURNER LES SOUMISSIONS À:**  
**Public Works Government Services Canada- Bid**  
**Receiving / Réception des soumissions**  
**189 Prince William Street**  
**Room 405**  
**Saint John**  
**New Brunswick**  
**E2L 2B9**

## **SOLICITATION AMENDMENT MODIFICATION DE L'INVITATION**

The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

### **Comments - Commentaires**

**Vendor/Firm Name and Address**  
**Raison sociale et adresse du**  
**fournisseur/de l'entrepreneur**

**Issuing Office - Bureau de distribution**  
**Public Works Government Services Canada- Bid**  
**Receiving / Réception des soumissions**  
**189 Prince William Street**  
**Room 405**  
**Saint John**  
**New Bruns**  
**E2L 2B9**

<b>Title - Sujet</b> Dartmouth - CCC Bldg Pad Prep & UXO	
<b>Solicitation No. - N° de l'invitation</b> EC016-150964/A	<b>Amendment No. - N° modif.</b> 004
<b>Client Reference No. - N° de référence du client</b> EC016-150964	<b>Date</b> 2014-09-25
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$PWB-007-3469	
<b>File No. - N° de dossier</b> PWB-4-37058 (007)	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin</b> <b>at - à 02:00 PM</b> <b>on - le 2014-09-30</b>	<b>Time Zone</b> <b>Fuseau horaire</b> Atlantic Daylight Saving Time ADT
<b>F.O.B. - F.A.B.</b> <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input type="checkbox"/> <b>Other-Autre:</b> <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Ellis-Herring , Alison PWB	<b>Buyer Id - Id de l'acheteur</b> pwb007
<b>Telephone No. - N° de téléphone</b> (506) 636-3908 ( )	<b>FAX No. - N° de FAX</b> (506) 636-4376
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b>	

**Instructions: See Herein**

**Instructions: Voir aux présentes**

<b>Delivery Required - Livraison exigée</b>	<b>Delivery Offered - Livraison proposée</b>
<b>Vendor/Firm Name and Address</b> <b>Raison sociale et adresse du fournisseur/de l'entrepreneur</b>	
<b>Telephone No. - N° de téléphone</b> <b>Facsimile No. - N° de télécopieur</b>	
<b>Name and title of person authorized to sign on behalf of Vendor/Firm</b> <b>(type or print)</b> <b>Nom et titre de la personne autorisée à signer au nom du fournisseur/</b> <b>de l'entrepreneur (taper ou écrire en caractères d'imprimerie)</b>	
<b>Signature</b>	<b>Date</b>

Cette modification de l'invitation numéro quatre (4) est soumise et comprend la modification numéro quatre (4) suivante.

La modification qui suit apportée aux documents de soumission entre en vigueur dès maintenant. L'addenda fera partie des document de contrat.

**Toutes autres conditions ne changent pas.**

Addenda no. 4

**1. QUESTIONS ET RÉPONSES**

**Q1** Could you please provide us with the document, D02, Site Plan for UXO Clearance, Burnside Industrial Park, Dartmouth, Nova Scotia, DCC Project No. NS137459, Contract No.54345. As this is stated as reference material in much of the contract documents.

**R1** Refer to attached "Final Report - MEC Site Survey, Technical Support, and Specification Development, Dartmouth, Nova Scotia".  
Document D02 is Drawing C5 in the tender documents.

**Q2** In section 01 11 00, item 1.1.8 states we are to contact DCC for a list of approved UXO subcontractors. I have called and gotten the approved venders but when I call them they tell me that DCC told them they are not allowed to price the work due to a previous contract and work performed on this site already. Could you please clarify this as this is very a substantial portion of the work.

**R2** Refer to item 3 of this addendum.

**Q3** Is the entire site to be hydroseeded upon completion?

**R3** Refer to Solicitation Amendment No. 3.

**Q4** Reference Specification section 01 35 28, paragraphs 1.11.1 and 1.11.2: Can our site superintendent also be our designated health & safety site supervisor? If not, does the health & safety site supervisor have to be on site full time?

---

**R4** The Site Superintendent and Contractor's designated Health and Safety Site Supervisor can be the Site Superintendent if he has the proper training and experience. The Site Superintendent has to be there full time.

**Q5** Reference Specification section 01 35 28, paragraphs 1.11.3: Is a Health and Safety Coordinator required? If so can it be our site superintendent? If required but cannot be our site superintendent, then does this coordinator have to be on site full time?

**A5** The Site Superintendent and Contractor's designated Health & Safety Co-ordinator can be the Site Superintendent if he has the proper training and experience. The Site Superintendent has to be there full time.

## **2. DEVIS**

**ADD** Appendix B - CEAA attached.

## **3. DCC Approved UXO Subcontractors List**

**ADD** attached DCC approved UXO subcontractors list referenced in Specification section 01 11 00, paragraph 1.1.8.

Note: although GEMTEC Limited is a DCC approved UXO subcontractor included on the list, GEMTEC Limited is not an approved UXO subcontractor for this Contract due to previous contract work in relation to this project.



# GEMTEC

CONSULTING ENGINEERS  
AND SCIENTISTS

GEMTEC Limited tel: 506.453.1025  
191 Doak Road fax: 506.453.9470  
Fredericton, NB gemtecf@gemtec.ca  
E3C 2E6 www.gemtec.ca



# GEMTEC

**Final Report**  
**MEC Site Survey, Technical Support, and Specification Development,**  
**Dartmouth, Nova Scotia**

DCC Project #: NS137459  
Contract #: 54345

Prepared for Defence Construction Canada  
Project No. 10103.20



26 November, 2013

File: 10103.20 – Final Report

DCC Project No. NS137459

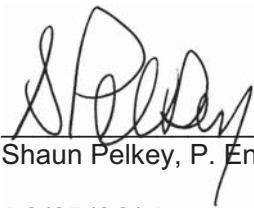
Defence Construction Canada  
H Hangar  
Shearwater, NS  
B1B 1A1

**Attention: Mr. Robert Mills**

**Re: MEC Site Survey, Technical Support, and Specification Development**  
**Burnside Park, Dartmouth, Nova Scotia**

---

Please accept our submission of the Final Report for the MEC Site Survey, Technical Support, and Specification Development, at Burnside Park, Dartmouth, Nova Scotia.



---

Shaun Pelkey, P. Eng.

AG/SP/SS/pb

Enclosures

10103.20 – Final Report.doc



---

Andrew Garsch, P. Eng, PMP

**Final Report**  
**MEC Site Survey, Technical Support, and Specification Development**  
**Burnside Park, Dartmouth, Nova Scotia**  
**October 2013**

## **Table of Contents**

<b>Table of Contents</b> .....	<b>i</b>
<b>List of Tables</b> .....	<b>iii</b>
<b>Executive Summary</b> .....	<b>1</b>
<b>References</b> .....	<b>4</b>
<b>Glossary</b> .....	<b>5</b>
<b>1.0 Introduction</b> .....	<b>7</b>
<b>2.0 Site History and Description</b> .....	<b>7</b>
2.1 Property Description .....	7
2.2 Site History .....	8
2.3 Future Land Use.....	8
2.4 Topography .....	8
2.5 Previous UXO Activities On-Site .....	8
2.6 Initial UXO Risk .....	9
<b>3.0 MEC Site Survey Methodology</b> .....	<b>9</b>
3.1 Site Personnel and Equipment .....	11
3.2 Task 1 – Mobilization / Demobilization .....	11
3.3 Task 2 – Site Preparation .....	12
3.4 Task 3 – Vegetation Removal .....	13
3.5 Task 4 – Surface Clearance .....	13
3.6 Task 5 – Geophysical Survey .....	13
3.6.1 Geophysical System Description.....	14
3.6.2 Positioning System .....	14
3.6.3 Instrument Verification Strip .....	14
3.6.4 Survey Execution .....	15
3.6.5 Geophysical Data Processing .....	16
3.6.6 Correction and Review.....	17
3.6.7 Mag and Flag.....	17
3.7 Task 6 – Calibration Grid Excavation .....	18

3.7.1	Grid Selection .....	18
3.7.2	Grid Excavation .....	18
<b>4.0</b>	<b>Quality Control Methodology.....</b>	<b>19</b>
4.1	Geophysical DQOs .....	19
4.1.1	Quality Control Seed Items .....	20
4.2	UXO Operations .....	21
4.3	UXO Quality Control Seed Items .....	21
4.4	Site Specific Training Process .....	22
4.5	Daily Quality Control Inspection Process .....	22
<b>5.0</b>	<b>MEC Site Survey Results .....</b>	<b>24</b>
5.1	Surface Clearance .....	24
5.2	Site Geophysical Survey.....	24
5.3	Mag and Flag Survey.....	24
5.4	Calibration Grids.....	25
<b>6.0</b>	<b>Material Management .....</b>	<b>25</b>
<b>7.0</b>	<b>Conclusion and Recommendations .....</b>	<b>26</b>

## List of Tables

Table 1	Summary of Digital Deliverables .....	10
Table 2	GPS Reference Points .....	12
Table 3	Property Boundary and Overlay Intersection Coordinates.....	12
Table 4	Equipment DQO Summary .....	15
Table 5	Quality Control Test Frequencies .....	20
Table 6	QC Seed Item Results.....	21
Table 7	Quality Control Seed Finds .....	21
Table 8	Project Related Checks & Frequencies.....	23

## Appendices

A - Property Boundary / SOW Overlay.....	28
Figure 1 .....	29
Figure 2.....	30
Figure 3.....	31
B - Geophysical Survey Results and Dig Sheet.....	32
C - Mag and Flag Dig Sheet.....	61
D - Site Photos .....	63
E - Report Examples .....	74
F - Test Pit Logs .....	83
G - Moisture Content and Density.....	88
H - Soil Grading Chart.....	90



**Final Report**  
**MEC Site Survey, Technical Support, and Specification Development**  
**Burnside Park, Dartmouth, Nova Scotia**  
**November 2013**

## **Executive Summary**

GEMTEC Limited was retained by Defence Construction Canada (DCC) on behalf of Public Works and Government Services Canada / Corrections Services Canada (PWGSC/CSC) to characterize the site conditions, the degree to which the area may be affected by UXO, determine the clearance requirements and develop UXO clearance specifications for the construction of a Community Correctional Centre (CCC) on the site.

In response to this objective, GEMTEC Limited conducted the following services between 30 September and 16 October 2013:

- Site Setup/Surface Sweep;
- Vegetation Removal;
- Surface Clearance;
- Geophysical Survey
- Mag and Flag Survey with a Limited Hard Prove Out;
- Calibration Grid Excavation;
- Soil Screening; and
- Site Remediation.

Following the initial setup and UXO surface sweep, the site was cleared of young growth vegetation to provide access for subsequent project tasks. Due to the introduction of backfilled debris onto the site, the project area was broken into two (2) areas which were characterized independently. In efforts to identify metal concentrations within the fill material, a 100% geophysical survey of Area 1 was performed. However, due to difficult topographic conditions and numerous obstacles (boulders, older growth trees) in the majority of Area 2, geophysical survey was impracticable. As such, Mag & Flag techniques were employed in Area 2 as an alternative method of characterizing near surface metal concentrations with all detected targets flagged and recorded using RTK precision GPS.

In Area 2, where only Mag & Flag operations were conducted, a total of one hundred and fifty five (155) targets were detected. Out of these, twenty (20) targets were randomly selected for intrusive investigation as part of a limited hard prove out resulting in the discovery of three (3) small munitions fragments.

In Area 1, the geophysical survey covered a total of 0.54 Ha and revealed a total of 839 anomalies. The distribution of targets appeared fairly homogeneous across the surveyed area, however, numerous consolidated areas were apparent, especially along the edges of the fill.

Characterization of the fill in Area 1 was accomplished through the excavation of four (4) calibration pits distributed evenly across the site. The largest of the four (4) pits was located along the southern edge of the fill and was selected to optimize a cross sectional view of the fill material. The remaining three (3) pits were selected by the Project Geophysicist based on anomalous density in reference to the geophysical targets to help further characterize the fill as well as aid in the determination of UXO concentrations at the original ground surface.

The fill comprised mostly mineral soil (silt, sand, gravel, cobbles and boulders) with minor (<5%) construction debris. The cobble and boulder portion of the fill ranged from an estimated 20 to 70 percent. Metal fragments were found throughout the fill and consisted of metal banding /strapping, metal conduit, wire, rebar in concrete, anchor bolts, and metal siding / roofing. No MEC was discovered in the fill.

The results of the survey work performed during this project suggests that the potential risk of encountering UXO in the fill soils is low. However, the amount of fill material screened (approximately 3%) is low and the high degree of metal contamination makes it difficult to rule out the possibility of encountering a UXO in the fill. The fill area appears to have been used primarily as a boulder dump but the finer material in the fill is similar in grading to the underlying natural soils and could represent original surface soils from the local area, i.e. a dump area for boulders and surface soils to accommodate nearby construction projects.

Munitions fragments found in the Mag and Flag area (Area 2) likely originated from the 1945 explosions and suggest that the possibility of finding UXO in the near surface soils (just below original grade) is relatively high based off of the work GEMTEC previously performed at a nearby location in Wright's Cove, the DILLON Consulting Report from the Document Review and the historical data. Foreign (fill) boulders in Area 2 prevented a proper assessment of the original ground surface.

Based on the site work, the following recommendations are provided:

- The fill soils (Area 1) should be excavated and screened under the supervision of UXO Technicians. Upon removal of the fill the original ground surface under the fill (Area 1) should be assessed (geophysical survey) and a clearance performed.
- The northern portion of the site (Area 2) contains numerous boulders (fill) on the original ground surface. These boulders should be removed, a geophysical survey performed followed by a clearance.

A complete description of the methodology and approach, results, and conclusions are presented in this report.

## References

The following references were used in the development of this report.

- Ammunition & Explosive Instruction # 05-07, Transportation and Palletization of Munitions Scrap;
- Ammunition & Explosive Instruction # 07, Ammunition Accident/Incident Investigation and Reporting;
- Ammunition & Explosive Instruction #14, Mitigation of Blast Fragmentation Effects Utilizing Sandbags
- Ammunition & Explosive Instruction #15, Recognized Civilian Qualifications Applicable to Ammunition and Explosives Employment;
- Ammunition & Explosive Instruction #17, Qualification Expiry Criteria
- CANFORGEN 106/07 Amendment;
- B-GL-381---3/TS-000, Operational Training Part 3 - Range Clearance and UXO Activities Handbook Draft Update dated 14 Apr 2010;
- CANFORGEN 106/07 Civilian Equivalent Qualifications for Contracted Range Clearance;
- Destruction of DUD and Misfired Ammunition on CF Ranges and Training Areas, C-09-008-002/FP-000.
- DCC Geospatial Data Standard V106;
- Explosives Safety Manual (C-09-008-002/FP-000)

## Glossary

APM – Assistant Project Manager  
 BIP- Blow-in-place  
 CA- Contract Authority  
 CCN -Contract Change Notice  
 CO -Change Order  
 CP- Communications Plan  
 CR – Change Request  
 DoI -Depth of Investigation  
 DQO – Data Quality Objectives  
 EA- Environmental Assessment  
 EMP- Environmental Management Plan  
 EO- Explosive Ordnance  
 ESP - Explosive Safety Plan  
 FFE - Free From Explosives  
 FIWP – Field Investigative Work Plan  
 GNSS - Global Navigator Satellite System  
 GSP - Geophysical Survey Plan  
 HSP – Health and Safety Plan  
 IIP - Intrusive Investigation Plan  
 ISO – International Organization for Standardization  
 IVS – Instrument Verification Strip  
 LIP – Left In Place  
 LMP - Location and Mapping Plan  
 MGFD - Maximum Greatest Fragmentation Distance  
 MSD - Maximum Safe Distance  
 MS – Munitions Scrap  
 NEQ - Net Explosive Quality  
 NMS – Non-Munitions Scrap  
 NOTAM - Notice to Airmen  
 NOTM - Notice to Mariners  
 NRCan - Natural Resources Canada  
 PMP - Project Management Plan

PMO – Project Management Office  
PMT - Project Management Team  
PPE – Personal Protective Equipment  
Q-D - Quantity – Distance  
QCP - Quality Control Plan  
RTK – Real Time Kinematic  
SOP - Standard Operating Procedure  
SPO - Soft Prove Out  
SOW - Statement Of Work  
STM - Safe To Move  
SPO - Soft Prove Out  
TMP - Technical Management Plan  
UXO - Unexploded Explosive Ordnance  
UXOFS/MM – UXO Field Supervisor/Material Manager  
UXOPL – UXO Project Leader  
UXOQCS/SO – UXO Quality Control Specialist/Safety Operator  
UXOT - Unexploded Explosive Ordnance Technician  
UXOTS – UXO Tech Supervisor  
VHF -Very High Frequency  
WP -Work Plan

## 1.0 Introduction

GEMTEC Limited was retained by Defence Construction Canada (DCC) on behalf of Public Works and Government Services Canada / Corrections Services Canada (PWGSC/CSC) to characterize the site conditions, the degree to which the area may be affected by UXO, determine the clearance requirements and develop UXO clearance specifications for the construction of a Community Correctional Centre (CCC) on the site.

The survey project site consisted of conducting a geophysical survey over the flat infill area (Area 1 – fill area) and a Mag and Flag of the area to the north of the infill area (Area 2 – boulder area). Four Calibration Grids were excavated in Area 1 and the soil was screened.

This report is presented in seven main sections. Following the Introduction, Section 2 includes a description of the project site with historical background. The Methodology for the project is presented in Section 3 including a summary of each project Task. The Quality Control plan is discussed in Section 4. Section 5, Materials Management is then followed by Section 6, Conclusions.

## 2.0 Site History and Description

The work area is located in the Burnside Industrial Park, Dartmouth, NS (See Appendix A, Figure 1, 2). There are two distinct work areas (See Appendix A, Figure 3).

### 2.1 Property Description

The property on which the CCC is to be constructed is located in the Burnside Industrial Park, Dartmouth, Nova Scotia. The property can be accessed via Morris Drive. The property itself measures approximately 21929.3 m<sup>2</sup>. Area 1 is a flat area that has had all vegetation removed and is approximately 5947 m<sup>2</sup>. Area 2 which incorporates a boulder strewn area is approximately 2627 m<sup>2</sup>. Vegetation on Area 2 consists of mature trees that were left in place following vegetation removal. Vegetation on the remainder of the property consists of mature trees that are mainly forty (40) years old or younger with fairly dense underbrush. There are currently two monitoring wells (MW6 and MW7) on the site as well as what appears to be a pump station.

## **2.2 Site History**

In the summer of 1945 CFAD Bedford was involved in de-storing of ammunition from the Canadian Fleet. Early evening of July 18<sup>th</sup> a fire started on a barge at Rent Point Jetty, CFAD Bedford, that spread and eventually caused the detonation of the ammunition on board. The fires and subsequent detonations spread throughout the main area of the depot. Tens of thousands of rounds of ammunition and other items littered the entire area. Huge craters remained where large quantities of munitions had been stored. The force of the explosions ejected soils and munitions throughout the Bedford Basin and surrounding areas. Despite numerous clean-ups, ordnance items continue to be discovered throughout the area. The proposed location of the CCC is within the area affected by the 1945 explosion. Historical data suggests the possibility of UXO being present due to the aforementioned incident.

## **2.3 Future Land Use**

The property was previously owned by DND (CFAD) and was purchased by Correction Services Canada (CSC). CSC plans to build a CCC which will consist of a building with an approximate area of 1713 m<sup>2</sup> and exterior parking for 30 staff / visitors. Access to the new site of the Halifax/Dartmouth CCC will be via Morris Drive located inside the Burnside Industrial Park. A new road access directly from the site onto Morris Drive is required.

## **2.4 Topography**

The southern portion of the site is relatively flat and appears to have been filled. The northern portion of the site is quite hilly and undulating with a large amount of boulders.

## **2.5 Previous UXO Activities On-Site**

Canadian Forces Ammunition Depot (CFAD) is located on the northeast shore of the Bedford Basin and is a major ammunition storage facility for the Atlantic region. On 18 July 1945, a fire at the Rent Point Jetty at CFAD Bedford resulted in the detonation of ammunition at the wharf that caused a cascade effect of multiple explosions and fires throughout the Depot. Despite numerous clean-ups, unexploded explosive ordnance continues to be found in the area, especially in the south-eastern area towards Rent Point which is essentially the epicentre of the 1945 explosion. The land transfer for the new CCC facility is located within approximately 730 metres of the explosion's epicenter.



## 2.6 Initial UXO Risk

A variety of items have been discovered in the vicinity of Rent Point since the 1945 explosion. They include but are not limited to the following:

- 3-inch, 4-inch, 4.7-inch and 6-inch Naval Shells (all natures).
- 12 Pounder HE / 12 CWT projectiles,
- 2 and 3 Pounder HE projectiles,
- 20mm and 40mm projectiles (all natures),
- Fuses, including 1945 proximity No. 410 and No. 420, and
- Various Small Arms Ammunition (SAA) types.

The site is situated approximately 730 metres from the jetty at Rent Point. UXO have been recently discovered on properties located further from the jetty than the subject site. See Appendix A site overview.

## 3.0 MEC Site Survey Methodology

This section presents the methodology employed to complete the MEC Site Survey. The primary objective of this project was to complete a MEC survey and provide technical support as well as a Specification Development. The tasks required to achieve these objectives were:

- Task 1 – Mobilization / Demobilization;
- Task 2 - Site Preparation;
- Task 3 - Vegetation Removal;
- Task 4 - Surface Clearance;
- Task 5 - Geophysical Survey and Flagging (Mag and Flag); and
- Task 6 - Calibration Grid Excavation.

Below is a list of all digital deliverables:

**Table 1 Summary of Digital Deliverables**

<b>Description</b>	<b>Format</b>
Field Investigative Work Plan	Adobe Acrobat (*.PDF)
Minutes	Adobe Acrobat (*.PDF)
Daily Reports	Adobe Acrobat (*.PDF)
Weekly Progress Reports	Adobe Acrobat (*.PDF)
Final Report	Adobe Acrobat (*.PDF)
Geophysical Data Databases	Geosoft Database (*.GDB)
Geophysical Grid Products	Geosoft Grid (*.GRD)
Geophysical Map Products	Adobe Acrobat (*.PDF)
Raw Geophysical Data	Geonics Raw Data (*.M61)
Dig Sheet	Adobe Acrobat (*.PDF)
Specification Development	Adobe Acrobat (*.PDF)

### 3.1 Site Personnel and Equipment

The field investigation team consisted of the following personnel:

- UXO Field Supervisor;
- UXO Quality Control / Safety Officer;
- UXO Tech Supervisor;
- UXO Tech;
- Field Geophysicist;
- Vegetation Removal Sub-contractor; and
- Earth Moving Machinery (EMM) Sub-contractor.

Below is a description of the equipment utilized during the field investigation program

- EMM including a Volvo EC340D Excavator with a 1.77-3.92 yd<sup>3</sup> bucket, Front-end Loader and soil screener as well as a Tandem Dump Truck;
- Geonics EM61 MK2 – Geophysical equipment used for the EM Survey;
- RTK GPS – Used to accurately record Geophysical information as well as Mag and Flag targets;
- Schiebel and DML Hand Held Detector – Used to search for shallow ferrous and metallic objects;
- Garmin Hand Held Global Positioning System (GPS) Units – Used for rough acquisition of GPS points as necessary; and
- Probes, shovels, stakes – Normal intrusive investigation requirements.

### 3.2 Task 1 – Mobilization / Demobilization

Following approval of the Field Investigative Work Plan (FIWP) and authorization to mobilize GEMTEC commenced field work on 1 Oct 2013. The initial mobilization included the Field Geophysicist, UXO Field Supervisor (UXOFS), UXO Team Supervisor (UXOTS) and UXO Technician (UXOT). Secondary mobilization consisted of the UXO Quality Control Specialist (UXOQCS) on 8 October 2013. The team kept accommodations in Dartmouth, Nova Scotia and traveled to the work site daily. Final demobilization occurred following the completion of field work on 16 October 2013.

### 3.3 Task 2 – Site Preparation

Site preparation work included construction of a short section of access road from Morris Drive to the site, establishment of a survey control point, marking the work boundaries and removal of surface debris (construction and demolition waste material).

In order to gain access to the site an excavator was used to construct a short section of road to the fill area. Prior to constructing the access road, a detector aided surface clearance was performed by the UXO team.

Following construction of the access road a temporary survey control point (TCP) was established by the field geophysicist. The temporary control point was used as a reference location for the GPS base station. Coordinates for the TCP and the Accuracy Test Point that was used to establish the CP are listed below.

**Table 2 GPS Reference Points**

ID	Description	Easting	Northing
TCP	Temporary Control Point	451356.061	4950558.281
ATP	Accuracy Test Point	451320.797	4950493.445

Note: The TCP was established using Leica Geosystems Base Station.

To ensure vegetation removal and follow-on operations occurred in the proper locations, the property boundaries provided by DCC and the overlay from the SOW were cross referenced. The intersection of the property boundary and the overlay from the SOW were used to delineate the work area. Flagging tape was used to mark the work area in the field. These coordinates are provided below.

**Table 3 Property Boundary and Overlay Intersection Coordinates**

ID	Description	Easting	Northing
1	North West Corner	0451263.55	4950579.74
2	South West Corner	0451237.34	4950453.07
3	North East Corner	0451352.25	4750557.19
4	South East Corner	0451327.20	4950436.13

Debris and vegetation removal then commenced. Nine tandem dump truck loads of construction and demolition debris were removed from the surface and edges of the fill area with an approximate overall weight of 48.4 tons. The material was disposed offsite at a private facility owned by TrentStar Excavating Limited (493 Lucasville Road, Sackville, Nova Scotia).

### **3.4 Task 3 – Vegetation Removal**

Full vegetation removal occurred on the fill area (Area 1) from the south edge of the boulder area as discussed during the Site Visit, to the north or top edge of the southern fill line. Vegetation was removed north of the boulder area (Area 2) to facilitate Mag and Flag operations, efforts were made to retain as much mature vegetation as possible. As discussed during the Bidder's Meeting, no vegetation to the south of the fill area was removed.

### **3.5 Task 4 – Surface Clearance**

Following the Vegetation Removal, the UXO Field Team (UXO Fd Tm) conducted a secondary search of the area. This was a detector aided visual sweep at the discretion of UXOFS. The area was divided into several grids to allow for concurrent activity. Within the grids, each Technician was responsible for the removal of metallic objects along a 3 metre path in front of him (1.5 metres to the left side and 1.5 metres to the right side). Dependent upon the direction of travel, a UXO Technician was tasked to insert into the ground, approximately every 8 metres, a coloured pin flag to denote the surface area cleared. The UXOFS and the UXOQCS/SO monitored the team movement for consistency and coverage and for safety and quality control issues. UXO Technicians carried a bucket to place the munitions scrap (MS) or non-munitions scrap (NMS) in. Full buckets were moved to the applicable NMS or MS designated area. Areas that were contaminated by heavy debris such as concrete slabs, were marked and recorded for later removal. Following removal of those items the area underneath and the immediate-surrounding area was cleared once again.

No intrusive investigation operations were conducted on sub surface targets at this stage of the project.

### **3.6 Task 5 – Geophysical Survey**

A geophysical survey was performed on the Burnside Industrial Park property covering ~0.54 Ha at 100% coverage. The survey was conducted using an electromagnetic detector with a 1 metre swath width with line spacing set at 0.8m. In open areas, the system was operated in a wheeled-cart mode with the onsite geophysicist as the operator. In rugged sections of the site (boulder areas), a stretcher mode was utilized to avoid additional stresses on the platform with both the site geophysicist and a second helper suspending the unit in the air.

### **3.6.1 Geophysical System Description**

The survey was conducted using a Geonics EM61-MK2A electromagnetic detection system. The EM61-MK2A is a time domain metal detector, which detects both ferrous and non-ferrous objects with excellent spatial resolution. The unit generates a primary electromagnetic field, which in turn induces eddy currents in nearby conductors. The resulting secondary field produced by these eddy currents is measured in multiple time gates and later analysed for target discrimination.

### **3.6.2 Positioning System**

Positioning of the geophysical survey data collected by the geophysical platform was achieved using a Leica Viva Real-Time Kinematic (RTK) Global Navigator Satellite System (GNSS) System. GNSS technology uses visible satellites to triangulate the X, Y, and Z positions of the GNSS antenna. To increase spatial accuracy, a base station was set up at an established monument to transmit differential corrections to the mobile unit by means of a radio transmitter. The corrections were applied to compensate for atmospheric distortions and significantly increased positional accuracy.

### **3.6.3 Instrument Verification Strip**

In order to ensure data quality objectives (DQO) and positional accuracy of the geophysical equipment, an Instrument Verification Strip was established within the project boundaries. The test strip was surveyed prior to project commencement and twice daily for the duration of the survey. The IVS consisted of five (5) ISO test items buried in a straight line with a 3.0 metre spacing between items and at pre-determined depths and orientations. Data collected between each item and off each end of the IVS provided background response levels expected in the area.

DQOs assessed during the IVS test and daily functional tests were done so as per the DCC DGM Standards. Below is a brief description of each functional test performed and the established thresholds:

**Table 4 Equipment DQO Summary**

<b>Functional Test</b>	<b>DQO Value (Based on channel 3)</b>
Static Background Test	< $\pm 1.5$ mV for 95% of records
Instrument Response Test	< 10% of 197.11 mV
Cable Shake Test	< 10 mV
GPS Scatter Test	< 2cm for 95% of records
GPS Accuracy Test	< 5cm from accuracy test point
Instrument Latency (Lag) Test	5-6 sample lag consistently
100% Survey Coverage	< 1.2 m line separation over 10 m
Survey Noise Levels	< 3mV over 10s in inactive areas
Spatial Accuracy	< 70cm IVS QC Seed items

### 3.6.4 Survey Execution

As per the requirements of the SOW, 100% data coverage was required within the designated fill boundary. This DQO was achieved using the EM61 method for survey and ropes as a guide allowing the survey crew to navigate the terrain without compromising coverage. A few obstructions were encountered, such as boulders and rough terrain but these areas were able to be completed using a stretcher like setup, which involves carrying the EM61 unit. Obstructions and variations in the terrain on the surface of the fill required a modification from the typical survey method using 50 x 50 metre grids. Based on the terrain, segments of the fill were surveyed as separate units to improve efficiency and limit the awkward transitions across terrain boundaries and promote a safer surveying procedure.

The following surveying techniques were used to complete the survey within the fill boundary of this site.

- Three 50 m ropes were arranged perpendicular to the boundary of the surveying unit and were spaced approximately 80 cm apart.
- The EM61 system was pulled or carried (depending on terrain) down the center of each 80 cm lane marked by the ropes.
- As the system reached the end of the lane, a person on either end of the rope would leap frog the other two ropes to create the next lane until the end of the surveying unit was reached.

This approach provided 20% overlap of the EM61 coil footprint, which is 1 m, and ensured 100% survey coverage.

### **3.6.5 Geophysical Data Processing**

The following steps were taken to process all geophysical data from raw to final format:

- Data files from the field were delivered to the project geophysicist.
- The data was pre-processed / converted using proprietary processing software and exported into standard XYZ format.
- Data was imported into Oasis Montaj for additional data processing and gridding.
- Profile based automated picking was performed followed by manual verification of picks.

Data pre-processing includes all steps required to bring the raw data files into a format recognizable by Geosoft. Following each survey, the data files were downloaded from the Archer acquisition unit directly to a Secure Digital (SD) card and transferred to the field laptop. The files were then loaded into a Geonics software utility converting the raw binary data stream (\*.R61 files) to an ASCII (\*.M61) format. These files were then loaded into proprietary software for preliminary profile based levelling. All four-time gates (1 to 4) were manually leveled to a zero baseline in areas of negligible EM response. This corrected for temperature changes in the coil throughout a day, which manifests itself as a slow, non-linear, drifting of the data. Following this step, an XYZ file was exported and formatted for direct input into Geosoft's Oasis Montaj geophysical processing suite.



### 3.6.6 Correction and Review

After the data was loaded into Geosoft, a number of steps were performed to re-project GPS coordinates and to remove unwanted affects from the data.

The EM data was processed using the following steps:

- Data was corrected to remove temperature effects that causes data drift.
- The data was lag corrected (1 sample) to account for systematic delays in correlating the GPS and the EM coil.
- Positional information was verified and survey path plotted.
- Line path was trimmed to remove unwanted data or to remove data outside the prescribed survey area.

A detailed review of the data was then performed in order to verify that the following DQOs were being met:

- Noise levels (< 3 mV in Channel 3)
- GPS quality (All bad fixes removed from dataset)
- Line spacing & coverage

### 3.6.7 Mag and Flag

Following the Surface Clearance Mag and Flag operations were undertaken north of the fill area. The area was divided into grids to control operations and ensure proper coverage. Within the grids, each Technician was responsible for investigating positive readings from their metal detector. They investigated each hit to determine the centre of mass of the target and marked the location with a flag. The Field Geophysicist was then accompanied by a Technician while he recorded the coordinates of the targets with a RTK precision GPS. The UXOFS and the UXOQCS/SO monitored the team movement for congruency and coverage and proper investigation of targets and for safety and quality control issues. 10% of the targets found during the Mag and Flag operations were required to be intrusively investigated. Intrusive investigating operations included the use of prodders, trowels and shovels. Appropriate safety distances were adhered to at all times (15 m). The centre of mass of the target was reacquired using a metal detector, the area around the periphery of the target was then excavated. While conducting investigation of the target the area was again subjected to investigation by a metal detector and excavation continued until the target was identified and removed.

### **3.7 Task 6 – Calibration Grid Excavation**

#### **3.7.1 Grid Selection**

Of the four (4) calibration grids selected, three (3) of the four (4) were selected by the Project Geophysicist based on anomalous characteristics of each area. The three (3) zones were set at approximately 5 x 5 metres in size, located within the fill area and in areas exhibiting a range of geophysical anomalous characteristics (light, medium, and high-density geophysical responses).

The fourth area, measuring approximately 5 x 7 metres in size (at original grade) was selected upon visual inspection of the area and was located at the south end of the fill in order to characterize the fill depth (down to original grade) and composition and makeup of the fill material.

#### **3.7.2 Grid Excavation**

Members of the UXO Field Team conducted a visual inspection of the Calibration Grid area as well as a detector aided investigation as required. An excavator was utilized to remove the soil in successive lifts at which point the newly exposed soil was then investigated by a member of the UXO Field Team. This process was repeated until the natural grade was reached. All excavated soil was placed on clean plastic sheets. The bottom of the excavation (original grade) was examined by a UXOT using a metal detector. The excavated soil was screened and returned to the calibration pits. In total, approximately 500 m<sup>3</sup> of fill material was excavated and screened over a two day period.

## 4.0 Quality Control Methodology

The Quality Control Methodology (QCM) section describes all quality objectives adhered to during the course of the project in accordance with Section 4.0 of the FIWP.

### 4.1 Geophysical DQOs

In order to ensure data quality throughout the course of the project, the following functional tests were performed at various intervals:

- GPS Scatter / Accuracy Test
- Instrument Response Test
- Cable Shake Test
- Personnel Test
- Latency (Lag) Test

In addition, all collected survey data was monitored to ensure the following data quality objectives (DQO) were being met:

- Survey Coverage
- Noise Levels
- Positional Accuracy

The aforementioned items were analyzed in accordance with the specifications prior to survey commencement. Table 5 shows each test and the frequency at which they were performed.

**Table 5 Quality Control Test Frequencies**

QC Action	Daily		Start of Project	Non-Conformances
	Morning	Evening		
Static Background Test	•	•	•	None
Instrument Response Test	•	•	•	None
GPS Scatter Test	•	•	•	None
GPS Accuracy Test	•		•	None
Cable Shake Test	•		•	None
Personnel Test	•			None
Lag Test			•	None
Soft Prove Out Survey			•	None

Examples of the daily geophysical checks can be found in Appendix E. No major problems were encountered throughout the project, however, a minor non-conformance was raised during a PM GPS scatter test where 50% of the data point exceeded the DQO of 2 cm. The problem was identified by the Project Geophysical Team and was found to be a loss of lock to the RTK base station due to a loss of power. This problem was also evident in the last data file collected that day. Data without RTK was discarded and the surveyed areas repeated.

No further action was taking other than more frequent checks to ensure the RTK base station battery continued to power the unit.

#### **4.1.1 Quality Control Seed Items**

In order to ensure the quality of the survey data, detection capabilities and the positional accuracy of identifying targets, the five (5) IVS seed items located within the project boundaries were used as QC seed items.

**Error! Not a valid bookmark self-reference.** displays the positional accuracy of all relocated seed items within the spatial accuracy DQO of 50 cm.

**Table 6 QC Seed Item Results**

Item No.	Description	Actual Position (NAD83)		Interp. Position (NAD83)		Calculated Offset (cm)
		X (m)	Y (m)	X (m)	Y (m)	
IVS_1	IVS Item 1 (Medium)	451303.62	4950504.62	451303.50	4950504.75	0.18
IVS_2	IVS Item 2 (Medium)	451300.86	4950504.27	451300.75	4950504.00	0.29
IVS_3	IVS Item 3 (Small)	451297.77	4950503.95	451297.75	4950503.75	0.20
IVS_4	IVS Item 4 (Large)	451295.00	4950503.58	451294.50	4950503.50	0.51
IVS_5	IVS Item 5 (Small)	451292.05	4950503.30	451292.00	4950503.25	0.07

## 4.2 UXO Operations

The UXO component of the QCM was developed to ensure that the work was completed as per the FIWP. The QCM included training for all on site personnel and confirmation that each employee met the qualification requirements as defined in the SOW.

## 4.3 UXO Quality Control Seed Items

The UXOQCS and DCC Representative placed seeds for the Mag and Flag operations. The seed locations and details regarding when and where they were located is in the table below.

**Table 7 Quality Control Seed Finds**

Seed #	Date Placed	Date Found	QC Seed Location	Comment
1	7 Oct 13	7 Oct 13	20 T 0451241 4950471	UXOQCS placed seed item which was found during sweep operations along the western grid lines.
2	10 Oct 13	15 Oct 13	20 T 0451306 4950570	DCC seed that was found during Surface Clearance
3	10 Oct 13	13 Oct 13	20 T 0451320 4950532	UXOQCS placed seed that was found during Mag and Flag Operations
4	11 Oct 13	12 Oct 13	Calibration Pit #2	UXOQCS seed that was found during screening operations.

#### **4.4 Site Specific Training Process**

All personnel received site-specific safety training that included:

- Hazards associated with possible MEC items;
- Actions to take if MEC items are discovered;
- Contact Information and route to Hospital; and
- Location of Emergency Equipment.

All GEMTEC onsite personnel attended a Safety Briefing presented by the Safety Officer prior to gaining access to the site. Site-specific training was provided to new site personnel during this project.

#### **4.5 Daily Quality Control Inspection Process**

All instruments, vehicles/machinery, and equipment were checked prior to the start of each workday, batteries for detectors were replaced as needed, and instruments requiring calibration were checked against a known source.

Table 7 below describes the frequency and personnel responsible for various checks and briefs during the project.

The UXOQCS was responsible for ensuring that personnel accomplish all equipment quality checks and that the appropriate records were kept. The UXOQCS performed random, unscheduled QC inspections to ensure that personnel accomplished the work specified in the SOW/FIWP.

**Table 8 Project Related Checks & Frequencies**

<b>Task</b>	<b>Responsible Person</b>	<b>Frequency</b>
Personnel Qualifications	APM/UXOQCS	Project Commencement / Personnel Changes
Communications Equipment	UXOFS	Daily
Geophysical Functional Tests	Field Geophysicist	Twice Daily
Geophysical DQO Verification	Field Geophysicist	Daily
Metal Detectors	UXOFS	Twice Daily
Safety Inspection Fire Fighting	UXOFS	Daily
Safety Briefings	UXOFS	Daily
Safety and Health Program	UXOSO	Weekly
Current On-Site Work Plan	UXOFS	Weekly
Vehicles	UXOSO	Daily
Visitor Briefings	UXOSO	As required
Hazard Assessment	UXOSO	Project Commencement / Personnel Changes
Site Specific Training	UXOFS	Project Commencement / Personnel Changes

The UXOQCS performed quality control inspections concurrently throughout the project. The team's procedures were observed to ensure quality standards were met and that all procedures were conducted according to the required standard. No quality issues were noted therefore no non-conformance notices were issued.

## **5.0 MEC Site Survey Results**

This section describes the results of the site geophysical survey, Mag and Flag survey and the calibration grids.

### **5.1 Surface Clearance**

The UXO Field team attempted to remove all metal from the site prior to the commencement of follow-on operations. In total, an estimated 48.4 tonnes of NMS were removed from the site and taken to a private disposal location owned by TrentStar Excavating Limited (493 Lucasville Road, Sackville, Nova Scotia).

### **5.2 Site Geophysical Survey**

Geophysical anomalies selected as targets were based on an amplitude threshold of 5 mV. Targets were initially selected using an automated grid peak method, then manually refined. A total of 839 targets were detected including the five (5) quality control, IVS items. All target information (dig list) and a geophysical results map are attached in Appendix B.

All geophysical data and related files have been placed in a directory called “Geophysical Data” and will be provided to DCC in accordance with the guidelines set out in DCC’s specific project requirements.

### **5.3 Mag and Flag Survey**

During Mag and Flag operations a total of 155 targets were flagged. Of these 155 only 10% were required to be intrusively investigated, however GEMTEC investigated 20 targets (nearly 13%) in order to aid with the characterization of the site. Of the 20 target locations, only three small fragments of MS were found. These items were found at the natural grade in soil that had not been covered by fill and were in close proximity to each other. A table containing the findings can be found in Appendix C.



## 5.4 Calibration Grids

Detailed descriptions of the fill material from each calibration grid are presented in the attached test pit logs, Appendix F and are summarized as follows:

- Fill materials ranged from 1.9 to 3.35 m and averaged 3.2 m. The average includes the fill measured at two test hole locations that were excavated as part of a geotechnical investigation.
- Fill material was comprised mostly mineral soils (silt, sand, gravel, cobbles and boulders) with minor amounts of construction debris (concrete, asphalt, metal, glass, etc.). Boulders were encountered in all of the calibration grid pits and comprised an estimated 30 to 70 percent of the test pit volume. The boulders typically ranged in size from 0.2 m to 1.0 m but some were up to 2.1 m in diameter.
- The percent of construction debris in the fill was low and estimated at less than 5 percent of the fill volume from each calibration grid. Metal fragments were found throughout the fill at each calibration grid location and typically consisted of small pieces of metal banding /strapping, metal conduit, wire, rebar in concrete, anchor bolts, and metal siding / roofing. Other debris included: minor glass, wood, concrete, plastic, and asphalt.
- The total fill volume is estimated at 18,000 m<sup>3</sup>, of which an estimated 30 to 70 % is cobble and boulder size material.
- Grain size analyses were performed on two samples collected from calibration grid CG1; one from the finer material within the fill (<80 mm size fraction) and one from the native till material. Both samples excluded the cobble and boulder size fraction (>80 mm). The results are presented on the attached soil grading charts in Appendix G and Appendix H.

No UXO were found in fill material or on the original ground surface at the base of fill.

## 6.0 Material Management

The Material Management was overseen by the UXOFS and the UXOQCS. No munition scrap was found until the last day of the field work (15 October 2013). Three pieces of fragmentation from an undetermined piece of ordnance were found. Due to the small size of the fragments it was determined by the DCC Representative that the fragments could be left in place.

## 7.0 Conclusion and Recommendations

GEMTEC Limited was retained by Defence Construction Canada (DCC) on behalf of Public Works and Government Services Canada / Corrections Services Canada (PWGSC/CSC) to characterize the site conditions at the proposed CCC location in Burnside Park, the degree to which the area may be affected by UXO, determine the clearance requirements and develop UXO clearance specifications for the construction of a CCC on the site. Conclusion of the site survey were as follows:

- No munitions related items or munition scrap was found during a surface sweep of the site.
- All vegetation was removed from the southern portion of the site (Area 1- Fill Material, area = 5947 m<sup>2</sup>). Some mature trees were left standing in the northern portion of the site (Area 2 – Boulder Area, area = 2627 m<sup>2</sup>).
- Nine loads (approximately 48.4 tonnes) of construction related debris (concrete with rebar, miscellaneous metal and other debris) were removed from the surface and outer perimeter of the fill area.
- No munitions related items or munition scrap was found during a surface clearance of the site.
- Based on the geophysical survey (resulting in the detection of 839 targets) the fill material contains a significant amount of metal contamination.
- Based on the results of the calibration grids the fill comprised mostly mineral soil (silt, sand, gravel, cobbles and boulders) with minor (<5%) construction debris. The cobble and boulder portion of the fill ranged from an estimated 20 to 70 percent. Metal fragments were found throughout the fill and consisted of metal banding /strapping, metal conduit, wire, rebar in concrete, anchor bolts, and metal siding / roofing.
- Based on the Mag and Flag survey one hundred and fifty five (155) targets were identified, flagged and the positions recorded with a RTK GPS. An intrusive investigation of twenty (20) targets identified three (3) small pieces of munitions scrap (MS). These were left in place.

- Based on the survey work performed during this project, the potential risk of encountering UXO in the fill soils in Area 1 is low. However, the amount of fill material screened (approximately 3%) is low and the high degree of metal contamination makes it difficult to rule out the possibility of encountering any UXO in the fill. The fill area appears to have been used primarily as a boulder dump but the finer material in the fill is similar in grading to the underlying natural soils and could represent original surface soils from the local area, i.e. a dump area for boulders and surface soils to accommodate construction.
- The munitions fragments found in the Mag and Flag area (Area 2) likely originated from the 1945 explosions and suggest that the possibility of finding UXO in the near surface soils (just below original grade) is relatively high based off of the work GEMTEC previously performed at a nearby location in Wright's Cove, the DILLON Consulting Report from the Document Review and the historical data. Foreign (fill) boulders in Area 2 prevented a proper assessment of the original ground surface.

Based on the site work, the following recommendations are provided:

- The fill soils (Area 1) should be excavated and screened under the supervision of UXO Technicians. Upon removal of the fill the original ground surface under the fill (Area 1) should be assessed (geophysical survey) and a clearance performed.
- The northern portion of the site (Area 2) contains numerous boulders (fill) on the original ground surface. These boulders should be removed, a geophysical survey performed followed by a clearance.

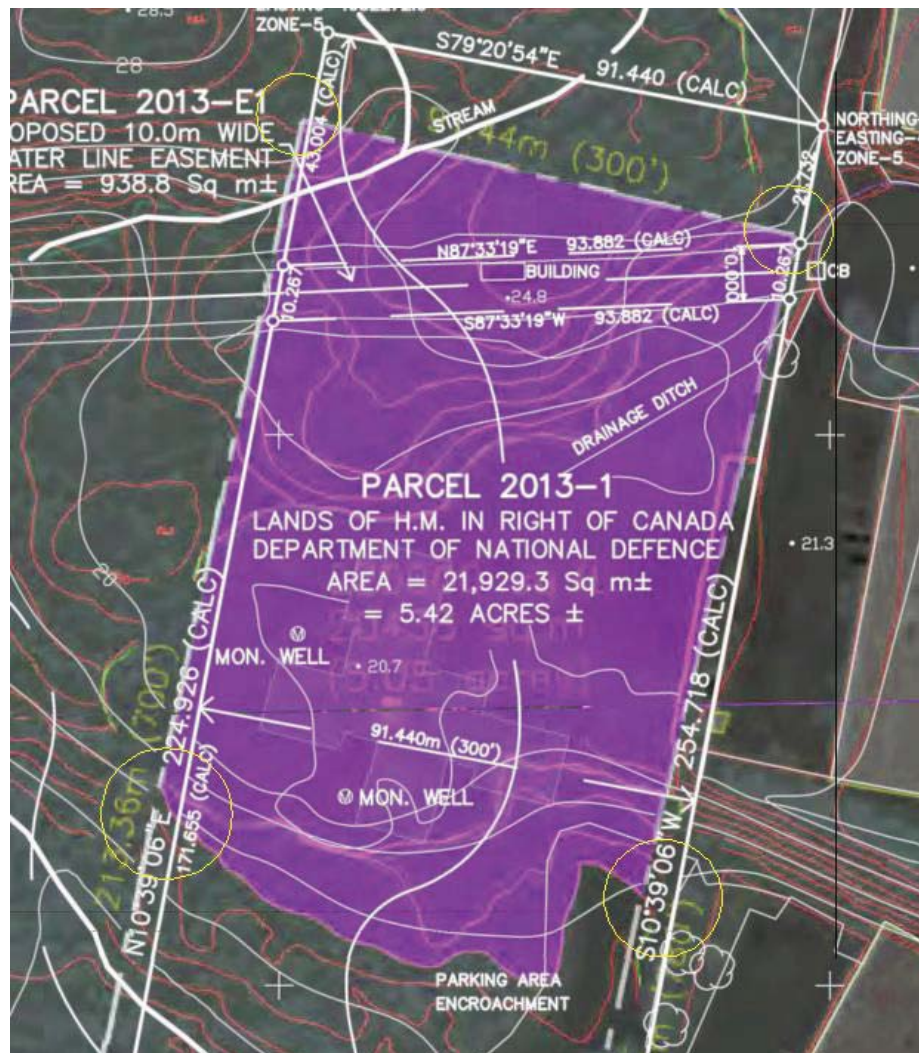
## **Appendix A**

A – Property Boundary / SOW Overlay



**Figure 1**

**Note: CSC property outline/location is not to scale.**



**Figure 2**

**Note:** Intersection points are outlined by yellow circles.



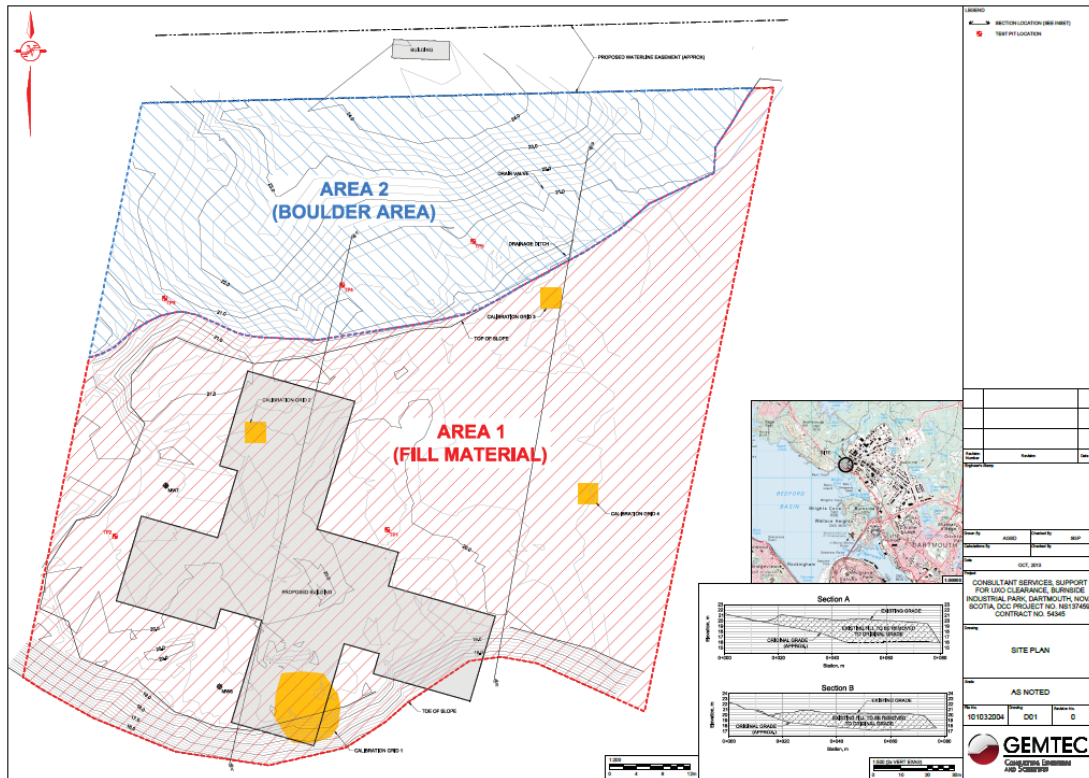
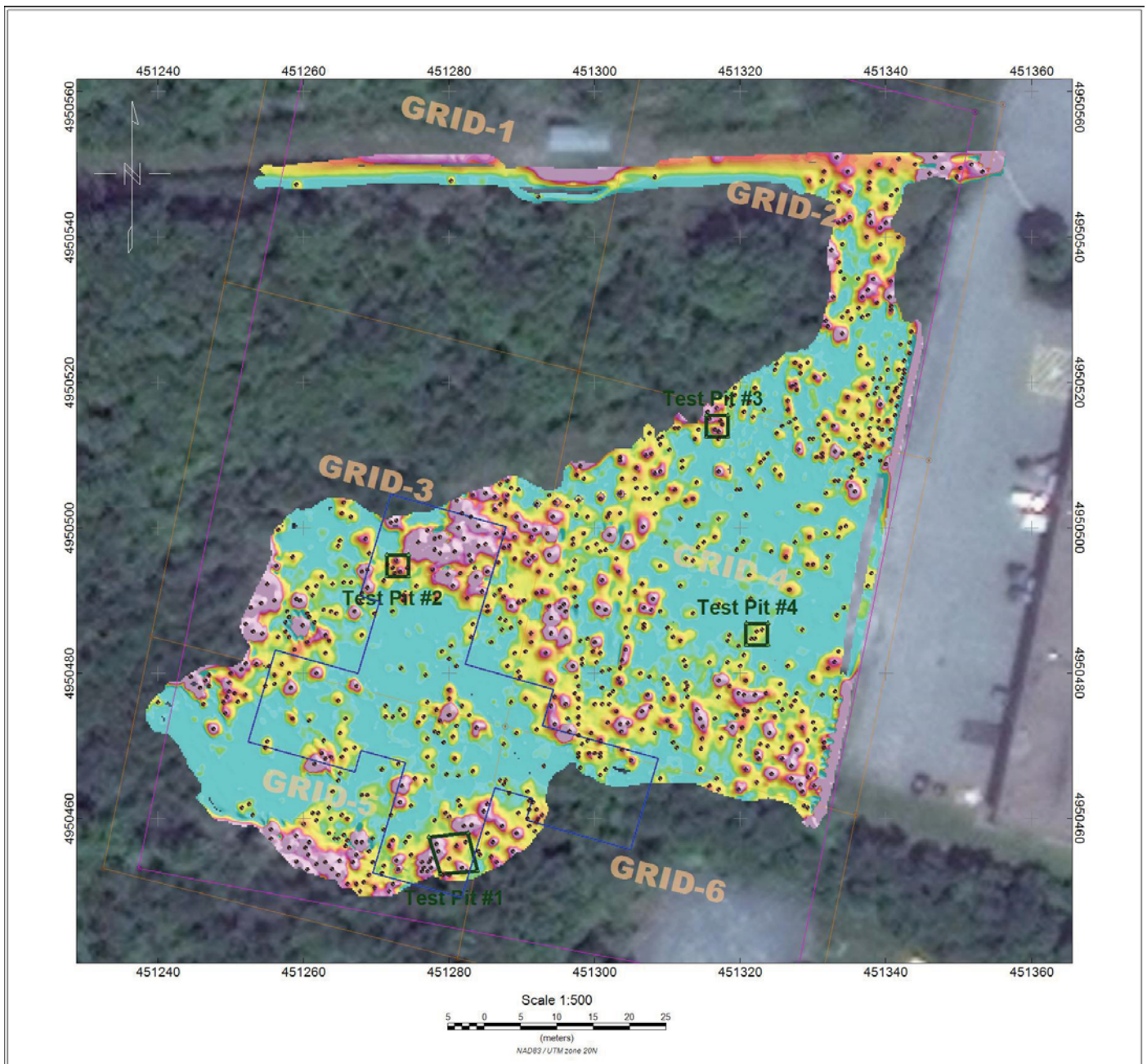


Figure 3

## **Appendix B**

B – Geophysical Survey Results and Dig Sheet





ID #	Easting NAD83 (m)	Northing NAD83 (m)	Ch 3 (mV)	Type	Disposition
GEO_0001	451346.75	4950551.00	1457		LIP
GEO_0002	451333.25	4950551.00	66		LIP
GEO_0003	451341.75	4950550.75	31		LIP
GEO_0004	451339.00	4950550.00	47		LIP
GEO_0005	451344.00	4950550.00	27		LIP
GEO_0006	451351.75	4950550.00	86		LIP
GEO_0007	451347.75	4950549.50	2555		LIP
GEO_0008	451350.25	4950549.50	43		LIP
GEO_0009	451340.75	4950549.20	36		LIP
GEO_0010	451331.50	4950549.00	36		LIP
GEO_0011	451334.75	4950549.00	67		LIP
GEO_0012	451337.75	4950549.00	36		LIP
GEO_0013	451353.25	4950549.00	80		LIP
GEO_0014	451346.00	4950548.75	2338		LIP
GEO_0015	451349.75	4950548.25	79		LIP
GEO_0016	451308.25	4950548.25	8		LIP
GEO_0017	451329.50	4950547.75	42		LIP
GEO_0018	451331.25	4950547.75	26		LIP
GEO_0019	451280.25	4950547.75	12		LIP
GEO_0020	451337.75	4950547.50	45		LIP
GEO_0021	451259.00	4950547.25	13		LIP
GEO_0022	451337.70	4950546.65	34		LIP
GEO_0023	451341.50	4950546.50	7		LIP
GEO_0024	451333.50	4950546.25	34		LIP
GEO_0025	451335.00	4950546.25	95		LIP
GEO_0026	451340.75	4950545.75	10		LIP
GEO_0027	451292.25	4950545.50	5		LIP
GEO_0028	451333.50	4950545.00	19		LIP
GEO_0029	451340.00	4950544.50	37		LIP
GEO_0030	451340.00	4950544.00	39		LIP
GEO_0031	451337.75	4950543.00	144		LIP
GEO_0032	451335.00	4950542.75	75		LIP
GEO_0033	451334.25	4950542.25	67		LIP

ID #	Easting NAD83 (m)	Northing NAD83 (m)	Ch 3 (mV)	Type	Disposition
GEO_0034	451340.00	4950542.00	229		LIP
GEO_0035	451333.50	4950542.00	58		LIP
GEO_0036	451337.97	4950541.99	80		LIP
GEO_0037	451339.25	4950541.25	67		LIP
GEO_0038	451337.35	4950540.05	31		LIP
GEO_0039	451341.75	4950540.00	28		LIP
GEO_0040	451334.00	4950539.00	10		LIP
GEO_0041	451339.25	4950539.00	11		LIP
GEO_0042	451332.50	4950538.25	202		LIP
GEO_0043	451339.00	4950537.25	41		LIP
GEO_0044	451333.50	4950536.50	35		LIP
GEO_0045	451333.75	4950535.25	6		LIP
GEO_0046	451336.20	4950534.31	7		LIP
GEO_0047	451334.25	4950534.25	5		LIP
GEO_0048	451338.25	4950534.25	85		LIP
GEO_0049	451340.68	4950533.97	53		LIP
GEO_0050	451337.50	4950532.75	91		LIP
GEO_0051	451336.75	4950531.75	74		LIP
GEO_0052	451340.50	4950531.75	297		LIP
GEO_0053	451332.75	4950531.75	112		LIP
GEO_0054	451338.75	4950531.00	54		LIP
GEO_0055	451340.75	4950530.50	111		LIP
GEO_0056	451336.25	4950530.25	21		LIP
GEO_0057	451340.75	4950530.00	113		LIP
GEO_0058	451334.75	4950529.75	23		LIP
GEO_0059	451337.50	4950529.25	7		LIP
GEO_0060	451334.00	4950529.00	12		LIP
GEO_0061	451336.75	4950529.00	6		LIP
GEO_0062	451335.25	4950528.75	19		LIP
GEO_0063	451331.75	4950528.50	82		LIP
GEO_0064	451332.00	4950527.75	62		LIP
GEO_0065	451343.50	4950527.00	27		LIP

ID #	Easting NAD83 (m)	Northing NAD83 (m)	Ch 3 (mV)	Type	Disposition
GEO_0066	451334.00	4950526.75	284		LIP
GEO_0067	451343.25	4950525.50	24		LIP
GEO_0068	451342.00	4950525.25	10		LIP
GEO_0069	451336.50	4950524.75	13		LIP
GEO_0070	451343.25	4950524.00	84		LIP
GEO_0071	451336.50	4950523.75	19		LIP
GEO_0072	451340.00	4950523.25	9		LIP
GEO_0073	451342.50	4950523.00	14		LIP
GEO_0074	451329.25	4950522.75	16		LIP
GEO_0075	451327.50	4950522.75	44		LIP
GEO_0076	451337.50	4950522.50	15		LIP
GEO_0077	451325.00	4950522.50	7		LIP
GEO_0078	451328.25	4950522.25	32		LIP
GEO_0079	451324.75	4950521.75	7		LIP
GEO_0080	451340.25	4950521.75	8		LIP
GEO_0081	451341.75	4950521.75	22		LIP
GEO_0082	451342.50	4950521.75	15		LIP
GEO_0083	451342.50	4950521.25	16		LIP
GEO_0084	451328.25	4950521.25	24		LIP
GEO_0085	451331.55	4950521.04	13		LIP
GEO_0086	451330.25	4950520.75	64		LIP
GEO_0087	451342.25	4950520.50	15		LIP
GEO_0088	451338.25	4950520.50	7		LIP
GEO_0089	451339.25	4950520.50	9		LIP
GEO_0090	451327.50	4950519.75	69		LIP
GEO_0091	451342.00	4950519.75	19		LIP
GEO_0092	451327.00	4950519.50	66		LIP
GEO_0093	451337.00	4950519.50	59		LIP
GEO_0094	451319.25	4950519.25	13		LIP
GEO_0095	451322.00	4950519.25	32		LIP
GEO_0096	451340.25	4950519.25	5		LIP
GEO_0097	451341.50	4950519.25	30		LIP

ID #	Easting NAD83 (m)	Northing NAD83 (m)	Ch 3 (mV)	Type	Disposition
GEO_0098	451338.75	4950519.25	5		LIP
GEO_0099	451327.75	4950519.00	49		LIP
GEO_0100	451341.25	4950518.75	30		LIP
GEO_0101	451338.50	4950518.50	6		LIP
GEO_0102	451337.50	4950518.25	22		LIP
GEO_0103	451319.25	4950518.25	22		LIP
GEO_0104	451341.75	4950518.00	26		LIP
GEO_0105	451334.75	4950518.00	47		LIP
GEO_0106	451318.25	4950517.75	26		LIP
GEO_0107	451326.50	4950517.50	40		LIP
GEO_0108	451336.25	4950517.50	26		LIP
GEO_0109	451340.75	4950517.50	32		LIP
GEO_0110	451321.25	4950517.25	13		LIP
GEO_0111	451339.25	4950517.00	242		LIP
GEO_0112	451318.75	4950516.75	9		LIP
GEO_0113	451341.50	4950516.75	11		LIP
GEO_0114	451316.75	4950516.50	79		LIP
GEO_0115	451326.50	4950516.25	40		LIP
GEO_0116	451323.25	4950516.25	6		LIP
GEO_0117	451334.25	4950516.00	32		LIP
GEO_0118	451320.50	4950516.00	25		LIP
GEO_0119	451315.50	4950516.00	70		LIP
GEO_0120	451336.75	4950515.50	29		LIP
GEO_0121	451341.25	4950515.50	15		LIP
GEO_0122	451321.75	4950515.25	12		LIP
GEO_0123	451338.00	4950515.00	14		LIP
GEO_0124	451331.50	4950515.00	52		LIP
GEO_0125	451327.50	4950515.00	10		LIP
GEO_0126	451315.75	4950515.00	85	NMS	MOVED
GEO_0127	451317.25	4950514.75	47	NMS	MOVED
GEO_0128	451339.00	4950514.75	15		LIP
GEO_0129	451340.25	4950514.75	63		LIP

ID #	Easting NAD83 (m)	Northing NAD83 (m)	Ch 3 (mV)	Type	Disposition
GEO_0130	451326.75	4950514.50	10		LIP
GEO_0131	451317.50	4950514.25	55	NMS	MOVED
GEO_0132	451330.75	4950514.25	18		LIP
GEO_0133	451335.50	4950514.25	8		LIP
GEO_0134	451332.75	4950514.00	88		LIP
GEO_0135	451325.75	4950514.00	6		LIP
GEO_0136	451339.00	4950513.75	17		LIP
GEO_0137	451337.75	4950513.75	15		LIP
GEO_0138	451327.75	4950513.75	14		LIP
GEO_0139	451311.50	4950513.75	28		LIP
GEO_0140	451311.00	4950513.75	27		LIP
GEO_0141	451336.00	4950513.50	20		LIP
GEO_0142	451316.50	4950513.50	107	NMS	MOVED
GEO_0143	451339.50	4950513.50	16		LIP
GEO_0144	451340.75	4950513.50	12		LIP
GEO_0145	451314.25	4950513.50	17		LIP
GEO_0146	451317.00	4950513.25	108	NMS	MOVED
GEO_0147	451325.00	4950513.00	23		LIP
GEO_0148	451307.50	4950513.00	17		LIP
GEO_0149	451331.50	4950512.75	14		LIP
GEO_0150	451337.75	4950512.75	24		LIP
GEO_0151	451309.25	4950512.50	9		LIP
GEO_0152	451336.25	4950512.50	30		LIP
GEO_0153	451330.00	4950512.25	8		LIP
GEO_0154	451329.50	4950512.25	9		LIP
GEO_0155	451317.00	4950512.25	18		LIP
GEO_0156	451335.00	4950512.25	17		LIP
GEO_0157	451308.75	4950512.25	9		LIP
GEO_0158	451340.50	4950512.25	15		LIP
GEO_0159	451313.75	4950512.25	34		LIP
GEO_0160	451332.00	4950512.00	14		LIP
GEO_0161	451338.25	4950512.00	35		LIP

ID #	Easting NAD83 (m)	Northing NAD83 (m)	Ch 3 (mV)	Type	Disposition
GEO_0162	451337.25	4950511.50	25		LIP
GEO_0163	451309.00	4950511.50	20		LIP
GEO_0164	451339.50	4950511.50	42		LIP
GEO_0165	451337.75	4950511.25	15		LIP
GEO_0166	451337.25	4950511.00	29		LIP
GEO_0167	451328.00	4950510.75	86		LIP
GEO_0168	451310.25	4950510.75	6		LIP
GEO_0169	451333.00	4950510.50	308		LIP
GEO_0170	451334.00	4950510.25	29		LIP
GEO_0171	451336.25	4950510.25	36		LIP
GEO_0172	451307.75	4950510.25	63		LIP
GEO_0173	451331.25	4950510.25	30		LIP
GEO_0174	451323.75	4950510.25	6		LIP
GEO_0175	451335.75	4950510.00	31		LIP
GEO_0176	451307.00	4950510.00	61		LIP
GEO_0177	451337.75	4950509.75	18		LIP
GEO_0178	451331.25	4950509.75	30		LIP
GEO_0179	451303.50	4950509.75	111		LIP
GEO_0180	451330.50	4950509.75	31		LIP
GEO_0181	451323.25	4950509.50	25		LIP
GEO_0182	451336.75	4950509.50	38		LIP
GEO_0183	451339.25	4950509.25	15		LIP
GEO_0184	451303.50	4950509.25	87		LIP
GEO_0185	451312.00	4950509.25	11		LIP
GEO_0186	451322.75	4950509.00	23		LIP
GEO_0187	451336.75	4950508.75	31		LIP
GEO_0188	451340.00	4950508.75	131		LIP
GEO_0189	451298.00	4950508.50	550		LIP
GEO_0190	451305.75	4950508.25	55		LIP
GEO_0191	451312.00	4950508.25	7		LIP
GEO_0192	451324.75	4950508.00	14		LIP
GEO_0193	451321.25	4950508.00	34		LIP



ID #	Easting NAD83 (m)	Northing NAD83 (m)	Ch 3 (mV)	Type	Disposition
GEO_0194	451335.50	4950508.00	9		LIP
GEO_0195	451309.00	4950507.75	69		LIP
GEO_0196	451317.00	4950507.75	165		LIP
GEO_0197	451308.25	4950507.50	88		LIP
GEO_0198	451297.50	4950507.25	43		LIP
GEO_0199	451325.50	4950507.25	27		LIP
GEO_0200	451335.25	4950507.00	33		LIP
GEO_0201	451303.75	4950506.75	24		LIP
GEO_0202	451305.50	4950506.75	25		LIP
GEO_0203	451298.50	4950506.75	12		LIP
GEO_0204	451333.50	4950506.50	18		LIP
GEO_0205	451288.00	4950506.50	91		LIP
GEO_0206	451333.00	4950506.50	38		LIP
GEO_0207	451337.13	4950506.42	5		LIP
GEO_0208	451314.00	4950506.25	16		LIP
GEO_0209	451287.00	4950506.00	22		LIP
GEO_0210	451335.16	4950505.77	96		LIP
GEO_0211	451322.50	4950505.75	10		LIP
GEO_0212	451305.75	4950505.50	13		LIP
GEO_0213	451288.50	4950505.50	12		LIP
GEO_0214	451307.00	4950505.50	11		LIP
GEO_0215	451320.00	4950505.25	7		LIP
GEO_0216	451319.50	4950505.25	8		LIP
GEO_0217	451289.50	4950505.25	13		LIP
GEO_0218	451311.00	4950505.25	48		LIP
GEO_0219	451335.75	4950505.00	158		LIP
GEO_0220	451331.75	4950504.75	8		LIP
GEO_0221	451308.50	4950504.75	6		LIP
GEO_0222	451285.00	4950504.75	193		LIP
GEO_0223	451303.50	4950504.75	37	IVS-SEED	MOVED
GEO_0224	451293.75	4950504.50	5		LIP
GEO_0225	451288.00	4950504.50	57		LIP



ID #	Easting NAD83 (m)	Northing NAD83 (m)	Ch 3 (mV)	Type	Disposition
GEO_0226	451283.25	4950504.50	65		LIP
GEO_0227	451286.25	4950504.25	87		LIP
GEO_0228	451313.50	4950504.00	47		LIP
GEO_0229	451307.50	4950504.00	16		LIP
GEO_0230	451300.75	4950504.00	55	IVS-SEED	MOVED
GEO_0231	451310.00	4950504.00	23		LIP
GEO_0232	451306.75	4950504.00	16		LIP
GEO_0233	451297.75	4950503.75	19	IVS-SEED	MOVED
GEO_0234	451312.50	4950503.75	34		LIP
GEO_0235	451287.75	4950503.75	63		LIP
GEO_0236	451281.05	4950503.75	206		LIP
GEO_0237	451294.50	4950503.50	38	IVS-SEED	MOVED
GEO_0238	451265.50	4950503.50	34		LIP
GEO_0239	451287.00	4950503.25	23		LIP
GEO_0240	451292.00	4950503.25	19	IVS-SEED	MOVED
GEO_0241	451296.25	4950503.00	20		LIP
GEO_0242	451328.00	4950503.00	6		LIP
GEO_0243	451286.25	4950502.50	97		LIP
GEO_0244	451330.50	4950502.50	28		LIP
GEO_0245	451302.00	4950502.00	24		LIP
GEO_0246	451281.75	4950502.00	1889		LIP
GEO_0247	451265.25	4950502.00	35		LIP
GEO_0248	451303.50	4950502.00	20		LIP
GEO_0249	451308.29	4950501.89	15		LIP
GEO_0250	451320.75	4950501.75	6		LIP
GEO_0251	451287.75	4950501.75	25		LIP
GEO_0252	451297.50	4950501.75	8		LIP
GEO_0253	451282.98	4950501.51	119		LIP
GEO_0254	451294.25	4950501.50	130		LIP
GEO_0255	451301.75	4950501.50	23		LIP
GEO_0256	451266.50	4950501.50	18		LIP
GEO_0257	451289.25	4950501.50	127		LIP

ID #	Easting NAD83 (m)	Northing NAD83 (m)	Ch 3 (mV)	Type	Disposition
GEO_0258	451299.00	4950501.50	12		LIP
GEO_0259	451311.75	4950501.25	6		LIP
GEO_0260	451317.00	4950501.25	7		LIP
GEO_0261	451272.75	4950501.00	152		LIP
GEO_0262	451272.00	4950500.75	146		LIP
GEO_0263	451314.24	4950500.33	5		LIP
GEO_0264	451290.50	4950500.25	128		LIP
GEO_0265	451284.00	4950500.25	296		LIP
GEO_0266	451334.50	4950500.25	17		LIP
GEO_0267	451306.65	4950500.15	82		LIP
GEO_0268	451333.75	4950500.00	19		LIP
GEO_0269	451281.25	4950500.00	145		LIP
GEO_0270	451256.50	4950499.75	20		LIP
GEO_0271	451291.75	4950499.75	109		LIP
GEO_0272	451277.00	4950499.64	77		LIP
GEO_0273	451331.75	4950499.25	13		LIP
GEO_0274	451298.50	4950499.25	25		LIP
GEO_0275	451293.50	4950499.25	1300		LIP
GEO_0276	451286.50	4950499.25	82		LIP
GEO_0277	451287.50	4950499.25	91		LIP
GEO_0278	451302.00	4950499.00	820		LIP
GEO_0279	451329.50	4950498.75	37		LIP
GEO_0280	451316.50	4950498.75	22		LIP
GEO_0281	451291.25	4950498.75	56		LIP
GEO_0282	451278.75	4950498.75	2617		LIP
GEO_0283	451333.50	4950498.75	11		LIP
GEO_0284	451289.00	4950498.75	67		LIP
GEO_0285	451297.00	4950498.50	23		LIP
GEO_0286	451282.00	4950498.50	92		LIP
GEO_0287	451278.00	4950498.50	2801		LIP
GEO_0288	451268.50	4950498.50	52		LIP
GEO_0289	451265.00	4950498.25	12		LIP

ID #	Easting NAD83 (m)	Northing NAD83 (m)	Ch 3 (mV)	Type	Disposition
GEO_0290	451320.39	4950498.09	4		LIP
GEO_0291	451309.75	4950498.00	5		LIP
GEO_0292	451304.45	4950498.00	165		LIP
GEO_0293	451327.50	4950498.00	6		LIP
GEO_0294	451275.75	4950498.00	642		LIP
GEO_0295	451315.00	4950498.00	16		LIP
GEO_0296	451297.00	4950497.75	24		LIP
GEO_0297	451285.00	4950497.75	161		LIP
GEO_0298	451300.25	4950497.75	14		LIP
GEO_0299	451284.00	4950497.50	251		LIP
GEO_0300	451264.75	4950497.50	13		LIP
GEO_0301	451288.25	4950497.50	76.99		LIP
GEO_0302	451314.19	4950497.34	7.58		LIP
GEO_0303	451287.50	4950497.25	71.38		LIP
GEO_0304	451299.00	4950497.25	15.46		LIP
GEO_0305	451319.50	4950497.00	5.04		LIP
GEO_0306	451278.00	4950497.00	1779.43		LIP
GEO_0307	451301.50	4950497.00	11.16		LIP
GEO_0308	451324.25	4950496.75	7.06		LIP
GEO_0309	451280.75	4950496.75	177.51		LIP
GEO_0310	451300.75	4950496.75	11.58		LIP
GEO_0311	451278.77	4950496.51	409.23		LIP
GEO_0312	451269.00	4950496.50	15.74		LIP
GEO_0313	451290.75	4950496.50	27.34		LIP
GEO_0314	451282.75	4950496.25	128.53		LIP
GEO_0315	451293.75	4950496.25	515.03		LIP
GEO_0316	451291.50	4950496.00	118.9		LIP
GEO_0317	451258.50	4950496.00	21.33		LIP
GEO_0318	451326.25	4950496.00	49.21		LIP
GEO_0319	451332.00	4950496.00	5.87		LIP
GEO_0320	451303.00	4950495.75	18.51		LIP
GEO_0321	451289.00	4950495.75	39.51		LIP

ID #	Easting NAD83 (m)	Northing NAD83 (m)	Ch 3 (mV)	Type	Disposition
GEO_0322	451312.50	4950495.75	9.79		LIP
GEO_0323	451291.00	4950495.50	85.51		LIP
GEO_0324	451272.75	4950495.50	69.43	NMS	MOVED
GEO_0325	451297.25	4950495.50	7.97		LIP
GEO_0326	451313.50	4950495.50	9.35		LIP
GEO_0327	451283.00	4950495.50	138.66		LIP
GEO_0328	451286.75	4950495.25	42.46		LIP
GEO_0329	451271.50	4950495.00	26.85	NMS	MOVED
GEO_0330	451330.00	4950495.00	32.61		LIP
GEO_0331	451329.25	4950495.00	29.17		LIP
GEO_0332	451265.75	4950494.75	6.7		LIP
GEO_0333	451256.25	4950494.75	139.71		LIP
GEO_0334	451309.00	4950494.75	12.09		LIP
GEO_0335	451272.25	4950494.50	31.76	NMS	MOVED
GEO_0336	451331.75	4950494.50	11.41		LIP
GEO_0337	451283.50	4950494.50	8.34		LIP
GEO_0338	451274.25	4950494.50	31.09	NMS	MOVED
GEO_0339	451268.75	4950494.25	301.22		LIP
GEO_0340	451297.00	4950494.25	6.34		LIP
GEO_0341	451277.75	4950494.25	47.9		LIP
GEO_0342	451273.25	4950494.00	75.97	NMS	MOVED
GEO_0343	451268.00	4950494.00	381.85		LIP
GEO_0344	451285.25	4950494.00	268.08		LIP
GEO_0345	451292.25	4950494.00	40.86		LIP
GEO_0346	451303.25	4950494.00	47.69		LIP
GEO_0347	451296.25	4950494.00	7.28		LIP
GEO_0348	451272.50	4950493.75	40.22	NMS	MOVED
GEO_0349	451328.00	4950493.75	8.26		LIP
GEO_0350	451281.50	4950493.75	39.05		LIP
GEO_0351	451338.00	4950493.75	10.91		LIP
GEO_0352	451279.82	4950493.60	1947.61		LIP
GEO_0353	451321.25	4950493.50	7.37		LIP

ID #	Easting NAD83 (m)	Northing NAD83 (m)	Ch 3 (mV)	Type	Disposition
GEO_0354	451294.00	4950493.50	13.7		LIP
GEO_0355	451283.75	4950493.25	1573.76		LIP
GEO_0356	451262.50	4950493.25	19.1		LIP
GEO_0357	451301.00	4950492.80	72.57		LIP
GEO_0358	451271.00	4950492.75	24.61		LIP
GEO_0359	451266.50	4950492.50	6.69		LIP
GEO_0360	451265.50	4950492.50	6.76		LIP
GEO_0361	451264.00	4950492.25	8.82		LIP
GEO_0362	451255.00	4950492.25	2194.43		LIP
GEO_0363	451306.50	4950492.25	32.57		LIP
GEO_0364	451288.50	4950492.00	16.31		LIP
GEO_0365	451275.50	4950492.00	15.12		LIP
GEO_0366	451311.75	4950492.00	6.7		LIP
GEO_0367	451261.75	4950492.00	9.71		LIP
GEO_0368	451337.50	4950492.00	11		LIP
GEO_0369	451280.50	4950492.00	129.86		LIP
GEO_0370	451296.00	4950491.75	14.23		LIP
GEO_0371	451260.50	4950491.75	14.46		LIP
GEO_0372	451297.25	4950491.75	44.92		LIP
GEO_0373	451268.75	4950491.75	328.55		LIP
GEO_0374	451287.00	4950491.50	41.08		LIP
GEO_0375	451326.75	4950491.50	31.36		LIP
GEO_0376	451284.50	4950491.25	127.09		LIP
GEO_0377	451305.50	4950491.25	36.57		LIP
GEO_0378	451292.75	4950491.25	47.56		LIP
GEO_0379	451268.00	4950491.00	6.19		LIP
GEO_0380	451303.50	4950491.00	12.72		LIP
GEO_0381	451292.00	4950491.00	45.86		LIP
GEO_0382	451261.25	4950490.75	9.09		LIP
GEO_0383	451286.25	4950490.75	10.1		LIP
GEO_0384	451273.75	4950490.75	39.17		LIP
GEO_0385	451287.50	4950490.50	78.86		LIP

ID #	Easting NAD83 (m)	Northing NAD83 (m)	Ch 3 (mV)	Type	Disposition
GEO_0386	451297.25	4950490.50	5.74		LIP
GEO_0387	451282.47	4950490.34	37.5		LIP
GEO_0388	451321.42	4950490.31	4.29		LIP
GEO_0389	451259.00	4950490.25	401.42		LIP
GEO_0390	451308.00	4950490.25	128.2		LIP
GEO_0391	451278.25	4950490.25	44.34		LIP
GEO_0392	451273.75	4950490.00	51.92		LIP
GEO_0393	451259.50	4950490.00	360.99		LIP
GEO_0394	451256.00	4950490.00	561.13		LIP
GEO_0395	451290.25	4950490.00	57.22		LIP
GEO_0396	451289.50	4950489.75	83.39		LIP
GEO_0397	451267.75	4950489.75	11.47		LIP
GEO_0398	451254.16	4950489.65	153.4		LIP
GEO_0399	451295.75	4950489.50	209.76		LIP
GEO_0400	451317.00	4950489.50	6.93		LIP
GEO_0401	451297.50	4950489.25	6.89		LIP
GEO_0402	451293.75	4950489.25	72.98		LIP
GEO_0403	451288.50	4950489.25	146.94		LIP
GEO_0404	451285.25	4950489.25	28.69		LIP
GEO_0405	451300.48	4950489.04	146.28		LIP
GEO_0406	451334.25	4950489.00	6.58		LIP
GEO_0407	451252.75	4950489.00	1252.21		LIP
GEO_0408	451306.75	4950489.00	104.32		LIP
GEO_0409	451295.25	4950489.00	250.78		LIP
GEO_0410	451307.75	4950488.75	91.9		LIP
GEO_0411	451304.75	4950488.75	28.34		LIP
GEO_0412	451301.50	4950488.75	363.64		LIP
GEO_0413	451262.75	4950488.75	10.81		LIP
GEO_0414	451272.21	4950488.50	4.64		LIP
GEO_0415	451263.75	4950488.50	14.14		LIP
GEO_0416	451257.75	4950488.50	5.12		LIP
GEO_0417	451267.00	4950488.50	580.58		LIP

ID #	Easting NAD83 (m)	Northing NAD83 (m)	Ch 3 (mV)	Type	Disposition
GEO_0418	451296.00	4950488.50	167.56		LIP
GEO_0419	451285.25	4950488.50	45.96		LIP
GEO_0420	451309.00	4950488.50	6.19		LIP
GEO_0421	451269.75	4950488.25	11.45		LIP
GEO_0422	451313.50	4950488.25	8.69		LIP
GEO_0423	451264.50	4950488.25	17.35		LIP
GEO_0424	451260.50	4950488.25	26.16		LIP
GEO_0425	451333.25	4950488.00	7.66		LIP
GEO_0426	451260.75	4950487.75	24.98		LIP
GEO_0427	451258.00	4950487.75	7.02		LIP
GEO_0428	451294.01	4950487.57	807.46		LIP
GEO_0429	451287.00	4950487.50	5.91		LIP
GEO_0430	451287.75	4950487.25	6.29		LIP
GEO_0431	451257.50	4950487.00	6.77		LIP
GEO_0432	451261.50	4950487.00	13.73		LIP
GEO_0433	451289.75	4950487.00	18.38		LIP
GEO_0434	451252.02	4950486.78	218.03		LIP
GEO_0435	451306.75	4950486.75	20.06		LIP
GEO_0436	451283.25	4950486.75	8.91		LIP
GEO_0437	451259.84	4950486.59	9258.89		LIP
GEO_0438	451304.25	4950486.25	11.48		LIP
GEO_0439	451310.00	4950486.25	6.3		LIP
GEO_0440	451306.75	4950486.25	20.32		LIP
GEO_0441	451288.50	4950486.25	7.33		LIP
GEO_0442	451287.25	4950486.00	6.01		LIP
GEO_0443	451323.00	4950486.00	13.65	NMS	MOVED
GEO_0444	451328.50	4950486.00	9.16		LIP
GEO_0445	451253.06	4950485.76	976.74		LIP
GEO_0446	451257.50	4950485.75	24.14		LIP
GEO_0447	451322.25	4950485.75	12.95	NMS	MOVED
GEO_0448	451291.25	4950485.50	33.57		LIP
GEO_0449	451294.00	4950485.50	284.87		LIP

ID #	Easting NAD83 (m)	Northing NAD83 (m)	Ch 3 (mV)	Type	Disposition
GEO_0450	451254.31	4950485.43	230.37		LIP
GEO_0451	451263.00	4950485.25	90.17		LIP
GEO_0452	451318.50	4950485.25	6.79		LIP
GEO_0453	451268.00	4950485.25	15.32		LIP
GEO_0454	451258.00	4950485.00	29.38		LIP
GEO_0455	451283.00	4950485.00	17.23		LIP
GEO_0456	451310.75	4950485.00	13.53		LIP
GEO_0457	451296.00	4950485.00	350.32		LIP
GEO_0458	451304.50	4950485.00	8.9		LIP
GEO_0459	451256.50	4950485.00	20.09		LIP
GEO_0460	451322.00	4950484.75	7.92	NMS	MOVED
GEO_0461	451321.50	4950484.75	7.8	NMS	MOVED
GEO_0462	451299.00	4950484.75	9.24		LIP
GEO_0463	451298.00	4950484.50	5.46		LIP
GEO_0464	451311.75	4950484.50	29.88		LIP
GEO_0465	451318.25	4950484.50	5.99		LIP
GEO_0466	451263.50	4950484.50	40.01		LIP
GEO_0467	451260.50	4950484.25	48.54		LIP
GEO_0468	451300.00	4950484.25	268.91		LIP
GEO_0469	451291.25	4950484.25	30.09		LIP
GEO_0470	451285.75	4950484.25	5.85		LIP
GEO_0471	451319.75	4950483.75	5.79		LIP
GEO_0472	451280.25	4950483.75	8.41		LIP
GEO_0473	451304.25	4950483.25	71.27		LIP
GEO_0474	451258.75	4950483.25	35.27		LIP
GEO_0475	451279.00	4950483.00	7.98		LIP
GEO_0476	451290.50	4950483.00	12.39		LIP
GEO_0477	451299.75	4950483.00	31.49		LIP
GEO_0478	451333.50	4950483.00	17.13		LIP
GEO_0479	451263.00	4950482.75	16.04		LIP
GEO_0480	451300.75	4950482.75	25.96		LIP
GEO_0481	451289.00	4950482.75	12.89		LIP



ID #	Easting NAD83 (m)	Northing NAD83 (m)	Ch 3 (mV)	Type	Disposition
GEO_0482	451293.25	4950482.75	60.4		LIP
GEO_0483	451320.50	4950482.50	9.97		LIP
GEO_0484	451280.00	4950482.00	6.03		LIP
GEO_0485	451298.25	4950482.00	18.07		LIP
GEO_0486	451312.25	4950481.75	10.54		LIP
GEO_0487	451303.75	4950481.75	74.35		LIP
GEO_0488	451332.94	4950481.57	53.28		LIP
GEO_0489	451300.25	4950481.50	16.57		LIP
GEO_0490	451315.75	4950481.50	8.14		LIP
GEO_0491	451318.25	4950481.50	8.39		LIP
GEO_0492	451252.04	4950481.35	192.43		LIP
GEO_0493	451253.50	4950481.25	94.02		LIP
GEO_0494	451298.25	4950481.25	15.04		LIP
GEO_0495	451257.00	4950481.25	21.8		LIP
GEO_0496	451326.50	4950481.00	11.53		LIP
GEO_0497	451312.50	4950481.00	6.33		LIP
GEO_0498	451288.00	4950481.00	13.59		LIP
GEO_0499	451255.25	4950481.00	12.65		LIP
GEO_0500	451281.00	4950481.00	5.59		LIP
GEO_0501	451320.00	4950481.00	12.68		LIP
GEO_0502	451297.00	4950481.00	482.93		LIP
GEO_0503	451303.50	4950480.75	32.55		LIP
GEO_0504	451323.25	4950480.75	11.05		LIP
GEO_0505	451332.06	4950480.71	33.89		LIP
GEO_0506	451273.37	4950480.68	4.72		LIP
GEO_0507	451251.46	4950480.51	126.29		LIP
GEO_0508	451302.00	4950480.50	5.77		LIP
GEO_0509	451289.50	4950480.25	18.63		LIP
GEO_0510	451301.00	4950480.25	9.21		LIP
GEO_0511	451250.00	4950480.00	64.63		LIP
GEO_0512	451261.75	4950480.00	135.43		LIP
GEO_0513	451258.00	4950480.00	25.53		LIP

ID #	Easting NAD83 (m)	Northing NAD83 (m)	Ch 3 (mV)	Type	Disposition
GEO_0514	451306.25	4950480.00	15.44		LIP
GEO_0515	451276.75	4950479.75	5.75		LIP
GEO_0516	451247.00	4950479.75	60.24		LIP
GEO_0517	451256.00	4950479.75	41.76		LIP
GEO_0518	451330.00	4950479.50	29.02		LIP
GEO_0519	451244.50	4950479.50	3086.22		LIP
GEO_0520	451307.50	4950479.50	6.33		LIP
GEO_0521	451289.75	4950479.50	21.33		LIP
GEO_0522	451297.50	4950479.50	21.09		LIP
GEO_0523	451309.50	4950479.25	22.49		LIP
GEO_0524	451303.25	4950479.25	55.7		LIP
GEO_0525	451320.75	4950479.00	48.9		LIP
GEO_0526	451317.00	4950479.00	322.98		LIP
GEO_0527	451294.00	4950479.00	96.53		LIP
GEO_0528	451246.50	4950479.00	237.75		LIP
GEO_0529	451303.50	4950478.75	54.75		LIP
GEO_0530	451312.50	4950478.75	12.94		LIP
GEO_0531	451249.75	4950478.75	128.47		LIP
GEO_0532	451310.00	4950478.50	14.34		LIP
GEO_0533	451256.00	4950478.50	8.59		LIP
GEO_0534	451325.50	4950478.50	13.83		LIP
GEO_0535	451312.75	4950478.25	12.96		LIP
GEO_0536	451254.75	4950478.25	15.21		LIP
GEO_0537	451318.50	4950478.25	33.68		LIP
GEO_0538	451297.75	4950478.25	5.65		LIP
GEO_0539	451267.25	4950478.25	149.59		LIP
GEO_0540	451247.00	4950478.25	21.8		LIP
GEO_0541	451301.00	4950478.00	25.95		LIP
GEO_0542	451258.25	4950478.00	222.9		LIP
GEO_0543	451245.75	4950478.00	2167.9		LIP
GEO_0544	451312.50	4950477.75	13.47		LIP
GEO_0545	451280.00	4950477.75	51.56		LIP

ID #	Easting NAD83 (m)	Northing NAD83 (m)	Ch 3 (mV)	Type	Disposition
GEO_0546	451249.75	4950477.50	57.69		LIP
GEO_0547	451333.00	4950477.50	10.18		LIP
GEO_0548	451302.50	4950477.50	8.89		LIP
GEO_0549	451319.75	4950477.25	102.92		LIP
GEO_0550	451323.50	4950477.25	53.99		LIP
GEO_0551	451250.50	4950477.25	46.46		LIP
GEO_0552	451297.25	4950477.25	21.15		LIP
GEO_0553	451327.75	4950477.25	6.73		LIP
GEO_0554	451331.25	4950477.00	6.3		LIP
GEO_0555	451252.00	4950477.00	41.01		LIP
GEO_0556	451326.25	4950477.00	16.68		LIP
GEO_0557	451302.00	4950477.00	8.43		LIP
GEO_0558	451320.50	4950477.00	88.94		LIP
GEO_0559	451307.25	4950477.00	135.48		LIP
GEO_0560	451322.00	4950477.00	131.68		LIP
GEO_0561	451312.75	4950476.75	9		LIP
GEO_0562	451317.00	4950476.75	9.37		LIP
GEO_0563	451249.50	4950476.75	54.2		LIP
GEO_0564	451294.50	4950476.75	39.92		LIP
GEO_0565	451333.11	4950476.52	7.24		LIP
GEO_0566	451309.50	4950476.50	17.04		LIP
GEO_0567	451280.00	4950476.50	33.43		LIP
GEO_0568	451290.50	4950476.50	22.81		LIP
GEO_0569	451297.75	4950476.50	29.7		LIP
GEO_0570	451310.75	4950476.50	56.93		LIP
GEO_0571	451327.50	4950476.25	27.7		LIP
GEO_0572	451264.75	4950476.25	28.77		LIP
GEO_0573	451250.95	4950476.09	14.91		LIP
GEO_0574	451325.25	4950476.00	10.52		LIP
GEO_0575	451277.00	4950476.00	12.87		LIP
GEO_0576	451288.50	4950476.00	6.35		LIP
GEO_0577	451249.00	4950476.00	75.84		LIP

ID #	Easting NAD83 (m)	Northing NAD83 (m)	Ch 3 (mV)	Type	Disposition
GEO_0578	451240.00	4950476.00	10.16		LIP
GEO_0579	451300.00	4950475.75	21.14		LIP
GEO_0580	451246.25	4950475.75	49.04		LIP
GEO_0581	451302.00	4950475.75	15.28		LIP
GEO_0582	451301.00	4950475.75	10.14		LIP
GEO_0583	451296.00	4950475.75	164.91		LIP
GEO_0584	451294.00	4950475.50	77.15		LIP
GEO_0585	451271.25	4950475.50	5.57		LIP
GEO_0586	451327.00	4950475.50	20.01		LIP
GEO_0587	451312.00	4950475.50	14.34		LIP
GEO_0588	451291.75	4950475.50	20.86		LIP
GEO_0589	451281.75	4950475.50	15.69		LIP
GEO_0590	451307.71	4950475.36	25.46		LIP
GEO_0591	451297.75	4950475.25	13.74		LIP
GEO_0592	451273.25	4950475.00	6.8		LIP
GEO_0593	451325.75	4950475.00	6.83		LIP
GEO_0594	451322.75	4950475.00	25.59		LIP
GEO_0595	451320.50	4950475.00	37.04		LIP
GEO_0596	451278.25	4950475.00	30.46		LIP
GEO_0597	451314.03	4950474.99	87.34		LIP
GEO_0598	451328.50	4950474.75	21.85		LIP
GEO_0599	451321.00	4950474.75	35.69		LIP
GEO_0600	451306.50	4950474.75	141.8		LIP
GEO_0601	451303.00	4950474.75	46.57		LIP
GEO_0602	451249.25	4950474.50	64.42		LIP
GEO_0603	451320.50	4950474.25	35.4		LIP
GEO_0604	451280.00	4950474.25	402.82		LIP
GEO_0605	451319.50	4950474.25	30.15		LIP
GEO_0606	451273.75	4950474.25	9.66		LIP
GEO_0607	451282.75	4950474.25	11.16		LIP
GEO_0608	451272.25	4950474.00	6.16		LIP
GEO_0609	451276.50	4950474.00	16.92		LIP

ID #	Easting NAD83 (m)	Northing NAD83 (m)	Ch 3 (mV)	Type	Disposition
GEO_0610	451324.75	4950474.00	37.03		LIP
GEO_0611	451297.75	4950474.00	97.63		LIP
GEO_0612	451271.25	4950474.00	12.08		LIP
GEO_0613	451258.50	4950473.75	43.77		LIP
GEO_0614	451265.75	4950473.75	6.19		LIP
GEO_0615	451322.25	4950473.75	10.58		LIP
GEO_0616	451316.50	4950473.75	7.7		LIP
GEO_0617	451296.25	4950473.75	8.8		LIP
GEO_0618	451314.50	4950473.75	211.99		LIP
GEO_0619	451310.00	4950473.50	59.47		LIP
GEO_0620	451260.75	4950473.50	7.28		LIP
GEO_0621	451278.75	4950473.50	111.66		LIP
GEO_0622	451275.75	4950473.25	31		LIP
GEO_0623	451330.00	4950473.25	15.85		LIP
GEO_0624	451301.78	4950473.23	28.36		LIP
GEO_0625	451304.53	4950473.13	104.02		LIP
GEO_0626	451303.50	4950473.00	200.24		LIP
GEO_0627	451297.75	4950473.00	21.8		LIP
GEO_0628	451294.50	4950473.00	127.7		LIP
GEO_0629	451281.00	4950472.75	6.06		LIP
GEO_0630	451310.50	4950472.75	49.86		LIP
GEO_0631	451314.84	4950472.65	111.78		LIP
GEO_0632	451318.88	4950472.62	288.85		LIP
GEO_0633	451283.75	4950472.50	118.01		LIP
GEO_0634	451320.25	4950472.50	40.61		LIP
GEO_0635	451328.50	4950472.50	48.86		LIP
GEO_0636	451247.60	4950472.35	117.63		LIP
GEO_0637	451292.00	4950472.25	16.47		LIP
GEO_0638	451306.50	4950472.25	21.41		LIP
GEO_0639	451330.25	4950472.25	14.23		LIP
GEO_0640	451296.50	4950472.00	1943.18		LIP
GEO_0641	451278.00	4950472.00	8.94		LIP

ID #	Easting NAD83 (m)	Northing NAD83 (m)	Ch 3 (mV)	Type	Disposition
GEO_0642	451303.63	4950471.98	88.88		LIP
GEO_0643	451289.25	4950471.75	15.97		LIP
GEO_0644	451299.50	4950471.75	31.64		LIP
GEO_0645	451324.00	4950471.75	322.69		LIP
GEO_0646	451278.50	4950471.75	8.53		LIP
GEO_0647	451265.00	4950471.75	13.63		LIP
GEO_0648	451308.25	4950471.75	6.9		LIP
GEO_0649	451297.75	4950471.50	17.88		LIP
GEO_0650	451327.00	4950471.25	55.94		LIP
GEO_0651	451280.50	4950471.25	19.39		LIP
GEO_0652	451317.37	4950471.06	16.55		LIP
GEO_0653	451277.00	4950471.00	7.26		LIP
GEO_0654	451314.75	4950471.00	30.06		LIP
GEO_0655	451262.75	4950470.75	7.13		LIP
GEO_0656	451320.00	4950470.75	13.66		LIP
GEO_0657	451329.25	4950470.75	13.43		LIP
GEO_0658	451300.75	4950470.75	50.74		LIP
GEO_0659	451299.00	4950470.75	8.09		LIP
GEO_0660	451255.02	4950470.63	11.75		LIP
GEO_0661	451279.25	4950470.50	6.15		LIP
GEO_0662	451331.50	4950470.50	64.13		LIP
GEO_0663	451310.75	4950470.50	5.31		LIP
GEO_0664	451322.75	4950470.25	23.59		LIP
GEO_0665	451298.25	4950470.25	9.39		LIP
GEO_0666	451287.50	4950470.25	6.03		LIP
GEO_0667	451319.75	4950470.00	17.15		LIP
GEO_0668	451323.75	4950470.00	17.17		LIP
GEO_0669	451331.50	4950469.75	48.73		LIP
GEO_0670	451325.75	4950469.75	14.77		LIP
GEO_0671	451311.25	4950469.75	5.83		LIP
GEO_0672	451267.00	4950469.75	14.2		LIP
GEO_0673	451254.75	4950469.75	19.24		LIP

ID #	Easting NAD83 (m)	Northing NAD83 (m)	Ch 3 (mV)	Type	Disposition
GEO_0674	451314.61	4950469.63	12.47		LIP
GEO_0675	451265.75	4950469.50	14.68		LIP
GEO_0676	451303.75	4950469.50	37.39		LIP
GEO_0677	451327.75	4950469.50	124.65		LIP
GEO_0678	451322.25	4950469.00	94.24		LIP
GEO_0679	451262.50	4950469.00	104.07		LIP
GEO_0680	451300.00	4950469.00	26.88		LIP
GEO_0681	451300.75	4950469.00	20.05		LIP
GEO_0682	451299.25	4950469.00	62.79		LIP
GEO_0683	451297.75	4950469.00	24.17		LIP
GEO_0684	451320.00	4950468.75	13.19		LIP
GEO_0685	451297.75	4950468.50	14.01		LIP
GEO_0686	451277.00	4950468.50	12.77		LIP
GEO_0687	451265.25	4950468.50	26.32		LIP
GEO_0688	451263.75	4950468.50	91.86		LIP
GEO_0689	451300.75	4950468.50	17.01		LIP
GEO_0690	451263.00	4950468.25	112.27		LIP
GEO_0691	451280.75	4950468.25	32.21		LIP
GEO_0692	451325.75	4950468.25	98.76		LIP
GEO_0693	451322.50	4950468.25	91.2		LIP
GEO_0694	451305.00	4950468.00	79.12		LIP
GEO_0695	451273.00	4950467.50	11.44		LIP
GEO_0696	451261.50	4950467.50	597.51		LIP
GEO_0697	451327.00	4950467.25	181.18		LIP
GEO_0698	451277.75	4950467.25	6.74		LIP
GEO_0699	451293.00	4950467.25	7.68		LIP
GEO_0700	451298.00	4950467.00	6		LIP
GEO_0701	451314.50	4950466.75	14.27		LIP
GEO_0702	451270.75	4950466.75	5.2		LIP
GEO_0703	451320.75	4950466.75	65.5		LIP
GEO_0704	451301.50	4950466.75	6.74		LIP
GEO_0705	451329.75	4950466.75	88.07		LIP

ID #	Easting NAD83 (m)	Northing NAD83 (m)	Ch 3 (mV)	Type	Disposition
GEO_0706	451283.25	4950466.50	16.73		LIP
GEO_0707	451265.00	4950466.25	7.32		LIP
GEO_0708	451324.30	4950466.17	149.07		LIP
GEO_0709	451279.62	4950466.08	4.64		LIP
GEO_0710	451300.75	4950466.00	9.63		LIP
GEO_0711	451281.27	4950465.88	3.92		LIP
GEO_0712	451329.25	4950465.75	63.17		LIP
GEO_0713	451327.00	4950465.50	86.44		LIP
GEO_0714	451316.75	4950465.50	6.84		LIP
GEO_0715	451275.25	4950465.50	35.82		LIP
GEO_0716	451309.00	4950465.50	14.7		LIP
GEO_0717	451287.00	4950465.25	10.68		LIP
GEO_0718	451276.75	4950465.25	7.73		LIP
GEO_0719	451287.75	4950465.25	6.14		LIP
GEO_0720	451264.75	4950465.25	5.97		LIP
GEO_0721	451322.25	4950465.00	22.41		LIP
GEO_0722	451287.50	4950464.75	6.56		LIP
GEO_0723	451328.25	4950464.75	179.96		LIP
GEO_0724	451330.12	4950464.50	77.49		LIP
GEO_0725	451315.75	4950464.50	39.06		LIP
GEO_0726	451273.50	4950464.50	215.17		LIP
GEO_0727	451319.75	4950464.00	110.53		LIP
GEO_0728	451317.00	4950464.00	20.37		LIP
GEO_0729	451328.50	4950463.75	93.36		LIP
GEO_0730	451264.00	4950463.75	7.5		LIP
GEO_0731	451290.75	4950463.75	14.62		LIP
GEO_0732	451288.25	4950463.50	5.99		LIP
GEO_0733	451268.75	4950463.25	5.73		LIP
GEO_0734	451268.00	4950463.25	5.81		LIP
GEO_0735	451291.00	4950462.50	29.34		LIP
GEO_0736	451281.25	4950462.50	13.28		LIP
GEO_0737	451291.50	4950462.25	25.73		LIP



ID #	Easting NAD83 (m)	Northing NAD83 (m)	Ch 3 (mV)	Type	Disposition
GEO_0738	451273.25	4950462.25	102.05		LIP
GEO_0739	451252.50	4950462.00	6.64		LIP
GEO_0740	451285.25	4950462.00	66.67		LIP
GEO_0741	451328.75	4950461.75	17.43		LIP
GEO_0742	451274.75	4950461.75	6.65		LIP
GEO_0743	451281.50	4950461.75	12.08		LIP
GEO_0744	451329.25	4950461.50	18.19		LIP
GEO_0745	451263.50	4950461.50	5.36		LIP
GEO_0746	451251.50	4950461.50	11.83		LIP
GEO_0747	451292.00	4950461.25	24.47		LIP
GEO_0748	451291.00	4950461.25	24.89		LIP
GEO_0749	451284.75	4950461.00	100.48		LIP
GEO_0750	451279.50	4950460.75	29.34		LIP
GEO_0751	451289.50	4950460.75	14.67		LIP
GEO_0752	451262.00	4950460.75	15.01		LIP
GEO_0753	451261.25	4950460.75	13.98		LIP
GEO_0754	451292.75	4950460.50	33.11		LIP
GEO_0755	451265.25	4950460.50	10.95		LIP
GEO_0756	451272.00	4950460.50	7.32		LIP
GEO_0757	451253.00	4950460.50	6.2		LIP
GEO_0758	451280.00	4950460.25	34.65		LIP
GEO_0759	451290.75	4950460.00	16.64		LIP
GEO_0760	451263.75	4950460.00	9.68		LIP
GEO_0761	451266.00	4950460.00	107.53		LIP
GEO_0762	451292.25	4950460.00	49.88		LIP
GEO_0763	451261.75	4950459.75	10.91		LIP
GEO_0764	451278.00	4950459.75	6.15		LIP
GEO_0765	451292.00	4950459.50	38.36		LIP
GEO_0766	451260.00	4950459.25	30.59		LIP
GEO_0767	451283.08	4950459.10	247.34		LIP
GEO_0768	451291.00	4950459.00	16.89		LIP
GEO_0769	451282.00	4950459.00	493.76		LIP

ID #	Easting NAD83 (m)	Northing NAD83 (m)	Ch 3 (mV)	Type	Disposition
GEO_0770	451287.25	4950459.00	95.1		LIP
GEO_0771	451255.50	4950458.50	2082		LIP
GEO_0772	451271.00	4950458.50	6.31		LIP
GEO_0773	451291.75	4950458.25	14.49		LIP
GEO_0774	451263.50	4950458.00	12.43		LIP
GEO_0775	451289.25	4950458.00	166.02		LIP
GEO_0776	451285.25	4950458.00	15		LIP
GEO_0777	451265.50	4950457.75	6.95		LIP
GEO_0778	451258.97	4950457.62	113.9		LIP
GEO_0779	451274.50	4950457.50	7.16		LIP
GEO_0780	451255.50	4950457.25	2140.47		LIP
GEO_0781	451264.25	4950457.25	5.37		LIP
GEO_0782	451264.75	4950457.25	5.62		LIP
GEO_0783	451269.50	4950457.25	5.6		LIP
GEO_0784	451272.25	4950457.00	42.71		LIP
GEO_0785	451266.00	4950457.00	34.68		LIP
GEO_0786	451267.25	4950456.75	9744.13		LIP
GEO_0787	451260.75	4950456.75	247.45		LIP
GEO_0788	451268.00	4950456.75	8471.88		LIP
GEO_0789	451286.00	4950456.75	97.57		LIP
GEO_0790	451274.00	4950456.75	6.95		LIP
GEO_0791	451282.25	4950456.75	23.84	NMS	MOVED
GEO_0792	451278.25	4950456.50	206.34	NMS	MOVED
GEO_0793	451271.75	4950456.25	50.12		LIP
GEO_0794	451265.75	4950456.25	24.94		LIP
GEO_0795	451281.00	4950456.25	42.57	NMS	MOVED
GEO_0796	451258.00	4950456.00	854.59		LIP
GEO_0797	451260.25	4950456.00	185.58		LIP
GEO_0798	451269.00	4950455.50	18.02		LIP
GEO_0799	451284.00	4950455.50	10.36		LIP
GEO_0800	451278.50	4950455.50	222.22	NMS	MOVED
GEO_0801	451288.75	4950455.50	80.29		LIP

ID #	Easting NAD83 (m)	Northing NAD83 (m)	Ch 3 (mV)	Type	Disposition
GEO_0802	451284.25	4950455.00	11.31		LIP
GEO_0803	451267.25	4950455.00	675.6		LIP
GEO_0804	451274.75	4950455.00	21.65		LIP
GEO_0805	451260.63	4950454.99	68.61		LIP
GEO_0806	451285.75	4950454.75	54.22		LIP
GEO_0807	451280.00	4950454.50	20.51	NMS	MOVED
GEO_0808	451277.50	4950454.50	325.67		LIP
GEO_0809	451272.75	4950454.25	219.29		LIP
GEO_0810	451264.93	4950454.23	126.05		LIP
GEO_0811	451259.03	4950454.10	118.63		LIP
GEO_0812	451266.75	4950454.00	114.27		LIP
GEO_0813	451277.25	4950454.00	324.85		LIP
GEO_0814	451286.50	4950454.00	70.91		LIP
GEO_0815	451276.25	4950454.00	151.27		LIP
GEO_0816	451269.50	4950454.00	13.08		LIP
GEO_0817	451263.00	4950454.00	667.54		LIP
GEO_0818	451261.75	4950453.75	184.57		LIP
GEO_0819	451271.00	4950453.50	16.5		LIP
GEO_0820	451276.50	4950453.25	120.29		LIP
GEO_0821	451277.50	4950453.25	290.8		LIP
GEO_0822	451281.75	4950453.25	154.16	NMS	MOVED
GEO_0823	451263.90	4950453.07	286.29		LIP
GEO_0824	451273.00	4950453.00	299.93		LIP
GEO_0825	451260.50	4950453.00	313.84		LIP
GEO_0826	451277.00	4950452.75	146.25		LIP
GEO_0827	451276.25	4950452.75	140.48		LIP
GEO_0828	451270.75	4950452.50	13.19		LIP
GEO_0829	451269.00	4950452.25	28.33		LIP
GEO_0830	451279.25	4950452.25	48.19		LIP
GEO_0831	451280.00	4950452.25	68.87		LIP
GEO_0832	451264.75	4950452.25	347.53		LIP
GEO_0833	451268.25	4950451.25	37.97		LIP

ID #	Easting NAD83 (m)	Northing NAD83 (m)	Ch 3 (mV)	Type	Disposition
GEO_0834	451267.25	4950451.00	40.18		LIP
GEO_0835	451266.00	4950451.00	42.72		LIP
GEO_0836	451272.25	4950451.00	85.66		LIP
GEO_0837	451269.75	4950450.50	57.63		LIP
GEO_0838	451271.75	4950450.00	62.39		LIP
GEO_0839	451267.75	4950450.00	21.92		LIP

## **Appendix C**

C – Mag and Flag Dig Sheet

Dig / Flag #	Location		Depth	Description	Classification
	Easting	Northing			
04	451242.958	4950468.207	10 cm	Sheet metal 1.5kg	NMS
20	451251.319	4950502.856	10cm	Rebar x 2 1kg	NMS
21	451255.397	4950503.263	2.5cm	Fence wire .5kg	NMS
22	451255.614	4950505.817	2.5cm	Fence wire 1kg	NMS
24	451253.967	4950506.302	2.5cm	Rebar .5kg	NMS
26	451252.178	4950508.487	5cm	Nails and Staple .5kg	NMS
30	451255.571	4950512.269	5cm	Frag 2.5cmx5cm	MS LIP
31	451256.025	4950514.199	5cm	Frag 3cmx8cm	MS LIP
35	451254.927	4950530.622	1.5cm	Frag 2cmx2.5cm	MS LIP
50	451279.073	4950522.900	5cm	Soda can	NMS
60	451291.771	4950507.880	50cm	Plastic coated wire .5kg	NMS
80	451307.888	4950517.262	30cm	Trash pit, nails,soda cans 1.5kg	NMS
100	451317.764	4950526.947	20cm	Electric Balist for light 2.5kg	NMS
128	451289.401	4950529.219	18cm	Soda can	NMS
139	451320.877	4950545.832	5cm	Rebar 15cm 1kg	NMS
142	451331.111	4950544.522	2.5cm	Electric wire .5kg	NMS
146	451300.690	4950543.465	6cm	Bolt 25cm 1kg	NMS
148	451282.827	4950540.427	40cm	Rebar 15cm 1kg	NMS
153	451276.573	4950540.115	Surface -- 5cm	Rebar 1.5m 6kg	NMS
154	451259.554	4950546.129	12cm	Excavator tooth 10kg	NMS

\*\*\*\*LIP -- Left in Place

## **Appendix D**

### **D - Site Photos**



PHOTO 1 - Vegetation conditions on site.



PHOTO 2 - Vegetation Removal operations in Area 1.





PHOTO 3 - EM 61 on Cart.



PHOTO 4 - EM 61 in Stretcher Mode.



PHOTO 5 - Constructed Road Access from gate to Area 1.



PHOTO 6 - Constructed Road Access from gate to Area 1.



PHOTO 7 - Barrier Emplacement to mitigate encroachment (View of Area 2).



PHOTO 8 -  
Barrier Emplacement to  
mitigate encroachment.





PHOTO 9 - Construction and Demolition Debris.



PHOTO 10 - Removal of Construction and Demolition Debris in Area 1.



PHOTO 11 - Contents of Calibration Grids



PHOTO 12 - Contents of Calibration Grids



PHOTO 13 - Calibration Grid Excavation



PHOTO 14 - Contents of Calibration Grids





PHOTO 15 - Calibration Grid Excavation



PHOTO 16 - Typical Contents of Calibration Grids with a notebook and standard size pen for size comparison.



PHOTO 17 - Calibration Grid 1



PHOTO 18 - Remediated Site (View of Area 1 from Area 2).





PHOTO 19 - Remediated Site (View of Area 2 from Area 1).



PHOTO 20 - Remediated Site (View of Area 1 from Area 2).

## **Appendix E**

### **E - Report Examples**



## UXO Daily Report

Project Details	
<b>Project Name:</b> Dartmouth CCC <b>Project Number:</b> 10103.20 <b>Contract Number:</b> 45345	<b>Date Worked Performed:</b> October 12, 2013 <b>Date Submitted:</b> October 12, 2013 <b>Prepared By:</b> Doug Payton

Personnel Attendance				
Employee Name	Position	Previous Hours Worked	Hours Worked Today	Total Hours Worked
Rick Roberts	UXO Project Leader	10	1	11
Doug Payton	UXO Field Supervisor	113	12	125
Rock Blouin	UXO Tech. Supervisor	101	11	112
Eric Boudreau	UXO Technician	90	11	101
Mike West	Project Geophysicist	90	11	101
Mark West	Excavator op	60.5	11	71.5
Paul Toomey	UXO QC Specialist / Safety Officer	43	12	55
Asplundh	Veg Removal Subcontractor		On Site	
	<b>Total</b>	<b>507.5</b>	<b>69</b>	<b>576.5</b>

Summary of Activities	
<b>Activities Performed</b> Activity #1: Vegetation Removal  Activity #2: : Surface Sweep  Activity #3 : Geophysical Survey  Activity #4: Sub-Surface Clearance	<b>General Remarks</b> Activity 1: Worked with Chipper crew as sentries while they worked. They were on site at 0630, started work 0700. Vegetation Removal complete. Activity 2: Team conducted more surface sweeps on areas that were veg removed.  Activity 3: 3 Geophysical survey holes completed with UXO aid/support  Activity 4: Four holes for Calibration grids completed.
<b>Weather Conditions</b> Morning: 6 Afternoon: 22	<b>Comments:</b> Sunny Cool  Sunrise – 07:24 Sunset – 18:40



## UXO Daily Report

### UXOPL/FS Comments

The DCC Rep was on site for a visit today.

Mr. Shaun Pelkey was on site to discuss procedures with FS.

### Tomorrows Planned work

Be on site for 0800L To begin Mag and Flag ops, and complete Detector aided surface sweep of North corridor.

### Call-Up Progress

#### Overall Progress

**Task 1 – Mobilization.**  
(100% Completed).

**Task 2 – Site set up/Sweep**  
(95% Completed )

**Task 3 - Vegetation removal**  
(100% complete)

**Task 4- Surface Clearance**  
(97% complete)

**Task 5– Geophysical Survey/Mag and Flag**  
(100% / 20%complete)

**Task 6- Calibration Grid Excavation**  
(100% complete)

**Task 7- Demobilization**  
(% complete)

**Task 8- Deliverables**  
(% complete)





## UXO Daily Report

Materials Management				
<b>MEC Discovered?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No			<b>MEC Screening Performed?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No	
Inert	Safe-To-Move	Blow-In-Place	MS Screened (kg)	NMS Screened (kg)
0	0	0	0	0
EOID Sheet References:			AS Screened (kg)	
			MS Shipped (kg)	NMS (kg)
			0	230
			AS Shipped (kg)	0
<b>Summary Table</b>				
Date	UXO (BIP) Discovered	UXO (STM) Discovered	Munitions Scrap (Kg)	Non-Munitions Scrap (Kg)
03-Oct	0	0	0	1590.00
04-Oct	0	0	0	5454.00
07-Oct	0	0	0	20
08-Oct	0	0	0	25
09-Oct	0	0	0	18
10-Oct	0	0	0	250
11-Oct	0	0	0	40909.00
12-Oct	0	0	0	230.00
<b>Totals</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>48396.0909</b>



## UXO Daily Report

Health & Safety	
<b>Safety Briefing Performed?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No	<b>Work Site Incidence?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
<b>Safety Inspections Performed?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Near Miss <input type="radio"/> Personnel Injury
<input checked="" type="checkbox"/> Vehicle <input checked="" type="checkbox"/> Work Site <input checked="" type="checkbox"/> Equipment <input checked="" type="checkbox"/> MEC Screening <input type="checkbox"/> PPE <input type="checkbox"/> Other	<input type="checkbox"/> First Aid <input type="checkbox"/> Medical <input type="checkbox"/> Lost Time
<b>Compliance?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No	<b>Training Performed?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
<input type="checkbox"/> Orientation <input type="checkbox"/> Site Specific <input type="checkbox"/> PPE	
<b>Additional Details:</b> <ul style="list-style-type: none"> <li>SO conducted briefing today, see attached files</li> </ul>	

Quality Control	
<b>QC Checks Performed?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No	<b>Non-Conformance Issues?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
<input checked="" type="checkbox"/> Geophysical <input type="checkbox"/> Equipment <input checked="" type="checkbox"/> Veg Removal <input checked="" type="checkbox"/> Surface Clr. <input checked="" type="checkbox"/> Intrusive Clr.	<input type="checkbox"/> Critical <input type="checkbox"/> Major <input checked="" type="checkbox"/> Minor
<b>Additional Details:</b> Gemtec QC seeds placed.  QC seed #2 placed at 20 T 0451306 4950570 this is in the North area to be Surfaced swept fully as discussed with DCC.  QC seed #3 placed at 20 T 0451320 4950532 This is in the center area that is going to be Mag and Flagged.  QC seed #4 placed in calibration pit #2 to be found during sifting ops. ( Found today during sifting ops)	



## UXO Daily Report

<b>PM Comments</b> Work will continue on Mag and Flag operations on 13 Oct 13. Monday is planned as an off day. It is requested that the DCC Rep confirm acceptance of the Site Sweep, Vegetation Removal, Surface Clearance, EM Survey and Calibration Grid Excavation as well as Calibration Grid Remediation. Acceptance or notification of non-acceptance of the aforementioned WBS Items is requested no later than 13 1201 Oct 13. Acceptance of Mag and Flag will be requested upon notification of completion from the UXO FS. This may occur on 13 Oct 13 or will occur on 15 Oct 13.	
<b>Approval</b>	
<b>GEMTEC Project Manager:</b> Shaun Pelkey <b>Date:</b> October 12, 2013 <b>Signature:</b> <i>SPelkey</i>	<b>DCC Representative:</b> Chuck Wilson <b>Date:</b> <i>Oct 15, 2013</i> <b>Signature:</b> <i>CWilson</i>

## Geophysical Daily Checklist



Project Details																																																																																																												
Project Name: <u>Burnside</u>					Prepared By: <u>Sean Scrivens, P. Geo.</u>																																																																																																							
Project Number: <u>N/A</u>					Date: <u>October 10, 2013</u>																																																																																																							
Contract Number: <u>NS137459</u>					Current Work Area(s): <u>Burnside Industrial Park</u>																																																																																																							
Daily / Overall Progress																																																																																																												
Survey Type: <u>Characterization</u>					Total Survey Progress (Ha): <u>0.54</u>																																																																																																							
Coverage Requirement: <u>100.0%</u>					Daily Progress (Ha): <u>0.01</u>																																																																																																							
Total ROI Area (Ha): <u>0.54</u>					Percent Completion: <u>100.0%</u>																																																																																																							
Project Equipment Baselines																																																																																																												
<div style="display: flex; justify-content: space-between;"> <div> <b>Electromagnetic Sensors</b> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th></th> <th>Coil #1</th> <th>Coil #2</th> <th>Coil #3</th> <th>Coil #4</th> <th>Coil #5</th> </tr> </thead> <tbody> <tr> <td>IR Base Value (mV):</td> <td>197.11</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>Avg Static Noise (mV):</td> <td>0.36</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>Avg Survey Noise (mV):</td> <td>0.80</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table> </div> <div> <b>GPS Rovers</b> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th></th> <th>Unit #1</th> <th>Unit #2</th> <th>Unit #3</th> </tr> </thead> <tbody> <tr> <td>Avg Rover Accuracy (cm):</td> <td>1.0</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>Avg Rover Scatter (cm):</td> <td>0.8</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>Positional Lag (samples):</td> <td>3</td> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table> </div> </div>											Coil #1	Coil #2	Coil #3	Coil #4	Coil #5	IR Base Value (mV):	197.11	N/A	N/A	N/A	N/A	Avg Static Noise (mV):	0.36	N/A	N/A	N/A	N/A	Avg Survey Noise (mV):	0.80	N/A	N/A	N/A	N/A		Unit #1	Unit #2	Unit #3	Avg Rover Accuracy (cm):	1.0	N/A	N/A	Avg Rover Scatter (cm):	0.8	N/A	N/A	Positional Lag (samples):	3	N/A	N/A																																																											
	Coil #1	Coil #2	Coil #3	Coil #4	Coil #5																																																																																																							
IR Base Value (mV):	197.11	N/A	N/A	N/A	N/A																																																																																																							
Avg Static Noise (mV):	0.36	N/A	N/A	N/A	N/A																																																																																																							
Avg Survey Noise (mV):	0.80	N/A	N/A	N/A	N/A																																																																																																							
	Unit #1	Unit #2	Unit #3																																																																																																									
Avg Rover Accuracy (cm):	1.0	N/A	N/A																																																																																																									
Avg Rover Scatter (cm):	0.8	N/A	N/A																																																																																																									
Positional Lag (samples):	3	N/A	N/A																																																																																																									
Date of Last SPO: <u>N/A</u>					GPS Control Point: <u>451320.797 E &amp; 4950493.445 N</u>																																																																																																							
Project Data Quality Objectives					Daily Quality Control Results																																																																																																							
<b>EM Survey System DQO's</b> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th></th> <th>Limit</th> <th>Subset</th> </tr> </thead> <tbody> <tr> <td>Background Noise (mV)</td> <td>1.5</td> <td>95%</td> </tr> <tr> <td>Cable Shake Spikes (mV)</td> <td>10.0</td> <td>100%</td> </tr> <tr> <td>Personnel Test Response (mV)</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>Inst. Response Difference (%)</td> <td>10%</td> <td>100%</td> </tr> <tr> <td>Filtered Survey Noise (mV)</td> <td>3.0</td> <td>95%</td> </tr> <tr> <td>Deviation in Repeatability (%)</td> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table> <p><small>*Note: All EM tests conducted on Channel 10 data</small></p>						Limit	Subset	Background Noise (mV)	1.5	95%	Cable Shake Spikes (mV)	10.0	100%	Personnel Test Response (mV)	N/A	N/A	Inst. Response Difference (%)	10%	100%	Filtered Survey Noise (mV)	3.0	95%	Deviation in Repeatability (%)	N/A	N/A	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th colspan="6">Electromagnetic Sensors (Ch 10)</th> </tr> <tr> <th></th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> </tr> </thead> <tbody> <tr> <td colspan="6" style="background-color: #e6f2e6;"><b>AM Functional Tests</b></td> </tr> <tr> <td>Static Background Noise (% &gt; DQO)</td> <td>0.00</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>Cable Shake Spikes (mV)</td> <td>0.00</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>Personnel Test (mV)</td> <td>0.00</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>Inst. Response Difference (mV)</td> <td>201.83</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td colspan="6" style="background-color: #e6f2e6;"><b>PM Functional Tests</b></td> </tr> <tr> <td>Static Background Noise (% &gt; DQO)</td> <td>0.0</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>Inst. Response Difference (mV)</td> <td>198.8</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td colspan="6" style="background-color: #e6f2e6;"><b>Survey DQO Evaluation</b></td> </tr> <tr> <td>Survey Noise Levels (% &gt; DQO)</td> <td>0.00</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>Data Repeatability (%)</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table>					Electromagnetic Sensors (Ch 10)							1	2	3	4	5	<b>AM Functional Tests</b>						Static Background Noise (% > DQO)	0.00	N/A	N/A	N/A	N/A	Cable Shake Spikes (mV)	0.00	N/A	N/A	N/A	N/A	Personnel Test (mV)	0.00	N/A	N/A	N/A	N/A	Inst. Response Difference (mV)	201.83	N/A	N/A	N/A	N/A	<b>PM Functional Tests</b>						Static Background Noise (% > DQO)	0.0	N/A	N/A	N/A	N/A	Inst. Response Difference (mV)	198.8	N/A	N/A	N/A	N/A	<b>Survey DQO Evaluation</b>						Survey Noise Levels (% > DQO)	0.00	N/A	N/A	N/A	N/A	Data Repeatability (%)	N/A	N/A	N/A	N/A	N/A
	Limit	Subset																																																																																																										
Background Noise (mV)	1.5	95%																																																																																																										
Cable Shake Spikes (mV)	10.0	100%																																																																																																										
Personnel Test Response (mV)	N/A	N/A																																																																																																										
Inst. Response Difference (%)	10%	100%																																																																																																										
Filtered Survey Noise (mV)	3.0	95%																																																																																																										
Deviation in Repeatability (%)	N/A	N/A																																																																																																										
Electromagnetic Sensors (Ch 10)																																																																																																												
	1	2	3	4	5																																																																																																							
<b>AM Functional Tests</b>																																																																																																												
Static Background Noise (% > DQO)	0.00	N/A	N/A	N/A	N/A																																																																																																							
Cable Shake Spikes (mV)	0.00	N/A	N/A	N/A	N/A																																																																																																							
Personnel Test (mV)	0.00	N/A	N/A	N/A	N/A																																																																																																							
Inst. Response Difference (mV)	201.83	N/A	N/A	N/A	N/A																																																																																																							
<b>PM Functional Tests</b>																																																																																																												
Static Background Noise (% > DQO)	0.0	N/A	N/A	N/A	N/A																																																																																																							
Inst. Response Difference (mV)	198.8	N/A	N/A	N/A	N/A																																																																																																							
<b>Survey DQO Evaluation</b>																																																																																																												
Survey Noise Levels (% > DQO)	0.00	N/A	N/A	N/A	N/A																																																																																																							
Data Repeatability (%)	N/A	N/A	N/A	N/A	N/A																																																																																																							
<b>GPS Equipment DQO's</b> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th></th> <th>Limit</th> <th>Subset</th> </tr> </thead> <tbody> <tr> <td>GPS Positional Accuracy (cm)</td> <td>5.0</td> <td>100%</td> </tr> <tr> <td>GPS Positional Scatter (cm)</td> <td>2.0</td> <td>95%</td> </tr> <tr> <td>Target Accuracy (cm)</td> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table>						Limit	Subset	GPS Positional Accuracy (cm)	5.0	100%	GPS Positional Scatter (cm)	2.0	95%	Target Accuracy (cm)	N/A	N/A	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th colspan="3">GPS Rovers</th> </tr> <tr> <th></th> <th>1</th> <th>2</th> </tr> </thead> <tbody> <tr> <td colspan="3" style="background-color: #e6f2e6;"><b>AM Functional Tests</b></td> </tr> <tr> <td>Accuracy Offset (cm)</td> <td>1.84</td> <td>N/A</td> </tr> <tr> <td>Data Scatter &gt; DQO (%)</td> <td>0.0</td> <td>N/A</td> </tr> <tr> <td colspan="3" style="background-color: #e6f2e6;"><b>PM Functional Tests</b></td> </tr> <tr> <td>Data Scatter &gt; DQO (%)</td> <td>0.0</td> <td>N/A</td> </tr> </tbody> </table>					GPS Rovers				1	2	<b>AM Functional Tests</b>			Accuracy Offset (cm)	1.84	N/A	Data Scatter > DQO (%)	0.0	N/A	<b>PM Functional Tests</b>			Data Scatter > DQO (%)	0.0	N/A																																																																		
	Limit	Subset																																																																																																										
GPS Positional Accuracy (cm)	5.0	100%																																																																																																										
GPS Positional Scatter (cm)	2.0	95%																																																																																																										
Target Accuracy (cm)	N/A	N/A																																																																																																										
GPS Rovers																																																																																																												
	1	2																																																																																																										
<b>AM Functional Tests</b>																																																																																																												
Accuracy Offset (cm)	1.84	N/A																																																																																																										
Data Scatter > DQO (%)	0.0	N/A																																																																																																										
<b>PM Functional Tests</b>																																																																																																												
Data Scatter > DQO (%)	0.0	N/A																																																																																																										
Root Cause Analysis & Authorization																																																																																																												
Problems Encountered:					Root Cause:		Corrective Action:																																																																																																					
Problem #1:					Cause #1:		Action #1:																																																																																																					
Problem #2:					Cause #2:		Action #2:																																																																																																					
Comments:							Signature: <u><i>[Signature]</i></u>																																																																																																					





## UXO Weekly Progress Report

Project Details	
<b>Project Name:</b> Dartmouth CCC <b>Project Number:</b> 10103.20 <b>Contract Number:</b> 45345	<b>Period Worked Performed:</b> 30 Sep – 7 Oct, 2013 <b>Date Submitted:</b> 8 Oct 13 <b>Prepared By:</b> Andrew Garsch
Project Overview	
<ul style="list-style-type: none"> <li>- MEC Site Survey, Technical Support and Specification Development.</li> <li>- Scope of work to include:               <ul style="list-style-type: none"> <li>• Site Setup/Surface Sweep</li> <li>• Vegetation Removal</li> <li>• Surface Clearance</li> <li>• EM Survey and Mag and Flag Operations</li> <li>• Calibration Grid Excavation of four locations with an overall total of 400 cubic feet.</li> <li>• Site Remediation</li> <li>• Specification Development</li> </ul> </li> </ul>	
Progress Report	
<ul style="list-style-type: none"> <li>- Site set up/Sweep (95% Completed )</li> <li>- Vegetation Removal (90% complete)</li> <li>- Surface Clearance (75% complete)</li> <li>- EM Survey and Mag and Flag (50% complete)</li> <li>- Calibration Grid Excavation of four locations with an overall total of 400 cubic feet. (Has not commenced)</li> <li>- Site Remediation (Has not commenced)</li> <li>- Specification Development (Has not commenced)</li> </ul>	
Planned Upcoming Work	
<ul style="list-style-type: none"> <li>- Site set up/Sweep – It is expected that the Site setup/Sweep will be complete by end of day 9 Oct 13.</li> <li>- Vegetation Removal – Although the subcontractor stated that all work would be complete by 6 Oct 13, this was delayed due to mechanical failure. The new timing was 7 Oct 13. Again this was delayed due to mechanical failure. Progress on 8 Oct is not what was expected. It is now expected that Vegetation Removal will be complete on 9 Oct 13. A map of the area will be produced following completion of veg removal.</li> <li>- Surface Clearance – The UXO Fd Tm is waiting on several vegetation piles to be removed from certain areas. In addition a large excavator is being brought in on 9 Oct to facilitate the movement of several extremely large pieces of concrete. Following that action, Surface Clearance will be able to be completed. Estimated Time of Completion (ETC) is end of play (EOP) 9 Oct 13.</li> <li>- EM Survey and Mag and Flag (50% complete) – EM Survey has been delayed by the Vegetation Removal issues. The new ETC of EM Survey is EOP 9 Oct 13. Mag and Flag operations will occur concurrent to Calibration Grid Excavation. Time and Space constraints will be resolved by the UXO FS on the ground.</li> <li>- Calibration Grid Excavation of four locations with an overall total of 400 cubic feet. – It is expected that Calibration Grid Excavation can start following the completion of EM Survey. An analysis of the area already surveyed has allowed for the selection of several locations for excavation. This will allow excavation to occur immediately following confirmation of EM Survey coverage of the prescribed area.</li> <li>- Specification Development – To commence upon completion of field work.</li> </ul>	



## UXO Weekly Progress Report

### Schedule Changes

- There have been a multitude of impacts on the schedule. This is due to issues with vegetation removal. As such, it has been decided that the best option moving forward is to expedite the commencement of Calibration Grid Excavation. A Contemplated Change Notice will be sent to the DCC Rep detailing the required changes.

### Budget Changes

- This is a fixed price budget, there have been no impacts to the price agreed upon between GEMTEC Ltd and the client.

### General Discussion

- Due to the past issues suffered on this project it was deemed that the best option to provide an expedient delivery of services was to ask for permission to commence Calibration Grid Excavation early. Calibration Grid Excavation will begin following the completion of vegetation removal and EM Survey which is expected to occur on 9 Oct 13.

### Health and Safety

- No health or safety concerns.

### Quality

- No major quality issues identified.

### Other

- N/A

### Approval

GEMTEC Project Manager: Andrew Garsch

Date: October 8, 2013

Signature:

DCC Representative: Chuck Wilson

Date:

Signature:

## **Appendix F**

F – Test Pit Logs



## TEST PIT LOG

[illegible]



## TEST PIT LOG

[illegible]



## TEST PIT LOG

Client				Defence Construction Canada				Proj No.		10103.20		Test pit		CG 3	
Project				MEC Site Survey & Specifications Development				Date		2013/11/10		Page 1 of 1			
Location				Dartmouth, Nova Scotia				Ground Level, m		20.40		Datum:		Geodetic	
Logged By				SGP				Water Content & Atterberg Limits		Dynamic Penetration Test, blows/0.3m		Standard Penetration Test, blows/0.3m			
DEPTH				m				No		TYPE		N (RQD)		REC	
LOG				DESCRIPTION				F F F		F F F		F F F		F F F	
0				FILL (sand, gravel, some silt with cobbles and boulders).				F F F		F F F		F F F		F F F	
1				Cobbles and boulders estimated at 20%.				F F F		F F F		F F F		F F F	
2				Minor debris (metal strapping or banding approx. 150mm long), few bricks, few glass pieces).				F F F		F F F		F F F		F F F	
3				No UXO encountered in the fill or at the original ground surface.				F F F		F F F		F F F		F F F	
4				1.90 18.50				F F F		F F F		F F F		F F F	
5				2.00 50mm black organics over TOPSOIL (silty s. 40 gravel, some sand).				F F F		F F F		F F F		F F F	
6				End of hole at 2.0 metres on inferred bedrock.				F F F		F F F		F F F		F F F	
7				Groundwater not encountered.				F F F		F F F		F F F		F F F	


## TEST PIT LOG

[illegible]

## **Appendix G**

G - Moisture Content and Density




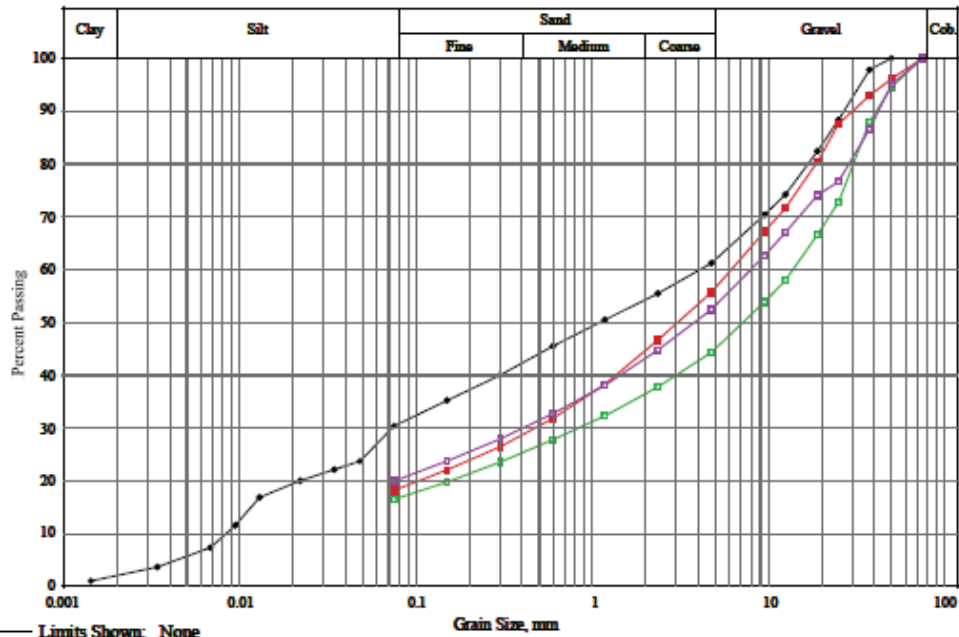
 <b>GEMTEC</b> CONSULTING ENGINEERS AND SCIENTISTS	Client	Defence Construction Canada	Moisture Content and Density
	Project:	Consultant Services, Support for UXO Clearance, Burnside Industrial Park, Dartmouth, Nova Scotia, D	
	Project #:	1010320	

Borehole / Testpit	Depth	Sample	Description	Date/Time Sampled	Moisture Content, %	Sample Volume, mm <sup>3</sup>	Wet Density, kg/m <sup>3</sup>	Dry Density, kg/m <sup>3</sup>
TP 1		1		13/10/17 11:57:00 AM	10.35			
TP 2		1		13/10/17 11:57:00 AM	12.75			
TP 3		1		13/10/17 11:57:00 AM	5.21			
TP 4		1		13/10/17 11:57:00 AM	11.62			
TP 5		1		13/10/17 11:57:00 AM	19.12			
TP CG-1		1		13/10/15 9:21:00 AM	6.29			
TP CG-1		2		13/09/30 11:52:00 AM	9.43			

## **Appendix H**

H - Soil Grading Chart


 <b>GEMTEC</b> CONSULTING ENGINEERS AND SCIENTISTS	Client: Defence Construction Canada	<b>Soils Grading Chart</b>
	Project: Consultant Services, Support for UXO Clearance, Burns	
	Project #: 1010320	

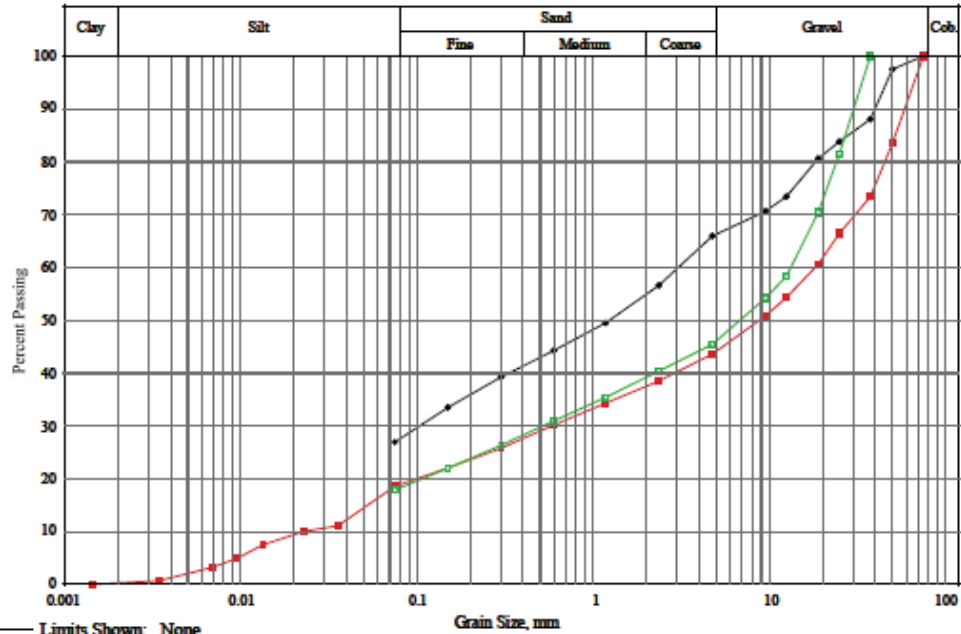


Line Symbol	Description	Borehole/ Test Pit	Sample Number	Depth	% Cob.+ Gravel	% Sand	% Silt	% Clay	Date Sampled
—●—		TP 1	1		38.8	30.8	28.3	2.1	13/10/17
—■—		TP 2	1		44.3	37.5	18.2		13/10/17
—□—		TP 3	1		55.7	27.8	16.5		13/10/17
—□—		TP 4	1		47.6	32.5	20.0		13/10/17

Line Symbol	Sample Description	AASHTO	D <sub>10</sub>	D <sub>15</sub>	D <sub>50</sub>	D <sub>85</sub>	% 5-75µm
—●—	Sandy silty gravel, trace clay	A-2-4	0.01	0.01	1.10	21.44	24.7
—■—	Gravel and sand, some silt	A-1-b	—	—	3.06	22.67	—
—□—	Sandy gravel, some silt	A-1-b	—	—	7.18	34.68	—
—□—	Sandy gravel, some silt	A-1-b	—	—	3.80	35.18	—

 <b>GEMTEC</b> CONSULTING ENGINEERS AND SCIENTISTS	Client: Defence Construction Canada	Soils Grading Chart
	Project: Consultant Services, Support for UXO Clearance, Burns	
	Project #: 1010320	



Limits Shown: None

Line Symbol	Description	Borehole/ Test Pit	Sample Number	Depth	% Cob.+ Gravel	% Sand	% Silt	% Clay	Date Sampled
—●—		TP 5	1		34.1	39.0	26.9		13/10/17
—■—		TP CG-1	1		56.4	25.0	18.3	0.3	13/10/15
—□—		TP CG-1	2		54.5	27.6	17.9		13/09/30
Line Symbol	Sample Description	AASHTO	D <sub>10</sub>	D <sub>15</sub>	D <sub>50</sub>	D <sub>85</sub>	% 5-75µm		
—●—	Gravelly silty sand	A-2-4	—	—	1.24	28.00	—		
—■—	Sandy gravel, some silt, trace clay	A-1-b	0.02	0.07	8.77	51.91	16.5		
—□—	Sandy gravel, some silt	A-1-b	—	—	6.81	26.99	—		

***Environmental Effects Evaluation (EEE) Report***  
***(Sections 66-69 of***  
***Canadian Environmental Assessment Act (CEAA) 2012)***

***CCC Building Pad Preparation and UXO Clearance***  
***Burnside Industrial Park, Dartmouth, NS***  
***PWGSC Project No. R.035143.001***

*Prepared by*  
*Public Works and Government Services Canada –*  
*Environmental Services*  
*Moncton, NB*

*for*  
*Correctional Service Canada*

***September 2014***

## **Environmental Effects Evaluation (EEE) Report**

### **TABLE OF CONTENTS**

PART A: PROJECT INFORMATION .....	2
PART B: SCOPE OF PROJECT .....	2
PART C: SCOPE OF EVALUATION .....	3
PART D: CONSULTATIONS .....	14
PART E: ENVIRONMENTAL EFFECTS EVALUATION CONCLUSION .....	15
PART F: ACCURACY AND COMPLIANCE MONITORING .....	16
PART G: DETERMINATION .....	16
PART H: SIGNATURE CERTIFICATE .....	17
PART I: REFERENCES .....	18

### **LIST OF TABLES**

Table 1	Potential Project / Environment Interactions Matrix
Tables 2.1 – 2.3	Potential Project / Valued Ecosystem Interactions and Mitigation
Table 3	Assessment Criteria for Determination of Significance

### **LIST OF APPENDICES**

<b>Appendix A</b>	<b>Figures</b>
Figure No.1	Plan indicating project site location
Figure No.2	Plan of parcel 2013-1
Figure No.3	Plan showing area to be excavated
<b>Appendix B</b>	<b>Record of Public Participation Determination</b>
<b>Appendix C</b>	<b>Definitions and Methodologies</b>

## PART A: PROJECT INFORMATION

**Federal Authority:** Correctional Service Canada (CSC)

**Project Title:** CCC Building Pad Preparation and UXO Clearance

**Location:** Burnside Industrial Park, Dartmouth, NS

**Responsible Officer:** David MacPherson

**Contact Person:** Julie Thériault

**Telephone:** 506-851-2184

**EEE Assessor:** Mylène Roy

**Telephone:** 506-851-6308

**PWGSC Project Number:** R.035143.001

## PART B: SCOPE OF PROJECT

### Project Description

Correctional Service Canada (CSC) intends to build a Community Correctional Centre (CCC) on a site located in Burnside Industrial Park in Dartmouth, NS. The current project consists of the excavation, screening for unexploded explosive ordnance (UXO), removal of debris of approximately 17,000 m<sup>3</sup> of imported fill material to expose original grade. This material will undergo UXO clearance in accordance with the specifications. A complete 100% geophysical survey including the base of the fill to identify anomalies indicative of potential UXO will also be performed. Also included is sub-surface investigation within the top 1.0 meter to ascertain the nature of the anomaly, and the disposal of an estimated three (3) discovered UXO with engineering controls to protect nearby buildings and roads during Blow-In-Place and Demolition operations. Refer to **Figures Nos. 1 to 3** for topographic map, detailed plan of the project site and area to be excavated.

A Phase II Environmental Site Assessment (ESA) was conducted in June 2014. The findings are summarized below (CSC Burnside Phase II ESA, AMEC, July 2014):

- No munitions or munitions scrap were identified during the field work by the UXO supervision team.
- Arsenic concentrations exceeded the CCME guidelines in the 13 of 14 samples with concentrations ranging from 23 to 61 mg/kg. These values are greater than the average Halifax area background concentration (18 mg/kg) identified in the PAH and Metals Baseline Study of Soil and Bedrock in Metro Halifax and Surrounding Area (Neill and Gunter 2001).
- Lead in one hand sample also exceeded the CCME guideline as well as the average Halifax area background concentration for lead (97 mg/kg) (Neill and Gunter 2001).
- Aluminium, arsenic and iron concentrations at several locations as well as lead and vanadium at a single location also exceeded the NS CSRs.
- One hand sample location had concentration of lead, F3 hydrocarbon, F4G, and phenanthrene exceeding CCME guidelines.
- Phenanthrene was also present at concentrations greater than CCME guidelines at two test pit locations.
- Cadmium and mercury exceeded the CCME water quality guidelines at one location.

Following the Phase II ESA, a human health and ecological risk assessment is currently underway. The results of this study will be shared with the successful Contractor.

### Scheduling

The anticipated client schedule for the proposed work is fall 2014, subject to approvals/funding, with completion of works up to March 2015.

### Regulatory

Any required permits/approvals to be obtained accordingly by the successful Contractor.

## **PART C: SCOPE OF EVALUATION**

### Environmental Setting

The property on which the CCC is to be constructed is located in the Burnside Industrial Park, Dartmouth, NS. The property itself is vacant and measures approximately 21929.3 m<sup>2</sup>. Area 1 is a flat area that has had all vegetation removed and measures approximately 5947 m<sup>2</sup>. Area 2 which incorporates boulder strewn area is approximately 2627 m<sup>2</sup>. Refer to **Figures Nos. 1 and 2** for topographic map and detailed plan of the project site.

The Canadian Climate Normals (1971 to 2000) recorded from the climate station in Dartmouth (44° 39' N 63° 35' W), New Brunswick (the closest station to the proposed project location) indicate an annual daily mean temperature of 7.5°C, with extremes ranging from -26.1°C to 34°C. Measurable precipitation averages 1468.1 mm annually. Extreme daily precipitation has been recorded at 118.1 mm.

### Physical Environment

The site sloped from north to south, with the central portion of the site being flat owing to a significant amount of fill having been placed in this area. The site is bordered to the east by commercial properties, to the south by Windmill road and to the west and north by vacant wooded property.

Vegetation consists of mature trees that are mainly forty (40) years old or younger with fairly dense underbrush. There are currently two monitoring wells on the site as well as what appears to be a pump station.

The soil encountered within the fill area generally consists of miscellaneous fill soils underlain by a layer of organics, which is in turn underlain by a thin layer of glacial till. The glacial till is underlain by bedrock. The fill generally consists of miscellaneous construction material with boulders, metal, concrete with debris and organics.

### Biological Environment

A search of the Atlantic Canada Conservation Centre (ACCD) database was conducted. The ACCDC provided a list of rare/unique species (i.e. plants and animals) within a 5 km buffer zone of the site of the proposed work. A buffer zone of 5 km around the study area returned 63 records of 22 rare taxa. All species were cross-referenced with the Schedule 1 of the *Species at Risk Act* (SARA) listed as extirpated, endangered and threatened or of special concern. The Atlantic Salmon (*Salmo salar*) is designated as endangered by the Committee on the Status of Endangered Wildlife (COSEWIC) and under Schedule 1 of SARA. The Wood Turtle (*Glyptemys insculpta*) is designated as threatened by COSEWIC and under Schedule 1 of SARA.

However, the proposed project site is not likely to provide critical or limiting habitat for these species and does not contain any environmental components that are considered to be important, sensitive, threatened or endangered that are likely to be affected by the project. Given the limited geographic extent, spatial and temporal footprints and limited magnitude of the proposed project, with the implantation of the mitigation measures listed in table 2, no significant adverse residual effects are anticipated.



### Socio-economic Environment

The property was previously owned by the Department of National Defense (DND), Canadian Forces Ammunition Depot (CFAD) and was purchased by CSC, who plans to build a CCC which will consist of a building with an approximate area of 1713 m<sup>2</sup> and exterior parking for 30 staff/visitors. Access to the new site of the Halifax/Dartmouth CCC will be via Morris Drive located inside the Burnside Industrial Park.

CFAD is located on the northeast shore of the Bedford Basin and is a major ammunition storage facility for the Atlantic region. Early evening of July 18<sup>th</sup>, a fire started on a barge at Rent Point jetty, CFAD Bedford that spread and eventually caused the detonation of the ammunition on board. The fires and subsequent detonations spread throughout the main area of the depot. Tens of thousands of rounds of ammunition and other items littered the entire area. Huge craters remained where large quantities of munitions had been stored. The force of the explosions ejected soils and munitions throughout the Bedford Basin and surrounding areas. Despite numerous clean-ups, ordnance items continue to be found in the area, especially in the southeastern area towards Rent Point which is essentially the epicenter of the 1945 explosion. The land transfer for the new CCC facility is located within approximately 730 metres of the explosion epicenter. Historical data suggests the possibility of UXO being present due to the aforementioned incident.

### Scoping

This environmental effects evaluation, as defined in the appendix, considers the full range of project / environment interactions and the environmental factors that could be affected by the project as defined above and the significance of related impacts with mitigation.

**Table 1:** Potential Project / Environment Interactions Matrix  
CCC Building Pad Preparation and UXO Clearance, Burnside Industrial Park, Dartmouth, NS

P = Potential Effect of Project on Environment; ? = Not enough Information; ' - ' = No Interaction

Project Phase / Physical Work/Activity	Soil (Surface and Subsurface) Quality	Groundwater Quality/Quantity	Rivers / Lakes / Streams (and Associated Drainage) Quality/Quantity	Marine/Estuary/Saltmarsh Water Quality	Wetlands (Bogs, Fens, Swamps)	Fish / Fish Habitat (Fisheries Act)	Birds / Bird Habitat (Migratory Birds Convention Act)	Terrestrial Species (Species at Risk Act)	Aquatic Species (Species at Risk Act)	Agriculture / Aquaculture	Aboriginal Interests	Archaeology / Paleontology / Heritage	Socio-economic Environment	Land Use	Air Quality / Noise	Health/Safety
Construction																
Site Preparation	P	P	P	-	-	-	P	P	P	-	-	-	-	-	P	P
Clearing and Grubbing	P	P	P	-	-	-	P	P	P	-	-	-	-	-	P	P
Excavating and Backfilling	P	P	P	-	-	-	P	P	P	-	-	-	-	-	P	P
Operation / Maintenance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Decommissioning / Abandonment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Table 2.1 – 2.8: Potential Project / Valued Ecosystem Interactions and Mitigation Measures (S.2(1))**

Table 2.1 Valued Ecosystem Component – Soil (Surface and Subsurface) Quality						
Potential Effect: Erosion and contamination of soils.						
Potential Interaction		Mitigation				
Disturbance to soil from heavy equipment use.		<ul style="list-style-type: none"><li>· Work must be scheduled to avoid periods of heavy precipitation. Erosion control structures (temporary matting, geotextile filter fabric) are to be used, as appropriate, to prevent erosion and release of sediments and/or sediment laden water during the construction phase. These structures are to be left in place until vegetation is re-established and/or all exposed soils are stabilized.</li><li>· The exposed soil area must be minimized by limiting the area that is exposed at one time and by limiting the time that any one area is exposed. All stockpiled soil must be covered and/or dyked to prevent erosion and release of sediment laden water. Wherever possible, exposed soil is to be replanted or sodded to ensure soil stabilization.</li><li>· Any hazardous material as well as construction/demolition debris must be disposed of in a provincially approved manner.</li><li>· All construction/demolition wastes must be recycled where possible or otherwise disposed of in accordance with all applicable regulations.</li><li>· Contaminated/hazardous material must be stored for the shortest time possible, covered with a liner and be disposed of at an approved facility as soon as available.</li><li>· Machinery must be checked for leakage of lubricants or fuel and must be in good working order. Refueling must be done at least 30 m from any water body and on an impermeable surface. Basic petroleum spill clean-up equipment must be on-site. All spills or leaks must be promptly contained, cleaned up and reported to the 24-hour environmental emergencies reporting system (1-800-565-1633).</li><li>· Fuel levels in equipment and / or on-site fuel storage tanks must be inspected on a daily basis to ensure there is no leakage to the surrounding environment.</li></ul>				
		Magnitude	Reversibility	Geographic Extent	Duration	Frequency
		Small	Reversible	Immediate	Short-term	Once
		Residual Effects:				
		Insignificant				
Monitoring:		None required				
Comments: Construction activities could result in the mobilization of onsite soils, especially during precipitation events. Such runoff events are likely to be of short duration and confined to the project site. The implementation of effective mitigation measures can reduce such effects to insignificant levels.						

Table 2.2 Valued Ecosystem Component – Groundwater Quality/Quantity					
Potential Effect: Erosion and contamination of soils.					
Potential Interaction		Mitigation			
Contamination of groundwater due to hazardous material spill.		<ul style="list-style-type: none"><li>Any hazardous material as well as construction/demolition debris must be disposed of in a provincially approved manner.</li><li>All construction/demolition wastes must be recycled where possible or otherwise disposed of in accordance with all applicable regulations.</li><li>Contaminated/hazardous material must be stored for the shortest time possible, covered with a liner and be disposed of at an approved facility as soon as available.</li><li>Machinery must be checked for leakage of lubricants or fuel and must be in good working order. Refueling must be done at least 30 m from any water body and on an impermeable surface. Basic petroleum spill clean-up equipment must be on-site. All spills or leaks must be promptly contained, cleaned up and reported to the 24-hour environmental emergencies reporting system (1-800-565-1633).</li><li>Fuel levels in equipment and / or on-site fuel storage tanks must be inspected on a daily basis to ensure there is no leakage to the surrounding environment.</li></ul>			
Magnitude	Reversibility	Geographic Extent	Duration	Frequency	
Small	Reversible	Immediate	Short-term	Once	
Residual Effects:		Insignificant			
Monitoring:		None required			
Comments: The potential exists for the contamination of local groundwater reserves from hydrocarbons due to upsets during refueling of construction equipment. While unlikely, such effects can be avoided through the application of effective mitigation measures.					

**Table 2.3 Valued Ecosystem Component – Rivers / Lakes / Streams (and Associated Drainage) Quality/Quantity**

Table 2.3 Valued Ecosystem Component – Rivers / Lakes / Streams (and Associated Drainage) Quality/Quantity						
Potential Effect: Erosion and contamination of soils.						
Potential Interaction		Mitigation				
Impacts to surface water quality from heavy equipment use (disturbed soil from construction activities).  Refuelling vehicles and construction machinery on site.  Contamination of surface water due to hazardous material spill.		<ul style="list-style-type: none"><li>· Work must be scheduled to avoid periods of heavy precipitation. Erosion control structures (temporary matting, geotextile filter fabric) are to be used, as appropriate, to prevent erosion and release of sediments and/or sediment laden water during the construction phase. These structures are to be left in place until vegetation is re-established and/or all exposed soils are stabilized.</li><li>· Any hazardous material as well as construction/demolition debris must be disposed of in a provincially approved manner.</li><li>· All construction/demolition wastes must be recycled where possible or otherwise disposed of in accordance with all applicable regulations.</li><li>· Contaminated/hazardous material must be stored for the shortest time possible, covered with a liner and be disposed of at an approved facility as soon as available.</li><li>· Machinery must be checked for leakage of lubricants or fuel and must be in good working order. Refueling must be done at least 30 m from any water body and on an impermeable surface. Basic petroleum spill clean-up equipment must be on-site. All spills or leaks must be promptly contained, cleaned up and reported to the 24-hour environmental emergencies reporting system (1-800-565-1633).</li><li>· Fuel levels in equipment and / or on-site fuel storage tanks must be inspected on a daily basis to ensure there is no leakage to the surrounding environment.</li></ul>				
		Magnitude	Reversibility	Geographic Extent	Duration	Frequency
		Small	Reversible	Immediate	Short-term	Once
		Residual Effects:				
		Monitoring:				
Comments: Construction activities could result in the mobilization of on site soils, especially during precipitation events. Such runoff events are likely to be of short duration and confined to the project site. The potential exists for the contamination of local surface water reserves from hydrocarbons due to upsets during refueling of construction equipment. Such effects can be avoided through the application of effective mitigation measures.						

Table 2.4 Valued Ecosystem Component – Birds / Bird Habitat (Migratory Birds Convention Act)						
Potential Effect: Disturbance of Rare/Endangered/Species at Risk (SARA)						
Potential Interaction	Mitigation					
Potential for disturbance to birds/nesting from equipment movement and operation.  All project activities are likely to result in increased noise and general disturbance at the project site.  Food scraps remaining at the site could enhance populations of predators in the area.	Magnitude	Reversibility	Geographic Extent	Duration	Frequency	
	Small	Reversible	Immediate	Short-term	Once	
	Residual Effects:					
	Insignificant					
	Monitoring:					
None required						
Comments: Increased noise and activity levels will be temporary and potential effects can most likely be minimized through implementation of the above mentioned best management practices.						

Table 2.5 Valued Ecosystem Component – Terrestrial Species ( <i>Species at Risk Act</i> )					
Potential Effect: Disturbance of Rare/Endangered/Species at Risk (SARA)					
Potential Interaction	Mitigation				
There will be an increase in noise levels and traffic that could cause disruption to rare/endangered species during dredging.  Food scraps remaining at the construction site could enhance populations of predators in the harbour.  Potential for suspended sediment to affect rare/endangered species.	Reversibility	Geographic Extent	Duration	Frequency	
	Reversible	Immediate	Short-term	Once	
	Residual Effects: Insignificant				
Monitoring:	None required				
Comments: Increased noise and activity levels will be temporary and potential effects can most likely be minimized through implementation of the above mentioned best management practices.					



Table 2.6 Valued Ecosystem Component – Aquatic Species (Species at Risk Act)						
Potential Effect: Disturbance of Rare/Endangered/Species at Risk (SARA)						
Potential Interaction		Mitigation				
Project activities may result in debris / material entering the freshwater environment.  Contamination of marine water due to hazardous material spill.		<ul style="list-style-type: none"><li>· Work must be scheduled to avoid periods of heavy precipitation. Erosion control structures (temporary matting, geotextile filter fabric) are to be used, as appropriate, to prevent erosion and release of sediments and/or sediment laden water during the construction phase. These structures are to be left in place until vegetation is re-established and/or all exposed soils are stabilized.</li><li>· Any hazardous material as well as construction/demolition debris must be disposed of in a provincially approved manner.</li><li>· All construction/demolition wastes must be recycled where possible or otherwise disposed of in accordance with all applicable regulations.</li><li>· Contaminated/hazardous material must be stored for the shortest time possible, covered with a liner and be disposed of at an approved facility as soon as available.</li><li>· Machinery must be checked for leakage of lubricants or fuel and must be in good working order. Refueling must be done at least 30 m from any water body and on an impermeable surface. Basic petroleum spill clean-up equipment must be on-site. All spills or leaks must be promptly contained, cleaned up and reported to the 24-hour environmental emergencies reporting system (1-800-565-1633).</li><li>· Fuel levels in equipment and / or on-site fuel storage tanks must be inspected on a daily basis to ensure there is no leakage to the surrounding environment.</li></ul>				
		Magnitude	Reversibility	Geographic Extent	Duration	Frequency
		Small	Reversible	Immediate	Short-term	Once
		Residual Effects:				
		Monitoring:				
Comments: Construction activities could result in the mobilization of onsite soils, especially during precipitation events. Such runoff events are likely to be of short duration and confined to the project site. The potential exists for the contamination of local surface water reserves from hydrocarbons due to upsets during refueling of construction equipment. Such effects can be avoided through the application of effective mitigation measures.						



Table 2.7 Valued Ecosystem Component – Air Quality / Noise					
Potential Effect: Disturbance of Rare/Endangered/Species at Risk (SARA)					
Potential Interaction	Mitigation				
Use of heavy machinery may cause short-term elevated noise levels and emissions at the site, along the transportation route, and may affect area residents and businesses.	<ul style="list-style-type: none"><li>· All construction equipment must be fitted with standard and well- maintained noise suppression devices. Construction activities must respect appropriate time restriction and use smaller, less disturbing equipment where possible.</li><li>· Appropriate dust suppression methods are to be employed when required. The construction manager shall determine locations where water is to be applied, the amount of water to be applied, and the times at which it shall be applied. Waste oil is not to be used for dust control under any circumstances.</li></ul>				
Construction activities may cause increase in dust material.					
Operation of the site may cause short-term elevated noise levels and dust.					
Short-term exposure to contaminated air quality as a result of hazardous materials spills or equipment malfunctions.					
Magnitude	Reversibility	Geographic Extent	Duration	Frequency	
Small	Reversible	Immediate	Short-term	Once	
Residual Effects:	Insignificant				
Monitoring:	None required				
<b>Comments:</b> Construction related activities could result in an increase in noise and dust on the project site and surrounding area. Dusting conditions related to machinery use will be of short duration and confined to the project site. While negative in nature, such effects are generally avoidable with appropriate mitigation measures. Similarly, any increase in noise levels related to the operation of construction equipment will be of short duration and confined to the project area. The magnitude of such noise effects will be small relative to background levels given volume of traffic in the area, taking appropriate mitigative measures into account.					

Table 2.8 Valued Ecosystem Component – Health/Safety						
Potential Effect: Human exposure to hazards.						
Potential Interaction		Mitigation				
Persons present on or surrounding project site may be exposed to hazards.		· Proper safety procedures must be followed during the duration of the project as per applicable municipal, provincial, and federal regulations.				
Operation of the site may cause exposure to hazardous materials.		· Employees will be trained in health and safety protocols (i.e., safe work practices, emergency response).				
		· Workers who may come in contact with hazards must be provided with and use appropriate personal protective equipment.				
		· Site access must be restricted to authorized workers only.				
Magnitude	Reversibility	Geographic Extent	Duration	Frequency		
Small	Reversible	Immediate	Short-term	Once		
Residual Effects:		Insignificant				
Monitoring:		None required				
Comments: While workers may be exposed to hazards, the exposure can be limited through the use of appropriate personal protective equipment and restricting site access to authorized workers only. In addition, workers must follow the Provincial <i>Occupational Health and Safety Act</i> and any other appropriate legislation, regulations, guidelines, or best-management practices.						

## **PART D: CONSULTATIONS**

### ***Public & Government Consultation***

In February and March 2013, CSC officials met with various elected municipal, provincial and federal officials to inform them about the proposed site for the relocation of the CCC. Meetings were also held with law enforcement partners and other CSC partners. More than 70 business owners and tenants whose offices are located near the proposed site were also visited to inform them of the proposed plan. A public notice was posted in the Halifax daily newspaper *The Chronicle Herald* in March 2013, which included 1-800 number for the general public to share any concerns or comments regarding the proposed project. After analyzing the results of the public consultation, CSC concluded that there is little opposition to the proposed site for the new CCC. A record of public participation determination is found in **Appendix B**.

### ***Aboriginal Consultation***

While CSC received advice from the Department of Justice (DOJ) that there is no legal duty to consult concerning the land transfer from DND to CSC, there has been no DOJ advice or Aboriginal consultation concerning the construction of the new CCC. Therefore, for this proposed Crown conduct, in context of Aboriginal consultation processes in Nova Scotia, PWGSC recommends that the Mi'kmaq of Nova Scotia be engaged prior to the next phase of this project.

## **PART E: ENVIRONMENTAL EFFECTS EVALUATION CONCLUSION**

### ***Significant Adverse Environmental Effect***

Potential impacts of this project are associated with construction disturbances. It is reasonable to conclude that with appropriate mitigation in place and good work practices, significant adverse environmental effect will be of short duration and the potential zone of influence will be confined to the immediate vicinity if the work.

### ***Mitigation***

- Work must be scheduled to avoid periods of heavy precipitation. Erosion control structures (temporary matting, geotextile filter fabric) are to be used, as appropriate, to prevent erosion and release of sediments and/or sediment laden water during the construction phase. These structures are to be left in place until vegetation is re-established and/or all exposed soils are stabilized.
- The exposed soil area must be minimized by limiting the area that is exposed at one time and by limiting the time that any one area is exposed. All stockpiled soil must be covered and/or dyked to prevent erosion and release of sediment laden water. Wherever possible, exposed soil is to be replanted or sodded to ensure soil stabilization.
- Any hazardous material as well as construction/demolition debris must be disposed of in a provincially approved manner.
- All construction/demolition wastes must be recycled where possible or otherwise disposed of in accordance with all applicable regulations.
- Contaminated/hazardous material must be stored for the shortest time possible, covered with a liner and be disposed of at an approved facility as soon as available.
- Machinery must be checked for leakage of lubricants or fuel and must be in good working order. Refueling must be done at least 30 m from any water body and on an impermeable surface. Basic petroleum spill clean-up equipment must be on-site. All spills or leaks must be promptly contained, cleaned up and reported to the 24-hour environmental emergencies reporting system (1-800-565-1633).
- Fuel levels in equipment and / or on-site fuel storage tanks must be inspected on a daily basis to ensure there is no leakage to the surrounding environment.
- Proponents and Contractors should ensure that food scraps and garbage are not left at the work site.
- It is recommended that vegetation clearing not take place during the bird breeding season until fledglings have left parental territories.
- Avoid disturbances to all birds and wildlife in project area.
- All construction equipment must be fitted with standard and well- maintained noise suppression devices. Construction activities must respect appropriate time restriction and use smaller, less disturbing equipment where possible.
- Appropriate dust suppression methods are to be employed when required. The construction manager shall determine locations where water is to be applied, the amount of water to be applied, and the times at which it shall be applied. Waste oil is not to be used for dust control under any circumstances.
- Proper safety procedures must be followed during the duration of the project as per applicable municipal, provincial, and federal regulations.
- Employees will be trained in health and safety protocols (i.e., safe work practices, emergency response).
- Workers who may come in contact with hazards must be provided with and use appropriate personal protective equipment.

- Site access must be restricted to authorized workers only.

## **PART F: ACCURACY AND COMPLIANCE MONITORING**

Site monitoring (accuracy and compliance monitoring) may be conducted to verify whether required mitigation measures were implemented. The proponent must provide site access to Responsible Authority officials and/or its agents upon request.

## **PART G: DETERMINATION**

The federal authority is required to provide a determination of the significance of environmental effects as a result of this project. The decision outlined below is based on the interpretation of environmental effects and mitigation measures described in Part D of this report.

**Project Name:** CCC Pad Preparation and UXO Clearance  
**Project #:** R.035143.001  
**Location:** Burnside Industrial Park, Dartmouth, NS

The Federal Authority has evaluated the project for significant adverse environmental effects as required under Section 67 of *Canadian Environmental Assessment Act (CEAA), 2012*. On the basis of this evaluation, the department has determined that the decision opposite the "X" applies to the proposed project.

- ☐ Project not likely to cause significant adverse environmental effects - proceed.
- ☒ Project not likely to cause significant adverse environmental effects with mitigation - proceed using mitigative measures as determined.
- ☐ Inadequate information available - further study and assessment is required.
- ☐ Project likely to cause significant adverse environmental effects that cannot be justified in the circumstances - project will not proceed.
- ☐ Project likely to cause significant adverse environmental effects that may be justified in the circumstances - refer to the Governor in Council for decision.

## PART H: SIGNATURE CERTIFICATE

This document summarizes the results of an environmental effects evaluation related to the above project that has been performed and completed by the Federal Authority in accordance with the *Canadian Environmental Assessment Act, 2012*.

Environmental Specialist: msl y  
Environmental Services, PWGSC, Atlantic Region

Date: Sept. 22, 2014

*The above has completed this environmental effects evaluation (EEE) report to the best of their ability and knowledge, and ensures that it meets the requirement of the Canadian Environmental Assessment Act, 2012.*

Environmental Officer: \_\_\_\_\_  
CSC, Atlantic Region

Date: \_\_\_\_\_

*The above has read and understood this environmental effects evaluation (EEE) report and acknowledges responsibility for ensuring that it meets the requirement of CEAA 2012.*

## **PART I: REFERENCES**

Geotechnical Investigation Proposed Dartmouth Facility, prepared by Gemtec, November 2013.

MEC Site Survey, Technical Support, and Specifications Development, Dartmouth, NS, November 2013.

Phase II Environmental Site Assessment, Correctional Services Canada, Proposed Facility, Portion of PID 40114084, prepared by AMEC Environment & Infrastructure, July 2014.

Briefing Note to the Minister of Public Safety Canada “Results of the Public Consultations for the Relocation of the Carlton Community Correctional Centre and Carleton Centre Annex”, prepare by Correctional Services Canada, April 2013.

Atlantic Canada Conservation Data Centre (ACCDC). Species of fauna and flora. Fredericton, New Brunswick. Accessed on August 25, 2014.

URL – <https://www.agri.ns.ca/pwgsc/%2Dregion2secure/>

Environment Canada. Canadian Climate Normals and Averages 1971-2000. Fredericton, New Brunswick. Accessed on August 26, 2014.

URL – [http://www.climate.weatheroffice.ec.gc.ca/climate\\_normals/index\\_e.html](http://www.climate.weatheroffice.ec.gc.ca/climate_normals/index_e.html).

Government of Canada. Species at Risk Public Registry. A to Z Species Index. Accessed on August 26, 2014.

URL – [http://www.sararegistry.gc.ca/sar/index/default\\_e.cfm](http://www.sararegistry.gc.ca/sar/index/default_e.cfm)

Parks Canada. Atlantic Maritime Ecozone. Accessed on August 26, 2014, 2014.

URL - [http://www.pc.gc.ca/apprendre-learn/prof/itm2-crp-trc/htm/ecozone\\_e.asp#no4](http://www.pc.gc.ca/apprendre-learn/prof/itm2-crp-trc/htm/ecozone_e.asp#no4)

## **APPENDIX A**

### **FIGURES**



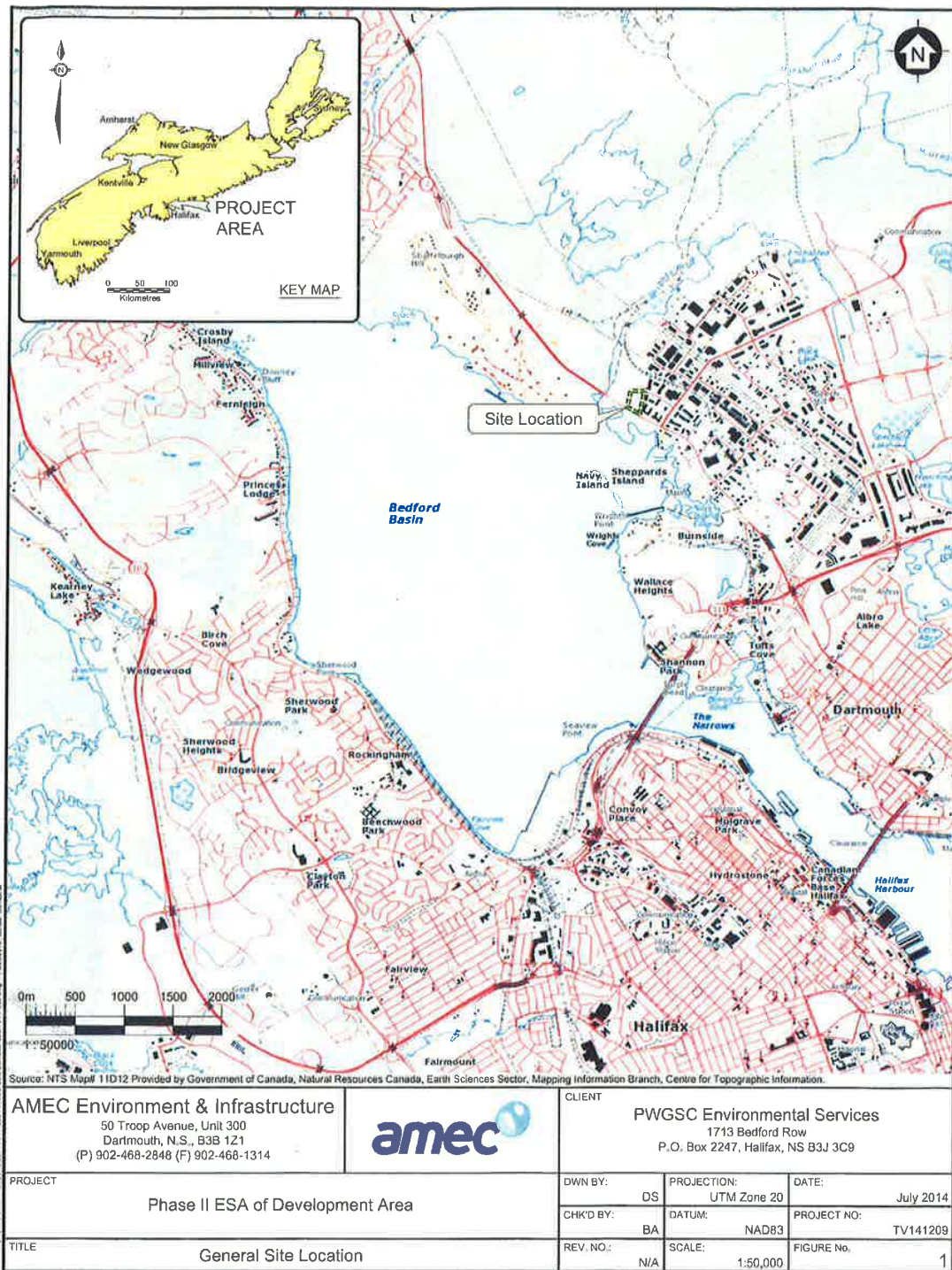


FIGURE 1: PLAN SHOWING SITE LOCATION, BURNSIDE INDUSTRIAL PARK, DARTMOUTH, NS.



FIGURE 2: PLAN OF PARCEL 2013-1, BURNSIDE INDUSTRIAL PARK, DARTMOUTH, NS.

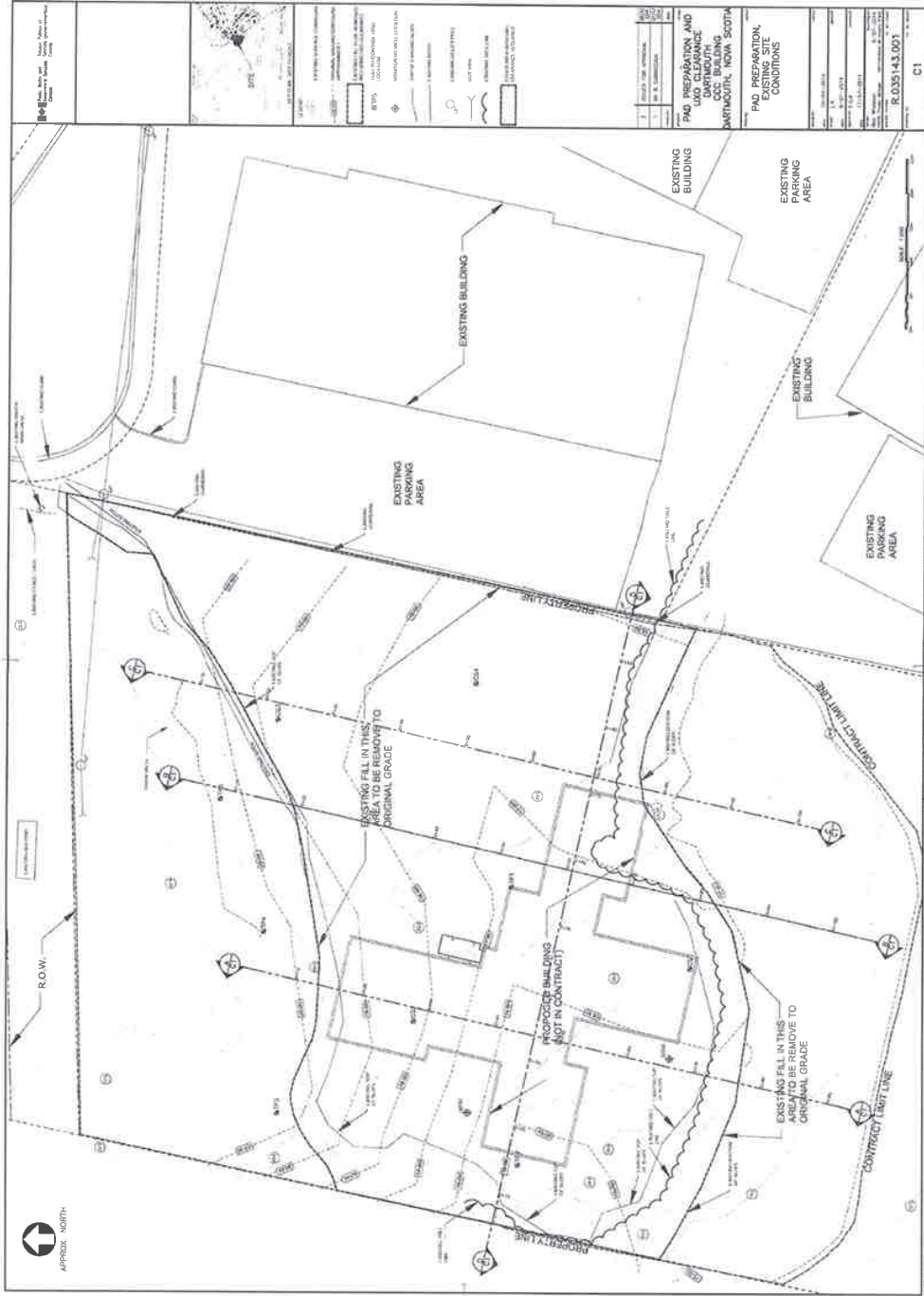


Figure No.3: Plan showing area to be excavated, Burnside Industrial Park, Dartmouth, NS.

**APPENDIX B**  
RECORD OF PUBLIC PARTICIPATION DETERMINATION



## Record of Public Participation Determination

**Stage of work plan:** Early planning phase of screening (pre-scoping)

Is there an indication that...	Describe potential indication and issues	Consider public participation?	
<i>there is an existing or likely public interest in the type, location or potential effects of the project?</i>		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
<i>There are members of the public with a history of being involved in past proposed projects in the area?</i>		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<i>the project has the potential to generate conflict between environmental and social or economic values of concern to the public?</i>		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<i>the project may be perceived as having the potential for significant adverse environmental effects? <sup>1</sup></i>		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<i>there is potential to learn from community ecological? knowledge or Aboriginal traditional knowledge?</i>		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<i>there is uncertainty about potential direct and indirect environmental effects or the significance of identified effects?</i>		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<i>the project has been or will be subject to other public participation processes that would meet the objectives of the Ministerial Guideline <a href="http://www.ceaa.gc.ca/013/006/ministerial_guideline_e.htm">http://www.ceaa.gc.ca/013/006/ministerial_guideline_e.htm</a></i>		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
<i>there is any other reason why public participation is or is not appropriate?</i>		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

**As a result of the scan above, is public participation under CEAA appropriate in the circumstances?**

☐ Yes    ☒ No

**Additional comments to support determination:**

<sup>1</sup> Environmental Effect as per the definition in CEAA (2012) is

- Changes to the environment to components of the environment that are within the legislative authority of Parliament (fish as defined by the Fisheries Act, aquatic species under the Species at Risk Act, and migratory birds as defined in the Migratory Birds Convention Act (1994))
- Changes to the environment that occur on federal lands, or inter-provincially or outside of Canada.
- The effect of any change on health and socio-economic condition, physical and cultural heritage, use of resources for traditional purposes and structures of historical significance are limited with respect to Aboriginal peoples.

## **APPENDIX C**

### **DEFINITIONS AND METHODOLOGIES**

Environment (defined in S.2(1)) – the components of the Earth, and includes land, water and air, including all layers of the atmosphere; and all organic and inorganic matter and living organisms (and the interacting natural systems of those).

Environmental Effects (defined in S.5(1) and 5(2)) – (a) a change that may be caused to the following components of the environment that are within the legislative authority of Parliament:

- Fish as defined in section 2 of the *Fisheries Act* and fish habitat as defined in subsection 34(1) of that Act,
- Aquatic species as defined in subsection 2(1) of the *Species at Risk Act (SARA)*,
- Migratory birds as defined in subsection 2(1) of the *Migratory Birds Convention Act, 1994*, and
- Any other component of the environment that is set out in Schedule 2.

(b) a change that may be caused to the environment that would occur on federal lands, or inter-provincially, or outside Canada; and

(c) with respect to aboriginal peoples, the effect of any change on health and socio-economic conditions, physical and cultural heritage, the current use of lands and resources for traditional purposes, or any structure, site or thing that is of historical, archaeological, paleontological or architectural significance.

Federal Authority (defined in S.2(1)) – a Minister of the Crown in right of Canada; an agency of the Government of Canada or a parent Crown corporation, as defined in subsection 83(1) of the *Financial Administration Act (FAA)*; or any department or departmental corporation that is set out in Schedule I or II to the FAA.

Federal lands (defined in S.2(1)) – defined as follows:

- lands that belong to Her Majesty in right of Canada, or that Canada has power to dispose of, and all waters on and airspace above those lands, other than lands under the administration and control of the Commissioner of Yukon, the Northwest Territories or Nunavut;
- the internal waters of Canada, in any area of the sea not within a province;
- the territorial sea of Canada in any area of the sea not within a province;
- the exclusive economic zone of Canada, and the continental shelf of Canada; and
- reserves, surrendered lands and any other lands that are set apart for the use and benefit of a band and that are subject to the *Indian Act*, and all waters on and airspace above those reserves or lands.

Mitigation measures (defined in S. 2(1)) – measures for the elimination, reduction or control of the adverse environmental effects of a designated project, and includes restitution for any damage to the environment caused by those effects through replacement, restoration, compensation or any other means.

Project (defined in S. 66) – a physical activity that is carried out in relation to a physical work and is not a designated project.

### **Methodology**

The environmental effects evaluation methodology used in this report focuses the evaluation on those environmental components of greatest concern. The Valued Ecological Components (VECs) most likely to be affected by the project as described are indicated in **Table 1**. VECs were selected based on

ecological importance to the existing environment (above), the relative sensitivity of environmental components to project influences and their relative social, cultural or economic importance. The potential impacts resulting from these interactions are described below.

### ***Evaluation of Environmental Effects***

The VECs selected in Table 1 are addressed in Tables 2.1 through 2.16\* in the EEE. The residual effects of the project on the environment are defined. Similarly, the physical works/activities and required mitigation measures are detailed and the significance of residual (post-mitigation) effects is estimated.

The following ratings are based on:

- **information provided by the proponent;**
- **a review of project related activities;**
- **an appraisal of the environmental setting, and identification of resources at risk;**
- **the identification of potential impacts within the temporal and spatial bounds; and**
- **personal knowledge and professional judgment of the assessor.**

The significance of project related impacts was determined in consideration of their frequency, the duration and geographical extent of the effects, magnitude relative to natural or background levels, and whether the effects are reversible or are positive or negative in nature. These criteria are indicated in Table 2.

**Table 3. Assessment Criteria for Determination of Significance.**

<b>Magnitude</b>	Magnitude, in general terms, may vary among Issues, but is a factor that accounts for size, intensity, concentration, importance, volume and social or monetary value. It is rated as compared with background conditions, protective standards or normal variability.	
	Small	Relative to natural or background levels
	Moderate	Relative to natural or background levels
	Large	Relative to natural or background levels
<b>Reversibility</b>	Reversible	Effect can be reversed
	Irreversible	Effects are permanent
<b>Geographic Extent</b>	Immediate	Confined to project site
	Local	Effects beyond immediate project site but not regional in scale
	Regional	Effects on a wide scale
<b>Duration</b>	Short Term	Between 0 and 6 months in duration
	Medium Term	Between 6 months and 2 years
	Long Term	Beyond 2 years
<b>Frequency</b>	Once	Occurs only once
	Intermittent	Occurs occasionally at irregular intervals
	Continuous	Occurs on a regular basis and regular intervals







UXO SL-B  
Atlantic Region  
Clearance Services

Firm	Contact	Head Office Address	Local Address	Phone & Fax	E-mail
<b>Amec Environment &amp; Infrastructure</b>	Chris Elliot, Manager	50 Troop Avenue, Dartmouth, NS B3B 1Z1		P: (902) 468-2848 F: (902) 468-1314	chris.elliott@amec.com
<b>CH2M Hill Canada Limited</b>	Brian Whiffin, Vice-President		72 Victoria Street South, Suite 300, Kitchener, ON N2G 4Y9	P: (509) 579-3500 X73216 F: (519) 579-8986	Brian.Whiffin@ch2m.com
<b>EBA, A Tetra Tech Company</b>	Mr. Neil Parry, PD Geophysics	14940 – 123 Avenue, Edmonton, AB T5V 1B4		P: (780) 451-2130 x 274 F: (780) 454-5688	<a href="mailto:nparry@eba.ca">nparry@eba.ca</a>
<b>ECC Services British Columbia ULC</b>	Michael J. Davis, Director, Munitions Response	1746 Cole Boulevard, Bldg 21, Suite 350, Lakewood, CO USA, 80401		P: (303) 298-7607 X1139 F: (303) 298-7837	<a href="mailto:mjdavis@ecc.net">mjdavis@ecc.net</a>
<b>EOD Technology Inc.</b>	Bill Brown	2229 Old Highway 95, Lenoir City, Tennessee, 37771		P: (865) 988-6063 X6513 F: (865) 988-6067	<a href="mailto:bill.brown@sterlinggo.com">bill.brown@sterlinggo.com</a>
<b>Explosive Ordnance Technologies Inc.</b>	Matthew S. Norris		9050 W. Executive Drive, #A-105, Knoxville, TN 37923-4669	P: (865) 200-8081 F: (865) 776-5971	<a href="mailto:MNorris@EOTI.net">MNorris@EOTI.net</a>
<b>GEMTEC Limited</b>	Shaun Pelkey	191 Doak Road, Fredericton, NB E3C 2E6		P: (506) 453-1025 F: (506) 453-9470 DL: (506) 461-6540	<a href="mailto:shaun.pelkey@gemtec.ca">shaun.pelkey@gemtec.ca</a>
<b>Mine/EODCLR Inc.</b>	Raynald Tremblay, President	3966 rue Verret, Québec, QC G2B 1G8		P: (418) 575-5235 F: (418) 407-1285	raynald.tremblay@mine-eod.com
<b>MREL Group of Companies Limited</b>	Michael D. Moran, Manager UXO Services	1555 Sydenham Road, Kingston, Ontario K7L 4V4		P: (613) 545-0466 x 118 F: (613) 542-8029	<a href="mailto:mmoran@mrel.com">mmoran@mrel.com</a>
<b>NOTRA Inc.</b>	Paula Bourque, Contract Administrator	2725 Queensview Drive, Suite #200, Ottawa, ON K2B 0A1		P: (613) 738-0887 F: (613) 738-4406	<a href="mailto:pbourque@notra.ca">pbourque@notra.ca</a>
<b>Parsons Canada Ltd.</b>	James Carss, Program Manager	3715 Laird Road, Mississauga, ON L5L 0A3		P: (905) 820-1210 F: (905) 820-1221 DL: (403) 294-4243	<a href="mailto:james.carss@parsons.com">james.carss@parsons.com</a>

Updated April 2013

UXO SL-B  
Atlantic Region  
Clearance Services

<b>SeaTerra Canada Inc.</b>	Edgar Schwab, Managing Director	70 Bentley Ave., Suite 201, Ottawa, ON K2E 6T8	P: +491604715580 F: +1 888 688 4126	<a href="mailto:info@seattera.ca">info@seattera.ca</a>
<b>STAR Munitions Management Solutions Ltd.</b>	Austen Turner, President	318 Porters Lake Station Road, Porters Lake, NS B3E 1J9	P: (902) 827-7828 F: (902) 827-5229 DL: (902) 221-4865	<a href="mailto:austen@starmunitionsmanagement.ca">austen@starmunitionsmanagement.ca</a>
<b>USA Environmental Inc.</b>	David Conolly Contracts Manager	720 Brooker Creek Blvd., Suite 204 Oldsmar, Florida 34677	P: (813) 343-6336 F: (813) 343-6337 DL: (813) 343-6390	<a href="mailto:dconolly@usatampa.com">dconolly@usatampa.com</a>
<b>Weston Solutions Inc.</b>	Ryan Steierwalt, P.G. Senior Technical Manager Munitions Response & Range Services		P: (267) 258-2672 F: (610) 701-3739	<a href="mailto:Ryan.Steierwalt@WestonSolutions.com">Ryan.Steierwalt@WestonSolutions.com</a>
<b>XTECH Explosive Decontamination Inc.</b>	Robert Enman, President	Suite 412, 14-900 Village Lane, Okotoks, AB T1S 1Z6	P: (403) 938-3856 F: (403) 938-6408	<a href="mailto:renman@xtech-uxo.com">renman@xtech-uxo.com</a>

Updated April 2013