Environment

Defence Construction Canada

FOX-M Hall Beach
Year 4 Landfill Monitoring

Prepared by:

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Project Number:

60212745 (0171-000-00)

Date:

March 5, 2012

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March 5, 2012

Mr. Nahed Farah
Defence Construction Canada
Director General Military Engineering
National Defence Headquarters
101 Colonel By Drive
Ottawa, ON K1A 0K2

Dear Mr. Farah:

Project No: **60212745**

Regarding: **FOX-M Hall Beach**
Year 4 Landfill Monitoring Report

AECOM is pleased to submit our FOX-M Year 4 Landfill Monitoring Report to Defence Construction Canada.

Should you have any queries, please contact Katie Scott at (780) 930-0033.

Sincerely,
AECOM Canada Ltd.

Roland Merkosky, P.Eng.
Senior Project Manager
roland.merkosky@aecom.com

KS:cn

Distribution List

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Revision Log

Revision #	Revised By	Date	Issue / Revision Description
1	Katie Scott	February 9, 2012	DRAFT
2	Katie Scott	March 5, 2012	FINAL

AECOM Signatures

Report Prepared By:

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Katie Scott, B.Sc.
Environmental Scientist

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C.A. CORRIGAN
LICENSEE
Mar 5/2012
NWT/NU

PERMIT TO PRACTICE
AECOM CANADA LTD.
Signature
Date March 9, 2012
PERMIT NUMBER: P 639
NWT/NU Association of Professional Engineers and Geoscientists

Report Reviewed By:

Cathy Corrigan, M.Sc., P.Eng.
Senior Geological Engineer

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1. Introduction

1.1 Background

The FOX-M Hall Beach DEW Line site is located on the east coast of the Melville Peninsula at 68°46' north latitude and 81°12' west longitude in the Foxe Basin Area. The community of Hall Beach is located approximately two kilometres (km) north of the site, has full services, and can be reached by commercial airline. The FOX-M has been converted to a North Warning System (NWS) Long Range Radar (LRR) and Logistical Support Site (LSS). The site is still active and is manned year-round. The clean-up of the site occurred between 2003 and 2007 and was completed on behalf of Department of National Defence (DND) as part of the DEW Line Clean-up (DLCU) Project. Remediation of the site included the demolition of site infrastructure not required for the operation of the NWS LRR site, closing and remediation of seven existing landfills (East Beach – north, East Beach – South, Communications – North, Communication – Northwest, G217, Billboards and Hazmat Storage), construction of a Non-Hazardous Waste Landfill and a Tier II Disposal Facility, and collection of site debris

1.2 Field Conditions

The 2011 field program was conducted on August 13 and 15, 2011 by the Environmental Sciences Group (ESG) and AECOM. ESG conducted the environmental component of the monitoring activities, while AECOM performed the geotechnical duties.

Weather conditions at site on August 13th, 2011 were slightly cool (5°C) with a slight breeze, overcast and fog patches. On August 15th, 2011 the temperature was 9°C, overcast with some light rain.

1.3 Scope of Work

The general components of the landfill monitoring program at FOX-M include:

VISUAL INSPECTION

At each landfill location, a field inspection was conducted to observe any visual signs of impact (such as seepage or stressed vegetation caused by the landfill) and for physical stability. Photographic records were taken to show the condition of the landfill and any area of concern that was observed. The observations and the photographic records for each landfill are discussed in detail below. Additional photos and photo logs are located on the CD included with this report. Field notes from the on-site teams have been included in Annex 3 at the end of this report.

Drawings with the location of noted landfill features and photo viewpoints can be found in each landfill discussion section below. AutoCAD versions of the drawings are included on the CD.

SURFACE AND SHALLOW DEPTH SOIL SAMPLING AND ANALYSES

Soil sampling was conducted at the Tier II Soil Disposal Facility and the East Beach Landfill in 2011. Two soil samples were collected at depths between 0-10 centimetres (cm) and 30-40 cm at each sample location. The soil sample were analysed for Polychlorinated Biphenyls (PCBs), Total Petroleum Hydrocarbons (TPH) Fraction 1 to 3 (using the Canada-Wide Standard method, 2001) and nine inorganic elements analysed for copper, nickel, cobalt, cadmium, lead, zinc, chromium, arsenic, and mercury. The analytical results for each sample landfill are discussed below.

Quality Assurance and Quality Control (QA/QC) procedures can be found in Annex 2. Laboratory reports can be found in Annex 1.

GROUNDWATER SAMPLING AND ANALYSES

Groundwater elevations were measured at each observation well. The monitoring conditions and field measurements were documented and collected at each monitoring well. The field measurements included the following: presence and thickness of free product (if present), depth to bottom of well, stick up height and visual condition of the well. Prior to sampling, wells were purged to remove at least one well volume of water, and field chemistry was monitored using a digital probe for the following parameters: temperature, pH, conductivity, and turbidity. Following purging, groundwater samples were collected from wells that had sufficient water volumes. The groundwater samples were analysed for PCB, TPH, and the suite of nine inorganic elements listed above. Further discussion regarding the groundwater sample results can be found in the landfill sections below.

The majority of the monitoring wells at the FOX-M site had insufficient volume to sample. During the 2011 monitoring event, samples were collected from the following wells;

Table 1.1: Summary of Groundwater Sampling

Landfill	Monitoring Well
Tier II Disposal Facility	MW-1, MW-2, MW-3, MW-4, MW-5
East Beach Landfill	MW-29, MW-30

QA/QC procedures can be found in Annex 2. Laboratory reports can be found in Annex 1.

GROUND TEMPERATURE MONITORING

Thermal monitoring was conducted at the Tier II Disposal Facility and the East Beach Landfill. The data was downloaded from the dataloggers using the provided Lakewood Systems Ltd. software. Manual resistance readings were collected at each of the thermistors with the exception of VT-1, VT-3 and VT-4. There appears to have been an error in the thermistors, and they could require reprogramming during the next monitoring event. The thermistor data from 2011 has been included on the CD.

The requirements for landfill monitoring, as laid out in Environmental Provisions of the NTI-DND Co-operation Agreement, are summarized in Table 1.1. Detailed landfill monitoring requirements are described in the Landfill Monitoring Plan - Part B - Nunavut Settlement Region.

Table 1.2: General Landfill Monitoring Requirements

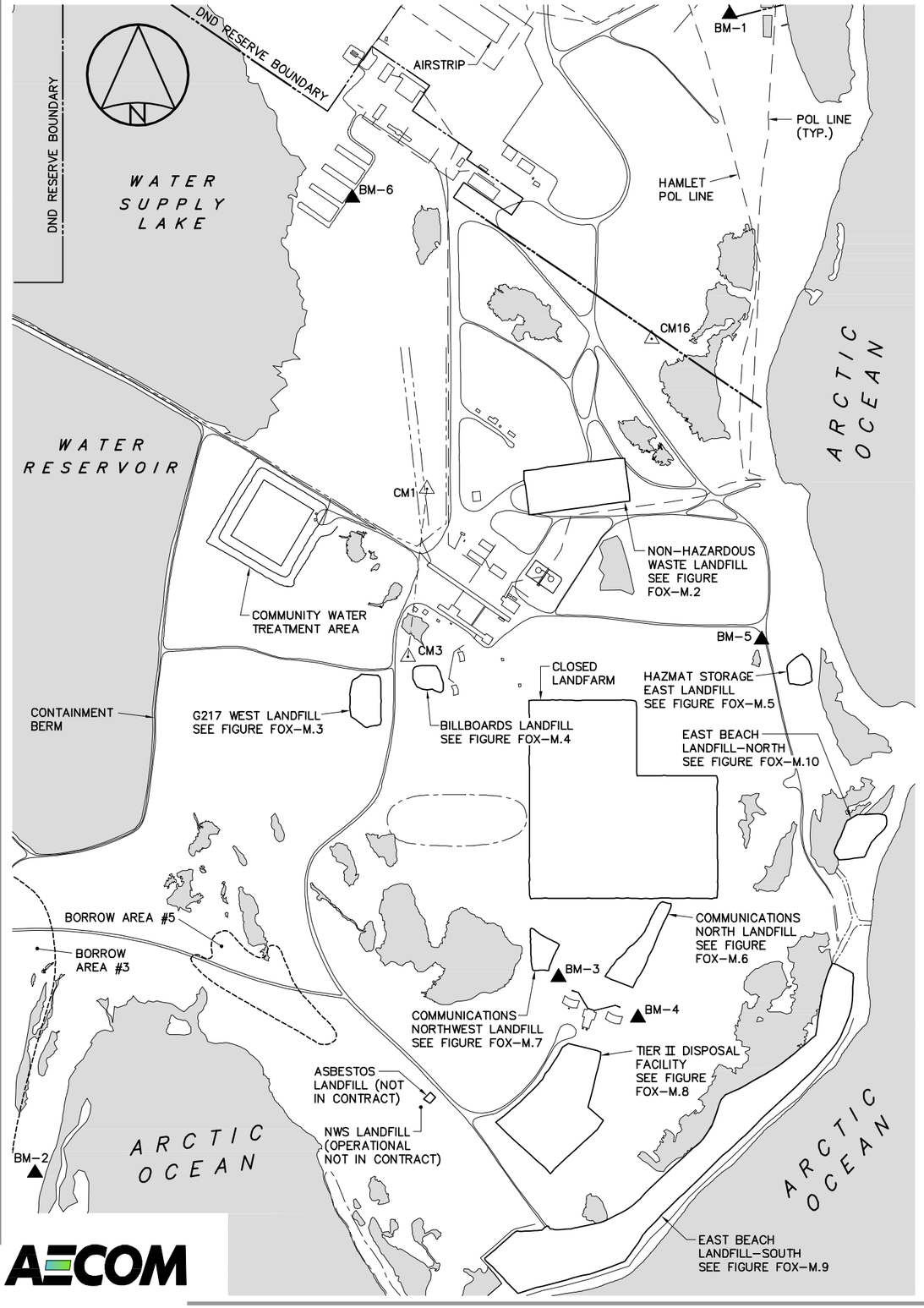
Landfill Classification	Visual Inspection	Groundwater Sampling	Soil Sampling	Thermal Monitoring
Existing Landfill, High Potential Environmental Risk (Class A)	Not required, as landfill to be excavated.			
Existing Landfills, Moderate Potential Environmental Risk (Class B)	√	√	√	√
Existing Landfills, Low Potential Environmental Risk (Class C)	√		√	
New Landfill, Non-Hazardous Waste Landfill	√	√	√	
New Landfill, DCC Tier II Disposal Facility	√	√	√	√

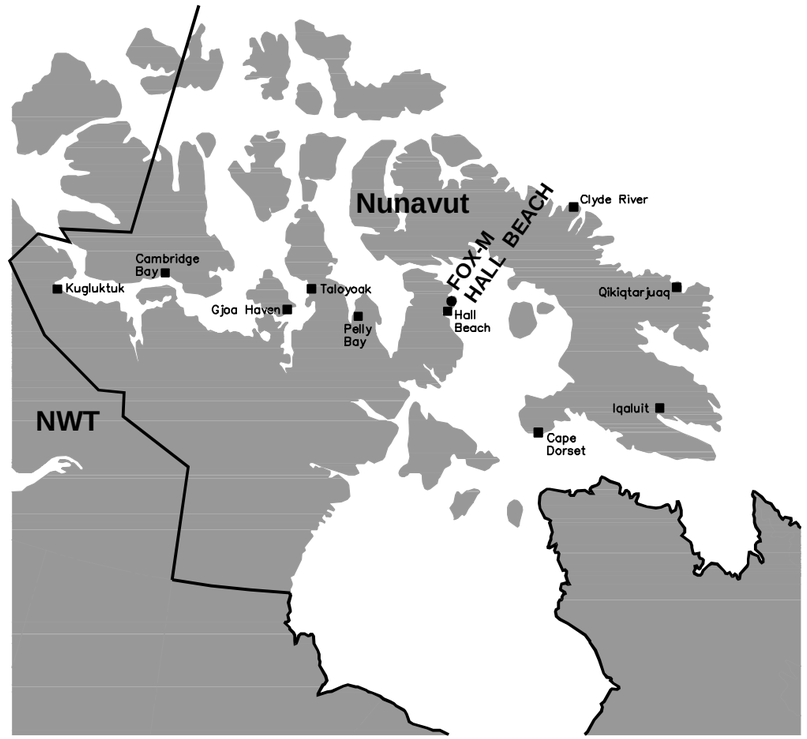
A summary of these requirements, as related to the specific landfills and 2011 monitoring program at FOX-M, is provided in Table 1.3.

Table 1.3: FOX-4 Cape Hooper Landfill Monitoring Requirements

Landfill Designation	Visual Inspection	Groundwater Sampling	Soil Sampling	Thermal Monitoring
Billboards Landfill	√			
Communications Northwest Landfill	√			
East Beach Landfill - North	√	√	√	√
East Beach Landfill - South	√	√	√	√
G217 West Landfill	√			
Communications North Landfill	√			
Non-Hazardous Waste Landfill	√			
Hazmat Storage East Landfill	√			
Tier II Disposal Facility	√	√	√	√

Detailed discussions related to the completed monitoring at each landfill are provided in the landfill-specific report sections that follow.





LOCATION OF HALL BEACH WITHIN NUNAVUT TERRITORY
SCALE: NTS

GENERAL NOTES:

1. ALL COORDINATES ARE REFERENCED TO NAD83 (CSRS), UTM ZONE 17. ALL ELEVATIONS REFER TO GEODETIC DATUM.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

LEGEND:

- △CM1 — SURVEY CONTROL MONUMENT
- ▲BM-5 — PERMANENT BENCHMARK LOCATION (6)
- ——--—— APPROXIMATE LOCATION OF PROPERTY BOUNDARY
- ARCHAEOLOGICAL FEATURE
- BODY OF WATER

SURVEY CONTROL MONUMENTS				
NO.	UTM COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
CM1	7 628 008.274	490 743.723	3.577	FOX-M BASELINE STA. 36+00
CM3	7 627 675.453	490 706.281	5.291	FOX-M BASELINE STA. 47+00
CM16	7 628 305.218	491 189.319	1.190	C.L.S. MONUMENT

NOTE: BASELINE STATIONS SHOWN ARE IN IMPERIAL UNITS.

PERMANENT BENCHMARK				
NO.	UTM COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
BM-1	7 628 948.528	491 344.124	-0.243	25mm DIA. STEEL PIPE
BM-2	7 626 652.600	489 967.120	-0.221	25mm DIA. STEEL PIPE
BM-3	7 627 040.589	491 004.505	2.949	25mm DIA. STEEL PIPE
BM-4	7 626 960.190	491 162.103	3.265	25mm DIA. STEEL PIPE
BM-5	7 627 709.111	491 407.009	0.514	25mm DIA. STEEL PIPE
BM-6	7 628 584.719	490 596.130	1.229	25mm DIA. STEEL PIPE

RECORD DRAWING
NOT FOR CONSTRUCTION

0 100 200 m SCALE 1:10000

DEW LINE CLEAN UP
LANDFILL MONITORING PLAN

FOX-M HALL BEACH

LOCATION PLAN
FIGURE FOX-M.1

AECOM

2. Non-Hazardous Waste Landfill (NHWL)

The NHWL is located just north of the Station Area. Monitoring requirements in 2011 consisted of a visual inspection only.

2.1 Visual Inspection

The visual inspection of the NHWL was conducted on August 15-16, 2011. The Visual Inspection Checklist/Report has been completed as per the Landfill Monitoring Contract Terms of Reference (ToR) and is included below.

Identified features and photo viewpoints can be found on Figure FOX-M.2.

2.1.1 Settlement

Settlement was observed in two areas on the landfills side slopes. The first area observed was on the eastern side slope in the in the northeast corner of the landfill and is approximately six metres (m) in length by two m wide with a depth of approximately 50 millimetres (mm). The second area observed was on the southern side slope near the south eastern corner of the landfill and is approximately seven m in length by 0.5 m wide with a depth of approximately 100 mm.

2.1.2 Erosion

Indications of erosion were not observed.

2.1.3 Frost Action

Indications of frost action were not observed.

2.1.4 Evidence of Burrowing Animals

Indications of burrowing animals were not observed.

2.1.5 Re-establishment of Vegetation

Trace amounts of vegetation on the north side slope.

2.1.6 Staining

Indications of staining were not observed.

2.1.7 Seepage Points

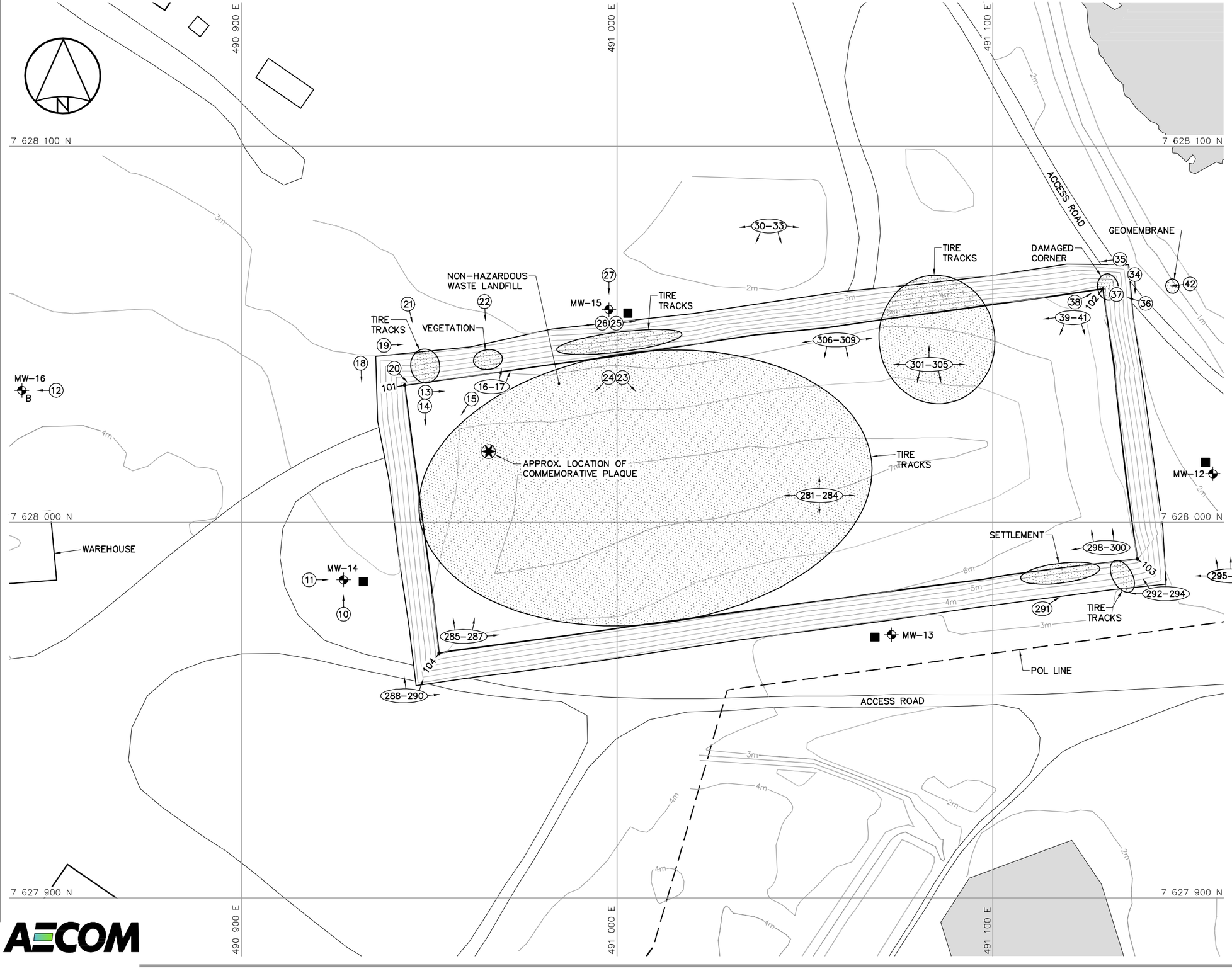
Indications of seepage were not observed.

2.1.8 Debris

A small piece of geomembrane was noted adjacent to the landfill. It does not appear to have originated from the landfill.

2.1.9 Discussion

Overall, the landfill is in good condition. The two areas of settlement should be of little consequence to the landfill performing as designed. Tire tracks were observed in several areas on the landfill; however the depth of the track marks were negligible. The noted damage to the corner of the landfill appears to be the result of tire tracks and was not present during the 2010 monitoring event. The landfill is considered stable.



GENERAL NOTES:

1. ALL COORDINATES ARE REFERENCED TO NAD83 (CSRS), UTM ZONE 17. ALL ELEVATIONS REFER TO GEODETIC DATUM.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

LEGEND:

- 101 — COORDINATE POINT
- ■ — MONITORING SOIL SAMPLE LOCATION (4)
- MW-12 — MONITORING WELL LOCATION (4)
- MW-16 B — BACKGROUND MONITORING WELL LOCATION (1)
- 281 — APPROX. PHOTOGRAPHIC VIEWPOINT
- MONITORING SITE FEATURE
- BODY OF WATER

NON-HAZARDOUS WASTE LANDFILL (AS-BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
101	7 628 036.5	490 943.5	6.0
102	7 628 062.1	491 129.2	5.3
103	7 627 990.2	491 138.4	5.5
104	7 627 965.1	490 952.6	6.7

NON-HAZARDOUS WASTE LANDFILL MONITORING WELLS (AS-BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
MW-12	7 628 012.9	491 158.5	2.4
MW-13	7 627 970.1	491 073.0	3.1
MW-14	7 627 984.7	490 927.2	4.4
MW-15	7 628 056.6	490 997.8	2.7
MW-16	7 628 035.1	490 841.6	4.7

RECORD DRAWING
NOT FOR CONSTRUCTION

0 10 20 m SCALE 1:1000

DEW LINE CLEAN UP
LANDFILL MONITORING PLAN

FOX-M HALL BEACH

NON - HAZARDOUS WASTE LANDFILL

FIGURE FOX-M.2

AECOM

2.2 Photographic Record

Photograph 1. Non-Hazardous Waste Landfill: Looking E from SW Corner of Landfill (Photo 285)↑

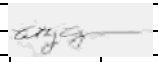
Photograph 2. Non-Hazardous Waste Landfill: Looking N From SW Corner of Landfill (Photo 287)↑

Photograph 3. Settlement at NE corner of landfill (Photo 020)↑

Photograph 4. Vegetation on northern side slope of landfill (Photo 022)↑

2.3 Visual Inspection Checklist and Stability Assessment

DEW Line Cleanup: Post-Construction - Landfill Monitoring
Visual Inspection Checklist and Preliminary Stability Assessment

Site Name:	FOX-M Hall Beach
Landfill Designation:	Non-Hazardous Waste Landfill
Date of Inspection:	15-Aug-11
Inspected By:	David Elwood, M.Sc., P.Eng. (AB)
Report Prepared By:	Shaun Hughes, P.Eng (AB)
Report Reviewed By:	Cathy Corrigan, M.Sc., P.Eng.
The inspector/reporter represents to the best of their knowledge, the following statement and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.	
Signature:	

Checklist Item	Present Yes/No	Location (Describe relative to existing monuments/features and relative to landfill design i.e. surface, berms, toe)	Length	Width	Depth	Extent relative to Area of Landfill (%)	Description	Photographic Records Focal length, location, view point & direction (relative to magnetic north) Feature of note Scale	Additional Comments	Severity Rating
Settlement	Yes	Area 1: southern side slope	A1: 7m	A1: 0.5m	A1: 100mm	<1%	A1: minimal settlement	A1: Photo 291		
Erosion	No									
Frost Action	No									
Sloughing and Cracking	No									
Animal Burrows	No									
Vegetation	Yes	A1: northern side slope A2: eastern side slope	A1: 1m A2: 6m	A1: 1m A2: 1.5m	n/a	<1% (occasional)		A1: Photo 022 A2: Photos 295 and 296		
Staining	No									
Vegetation Stress	No									
Seepage Points	No									
Debris Exposed	No					Isolated		Photo 042	A small amount of debris is located next to the landfill. Did not originate from landfill	Acceptable
Presence/Condition - Monitoring Instruments	No									
Features of Note	Yes	A1: side slopes and top cover A2: Side slope at northeast corner	A2: 6 m	A2: 2 m	A2: 50mm	A1: Numerous A2: occasional	A1: Track marks at various locations on the landfill with varying depths A2: corner damaged by vehicles	A1: Photos 283, 286, 287 and 302 A2: Photo 37 and 38		A1: Acceptable A2: Acceptable
Landfill Performance										Acceptable

3. G217 West Landfill

The G217 West Landfill is located west of the main access road, south of the Station Area. Monitoring requirements for 2011 included a visual inspection of the landfill only.

3.1 Visual Inspection

The visual inspection of the G217 West Landfill was conducted on August 15-16, 2011. The Visual Inspection Checklist/Report has been completed as per the ToR and is included below.

Noted features and photo viewpoints can be found on Figure FOX-M.3.

3.1.1 Settlement

Two tension cracks were observed along the western side slope of the landfill measuring roughly eight m and four m; each crack was observed mid-slope.

3.1.2 Erosion

Indications of erosion were not observed.

3.1.3 Frost Action

Indications of frost action were not observed.

3.1.4 Evidence of Burrowing Animals

Indications of burrowing animals were not observed.

3.1.5 Re-establishment of Vegetation

Indications of vegetation were not observed.

3.1.6 Staining

Indications of staining were not observed.

3.1.7 Seepage Points

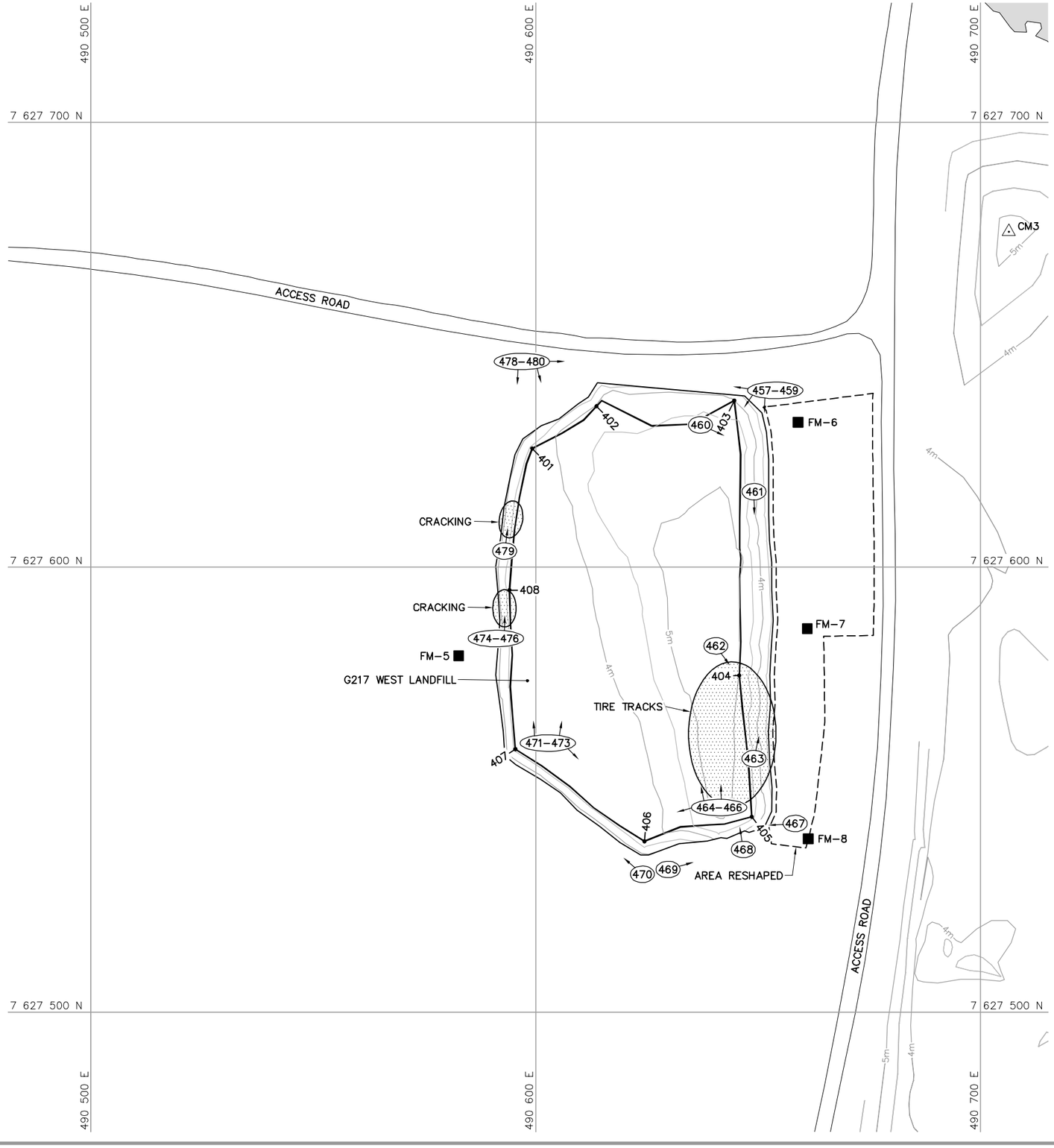
Indications of seepage were not observed.

3.1.8 Debris

Indications of debris were not observed.

3.1.9 Discussion

The two tension cracks should be of little consequence to the landfill performing as designed. The landfill is considered stable.



GENERAL NOTES:

1. ALL COORDINATES ARE REFERENCED TO NAD83 (CSRS), UTM ZONE 17. ALL ELEVATIONS REFER TO GEODETIC DATUM.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

LEGEND:

- CM3 — SURVEY CONTROL MONUMENT
- 401 — COORDINATE POINT
- ■ — MONITORING SOIL SAMPLE LOCATION (4)
- (457) — APPROX. PHOTOGRAPHIC VIEWPOINT
- MONITORING SITE FEATURE
- BODY OF WATER

G217 WEST LANDFILL REGRADED (AS–BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
401	7 627 626.7	490 599.2	3.6
402	7 627 636.2	490 613.6	4.0
403	7 627 637.5	490 644.6	3.9
404	7 627 575.7	490 645.7	5.0
405	7 627 543.9	490 648.5	4.7
406	7 627 538.4	490 624.4	3.8
407	7 627 559.1	490 595.4	3.6
408	7 627 594.9	490 594.0	3.7

SURVEY CONTROL MONUMENTS				
NO.	UTM COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
CM3	7 627 675.453	490 706.281	5.291	FOX–M BASELINE STA. 47+00

NOTE: BASELINE STATIONS SHOWN ARE IN IMPERIAL UNITS.

RECORD DRAWING
NOT FOR CONSTRUCTION

0 10 20 m SCALE 1:1000

DEW LINE CLEAN UP
LANDFILL MONITORING PLAN

FOX-M HALL BEACH

G217 WEST LANDFILL

FIGURE FOX-M.3

AECOM

Sheet Size: 11 x 17 (432mm x 279mm)
PLOT: February 27, 2012 11:19:56 AM
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AECOM FILE NO.: FOX-M.3 LF MON.dwg

3.2 Photographic Record

Photograph 5. G217 West Landfill: Looking S from NE Corner of Landfill (Photo 457)↑

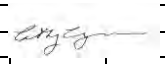
Photograph 6. G217 West Landfill: Looking W from NE Corner of Landfill (Photo 459)↑

Photograph 7. G217 West Landfill: Looking NW From SE Corner of Landfill (Photo 465)↑

Photograph 8. G217 West Landfill: Looking N at Cracking Along the W Side Slope of Landfill (Photo 475)↑

3.3 Visual Inspection Checklist and Stability Assessment

DEW Line Cleanup: Post-Construction - Landfill Monitoring
Visual Inspection Checklist and Preliminary Stability Assessment

Site Name:	**FOX-M Hall Beach**
Landfill Designation:	**G217 West Landfill**
Date of Inspection:	**15-Aug-11**
Inspected By:	**David Elwood, M.Sc., P.Eng. (AB)**
Report Prepared By:	**Shaun Hughes, P.Eng (AB)**
Report Reviewed By:	**Cathy Corrigan, M.Sc., P.Eng.**
The inspector/reporter represents to the best of their knowledge, the following statement and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.	
Signature:	

Checklist Item	Present Yes/No	Location (Describe relative to existing monuments/features and relative to landfill design i.e. surface, berms, toe)	Length	Width	Depth	Extent relative to Area of Landfill (%)	Description	Photographic Records Focal length, location, view point & direction (relative to magnetic north) Feature of note Scale	Additional Comments	Severity Rating
Settlement	No									
Erosion	No									
Frost Action	No									
Sloughing and Cracking	Yes	Area 1: western side slope Area 2: western side slope	A1: 4m A2: 8m	A1: ~50mm A2: ~10mm	A1: ~100mm A2: ~20mm	<1% (occasional)	Occurring in two midslope locations	Photos: 474, 475, and 477		Acceptable
Animal Burrows	No									
Vegetation	No									
Staining	No									
Vegetation Stress	No									
Seepage Points	No									
Debris Exposed	No									
Presence/Condition - Monitoring Instruments	No									
Features of Note	-									
Landfill Performance										Acceptable

4. Billboards Landfill

The landfill is located east of the main access road, south of the Station Area. Monitoring requirements for 2011 included a visual inspection of the landfill only.

4.1 Visual Inspection

The visual inspection of the Billboards Landfill was conducted on August 15-16, 2011. The Visual Inspection Checklist/Report has been completed as per the ToR and is included below.

Noted features and photo viewpoints can be found on Figure FOX-M.4.

4.1.1 Settlement

A small crack (approximately two m length by 40 mm width by 25 mm depth) was noted in the landfill cap near the access roadway in the northwest corner. The crack is considered minor and does not affect the stability of the landfill.

4.1.2 Erosion

Indications of erosion were not observed.

4.1.3 Frost Action

Indications of frost action were not observed.

4.1.4 Evidence of Burrowing Animals

Indications of burrowing animals were not observed.

4.1.5 Re-establishment of Vegetation

Indications of vegetation were not observed.

4.1.6 Staining

Indications of staining were not observed.

4.1.7 Seepage Points

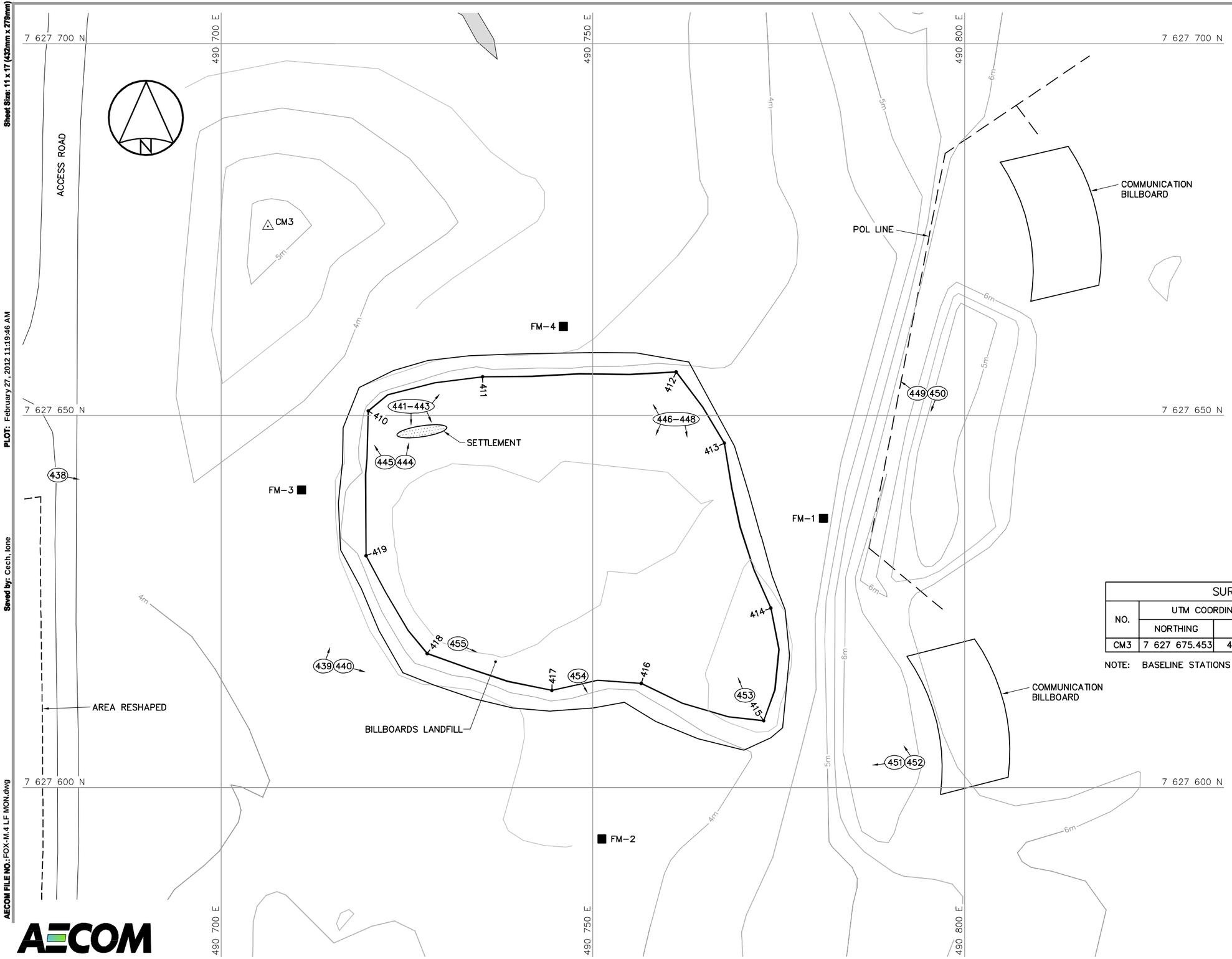
Indications of seepage points were not observed.

4.1.8 Debris

Indications of exposed debris were not observed.

4.1.9 Discussion

There was no evidence of anything that may call into question the integrity of the landfill and therefore, the landfill is considered stable.



GENERAL NOTES:

1. ALL COORDINATES ARE REFERENCED TO NAD83 (CSRS), UTM ZONE 17. ALL ELEVATIONS REFER TO GEODETIC DATUM.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

LEGEND:

- CM3 — SURVEY CONTROL MONUMENT
- 410 — COORDINATE POINT
- ■ — MONITORING SOIL SAMPLE LOCATION (4)
- (438) — APPROX. PHOTOGRAPHIC VIEWPOINT
- MONITORING SITE FEATURE
- BODY OF WATER

BILLBOARDS LANDFILL REGRADED (AS-BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
410	7 627 650.6	490 719.8	4.1
411	7 627 655.2	490 735.2	4.3
412	7 627 655.9	490 761.2	4.3
413	7 627 646.3	490 767.7	4.5
414	7 627 624.1	490 773.9	4.7
415	7 627 609.0	490 773.0	4.8
416	7 627 614.0	490 756.5	4.2
417	7 627 613.1	490 744.5	4.4
418	7 627 618.0	490 727.7	4.4
419	7 627 631.2	490 719.5	4.2

SURVEY CONTROL MONUMENTS				
NO.	UTM COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
CM3	7 627 675.453	490 706.281	5.291	FOX-M BASELINE STA. 47+00

NOTE: BASELINE STATIONS SHOWN ARE IN IMPERIAL UNITS.

RECORD DRAWING
NOT FOR CONSTRUCTION

0 5 10 m SCALE 1:500

AECOM

DEW LINE CLEAN UP
LANDFILL MONITORING PLAN

FOX-M HALL BEACH

BILLBOARDS LANDFILL

FIGURE FOX-M.4

4.2 Photographic Record

Photograph 9. Billboards Landfill: Looking E at Entire Landfill (Photo 438)↑

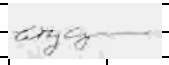
Photograph 10. Billboards Landfill: Looking SE from NW corner of landfill (Photo 442)↑

Photograph 11. Billboards Landfill: Looking W from NE Corner of Landfill (Photo 446)↑

Photograph 12. Billboards Landfill: Looking S from NE Corner of Landfill (Photo 448)↑

4.3 Visual Inspection Checklist and Stability Assessment

DEW Line Cleanup: Post-Construction - Landfill Monitoring
Visual Inspection Checklist and Preliminary Stability Assessment

Site Name:	FOX-M Hall Beach
Landfill Designation:	Billboards Landfill
Date of Inspection:	15-Aug-11
Inspected By:	David Elwood, M.Sc., P.Eng. (AB)
Report Prepared By:	Shaun Hughes, P.Eng (AB)
Report Reviewed By:	Cathy Corrigan, M.Sc., P.Eng.
The inspector/reporter represents to the best of their knowledge, the following statement and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.	
Signature:	

Checklist Item	Present Yes/No	Location (Describe relative to existing monuments/features and relative to landfill design i.e. surface, berms, toe)	Length	Width	Depth	Extent relative to Area of Landfill (%)	Description	Photographic Records Focal length, location, view point & direction (relative to magnetic north) Feature of note Scale	Additional Comments	Severity Rating
Settlement	Yes	Near access roadway, in the northwest corner	2 m	40 mm	25 mm		Settlement crack in landfill cap	Photos 442 and 443		Acceptable
Erosion	No									
Frost Action	No									
Sloughing and Cracking	Yes									
Animal Burrows	No									
Vegetation	No									
Staining	No									
Vegetation Stress	No									
Seepage Points	No									
Debris Exposed	No									
Presence/Condition - Monitoring Instruments	No									
Features of Note	-									
Landfill Performance										Acceptable

5. Hazmat Storage - East Landfill

The landfill is located east of the main access road, east of the Station Area. Monitoring requirements for 2011 included a visual inspection of the landfill only.

5.1 Visual Inspection

The visual inspection of the Hazmat Storage - East Landfill was conducted on August 15-16, 2011. The Visual Inspection Checklist/Report has been completed as per the ToR and is included below.

Noted features and photo viewpoints can be found on Figure FOX-M.5.

5.1.1 Settlement

Indications of settlement were not observed.

5.1.2 Erosion

Indications of erosion were not observed.

5.1.3 Frost Action

Indications of frost action were not observed.

5.1.4 Evidence of Burrowing Animals

Indications of burrowing animals were not observed.

5.1.5 Re-establishment of Vegetation

Indications of vegetation were not observed.

5.1.6 Staining

Indications of staining were not observed.

5.1.7 Seepage Points

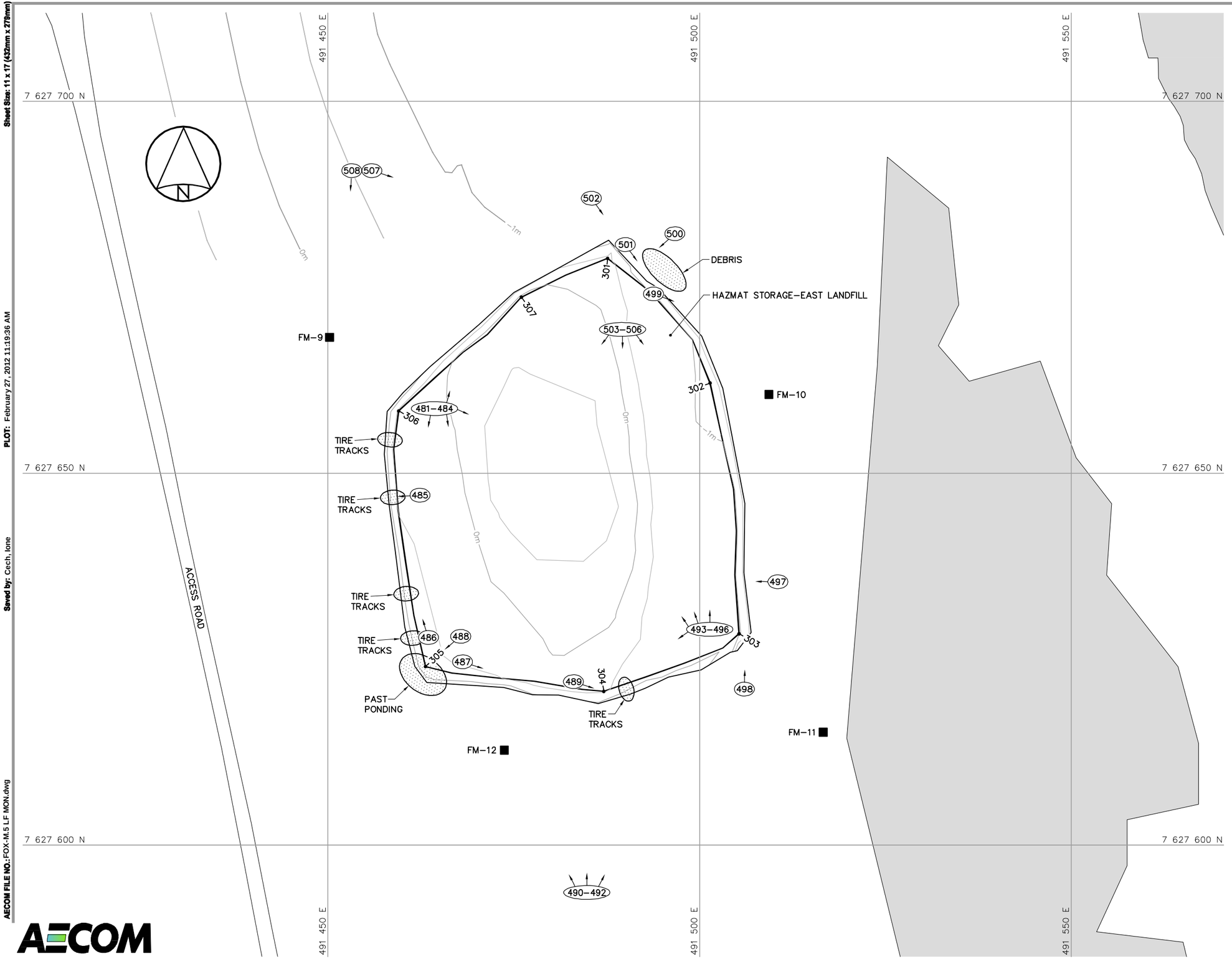
Indications of seepage were not observed.

5.1.8 Debris

Minimal amounts of wood and metal debris were observed along the eastern side of the landfill. This debris appears to have been dumped next to the landfill after construction.

5.1.9 Discussion

Tire tracks were observed on the east and west side slopes of the landfill; however the depth of the track marks was negligible. It was observed that ponding had occurred on the top cover in the southwest corner in the past. The landfill is considered stable.



GENERAL NOTES:

1. ALL COORDINATES ARE REFERENCED TO NAD83 (CSRS), UTM ZONE 17. ALL ELEVATIONS REFER TO GEODETIC DATUM.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

LEGEND:

- 301 — COORDINATE POINT
- ■ — MONITORING SOIL SAMPLE LOCATION (4)
- (481) — APPROX. PHOTOGRAPHIC VIEWPOINT
- MONITORING SITE FEATURE
- BODY OF WATER

HAZMAT STORAGE–EAST LANDFILL REGRADED (AS–BUILT)

NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
301	7 627 678.9	491 487.6	–0.4
302	7 627 662.1	491 501.4	–1.1
303	7 627 628.4	491 505.3	–0.9
304	7 627 620.7	491 487.1	–0.4
305	7 627 624.0	491 463.1	–0.6
306	7 627 658.4	491 459.5	–0.4
307	7 627 673.7	491 476.0	0.2

RECORD DRAWING
NOT FOR CONSTRUCTION

0 5 10 m SCALE 1:500

AECOM

DEW LINE CLEAN UP
LANDFILL MONITORING PLAN

FOX-M HALL BEACH

HAZMAT STORAGE EAST LANDFILL

FIGURE FOX-M.5

5.2 Photographic Record

Photograph 13. Hazmat Storage Landfill: Looking S from NW Corner of Landfill (Photo 481)↑

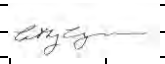
Photograph 14. Hazmat Storage Landfill: Tire tracks on south slope of landfill (Photo 489)↑

Photograph 15. Hazmat Storage Landfill: Area of past ponding (Photo 488) ↑

Photograph 16. Hazmat Storage Landfill: Looking SW from SE corner of landfill (Photo 493) ↑

5.3 Visual Inspection Checklist and Stability Assessment

DEW Line Cleanup: Post-Construction - Landfill Monitoring
Visual Inspection Checklist and Preliminary Stability Assessment

Site Name:	**FOX-M Hall Beach**
Landfill Designation:	**Hazmat Storage Landfill**
Date of Inspection:	**15-Aug-11**
Inspected By:	**David Elwood, M.Sc., P.Eng. (AB)**
Report Prepared By:	**Shaun Hughes, P.Eng (AB)**
Report Reviewed By:	**Cathy Corrigan, M.Sc., P.Eng.**
The inspector/reporter represents to the best of their knowledge, the following statement and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.	
Signature:	

Checklist Item	Present Yes/No	Location (Describe relative to existing monuments/features and relative to landfill design i.e. surface, berms, toe)	Length	Width	Depth	Extent relative to Area of Landfill (%)	Description	Photographic Records Focal length, location, view point & direction (relative to magnetic north) Feature of note Scale	Additional Comments	Severity Rating
Settlement	No									
Erosion	No									
Frost Action	No									
Sloughing and Cracking	No									
Animal Burrows	No									
Vegetation	No									
Staining	No									
Vegetation Stress	No									
Seepage Points	No									
Debris Exposed	No					n/a	Some debris observed laying near the landfill, it appears this was dumped after landfill construction was completed.	Photos: 499 and 501		
Presence/Condition - Monitoring Instruments	No									
Features of Note	Yes	A1: South and west side slopes A2: Top cover				(occasional)	A1: Track marks have been observed along west and southern side slopes	A1: Photos 489 A2: Photos 488	A2: Ponding has occurred in the southwest corner of the top cover in the past	Acceptable
Landfill Performance										Acceptable

6. Communications North Landfill

The landfill is located south of the Station Area, immediately north of the former communications area pad. Monitoring requirements for 2011 included a visual inspection of the landfill only.

6.1 Visual Inspection

The visual inspection of the Communications North Landfill was conducted on August 15-16, 2011. The Visual Inspection Checklist/Report has been completed as per the ToR and is included below.

Noted features and photo viewpoints can be found on Figure FOX-M.6.

6.1.1 Settlement

There are possible indications of settlement in two areas along the side slopes of the landfill. The first is occurring on the west side slope in the south west corner of the landfill roughly eight m in length by 0.5 m wide with a depth of 0.25 m. The second occurrence is a low lying area located along the west side just beyond the toe of the side slopes.

6.1.2 Erosion

Indications of erosion were not observed.

6.1.3 Frost Action

Indications of frost action were not observed.

6.1.4 Re-establishment of Vegetation

Indications of vegetation were not observed.

6.1.5 Evidence of Burrowing Animals

Indications of burrowing animals were not observed.

6.1.6 Staining

Indications of staining were not observed.

6.1.7 Seepage Points

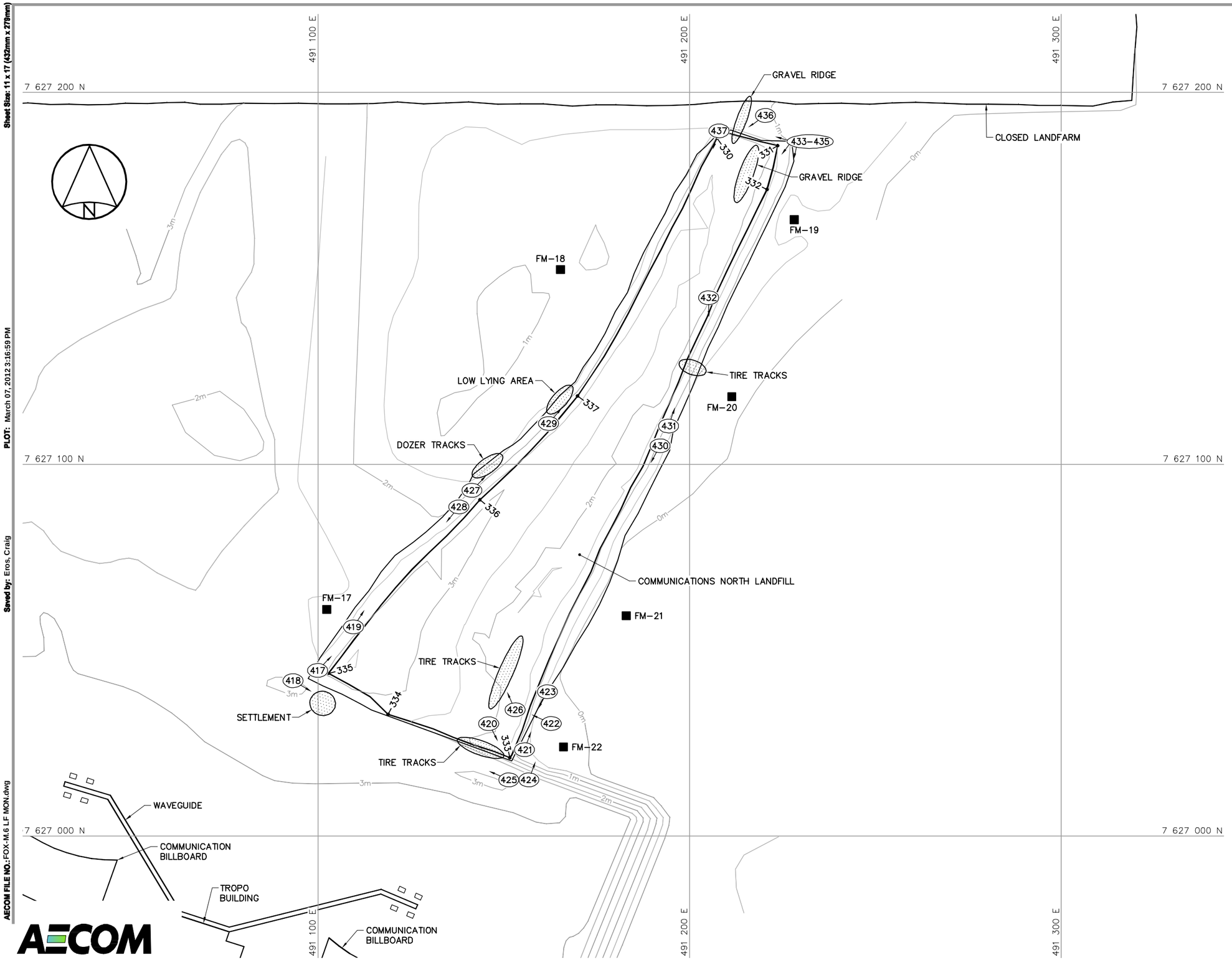
Indications of seepage were not observed.

6.1.8 Debris

Indications of debris were not observed.

6.1.9 Discussion

The two areas of settlement observed are isolated and should be of little consequence to the landfill performing as designed. Tire tracks were observed on the east and west side slopes of the landfill; however the depth of the track marks was negligible. A gravel ridge approximately 0.3 m in height spanning roughly 18 m in length was observed on the top cover in the northwest corner of the landfill. The landfill is considered stable.



GENERAL NOTES:

1. ALL COORDINATES ARE REFERENCED TO NAD83 (CSRS), UTM ZONE 17. ALL ELEVATIONS REFER TO GEODETIC DATUM.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

LEGEND:

- 330 — COORDINATE POINT
- MONITORING SOIL SAMPLE LOCATION (6)
- 416 — APPROX. PHOTOGRAPHIC VIEWPOINT
- MONITORING SITE FEATURE
- BODY OF WATER

COMMUNICATIONS NORTH LANDFILL REGRADED (AS-BUILT)

NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
330	7 627 187.8	491 207.3	2.1
331	7 627 185.8	491 223.6	1.5
332	7 627 173.9	491 220.8	1.6
333	7 627 021.1	491 151.6	1.3
334	7 627 032.8	491 118.8	2.7
335	7 627 043.8	491 102.8	3.1
336	7 627 090.5	491 143.5	2.7
337	7 627 118.4	491 169.8	2.2

RECORD DRAWING
NOT FOR CONSTRUCTION

0 10 20 m SCALE 1:1000

AECOM

DEW LINE CLEAN UP
LANDFILL MONITORING PLAN

FOX-M HALL BEACH

COMMUNICATIONS NORTH LANDFILL

FIGURE FOX-M.6

6.2 Photographic Record

Photograph 17. Communications North Landfill: Looking NE From the SE Corner of the Landfill (Photo 424)↑

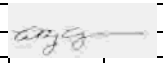
Photograph 18. Communications North Landfill: Settlement on south side slope (Photo 418)↑

Photograph 19. Communications North Landfill: Looking N at Tire Marks in the S Portion of the Landfill (Photo 426)↑

Photograph 20. Communications North Landfill: Gravel ridge on top of landfill (Photo 436). ↑

6.3 Visual Inspection Checklist and Stability Assessment

DEW Line Cleanup: Post-Construction - Landfill Monitoring
Visual Inspection Checklist and Preliminary Stability Assessment

Site Name:	FOX-M Hall Beach
Landfill Designation:	Communications North Landfill
Date of Inspection:	15-Aug-11
Inspected By:	David Elwood, M.Sc., P.Eng. (AB)
Report Prepared By:	Shaun Hughes, P.Eng (AB)
Report Reviewed By:	Cathy Corrigan, M.Sc., P.Eng.
The inspector/reporter represents to the best of their knowledge, the following statement and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.	
Signature:	

Checklist Item	Present Yes/No	Location (Describe relative to existing monuments/features and relative to landfill design i.e. surface, berms, toe)	Length	Width	Depth	Extent relative to Area of Landfill (%)	Description	Photographic Records Focal length, location, view point & direction (relative to magnetic north) Feature of note Scale	Additional Comments	Severity Rating
Settlement	Yes	A1: South, off toe of landfill A2: western side slope	A1: 6 m A2: 0.6m	A1: 1 m A2: 0.6 m	A1: 500 mm A2: 152 mm	<1% (occasional)	A1: Minimal settlement A2: Minimal settlement	A1: Photo 418 A2: Photo 429	low lying area	Acceptable
Erosion	No									
Frost Action	No									
Sloughing and Cracking	No									
Animal Burrows	No									
Vegetation	No									
Staining	No									
Vegetation Stress	No									
Seepage Points	No									
Debris Exposed	No									
Presence/Condition - Monitoring Instruments	No									
Features of Note	Yes	A1: Side Slopes A2:Top cover				(occasional)	A1:Tracking visible on north, south and east side slopes A2: gravel ridge located on top (300mm high)	A1:Photos 420, 422, 426, 429 and 437 A2:Photo 436		Acceptable
Landfill Performance										Acceptable

7. Communications Northwest Landfill

The landfill is located northwest of the Communications Area and west of the Communications North Landfill. Monitoring requirements for the 2011 monitoring event included a visual inspection of the landfill only.

7.1 Visual Inspection

The visual inspection of the Communications Northwest Landfill was conducted on August 15-16, 2011. The Visual Inspection Checklist/Report has been completed as per the ToR and is included below.

Noted features and photo viewpoints can be found on Figure FOX-M.7.

7.1.1 Settlement

Indications of settlement were not observed.

7.1.2 Erosion

Indications of erosion were not observed.

7.1.3 Frost Action

Indications of frost action were not observed.

7.1.4 Evidence of Burrowing Animals

Indications of burrowing animals were not observed.

7.1.5 Re-establishment of Vegetation

Indications of vegetation were not observed.

7.1.6 Staining

Indications of staining were not observed.

7.1.7 Seepage Points

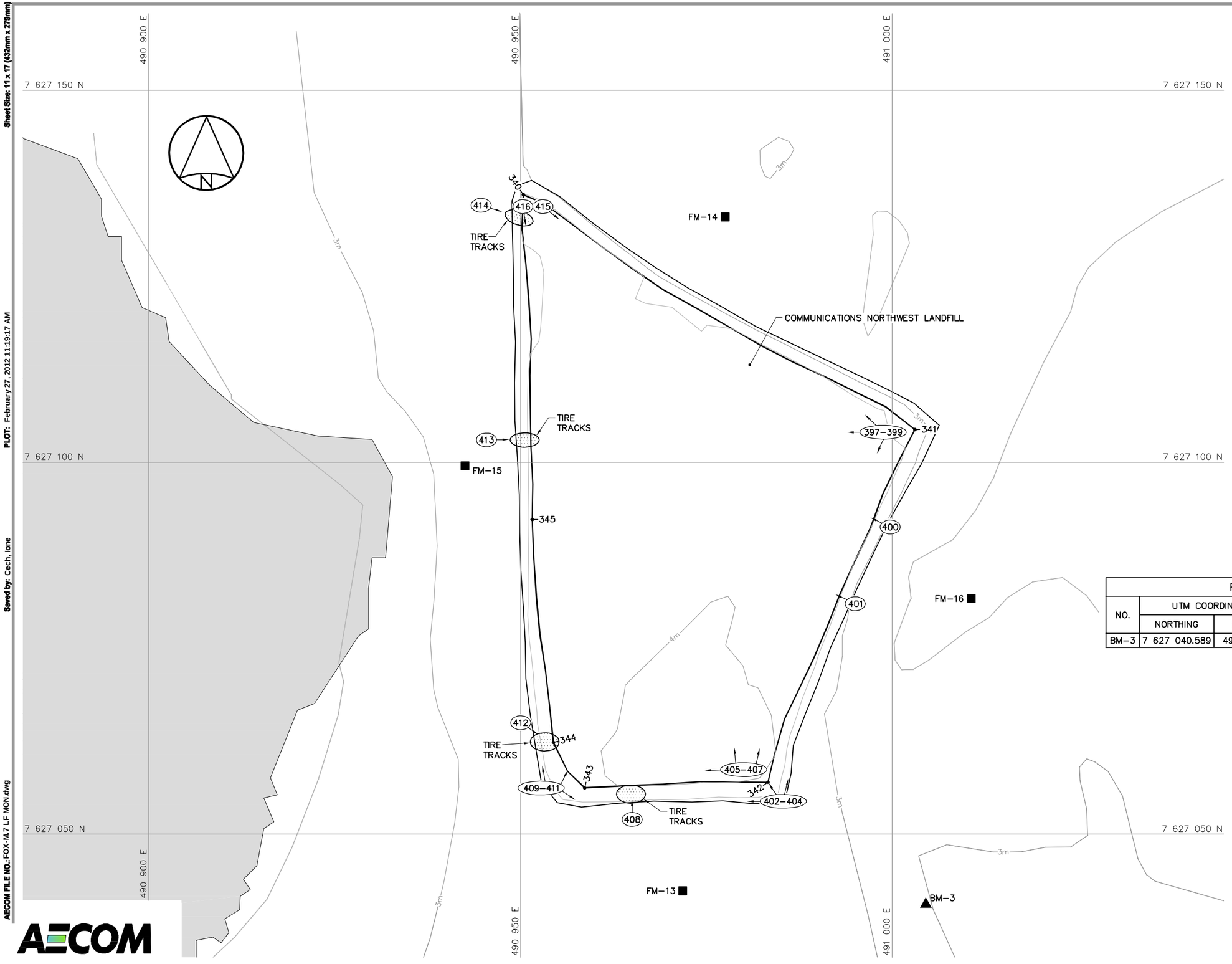
Indications of seeping were not observed.

7.1.8 Debris

Indications of debris were not observed.

7.1.9 Discussion

Tire tracks were observed on the north, south, and east side slopes of the landfill; however the depth of the track marks were negligible. The landfill is considered stable.



GENERAL NOTES:

1. ALL COORDINATES ARE REFERENCED TO NAD83 (CSRS), UTM ZONE 17. ALL ELEVATIONS REFER TO GEODETIC DATUM.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

LEGEND:

- BM-3 — PERMANENT BENCHMARK LOCATION (1)
- 340 — COORDINATE POINT
- ■ — MONITORING SOIL SAMPLE LOCATION (4)
- 397 — APPROX. PHOTOGRAPHIC VIEWPOINT
- MONITORING SITE FEATURE
- BODY OF WATER

COMMUNICATIONS NORTHWEST LANDFILL REGRADED (AS-BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
340	7 627 136.0	490 950.4	3.5
341	7 627 104.4	491 003.0	3.4
342	7 627 057.0	490 983.3	4.0
343	7 627 056.3	490 958.6	3.9
344	7 627 062.4	490 954.4	3.9
345	7 627 092.3	490 951.5	3.6

PERMANENT BENCHMARK				
NO.	UTM COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
BM-3	7 627 040.589	491 004.505	2.949	25mm DIA. STEEL PIPE

RECORD DRAWING
NOT FOR CONSTRUCTION

0 5 10 m SCALE 1:500

DEW LINE CLEAN UP
LANDFILL MONITORING PLAN

FOX-M HALL BEACH

COMMUNICATIONS NORTHWEST LANDFILL

FIGURE FOX-M.7

AECOM

7.2 Photographic Record

Photograph 21. Communications Northwest Landfill: Looking NW from NE Corner of Landfill (Photo 397)↑

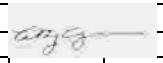
Photograph 22. Communications Northwest Landfill: Looking W from NE Corner of Landfill (Photo 398)↑

Photograph 23. Communications Northwest Landfill: Looking N along W Toe of Landfill (Photo 409)↑

Photograph 24. Communications Northwest Landfill: Looking S from NW Corner of Landfill (Photo 416)↑

7.3 Visual Inspection Checklist and Stability Assessment

DEW Line Cleanup: Post-Construction - Landfill Monitoring
Visual Inspection Checklist and Preliminary Stability Assessment

Site Name:	FOX-M Hall Beach
Landfill Designation:	Communications Northwest Landfill
Date of Inspection:	15-Aug-11
Inspected By:	David Elwood, M.Sc., P.Eng. (AB)
Report Prepared By:	Shaun Hughes, P.Eng (AB)
Report Reviewed By:	Cathy Corrigan, M.Sc., P.Eng.
The inspector/reporter represents to the best of their knowledge, the following statement and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.	
Signature:	

Checklist Item	Present Yes/No	Location (Describe relative to existing monuments/features and relative to landfill design i.e. surface, berms, toe)	Length	Width	Depth	Extent relative to Area of Landfill (%)	Description	Photographic Records Focal length, location, view point & direction (relative to magnetic north) Feature of note Scale	Additional Comments	Severity Rating
Settlement	Yes	Area 1: southern side slope	A1: 8m	A1:0.5m	A1: 250mm	<1%	A1: minimal settlement	A1: Photo 408		Acceptable
Erosion	No									
Frost Action	No									
Sloughing and Cracking	No									
Animal Burrows	No									
Vegetation	No									
Staining	No									
Vegetation Stress	No									
Seepage Points	No									
Debris Exposed	No									
Presence/Condition - Monitoring Instruments	No									
Features of Note	Yes	Side slopes				(occasional)	Tracking visible on west and east side slopes	A1: Photos 400, 401, 408, 412, 413 and 414 A2:Photos 400, 401, 408, 412, 413 and 414		Acceptable
Landfill Performance										Acceptable

8. Tier II Disposal Facility

The landfill is located south of the Communications Area. Monitoring requirements for 2011 included a visual inspection of the landfill, soil and groundwater sampling, and downloading of thermistor data. The Visual Inspection Checklist/Report has been completed as per the ToR and is included below. The results of soil sample analysis are provided in Tables 8.1 and 8.2 below, while groundwater sample results are provided in Tables 8.3 and 8.4. The thermistor data has been forwarded on separately from this report. Thermistor and monitoring wells inspection logs are provided in sections 8.6 and 8.7 below.

8.1 Visual Inspection

The visual inspection of the Tier II Disposal Facility was conducted on August 15-16, 2011. Noted features and photo viewpoints can be found on Figure FOX-M.8.

8.1.1 Settlement

Settlement was observed along the western side slope of the landfill and is approximately five m in length by 0.7m in width.

8.1.2 Erosion

Indications of erosion were not observed.

8.1.3 Frost Action

Indications of frost action were not observed.

8.1.4 Evidence of Burrowing Animals

Indications of burrowing animals were not observed.

8.1.5 Re-establishment of Vegetation

Indications of vegetation were not observed.

8.1.6 Staining

Indications of staining were not observed.

8.1.7 Seepage Points

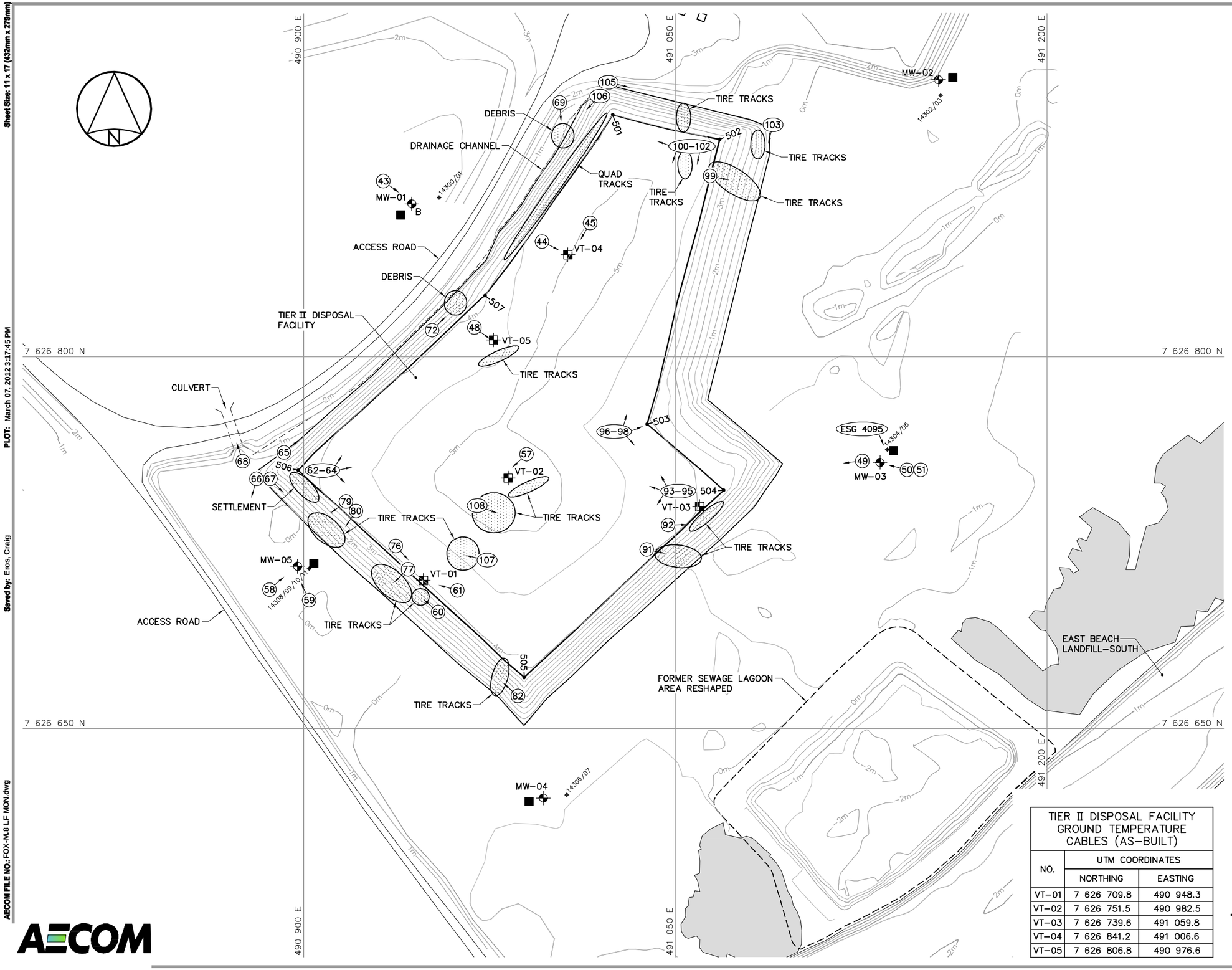
Indications of seepage were not observed.

8.1.8 Debris

A small amount of geotextile was noted near VT-05 and a piece of a metal sign was noted near the northeast corner. They are not thought to have originated from the landfill.

8.1.9 Discussion

The area of settlement should be of little consequence to the landfill performing as designed. Tire tracks were observed on both the side slopes and top cover of the landfill; however the depth of the track marks were negligible. The landfill is considered stable.



GENERAL NOTES:

1. ALL COORDINATES ARE REFERENCED TO NAD83 (CSRS), UTM ZONE 17. ALL ELEVATIONS REFER TO GEODETIC DATUM.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

LEGEND:

- 501 — COORDINATE POINT
- ■ — MONITORING SOIL SAMPLE LOCATION (5)
- 14300 — SOIL SAMPLE TAG LOCATION
- MW-02 — MONITORING WELL LOCATION (4)
- MW-01 B — BACKGROUND MONITORING WELL LOCATION (1)
- VT-01 — GROUND TEMPERATURE CABLE LOCATION (5)
- 43 — APPROX. PHOTOGRAPHIC VIEWPOINT
- MONITORING SITE FEATURE
- BODY OF WATER

TIER II DISPOSAL FACILITY (AS-BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
501	7 626 897.6	491 024.7	4.5
502	7 626 887.7	491 067.9	4.4
503	7 626 772.9	491 038.6	4.0
504	7 626 746.2	491 069.5	4.0
505	7 626 670.7	490 989.0	4.0
506	7 626 754.2	490 897.8	3.9
507	7 626 824.7	490 973.1	4.0

TIER II DISPOSAL FACILITY MONITORING WELLS (AS-BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
MW-01	7 626 861.7	490 943.6	1.8
MW-02	7 626 911.8	491 156.2	0.4
MW-03	7 626 757.4	491 132.6	-0.5
MW-04	7 626 622.0	490 996.7	0.2
MW-05	7 626 715.5	490 897.5	0.6

TIER II DISPOSAL FACILITY GROUND TEMPERATURE CABLES (AS-BUILT)		
NO.	UTM COORDINATES	
	NORTHING	EASTING
VT-01	7 626 709.8	490 948.3
VT-02	7 626 751.5	490 982.5
VT-03	7 626 739.6	491 059.8
VT-04	7 626 841.2	491 006.6
VT-05	7 626 806.8	490 976.6

RECORD DRAWING
NOT FOR CONSTRUCTION

0 15 30 m SCALE 1:1500

DEW LINE CLEAN UP
LANDFILL MONITORING PLAN

FOX-M HALL BEACH

TIER II DISPOSAL FACILITY

FIGURE FOX-M.8

AECOM

8.2 Photographic Record

Photograph 25. Looking SW from N portion of landfill. VT-4 and VT-5 visible (Photo 045). ↑

Photograph 26. Soil sample at MW-3 (ESG Photo 4095). ↑

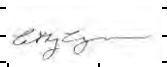
Photograph 27. Debris at Tier II Facility (Photo 069).↑

Photograph 28. Looking down slope at tire tracks on NE slope (Photo 099). ↑

Photograph 29. Debris at Tier II Facility (Photo 072).↑

8.3 Visual Inspection Checklist and Stability Assessment

DEW Line Cleanup: Post-Construction - Landfill Monitoring
Visual Inspection Checklist and Preliminary Stability Assessment

Site Name:	**FOX-M Hall Beach**
Landfill Designation:	**Tier II Disposal Facility**
Date of Inspection:	**15-Aug-11**
Inspected By:	**David Elwood, M.Sc., P.Eng. (AB)**
Report Prepared By:	**Shaun Hughes, P.Eng (AB)**
Report Reviewed By:	**Cathy Corrigan, M.Sc., P.Eng.**
The inspector/reporter represents to the best of their knowledge, the following statement and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.	
Signature:	

Checklist Item	Present Yes/No	Location (Describe relative to existing monuments/features and relative to landfill design i.e. surface, berms, toe)	Length	Width	Depth	Extent relative to Area of Landfill (%)	Description	Photographic Records Focal length, location, view point & direction (relative to magnetic north) Feature of note Scale	Additional Comments	Severity Rating
Settlement	No	Western side slope	7m	0.7m		Isolated	Minor settlement			Acceptable
Erosion	No									
Frost Action	No									
Sloughing and Cracking	no									
Animal Burrows	No									
Vegetation	No									
Staining	No									
Vegetation Stress	No									
Seepage Points	No									
Debris Exposed	No	Located on side slope near VT-05; near control point 501					Geotextile within cap near VT-05; abandoned sign and post	Photos 72 and 69 (respectively)	Debris did not originate within landfill	Acceptable
Presence/Condition - Monitoring Instruments	No									
Features of Note	Yes	Side slopes and top cover					Track marks at various locations on the landfill with varying depths.	Photos 79, 80, 77, 82, 99, 91 and 103	Deepest track mark estimated at 30mm.	Acceptable
Landfill Performance										Acceptable

8.4 Soil Sample Analytical Data

Results and analysis for soil sample analytical results are included in Table 8.1 and 8.2 below. Lab Results can be found on the CD included with this report.

Table 8.1: Tier II Disposal Facility – Soil Sample Analytical Results

Sample #	Location	Depth (cm)	Cu [mg/kg]	Ni [mg/kg]	Co [mg/kg]	Cd [mg/kg]	Pb [mg/kg]	Zn [mg/kg]	Cr [mg/kg]	As [mg/kg]	Hg [mg/kg]	PCBs [mg/kg]	F1 C_8-C_{10} [mg/kg]	F2 C_{10}-C_{16} [mg/kg]	F3 C_{16}-C_{34} [mg/kg]	TPH C_6-C_{34} [mg/kg]
11-14300	MW-1	0-10	6.7	7.2	<5.0	<1.0	<10	<15	<20	2.2	<0.10	<0.050	<10	<4.0	11	11
11-14301	MW-1	30-40	3.4	6.8	<5.0	<1.0	<10	18	<20	6.5	<0.10	<0.050	<10	<4.0	<9.0	ND
11-14302	MW-2	0-10	4.7	7.4	<5.0	<1.0	<10	16	<20	2.4	<0.10	<0.050	<10	7.3	<9.0	7.3
11-14303	MW-2	30-40	5.5	7.5	<5.0	<1.0	<10	<15	<20	1.7	<0.10	<0.050	<10	11	12	23
11-14304	MW-3	0-10	5	10	<5.0	<1.0	<10	<15	<20	4.9	<0.10	<0.050	<10	<4.0	<9.0	ND
11-14305	MW-3	30-40	5.3	10	<5.0	<1.0	<10	16	<20	4.1	<0.10	<0.050	<10	<4.0	<9.0	ND
11-14306	MW-4	0-10	4	7.3	<5.0	<1.0	<10	<15	<20	2.5	<0.10	<0.050	<10	4.4	<9.0	4.4
11-14307	MW-4	30-40	3.7	6.7	<5.0	<1.0	<10	<15	<20	2.6	<0.10	<0.050	<10	<4.0	9	9
11-14308/9*	MW-5	0-10	4.5	11	<5.0	<1.0	<10	17	<20	2.5	<0.10	<0.050	<10	<4.0	<9.0	ND
11-14310/11*	MW-5	30-40	3.3	8.1	<5.0	<1.0	<10	16	<20	1.9	<0.10	<0.050	<10	<4.0	<9.0	ND
***Field duplicates. Average of analytical results shown in data table**																
TPH: Sum of the concentrations of F1, F2, and F3. Concentrations below method detection limits are excluded from the total																
ND: Not Detected																

Table 8.2: Tier II Disposal Facility – Soil Sample Analysis

Parameter	2011
Copper	Detectable concentrations ranged between 3.3 - 6.7 milligrams per kilogram (mg/kg) with detectable concentrations at all sample locations and a mean concentration of 4.6 mg/kg. The highest concentration was observed at surface at MW-1, whereas the lowest concentration was observed at depth at MW-5.
Nickel	Detectable concentrations ranged between 6.7 - 11 mg/kg with detectable concentrations at all sample locations and a mean concentration of 8.2 mg/kg. The highest concentration was observed at surface at MW-5, whereas the lowest concentration was observed at depth at MW-4.
Cobalt	All reported concentrations were less than the method detection limit. (5 mg/kg)
Cadmium	All reported concentrations were less than the method detection limit. (1 mg/kg)
Lead	All reported concentrations were less than the method detection limit. (10 mg/kg)
Zinc	Concentrations ranged between 16 – 18 mg/kg with detectable concentrations in 5 of 10 sample locations and a mean concentration of 17 mg/kg. The highest concentrations were observed at depth at MW-1, whereas the lowest concentrations were observed at surface at MW-2 and at depth at MW-5.
Chromium	All reported concentrations were less than the method detection limit (20 mg/kg)
Arsenic	Detectable concentrations ranged between 1.7 - 6.5 mg/kg with detectable concentrations at all sample locations and a mean concentration of 3.1 mg/kg. The highest concentration was observed at depth at MW-2, whereas the lowest concentration was observed at depth at MW-1.
Mercury	All reported concentrations were less than the method detection limit. (0.10 mg/kg)
PCBs	All reported concentrations were less than the method detection limit. (0.050 mg/kg)
TPH	Concentrations ranged between <4-23 mg/kg with detectable Fraction F2 concentrations noted at three sample locations including surface and depth samples at MW-2 and depth sample at MW-4, and detectable Fraction F3 concentrations noted at three sample locations including the surface sample at MW-1, and depth samples at MW-2 and MW-5.

8.5 Groundwater Sample Analytical Data

Table 8.3: Tier II Disposal Facility – Groundwater Analysis

Sample #	Location	Cu [mg/L]	Ni [mg/L]	Co [mg/L]	Cd [mg/L]	Pb [mg/L]	Zn [mg/L]	Cr [mg/L]	As [mg/L]	Hg [mg/L]	PCBs [mg/L]	F1 C_8-C_{10} [mg/L]	F2 C_{10}-C_{16} [mg/L]	F3 C_{16}-C_{34} [mg/L]	TPH C_6-C_{34} [mg/L]
11-14345/46	MW-1	<0.0050	0.015	<0.0030	<0.0010	<0.010	<0.010	0.058	<0.0030	<0.00040	<0.0030	<0.050	<0.50	<1.0	ND
11-14347	MW-2	<0.0050	0.018	<0.0030	<0.0010	<0.010	0.24	0.056	<0.0030	<0.00040	<0.0030	<0.050	<0.50	<1.0	ND
11-14348	MW-3	0.0072	0.10	<0.0030	<0.0010	<0.010	<0.010	0.26	<0.0030	<0.00040	<0.0030	<0.050	<0.50	<1.0	ND
11-14349	MW-4	0.0059	0.0073	<0.0030	<0.0010	<0.010	<0.010	0.058	<0.0030	<0.00040	<0.0030	<0.050	<0.50	<1.0	ND
11-14350	MW-5	0.0056	0.017	<0.0030	<0.0010	<0.010	<0.010	0.22	<0.0030	<0.00040	<0.0030	<0.050	<0.50	<1.0	ND
***Field duplicates. Average of analytical results shown in data table**															
PCB detection limit increased to 0.0030 mg/L in 2011															
TPH: Sum of the concentrations of F1, F2, and F3. Concentrations below method detection limits are excluded from the total															
ND: Not Detected															

Table 8.4: Tier II Disposal Facility – Groundwater Evaluation

Parameter	2011
Copper	Detectable concentrations ranged between 0.0056 - 0.0072 milligrams per litre (mg/L) with the highest concentration noted at MW-3 (0.0072 mg/L) and lowest concentrations noted at MW-1 and MW-5 (0.0056 mg/L).
Nickel	Detectable concentrations ranged between 0.0073 - 0.10 mg/kg with detectable concentrations at all well locations with the highest concentration noted at MW-3 (0.10 mg/L) and lowest concentration noted at MW-4 (0.0073 mg/L).
Cobalt	All reported concentrations were less than the method detection limit (0.0030 mg/L)
Cadmium	All reported concentrations were less than the method detection limit (0.0010 mg/L)
Lead	All reported concentrations were less than the method detection limit (0.010 mg/L)
Zinc	Detectable concentrations were only noted in MW-2 (0.24 mg/L).
Chromium	Detectable concentrations ranged between 0.056 - 0.26 mg/L with detectable concentrations at all well locations with the highest concentration noted at MW-3 (0.26 mg/L) and lowest concentration noted at MW-2 (0.056 mg/L).
Arsenic	All reported concentrations were less than the method detection limit (0.0030 mg/L)
Mercury	All reported concentrations were less than the method detection limit (0.0040 mg/L)
PCBs	All reported concentrations were less than the method detection limit (0.0030 mg/L)
TPH	All reported concentrations were less than the method detection limit.

8.6 Monitoring Well Sampling/Inspection Logs

Table B-3: Monitoring Well Sampling Log- MW-1

Site Name:	FOX-M
Date of Sampling Event:	Saturday, August 13, 2011
Names of Samplers:	Tom Partridge, Alaina Leslie
Monitoring Well ID:	MW-1
Facility:	Tier II Disposal Facility

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:	Tape Measure	Procedure/Equipment:	waterra tubing / interface meter
Well height above ground (m)=	0.45	Depth to water surface (m)=	1.18
Diameter of well (m)=	0.040	Static water level* (m)=	0.73
Depth of installation* (m)=	3.0	Depth to bottom (m)=	2.00
Length screened section (m)=	1.50	Free product thickness (mm)=	N/A
Depth to top of screen* (m)=	0.50		
Calculations		**Notes**	
Depth of water (m)=	0.82	Evidence of sludge etc:	N/A
Well volume of water (L)=	1.0	Evidence of freezing/siltation: (compare to installation record)	freezing
Length screen collecting water (m)=	0.82		

Development/Purging Information

Equipment:	waterra tubing / interface meter

Date & Time	Volume Removed (L)	Temperature (^{o}C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water
8/13/2011 (10:00 AM)	1.0	10.0	8.3	1400	22	clear
8/13/2011 (10:10 AM)	1.0	9.2	8.2	1200	51	clear

Water Sampling		**Soil Sampling**	
Date and time collected:	Saturday, August 13, 2011	Date and time collected:	Saturday, August 13, 2011
Sample Number - Water:	11-14345, 11-14346	Sample Number - Soil:	11-14300
			11-14301 (30 - 40 cm depth)
Sample containers:	1L HDPE	Sample containers:	125 mL jars
	1L Teflon		whirlpaks
	250 mL Amber glass		
Procedure/Equipment:	Waterra tubing	Procedure/Equipment:	Shovel, disposable scoops
Water description:	clear	Soil description:	low lying vegetation, moderate organics, dark brown soil / gravel present
Filtration: (Y/N)	N	GPS	490945
Acidification: (Y/N)	N		7626864
Sampling Equipment Decontamination: (Y/N)	Methanol / Distilled Water Mix Distilled Water	Sampling Equipment Decontamination: (Y/N)	Y (shovel rinse)
Number washes:	3	Number washes:	0
Number rinses:	3	Number rinses:	1

n/a=not applicable

*From ground surface. All other measurements are assumed to be from the top of the casing.

Table B-4: Monitoring Well Sampling Log- MW-2

Site Name:	FOX-M
Date of Sampling Event:	Saturday, August 13, 2011
Names of Samplers:	Tom Partridge, Alaina Leslie
Monitoring Well ID:	MW-2
Facility:	Tier II Disposal Facility

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:	Tape Measure	Procedure/Equipment:	waterra tubing / interface meter
Well height above ground (m)=	0.48	Depth to water surface (m)=	1.1
Diameter of well (m)=	0.040	Static water level* (m)=	0.62
Depth of installation* (m)=	3.0	Depth to bottom (m)=	2.1
Length screened section (m)=	1.5	Free product thickness (mm)=	N/A
Depth to top of screen* (m)=	0.54		
Calculations		**Notes**	
Depth of water (m)=	1.0	Evidence of sludge etc:	N/A
Well volume of water (L)=	1.3	Evidence of freezing/siltation: (compare to installation record)	freezing
Length screen collecting water (m)=	1.00		

Development/Purging Information

Equipment:	waterra tubing / interface meter

Date & Time	Volume Removed (L)	Temperature (^{o}C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water
8/13/2011 (10:50 AM)	1.0	8.6	8.2	1200	11	clear
8/13/2011 (11:00 AM)	1.0	8.5	7.8	1100	15	clear

Water Sampling		**Soil Sampling**	
Date and time collected:	Saturday, August 13, 2011	Date and time collected:	Saturday, August 13, 2011
Sample Number - Water:	11-14347	Sample Number - Soil:	11-14302
			11-14303 (30 - 40 cm depth)
Sample containers:	1L HDPE	Sample containers:	125 mL jars
	1L Teflon		whirlpaks
	250mL Amber glass		
Procedure/Equipment:	Waterra tubing	Procedure/Equipment:	Shovel, disposable scoops
Water description:	clear	Soil description:	marsh area, high amount of organics, clay present
Filtration: (Y/N)	N	GPS	491159
Acidification: (Y/N)	N		7626913
Sampling Equipment Decontamination: (Y/N)	Methanol / Distilled Water Mix Distilled Water	Sampling Equipment Decontamination: (Y/N)	Y (shovel rinse)
Number washes:	3	Number washes:	0
Number rinses:	3	Number rinses:	1

n/a=not applicable

*From ground surface. All other measurements are assumed to be from the top of the casing.

Table B-5: Monitoring Well Sampling Log- MW-3

Site Name:	FOX-M
Date of Sampling Event:	Saturday, August 13, 2011
Names of Samplers:	Tom Partridge, Alaina Leslie
Monitoring Well ID:	MW-3
Facility:	Tier II Disposal Facility

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:	Tape Measure	Procedure/Equipment:	waterra tubing / interface meter
Well height above ground (m)=	0.52	Depth to water surface (m)=	1.1
Diameter of well (m)=	0.040	Static water level* (m)=	0.53
Depth of installation* (m)=	3.0	Depth to bottom (m)=	2.2
Length screened section (m)=	1.5	Free product thickness (mm)=	N/A
Depth to top of screen* (m)=	0.50		
Calculations		**Notes**	
Depth of water (m)=	1.11	Evidence of sludge etc:	N/A
Well volume of water (L)=	1.4	Evidence of freezing/siltation: (compare to installation record)	freezing
Length screen collecting water (m)=	1.11	Replaced lock.	

Development/Purging Information

Equipment: waterra tubing / interface meter

Date & Time	Volume Removed (L)	Temperature (°C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water
8/13/2011 (12:35 PM)	1.0	9.2	11.2	900.0	92	clear, sediment flakes at bottom
8/13/2011 (12:45 PM)	1.0	11	11	996	60.0	clear, less sediment present

Water Sampling		**Soil Sampling**	
Date and time collected:	Saturday, August 13, 2011	Date and time collected:	Saturday, August 13, 2011
Sample Number - Water:	11-14348	Sample Number - Soil:	11-14304
			11-14305 (30 - 40 cm depth)
Sample containers:	1L HDPE	Sample containers:	125 mL jars
	1L Teflon		whirlpaks
	250mL Amber glass		
Procedure/Equipment:	Waterra tubing	Procedure/Equipment:	Shovel, disposable scoops
Water description:	clear	Soil description:	cobbles, rust coloured staining, low amount of organics, dark brown soil / gravel present
Filtration: (Y/N)	N	GPS	491131
Acidification: (Y/N)	N		7626761
Sampling Equipment Decontamination: (Y/N)	Methanol / Distilled Water Mix Distilled Water	Sampling Equipment Decontamination: (Y/N)	Y (shovel rinse)
Number washes:	3	Number washes:	0
Number rinses:	3	Number rinses:	1

n/a=not applicable

*From ground surface. All other measurements are assumed to be from the top of the casing.

Table B-6: Monitoring Well Sampling Log- MW-4

Site Name:	FOX-M
Date of Sampling Event:	Saturday, August 13, 2011
Names of Samplers:	Tom Partridge, Alaina Leslie
Monitoring Well ID:	MW-4
Facility:	Tier II Disposal Facility

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:	Tape Measure	Procedure/Equipment:	waterra tubing / interface meter
Well height above ground (m)=	0.70	Depth to water surface (m)=	1.1
Diameter of well (m)=	0.040	Static water level* (m)=	0.42
Depth of installation* (m)=	3.0	Depth to bottom (m)=	2.2
Length screened section (m)=	1.5	Free product thickness (mm)=	N/A
Depth to top of screen* (m)=	0.47		
Calculations		**Notes**	
Depth of water (m)=	1.1	Evidence of sludge etc:	N/A
Well volume of water (L)=	1.3	Evidence of freezing/siltation: (compare to installation record)	freezing
Length screen collecting water (m)=	1.00		

Development/Purging Information

Equipment:	waterra tubing / interface meter

Date & Time	Volume Removed (L)	Temperature (^{o}C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water
8/13/2011 (1:10 PM)	0.75	10.0	6.0	770	18	clear
8/13/2011 (1:20 PM)	0.75	9.0	6.0	780	36	clear

Water Sampling		**Soil Sampling**	
Date and time collected:	Saturday, August 13, 2011	Date and time collected:	Saturday, August 13, 2011
Sample Number - Water:	11-14349	Sample Number - Soil:	11-14306
			11-14307 (30 - 40 cm depth)
Sample containers:	1L HDPE	Sample containers:	125 mL jars
	1L Teflon		whirlpaks
	250mL Amber glass		
Procedure/Equipment:	Waterra tubing	Procedure/Equipment:	Shovel, disposable scoops
Water description:	clear	Soil description:	swampy area, low lying vegetation, clay present
Filtration: (Y/N)	N	GPS	490997
Acidification: (Y/N)	N		7626625
Sampling Equipment Decontamination: (Y/N)	Methanol / Distilled Water Mix Distilled Water	Sampling Equipment Decontamination: (Y/N)	Y (shovel rinse)
Number washes:	3	Number washes:	0
Number rinses:	3	Number rinses:	1

n/a=not applicable

*From ground surface. All other measurements are assumed to be from the top of the casing.

Table B-7: Monitoring Well Sampling Log- MW-5

Site Name:	FOX-M
Date of Sampling Event:	Saturday, August 13, 2011
Names of Samplers:	Tom Partridge, Alaina Leslie
Monitoring Well ID:	MW-5
Facility:	Tier II Disposal Facility

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:	Tape Measure	Procedure/Equipment:	waterra tubing / interface meter
Well height above ground (m)=	0.56	Depth to water surface (m)=	1.3
Diameter of well (m)=	0.040	Static water level* (m)=	0.69
Depth of installation* (m)=	3.0	Depth to bottom (m)=	2.4
Length screened section (m)=	1.5	Free product thickness (mm)=	N/A
Depth to top of screen* (m)=	0.54		
Calculations		**Notes**	
Depth of water (m)=	1.2	Evidence of sludge etc:	N/A
Well volume of water (L)=	1.5	Evidence of freezing/siltation: (compare to installation record)	N/A
Length screen collecting water (m)=	1.19		

Development/Purging Information

Equipment:	waterra tubing / interface meter

Date & Time	Volume Removed (L)	Temperature (^{o}C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water
8/13/2011 (1:50 PM)	0.75	8.9	6.0	2000.0	5.0	clear
8/13/2011 (2:00 PM)	0.75	9.9	6.0	1000.0	5.6	clear

Water Sampling		**Soil Sampling**	
Date and time collected:	Saturday, August 13, 2011	Date and time collected:	Saturday, August 13, 2011
Sample Number - Water:	11-14350	Sample Number - Soil:	11-14308, 11-14309
			11-14310, 11-14311 (30 - 40 cm depth)
Sample containers:	1L HDPE	Sample containers:	125 mL jars
	1L Teflon		whirlpaks
	250 mL Amber glass		
Procedure/Equipment:	Waterra tubing	Procedure/Equipment:	Shovel, disposable scoops
Water description:	clear	Soil description:	water at depth, medium amount of organics, cobbles, clay present
Filtration: (Y/N)	N	GPS	490898
Acidification: (Y/N)	N		7626715
Sampling Equipment Decontamination: (Y/N)	Methanol / Distilled Water Mix Distilled Water	Sampling Equipment Decontamination: (Y/N)	Y (shovel rinse)
Number washes:	3	Number washes:	0
Number rinses:	3	Number rinses:	1

n/a=not applicable

*From ground surface. All other measurements are assumed to be from the top of the casing.

8.7 Thermistor Inspection Logs

Thermistor Annual Maintenance Report

Contractor Name:	AECOM	Inspection Date:	8/16/2011, 9/16/2011
Prepared By:	Dave Elwood		

Thermistor Information

Site Name:	**FOX-M**	Thermistor Location	Tier II Facility		
Thermistor Number:	**VT-1**	Inclination	Vertical		
Install Date:	**23-Aug-07**	First Date Event	**26-Aug-10**	Last Date Event	**27-Aug-10**
Coordinates and Elevation	N	7626709 E	490947	Elev	**0**
Length of Cable (m)	**9.23**	Cable Lead Above Ground (m)	**4.2**	Nodal Points	**11**
Datalogger Serial #	**07050014**			Cable Serial Number	**TS07050014 B-9.2**

Thermistor Inspection

	Good	Needs Maintenance
Casing	Yes	No
Cover	Yes	No
Data Logger	Yes	No
Cable	Yes	No
Beads	Yes	No
Battery Installation Date	16-Sep-11	
Battery Levels	Main 11.34 V	Aux 11.56 V

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1		
2		
3		
4		
5		
6		
7		
8		

Bead	ohms	Degrees C
9		
10		
11		

Observations and Proposed Maintenance

Memory at 39%

Manual temperature readings were not taken

Thermistor and casing in general good condition

Thermistor Annual Maintenance Report

Contractor Name:	AECOM	Inspection Date:	8/15/2011, 9/16/2011
Prepared By:	Dave Elwood		

Thermistor Information

Site Name:	**FOX-M**	Thermistor Location	Tier II Facility		
Thermistor Number:	**VT-2**	Inclination	Vertical		
Install Date:	**23-Aug-07**	First Date Event	**26-Aug-10**	Last Date Event	**15-Aug-11**
Coordinates and Elevation	N	7626747	E	490982 Elev	**0**
Length of Cable (m)	**7.32**	Cable Lead Above Ground (m)	**4.3**	Nodal Points	**7**
Datalogger Serial #	**07060009**			Cable Serial Number	**TS07060009 B-7.2**

Thermistor Inspection

	Good	Needs Maintenance
Casing	Yes	No
Cover	Yes	No
Data Logger	Yes	No
Cable	Yes	No
Beads	Yes	No
Battery Installation Date	16-Sep-11	
Battery Levels	Main 11.34 V	Aux 13.87 V

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	10.074	9.0874
2	13.297	4.1684
3	16.111	0.305
4	17.494	-1.2717
5	18.735	-2.6561
6	20.43	-4.3336
7	21.46	-5.3478

Bead	ohms	Degrees C

Observations and Proposed Maintenance

Memory 39% full

Thermistor and casing in general good condition

Thermistor Annual Maintenance Report

Contractor Name:	AECOM	Inspection Date:	8/15/2011, 9/16/2011
Prepared By:	Dave Elwood		

Thermistor Information

Site Name:	**FOX-M**	Thermistor Location	Tier II Facility		
Thermistor Number:	**VT-3**	Inclination	Vertical		
Install Date:	**23-Aug-07**	First Date Event	**26-Aug-11**	Last Date Event	**27-Aug-11**
Coordinates and Elevation	N	7626738	E	491057 Elev	**0**
Length of Cable (m)	**9.21**	Cable Lead Above Ground (m)	**4.2**	Nodal Points	**11**
Datalogger Serial #	**06030090**			Cable Serial Number	**TS06030090 B-9.2**

Thermistor Inspection

	Good	Needs Maintenance
Casing	Yes	No
Cover	Yes	No
Data Logger	Yes	No
Cable	Yes	No
Beads	Yes	No
Battery Installation Date	16-Sep-11	
Battery Levels	Main 11.34 V	Aux 13.87 V

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	9.863	
2	13.209	
3	15.794	
4	17.128	
5	18.216	
6	19.146	
7	20.02	
8	20.71	

Bead	ohms	Degrees C
9	21.65	
10	22.4	
11	22.85	

Observations and Proposed Maintenance

Possibly requires re-programing
No temperature readings taken
Thermistor and casing in general good condition

Thermistor Annual Maintenance Report

Contractor Name:	AECOM	Inspection Date:	8/15/2011, 9/16/2011
Prepared By:	Dave Elwood		

Thermistor Information

Site Name:	**FOX-M**	Thermistor Location	Tier II Facility		
Thermistor Number:	**VT-4**	Inclination	Vertical		
Install Date:	**23-Aug-07**	First Date Event	**26-Aug-11**	Last Date Event	**27-Aug-11**
Coordinates and Elevation	N	7626841	E	491005 Elev	**0**
Length of Cable (m)	**7.32**	Cable Lead Above Ground (m)	**4.3**	Nodal Points	**7**
Datalogger Serial #	**7060020**			Cable Serial Number	**TS06060020**

Thermistor Inspection

	Good	Needs Maintenance	
Casing	Yes	No	
Cover	Yes	No	
Data Logger	Yes	No	
Cable	Yes	No	minor cracking at connection
Beads	Yes	No	
Battery Installation Date	16-Sep-11		
Battery Levels	Main	11.34 V	Aux 13.63 V

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	-	
2	266.3	
3	260.7	
4	249.8	
5	262.3	
6	250.9	
7	269	

Bead	ohms	Degrees C

Observations and Proposed Maintenance

Datalogger requires reprogramming

Thermistor and casing in general good condition

Thermistor Annual Maintenance Report

Contractor Name:	AECOM	Inspection Date:	8/15/2011, 9/16/2011
Prepared By:	Dave Elwood		

Thermistor Information

Site Name:	**FOX-M**	Thermistor Location	Tier II Facility		
Thermistor Number:	**VT-5**	Inclination	Vertical		
Install Date:	**23-Aug-07**	First Date Event	**26-Aug-10**	Last Date Event	**15-Aug-11**
Coordinates and Elevation	N	7626809	E	490979 Elev	**0**
Length of Cable (m)	**7.33**	Cable Lead Above Ground (m)	**4.3**	Nodal Points	**7**
Datalogger Serial #	**7060023**			Cable Serial Number	**TS07060023 B-7.2**

Thermistor Inspection

	Good	Needs Maintenance
Casing	Yes	No
Cover	Yes	No
Data Logger	Yes	No
Cable	Yes	No
Beads	Yes	No
Battery Installation Date	16-Sep-11	
Battery Levels	Main 11.34 V	Aux 13.63 V

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	9.257	10.6367
2	12.891	4.7623
3	15.865	0.6841
4	17.191	-0.9039
5	18.708	-2.5836
6	19.691	-3.5877
7	20.47	-4.4234

Bead	ohms	Degrees C

Observations and Proposed Maintenance

Thermistor and casing in general good condition

9. East Beach Landfill

The East Beach Landfill is the main landfill at FOX-M and is located southeast of the Station Area. Monitoring requirements 2011 included a visual inspection of the landfill, soil and groundwater sampling, and downloading of thermistor data. The thermistor data has been forwarded on separately from this report. The results of soil sample analysis are provided in Tables 9.1 and 9.2 below, while groundwater sample results are provided in Tables 9.3 and 9.4. Thermistor and monitoring wells inspection logs are provided in sections 9.6 and 9.7 below.

9.1 Visual Inspection

The visual inspection of the East Beach Landfill was conducted on August 15-16, 2011. The Visual Inspection Checklist/Report has been completed as per the ToR and is included below.
Noted features and photo viewpoints can be found on Figures FOX-M.9 and FOX-M.10.

9.1.1 Settlement

Indications of settlement were not observed.

9.1.2 Erosion

Indications of erosion were not observed.

9.1.3 Frost Action

Indications of frost action were not observed.

9.1.4 Evidence of Burrowing Animals

Indications of burrowing animals were not observed.

9.1.5 Re-establishment of Vegetation

Indications of vegetation were not observed.

9.1.6 Staining

Indications of staining were not observed.

9.1.7 Seepage Points

Indications of seepage were not observed.

9.1.8 Debris

Indications of debris were not observed.

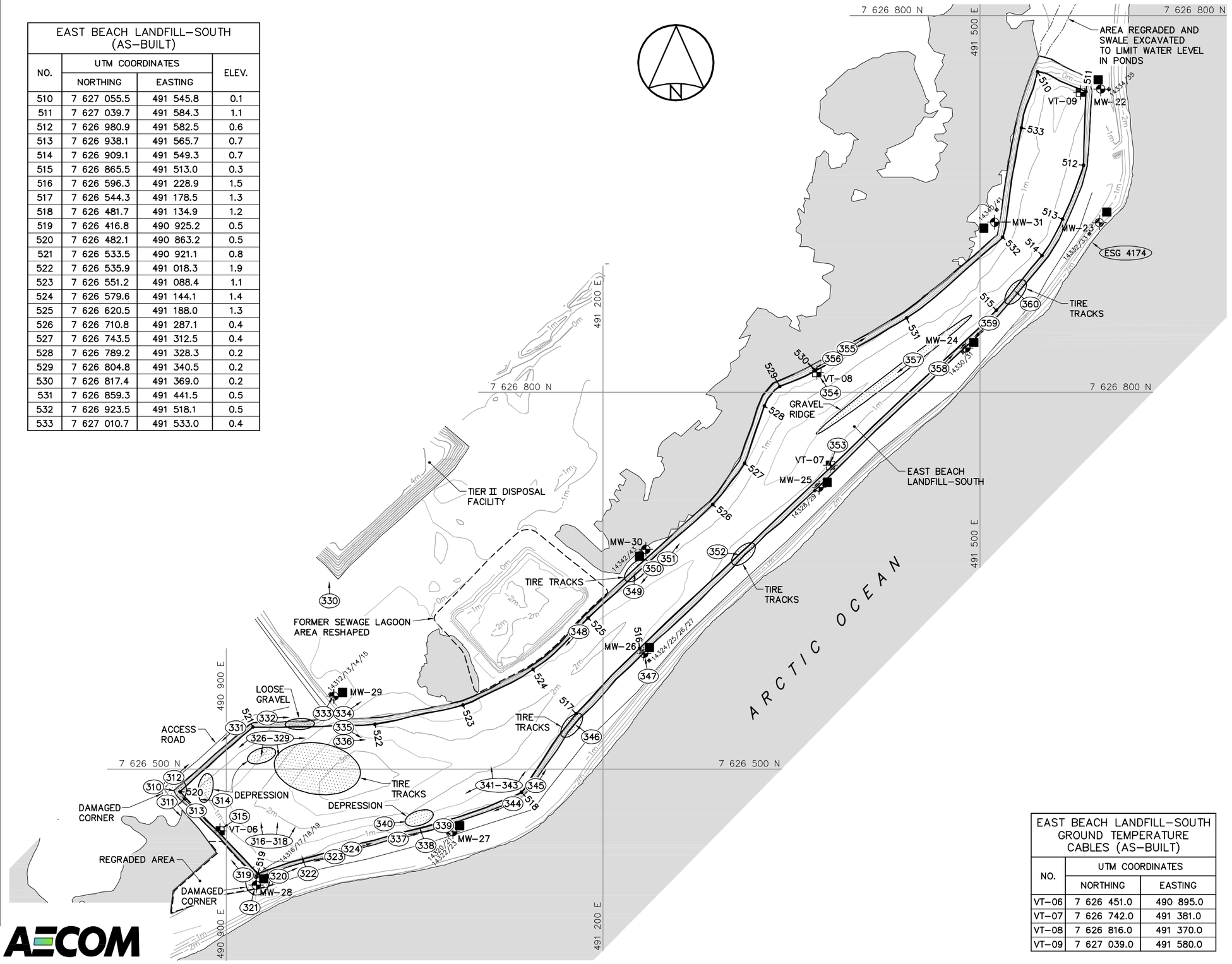
9.1.9 Discussion

Tire tracks were observed on the landfills side slopes and top cover; however the depth of the track marks were negligible. The damage to the corners of the landfill and the depressions noted are a result of quads driving over the area.

A gravel ridge approximately 125 m in length was observed on the top cover of the landfill.

Overall, the landfill is considered stable.

EAST BEACH LANDFILL–SOUTH (AS–BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
510	7 627 055.5	491 545.8	0.1
511	7 627 039.7	491 584.3	1.1
512	7 626 980.9	491 582.5	0.6
513	7 626 938.1	491 565.7	0.7
514	7 626 909.1	491 549.3	0.7
515	7 626 865.5	491 513.0	0.3
516	7 626 596.3	491 228.9	1.5
517	7 626 544.3	491 178.5	1.3
518	7 626 481.7	491 134.9	1.2
519	7 626 416.8	490 925.2	0.5
520	7 626 482.1	490 863.2	0.5
521	7 626 533.5	490 921.1	0.8
522	7 626 535.9	491 018.3	1.9
523	7 626 551.2	491 088.4	1.1
524	7 626 579.6	491 144.1	1.4
525	7 626 620.5	491 188.0	1.3
526	7 626 710.8	491 287.1	0.4
527	7 626 743.5	491 312.5	0.4
528	7 626 789.2	491 328.3	0.2
529	7 626 804.8	491 340.5	0.2
530	7 626 817.4	491 369.0	0.2
531	7 626 859.3	491 441.5	0.5
532	7 626 923.5	491 518.1	0.5
533	7 627 010.7	491 533.0	0.4



GENERAL NOTES:

1. ALL COORDINATES ARE REFERENCED TO NAD83 (CSRS), UTM ZONE 17. ALL ELEVATIONS REFER TO GEODETIC DATUM.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

LEGEND:

- 510 — COORDINATE POINT
- MONITORING SOIL SAMPLE LOCATION (10)
- 14312 — SOIL SAMPLE TAG LOCATION
- MW–22 — MONITORING WELL LOCATION (10)
- VT–06 — GROUND TEMPERATURE CABLE LOCATION (4)
- SWALE
- 310 — APPROX. PHOTOGRAPHIC VIEWPOINT
- MONITORING SITE FEATURE
- BODY OF WATER

EAST BEACH LANDFILL–SOUTH MONITORING WELLS (AS–BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
MW–22	7 627 041.6	491 596.1	–0.5
* MW–23	–	–	–
MW–24	7 626 835.4	491 488.8	0.0
MW–25	7 626 724.5	491 371.8	0.2
MW–26	7 626 592.2	491 232.3	0.6
MW–27	7 626 450.3	491 080.3	–0.1
MW–28	7 626 407.7	490 923.9	–0.4
MW–29	7 626 558.2	490 985.7	0.0
MW–30	7 626 675.1	491 234.0	–1.0
MW–31	7 626 935.6	491 511.6	–0.2

* NOTE: NO AS–BUILT SURVEY INFORMATION.

RECORD DRAWING
NOT FOR CONSTRUCTION

0 30 60 m SCALE 1:3000

EAST BEACH LANDFILL–SOUTH GROUND TEMPERATURE CABLES (AS–BUILT)		
NO.	UTM COORDINATES	
	NORTHING	EASTING
VT–06	7 626 451.0	490 895.0
VT–07	7 626 742.0	491 381.0
VT–08	7 626 816.0	491 370.0
VT–09	7 627 039.0	491 580.0

DEW LINE CLEAN UP
LANDFILL MONITORING PLAN

FOX-M HALL BEACH

EAST BEACH LANDFILL - SOUTH

FIGURE FOX-M.9

AECOM

GENERAL NOTES:

1. ALL COORDINATES ARE REFERENCED TO NAD83 (CSRS), UTM ZONE 17. ALL ELEVATIONS REFER TO GEODETIC DATUM.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

LEGEND:

- 210 — COORDINATE POINT
- MONITORING SOIL SAMPLE LOCATION (2)
- 14336 — SOIL SAMPLE TAG LOCATION
- MW-20 — MONITORING WELL LOCATION (2)
- VT-10 — GROUND TEMPERATURE CABLE LOCATION (2)
- SWALE
- 371 — APPROX. PHOTOGRAPHIC VIEWPOINT
- MONITORING SITE FEATURE
- BODY OF WATER

EAST BEACH LANDFILL–NORTH REGRADED (AS–BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
210	7 627 358.1	491 598.5	0.1
211	7 627 357.8	491 649.0	1.2
212	7 627 341.0	491 650.1	1.3
213	7 627 317.3	491 626.7	0.7
214	7 627 283.2	491 606.9	0.7
215	7 627 277.6	491 562.3	0.2
216	7 627 290.5	491 556.0	0.1
217	7 627 347.5	491 580.3	0.2

EAST BEACH LANDFILL–NORTH MONITORING WELLS (AS–BUILT)			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
MW–20	7 627 347.8	491 660.5	0.0
MW–21	7 627 249.3	491 604.4	–0.1

RECORD DRAWING
NOT FOR CONSTRUCTION

0 10 20 m SCALE 1:1000

EAST BEACH LANDFILL–NORTH GROUND TEMPERATURE CABLES (AS–BUILT)		
NO.	UTM COORDINATES	
	NORTHING	EASTING
VT–10	7 627 284.0	491 605.0
VT–11	7 627 315.0	491 569.0

DEW LINE CLEAN UP
LANDFILL MONITORING PLAN

FOX-M HALL BEACH

EAST BEACH LANDFILL - NORTH

FIGURE FOX-M.10

AECOM

9.2 Photographic Record

Photograph 30. East Beach Landfill North: Looking at hole noted on east slope (Photo 391)↑

Photograph 31. East Beach Landfill North: Looking W from SE Corner of Landfill at dozer tracks (Photo 374)↑

Photograph 32. East Beach Landfill North: Tire tracks on west side of landfill (Photo 388)↑

Photograph 33. East Beach Landfill North: Soil sampling at MW-21 (ESG Photo 4185)↑

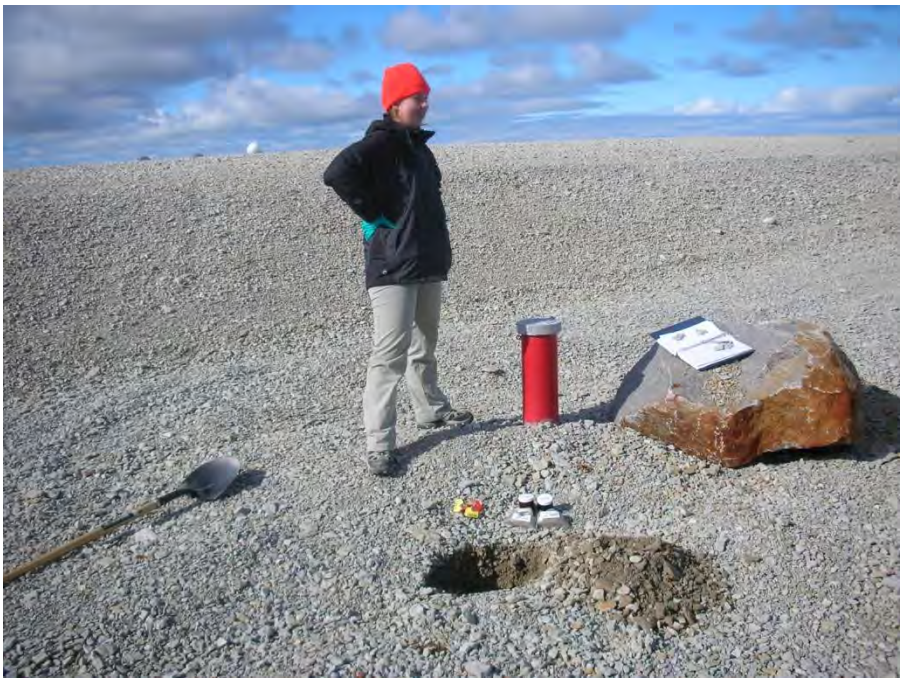
Photograph 34. East Beach Landfill South: Looking N at MW-28. (Photo 321)↑

Photograph 35. East Beach Landfill South: Looking at damage to corner of landfill (Photo 310)↑

Photograph 36. East Beach Landfill South: Looking tire ruts at east side of landfill (Photo 328)↑

Photograph 37. East Beach Landfill South: Gravel ridge located at centre of landfill (Photo 357)↑

Photograph 38. East Beach Landfill South: Facing SE from MW-28 (ESG Photo 4162)↑

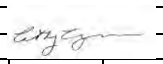


Photograph 39. East Beach Landfill South: Soil sample location at MW-23 (ESG Photo 4174)↑

Photograph 40. East Beach Landfill South: Looking S at thermistor VT-07 (Photo 353)↑

9.3 Visual Inspection Checklist and Stability Assessment

DEW Line Cleanup: Post-Construction - Landfill Monitoring
Visual Inspection Checklist and Preliminary Stability Assessment

Site Name:	**FOX-M Hall Beach**
Landfill Designation:	**East Beach Landfill**
Date of Inspection:	**15-Aug-11**
Inspected By:	**David Elwood, M.Sc., P.Eng. (AB)**
Report Prepared By:	**Shaun Hughes, P.Eng (AB)**
Report Reviewed By:	**Cathy Corrigan, M.Sc., P.Eng.**
The inspector/reporter represents to the best of their knowledge, the following statement and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.	
Signature:	

Checklist Item	Present Yes/No	Location (Describe relative to existing monuments/features and relative to landfill design i.e. surface, berms, toe)	Length	Width	Depth	Extent relative to Area of Landfill (%)	Description	Photographic Records Focal length, location, view point & direction (relative to magnetic north) Feature of note Scale	Additional Comments	Severity Rating
Settlement	No									
Erosion	No									
Frost Action	No									
Sloughing and Cracking	No									
Animal Burrows	No									
Vegetation	No									
Staining	No									
Vegetation Stress	No									
Seepage Points	No									
Debris Exposed	No									
Presence/Condition - Monitoring Instruments	No									
Features of Note	Yes	A1: top cover, north lobe A2: west side slope, south lobe A3: west corner, south lobe A4: southwest corner, south lobe A5: top cover, south lobe A6: top cover, south lobe A7: top cover, eastern side of south lobe	A1: 50mm A2: 3m A3: 2m A4: 3.5m A5: 5m A6: 4m A7: 125m	A1: 50mm A2: 2m A3: 1.5m A4: 3.5m A5: 1.5m A6: 2.5m A7: 2.5-5m	A1: 200mm A2: 50mm A3: 50mm A4: 25mm A5: 25mm A6: 50mm		Track marks at various locations (A1 to A6). Gravel ridge (A7)	A1: Photo 391 A2: Photo 311 A3: Photo 314 A4: Photo 321 A5: Photo 329 A6: Photo 340 A7: Photo 357	Damage to corners of landfill and depression noted a result of quads.	Acceptable
Landfill Performance										Acceptable

9.4 Soil Sample Analytical Data

Results and analysis for soil sample analytical results are included in Table 9.1 and 9.2 below. Lab Results can be found on the CD included with this report.

Table 9.1: East Beach Landfill - Soil Sample Analytical Results

Sample #	Location	Depth (cm)	Cu [mg/kg]	Ni [mg/kg]	Co [mg/kg]	Cd [mg/kg]	Pb [mg/kg]	Zn [mg/kg]	Cr [mg/kg]	As [mg/kg]	Hg [mg/kg]	PCBs [mg/kg]	F1 C_8-C_{10} [mg/kg]	F2 C_{10}-C_{16} [mg/kg]	F3 C_{16}-C_{34} [mg/kg]	TPH C_6-C_{34} [mg/kg]
11-14338	MW-20	0-10	5.2	8.5	<5.0	<1.0	<10	17	<20	2.3	<0.10	<0.050	<10	<4.0	11	11
11-14339	MW-20	30-40	3.9	7.1	<5.0	<1.0	<10	17	<20	2.5	<0.10	<0.050	<10	<4.0	<9.0	ND
11-14336	MW-21	0-10	5.8	6.6	<5.0	<1.0	<10	26	<20	2.8	<0.10	<0.050	<10	<4.0	<9.0	ND
11-14337	MW-21	30-40	3.9	5.8	<5.0	<1.0	<10	<15	<20	2.7	<0.10	<0.050	<10	<4.0	<9.0	ND
11-14334	MW-22	0-10	4.7	9.3	<5.0	<1.0	<10	<15	<20	2.6	<0.10	<0.050	<10	<4.0	12	12
11-14335	MW-22	30-40	4.7	7.0	<5.0	<1.0	<10	<15	<20	2.7	<0.10	<0.050	<10	<4.0	13	13
11-14332	MW-23	0-10	11	9.5	<5.0	<1.0	23	27	<20	8.4	<0.10	0.13	<10	<4.0	57	57
11-14333	MW-23	30-40	13	9.1	<5.0	<1.0	15	21	<20	3.4	<0.10	0.070	<10	<4.0	21	21
11-14330	MW-24	0-10	7.7	59	<5.0	<1.0	12	23	120	2.7	<0.10	<0.050	<10	<4.0	9	9
11-14331	MW-24	30-40	5.6	7.2	<5.0	<1.0	<10	18	<20	2.4	<0.10	<0.050	<10	<4.0	15	15
11-14328	MW-25	0-10	8.7	9.7	<5.0	<1.0	480	18	<20	2.8	<0.10	<0.050	<10	<4.0	13	13
11-14329	MW-25	30-40	6.0	7.8	<5.0	<1.0	130	<15	<20	4.0	<0.10	<0.050	<10	<4.0	9.7	9.7
11-14324/25*	MW-26	0-10	<3.0	6.7	<5.0	<1.0	<10	<15	<20	2.4	<0.10	<0.050	<10	<4.0	<9.0	ND
11-14326/27*	MW-26	30-40	<3.0	<5.0	<5.0	<1.0	<10	<15	<20	2.0	<0.10	<0.050	<10	<4.0	<9.0	ND
11-14320/21*	MW-27	0-10	4.4	6.9	<5.0	<1.0	<10	<15	<20	3.4	<0.10	<0.050	<10	<4.0	<9.0	ND
11-14322/23*	MW-27	30-40	110	7.3	<5.0	<1.0	<10	<15	<20	3.7	<0.10	<0.050	<10	<4.0	<9.0	ND
11-14316/17*	MW-28	0-10	4.7	6.3	<5.0	<1.0	<10	<15	<20	4.4	<0.10	<0.050	<10	<4.0	<9.0	ND
11-14318/19*	MW-28	30-40	4.6	7.5	<5.0	<1.0	<10	<15	<20	2.6	<0.10	<0.050	<10	4.1	<9.0	4.1
11-14312/13*	MW-29	0-10	3.4	7.2	<5.0	<1.0	<10	<15	<20	2.5	<0.10	<0.050	<10	<4.0	<9.0	ND
11-14314/15*	MW-29	30-40	4.2	7.9	<5.0	<1.0	<10	<15	<20	3.0	<0.10	<0.050	<10	<4.0	<9.0	ND
11-14342	MW-30	0-10	3.3	7.2	<5.0	<1.0	<10	<15	<20	2.7	<0.10	<0.050	<10	<4.0	<9.0	ND
11-14343	MW-30	30-40	3.7	7.5	<5.0	<1.0	<10	<15	<20	1.4	<0.10	<0.050	<10	<4.0	<9.0	ND
11-14340	MW-31	0-10	4.6	7.8	<5.0	<1.0	10	16	<20	3.0	<0.10	0.28	<10	<4.0	<9.0	ND
11-14341	MW-31	30-40	3.2	6.5	<5.0	<1.0	<10	<15	<20	1.4	<0.10	0.10	<10	<4.0	<9.0	ND
***Field duplicates. Average of analytical results shown in datatable**																
TPH: Sum of the concentrations of F1, F2, and F3. Concentrations below method detection limits are excluded from the total																
ND: Not Detected																

Table 9.2: East Beach Landfill – Soil Sample Results Analysis

Parameter	2011
Copper	Detectable concentrations ranged between 3.2 – 110 mg/kg with detectable concentrations at 22 of 24 sample locations and a mean concentration of 5.5 mg/kg. The highest concentration was observed at depth at MW-27 (110 mg/kg), whereas the lowest concentration was observed at the depth at MW-31 (3.2 mg/kg). The concentration provided for MW-27 was the average of three samples (4.4, 4.3, and 335 mg/kg) taken, with an average of 110 mg/kg. The same location as sampled in 2007 which yielded a concentration of 430 mg/kg which suggests pre-existing contamination rather than contaminant transport from landfill.
Nickle	Detectable concentrations ranged between 5.8 - 59 mg/kg with detectable concentrations at 23 of 24 sample locations and a mean concentration of 9.8 mg/kg. The highest concentration was observed at surface at MW-24 (59 mg/kg), whereas the lowest concentration was observed at depth at MW-21 (5.8 mg/kg).
Cobalt	All reported concentrations were less than the method detection limit (5.0 mg/kg)
Cadmium	All reported concentrations were less than the method detection limit (1.0 mg/kg)
Lead	Detectable concentrations ranged between 10 - 480 mg/kg with detectable concentrations at 6 of 24 sample locations and a mean concentration of 110 mg/kg. The highest concentration was observed at the surface at MW-25 (480 mg/kg), whereas the lowest concentration was observed at the depth at MW-31 (10 mg/kg). Contaminant concentration in MW-25 was elevated in comparison to the baseline average and the surface sample exceeded the Tier I DLCC. Previous samples taken at MW-25 (2008 and 2011) have been over 100 mg/kg. The results from MW-25 are not believed to be an indication of contaminant leaching.
Zinc	Detectable concentrations ranged between 16 - 27 mg/kg with detectable concentrations at 9 of 24 sample locations and a mean concentration of 20 mg/kg. The highest concentration was observed at the surface at MW-23 (27 mg/kg), whereas the lowest concentration was observed at the depth at MW-31 (16 mg/kg).
Chromium	Only one instance of detectable concentration was noted in the 24 sample locations. The surface sample at MW-24 was found to have a concentration of 120 mg/kg.
Arsenic	Detectable concentrations ranged between 1.4 - 8.4 mg/kg with detectable concentrations at all sample locations and a mean concentration of 3.0 mg/kg. The highest concentration was observed at the surface at MW-23 (8.4 mg/kg), whereas the lowest concentration was observed at the depth at MW-30 and MW-31 (1.4 mg/kg).
Mercury	All reported concentrations were less than the method detection limit (0.10 mg/kg)
PCBs	Detectable concentrations ranged between 0.070 - 0.28 mg/kg with detectable concentrations at 4 of 24 sample locations and a mean concentration of 0.15 mg/kg. The highest concentration was observed at the surface at MW-31 (0.28 mg/kg), whereas the lowest concentration was observed at the depth at MW-23 (0.070 mg/kg).
TPH	Concentrations ranged between <4-57 mg/kg with detectable Fraction F2 concentrations noted at one sample location at depth at MW-28 (4.1 mg/kg) , and detectable Fraction F3 concentrations noted at nine sample locations with the highest concentration observed at surface depth at MW-23 (57 mg/kg), whereas the lowest concentration was observed at the surface at MW-24 (9.0 mg/kg).

9.5 Groundwater Sample Analytical Data

The groundwater analytical results and evaluation for the East Beach Landfill are included in Table 9.3 and 9.4 below. Groundwater samples were collected from MW-29 and MW-30. The remaining 10 monitoring wells had insufficient water to collect a sample.

Table 9.3: East Beach Landfill – Groundwater Analytical Results

Sample #	Location	Cu [mg/L]	Ni [mg/L]	Co [mg/L]	Cd [mg/L]	Pb [mg/L]	Zn [mg/L]	Cr [mg/L]	As [mg/L]	Hg [mg/L]	PCBs [mg/L]	F1 C_8-C_{10} [mg/L]	F2 C_{10}-C_{16} [mg/L]	F3 C_{16}-C_{34} [mg/L]	TPH C_6-C_{34} [mg/L]
11-14351	MW-29	0.0060	<0.0050	<0.0030	<0.0010	<0.010	0.065	0.031	<0.0030	<0.00040	<0.0030	<0.050	<0.50	<1.0	ND
11-14352	MW-30	0.016	0.079	0.0098	0.0010	0.013	0.19	0.22	0.014	<0.00040	<0.0030	<0.050	<0.50	<1.0	ND
PCB detection limit increased to 0.0030 mg/L in 2011															
TPH: Sum of the concentrations of F1, F2, and F3. Concentrations below method detection limits are excluded from the total															
ND: Not Detected															

Table 9.4: East Beach Landfill – Groundwater Analysis

Parameter	2011
Copper	Detectable concentrations ranged between 0.0060 - 0.016 mg/L with detectable concentrations at all sample locations and a mean concentration of 0.011 mg/L. The highest concentration was observed at MW-30 (0.016 mg/L), whereas the lowest concentration was observed at the depth at MW-29 (0.0060 mg/L).
Nickle	Only one instance of detectable concentration was noted in the two sample locations. The sample at MW-30 was found to have a concentration of 0.079 mg/L.
Cobalt	Only one instance of detectable concentration was noted in the two sample locations. The sample at MW-30 was found to have a concentration of 0.0098 mg/L.
Cadmium	Only one instance of detectable concentration was noted in the two sample locations. The sample at MW-30 was found to have a concentration of 0.0010 mg/L.
Lead	Only one instance of detectable concentration was noted in the two sample locations. The sample at MW-30 was found to have a concentration of 0.013 mg/L.
Zinc	Detectable concentrations ranged between 0.065 - 0.19 mg/L with detectable concentrations at all sample locations and a mean concentration of 0.128 mg/L. The highest concentration was observed at MW-30 (0.19 mg/L), whereas the lowest concentration was observed at the depth at MW-29 (0.065 mg/L).
Chromium	Detectable concentrations ranged between 0.031 - 0.22 mg/L with detectable concentrations at all sample locations and a mean concentration of 0.13 mg/L. The highest concentration was observed at MW-30 (0.22 mg/L), whereas the lowest concentration was observed at the depth at MW-29 (0.031 mg/L).
Arsenic	Only one instance of detectable concentration was noted in the two sample locations. The sample at MW-30 was found to have a concentration of 0.014 mg/L.
Mercury	All reported concentrations were less than the method detection limit. (0.00040 mg/kg)
PCBs	All reported concentrations were less than the method detection limit. (0.0030 mg/kg)
TPH	All reported concentrations were less than the method detection limit.

9.6 Monitoring Well Sampling/Inspection Logs

Table B-10: Monitoring Well Sampling Log- MW-20

Site Name:	FOX-M		
Date of Sampling Event:	Monday, August 15, 2011		
Names of Samplers:	Tom Partridge, Alaina Leslie		
Monitoring Well ID:	MW-20		
Facility:	East Beach Landfill		
Water Sample Measured Data			
Condition of Well:	Good		
Procedure/Equipment:	Tape Measure	Procedure/Equipment:	waterra tubing / interface meter
Well height above ground (m)=	0.39	Depth to water surface (m)=	N/A
Diameter of well (m)=	0.040	Static water level* (m)=	0
Depth of installation* (m)=	3.0	Depth to bottom (m)=	1.13
Length screened section (m)=	1.5	Free product thickness (mm)=	N/A
Depth to top of screen* (m)=	0.46		
Calculations		**Notes**	
Depth of water (m)=	0	Evidence of sludge etc:	N/A
Well volume of water (L)=	0	Evidence of freezing/siltation: (compare to installation record)	freezing
Length screen collecting water (m)=	N/A	Replaced lock.	

Development/Purging Information

Equipment: N/A

Date & Time	Volume Removed (L)	Temperature (^{o}C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water
well frozen						

Water Sampling		**Soil Sampling**	
Date and time collected:	Monday, August 15, 2011	Date and time collected:	Monday, August 15, 2011
Sample Number - Water:	no sample collected	Sample Number - Soil:	11-14338
			11-14339 (30 - 40 cm depth)
Sample containers:	N/A	Sample containers:	125 mL jars
			whirlpaks
Procedure/Equipment:	N/A	Procedure/Equipment:	Shovel, disposable scoops
Water description:	N/A	Soil description:	gravel, light brown silt / sand
Filtration: (Y/N)	N/A	GPS	491659
Acidification: (Y/N)	N/A		7627348
Sampling Equipment Decontamination: (Y/N)	N/A	Sampling Equipment Decontamination: (Y/N)	Y (shovel rinse)
Number washes:	N/A	Number washes:	0
Number rinses:	N/A	Number rinses:	1

n/a=not applicable

*From ground surface. All other measurements are assumed to be from the top of the casing.

Table B-11: Monitoring Well Sampling Log- MW-21

Site Name:	FOX-M
Date of Sampling Event:	Monday, August 15, 2011
Names of Samplers:	Tom Partridge, Alaina Leslie
Monitoring Well ID:	MW-21
Facility:	East Beach Landfill

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:	Tape Measure	Procedure/Equipment:	waterra tubing / interface meter
Well height above ground (m)=	0.46	Depth to water surface (m)=	N/A
Diameter of well (m)=	0.040	Static water level* (m)=	0
Depth of installation* (m)=	3.0	Depth to bottom (m)=	1.42
Length screened section (m)=	1.5	Free product thickness (mm)=	N/A
Depth to top of screen* (m)=	0.60		

Calculations		**Notes**	
Depth of water (m)=	0	Evidence of sludge etc:	N/A
Well volume of water (L)=	0	Evidence of freezing/siltation: (compare to installation record)	freezing
Length screen collecting water (m)=	N/A	Well cover broken.	

Development/Purging Information

Equipment: waterra tubing / interface meter

Date & Time	Volume Removed (L)	Temperature (^{o}C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water
						well frozen

Water Sampling		**Soil Sampling**	
Date and time collected:	Monday, August 15, 2011	Date and time collected:	Monday, August 15, 2011
Sample Number - Water:	no sample collected	Sample Number - Soil:	11-14336
			11-14337 (30 - 40 cm depth)
Sample containers:	N/A	Sample containers:	125 mL jars
			whirlpaks
Procedure/Equipment:	N/A	Procedure/Equipment:	Shovel, disposable scoops
Water description:	N/A	Soil description:	gravel, light brown silt / sand
Filtration: (Y/N)	N/A	GPS	491602
Acidification: (Y/N)	N/A		7627250
Sampling Equipment Decontamination: (Y/N)	N/A	Sampling Equipment Decontamination: (Y/N)	Y (shovel rinse)
Number washes:	N/A	Number washes:	0
Number rinses:	N/A	Number rinses:	1

n/a=not applicable

*From ground surface. All other measurements are assumed to be from the top of the casing.

Table B-12: Monitoring Well Sampling Log- MW-22

Site Name:	FOX-M
Date of Sampling Event:	Monday, August 15, 2011
Names of Samplers:	Tom Partridge, Alaina Leslie
Monitoring Well ID:	MW-22
Facility:	East Beach Landfill

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:	Tape Measure	Procedure/Equipment:	waterra tubing / interface meter
Well height above ground (m)=	0.54	Depth to water surface (m)=	N/A
Diameter of well (m)=	0.040	Static water level* (m)=	0
Depth of installation* (m)=	3.0	Depth to bottom (m)=	0.67
Length screened section (m)=	1.5	Free product thickness (mm)=	N/A
Depth to top of screen* (m)=	0.60		
Calculations		**Notes**	
Depth of water (m)=	0	Evidence of sludge etc:	N/A
Well volume of water (L)=	0	Evidence of freezing/siltation: (compare to installation record)	freezing
Length screen collecting water (m)=	N/A	Well cover broken.	

Development/Purging Information

Equipment:	N/A					
Date & Time	Volume Removed (L)	Temperature (^{o}C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water
				well frozen		

Water Sampling		**Soil Sampling**	
Date and time collected:	Monday, August 15, 2011	Date and time collected:	Monday, August 15, 2011
Sample Number - Water:	no sample collected	Sample Number - Soil:	11-14334
			11-14335 (30 - 40 cm depth)
Sample containers:	N/A	Sample containers:	125 mL jars
			whirlpaks
Procedure/Equipment:	N/A	Procedure/Equipment:	Shovel, disposable scoops
Water description:	N/A	Soil description:	cobbles present, moderate sand/loam
Filtration: (Y/N)	N/A	GPS	491595
Acidification: (Y/N)	N/A		7627044
Sampling Equipment Decontamination: (Y/N)	N/A	Sampling Equipment Decontamination: (Y/N)	Y (shovel rinse)
Number washes:	N/A	Number washes:	0
Number rinses:	N/A	Number rinses:	1

n/a=not applicable

*From ground surface. All other measurements are assumed to be from the top of the casing.

Table B-13: Monitoring Well Sampling Log- MW-23

Site Name:	FOX-M		
Date of Sampling Event:	Monday, August 15, 2011		
Names of Samplers:	Tom Partridge, Alaina Leslie		
Monitoring Well ID:	MW-23		
Facility:	East Beach Landfill		
Water Sample Measured Data			
Condition of Well:	Good		
Procedure/Equipment:	Tape Measure	Procedure/Equipment:	waterra tubing / interface meter
Well height above ground (m)=	0.40	Depth to water surface (m)=	N/A
Diameter of well (m)=	0.040	Static water level* (m)=	0
Depth of installation* (m)=	3.0	Depth to bottom (m)=	1.3
Length screened section (m)=	1.5	Free product thickness (mm)=	N/A
Depth to top of screen* (m)=	0.60		
Calculations		**Notes**	
Depth of water (m)=	0	Evidence of sludge etc:	N/A
Well volume of water (L)=	0	Evidence of freezing/siltation: (compare to installation record)	freezing
Length screen collecting water (m)=	N/A		

Development/Purging Information

Equipment: N/A

Date & Time	Volume Removed (L)	Temperature (^{o}C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water
						well frozen

Water Sampling		**Soil Sampling**	
Date and time collected:	Monday, August 15, 2011	Date and time collected:	Monday, August 15, 2011
Sample Number - Water:	no sample collected	Sample Number - Soil:	11-14332
			11-14333 (30 - 40 cm depth)
Sample containers:	N/A	Sample containers:	125 mL jars
			whirlpaks
Procedure/Equipment:	N/A	Procedure/Equipment:	Shovel, disposable scoops
Water description:	N/A	Soil description:	moderate light brown soil / fines, high amount of gravel, cobbles, area adjacent to beach
Filtration: (Y/N)	N/A	GPS	491572
Acidification: (Y/N)	N/A		7626940
Sampling Equipment Decontamination: (Y/N)	N/A	Sampling Equipment Decontamination: (Y/N)	Y (shovel rinse)
Number washes:	N/A	Number washes:	0
Number rinses:	N/A	Number rinses:	1

n/a=not applicable

*From ground surface. All other measurements are assumed to be from the top of the casing.

Table B-14: Monitoring Well Sampling Log- MW-24

Site Name:	FOX-M
Date of Sampling Event:	Monday, August 15, 2011
Names of Samplers:	Tom Partridge, Alaina Leslie
Monitoring Well ID:	MW-24
Facility:	East Beach Landfill

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:	Tape Measure	Procedure/Equipment:	waterra tubing / interface meter
Well height above ground (m)=	0.50	Depth to water surface (m)=	N/A
Diameter of well (m)=	0.040	Static water level* (m)=	0
Depth of installation* (m)=	3.0	Depth to bottom (m)=	1.3
Length screened section (m)=	1.5	Free product thickness (mm)=	N/A
Depth to top of screen* (m)=	0.60		
Calculations		**Notes**	
Depth of water (m)=	0	Evidence of sludge etc:	N/A
Well volume of water (L)=	0	Evidence of freezing/siltation: (compare to installation record)	freezing
Length screen collecting water (m)=	N/A	Well cover broken.	

Development/Purging Information

Equipment:	N/A

Date & Time	Volume Removed (L)	Temperature (^{o}C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water
well frozen						

Water Sampling		**Soil Sampling**	
Date and time collected:	Monday, August 15, 2011	Date and time collected:	Monday, August 15, 2011
Sample Number - Water:	no sample collected	Sample Number - Soil:	11-14330
			11-14331 (30 - 40 cm depth)
Sample containers:	N/A	Sample containers:	125 mL jars
			whirlpaks
Procedure/Equipment:	N/A	Procedure/Equipment:	Shovel, disposable scoops
Water description:	N/A	Soil description:	very little soil, fines / gravel present, adjacent to beach
Filtration: (Y/N)	N/A	GPS	491489
Acidification: (Y/N)	N/A		7626837
Sampling Equipment Decontamination: (Y/N)	N/A	Sampling Equipment Decontamination: (Y/N)	Y (shovel rinse)
Number washes:	N/A	Number washes:	0
Number rinses:	N/A	Number rinses:	1

n/a=not applicable

*From ground surface. All other measurements are assumed to be from the top of the casing.

Table B-15: Monitoring Well Sampling Log- MW-25

Site Name:	FOX-M
Date of Sampling Event:	Monday, August 15, 2011
Names of Samplers:	Tom Partridge, Alaina Leslie
Monitoring Well ID:	MW-25
Facility:	East Beach Landfill

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:	Tape Measure	Procedure/Equipment:	waterra tubing / interface meter
Well height above ground (m)=	0.42	Depth to water surface (m)=	N/A
Diameter of well (m)=	0.040	Static water level* (m)=	0
Depth of installation* (m)=	3.0	Depth to bottom (m)=	1.4
Length screened section (m)=	1.5	Free product thickness (mm)=	N/A
Depth to top of screen* (m)=	0.60		
Calculations		**Notes**	
Depth of water (m)=	0	Evidence of sludge etc:	N/A
Well volume of water (L)=	0	Evidence of freezing/siltation: (compare to installation record)	freezing
Length screen collecting water (m)=	N/A		

Development/Purging Information

Equipment:	N/A

Date & Time	Volume Removed (L)	Temperature (^{o}C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water
well frozen						

Water Sampling		**Soil Sampling**	
Date and time collected:	Monday, August 15, 2011	Date and time collected:	Monday, August 15, 2011
Sample Number - Water:	no sample collected	Sample Number - Soil:	11-14328
			11-14339 (30 - 40 cm depth)
Sample containers:	N/A	Sample containers:	125 mL jars
			whirlpaks
Procedure/Equipment:	N/A	Procedure/Equipment:	Shovel, disposable scoops
Water description:	N/A	Soil description:	light brown sand / gravel present, adjacent to beach
Filtration: (Y/N)	N/A	GPS	491370
Acidification: (Y/N)	N/A		7626723
Sampling Equipment Decontamination: (Y/N)	N/A	Sampling Equipment Decontamination: (Y/N)	Y (shovel rinse)
Number washes:	N/A	Number washes:	0
Number rinses:	N/A	Number rinses:	1

n/a=not applicable

*From ground surface. All other measurements are assumed to be from the top of the casing.

Table B-16: Monitoring Well Sampling Log- MW-26

Site Name:	FOX-M
Date of Sampling Event:	Saturday, August 13, 2011
Names of Samplers:	Tom Partridge, Alaina Leslie
Monitoring Well ID:	MW-26
Facility:	East Beach Landfill

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:	Tape Measure	Procedure/Equipment:	waterra tubing / interface meter
Well height above ground (m)=	0.37	Depth to water surface (m)=	N/A
Diameter of well (m)=	0.040	Static water level* (m)=	0
Depth of installation* (m)=	3.0	Depth to bottom (m)=	1.2
Length screened section (m)=	1.5	Free product thickness (mm)=	N/A
Depth to top of screen* (m)=	0.60		
Calculations		**Notes**	
Depth of water (m)=	0	Evidence of sludge etc:	N/A
Well volume of water (L)=	0	Evidence of freezing/siltation: (compare to installation record)	freezing
Length screen collecting water (m)=	N/A		

Development/Purging Information

Equipment: N/A

Date & Time	Volume Removed (L)	Temperature (^{o}C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water
well frozen						

Water Sampling		**Soil Sampling**	
Date and time collected:	Saturday, August 13, 2011	Date and time collected:	Saturday, August 13, 2011
Sample Number - Water:	no sample collected	Sample Number - Soil:	11-14324, 11-14325
			11-14326, 11-14327 (30 - 40 cm depth)
Sample containers:	N/A	Sample containers:	125 mL jars
			whirlpaks
Procedure/Equipment:	N/A	Procedure/Equipment:	Shovel, disposable scoops
Water description:	N/A	Soil description:	gravel, no organic matter, adjacent to beach
Filtration: (Y/N)	N/A	GPS	491234
Acidification: (Y/N)	N/A		7626592
Sampling Equipment Decontamination: (Y/N)	N/A	Sampling Equipment Decontamination: (Y/N)	Y (shovel rinse)
Number washes:	N/A	Number washes:	0
Number rinses:	N/A	Number rinses:	1

n/a=not applicable

*From ground surface. All other measurements are assumed to be from the top of the casing.

Table B-17: Monitoring Well Sampling Log- MW-27

Site Name:	FOX-M				
Date of Sampling Event:	Saturday, August 13, 2011				
Names of Samplers:	Tom Partridge, Alaina Leslie				
Monitoring Well ID:	MW-27				
Facility:	East Beach Landfill				
Water Sample Measured Data					
Condition of Well:	Good				
Procedure/Equipment:	Tape Measure		Procedure/Equipment:	waterra tubing / interface meter	
Well height above ground (m)=	0.40		Depth to water surface (m)=	N/A	
Diameter of well (m)=	0.040		Static water level* (m)=	0	
Depth of installation* (m)=	3.0		Depth to bottom (m)=	1.3	
Length screened section (m)=	1.5		Free product thickness (mm)=	N/A	
Depth to top of screen* (m)=	0.60				
Calculations			**Notes**		
Depth of water (m)=	0		Evidence of sludge etc:	N/A	
Well volume of water (L)=	0		Evidence of freezing/siltation: (compare to installation record)	freezing	
Length screen collecting water (m)=	N/A				
Development/Purging Information					
Equipment:	N/A				
Date & Time	Volume Removed (L)	Temperature (^{o}C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water
well frozen						
Water Sampling			**Soil Sampling**		
Date and time collected:	Saturday, August 13, 2011		Date and time collected:	Saturday, August 13, 2011	
Sample Number - Water:	no sample collected		Sample Number - Soil:	11-14320, 11-14321	
				11-14322, 11-14323 (30 - 40 cm depth)	
Sample containers:	N/A		Sample containers:	125 mL jars	
				whirlpaks	
Procedure/Equipment:	N/A		Procedure/Equipment:	Shovel, disposable scoops	
Water description:	N/A		Soil description:	gravel, no organic matter, adjacent to beach	
Filtration: (Y/N)	N/A		GPS	491081	
Acidification: (Y/N)	N/A			7626448	
Sampling Equipment Decontamination: (Y/N)	N/A		Sampling Equipment Decontamination: (Y/N)	Y (shovel rinse)	
Number washes:	N/A		Number washes:	0	
Number rinses:	N/A		Number rinses:	1	

n/a=not applicable

*From ground surface. All other measurements are assumed to be from the top of the casing.

Table B-18: Monitoring Well Sampling Log- MW-28

Site Name:	FOX-M
Date of Sampling Event:	Saturday, August 13, 2011
Names of Samplers:	Tom Partridge, Alaina Leslie
Monitoring Well ID:	MW-28
Facility:	East Beach Landfill

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:	Tape Measure	Procedure/Equipment:	waterra tubing / interface meter
Well height above ground (m)=	0.52	Depth to water surface (m)=	N/A
Diameter of well (m)=	0.040	Static water level* (m)=	0
Depth of installation* (m)=	3.0	Depth to bottom (m)=	1.3
Length screened section (m)=	1.5	Free product thickness (mm)=	N/A
Depth to top of screen* (m)=	0.60		
Calculations		**Notes**	
Depth of water (m)=	0	Evidence of sludge etc:	N/A
Well volume of water (L)=	0	Evidence of freezing/siltation: (compare to installation record)	freezing
Length screen collecting water (m)=	N/A	Replaced lock.	

Development/Purging Information

Equipment: N/A

Date & Time	Volume Removed (L)	Temperature (^{o}C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water
well frozen						

Water Sampling		**Soil Sampling**	
Date and time collected:	Saturday, August 13, 2011	Date and time collected:	Saturday, August 13, 2011
Sample Number - Water:	no sample collected	Sample Number - Soil:	11-14316, 11-14317
			11-14318, 11-14319 (30 - 40 cm depth)
Sample containers:	N/A	Sample containers:	125 mL jars
			whirlpaks
Procedure/Equipment:	N/A	Procedure/Equipment:	Shovel, disposable scoops
Water description:	N/A	Soil description:	cobbles / gravel, no organic matter, adjacent to beach
Filtration: (Y/N)	N/A	GPS	490926
Acidification: (Y/N)	N/A		7626404
Sampling Equipment Decontamination: (Y/N)	N/A	Sampling Equipment Decontamination: (Y/N)	Y (shovel rinse)
Number washes:	N/A	Number washes:	0
Number rinses:	N/A	Number rinses:	1

n/a=not applicable

*From ground surface. All other measurements are assumed to be from the top of the casing.

Table B-19: Monitoring Well Sampling Log- MW-29

Site Name:	FOX-M		
Date of Sampling Event:	Saturday, August 13, 2011		
Names of Samplers:	Tom Partridge, Alaina Leslie		
Monitoring Well ID:	MW-29		
Facility:	East Beach Landfill		
Water Sample Measured Data			
Condition of Well:	Good		
Procedure/Equipment:	Tape Measure	Procedure/Equipment:	waterra tubing / interface meter
Well height above ground (m)=	0.40	Depth to water surface (m)=	0.75
Diameter of well (m)=	0.040	Static water level* (m)=	0.35
Depth of installation* (m)=	3.0	Depth to bottom (m)=	1.1
Length screened section (m)=	1.5	Free product thickness (mm)=	N/A
Depth to top of screen* (m)=	0.60		
Calculations		**Notes**	
Depth of water (m)=	0.35	Evidence of sludge etc:	N/A
Well volume of water (L)=	0.44	Evidence of freezing/siltation: (compare to installation record)	freezing
Length screen collecting water (m)=	0.10		

Development/Purging Information

Equipment: waterra tubing / interface meter

Date & Time	Volume Removed (L)	Temperature (^{o}C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water
13-Aug	0.40	11	6.0	1600	41	clear
13-Aug	0.40	11	6.0	1700	31	clear

Water Sampling		**Soil Sampling**	
Date and time collected:	Saturday, August 13, 2011	Date and time collected:	Saturday, August 13, 2011
Sample Number - Water:	11-14351	Sample Number - Soil:	11-14312, 11-14313
			11-14314, 11-14315 (30 - 40 cm depth)
Sample containers:	1L HDPE	Sample containers:	125 mL jars
	1L Teflon		whirlpaks
	250mL Amber glass		
Procedure/Equipment:	Waterra tubing	Procedure/Equipment:	Shovel, disposable scoops
Water description:	clear	Soil description:	cobbles, adjacent to marsh, water in depth, minor amount of organic matter present
Filtration: (Y/N)	N	GPS	490986
Acidification: (Y/N)	N		7626558
Sampling Equipment Decontamination: (Y/N)	Methanol / Distilled Water Mix	Sampling Equipment Decontamination: (Y/N)	Y (shovel rinse)
Number washes:	3	Number washes:	0
Number rinses:	3	Number rinses:	1

n/a=not applicable

*From ground surface. All other measurements are assumed to be from the top of the casing.

Table B-20: Monitoring Well Sampling Log- MW-30

Site Name:	FOX-M
Date of Sampling Event:	Monday, August 15, 2011
Names of Samplers:	Tom Partridge, Alaina Leslie
Monitoring Well ID:	MW-30
Facility:	East Beach Landfill

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:	Tape Measure	Procedure/Equipment:	waterra tubing / interface meter
Well height above ground (m)=	0.28	Depth to water surface (m)=	0.60
Diameter of well (m)=	0.040	Static water level* (m)=	0.32
Depth of installation* (m)=	3.0	Depth to bottom (m)=	1.2
Length screened section (m)=	1.5	Free product thickness (mm)=	N/A
Depth to top of screen* (m)=	0.60		
Calculations		**Notes**	
Depth of water (m)=	0.60	Evidence of sludge etc:	N/A
Well volume of water (L)=	0.75	Evidence of freezing/siltation: (compare to installation record)	freezing
Length screen collecting water (m)=	0.32		

Development/Purging Information

Equipment: waterra tubing / interface meter

Date & Time	Volume Removed (L)	Temperature (^{o}C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water
15-Aug	0.75	8.2	5.5	1100	270	brown
15-Aug	0.75	9.2	6.0	1600	400.0	brown

Water Sampling		**Soil Sampling**	
Date and time collected:	Monday, August 15, 2011	Date and time collected:	Monday, August 15, 2011
Sample Number - Water:	11-14352	Sample Number - Soil:	11-14342
			11-14343 (30 - 40 cm depth)
Sample containers:	1L HDPE	Sample containers:	125 mL jars
	1L Teflon		whirlpaks
	250mL Amber glass		
Procedure/Equipment:	Waterra tubing	Procedure/Equipment:	Shovel, disposable scoops
Water description:	brown	Soil description:	gravel, minor vegetation / weeds, adjacent to pond
Filtration: (Y/N)	N	GPS	491234
Acidification: (Y/N)	N		7626675
Sampling Equipment Decontamination: (Y/N)	Methanol / Distilled Water Mix Distilled Water	Sampling Equipment Decontamination: (Y/N)	Y (shovel rinse)
Number washes:	3	Number washes:	0
Number rinses:	3	Number rinses:	1

n/a=not applicable

*From ground surface. All other measurements are assumed to be from the top of the casing.

Table B-21: Monitoring Well Sampling Log- MW-31

Site Name:	FOX-M
Date of Sampling Event:	Monday, August 15, 2011
Names of Samplers:	Tom Partridge, Alaina Leslie
Monitoring Well ID:	MW-31
Facility:	East Beach Landfill

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:	Tape Measure	Procedure/Equipment:	waterra tubing / interface meter
Well height above ground (m)=	0.41	Depth to water surface (m)=	N/A
Diameter of well (m)=	0.040	Static water level* (m)=	0
Depth of installation* (m)=	3.0	Depth to bottom (m)=	1.2
Length screened section (m)=	1.5	Free product thickness (mm)=	N/A
Depth to top of screen* (m)=	0.60		
Calculations		**Notes**	
Depth of water (m)=	0	Evidence of sludge etc:	N/A
Well volume of water (L)=	0	Evidence of freezing/siltation: (compare to installation record)	freezing
Length screen collecting water (m)=	N/A		

Development/Purging Information

Equipment: N/A

Date & Time	Volume Removed (L)	Temperature (^{o}C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water
well frozen						

Water Sampling		**Soil Sampling**	
Date and time collected:	Monday, August 15, 2011	Date and time collected:	Monday, August 15, 2011
Sample Number - Water:	no sample collected	Sample Number - Soil:	11-14340
			11-14341 (30 - 40 cm depth)
Sample containers:	N/A	Sample containers:	125 mL jars
			whirlpaks
Procedure/Equipment:	N/A	Procedure/Equipment:	Shovel, disposable scoops
Water description:	N/A	Soil description:	gravel, minor vegetation, adjacent to pond
Filtration: (Y/N)	N/A	GPS	491511
Acidification: (Y/N)	N/A		7626938
Sampling Equipment Decontamination: (Y/N)	N/A	Sampling Equipment Decontamination: (Y/N)	Y (shovel rinse)
Number washes:	N/A	Number washes:	0
Number rinses:	N/A	Number rinses:	1

n/a=not applicable

*From ground surface. All other measurements are assumed to be from the top of the casing.

9.7 Thermistor Inspection Logs

Thermistor Annual Maintenance Report

Contractor Name:	AECOM	Inspection Date:	8/15/2011, 9/16/2011
Prepared By:	Dave Elwood		

Thermistor Information

Site Name:	**FOX-M**	Thermistor Location	East Beach Landfill South Lobe		
Thermistor Number:	**VT-6**	Inclination	Vertical		
Install Date:	**23-Aug-07**	First Date Event	**27-Aug-10**	Last Date Event	**15-Aug-11**
Coordinates and Elevation	N 7626809	E 490979	Elev		**0**
Length of Cable (m)	**8.23**	Cable Lead Above Ground (m)	**4.2**	Nodal Points	**9**
Datalogger Serial #	**7060018**			Cable Serial Number	**TS07060018**

Thermistor Inspection

	Good	Needs Maintenance
Casing	Yes	No
Cover	Yes	No
Data Logger	Yes	No
Cable	Yes	No
Beads	Yes	No
Battery Installation Date	16-Sep-11	
Battery Levels	Main 11.34 V	Aux 13.38 V

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	8.656	13.1434
2	11.224	8.0263
3	14.241	3.5292
4	16.456	-0.0597
5	17.171	-0.8835
6	18.047	-1.8460
7	18.935	-2.8324
8	19.857	-3.8

Bead	ohms	Degrees C
9	20.74	-4.5502

Observations and Proposed Maintenance

memory at 39%

Thermistor and casing in general good condition

Thermistor Annual Maintenance Report

Contractor Name:	AECOM	Inspection Date:	8/15/2011, 9/16/2011
Prepared By:	Dave Elwood		

Thermistor Information

Site Name:	**FOX-M**	Thermistor Location	East Beach Landfill South Lobe		
Thermistor Number:	**VT-7**	Inclination	Vertical		
Install Date:	**24-Aug-07**	First Date Event	**27-Aug-10**	Last Date Event	**15-Aug-11**
Coordinates and Elevation	N 7626740	E 491378	Elev		**0**
Length of Cable (m)	**8.22**	Cable Lead Above Ground (m)	**4.2**	Nodal Points	**9**
Datalogger Serial #	**7019996**			Cable Serial Number	**TS07010006B8.2**

Thermistor Inspection

	Good	Needs Maintenance
Casing	Yes	No
Cover	Yes	No New lock required
Data Logger	Yes	No
Cable	Yes	No
Beads	Yes	No
Battery Installation Date	16-Sep-11	
Battery Levels	Main 11.34 V	Aux 11.68 V

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	8.419	13.2265
2	9.904	9.3548
3	13.006	4.5876
4	15.655	0.9464
5	16.85	-0.4557
6	17.769	-1.4714
7	18.838	-2.6043
8	19.817	-3.5877

Bead	ohms	Degrees C
9	20.86	-4.5714

Observations and Proposed Maintenance

memory at 39%

Thermistor and casing in general good condition

Thermistor Annual Maintenance Report

Contractor Name:	AECOM	Inspection Date:	8/15/2011, 9/16/2011
Prepared By:	Dave Elwood		

Thermistor Information

Site Name:	**FOX-M**	Thermistor Location	East Beach Landfill South Lobe		
Thermistor Number:	**VT-8**	Inclination	Vertical		
Install Date:	**24-Aug-07**	First Date Event	**27-Aug-10**	Last Date Event	**15-Aug-11**
Coordinates and Elevation	N 7626818	E 491372	Elev		**0**
Length of Cable (m)	**8.32**	Cable Lead Above Ground (m)	**4.3**	Nodal Points	**9**
Datalogger Serial #	**7040022**			Cable Serial Number	**TS070400022B8.2**

Thermistor Inspection

	Good	Needs Maintenance
Casing	Yes	No
Cover	Yes	No New lock required
Data Logger	Yes	No
Cable	Yes	No Minor cracking at connection
Beads	Yes	No
Battery Installation Date	16-Sep-11	
Battery Levels	Main 11.34 V	Aux 13.26 V

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	8.986	13.3097
2	11.055	8.7751
3	13.876	4.1684
4	16.04	0.5629
5	17.113	-0.7815
6	18.108	-1.8871
7	19.096	-2.8998
8	19.985	-3.8759

Bead	ohms	Degrees C
9	20.79	-4.6349

Observations and Proposed Maintenance

memory at 38%

Thermistor and casing in general good condition

Thermistor Annual Maintenance Report

Contractor Name:	AECOM	Inspection Date:	8/15/2011, 9/16/2011
Prepared By:	Dave Elwood		

Thermistor Information

Site Name:	**FOX-M**	Thermistor Location	East Beach Landfill South Lobe		
Thermistor Number:	**VT-9**	Inclination	Vertical		
Install Date:	**22-Aug-07**	First Date Event	**27-Aug-10**	Last Date Event	**15-Aug-11**
Coordinates and Elevation	N 762038	E 491574	Elev		**0**
Length of Cable (m)	**8.22**	Cable Lead Above Ground (m)	**4.22**	Nodal Points	**9**
Datalogger Serial #	**RDHM 070609**			Cable Serial Number	**TS07060017**

Thermistor Inspection

	Good	Needs Maintenance
Casing	Yes	No
Cover	Yes	No
Data Logger	Yes	No
Cable	Yes	No
Beads	Yes	No
Battery Installation Date	16-Sep-11	
Battery Levels	Main 11.34 V	Aux 13.63 V

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	9.239	14.6661
2	9.574	11.9658
3	12.045	6.8893
4	14.484	2.9293
5	16.431	-0.0445
6	17.306	-1.0264
7	18.446	-2.2735
8	19.303	-3.2119

Bead	ohms	Degrees C
9	20.31	-4.1650

Observations and Proposed Maintenance

Thermistor and casing in general good condition

Thermistor Annual Maintenance Report

Contractor Name:	AECOM	Inspection Date:	8/15/2011, 9/16/2011
Prepared By:	Dave Elwood		

Thermistor Information

Site Name:	**FOX-M**	Thermistor Location	East Beach Landfill South Lobe		
Thermistor Number:	**VT-10**	Inclination	Vertical		
Install Date:	**24-Aug-07**	First Date Event	**27-Aug-10**	Last Date Event	**15-Aug-11**
Coordinates and Elevation	N 7627282	E 491605	Elev		**0**
Length of Cable (m)	**8.22**	Cable Lead Above Ground (m)	**4.22**	Nodal Points	**9**
Datalogger Serial #	**7060003**			Cable Serial Number	**TS07060003B-8.2**

Thermistor Inspection

	Good	Needs Maintenance
Casing	Yes	No
Cover	Yes	No
Data Logger	Yes	No
Cable	Yes	No slight cracking at connection
Beads	Yes	No
Battery Installation Date	16-Sep-11	
Battery Levels	Main 11.34 V	Aux 13.26 V

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	8.731	13.1641
2	10.482	8.8909
3	13.713	4.6026
4	15.7	1.0018
5	16.866	-0.5574
6	17.787	-1.6406
7	18.854	-2.7494
8	19.695	-3.6453

Bead	ohms	Degrees C
9	20.55	-4.4234

Observations and Proposed Maintenance

Thermistor and casing in general good condition

Thermistor Annual Maintenance Report

Contractor Name:	AECOM	Inspection Date:	8/15/2011, 9/16/2011
Prepared By:	Dave Elwood		

Thermistor Information

Site Name:	**FOX-M**		Thermistor Location	East Beach Landfill South Lobe			
Thermistor Number:	**VT-11**		Inclination	Vertical			
Install Date:	**24-Aug-07**		First Date Event	**27-Aug-10**	Last Date Event		**15-Aug-11**
Coordinates and Elevation	N	7627318	E	491566	Elev		**0**
Length of Cable (m)	**8.22**	Cable Lead Above Ground (m)	**4.22**	Nodal Points	**9**		
Datalogger Serial #	**7060002**			Cable Serial Number			**TS07060002**

Thermistor Inspection

	Good	Needs Maintenance
Casing	Yes	No
Cover	Yes	No
Data Logger	Yes	No
Cable	Yes	No
Beads	Yes	No
Battery Installation Date	16-Sep-11	
Battery Levels	Main 11.34 V	Aux 12.29 V

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	8.204	12.7339
2	9.817	9.7338
3	13.56	4.7473
4	15.55	1.1933
5	16.925	-0.5778
6	17.927	-1.6818
7	19.008	-2.8324
8	19.947	-3.8391

Bead	ohms	Degrees C
9	20.85	-4.6667

Observations and Proposed Maintenance

Thermistor and casing in general good condition

Annex 1

Laboratory Data

ASU #	13847		**Report ID:**	FOX-M W1					
Client:	ESG		**Date Submitted:**	25-Aug-11					
			Date tested:	25-Aug-11					
Site:	FOX-M		**Date:**	26-Aug-11					
	11-219		**Matrix:**	water					
Report of Analysis									
Results relate only to the items tested									
Total Metals	Results in mg/L								
SAMPLE	Cu	Ni	Co	Cd	Pb	Zn	Cr	As	
11-14345	<0.005	0.018	<0.003	<0.001	<0.010	<0.010	0.058	<0.003	
11-14346	<0.005	0.011	<0.003	<0.001	<0.010	<0.010	0.056	<0.003	
11-14347	<0.005	0.018	<0.003	<0.001	<0.010	0.244	0.056	<0.003	
11-14348	0.007	0.104	<0.003	<0.001	<0.010	<0.010	0.260	<0.003	
11-14349	0.006	0.007	<0.003	<0.001	<0.010	<0.010	0.058	<0.003	
11-14350	0.006	0.017	<0.003	<0.001	<0.010	<0.010	0.220	<0.003	
11-14351	0.006	<0.005	<0.003	<0.001	<0.010	0.065	0.031	<0.003	*
11-14052	0.016	0.079	0.010	0.001	0.013	0.188	0.220	0.014	
11-14053	<0.005	<0.005	<0.003	<0.001	<0.010	<0.010	<0.005	<0.003	
11-14054	<0.005	<0.005	<0.003	<0.001	<0.010	<0.010	<0.005	<0.003	
Blank	<0.005	<0.005	<0.003	<0.001	<0.010	<0.010	<0.005	<0.003	
Control	1.57	1.62	1.60	0.79	8.08	3.02	0.82	0.75	
Control Target	1.60	1.60	1.60	0.80	8.00	3.00	0.80	0.80	
11-14351	0.006	<0.005	<0.003	<0.001	<0.010	0.066	0.015	<0.003	
11-14351	0.006	0.007	<0.003	<0.001	<0.010	0.065	0.047	<0.003	

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(613) 541-6000 ext 6567
Fax: (613) 541-6596

ASG Login No: 22023
Site: Fox-M
Client No: 11-219
Samples Received: 25-Aug-11
Date of analysis: 25-Aug-11
Method No: ASG 015
Date Reported: 31-Aug-11
Sheet No: 1 of 1

RESULTS OF PCB IN WATER ANALYSIS

Sample Type **	Sample I.D.	Unit	Aroclor 1254	Aroclor 1260
W	14345	mg/L	< 0.003	< 0.003
W	14346	mg/L	< 0.003	< 0.003
W	14347	mg/L	< 0.003	< 0.003
W	14348	mg/L	< 0.003	< 0.003
W	14349	mg/L	< 0.003	< 0.003
W	14350	mg/L	< 0.003	< 0.003
W	14351	mg/L	< 0.003	< 0.003
W	14352	mg/L	< 0.003	< 0.003
W	14353	mg/L	< 0.003	< 0.003
W	14354	mg/L	< 0.003	< 0.003

Report Values in PPM

LABORATORY QA/QC

	Blank	mg/L	< 0.003	< 0.003
	Control Sample	mg/L	< 0.003	0.015
	Control Sample Target	mg/L	< 0.003	0.015

** S = Soil , C = Concrete , PC = Paint Chip , SW = Swab , P = Plant , W = Water, L = Leachate

All results corrected for the recovery of the surrogate decachlorobiphenyl

The results reported here relate only to the items tested.

Prepared By: _____
Chad Hind, Analyst

Authorization: _____
Julie McDonald, Laboratory Manager
PCBregw22023r1.xls

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Fax: (613) 541-6596

ASG Login No: 22023
Site: Fox-M
Client No: 11-219
Samples Received: 25-Aug-11
Date of analysis: 26-Aug-11
Method No: ASG 021
Date Reported: 26-Aug-11
Sheet: 1 of 1

RESULTS OF MERCURY ANALYSIS

Sample ID	Mercury^ mg/L
14345	< 0.0004
14346	< 0.0004
14347	< 0.0004
14348	< 0.0004
14349	< 0.0004
14350	< 0.0004
14351	< 0.0004
14352	< 0.0004
14353	< 0.0004
14354	< 0.0004

^ Acid digestion performed.
# Reported at 0.0004 mg/L detection limit.

LABORATORY QA/QC

Sample ID	Mercury^ mg/L
Blank	< 0.0004
Control Target	0.0040
Control Sample	0.0042

The results reported here relate only to the items tested.

Prepared By: _____
Yi Wang;
Analyst

Authorization: _____
Julie McDonald;
Laboratory Manager

Test Report I.D: Hgw22023r1.xls

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ASG Login No: 22023
Site: Fox-M
Client Login No: 11-219
Date Sampled: 13-15-Aug-11
Samples Received: 25-Aug-11
Date of analysis: 30-Aug-11
Method No: ASG 055 ~
Date Reported: 06-Sep-11
Sheet: 1 of 1

RESULTS OF PHC IN WATER ANALYSIS - F1 FRACTION^

Sample I.D.	Unit	F1 Fraction (ppm)
14345	mg/L	< 0.05
14346	mg/L	< 0.05
14347	mg/L	< 0.05
14348	mg/L	< 0.05
14349	mg/L	< 0.05
14350	mg/L	< 0.05
14351	mg/L	< 0.05
14352	mg/L	< 0.05
14353	mg/L	< 0.05
14354	mg/L	< 0.05

LABORATORY QA/QC SECTION

Blank	mg/L	< 0.05
Gasoline Control Sample	mg/L	0.15
Gasoline Control Target	mg/L	0.16

^ BTEX contribution to F1 fraction not subtracted from reported values
Average response factors for hexane and decane were within 30% of the toluene response factor.
Linearity of calibration standards is within 15%.

The results reported here relate only to the items tested

Prepared by:_____
Chad Hind ; Analyst

Authorization:_____
Julie McDonald, Laboratory Manager

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Fax: (613) 541-6596

ASG Login No: 22023
Site: Fox-M
Client Login No: 11-219
Samples Received: 25-Aug-11
Date of analysis: 8-Sep-11
Date Sampled: 13-15 Aug 11
Method No: ASG 053~
Date Reported: 13-Sep-11
Sheet: 1 of 1

RESULTS OF PHC IN WATER ANALYSIS^

Sample I.D.	Unit	F2 Fraction (ppm)	F3 Fraction (ppm)	F4 Fraction (ppm)	F4G (ppm)
14345	mg/L	< 0.5	< 1.0	< 1.0	N/A
14346	mg/L	< 0.5	< 1.0	< 1.0	N/A
14347	mg/L	< 0.5	< 1.0	< 1.0	N/A
14348	mg/L	< 0.5	< 1.0	< 1.0	N/A
14349	mg/L	< 0.5	< 1.0	< 1.0	N/A
14350	mg/L	< 0.5	< 1.0	< 1.0	N/A
14351	mg/L	< 0.5	< 1.0	< 1.0	N/A
14352	mg/L	< 0.5	< 1.0	< 1.0	N/A
14353	mg/L	< 0.5	< 1.0	< 1.0	N/A
14354	mg/L	< 0.5	< 1.0	< 1.0	N/A

LABORATORY QA/QC FOR F2-F4 FRACTIONS

Sample I.D.	Unit	F2 Fraction (ppm)	F3 Fraction (ppm)	F4 Fraction (ppm)	F4G (ppm)
Blank	mg/L	< 0.5	< 1.0	< 1.0	N/A

Diesel Spike	mg/L	8.5
Diesel Spike Target	mg/L	10
Control Standard	mg/L	2400
Control Standard Target	mg/L	2500

^PAH contributions to F2-F4 not subtracted from reported values.
~The method used complies with the Reference Method for the CWS PHC.
*Averaged result of duplicate

Gravimetric heavy hydrocarbons cannot be added to the C6-C50 hydrocarbons.
The chromatogram descended to baseline by the C50 retention time.
Average response factors for C10, C16, C34 were within 10% of each other.
C50 response factor was within 70% of the C10, C16, C34 average response factor.
Linearity of calibration standards was within 15%.
Extraction and analysis holding times for samples were met.

The results reported here relate only to the items tested.

Prepared By: _____
Kate Campbell, Analyst

Authorization: _____
Julie McDonald, Laboratory Manager

ASU #	**13850**		Report ID:	FOX-M S1					
Client:	**ESG**		Date Submitted:	25-Aug-11					
			Date Tested:	30-Aug-11					
Site:	**FOX-M**		Date Reported:	01-Sep-11					
ESG#	**11-218**		Matrix:	Soil					
Report of Analysis			All results in ug/g						
Results relate only to the items tested									
Sample	Cu	Ni	Co	Cd	Pb	Zn	Cr	As	
11-14300	9.1	6.9	<5.0	<1.0	<10	<15	<20	2.7	*
11-14301	3.4	6.8	<5.0	<1.0	<10	18	<20	6.5	
11-14302	4.7	7.4	<5.0	<1.0	<10	16	<20	2.4	
11-14303	5.1	6.9	<5.0	<1.0	<10	<15	<20	2.1	
11-14304	5.0	10.1	<5.0	<1.0	<10	<15	<20	4.9	
11-14305	5.3	10.0	<5.0	<1.0	<10	16	<20	4.1	
11-14306	4.0	7.3	<5.0	<1.0	<10	<15	<20	2.5	
11-14307	3.7	6.7	<5.0	<1.0	<10	<15	<20	2.6	
11-14308	3.5	9.2	<5.0	<1.0	<10	<15	<20	2.6	
11-14309	4.0	9.9	<5.0	<1.0	<10	16	<20	2.8	
11-14310	3.1	8.1	<5.0	<1.0	<10	<15	<20	2.0	*
11-14311	3.5	8.1	<5.0	<1.0	<10	<15	<20	1.8	
11-14313	3.4	7.2	<5.0	<1.0	<10	<15	<20	2.5	
11-14315	4.2	8.7	<5.0	<1.0	<10	<15	<20	2.7	
11-14317	5.0	6.8	<5.0	<1.0	<10	<15	<20	6.5	
11-14319	4.6	7.5	<5.0	<1.0	<10	<15	<20	2.6	
11-14321	4.4	7.2	<5.0	<1.0	<10	<15	<20	2.4	
11-14323	169.9	7.8	<5.0	<1.0	<10	<15	<20	3.8	*
11-14325	<3.0	6.7	<5.0	<1.0	<10	<15	<20	2.4	
11-14327	<3.0	5.2	<5.0	<1.0	<10	<15	<20	2.1	
11-14328	8.7	9.7	<5.0	<1.0	478	18	<20	2.8	
11-14329	6.0	8.4	<5.0	<1.0	124	<15	<20	2.7	
11-14330	7.7	59.0	<5.0	<1.0	12	23	120	2.7	
11-14331	5.6	7.2	<5.0	<1.0	<10	18	<20	2.4	
11-14332	10.5	9.1	<5.0	<1.0	19	23	<20	4.0	*
11-14333	12.9	9.1	<5.0	<1.0	15	21	<20	3.4	
11-14334	4.7	9.3	<5.0	<1.0	10	<15	<20	2.6	
11-14335	4.7	7.0	<5.0	<1.0	<10	<15	<20	2.7	
Blank	<3.0	<5.0	<5.0	<1.0	<10	<15	<20	<1.0	
Blank	<3.0	<5.0	<5.0	<1.0	<10	<15	<20	<1.0	
MESS-3	27.2	33.4	11.1	<1.0	18	118	33	16.3	
SS-2	196.8	59.9	15.6	1.9	122	490	45	88.9	
11-14300	13.8	6.6	<5.0	<1.0	<10	<15	<20	2.5	
11-14300	4.3	7.2	<5.0	<1.0	<10	<15	<20	2.8	
11-14310	3.0	7.4	<5.0	<1.0	<10	<15	<20	2.0	
11-14310	3.2	8.8	<5.0	<1.0	<10	<15	<20	2.1	
11-14323	4.4	7.2	<5.0	<1.0	<10	<15	<20	3.5	
11-14323	335.4	8.3	<5.0	<1.0	<10	<15	<20	4.1	
11-14332	12.0	9.7	<5.0	<1.0	21	24	<20	4.4	
11-14332	9.0	8.4	<5.0	<1.0	18	22	<20	3.6	

ASU #	**13850**		Report ID:	FOX-M S2					
Client:	**ESG**		Date Submitted:	25-Aug-11					
			Date Tested:	30-Aug-11					
Site:	**FOX-M**		Date Reported:	01-Sep-11					
ESG#	**11-218**		Matrix:	Soil					
Report of Analysis			All results in ug/g						
Results relate only to the items tested									
Sample	Cu	Ni	Co	Cd	Pb	Zn	Cr	As	
11-14336	5.8	6.6	<5.0	<1.0	<10	26	<20	2.8	
11-14337	3.9	5.8	<5.0	<1.0	<10	<15	<20	2.7	
11-14338	5.2	8.5	<5.0	<1.0	<10	17	<20	2.3	
11-14339	3.9	7.1	<5.0	<1.0	<10	17	<20	2.5	*
11-14340	4.6	7.8	<5.0	<1.0	10	16	<20	3.0	
11-14341	3.2	6.5	<5.0	<1.0	<10	<15	<20	1.4	
11-14342	3.3	7.3	<5.0	<1.0	<10	<15	<20	1.8	
11-14343	3.7	7.5	<5.0	<1.0	<10	<15	<20	1.4	
Blank	<3.0	<5.0	<5.0	<1.0	<10	<15	<20	<1.0	
Blank	<3.0	<5.0	<5.0	<1.0	<10	<15	<20	<1.0	
MESS-3	29.6	39.4	12.6	<1.0	19	140	52	18.1	
SS-2	185.0	56.6	14.9	1.9	116	461	47	78.2	
11-14339	3.7	6.9	<5.0	<1.0	<10	16	<20	2.5	
11-14339	4.1	7.3	<5.0	<1.0	<10	18	<20	2.5	

Prepared by:_____ FOX-M S2.xls Authorization:_____

ASU #	**13993**		Report ID:	FOX-M S3					
Client:	**ESG**		Date Submitted:	09-Dec-11					
			Date Tested:	12-Dec-11					
Site:	**FOX-M**		Date Reported:	13-Dec-11					
ESG#	**11-351**		Matrix:	Soil					
Report of Analysis			All results in ug/g						
Results relate only to the items tested									
Sample	Cu	Ni	Co	Cd	Pb	Zn	Cr	As	
11-14316	4.3	5.8	<5.0	<1.0	<10	<15	<20	2.3	*
11-14322	4.3	6.5	<5.0	<1.0	<10	<15	<20	3.4	
11-14326	<3.0	<5.0	<5.0	<1.0	<10	<15	<20	1.8	
Blank	<3.0	<5.0	<5.0	<1.0	<10	<15	<20	<1.0	
Blank	<3.0	<5.0	<5.0	<1.0	<10	<15	<20	<1.0	
MESS-3	30.1	36.8	11.6	<1.0	21	126	38	16.8	
SS-2	214.3	51.7	13.6	1.8	118	454	44	67.7	
11-14316	4.3	5.9	<5.0	<1.0	<10	<15	<20	2.0	
11-14316	4.2	5.7	<5.0	<1.0	<10	<15	<20	2.5	

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ASG Login No: 22015
Site: Fox-M
Client No: 11-218
Samples Received: 25-Aug-11
Date of analysis: 8-Sep-11
Method No: ASG 005C
Date Reported: 15-Sep-11
Sheet No: 1 of 1

RESULTS OF PCB ANALYSIS

Sample Type **	Sample I.D.	Unit	Aroclor 1254	Aroclor 1260
S	14300	µg/g	< 0.05	< 0.05
S	14301	µg/g	< 0.05	< 0.05
S	14302	µg/g	< 0.05	< 0.05
S	14303	µg/g	< 0.05	< 0.05
S	14304	µg/g	< 0.05	< 0.05
S	14305	µg/g	< 0.05	< 0.05
S	14306	µg/g	< 0.05	< 0.05
S	14307	µg/g	< 0.05	< 0.05
S	14308	µg/g	< 0.05	< 0.05
S	14309	µg/g	< 0.05	< 0.05
S	14310	µg/g	< 0.05	< 0.05
S	14311	µg/g	< 0.05	< 0.05
S	14313	µg/g	< 0.05	< 0.05
S	14315	µg/g	< 0.05	< 0.05
S	14317	µg/g	< 0.05	< 0.05
S	14319	µg/g	< 0.05	< 0.05
S	14321	µg/g	< 0.05	< 0.05
S	14323	µg/g	< 0.05	< 0.05

* Averaged result of duplicate
** O = Oil, S = Soil, C = Concrete, PC = Paint Chips, SW = Swabs, W = Water, P = Plants

LABORATORY QA/QC

S	38338 ; Duplicate	µg/g	< 0.05 ; < 0.05	< 0.05 ; < 0.05
	Blank	µg/g	< 0.1	< 0.05
	Control Sample	µg/g	5.3	< 0.05
	Control Sample Target	µg/g	5.0	< 0.05

All results corrected for the recovery of the surrogate decachlorobiphenyl

The results reported here relate only to the items tested.

Prepared By: _____
Stephanie Trickey, Analyst

Authorization: _____
Julie McDonald, Lab Manager

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ASG Login No: 22015
Site: Fox-M
Client No: 11-218
Samples Received: 25-Aug-11
Date of analysis: 8-Sep-11
Method No: ASG 005C
Date Reported: 15-Sep-11
Sheet No: 1 of 1

RESULTS OF PCB ANALYSIS

Sample Type **	Sample I.D.	Unit	Aroclor 1254	Aroclor 1260
S	14325*	µg/g	< 0.05	< 0.05
S	14327	µg/g	< 0.05	< 0.05
S	14328	µg/g	< 0.05	< 0.05
S	14329	µg/g	< 0.05	< 0.05
S	14330	µg/g	< 0.05	< 0.05
S	14331	µg/g	< 0.05	< 0.05
S	14332	µg/g	0.10	< 0.05
S	14333	µg/g	0.07	< 0.05
S	14334	µg/g	< 0.05	< 0.05
S	14335	µg/g	< 0.05	< 0.05
S	14336	µg/g	< 0.05	< 0.05
S	14337	µg/g	< 0.05	< 0.05
S	14338	µg/g	< 0.05	< 0.05
S	14339	µg/g	< 0.05	< 0.05
S	14340	µg/g	0.28	< 0.05
S	14341	µg/g	0.10	< 0.05
S	14342	µg/g	< 0.05	< 0.05

* Averaged result of duplicate
** O = Oil, S = Soil, C = Concrete, PC = Paint Chips, SW = Swabs, W = Water, P = Plants

LABORATORY QA/QC

S	14325 ; Duplicate	µg/g	< 0.05 ; < 0.05	< 0.05 ; < 0.05
	Blank	µg/g	< 0.05	< 0.05
	Control Sample	µg/g	6.5	< 0.05
	Control Sample Target	µg/g	5.0	< 0.05

All results corrected for the recovery of the surrogate decachlorobiphenyl

The results reported here relate only to the items tested.

Prepared By: _____
Stephanie Trickey, Analyst

Authorization: _____
Julie McDonald, Lab Manager

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ASG Login No: 22015
Site: Fox-M
Client No: 11-218
Samples Received: 25-Aug-11
Date of analysis: 15-Sep-11
Method No: ASG 005C
Date Reported: 16-Sep-11
Sheet No: 1 of 1

RESULTS OF PCB ANALYSIS

Sample Type **	Sample I.D.	Unit	Aroclor 1254	Aroclor 1260
S	14343	µg/g	< 0.05	< 0.05

* Averaged result of duplicate
** O = Oil, S = Soil, C = Concrete, PC = Paint Chips, SW = Swabs, W = Water, P = Plants

LABORATORY QA/QC

	Blank	µg/g	< 0.05	< 0.05
	Control Sample	µg/g	6.4	< 0.05
	Control Sample Target	µg/g	5.0	< 0.05

All results corrected for the recovery of the surrogate decachlorobiphenyl

The results reported here relate only to the items tested.

Prepared By: _____
Stephanie Trickey, Analyst

Authorization: _____
Julie McDonald, Lab Manager

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ASG Login No: 22282
Site: Fox-M
Client No: 11-351
Samples Received: 9-Dec-11
Date of analysis: 19-Dec-11
Method No: ASG 005C
Date Reported: 20-Dec-11
Sheet No: 1 of 1

RESULTS OF PCB ANALYSIS

Sample Type **	Sample I.D.	Unit	Aroclor 1254	Aroclor 1260
S	14316	µg/g	< 0.05	< 0.05
S	14322	µg/g	< 0.05	< 0.05
S	14326*	µg/g	< 0.05	< 0.05

* Averaged result of duplicate
** O = Oil, S = Soil, C = Concrete, PC = Paint Chips, SW = Swabs, W = Water, P = Plants

LABORATORY QA/QC

S	14326 ; Duplicate	µg/g	< 0.05 ; < 0.05	< 0.05 ; < 0.05
	Blank	µg/g	< 0.05	< 0.05
	Control Sample	µg/g	5.1	< 0.05
	Control Sample Target	µg/g	5.0	< 0.05

All results corrected for the recovery of the surrogate decachlorobiphenyl

The results reported here relate only to the items tested.

Prepared By: _____
Stephanie Trickey, Analyst

Authorization: _____
Julie McDonald, Lab Manager

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ASG Login No: 22015
Site: Fox-M
Client No: 11-218
Samples Received: 25-Aug-11
Date of analysis: 13-Sep-11
Method No: ASG 014
Date Reported: 15-Sep-11
Sheet: 1 of 1

RESULTS OF MERCURY ANALYSIS

Sample ID	Mercury^ µg/g
14341	< 0.1
14342	< 0.1
14343	< 0.1

^ Acid digestion performed.
# Reported at 0.1µg/g detection limit.

LABORATORY QA/QC

Sample ID	Mercury^ µg/g
Blank	< 0.1
Control Target	0.44
Control Sample	0.48

The results reported here relate only to the items tested.

Prepared By: _____
Yi Wang;
Analyst

Authorization: _____
Julie McDonald;
Laboratory Manager

Test Report I.D: Hgs-22015r1.xls

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ASG Login No: 22015
Site: Fox-M
Client No: 11-218
Samples Received: 25-Aug-11
Date of analysis: 15-Sep-11
Method No: ASG 014
Date Reported: 15-Sep-11
Sheet: 1 of 1

RESULTS OF MERCURY IN SOIL ANALYSIS

Sample ID	Mercury µg/g
14300*	< 0.1
14301	< 0.1
14302	< 0.1
14303	< 0.1
14304	< 0.1
14305	< 0.1
14306	< 0.1
14307	< 0.1
14308	< 0.1
14309	< 0.1
14310	< 0.1
14311	< 0.1
14313	< 0.1
14315	< 0.1
14317	< 0.1
14319	< 0.1
14321	< 0.1
14323	< 0.1
14325	< 0.1
14327	< 0.1
14328	< 0.1
14329	< 0.1
14330	< 0.1
14331	< 0.1
14332	< 0.1
14333	< 0.1
14334	< 0.1
14335	< 0.1
14336	< 0.1
14337	< 0.1
14338	< 0.1
14339	< 0.1
14340	< 0.1

LABORATORY QA/QC

Sample ID	Mercury µg/g
Duplicate ; 14300*	< 0.1 ; < 0.1
Blank	< 0.1
Control Target	0.44
Control Sample	0.31

* Averaged result of duplicates

The results reported here relate only to the items tested.

Prepared By: _____
Curtis McDonald;
Analyst

Authorization: _____
Julie McDonald;
Laboratory Manager

Test Report I.D: Hgs-22015r2.xls

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ASG Login No: 22282
Site: Fox-M
Client No: 11-351
Samples Received: 09-Dec-11
Date of analysis: 14-Dec-11
Method No: ASG 014
Date Reported: 14-Dec-11
Sheet: 1 of 1

RESULTS OF MERCURY IN SOIL ANALYSIS

Sample ID	Mercury µg/g
14316	< 0.1
14322*	< 0.1
14326	< 0.1

LABORATORY QA/QC

Sample ID	Mercury µg/g
Duplicate ; 14322*	< 0.1 ; < 0.1
Blank	< 0.1
Control Target	0.44
Control Sample	0.33

* Averaged result of duplicates

The results reported here relate only to the items tested.

Prepared By: _____
Curtis McDonald;
Analyst

Authorization: _____
Julie McDonald;
Laboratory Manager

Test Report I.D: mercury fox-m extra.xls

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ASG Login No: 22015
Site: Fox-M
Client Login No: 11-218
Date Sampled: 13-15-Aug-11
Samples Received: 25-Aug-11
Date of analysis: 26-Aug-11
Method No: ASG 053 ~
Date Reported: 14-Sep-11
Sheet: 1 of 1

RESULTS OF PHC IN SOIL ANALYSIS - F1 FRACTION^

Sample I.D.	Unit	F1 Fraction (ppm)
14335*	mg/kg	< 10
14336	mg/kg	< 10
14337	mg/kg	< 10
14338	mg/kg	< 10
14339	mg/kg	< 10
14340	mg/kg	< 10
14341	mg/kg	< 10
14342	mg/kg	< 10
14343	mg/kg	< 10

LABORATORY QA/QC SECTION

Blank	mg/kg	< 10
Duplicate ; 14335*	mg/kg	< 10 ; < 10
Gasoline Control Sample	mg/kg	32
Gasoline Control Target	mg/kg	29

^ BTEX contribution to F1 fraction not subtracted from reported values
* Averaged result of duplicates

~ This method complies with the reference method for the CWS PHC and is validated for use in the laboratory.
Linearity of calibration standards is within 15%.
Extraction and analysis holding times for samples were met.

The results reported here relate only to the items tested

Prepared by:_____
Chad Hind, Analyst

Authorization:_____
Julie McDonald, Laboratory Manager

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ASG Login No: 22015
Site: Fox-M
Client Login No: 11-218
Date Sampled: 13-15-Aug-11
Samples Received: 25-Aug-11
Date of analysis: 26-Aug-11
Method No: ASG 053 ~
Date Reported: 09-Sep-11
Sheet: 1 of 1

RESULTS OF PHC IN SOIL ANALYSIS - F1 FRACTION^

Sample I.D.	Unit	F1 Fraction (ppm)
14300*	mg/kg	< 10
14301	mg/kg	< 10
14302	mg/kg	< 10
14303	mg/kg	< 10
14304	mg/kg	< 10
14305	mg/kg	< 10
14306	mg/kg	< 10
14307	mg/kg	< 10
14308	mg/kg	< 10
14309	mg/kg	< 10
14310	mg/kg	< 10
14311	mg/kg	< 10
14313	mg/kg	< 10
14315	mg/kg	< 10
14317	mg/kg	< 10
14319	mg/kg	< 10
14321	mg/kg	< 10
14323	mg/kg	< 10
14325	mg/kg	< 10
14327	mg/kg	< 10
14328	mg/kg	< 10
14329	mg/kg	< 10
14330	mg/kg	< 10
14331	mg/kg	< 10
14332	mg/kg	< 10
14333	mg/kg	< 10
14334	mg/kg	< 10

LABORATORY QA/QC SECTION

Blank	mg/kg	< 10
Duplicate ; 14300*	mg/kg	< 10 ; < 10
Gasoline Control Sample	mg/kg	29
Gasoline Control Target	mg/kg	29

^ BTEX contribution to F1 fraction not subtracted from reported values
* Averaged result of duplicates

~ This method complies with the reference method for the CWS PHC and is validated for use in the laboratory.
Linearity of calibration standards is within 15%.
Extraction and analysis holding times for samples were met.

The results reported here relate only to the items tested

Prepared by:_____
Chad Hind, Analyst

Authorization:_____
Julie McDonald, Laboratory Manager

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ASG Login No: 22282
Site: Fox-M
Client Login No: 11-351
Date Sampled: 13-Aug-11
Samples Received: 09-Dec-11
Date of analysis: 09-Dec-11
Method No: ASG 053 ~
Date Reported: 13-Dec-11
Sheet: 1 of 1

RESULTS OF PHC IN SOIL ANALYSIS - F1 FRACTION^

Sample I.D.	Unit	F1 Fraction (ppm)
14316*	mg/kg	< 10
14322	mg/kg	< 10
14326	mg/kg	< 10

LABORATORY QA/QC SECTION

Blank	mg/kg	< 10
Duplicate ; 14316*	mg/kg	< 10 ; < 10
Gasoline Control Sample	mg/kg	28
Gasoline Control Target	mg/kg	29

^ BTEX contribution to F1 fraction not subtracted from reported values
* Averaged result of duplicates

~ This method complies with the reference method for the CWS PHC and is validated for use in the laboratory.
Linearity of calibration standards is within 15%.
Extraction and analysis holding times for samples were met.

The results reported here relate only to the items tested

Prepared by:_____
Chad Hind, Analyst

Authorization:_____
Julie McDonald, Laboratory Manager

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ASG Login No: 22015
Site: Fox-M
Client Login No: 11-218
Samples Received: 25-Aug-11
Date of analysis: 7-Sep-11
Date Sampled: 13-15 Aug 11
Method No: ASG 053~
Date Reported: 15-Sep-11
Sheet: 1 of 1

RESULTS OF PHC IN SOIL ANALYSIS^

Sample I.D.	Unit	F2 Fraction (ppm)	F3 Fraction (ppm)	F4 Fraction (ppm)	F4G (ppm)
14300	mg/kg	< 4.0	11	< 8.0	N/A
14301	mg/kg	< 4.0	< 9.0	< 8.0	N/A
14302	mg/kg	7.3	< 9.0	< 8.0	N/A
14303	mg/kg	6.8	12	< 8.0	N/A
14304	mg/kg	< 4.0	< 9.0	< 8.0	N/A
14305	mg/kg	< 4.0	< 9.0	< 8.0	N/A
14306	mg/kg	4.4	< 9.0	< 8.0	N/A
14307	mg/kg	< 4.0	9.0	< 8.0	N/A
14308	mg/kg	4.7	< 9.0	< 8.0	N/A
14309	mg/kg	< 4.0	< 9.0	< 8.0	N/A
14310	mg/kg	< 4.0	< 9.0	< 8.0	N/A
14311	mg/kg	< 4.0	< 9.0	< 8.0	N/A
14313	mg/kg	< 4.0	< 9.0	< 8.0	N/A
14315	mg/kg	< 4.0	< 9.0	< 8.0	N/A
14317	mg/kg	< 4.0	< 9.0	< 8.0	N/A
14319	mg/kg	4.1	< 9.0	< 8.0	N/A
14321	mg/kg	< 4.0	< 9.0	< 8.0	N/A
14323	mg/kg	< 4.0	< 9.0	< 8.0	N/A
14325	mg/kg	< 4.0	< 9.0	< 8.0	N/A
14327	mg/kg	< 4.0	< 9.0	< 8.0	N/A
14328	mg/kg	< 4.0	13	11	N/A
14329	mg/kg	< 4.0	10	< 8.0	N/A
14330	mg/kg	< 4.0	9.2	< 8.0	N/A
14331	mg/kg	< 4.0	15	< 8.0	N/A
14332	mg/kg	< 4.0	57	13	N/A
14333*	mg/kg	< 4.1	21	8.7	N/A
14334	mg/kg	< 4.0	12	< 8.0	N/A

LABORATORY QA/QC FOR F2-F4 FRACTIONS

Sample I.D.	Unit	F2 Fraction (ppm)	F3 Fraction (ppm)	F4 Fraction (ppm)	F4G (ppm)
Duplicate ; 14333*	mg/kg	< 4.0 ; < 4.0	20 ; 21	8.2 ; 9.1	N/A
Blank	mg/kg	< 4.0	< 9.0	< 8.0	N/A

Diesel Spike	mg/kg	40
Diesel Spike Target	mg/kg	50
Control Standard	mg/kg	2600
Control Standard Target	mg/kg	2500

^PAH contributions to F2-F4 not subtracted from reported values.
~The method used complies with the Reference Method for the CWS PHC.
*Averaged result of duplicate

Gravimetric heavy hydrocarbons cannot be added to the C6-C50 hydrocarbons.
The chromatogram descended to baseline by the C50 retention time.
Average response factors for C10, C16, C34 were within 10% of each other.
C50 response factor was within 70% of the C10, C16, C34 average response factor.
Linearity of calibration standards was within 15%.
Extraction and analysis holding times for samples were met.

The results reported here relate only to the items tested.

Prepared By: _____
Kate Campbell, Analyst

Authorization: _____
Julie McDonald, Laboratoy Manager

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ASG Login No: 22015
Site: Fox-M
Client Login No: 11-218
Samples Received: 25-Aug-11
Date of analysis: 7-Sep-11
Date Sampled: 13-15 Aug 11
Method No: ASG 053~
Date Reported: 15-Sep-11
Sheet: 1 of 1

RESULTS OF PHC IN SOIL ANALYSIS^

Sample I.D.	Unit	F2 Fraction (ppm)	F3 Fraction (ppm)	F4 Fraction (ppm)	F4G (ppm)
14335	mg/kg	< 4.0	13	< 8.0	N/A
14336	mg/kg	< 4.0	< 9.0	< 8.0	N/A
14337	mg/kg	< 4.0	< 9.0	< 8.0	N/A
14338	mg/kg	< 4.0	11	< 8.0	N/A
14339	mg/kg	< 4.0	< 9.0	< 8.0	N/A
14340	mg/kg	< 4.0	< 9.0	< 8.0	N/A
14341	mg/kg	< 4.0	< 9.0	< 8.0	N/A
14342	mg/kg	< 4.0	< 9.0	< 8.0	N/A
14343*	mg/kg	< 4.0	< 9.0	< 8.0	N/A

LABORATORY QA/QC FOR F2-F4 FRACTIONS

Sample I.D.	Unit	F2 Fraction (ppm)	F3 Fraction (ppm)	F4 Fraction (ppm)	F4G (ppm)
Duplicate ; 14343*	mg/kg	< 4.0 ; < 4.0	< 9.0 ; < 9.0	< 8.0 ; < 8.0	N/A
Blank	mg/kg	< 4.0	< 9.0	< 8.0	N/A

Diesel Spike	mg/kg	41
Diesel Spike Target	mg/kg	50
Control Standard	mg/kg	2600
Control Standard Target	mg/kg	2500

^PAH contributions to F2-F4 not subtracted from reported values.
~The method used complies with the Reference Method for the CWS PHC.
*Averaged result of duplicate

Gravimetric heavy hydrocarbons cannot be added to the C6-C50 hydrocarbons.
The chromatogram descended to baseline by the C50 retention time.
Average response factors for C10, C16, C34 were within 10% of each other.
C50 response factor was within 70% of the C10, C16, C34 average response factor.
Linearity of calibration standards was within 15%.
Extraction and analysis holding times for samples were met.

The results reported here relate only to the items tested.

Prepared By: _____
Kate Campbell, Analyst

Authorization: _____
Julie McDonald, Laboratory Manager
Test Report I.D: PHCs22015r2(F2-F4).xls

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ASG Login No: 22282
Site: Fox-M
Client Login No: 11-351
Samples Received: 9-Dec-11
Date of analysis: 9-Dec-11
Date Sampled: 13-Aug-11
Method No: ASG 053~
Date Reported: 16-Dec-11
Sheet: 1 of 1

RESULTS OF PHC IN SOIL ANALYSIS^

Sample I.D.	Unit	F2 Fraction (ppm)	F3 Fraction (ppm)	F4 Fraction (ppm)	F4G (ppm)
14316	mg/kg	< 4.0	< 9.0	< 8.0	N/A
14322	mg/kg	< 4.0	< 9.0	< 8.0	N/A
14326*	mg/kg	< 4.0	< 9.0	< 8.0	N/A

LABORATORY QA/QC FOR F2-F4 FRACTIONS

Sample I.D.	Unit	F2 Fraction (ppm)	F3 Fraction (ppm)	F4 Fraction (ppm)	F4G (ppm)
Duplicate ; 14326*	mg/kg	< 4.0 ; < 4.0	< 9.0 ; < 9.0	< 8.0 ; < 8.0	N/A
Blank	mg/kg	< 4.0	< 9.0	< 8.0	N/A

Diesel Spike	mg/kg	38
Diesel Spike Target	mg/kg	50
Control Standard	mg/kg	2300
Control Standard Target	mg/kg	2500

^PAH contributions to F2-F4 not subtracted from reported values.
~The method used complies with the Reference Method for the CWS PHC.
*Averaged result of duplicate

Gravimetric heavy hydrocarbons cannot be added to the C6-C50 hydrocarbons.
The chromatogram descended to baseline by the C50 retention time.
Average response factors for C10, C16, C34 were within 10% of each other.
C50 response factor was within 70% of the C10, C16, C34 average response factor.
Linearity of calibration standards was within 15%.
Extraction and analysis holding times for samples were met.

The results reported here relate only to the items tested.

Prepared By: _____
Kate Campbell, Analyst

Authorization: _____
Julie McDonald, Laboratory Manager

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ASG Login No: 22282
Site: Fox-M
Client Login No: 11-351
Samples Received: 09-Dec-11
Date of analysis: 09-Dec-11
Method No: ASG 053~
Date Reported: 16-Dec-11
Sheet: 1 of 1

RESULTS OF % MOISTURE ANALYSIS

Sample I.D.	Moisture (%)
14316	2.3
14322	2.2
14326*	2.7

The results reported here relate only to the items tested.

Prepared By: _____
Kate Campbell, Analyst

Authorization: _____
Julie McDonald, Laboratory Manager
Test Report I.D: F-M PHC 2nd moisture.xls

Project	FOX-M-MON-DLCU.RQ.11-309
Report To	Candice Casucci, Department of National Defense - Astra
ALS File No.	L1071571
Date Received	13-Oct-11 09:15
Date	27-Oct-11

RESULTS OF ANALYSIS

Sample ID	14300	14303	14308	14315	14321	14329	14332	14342
Date Sampled	15-AUG-11	13-AUG-11	13-AUG-11	13-AUG-11	13-AUG-11	15-AUG-11	15-AUG-11	15-AUG-11
Time Sampled	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00
ALS Sample ID	L1071571-1	L1071571-2	L1071571-3	L1071571-4	L1071571-5	L1071571-6	L1071571-7	L1071571-8
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Physical Tests								
% Moisture	6.46	12.1	12.8	9.76	4.29	4.53	4.21	3.61
Metals								
Arsenic (As)	1.72	1.27	2.18	2.23	3.07	2.45	4.26	2.23
Cadmium (Cd)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chromium (Cr)	8.6	12.3	18.8	10.3	7.9	9.1	12.8	9.6
Cobalt (Co)	1.9	1.9	3.0	1.8	1.7	1.7	2.5	1.7
Copper (Cu)	4.3	5.9	5.1	3.4	4.0	5.9	12.5	3.3
Lead (Pb)	2.9	5.2	3.5	3.3	4.4	140	25.8	4.3
Mercury (Hg)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Nickel (Ni)	7.4	8.0	11.7	7.0	6.5	7.2	9.9	7.1
Zinc (Zn)	10.2	18.6	22.7	11.6	10.5	16.6	29.3	14.1
Hydrocarbons								
F1 (C6-C10)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
F2 (C10-C16)	<6	14	<6	<6	<6	<6	<6	<6
F3 (C16-C34)	<50	<50	<18	<18	<18	<18	<50	<50
F4 (C34-C50)	<50	<17	<17	<17	<17	<17	<50	<17
Total Hydrocarbons (C6-C50)	<50	<50	<50	<50	<50	<50	<50	<50
Chrom. to baseline at nC50	YES	YES	YES	YES	YES	YES	YES	YES
Surrogate: 2-Bromobenzotrifluoride	90.3	88.0	85.5	85.1	79.1	88.0	88.8	80.0
Surrogate: Octacosane	94.7	90.8	102.1	100.5	101.1	112.2	100.8	90.4
Polychlorinated Biphenyls								
Aroclor 1016	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Aroclor 1221	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Aroclor 1232	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Aroclor 1242	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Aroclor 1248	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Aroclor 1254	<0.010	<0.010	<0.010	<0.010	0.013	<0.010	0.153	0.012
Aroclor 1260	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Aroclor 1262	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Aroclor 1268	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Total PCBs	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	0.153	<0.030
Surrogate: d14-Terphenyl	99.4	101.1	98.5	96.4	103.6	98.6	100.7	101.7

Project FOX-M-MON-DLCU.RQ.11-309
Report To Candice Casucci, Department of National Defense - Astra
ALS File No. L1071571
Date Received 13-Oct-11 09:15
Date 27-Oct-11

DETECTION LIMITS

Sample ID	14300	14303	14308	14315	14321	14329	14332	14342
Date Sampled	15-AUG-11	13-AUG-11	13-AUG-11	13-AUG-11	13-AUG-11	15-AUG-11	15-AUG-11	15-AUG-11
Time Sampled	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00
ALS Sample ID	L1071571-1	L1071571-2	L1071571-3	L1071571-4	L1071571-5	L1071571-6	L1071571-7	L1071571-8
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Physical Tests								
% Moisture	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Metals								
Arsenic (As)	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Cadmium (Cd)	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Chromium (Cr)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Cobalt (Co)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Copper (Cu)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead (Pb)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Mercury (Hg)	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
Nickel (Ni)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Zinc (Zn)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Hydrocarbons								
F1 (C6-C10)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
F2 (C10-C16)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
F3 (C16-C34)	50	50	18	18	18	18	50	50
F4 (C34-C50)	50	17	17	17	17	17	50	17
Total Hydrocarbons (C6-C50)	50	50	50	50	50	50	50	50
Chrom. to baseline at nC50	-	-	-	-	-	-	-	-
Surrogate: 2-Bromobenzotrifluoride	-	-	-	-	-	-	-	-
Surrogate: Octacosane	-	-	-	-	-	-	-	-
Polychlorinated Biphenyls								
Aroclor 1016	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Aroclor 1221	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Aroclor 1232	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Aroclor 1242	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Aroclor 1248	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Aroclor 1254	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Aroclor 1260	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Aroclor 1262	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Aroclor 1268	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Total PCBs	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030
Surrogate: d14-Terphenyl	-	-	-	-	-	-	-	-

Project	FOX-M-MON-DLCU.RQ.11-309
Report To	Candice Casucci, Department of National Defense - Astra
ALS File No.	L1071571
Date Received	13-Oct-11 09:15
Date	27-Oct-11

UNITS								
Sample ID	14300	14303	14308	14315	14321	14329	14332	14342
Date Sampled	15-AUG-11	13-AUG-11	13-AUG-11	13-AUG-11	13-AUG-11	15-AUG-11	15-AUG-11	15-AUG-11
Time Sampled	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00
ALS Sample ID	L1071571-1	L1071571-2	L1071571-3	L1071571-4	L1071571-5	L1071571-6	L1071571-7	L1071571-8
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Physical Tests								
% Moisture	%	%	%	%	%	%	%	%
Metals								
Arsenic (As)	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g
Cadmium (Cd)	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g
Chromium (Cr)	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g
Cobalt (Co)	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g
Copper (Cu)	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g
Lead (Pb)	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g
Mercury (Hg)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Nickel (Ni)	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g
Zinc (Zn)	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g
Hydrocarbons								
F1 (C6-C10)	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g
F2 (C10-C16)	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g
F3 (C16-C34)	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g
F4 (C34-C50)	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g
Total Hydrocarbons (C6-C50)	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g
Chrom. to baseline at nC50	-	-	-	-	-	-	-	-
Surrogate: 2-Bromobenzotrifluoride	%	%	%	%	%	%	%	%
Surrogate: Octacosane	%	%	%	%	%	%	%	%
Polychlorinated Biphenyls								
Aroclor 1016	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aroclor 1221	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aroclor 1232	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aroclor 1242	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aroclor 1248	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aroclor 1254	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aroclor 1260	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aroclor 1262	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aroclor 1268	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Total PCBs	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Surrogate: d14-Terphenyl	%	%	%	%	%	%	%	%

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REPLICATE RESULTS

Sample ID	Matrix	ALS ID	Analyte	Replicate 1	Replicate 2	Units	RPD	RPD Limit	Diff	Diff Limit	Qualifier
Physical Tests											
L1071571-6	Soil	WG1368153-3	% Moisture	4.53	4.58	%	1.3	30	-	-	-
Hydrocarbons											
WG1370324-2	Soil	WG1370324-3	F2 (C10-C16)	86.0	84.5	%	1.8	50	-	-	-
WG1371986-2	Soil	WG1371986-3	F2 (C10-C16)	85.7	89.3	%	4.0	50	-	-	-
WG1372060-2	Soil	WG1372060-3	F2 (C10-C16)	84.0	89.3	%	6.1	50	-	-	-
WG1370324-2	Soil	WG1370324-3	F3 (C16-C34)	95.2	99.9	%	4.8	50	-	-	-
WG1371986-2	Soil	WG1371986-3	F3 (C16-C34)	94.7	97.6	%	3.0	50	-	-	-
WG1372060-2	Soil	WG1372060-3	F3 (C16-C34)	86.9	92.5	%	6.3	50	-	-	-
WG1370324-2	Soil	WG1370324-3	F4 (C34-C50)	101.6	105.1	%	3.4	50	-	-	-
WG1371986-2	Soil	WG1371986-3	F4 (C34-C50)	99.5	101.2	%	1.6	50	-	-	-
WG1372060-2	Soil	WG1372060-3	F4 (C34-C50)	90.8	98.0	%	7.6	50	-	-	-
Polychlorinated Biphenyls											
WG1371979-2	Soil	WG1371979-3	Aroclor 1242	89.6	87.7	%	2.2	50	-	-	-
WG1371979-2	Soil	WG1371979-3	Aroclor 1248	86.7	86.7	%	0.0	50	-	-	-
WG1371979-2	Soil	WG1371979-3	Aroclor 1254	87.0	85.6	%	1.6	50	-	-	-
WG1371979-2	Soil	WG1371979-3	Aroclor 1260	99.7	99.3	%	0.43	50	-	-	-

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QUALITY CONTROL RESULTS

Matrix	QC Type	Analyte	QC Spl. No.	Reference	Result	Target	Units	%	Limits	Qualifier
Physical Tests										
Soil	LCS	% Moisture	WG1368153-2		5129470348	10.0	%	94.6	70-130	
Soil	LCS	% Moisture	WG1368209-2		834697217(	10.0	%	90.8	70-130	
Soil	MB	% Moisture	WG1368153-1		<0.10	<0.1	%	-	0.1	
Soil	MB	% Moisture	WG1368209-1		<0.10	<0.1	%	-	0.1	
Metals										
Soil	CRM	Mercury (Hg)	WG1370025-2	WT-SS-1	0.401	0.410	mg/kg	97.8	70-130	
Soil	LCS	Arsenic (As)	WG1370025-6	A+B	1.028576	1.00	ug/g	102.9	80-120	
Soil	LCS	Cadmium (Cd)	WG1370025-6	A+B	.992982	1.00	ug/g	99.3	80-120	
Soil	LCS	Chromium (Cr)	WG1370025-6	A+B	1.020686	1.0	ug/g	102.1	80-120	
Soil	LCS	Cobalt (Co)	WG1370025-6	A+B	.98499	1.0	ug/g	98.5	80-120	
Soil	LCS	Copper (Cu)	WG1370025-6	A+B	.96367	1.0	ug/g	96.4	80-120	
Soil	LCS	Lead (Pb)	WG1370025-6	A+B	1.010608	1.0	ug/g	101.1	80-120	
Soil	LCS	Nickel (Ni)	WG1370025-6	A+B	.97552	1.0	ug/g	97.6	80-120	
Soil	LCS	Zinc (Zn)	WG1370025-6	A+B	1.153814	1.0	ug/g	115.4	80-120	
Soil	LCS	Mercury (Hg)	WG1370025-7	QCSTD	.05325	0.050	mg/kg	106.5	70-130	
Soil	MB	Arsenic (As)	WG1370025-1		<0.20	<0.2	ug/g	-	0.2	
Soil	MB	Cadmium (Cd)	WG1370025-1		<0.50	<0.5	ug/g	-	0.5	
Soil	MB	Chromium (Cr)	WG1370025-1		<1.0	<1	ug/g	-	1	
Soil	MB	Cobalt (Co)	WG1370025-1		<1.0	<1	ug/g	-	1	
Soil	MB	Copper (Cu)	WG1370025-1		<1.0	<1	ug/g	-	1	
Soil	MB	Lead (Pb)	WG1370025-1		<1.0	<1	ug/g	-	1	
Soil	MB	Mercury (Hg)	WG1370025-1		<0.050	<0.05	mg/kg	-	0.05	
Soil	MB	Nickel (Ni)	WG1370025-1		<1.0	<1	ug/g	-	1	
Soil	MB	Zinc (Zn)	WG1370025-1		<5.0	<5	ug/g	-	5	
Soil	MS	Arsenic (As)	WG1370025-5	Anonymous	2809324566	5.62	ug/g	N/A	-	MS-B
Soil	MS	Cadmium (Cd)	WG1370025-5	Anonymous	3705917513	2.49	ug/g	101.9	70-130	
Soil	MS	Chromium (Cr)	WG1370025-5	Anonymous	2117951783	12.7	ug/g	N/A	-	MS-B
Soil	MS	Cobalt (Co)	WG1370025-5	Anonymous	4793783622	6.3	ug/g	N/A	-	MS-B
Soil	MS	Copper (Cu)	WG1370025-5	Anonymous	5819884439	10.7	ug/g	N/A	-	MS-B

Soil	MS	Lead (Pb)	WG1370025-5	Anonymous	2727634987	8.5	ug/g	N/A	-	MS-B
Soil	MS	Mercury (Hg)	WG1370025-5	Anonymous	3606296074	0.09960	mg/kg	104.0	70-130	
Soil	MS	Nickel (Ni)	WG1370025-5	Anonymous	3314405260	11.2	ug/g	N/A	-	MS-B
Soil	MS	Zinc (Zn)	WG1370025-5	Anonymous	412432755	9.7	ug/g	N/A	-	MS-B
Hydrocarbons										
Soil	LCS	F1 (C6-C10)	WG1368188-2		8.4795	7.5	ug/g	113.1	80-120	
Soil	LCS	F1 (C6-C10)	WG1368312-2		8.73525	7.5	ug/g	116.5	80-120	
Soil	LCS	F2 (C10-C16)	WG1370324-2		289.13	336	ug/g	86.0	80-120	
Soil	LCS	F3 (C16-C34)	WG1370324-2		610.77	641	ug/g	95.2	80-120	
Soil	LCS	F4 (C34-C50)	WG1370324-2		76.98	76	ug/g	101.6	80-120	
Soil	LCS	F2 (C10-C16)	WG1371986-2		288.14	336	ug/g	85.7	80-120	
Soil	LCS	F3 (C16-C34)	WG1371986-2		607.22	641	ug/g	94.7	80-120	
Soil	LCS	F4 (C34-C50)	WG1371986-2		75.43	76	ug/g	99.5	80-120	
Soil	LCS	F2 (C10-C16)	WG1372060-2		282.44	336	ug/g	84.0	80-120	
Soil	LCS	F3 (C16-C34)	WG1372060-2		557.35	641	ug/g	86.9	80-120	
Soil	LCS	F4 (C34-C50)	WG1372060-2		68.81	76	ug/g	90.8	80-120	
Soil	MB	F1 (C6-C10)	WG1368188-1		<5.0	<5	ug/g	-	5	
Soil	MB	F1 (C6-C10)	WG1368312-1		<5.0	<5	ug/g	-	5	
Soil	MB	F2 (C10-C16)	WG1370324-1		<10	<10	ug/g	-	10	
Soil	MB	F3 (C16-C34)	WG1370324-1		<50	<50	ug/g	-	50	
Soil	MB	F4 (C34-C50)	WG1370324-1		<50	<50	ug/g	-	50	
Soil	MB	F2 (C10-C16)	WG1371986-1		<10	<10	ug/g	-	10	
Soil	MB	F3 (C16-C34)	WG1371986-1		<50	<50	ug/g	-	50	
Soil	MB	F4 (C34-C50)	WG1371986-1		<50	<50	ug/g	-	50	
Soil	MB	F2 (C10-C16)	WG1372060-1		<10	<10	ug/g	-	10	
Soil	MB	F3 (C16-C34)	WG1372060-1		<50	<50	ug/g	-	50	
Soil	MB	F4 (C34-C50)	WG1372060-1		<50	<50	ug/g	-	50	
Soil	MS	F1 (C6-C10)	WG1368188-6	Anonymous	3634960657	9.5	ug/g	93	50-140	
Soil	MS	F1 (C6-C10)	WG1368312-7	Anonymous	3811325223	6.6	ug/g	134.0	50-140	
Soil	MS	F2 (C10-C16)	WG1370324-5	Anonymous	.635419719	360	ug/g	80.0	60-140	
Soil	MS	F3 (C16-C34)	WG1370324-5	Anonymous	.909837110	686	ug/g	96.7	60-140	
Soil	MS	F4 (C34-C50)	WG1370324-5	Anonymous	2418186674	81	ug/g	103.9	60-140	
Soil	MS	F2 (C10-C16)	WG1371986-5	Anonymous	.958048148	370	ug/g	88.7	60-140	
Soil	MS	F3 (C16-C34)	WG1371986-5	Anonymous	.997657266	706	ug/g	98.6	60-140	
Soil	MS	F4 (C34-C50)	WG1371986-5	Anonymous	7229502236	83	ug/g	106.4	60-140	
Soil	MS	F2 (C10-C16)	WG1372060-5	Anonymous	0.04604263	341	ug/g	90.8	60-140	
Soil	MS	F3 (C16-C34)	WG1372060-5	Anonymous	.964053963	652	ug/g	96.1	60-140	
Soil	MS	F4 (C34-C50)	WG1372060-5	Anonymous	9999727487	77	ug/g	107.8	60-140	
Polychlorinated Biphenyls										
Soil	LCS	Aroclor 1242	WG1371979-2		.17928	0.200	mg/kg	89.6	60-140	
Soil	LCS	Aroclor 1248	WG1371979-2		.17336	0.200	mg/kg	86.7	60-140	
Soil	LCS	Aroclor 1254	WG1371979-2		.17402	0.200	mg/kg	87.0	60-140	

Soil	LCS	Aroclor 1260	WG1371979-2	.1994	0.200	mg/kg	99.7	60-140
Soil	MB	Aroclor 1016	WG1371979-1	<0.010	<0.01	mg/kg	-	0.01
Soil	MB	Aroclor 1221	WG1371979-1	<0.010	<0.01	mg/kg	-	0.01
Soil	MB	Aroclor 1232	WG1371979-1	<0.010	<0.01	mg/kg	-	0.01
Soil	MB	Aroclor 1242	WG1371979-1	<0.010	<0.01	mg/kg	-	0.01
Soil	MB	Aroclor 1248	WG1371979-1	<0.010	<0.01	mg/kg	-	0.01
Soil	MB	Aroclor 1254	WG1371979-1	<0.010	<0.01	mg/kg	-	0.01
Soil	MB	Aroclor 1260	WG1371979-1	<0.010	<0.01	mg/kg	-	0.01
Soil	MB	Aroclor 1262	WG1371979-1	<0.010	<0.01	mg/kg	-	0.01
Soil	MB	Aroclor 1268	WG1371979-1	<0.010	<0.01	mg/kg	-	0.01

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Hold Time Exceedances

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
% Moisture	1	15-AUG-11	14-OCT-11 11:48	14	60	days	EHTR
	2	13-AUG-11	14-OCT-11 11:49	14	62	days	EHTR
	3	13-AUG-11	14-OCT-11 11:50	14	62	days	EHTR
	4	13-AUG-11	14-OCT-11 11:51	14	62	days	EHTR
	5	13-AUG-11	14-OCT-11 11:52	14	62	days	EHTR
	6	15-AUG-11	14-OCT-11 11:53	14	60	days	EHTR
	7	15-AUG-11	14-OCT-11 12:24	14	60	days	EHTR
	8	15-AUG-11	14-OCT-11 12:25	14	60	days	EHTR
Metals							
Metal Scan Collision Cell ICPMS	1	15-AUG-11	17-OCT-11 23:37	60	63	days	EHT
	2	13-AUG-11	17-OCT-11 23:38	60	65	days	EHTR
	3	13-AUG-11	17-OCT-11 23:39	60	65	days	EHTR
	4	13-AUG-11	17-OCT-11 23:40	60	65	days	EHTR
	5	13-AUG-11	17-OCT-11 23:41	60	65	days	EHTR
	6	15-AUG-11	17-OCT-11 23:42	60	63	days	EHT
	7	15-AUG-11	17-OCT-11 23:43	60	63	days	EHT
	8	15-AUG-11	17-OCT-11 23:44	60	63	days	EHT
Hydrocarbons							
F1 R153/04 as amended R511 by headspace	1	15-AUG-11	14-OCT-11 12:28	14	60	days	EHTR
	2	13-AUG-11	14-OCT-11 12:29	14	62	days	EHTR
	3	13-AUG-11	14-OCT-11 12:30	14	62	days	EHTR
	4	13-AUG-11	14-OCT-11 12:31	14	62	days	EHTR
	5	13-AUG-11	14-OCT-11 12:32	14	62	days	EHTR
	6	15-AUG-11	14-OCT-11 15:09	14	60	days	EHTR
	7	15-AUG-11	14-OCT-11 15:10	14	60	days	EHTR
	8	15-AUG-11	14-OCT-11 15:11	14	60	days	EHTR
F2-F4 (O.Reg 153/04, 511 Amendments)	1	15-AUG-11	18-OCT-11 08:58	14	64	days	EHTR
	2	13-AUG-11	18-OCT-11 08:59	14	66	days	EHTR
	3	13-AUG-11	20-OCT-11 23:37	14	68	days	EHTR
	4	13-AUG-11	20-OCT-11 23:38	14	68	days	EHTR
	5	13-AUG-11	20-OCT-11 23:39	14	68	days	EHTR
	6	15-AUG-11	20-OCT-11 23:40	14	66	days	EHTR
	7	15-AUG-11	20-OCT-11 23:41	14	66	days	EHTR
	8	15-AUG-11	20-OCT-11 23:19	14	66	days	EHTR
Polychlorinated Biphenyls							
PCBs	1	15-AUG-11	20-OCT-11 13:44	14	66	days	EHTR
	2	13-AUG-11	20-OCT-11 13:45	14	68	days	EHTR
	3	13-AUG-11	20-OCT-11 13:46	14	68	days	EHTR
	4	13-AUG-11	20-OCT-11 13:47	14	68	days	EHTR
	5	13-AUG-11	20-OCT-11 13:48	14	68	days	EHTR
	6	15-AUG-11	20-OCT-11 13:49	14	66	days	EHTR
	7	15-AUG-11	20-OCT-11 13:50	14	66	days	EHTR
	8	15-AUG-11	20-OCT-11 13:51	14	66	days	EHTR

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

SAMPLENUM	RPTREMARKS
WG1368188-4	; Analysis compromised due to type of sample jar received. Loses may have occurred according to 511 Regulation.

QUALIFIER	DESCRIPTION
ABL	Approximate Result: May Be Biased Low
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Qualifier Key for Sample Parameters Listed Below:

Qualifier	Description
ABL	Approximate Result: May Be Biased Low
VC:RHS	Volatile Analysis Compromised; Samples Received With Headspace
DLMDL	Detection Limit calculated from MDL to meet client specification

Samples with Parameter Qualifiers as Listed Above:

Sample Number	Client Sample ID	Parameters	Qualifier
L1071571-1	14300	F2 (C10-C16)	DLMDL
L1071571-1	14300	F1 (C6-C10)	ABL
L1071571-2	14303	F4 (C34-C50)	DLMDL
L1071571-2	14303	F2 (C10-C16)	DLMDL
L1071571-2	14303	F1 (C6-C10)	ABL
L1071571-3	14308	F3 (C16-C34)	DLMDL
L1071571-3	14308	F1 (C6-C10)	ABL
L1071571-3	14308	F4 (C34-C50)	DLMDL
L1071571-3	14308	F2 (C10-C16)	DLMDL
L1071571-4	14315	F1 (C6-C10)	ABL
L1071571-4	14315	F2 (C10-C16)	DLMDL
L1071571-4	14315	F4 (C34-C50)	DLMDL
L1071571-4	14315	F3 (C16-C34)	DLMDL
L1071571-5	14321	F2 (C10-C16)	DLMDL
L1071571-5	14321	F4 (C34-C50)	DLMDL
L1071571-5	14321	F3 (C16-C34)	DLMDL
L1071571-5	14321	F1 (C6-C10)	ABL
L1071571-6	14329	F2 (C10-C16)	DLMDL
L1071571-6	14329	F3 (C16-C34)	DLMDL
L1071571-6	14329	F1 (C6-C10)	VC:RHS
L1071571-6	14329	F4 (C34-C50)	DLMDL
L1071571-7	14332	F2 (C10-C16)	DLMDL
L1071571-7	14332	F1 (C6-C10)	VC:RHS
L1071571-8	14342	F1 (C6-C10)	VC:RHS
L1071571-8	14342	F4 (C34-C50)	DLMDL
L1071571-8	14342	F2 (C10-C16)	DLMDL

Annex 2

QA/QC Discussion and Result

APPENDIX C: QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

ESG follows an internal quality assurance/quality control program that was implemented to allow data quality to be monitored on an ongoing basis. This program is described in the Quality Assurance Project Plan (QAPP) (ESG, 2011). The points relevant to the discussion of QA/QC sample collection and analysis of monitoring samples at FOX-M, Hall Beach in 2011 are summarized here for completeness.

All samples are given sequential, numerical codes before submission to the analytical firms; these codes mask any information concerning site location, sample type or possible concentration of the sample.

Accuracy is measured and controlled by instrument calibration, the use of control standards, control spikes and the collection and analysis of blanks. Control standards and control spikes are reference materials with known concentrations. After analysis of a control standard or spike, the instrument calibration is evaluated based on comparison of the results with the target concentration.

Analytical blanks are processed through extraction/digestion and analysis procedures. These blanks give a measure of the quantity of any contaminant (analyte) that may be added to the overall result during the analysis.

Precision is measured and controlled by the analysis of field and analytical duplicates. Samples of the same material that are collected in the field and submitted blind as separate samples for analysis are field duplicates. Analytical duplicates are replicate preparations and analyses of the same sample. Comparison of the average relative standard deviations (RSD%) – also known as coefficients of variation, which are calculated as the standard deviation divided by the mean – are used to evaluate laboratory precision. Acceptable limits are generally considered to be less than 40 percent RSD for inorganics, 30 percent for other analyses, with 20 percent or less considered good agreement.

The results of the QA/QC program for the 2011 monitoring sampling program at FOX-Main, Hall Beach are discussed below. The laboratory associated with each analysis is also listed.

A. Inorganic Elements in Soil and Water Samples – Analytical Services Unit (ASU), Queen's University

1. Accuracy

Accuracy was monitored internally by ASU with the analysis of Standard Reference materials, specifically NRC Canada Marine Reference Sediment MESS-3 and contaminated soil reference material SS-2 (Table C-1). The reported results for several elements were consistently lower than the certified value for MESS-3. This discrepancy is attributed to differences between the digestion methods used at ASU and those used to obtain the certified values. The reference values are established by a variety of techniques that analyze the total metal content of the standard substrate. By contrast, the method used in most laboratories, including the ASU lab, (*aqua regia* digestion) extracts only the available metals in the sample substrate. This is because metals present within minerals forming part of the soil matrix are not released in the extraction process. As these metals form part of the soil matrix, they are also biologically unavailable. Because these elements are not extracted under the strongly oxidizing acid digestion procedure then generally they will not become mobilized by normal weathering and are therefore not environmentally significant. The fact that numerical environmental criteria for metals are designed to be compared with potentially biologically available metal concentrations means that the level of accuracy reported above is acceptable. ASU has developed a set of warning and control limits for MESS-3 sediment analyzed using *aqua regia* digestion, and results must be within these limits. The limits were created by compiling data from each MESS-3 sample over the last several years and checking for trends such as moving averages. The data compiled takes into account day to day variations in such factors as the weighing, acid digestion procedures and instrumentation. For the current MESS-3 control limits, there were over 600 data points for the arctic suite elements (Cu, Ni, Co, Cd, Pb, Zn, Cr, As) used in the development of the limits.

Average determined results for inorganic elements in MESS-3 in this study were all within control limits (Table C-1).

Soil reference material SS-2 was also used to monitor accuracy and determined results were within control limits. Certified values provided in Table C-1 reflect results obtained by the supplier for total digest analysis, similar to MESS-3 certified values. While the supplier also lists EPA-3050 Acid digestion values, the procedure is different from that used at ASU and digestion times are not provided by the supplier. Typically, digestion efficiencies for partial digestion methods have to be established on a lab per lab basis. As stated for MESS-3, the control limits established for SS-2 analysis at ASU are based on

hundreds of digestions performed over several years and the tolerance intervals are much smaller than those listed by the SS-2 supplier for acid digestion.

Water sample batches included spiked control samples to monitor accuracy. The control results and percent recoveries of the spikes are presented in Table C-2. Recoveries ranged from 94 to 103 percent for elements analyzed as total metals in water samples indicating good accuracy for the method. Laboratory control limits allow for a 30 percent variation in spike recovery.

Analytical blank samples were run with the soil and water batches and all results were below detection for inorganic elements (Tables C-2 & C-3). One field blank was also analyzed with the water samples and results were again below detection (Table C-2).

2. Precision/Repeatability

Precision was monitored externally by ESG using 2 pairs of soil sample field duplicates and one water sample field duplicate (Tables C-4 & C-2). The average relative standard deviations for detectable inorganic elements in the FOX-M monitoring soil samples were below 10 percent, indicating very good agreement between replicates (Table C-4). Just chromium and nickel showed detectable concentrations in the water field duplicate and RSDs were 2.0 and 34 percent respectively (Table C-2).

In some cases, one duplicate result was above the detection limit while the other was below. For these duplicates, we have not calculated RSDs. Previously in such cases, ESG calculated the relative standard deviation by a conventional method that takes the lower of the duplicate results as half of the detection limit. This method invariably leads to artificially inflated RSDs, even when the concentration in the higher result is close to the detection limit. In our experience, in such cases the two results generally are, in fact, very close and do represent good precision. For these reasons, these duplicate calculations are no longer included in the QA/QC analysis.

Internal precision was also monitored by ASU through the use of analytical duplicates. Five soil samples and one water sample were analyzed in duplicate for inorganic elements (Tables C-5 & C-2). The average RSDs for most elements in the soil replicates were below 10 percent, indicating good precision for analysis. The average RSD for copper was higher at 49 percent but most duplicate results were well below the DLCU criteria of 100ppm for copper in soil so results were accepted (Table C-5). One pair (14323) reported copper results straddling the criteria, with an elevated RSD. Variation in results for this pair were considered to be due to heterogeneity of the soil and since all other QA/QC parameters passed, no further action was taken.

One water sample was analyzed in duplicate and just three elements showed detectable levels in the pairs (Table C-2). RSDs for copper and zinc were quite low at 6.4 per cent and 1.8 percent, indicating good reproducibility. Chromium results in the water replicate resulted in a higher RSD at 74 percent.

B. Mercury in Soil and Water Samples – Analytical Services Group (ASG), Royal Military College (RMC)

1. Accuracy

Soil and water samples were analyzed for mercury along with control spiked samples. The results for these are presented in Tables C-6 and C-7; the control recoveries averaged 90 percent for soil control spikes and 105 percent for mercury in the water spikes. Blank samples were analyzed for mercury and results for soil and water analytical blanks and for the water field blank were below detection (Tables C-6 and C-7).

2. Precision

Two soil and one water sample field duplicate were submitted for analysis and all results were below detection for mercury (Tables C-6 and C-7).

One soil analytical duplicate was analyzed for mercury and results were again below detection (Table C-6).

C. Polychlorinated Biphenyls (PCBs) in Soil Samples – ASG, RMC

The QA/QC protocol for PCBs calls for analyses to be carried out in batches of no more than 30 samples. Each batch must include one analytical duplicate, a procedural blank and a spiked control sample. Each batch is treated as a separate unit: samples within the same batch must be worked up and analyzed continuously, and the QA/QC data considered with respect to each batch.

1. Accuracy

Internally, all samples were spiked with an aliquot of the surrogate standard decachlorobiphenyl (DCBP) prior to analysis by gas chromatography (GC) with electron capture detection (ECD), in order to measure recovery of PCBs. Sample results were corrected for this recovery. The method was calibrated using known standards of Aroclor 1254 and 1260. A calibration check standard was run with each batch to verify the

calibration. Duplicates, blanks, the spiked control sample, DCBP recovery and the calibration check were all required to be within predetermined control limits.

Aroclor 1254 (soil) and Aroclor 1260 (water) spiked control samples were run with the soil and water PCB analyses; the average recoveries were 121 percent in soil samples and 100 percent in the water spike (Table C-8).

Each batch was monitored internally by analyzing blank samples for PCBs with the soil and water samples. All results were below detection limits for analytical blanks and for the water sample field blank (Table C-9).

2. Precision/Repeatability

Precision was monitored internally by ASG using soil and water field duplicates and one soil sample analytical replicate (Table C-10). All results in the soil and water duplicates were below detection for Aroclor PCBs.

D. CCME Method of Petroleum Hydrocarbons in Soil and Water – ASG, RMC

Soil and water analysis was performed as prescribed in the CCME Reference Method for Canada-Wide Standard for Petroleum Hydrocarbons in Soil, 2001-2002. Results were reported for F1 fraction, F2 to F4 fractions and, if extra cleanup was required, Gravimetric F4G.

1. Accuracy

Two gasoline control spikes were analyzed for F1 fraction hydrocarbons in soil samples and the average recovery was 105 percent (Table C-11). Two control diesel spikes and control standards were analyzed for total hydrocarbons in soil samples resulting in average recoveries of 81 percent and 104 percent, respectively (Table C-11). Water sample control spikes were analyzed for F1 fraction hydrocarbons and total hydrocarbons and the resulting recoveries were 94 percent for F1, 85 percent for total hydrocarbon diesel spikes and 96 percent for total hydrocarbon control standards (Table C-14).

Analytical soil blank results are listed in Table C-12 and the water blanks are listed in Table C-15. All results were below detection for hydrocarbons in the analytical blanks and field blank.

2. Precision

Precision was monitored by running field and analytical replicates. Two soil sample field duplicates were analyzed and results were below detection with the exception of one sample which showed F2 fraction hydrocarbons just over the detection limit (Table C-13). The water sample field duplicate showed no detectable hydrocarbons (Table C-15).

Four soil samples were analyzed in duplicate for hydrocarbons and the results are listed in Table C-13. RSDs for the were less than 10 percent in the one sample that showed detectable hydrocarbons (Table C-13).

E. Inorganic Analysis of Soil Samples at ALS Environmental, Waterloo, ON

Soil samples were analysed for the Arctic suite of inorganic elements and mercury and QA/QC results are listed in Table C-16.

1. Accuracy and Precision

ALS Environmental laboratory used a control reference material to help quantifiy the mercury results and the recovery was reported as 98 percent (Table C-16). One laboratory control spike was analysed for inorganic elements and recoveries ranged from 96 percent to 115 percent, within the laboratory control limits of 80 to 120 percent. One matrix control spike was also run and just cadmium and mercury reported quantifiable results at 102 percent and 104 percent recovery. Control limits for these spikes were 70 to 130 percent. According to notes from the lab, other inorganic element spike recoveries could not be accurately calculated due to high analyte background in the samples (Table C-16).

Results were below detection in the method blank (Table C-16).

F. Hydrocarbon Analysis of Soil Samples at ALS, Waterloo, ON

1. Accuracy and Precision

Three laboratory control spikes were analysed for F1, F2, F3 and F4 fraction hydrocarbons. Average recoveries ranged from 85 percent to 115 percent, within the laboratory acceptable limits of 80 to 120 percent (Table C-17). The laboratory control spikes were analysed in duplicate and recoveries were within the control limits. Three

matrix control spikes were also run and the resulting average recoveries were again within control limits (Table C-17).

Results were below detection for hydrocarbons in the method blanks (Table C-17).

G. Aroclor PCB Analysis of Soil Samples at ALS, Waterloo, ON

1. Accuracy and Precision

One laboratory control spike of Aroclor 1242, 1248, 1254 and 1260 reported recoveries ranging from 87 percent to 100 percent (Table C-18). The spike was analysed in duplicate and recoveries of the replicate were also well within control limits.

Results were below detection for Aroclor PCBs in the method blank (Table C-18).

H. Comparison of Inorganic, Hydrocarbon and PCB Analysis at ASU/ASG and ALS

Table C-19 lists samples that were analysed at more than one laboratory. Results were compared on the basis of agreement with the DewLine Cleanup Criteria (DLCU) and samples that were not in agreement were flagged. All results were in agreement (Table C-19).

I. References

Environmental Sciences Group (ESG 2011). Quality Assurance Project Plan. Royal Military College, Kingston, ON.

Table C-1: Summary of Inorganic Element Results for Soil Internal Standards (MESS-3 and SS-2)

Element	MESS-3 Certified Value	Mean (n=2)	ASU Control Limits
	[ppm]	[ppm]	[ppm]
Cu	33.9 ± 1.6	28 ± 1.7	25.7-38.7
Ni	46.9 ± 2.2	36 ± 4.3	32.4-43.2
Co	14.4 ± 2.0	12 ± 1.1	10.4-13.9
Cd	0.24 ± 0.01	<1.0	-
Pb	21.1 ± 0.7	19 ± 1.0	14.2-19.8
Zn	159 ± 8	129 ± 15	115-152
Cr	105 ± 4	42 ± 13	25.8-55
As	21.2 ± 1.1	17 ± 1.3	14.1-19.2

Element	SS-2 Certified Value	Mean (n=2)	ASU Control Limits
	[ppm]	[ppm]	[ppm]
Cu	191 ± 9.0	191 ± 8.4	160-232
Ni	54 ± 4.0	58 ± 2.3	48-62.8
Co	12 ± 1.0	15 ± 0.4	11.8-16.9
Cd	2.0**	1.9 ± 0	1.3-2.8
Pb	126 ± 10	119 ± 3.7	97.6-137
Zn	467 ± 23	476 ± 20	389-563
Cr	34 ± 4.0	46 ± 1.5	34.7-52.7
As	75 ± 10	84 ± 7.6	53-99.7

** cadmium SS-2 information only, not certified

Table C-2: Inorganic Element Analysis of Water QA/QC Samples

Sample	Cu	Ni	Co	Cd	Pb	Zn	Cr	As
	[mg/L]	[mg/L]	[mg/L]	[mg/L]	[mg/L]	[mg/L]	[mg/L]	[mg/L]
Total Metals								
Control Spike								
Control	1.57	1.62	1.6	0.79	8.08	3.02	0.82	0.75
Control Target	1.6	1.6	1.6	0.8	8.0	3.0	0.8	0.8
Recovery (%)	98	101	100	99	101	101	103	94
Analytical and Field Blanks								
Blank	<0.005	<0.005	<0.003	<0.001	<0.010	<0.010	<0.005	<0.003
11-14354 Field Blank	<0.005	<0.005	<0.003	<0.001	<0.010	<0.010	<0.005	<0.003
Field Duplicate								
11-14345	<0.005	0.018	<0.003	<0.001	<0.010	<0.010	0.058	<0.003
11-14346	<0.005	0.011	<0.003	<0.001	<0.010	<0.010	0.056	<0.003
Average		0.015					0.057	
Std Dev		0.005					0.001	
RSD (%)		34					2.0	
Analytical Duplicate								
11-29114	0.0057	<0.005	<0.003	<0.001	<0.010	0.066	0.015	<0.003
Duplicate	0.0063	0.006	<0.003	<0.001	<0.010	0.065	0.047	<0.003
Average	0.006					0.065	0.031	
Std Dev	0.0004					0.001	0.02	
RSD (%)	6.4					1.8	74	

Table C-3: Inorganic Element Results for Soil Sample Analytical Blanks

Sample	Cu	Ni	Co	Cd	Pb	Zn	Cr	As
	[ppm]	[ppm]	[ppm]	[ppm]	[ppm]	[ppm]	[ppm]	[ppm]
Soil Samples								
Blank	<3.0	<5.0	<5.0	<1.0	<10	<15	<20	<1.0
Blank	<3.0	<5.0	<5.0	<1.0	<10	<15	<20	<1.0
Blank	<3.0	<5.0	<5.0	<1.0	<10	<15	<20	<1.0
Blank	<3.0	<5.0	<5.0	<1.0	<10	<15	<20	<1.0

Table C-4: Inorganic Element Results for Soil Sample Field Duplicates

Sample	Cu	Ni	Co	Cd	Pb	Zn	Cr	As
	[ppm]	[ppm]	[ppm]	[ppm]	[ppm]	[ppm]	[ppm]	[ppm]
Field Duplicates								
11-14308	3.5	9.2	<5.0	<1.0	<10	<15	<20	2.6
11-14309	4.0	9.9	<5.0	<1.0	<10	16	<20	2.8
Average	3.8	9.6						2.7
Std Dev	0.4	0.5						0.1
RSD (%)	9.4	4.9						5.6
11-14310	3.1	8.11	<5.0	<1.0	<10	<15	<20	2.0
11-14311	3.5	8.1	<5.0	<1.0	<10	<15	<20	1.8
Average	3.3	8.1						1.9
Std Dev	0.3	0.01						0.2
RSD (%)	8.6	0.1						9.9
Average RSD (%)	**9.0**	**2.5**						**7.8**
Std Dev	**± 0.6**	**± 3.4**						**± 3.0**

Table C-5: Inorganic Element Results for Soil Sample Analytical Duplicates

Sample	Cu	Ni	Co	Cd	Pb	Zn	Cr	As
	[ppm]	[ppm]	[ppm]	[ppm]	[ppm]	[ppm]	[ppm]	[ppm]
Soil Samples - Analytical Duplicates								
11-14300	14	6.6	<5.0	<1.0	<10	<15	<20	2.5
Duplicate	4.3	7.2	<5.0	<1.0	<10	<15	<20	2.8
Average	9.1	6.9						2.7
Std Dev	6.7	0.4						0.2
RSD (%)	74	6.4						7.8
11-14310	3.0	7.4	<5.0	<1.0	<10	<15	<20	2.0
Duplicate	3.2	8.8	<5.0	<1.0	<10	<15	<20	2.1
Average	3.1	8.1						2.0
Std Dev	0.1	1.0						0.01
RSD (%)	4.6	12						0.5
11-14323	4.4	7.2	<5.0	<1.0	<10	<15	<20	3.5
Duplicate	335	8.3	<5.0	<1.0	<10	<15	<20	4.1
Average	170	7.8						3.8
Std Dev	234	0.8						0.5
RSD (%)	138	10						12
11-14332	12	9.7	<5.0	<1.0	21	24	<20	4.4
Duplicate	9.0	8.4	<5.0	<1.0	18	22	<20	3.6
Average	11	9.1			19	23		4.0
Std Dev	2.1	0.9			2.1	1.6		0.6
RSD (%)	20	10			11	7.0		14
11-14339	3.7	6.9	<5.0	<1.0	<10	16	<20	2.5
Duplicate	4.1	7.3	<5.0	<1.0	<10	18	<20	2.5
Average	3.9	7.1				17		2.5
Std Dev	0.3	0.3				1.1		0.02
RSD (%)	7.3	4.4				6.2		0.7
Average RSD (%)	**49**	**8.6**			**11**	**6.6**		**7.0**
Std Dev	**± 57**	**± 3.1**			**-**	**± 0.6**		**± 6.2**

Table C-6: Mercury Analysis in Soil QA/QC Samples

Sample	Hg
	[ppm]
Control Spikes	
Control	0.31
Control Target	0.44
Recovery (%)	70
Control	0.48
Control Target	0.44
Recovery (%)	109
Average Recovery (%)	**90**
Std Dev	**± 27**
Analytical Blanks	
Blank	<0.1
Blank	<0.1
Field Duplicates	
11-14308	< 0.1
11-14309	< 0.1
11-14310	< 0.1
11-14311	< 0.1
Analytical Duplicate	
11-14300	<0.1
Duplicate	<0.1

Table C-7: Mercury Analysis in Water QA/QC Samples

Sample	Hg [mg/L]
Control Spike	
Control Sample	0.0042
Control Target	0.004
Recovery (%)	105
Analytical and Field Blank Samples	
Blank	<0.0004
11-14354 Field Blank	<0.0004
Field Duplicate	
11-14345	< 0.0004
11-14346	< 0.0004

Table C-8: Aroclor Polychlorinated Biphenyl (PCB) Control Spikes for Soil and Water Samples

Sample	Aroclor 1254	Aroclor 1260
	[ppm]	[ppm]
Soil Samples - Control Spikes		
Control Sample	6.5	< 0.05
Control Target	5.0	< 0.05
Recovery (%)	130	
Control Sample	5.3	< 0.05
Control Target	5.0	< 0.05
Recovery (%)	106	
Control Sample	6.4	< 0.05
Control Target	5.0	< 0.05
Recovery (%)	128	
Average Recovery (%)	**121**	
Std Dev	**± 13**	

Sample	Aroclor 1254	Aroclor 1260
	[mg/L]	[mg/L]
Water Samples - Control Spike		
Control Sample	< 0.003	0.015
Control Target	< 0.003	0.015
Recovery (%)		100

Table C-9: Aroclor PCB Results for Soil and Water Analytical and Field Blanks

Sample	Aroclor 1254 [ppm]	Aroclor 1260 [ppm]
Soil Samples - Analytical Blanks		
Blank	< 0.05	< 0.05
Blank	< 0.05	< 0.05
Blank	< 0.05	< 0.05

Sample	Aroclor 1254 [mg/L]	Aroclor 1260 [mg/L]
Water Samples - Analytical Blank and Field Blank		
Blank	< 0.003	< 0.003
11-14354 Field Blank	< 0.003	< 0.003

Table C-10: Aroclor PCB Results for Soil and Water Sample Field and Analytical Duplicates

Sample	Aroclor 1254 [ppm]	Aroclor 1260 [ppm]
Soil Samples - Field Duplicates		
11-14308	< 0.05	< 0.05
11-14309	< 0.05	< 0.05
11-14310	< 0.05	< 0.05
11-14311	< 0.05	< 0.05
Soil Samples - Analytical Duplicate		
11-14325	< 0.05	< 0.05
Duplicate	< 0.05	< 0.05

Sample	Aroclor 1254 [mg/L]	Aroclor 1260 [mg/L]
Water Samples - Field Duplicate		
11-14345	< 0.003	< 0.003
11-14346	< 0.003	< 0.003

Table C-11: Canadian Council of Ministers of the Environment (CCME)
Hydrocarbon Control Spikes in Soil Samples

Sample	F1 (C6-C10) [ppm]
Control Sample F1	
Control F1	32
Control Target	29
Recovery (%)	110
Control F1	29
Control Target	29
Recovery (%)	100
Average Recovery (%)	**105**
Std Dev	**± 7.3**

Sample	Total Hydrocarbons [ppm]
Control Samples F2-F4	
Diesel Spike	40
Diesel Spike Target	50
Recovery (%)	80
Diesel Spike	41
Diesel Spike Target	50
Recovery (%)	82
Average Recovery (%)	**81**
Std Dev	**± 1.4**

Sample	Total Hydrocarbons [ppm]
Control Samples F2-F4	
Control Standard	2,600
Control Standard Target	2,500
Recovery (%)	104
Control Standard	2,600
Control Standard Target	2,500
Recovery (%)	104
Average Recovery (%)	**104**
Std Dev	**± 0**

Table C-12: CCME Hydrocarbons in Soil Sample Analytical Blanks

Sample	F1 (C6-C10) [ppm]	F2 (C10-C16) [ppm]	F3 (C16-C34) [ppm]	F4 (C34-C50) [ppm]
Analytical Blanks				
Blank	< 10	< 4.0	< 9.0	< 8.0
Blank	< 10	< 4.0	< 9.0	< 8.0

Table C-13: CCME Hydrocarbon in Soil Field and Analytical Duplicates

Sample	F1 (C6-C10) [ppm]	F2 (C10-C16) [ppm]	F3 (C16-C34) [ppm]	F4 (C34-C50) [ppm]
Field Duplicates				
11-14308	<10	4.7	< 9.0	< 8.0
11-14309	<10	< 4.0	< 9.0	< 8.0
11-14310	<10	< 4.0	< 9.0	< 8.0
11-14311	<10	< 4.0	< 9.0	< 8.0
Analytical Duplicates				
11-14300	<10			
Duplicate	<10			
11-14333		<4.0	20	8.2
Duplicate		<4.0	21	9.1
Average			21	8.7
Std Dev			0.7	0.6
RSD (%)			3.4	7.4
11-14343	<10			
Duplicate	<10			
11-14343		<4.0	<9.0	<8.0
Duplicate		<4.0	<9.0	<8.0

Table C-14: CCME Hydrocarbon Control Spikes in Water Samples

Sample	F1 (C6-C10) [mg/L]
Control Sample F1	
Control F1	0.15
Control Target	0.16
Recovery (%)	94

Sample	Total Hydrocarbons (C34-C50) [mg/L]
Control Samples F2-F4	
Diesel Spike	8.5
Diesel Spike Target	10
Recovery (%)	85

Sample	Total Hydrocarbons (C34-C50) [mg/L]
Control Samples F2-F4	
Control Standard	2,400
Control Standard Target	2,500
Recovery (%)	96

Table C-15: CCME Hydrocarbon Analysis of Water Sample Blanks and Duplicates

Sample	F1 (C6-C10) [mg/L]	F2 (C10-C16) [mg/L]	F3 (C16-C34) [mg/L]	F4 (C34-C50) [mg/L]
Analytical Blanks				
Blank	<0.05	< 0.5	< 1.0	< 1.0
11-14354 Field Blank	<0.05	< 0.5	< 1.0	< 1.0
Field Duplicate				
11-14345	<0.05	< 0.5	< 1.0	< 1.0
11-14346	<0.05	< 0.5	< 1.0	< 1.0

Table C-16: Inorganic Element Analysis of Soil QA/QC Samples Analyzed at ALS Environmental

Sample	Hg [ppm]
Certified Reference material	0.401
Reference Target	0.41
Recovery (%)	98
Limits	*70-130*

Sample	Cu [ppm]	Ni [ppm]	Co [ppm]	Cd [ppm]	Pb [ppm]	Zn [ppm]	Cr [ppm]	As [ppm]	Hg [ppm]
Laboratory Control Spike									
Laboratory Control Spike	0.96	0.98	0.98	0.99	1.01	1.15	1.02	1.03	0.053
Control Target	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.05
Recovery (%)	96	98	98	99	101	115	102	103	106
Limits	*80-120*	*80-120*	*80-120*	*80-120*	*80-120*	*80-120*	*80-120*	*80-120*	*70-130*
Matrix Control Spike									
Matrix Control Spike	11.6	11.8	6.6	2.5	8.4	11	15	6.02	0.104
Control Target	10.7	11.2	6.3	2.5	8.5	9.7	12.7	5.6	0.1
Recovery (%)	N/A*	N/A*	N/A*	102	N/A*	N/A*	N/A*	N/A*	104
Limits	-	-	-	*70-130*	-	-	-	-	*70-130*
	*N/A Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.								
Method Blank									
Method Blank	<1.0	<1.0	<1.0	<0.50	<1.0	<5.0	<1.0	<0.20	<0.05

Table C-17: Hydrocarbon Analysis of Soil Sample Control Spikes and Blanks, Analyzed at ALS

Sample	F1 (C6-C10) [ppm]	F2 (C10-C16) [ppm]	F3 (C16-C34) [ppm]	F4 (C34-C50) [ppm]
Laboratory Control Spike				
Laboratory Control Spike	8.5	289	611	77
Control Target	7.5	336	641	76
Recovery (%)	113	86	95	102
Laboratory Control Spike	8.7	288	607	75
Control Target	7.5	336	641	76
Recovery (%)	117	86	95	100
Laboratory Control Spike		282	557	69
Control Target		336	641	76
Recovery (%)		84	87	91
Average Recovery (%)	**115**	**85**	**92**	**98**
Std Dev	**± 2.8**	**± 1.2**	**± 4.6**	**± 5.9**
Limits	80-120	80-120	80-120	80-120
Matrix Control Spike				
Matrix Control Spike	0.8	288	664	84
Control Target	9.5	360	686	81
Recovery (%)	93	80	97	104
Matrix Control Spike	8.9	328	696	89
Control Target	6.6	370	706	83
Recovery (%)	134	89	99	106
Matrix Control Spike		310	626	83
Control Target		341	652	77
Recovery (%)		91	96	108
Average Recovery (%)	**114**	**87**	**97**	**106**
Std Dev	**± 29**	**± 5.9**	**± 1.5**	**± 2.0**
Limits	50-140	50-140	60-140	60-140
Method Blanks				
Method Blank	<5.0	<10	<50	<50
Method Blank	<5.0	<10	<50	<50
Method Blank		<10	<50	<50

Table C-18: PCB Analysis of Control Spike and Blank, Analyzed at ALS

Sample	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260
	[ppm]	[ppm]	[ppm]	[ppm]
Laboratory Control Spike				
Laboratory Control Spike	0.18	0.17	0.17	0.2
Control Target	0.2	0.2	0.2	0.2
Recovery (%)	90	87	87	100
Limits	60-140	60-140	60-140	60-140

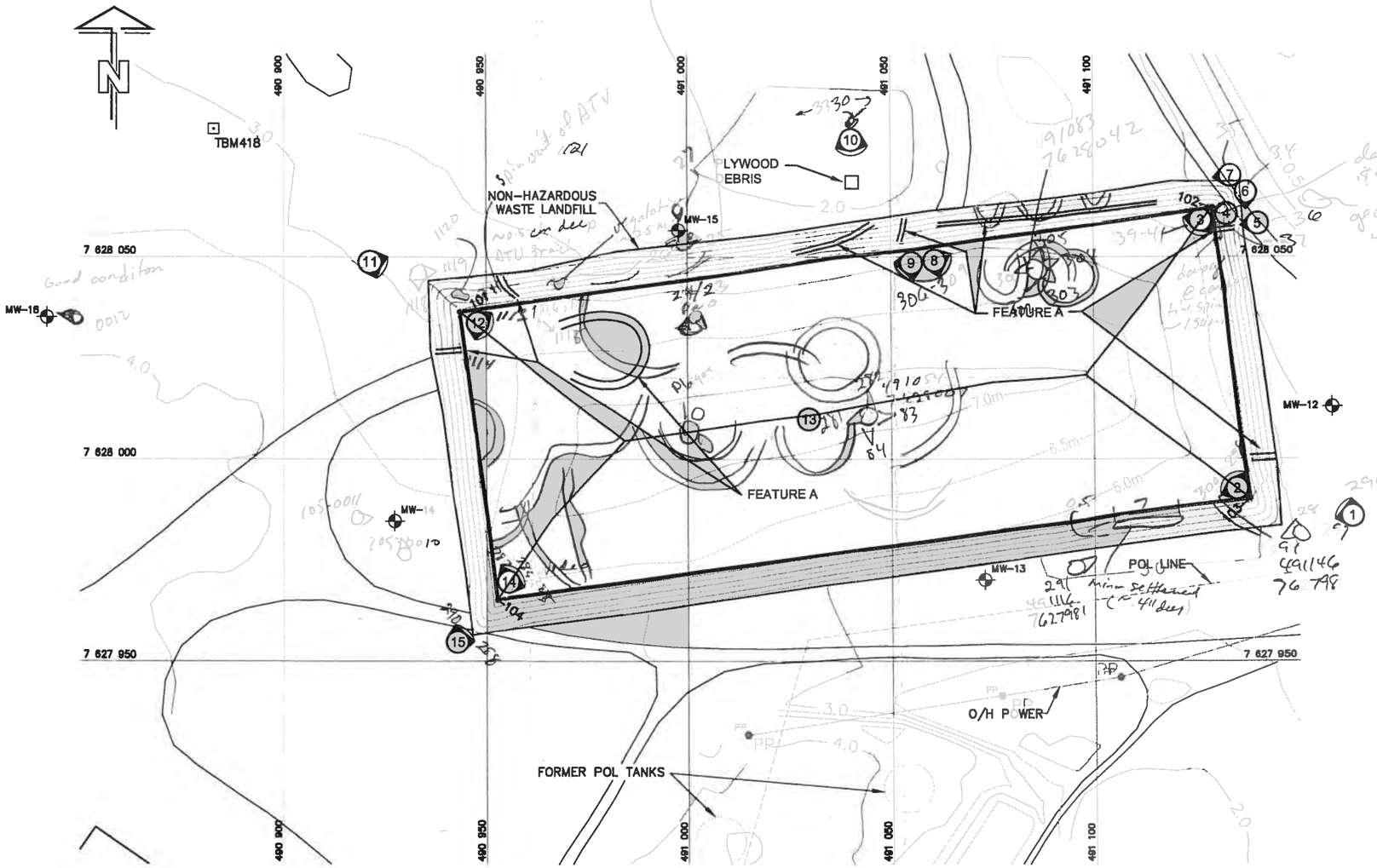
Sample	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Aroclor 1262	Aroclor 1268
	[ppm]	[ppm]	[ppm]	[ppm]	[ppm]	[ppm]	[ppm]	[ppm]	[ppm]
Method Blank	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010

Table C-19: Comparison of Inorganic, Hydrocarbon and PCB results analyzed at ASU/ASG and at ALS Laboratories

Laboratory	Sample ID	Cu	Ni	Co	Cd	Pb	Zn	Cr	As	Hg	F1 (C6-C10)	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)	Total PCBs
		[ppm]	[ppm]	[ppm]	[ppm]	[ppm]	[ppm]	[ppm]	[ppm]	[ppm]	[ppm]	[ppm]	[ppm]	[ppm]	[ppm]
DLCU Criteria	**Tier I**					**200**									**1**
	Tier II	**100**	**100**	**50**	**5**	**500**	**500**	**250**	**30**	**2**					**5**
ASG/ASU	11-14300	9.1	6.9	<5.0	<1.0	<10	<15	<20	2.7	<0.1	<10	<4.0	11	<8.0	<0.05
ALS		4.3	7.4	1.9	<0.5	2.9	10.2	8.6	1.72	<0.5	<5.0	<6.0	<50	<50	<0.03
ASG/ASU	11-14303	5.1	6.9	<5.0	<1.0	<10	<15	<20	2.1	<0.1	<10	6.8	12	<8.0	<0.05
ALS		5.9	8.0	1.9	<0.5	5.2	18.6	12.3	1.27	<0.5	<5.0	14	<50	<17	<0.03
ASG/ASU	11-14308	3.5	9.2	<5.0	<1.0	<10	<15	<20	2.6	<0.1	<10	4.7	<9.0	<8.0	<0.05
ALS		5.1	11.7	3.0	<0.5	3.5	22.7	18.8	2.18	<0.5	<5.0	<6	<18	<17	<0.03
ASG/ASU	11-14315	4.2	8.7	<5.0	<1.0	<10	<15	<20	2.7	<0.1	<10	<4.0	<9.0	<8.0	<0.05
ALS		3.4	7.0	1.8	<0.5	3.3	11.6	10.3	2.23	<0.5	<5.0	<6.0	<18	<17	<0.03
ASG/ASU	11-14321	4.4	7.2	<5.0	<1.0	<10	<15	<20	2.4	<0.1	<10	<4.0	<9.0	<8.0	<0.05
ALS		4.0	6.5	1.7	<0.5	4.4	10.5	7.9	3.07	<0.5	<5.0	<6.0	<18	<17	<0.03
ASG/ASU	11-14329	6.0	8.4	<5.0	<1.0	120	<15	<20	2.7	<0.1	<10	<4.0	9.7	<8.0	<0.05
ALS		5.9	7.2	1.7	<0.5	140	16.6	9.1	2.45	<0.5	<5.0	<6.0	<18	<17	<0.03
ASG/ASU	11-14332	11	9.1	<5.0	<1.0	19	23	<20	4.0	<0.1	<10	<4.0	57	13	0.1
ALS		12.5	9.9	2.5	<0.5	26	29.3	12.8	4.26	<0.5	<5.0	<6.0	<50	<50	0.153
ASG/ASU	11-14342	3.3	7.3	<5.0	<1.0	<10	<15	<20	1.8	<0.1	<10	<4.0	<9.0	<8	<0.05
ALS		3.3	7.1	1.7	<0.5	4.3	14.1	9.6	2.23	<0.5	<5.0	<6.0	<50	<17	<0.03

Annex 3

Field Notes



LEGEND

- TEMPORARY BENCHMARK
- 101 — COORDINATE POINT
- MONITORING WELL LOCATION
- 1 — PHOTOGRAPH VIEWPOINT LOCATION
- 10 — PANORAMIC VIEW
- VEHICLE TRACKS/RUTS (NTS)

TEMPORARY BENCHMARKS			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
TBM418	7 628 081.738	490 882.902	3.277

COORDINATE POINTS (AS BUILT) MONITORING WELLS			
NO.	NORTHING	EASTING	ELEV.
MW–12	7 628 012.9	491 158.5	2.41
MW–13	7 627 970.1	491 073.0	3.12
MW–14	7 627 984.7	790 927.2	4.39
MW–15	7 628 056.6	490 997.8	2.72
MW–16	7 628 035.1	490 841.6	4.65

0 12.5m 25m 37.5m 50m 62.5m

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A	FINAL VERSION	10–03–08	P.L	A.P.	J.P.P.

FINAL REPORT
COLLECTION OF LANDFILL MONITORING DATA
FOX-M, HALL BEACH, NUNAVUT

NON-HAZARDOUS WASTE LANDFILL

SITE REMEDIATION SOLUTIONS

Biogenie, a division of EnGlobe Corp.
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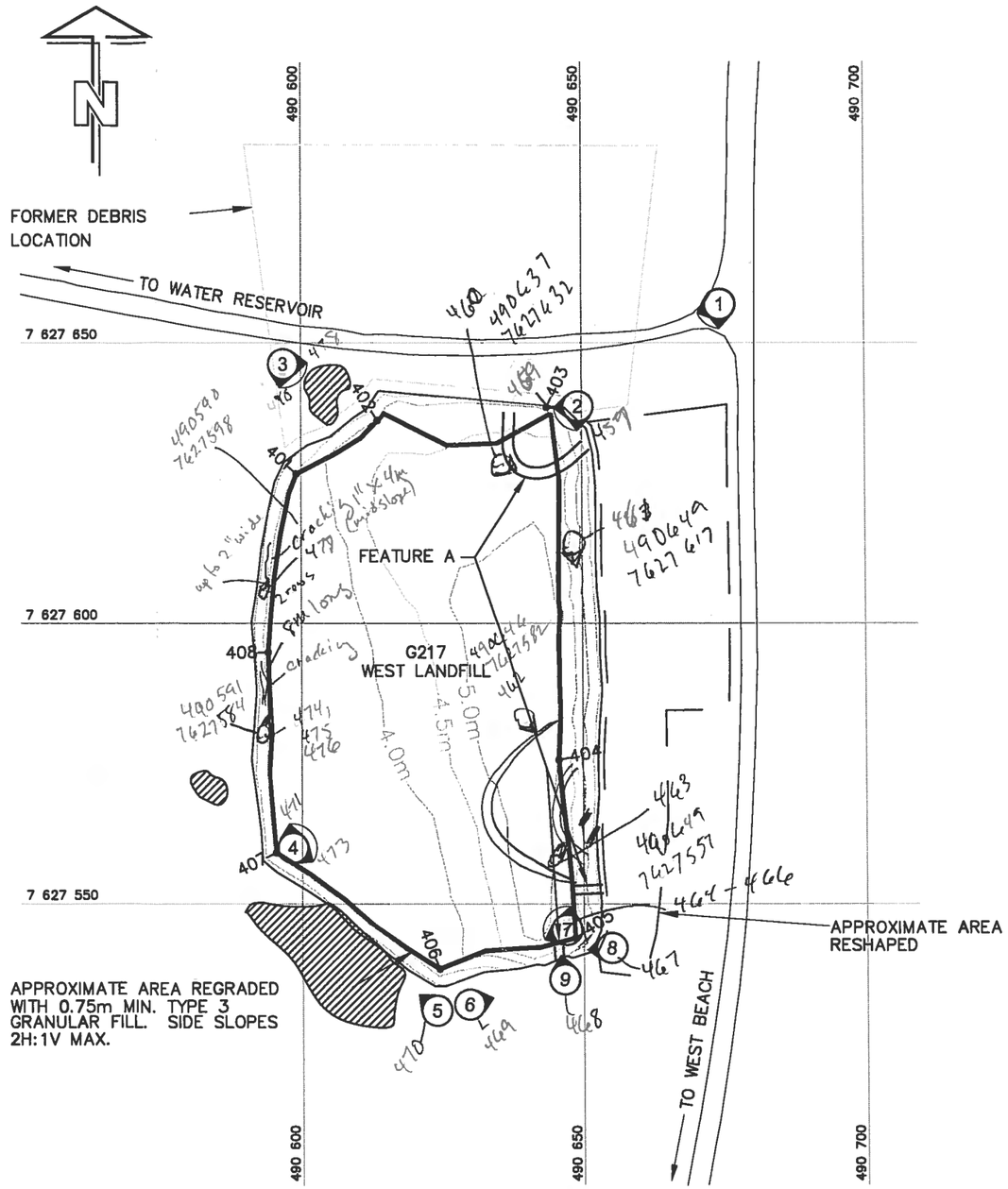
Quebec (Quebec) CANADA G1P 2J7
Phone: (418) 653-4422 Fax.: (418) 653-3583

MEASUREMENT UNIT	SCALE:	DATE (month–year):
Metre	1 : 1,250	MARCH 2010
DRAWN BY: P. LÉGARÉ	VERIFIED BY: A. PASSALIS	APPROVED BY: J.–P. PELLETIER
PROJECT NO: CD8177_005_101	DRAWING NO: CD8177_005_101-FOX-M_B	PAGE PL

FIGURE FOX-M.2



LEGEND

- SURVEY CONTROL MONUMENT
- TEMPORARY BENCHMARK
- 410 — COORDINATE POINT
- 1 — PHOTOGRAPH VIEWPOINT LOCATION
- 10 — PANORAMIC VIEW
- PONDED WATER
- VEHICLE TRACKS/RUTS (NTS)

TEMPORARY BENCHMARKS			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
TBM202	7 627 536.239	490 688.266	4.032
TBM420	7 627 562.060	490 830.450	6.578

0 10m 20m 30m 40m 50m

NO.	VERSION	DATE	BY	VERIF.	APPR.
A	FINAL VERSION	10-03-08	P.L	A.P.	J.P.P.

FINAL REPORT
COLLECTION OF LANDFILL MONITORING DATA
FOX-M, HALL BEACH, NUNAVUT

G217 WEST LANDFILL

SITE REMEDIATION SOLUTIONS
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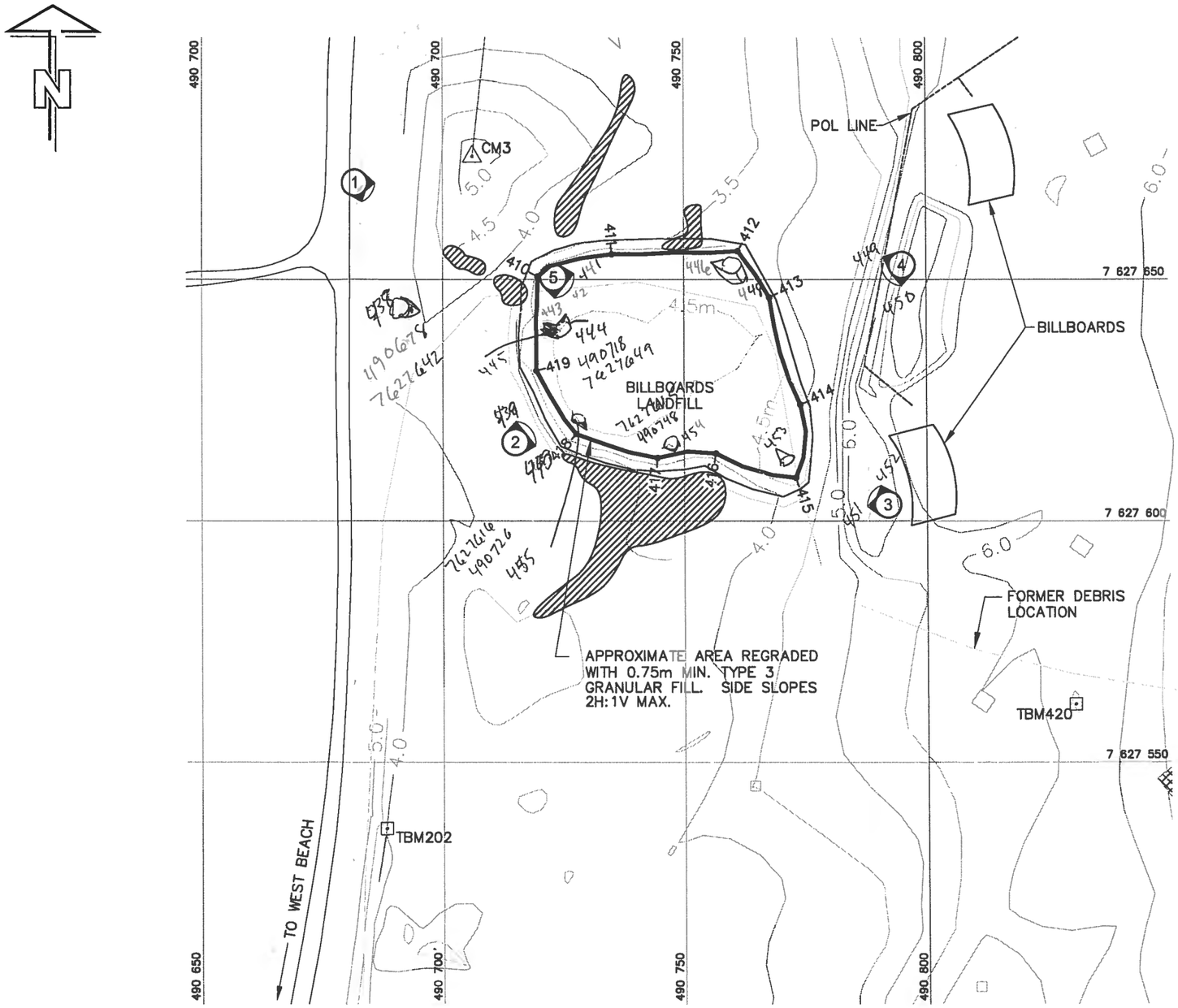
MEASUREMENT UNIT	SCALE:	DATE (month-year):
Metre	1 : 1,000	MARCH 2010
DRAWN BY: P. LÉGARÉ	VERIFIED BY: A. PASSALIS	APPROVED BY: J.-P. PELLETIER
PROJECT NO: CD8177_005_101	DRAWING NO: CD8177_005_101-FOX-M_C	PAGE: PL

FIGURE FOX-M.3



LEGEND

- SURVEY CONTROL MONUMENT
- TEMPORARY BENCHMARK
- 410 — COORDINATE POINT
- 1 — PHOTOGRAPH VIEWPOINT LOCATION
- 10 — PANORAMIC VIEW
- PONDED WATER

TEMPORARY BENCHMARKS			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
TBM202	7 627 536.239	490 688.266	4.032
TBM420	7 627 562.060	490 830.450	6.578

0 10m 20m 30m 40m 50m

SURVEY CONTROL MONUMENTS				
NO.	UTM COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
CM3	7 627 675.453	490 706.281	5.291	FOX-M BASELINE STA. 47+00

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FINAL REPORT
COLLECTION OF LANDFILL MONITORING DATA
FOX-M, HALL BEACH, NUNAVUT

BILLBOARDS LANDFILL

SITE REMEDIATION SOLUTIONS
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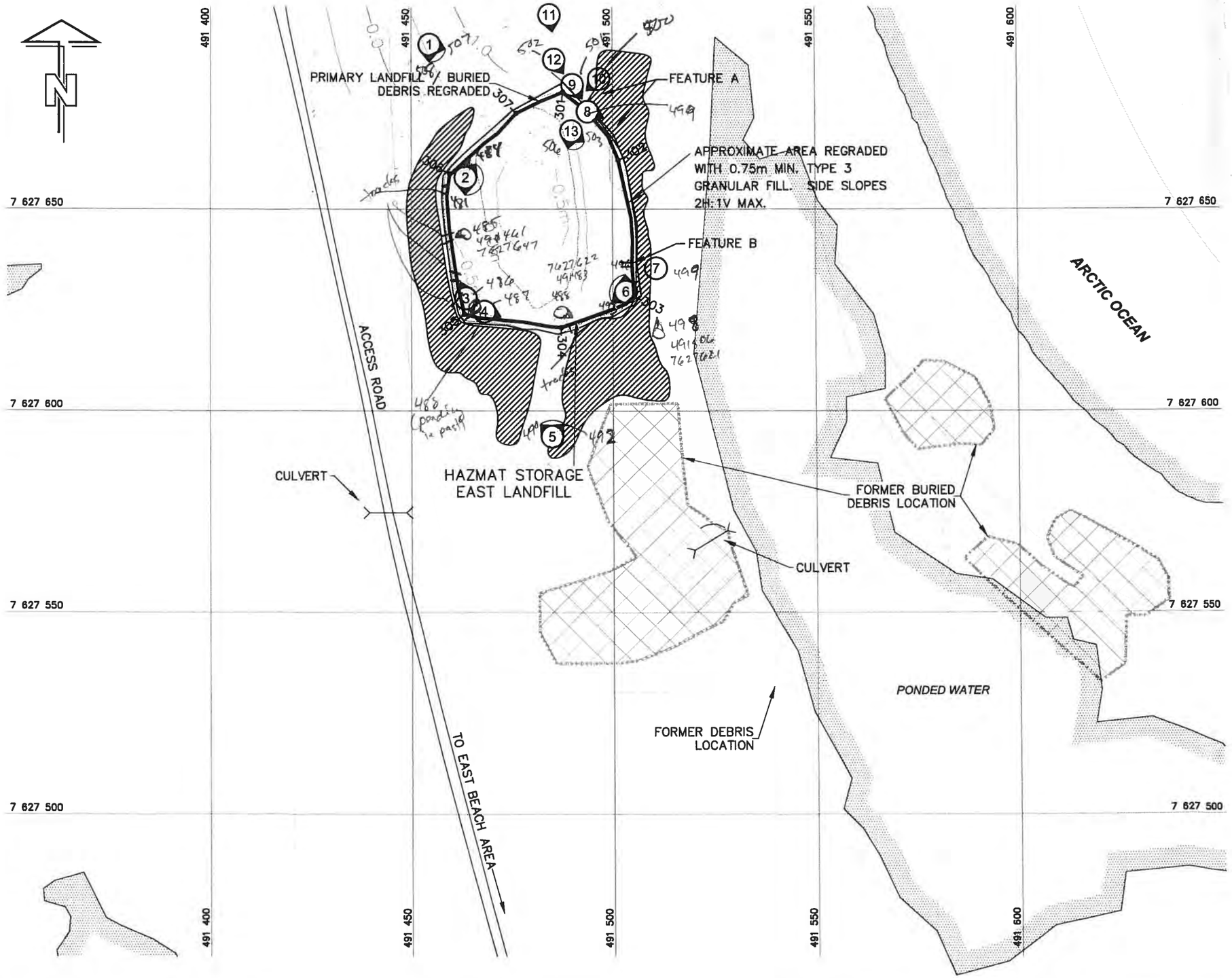
MEASUREMENT UNIT	SCALE	DATE (month-year)
Metre	1 : 1,000	MARCH 2010
DRAWN BY: P. LÉGARÉ	VERIFIED BY: A. PASSALIS	APPROVED BY: J.-P. PELLETIER
PROJECT NO: CD8177_005_101	DRAWING NO: CD8177_005_101-FOX-M_D	PAGE PL

FIGURE FOX-M.4



LEGEND

- 2002 — COORDINATE POINT
- BURIED DEBRIS EXCAVATION AREA
- 1 — PHOTOGRAPH VIEWPOINT LOCATION
- 10 — PANORAMIC VIEW
- PONDED WATER
- VEHICLE TRACKS / RUTS (NTS)

COORDINATE POINTS (AS-BUILT)
STATION AREA EAST REGRADE AREAS

NO.	NORTHING	EASTING	ELEV.
301	7 627 678.9	491 487.6	-0.4
302	7 627 662.1	491 501.4	-1.1
303	7 627 628.4	491 505.3	-0.9
304	7 627 620.7	491 487.1	-0.4
305	7 627 624.0	491 463.1	-0.6
306	7 627 658.4	491 459.5	-0.4
307	7 627 673.7	491 476.0	0.2

0 10m 20m 30m 40m 50m

NO.	VERSION	DATE	BY	VERIF.	APPR.
A	FINAL VERSION	10-03-08	P.L.	A.P.	J.P.P.

FINAL REPORT
COLLECTION OF LANDFILL MONITORING DATA
FOX-M, HALL BEACH, NUNAVUT

HAZMAT STORAGE - EAST LANDFILL

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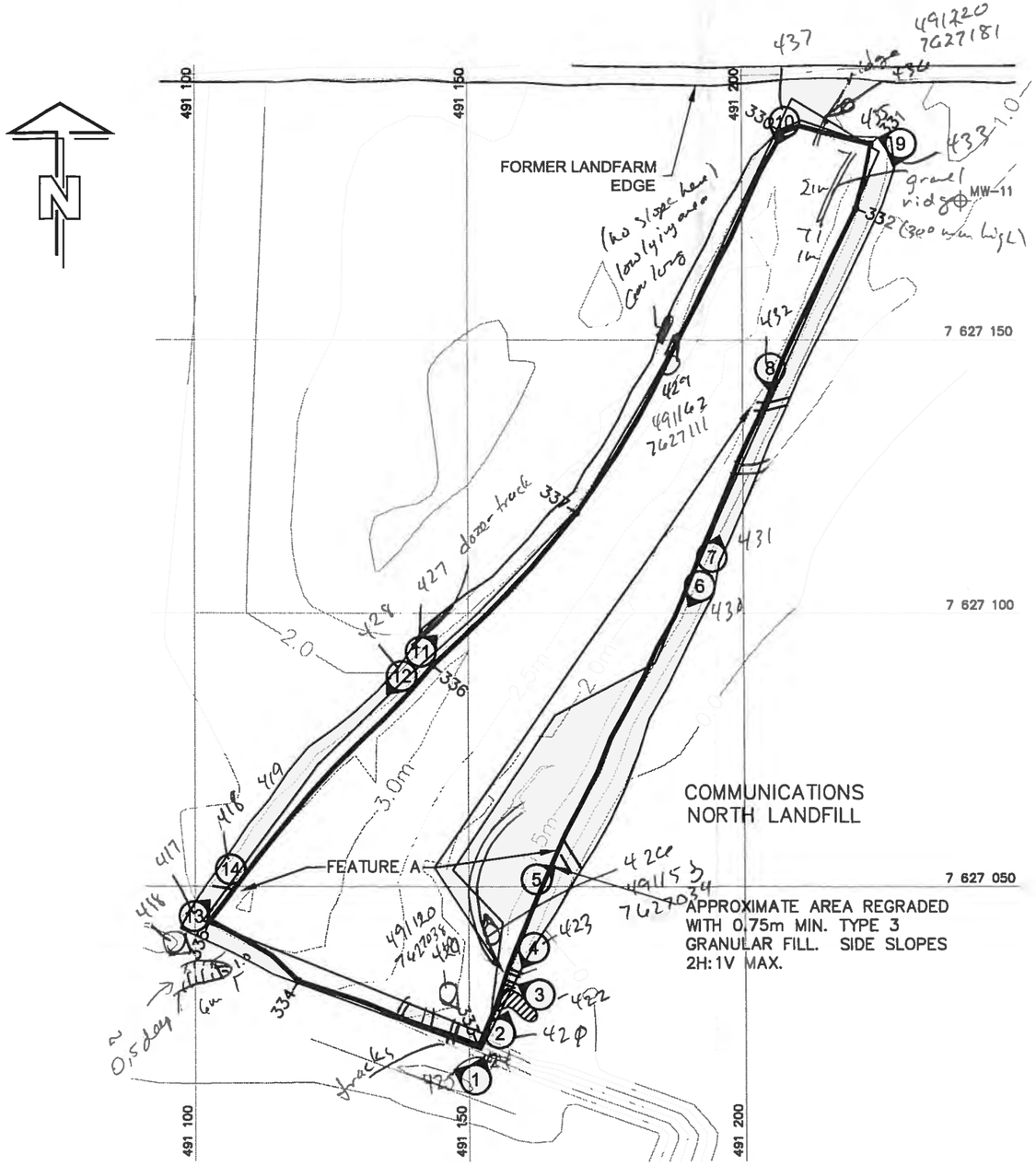
MEASUREMENT UNIT	SCALE:	DATE (month-year):
Metre	1 : 1,000	MARCH 2010
DRAWN BY: P. LÉGARÉ	VERIFIED BY: A. PASSALIS	APPROVED BY: J.-P. PELLETIER
PROJECT NO: CD8177_005_101	DRAWING NO: CD8177_005_101-FOX-M_E	PAGE PL

FIGURE FOX-M.5



LEGEND

- ▲ PERMANENT BENCHMARK
- —342 COORDINATE POINT
- (1) PHOTOGRAPH VIEWPOINT LOCATION
- (10) PANORAMIC VIEW
- PONDED WATER
- VEHICLE TRACKS/RUTS (NTS)

0 10m 20m 30m 40m 50m

PERMANENT BENCHMARK				
NO.	UTM COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
BM-3	7 627 040.589	491 004.505	2.949	25mm DIA. STEEL PIPE

NO.	VERSION	DATE	BY	VERIF.	APPR.
A	FINAL VERSION	10-03-08	P.L.	A.P.	J.P.P.

FINAL REPORT
COLLECTION OF LANDFILL MONITORING DATA
FOX-M, HALL BEACH, NUNAVUT

COMMUNICATIONS NORTH LANDFILL

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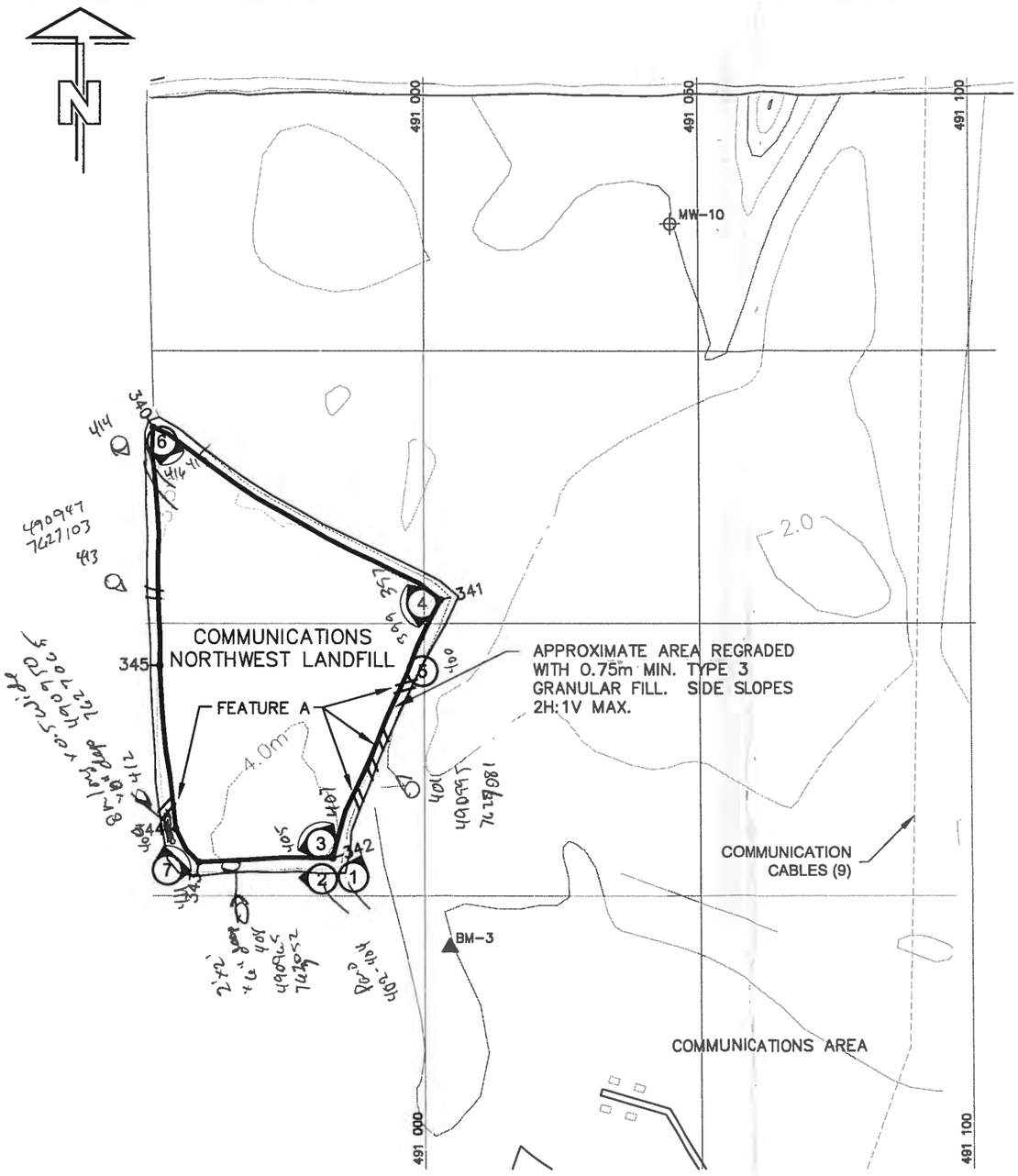
MEASUREMENT UNIT	SCALE:	DATE (month-year):
Metre	1 : 1,000	MARCH 2010
DRAWN BY: P. LÉGARÉ	VERIFIED BY: A. PASSALIS	APPROVED BY: J.-P. PELLETIER
PROJECT NO: CD8177_005_101	DRAWING NO: CD8177_005_101-FOX-M_F	PAGE PL

FIGURE FOX-M.6



LEGEND

- PERMANENT BENCHMARK
- 342 — COORDINATE POINT
- 1 — PHOTOGRAPH VIEWPOINT LOCATION
- 10 — PANORAMIC VIEW
- PONDED WATER
- VEHICLE TRACKS/RUTS (NTS)

0 10m 20m 30m 40m 50m

NO.	VERSION	DATE	BY	VERIF.	APPR.
A	FINAL VERSION	10-03-08	P.L	A.P.	J.P.P.

PERMANENT BENCHMARK				
NO.	UTM COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
BM-3	7 627 040.589	491 004.505	2.949	25mm DIA. STEEL PIPE

FINAL REPORT
COLLECTION OF LANDFILL MONITORING DATA
FOX-M, HALL BEACH, NUNAVUT

COMMUNICATIONS NORTHWEST LANDFILL

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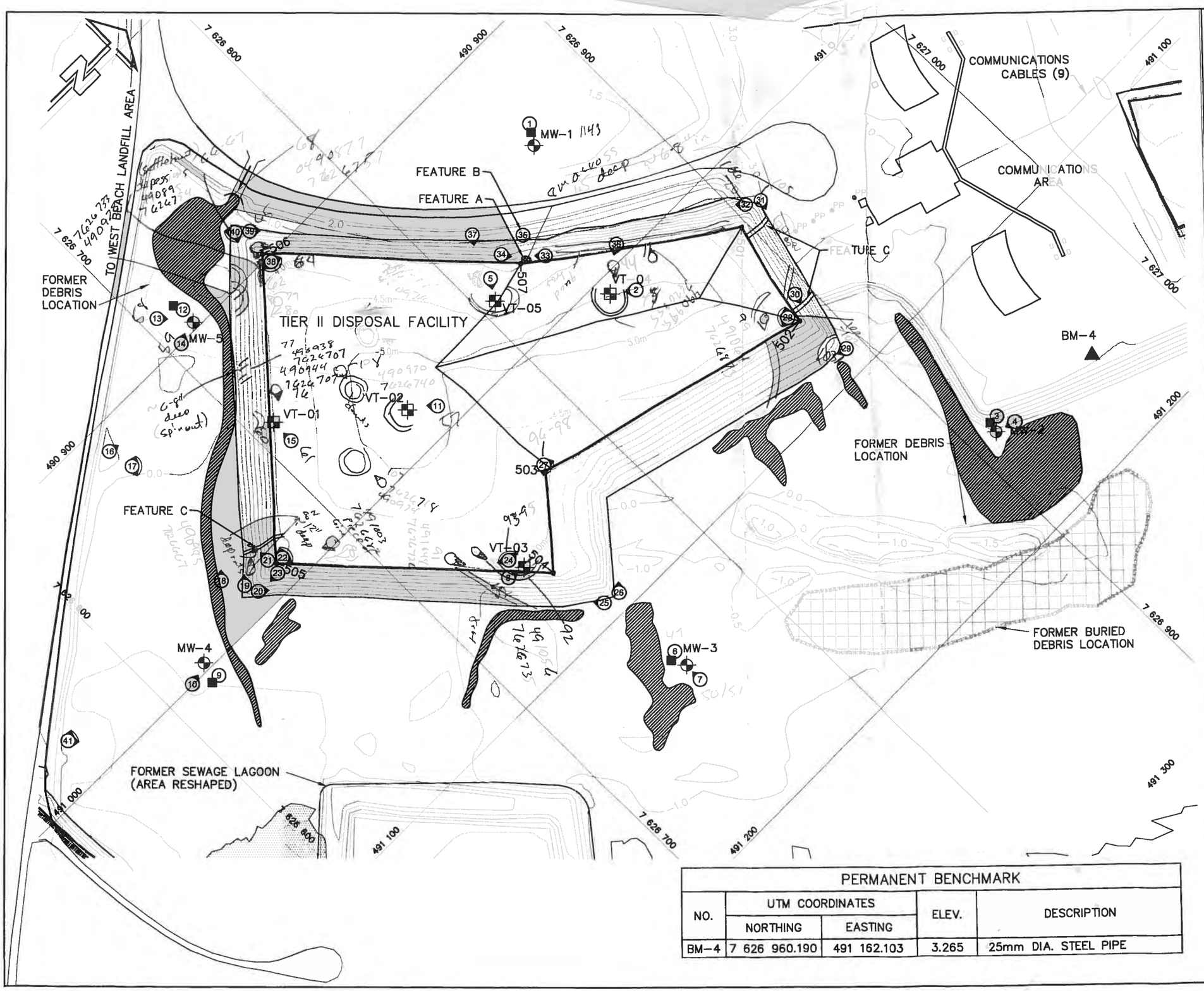
MEASUREMENT UNIT	SCALE:	DATE (month-year):
Metre	1 : 1,000	MARCH 2010
DRAWN BY: P. LÉGARÉ	VERIFIED BY: A. PASSALIS	APPROVED BY: J.-P. PELLETIER
PROJECT NO.: CD8177_005_101	DRAWING NO.: CD8177_005_101-FOX-M_G	PAGE: PL

FIGURE FOX-M.7



LEGEND

- PERMANENT BENCHMARK
- 507 — COORDINATE POINT
- SOIL SAMPLE LOCATION
- MONITORING WELL LOCATION
- VERTICAL THERMISTOR LOCATION
- 29 — PHOTOGRAPH VIEWPOINT LOCATION
- 10 — PANORAMIC VIEW
- VEHICLE TRACKS / RUTS (NTS)
- SETTLEMENT (NTS)
- PONDED WATER

0 15m 30m 45m 60m 75m

NO.	VERSION	DATE	BY	VERIF.	APPR.
A	FINAL VERSION	10-03-08	P.L	A.P.	J.P.P.

PERMANENT BENCHMARK

NO.	UTM COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
BM-4	7 626 960.190	491 162.103	3.265	25mm DIA. STEEL PIPE

FINAL REPORT
COLLECTION OF LANDFILL MONITORING DATA
FOX-M, HALL BEACH, NUNAVUT

TIER II DISPOSAL FACILITY

SITE REMEDIATION SOLUTIONS

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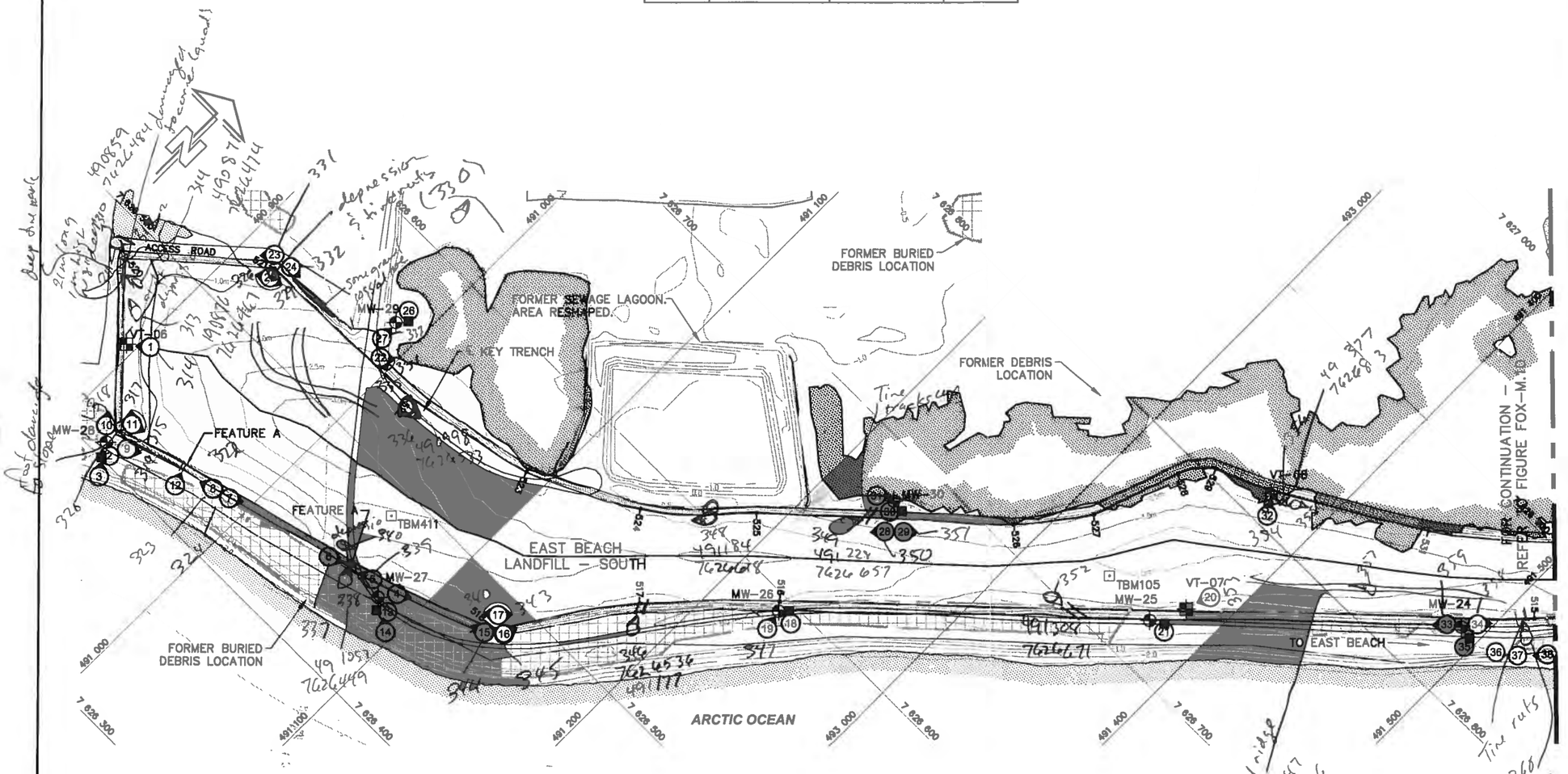
MEASUREMENT UNIT: Metre	SCALE: 1 : 1,500	DATE (month-year): MARCH 2010
DRAWN BY: P. LÉGARÉ	VERIFIED BY: A. PASSALIS	APPROVED BY: J.-P. PELLETIER
PROJECT NO: CD8177_005_101	DRAWING NO: CD8177_005_101-FOX-M_H	PAGE: PL

FIGURE FOX-M.8

TEMPORARY BENCHMARKS			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
TBM106	7 627 001.134	491 547.332	−1.054
TBM411	7 626 485.282	491 055.174	−0.112



LEGEND

- TEMPORARY BENCHMARK
- 525 — COORDINATE POINT
- MONITORING SOIL SAMPLE LOCATION
- MONITORING WELL LOCATION
- VERTICAL THERMISTOR LOCATION
- 1 — PHOTOGRAPH VIEWPOINT LOCATION
- 10 — PANORAMIC VIEW
- VEHICLE TRACKS / RUTS (NTS)

0 25m 50m 75m 100m 125m

COORDINATE POINTS (AS BUILT) MONITORING WELLS			
NO.	NORTHING	EASTING	ELEV.
MW24	7 626 835.4	491 488.8	0.01
MW25	7 626 724.5	491 371.8	0.24
MW26	7 626 592.2	491 232.3	0.57
MW27	7 626 450.3	491 080.3	−0.10
MW28	7 626 407.7	490 923.9	−0.42
MW29	7 626 558.2	490 985.7	−0.03
MW30	7 626 675.1	491 234.0	−1.03

COORDINATE POINTS (AS–BUILT) VERTICAL THERMISTORS		
NO.	NORTHING	EASTING
VT–06	7 626 451.0	490 895.0
VT–07	7 626 742.0	491 381.0
VT–08	7 626 816.0	491 370.0

NO.	VERSION	DATE	BY	VERIF.	APPR.
A	FINAL VERSION	10–03–08	P.L.	A.P.	J.P.P.

FINAL REPORT
COLLECTION OF LANDFILL MONITORING DATA
FOX-5, HALL BEACH, NUNAVUT

EAST BEACH LANDFILL SOUTH

SITE REMEDIATION SOLUTIONS

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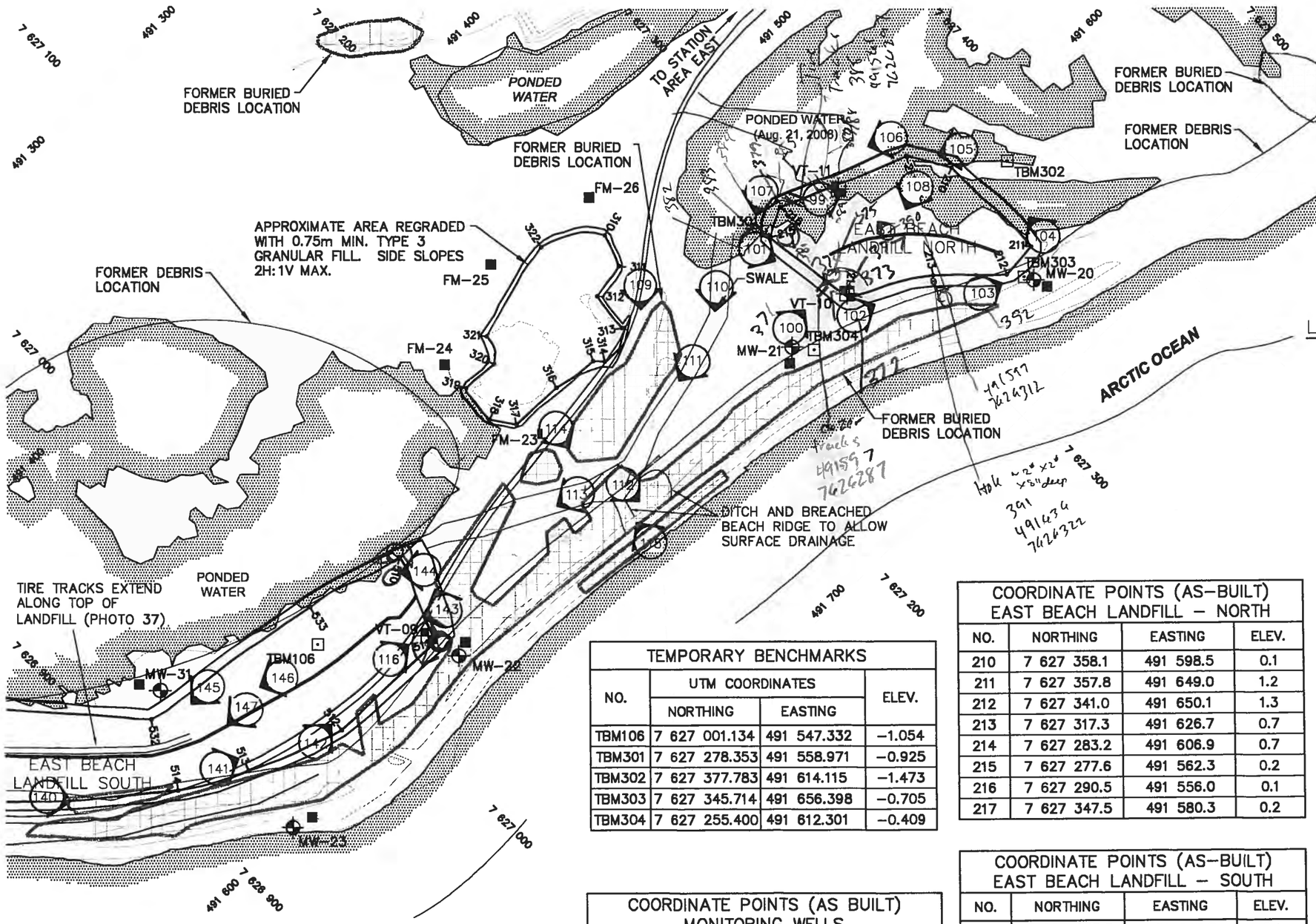
MEASUREMENT UNIT	SCALE:	DATE (month–year):
Metre	1 : 2,500	MARCH 2010
DRAWN BY: P. LEGARÉ	VERIFIED BY: A. PASSALIS	APPROVED BY: J.–P. PELLETIER
PROJECT NO: CD8177_005_101	DRAWING NO: CD8177_005_101-FOX-M_I	PAGE: PL

FIGURE FOX-M.9

FOR CONTINUATION – REFER TO FIGURE FOX–M.7



LEGEND:

- TEMPORARY BENCHMARK
- 218 COORDINATE POINT
- MONITORING SOIL SAMPLE LOCATION
- MONITORING WELL LOCATION
- VERTICAL THERMISTOR LOCATION
- BURIED DEBRIS EXCAVATION AREA
- # PHOTOGRAPH VIEWPOINT LOCATION
- VISUAL INSPECTION 2008

TEMPORARY BENCHMARKS			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
TBM106	7 627 001.134	491 547.332	–1.054
TBM301	7 627 278.353	491 558.971	–0.925
TBM302	7 627 377.783	491 614.115	–1.473
TBM303	7 627 345.714	491 656.398	–0.705
TBM304	7 627 255.400	491 612.301	–0.409

COORDINATE POINTS (AS–BUILT) VERTICAL THERMISTORS		
NO.	NORTHING	EASTING
VT–09	7 627 039.0	491 580.0
VT–10	7 627 284.0	491 605.0
VT–11	7 627 315.0	491 569.0

COORDINATE POINTS (AS BUILT) MONITORING WELLS			
NO.	NORTHING	EASTING	ELEV.
MW–20	7 627 347.8	491 660.5	–0.03
MW–21	7 627 249.3	491 604.4	–0.60
MW–22	7 627 041.6	491 596.1	–0.48
MW–23	TBD	TBD	–
MW–31	7 626 935.6	491 511.6	–0.21

COORDINATE POINTS (AS–BUILT) EAST BEACH LANDFILL – NORTH			
NO.	NORTHING	EASTING	ELEV.
210	7 627 358.1	491 598.5	0.1
211	7 627 357.8	491 649.0	1.2
212	7 627 341.0	491 650.1	1.3
213	7 627 317.3	491 626.7	0.7
214	7 627 283.2	491 606.9	0.7
215	7 627 277.6	491 562.3	0.2
216	7 627 290.5	491 556.0	0.1
217	7 627 347.5	491 580.3	0.2

COORDINATE POINTS (AS–BUILT) EAST BEACH LANDFILL – SOUTH			
NO.	NORTHING	EASTING	ELEV.
510	7 627 055.5	491 545.8	0.1
511	7 627 039.7	491 584.3	1.1
512	7 626 980.9	491 582.5	0.6
513	7 626 938.1	491 565.7	0.7
514	7 626 909.1	491 549.3	0.7
532	7 626 923.5	491 518.1	0.5
533	7 627 010.7	491 533.0	0.4

COORDINATE POINTS (AS–BUILT) STATION AREA EAST REGRADE AREAS			
NO.	NORTHING	EASTING	ELEV.
310	7 627 224.9	491 508.3	–0.7
311	7 627 219.4	491 522.7	–0.7
312	7 627 202.9	491 525.4	–0.6
313	7 627 200.6	491 543.5	–0.5
314	7 627 184.2	491 548.6	–0.8
315	7 627 180.7	491 544.8	–0.7
316	7 627 160.3	491 541.6	–0.6
317	7 627 135.5	491 540.5	–0.6
318	7 627 128.7	491 530.6	–0.8
319	7 627 131.3	491 513.0	–0.7
320	7 627 148.0	491 514.2	–0.4
321	7 627 154.7	491 502.9	–0.5
322	7 627 200.7	491 491.7	–0.7

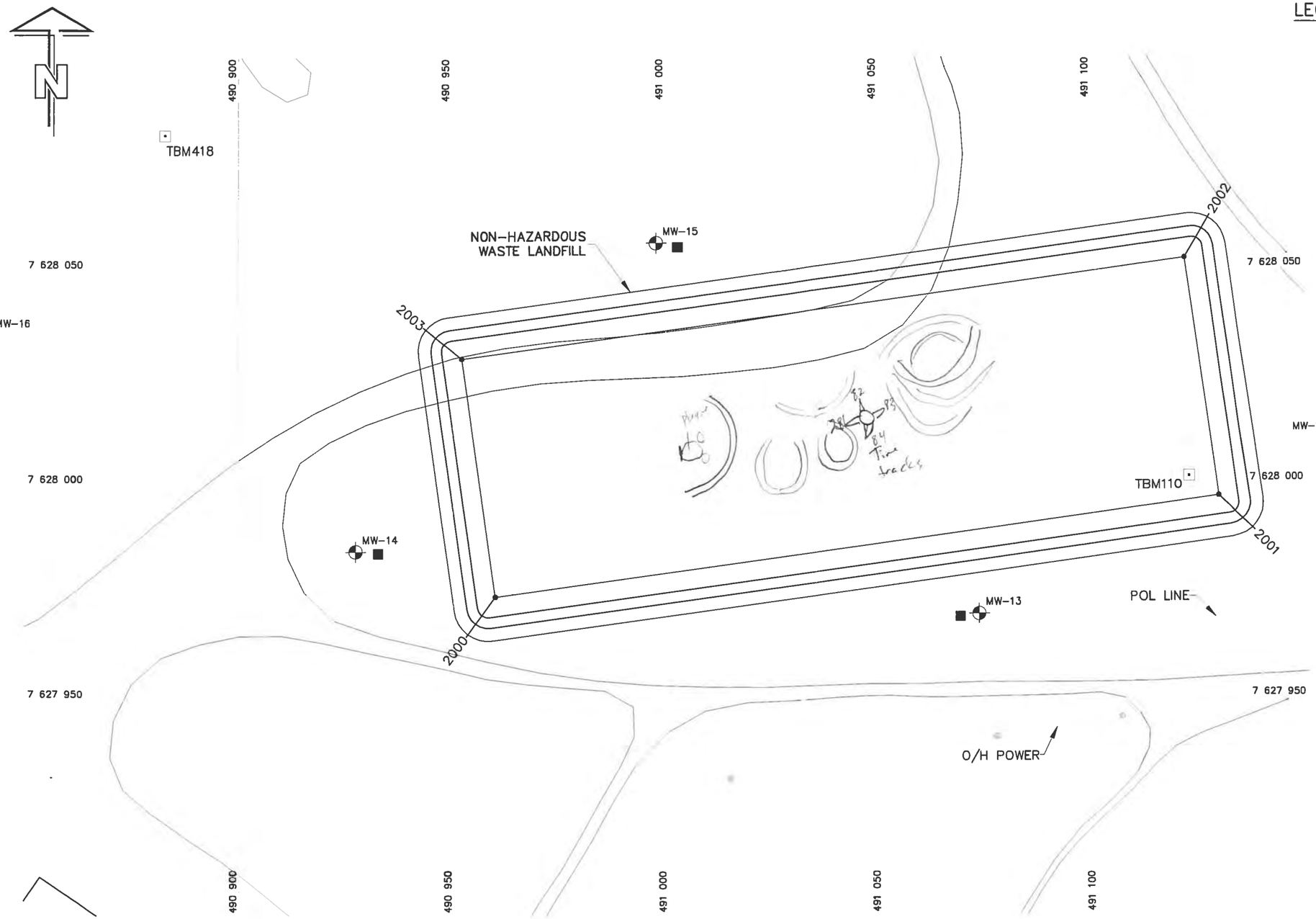
AECOM

DEW LINE CLEAN UP
LANDFILL MONITORING PLAN

FOX-M HALL BEACH

EAST BEACH LANDFILL - NORTH

FIGURE FOX-M.8



LEGEND:

- SURVEY CONTROL MONUMENT
- TEMPORARY BENCHMARK
- 2002 COORDINATE POINT
- MONITORING SOIL SAMPLE LOCATION
- MONITORING WELL LOCATION
- VERTICAL THERMISTOR LOCATION

NOTE: DRAWING TO BE UPDATED BASED ON RECORD INFORMATION

COORDINATE POINTS		
NO.	COORDINATES	
	NORTHING	EASTING
2000	7 627 974.174	490 959.886
2001	7 627 997.366	491 129.306
2002	7 628 052.849	491 121.711
2003	7 628 029.657	490 952.291

TEMPORARY BENCHMARKS			
NO.	UTM COORDINATES		ELEV.
	NORTHING	EASTING	
TBM110	7 628 002.026	491 122.279	3.374
TBM418	7 628 081.738	490 882.902	3.277

COORDINATE POINTS (AS BUILT) MONITORING WELLS			
NO.	NORTHING	EASTING	ELEV.
MW-12	7 628 012.9	491 158.5	2.41
MW-13	7 627 970.1	491 073.0	3.12
MW-14	7 627 984.7	790 927.2	4.39
MW-15	7 628 056.6	490 997.8	4.65
MW-16	7 628 035.1	490 841.6	4.65

SCALE 1:1000 0 10 20 30 m

UMA | AECOM

DEW LINE CLEAN UP
LANDFILL MONITORING PLAN

FOX-M HALL BEACH

NON-HAZARDOUS WASTE LANDFILL

FIGURE FOX-M.2

DGN NAME: FM-RD02.DWG CLC 07/12/11

Table XX: Monitoring Well Sampling Log

Site Name:	FOX-M
Date of Sampling Event:	Aug 13
Names of Samplers:	Tom, Alnina
Monitoring Well ID:	MW-3
Facility:	Tier II

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:	water/interface	Procedure/Equipment:	
Well height above ground (m)=	0.45	Depth to water surface (m)=	1.18
Diameter of well (m)=	0.04	Static water level* (m)=	~~1.00~~ 0.82
Depth of installation* (m)=	3	Depth to bottom (m)=	2.00
Length screened section (m)=	1.5	Free product thickness (mm)=	
Depth to top of screen* (m)=	0.5		
Calculations		**Notes**	
Depth of water (m)=	0.82	Evidence of sludge etc:	
Well volume of water (L)=	1.60	Evidence of freezing/siltation: (compare to installation record)	
Length screen collecting water (m)=	~~0.82~~ 1.5		

Development/Purging Information

Equipment:

Date & Time	Volume Removed (L)	Temperature (°C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water
10:20	1	~~10~~ 10	8.25	1360	21.9	clear
10:30	1	~~10.9~~ 9.2	8.16	1200	50.9	clay

Water Sampling		**Soil Sampling**	
Date and time collected:	10:40 am	Date and time collected:	10:20
Sample Number - Water:	14345	Sample Number - Soil:	14300/01
	14346		
Sample containers:	1 L HDPE	Sample containers:	Jars/WPS
	1 L Teflon		
	250 mL glass		
Procedure/Equipment:		Procedure/Equipment:	Plastic Scoops
Water description:	clear	Soil description:	low lying 2ft-5' mud organics
Filtration: (Y/N)		GPS	490845 7626864
Acidification: (Y/N)			
Sampling Equipment Decontamination: (Y/N)	√	Sampling Equipment Decontamination: (Y/N)	N
Number washes:	3	Number washes:	/
Number rinses:	3	Number rinses:	/

n/a=not applicable

*From ground surface. Unless this is stated, all measurements are assumed to be from the top of the casing.

Grey shaded cells indicates information obtained from original installation record.

Table XX: Monitoring Well Sampling Log

Site Name:	Fox-M
Date of Sampling Event:	Aug 13
Names of Samplers:	ToR, Maino
Monitoring Well ID:	MW-2
Facility:	Tiv II

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:	waterra/intake	Procedure/Equipment:	
Well height above ground (m)=	0.48	Depth to water surface (m)=	1.10
Diameter of well (m)=	0.04	Static water level* (m)=	1.00
Depth of installation* (m)=	3	Depth to bottom (m)=	2.10
Length screened section (m)=	1.5	Free product thickness (mm)=	
Depth to top of screen* (m)=	0.54		

Calculations		Notes	
Depth of water (m)=	1.0	Evidence of sludge etc:	
Well volume of water (L)=	2.0	Evidence of freezing/siltation: (compare to installation record)	
Length screen collecting water (m)=	1.6		

Development/Purging Information

Equipment:

Date & Time	Volume Removed (L)	Temperature (°C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water
11:20	1	8.6	8.15	1167	10.69	clear
11:30	1	8.5	7.82	1148	14.53	clear

Water Sampling		Soil Sampling	
Date and time collected:	11-48	Date and time collected:	11:40 AM
Sample Number - Water:	13547	Sample Number - Soil:	14702 14303
Sample containers:	1 L HDPE 1 L Teflon 250 mL glass	Sample containers:	Tms/Wps
Procedure/Equipment:		Procedure/Equipment:	Plastic Scoops
Water description:		Soil description:	heavy organics - muck
Filtration: (Y/N)		GPS	491159 7626913
Acidification: (Y/N)			
Sampling Equipment Decontamination: (Y/N)	Y	Sampling Equipment Decontamination: (Y/N)	
Number washes:	3	Number washes:	
Number rinses:	3	Number rinses:	

n/a=not applicable

*From ground surface. Unless this is stated, all measurements are assumed to be from the top of the casing.

Grey shaded cells indicates information obtained from original installation record.

Table XX: Monitoring Well Sampling Log

Site Name:	Fox-M
Date of Sampling Event:	Aug 13
Names of Samplers:	Tom / Alaina
Monitoring Well ID:	MW-3
Facility:	Tier II

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:	waterra / interface	Procedure/Equipment:	
Well height above ground (m)=	0.52	Depth to water surface (m)=	1.05
Diameter of well (m)=	0.04	Static water level* (m)=	1.11
Depth of installation* (m)=	3	Depth to bottom (m)=	2.16
Length screened section (m)=	1.5	Free product thickness (mm)=	
Depth to top of screen* (m)=	0.5		

Calculations		Notes	
Depth of water (m)=	1.11	Evidence of sludge etc:	
Well volume of water (L)=	2.2	Evidence of freezing/siltation: (compare to installation record)	
Length screen collecting water (m)=	1.66		

Development/Purging Information

Equipment:

Date & Time	Volume Removed (L)	Temperature (°C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water
1 PM	1L	9.2°	11.17	902	92.3	sediment, Plastic, Leaves
1:10	1L	11°	11	796	575	less sediment
	3rd sample - not enough volume					

Water Sampling		Soil Sampling	
Date and time collected:	1:20	Date and time collected:	1 PM
Sample Number - Water:	14348	Sample Number - Soil:	14304 / 05
Sample containers:	1L HDPE 1L Teflon 250-mL glass	Sample containers:	Jars / wps
Procedure/Equipment:		Procedure/Equipment:	Plastic Scoops
Water description:		Soil description:	mostly shiny rocky, low organics
Filtration: (Y/N)		GPS	491131 762761
Acidification: (Y/N)			
Sampling Equipment Decontamination: (Y/N)	Y	Sampling Equipment Decontamination: (Y/N)	N
Number washes:	3	Number washes:	/
Number rinses:	3	Number rinses:	/

n/a=not applicable

*From ground surface. Unless this is stated, all measurements are assumed to be from the top of the casing.

Grey shaded cells indicates information obtained from original installation record.

Table XX: Monitoring Well Sampling Log

Site Name:	FOX-M
Date of Sampling Event:	Aug 13
Names of Samplers:	Tom, Alaina
Monitoring Well ID:	MW-4
Facility:	Tie II

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:	water/interface	Procedure/Equipment:	
Well height above ground (m)=	0.70	Depth to water surface (m)=	1.12
Diameter of well (m)=	0.09	Static water level* (m)=	1.05
Depth of installation* (m)=	3	Depth to bottom (m)=	2.17
Length screened section (m)=	1.5	Free product thickness (mm)=	
Depth to top of screen* (m)=	0.47		

Calculations		Notes	
Depth of water (m)=	1.05	Evidence of sludge etc:	
Well volume of water (L)=	2.1	Evidence of freezing/siltation: (compare to installation record)	
Length screen collecting water (m)=	1.67		

Development/Purging Information

Equipment:

Date & Time	Volume Removed (L)	Temperature (°C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water
2 PM	0.75	10.4	6	770	19.21	clear
2:10 PM	0.75	9	6	783	36.0	clear

Water Sampling		Soil Sampling	
Date and time collected:	2:20 PM	Date and time collected:	2:20 PM
Sample Number - Water:	14349	Sample Number - Soil:	14806/07
Sample containers:	1L HDPE 1L Teflon 250 mL glass	Sample containers:	Jars / Wps
Procedure/Equipment:		Procedure/Equipment:	Plastic Scoops
Water description:		Soil description:	sandy, silt, clay, rocks, clay
Filtration: (Y/N)		GPS	~~49 43 1~~ ~~76 26 76~~
Acidification: (Y/N)			490987 762663
Sampling Equipment Decontamination: (Y/N)	Y	Sampling Equipment Decontamination: (Y/N)	N
Number washes:	3	Number washes:	1
Number rinses:	2	Number rinses:	1

n/a=not applicable

*From ground surface. Unless this is stated, all measurements are assumed to be from the top of the casing.

Grey shaded cells indicates information obtained from original installation record.

Table XX: Monitoring Well Sampling Log

Site Name:	Fox-M
Date of Sampling Event:	Aug 13
Names of Samplers:	Tom, Alvina
Monitoring Well ID:	MW-5
Facility:	Tier II Disposal Facility

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:		Procedure/Equipment:	
Well height above ground (m)=	0.56	Depth to water surface (m)=	1.25
Diameter of well (m)=	0.09	Static water level* (m)=	1.19
Depth of installation* (m)=	3	Depth to bottom (m)=	2.44
Length screened section (m)=	1.5	Free product thickness (mm)=	
Depth to top of screen* (m)=	0.54		

Calculations		**Notes**	
Depth of water (m)=	1.19	Evidence of sludge etc:	
Well volume of water (L)=	2.3	Evidence of freezing/siltation: (compare to installation record)	
Length screen collecting water (m)=	1.94		

Development/Purging Information

Equipment:

Date & Time	Volume Removed (L)	Temperature (°C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water
3 PM	0.75	8.9°	6	1960	4.95	clear
3:10	0.75	9.9	6	1026	5.57	clear

Water Sampling		**Soil Sampling**	
Date and time collected:	3:10	Date and time collected:	3 PM
Sample Number - Water:	14350	Sample Number - Soil:	14308/09 14310/11
Sample containers:	1 L HDPE 1 L Teflon 250 mL glass	Sample containers:	Jars / Wps
Procedure/Equipment:		Procedure/Equipment:	Plastic Scoops
Water description:		Soil description:	water @ depth
Filtration: (Y/N)		GPS	490892 7626715
Acidification: (Y/N)			
Sampling Equipment Decontamination: (Y/N)	Y	Sampling Equipment Decontamination: (Y/N)	N
Number washes:	3	Number washes:	/
Number rinses:	3	Number rinses:	/

n/a=not applicable

*From ground surface. Unless this is stated, all measurements are assumed to be from the top of the casing.

Grey shaded cells indicates information obtained from original installation record.

Table XX: Monitoring Well Sampling Log

Site Name:	Fox-M
Date of Sampling Event:	Aug 15
Names of Samplers:	Tom, Alvina
Monitoring Well ID:	MW-20
Facility:	East Beach Landfill

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:	water/interface	Procedure/Equipment:	
Well height above ground (m)=	0.39	Depth to water surface (m)=	
Diameter of well (m)=	0.04	Static water level* (m)=	
Depth of installation* (m)=	3.5	Depth to bottom (m)=	1.13
Length screened section (m)=	1.5	Free product thickness (mm)=	
Depth to top of screen* (m)=	0.96		

Calculations		**Notes**	
Depth of water (m)=	dry	Evidence of sludge etc:	
Well volume of water (L)=		Evidence of freezing/siltation: (compare to installation record)	
Length screen collecting water (m)=			

Development/Purging Information

Equipment:

Date & Time	Volume Removed (L)	Temperature (°C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water

Water Sampling		**Soil Sampling**	
Date and time collected:		Date and time collected:	
Sample Number - Water:		Sample Number - Soil:	14338 339
Sample containers:		Sample containers:	WPS/Jars
Procedure/Equipment:		Procedure/Equipment:	Plastic Scoops
Water description:		Soil description:	gravel, some silty sand
Filtration: (Y/N)		GPS	491659 7627348
Acidification: (Y/N)			
Sampling Equipment Decontamination: (Y/N)		Sampling Equipment Decontamination: (Y/N)	/
Number washes:		Number washes:	/
Number rinses:		Number rinses:	/

n/a=not applicable

*From ground surface. Unless this is stated, all measurements are assumed to be from the top of the casing.

Grey shaded cells indicates information obtained from original installation record.

Table XX: Monitoring Well Sampling Log

Site Name:	FOX-M
Date of Sampling Event:	Aug 15
Names of Samplers:	Tom, Alain
Monitoring Well ID:	MW-21
Facility:	East Beach Landfill

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:		Procedure/Equipment:	
Well height above ground (m)=	0.46	Depth to water surface (m)=	
Diameter of well (m)=	0.04	Static water level* (m)=	
Depth of installation* (m)=	3	Depth to bottom (m)=	1.42
Length screened section (m)=	1.5	Free product thickness (mm)=	
Depth to top of screen* (m)=	0.6		
Calculations		**Notes**	
Depth of water (m)=	Dry.	Evidence of sludge etc:	
Well volume of water (L)=		Evidence of freezing/siltation: (compare to installation record)	
Length screen collecting water (m)=			

Development/Purging Information

Equipment:

Date & Time	Volume Removed (L)	Temperature (°C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water

Water Sampling		**Soil Sampling**	
Date and time collected:		Date and time collected:	
Sample Number - Water:		Sample Number - Soil:	14337 14336
Sample containers:		Sample containers:	Jars/Wps
Procedure/Equipment:		Procedure/Equipment:	Plastic Scoops
Water description:		Soil description:	gravel, some ~~Sand~~ + Silt
Filtration: (Y/N)		GPS	44 16 02 76 28 50
Acidification: (Y/N)			
Sampling Equipment Decontamination: (Y/N)		Sampling Equipment Decontamination: (Y/N)	
Number washes:		Number washes:	
Number rinses:		Number rinses:	

n/a=not applicable

*From ground surface. Unless this is stated, all measurements are assumed to be from the top of the casing.

Grey shaded cells indicates information obtained from original installation record.

Table XX: Monitoring Well Sampling Log

Site Name:	FOX-A
Date of Sampling Event:	Aug 15
Names of Samplers:	Tom, Alaina
Monitoring Well ID:	MW-22
Facility:	East Beach LF

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:		Procedure/Equipment:	
Well height above ground (m)=	0.54	Depth to water surface (m)=	
Diameter of well (m)=	0.04	Static water level* (m)=	
Depth of installation* (m)=	3	Depth to bottom (m)=	0.67 (4x)
Length screened section (m)=	1.5	Free product thickness (mm)=	
Depth to top of screen* (m)=	0.6		

Calculations		Notes	
Depth of water (m)=		Evidence of sludge etc:	
Well volume of water (L)=		Evidence of freezing/siltation: (compare to installation record)	
Length screen collecting water (m)=			

Development/Purging Information

Equipment:

Date & Time	Volume Removed (L)	Temperature (°C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water

Water Sampling		Soil Sampling	
Date and time collected:		Date and time collected:	
Sample Number - Water:		Sample Number - Soil:	14 334 335
Sample containers:		Sample containers:	Jars / Wps
Procedure/Equipment:		Procedure/Equipment:	Plastic Scoops
Water description:		Soil description:	rocky, some sandy loam
Filtration: (Y/N)		GPS	491595 7627044
Acidification: (Y/N)			
Sampling Equipment Decontamination: (Y/N)		Sampling Equipment Decontamination: (Y/N)	
Number washes:		Number washes:	
Number rinses:		Number rinses:	

n/a=not applicable

*From ground surface. Unless this is stated, all measurements are assumed to be from the top of the casing.

Grey shaded cells indicates information obtained from original installation record.

Table XX: Monitoring Well Sampling Log

Site Name:	FOX-1
Date of Sampling Event:	Aug 15
Names of Samplers:	Tom, Alaina
Monitoring Well ID:	MW-23
Facility:	East Beach LF

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:		Procedure/Equipment:	
Well height above ground (m)=	0.40	Depth to water surface (m)=	
Diameter of well (m)=	0.04	Static water level* (m)=	
Depth of installation* (m)=	3	Depth to bottom (m)=	1.25 (dry)
Length screened section (m)=	1.5	Free product thickness (mm)=	
Depth to top of screen* (m)=	0.60		

Calculations		**Notes**	
Depth of water (m)=		Evidence of sludge etc:	
Well volume of water (L)=		Evidence of freezing/siltation: (compare to installation record)	
Length screen collecting water (m)=			

Development/Purging Information

Equipment:						
Date & Time	Volume Removed (L)	Temperature (°C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water

Water Sampling		**Soil Sampling**	
Date and time collected:		Date and time collected:	
Sample Number - Water:		Sample Number - Soil:	143321/33
Sample containers:		Sample containers:	Jar/Wps
Procedure/Equipment:		Procedure/Equipment:	Plastic Scoops
Water description:		Soil description:	mud soil/fines, most out of rocks, gravel adj. to beach
Filtration: (Y/N)		GPS	491572 7626940
Acidification: (Y/N)			
Sampling Equipment Decontamination: (Y/N)		Sampling Equipment Decontamination: (Y/N)	
Number washes:		Number washes:	
Number rinses:		Number rinses:	

n/a=not applicable

*From ground surface. Unless this is stated, all measurements are assumed to be from the top of the casing.

Grey shaded cells indicates information obtained from original installation record.

Table XX: Monitoring Well Sampling Log

Site Name:	FOX-M
Date of Sampling Event:	Aug 15
Names of Samplers:	Tom, Alaina
Monitoring Well ID:	MW-24
Facility:	East Beach LF

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:		Procedure/Equipment:	
Well height above ground (m)=	0,50	Depth to water surface (m)=	
Diameter of well (m)=	0,04	Static water level* (m)=	
Depth of installation* (m)=	3	Depth to bottom (m)=	1,76 (dry)
Length screened section (m)=	1.5	Free product thickness (mm)=	
Depth to top of screen* (m)=	0.60		

Calculations		Notes	
Depth of water (m)=		Evidence of sludge etc:	
Well volume of water (L)=		Evidence of freezing/siltation: (compare to installation record)	
Length screen collecting water (m)=			

Development/Purging Information

Equipment:

Date & Time	Volume Removed (L)	Temperature (°C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water

Water Sampling		Soil Sampling	
Date and time collected:		Date and time collected:	
Sample Number - Water:		Sample Number - Soil:	1723-1/31
Sample containers:		Sample containers:	Jars / WPS
Procedure/Equipment:		Procedure/Equipment:	Plastic Scoops
Water description:		Soil description:	very little soil / Fine, gravel adjacent to road
Filtration: (Y/N)		GPS	491489 7626837
Acidification: (Y/N)			
Sampling Equipment Decontamination: (Y/N)		Sampling Equipment Decontamination: (Y/N)	
Number washes:		Number washes:	
Number rinses:		Number rinses:	

n/a=not applicable

*From ground surface. Unless this is stated, all measurements are assumed to be from the top of the casing.

Grey shaded cells indicates information obtained from original installation record.

Table XX: Monitoring Well Sampling Log

Site Name:	FOX-1
Date of Sampling Event:	Aug 15
Names of Samplers:	Tom, Alaina
Monitoring Well ID:	MW-75
Facility:	East Beach LF

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:		Procedure/Equipment:	
Well height above ground (m)=	0.42	Depth to water surface (m)=	
Diameter of well (m)=	0.04	Static water level* (m)=	
Depth of installation* (m)=	3	Depth to bottom (m)=	1.93 (dry)
Length screened section (m)=	1.5	Free product thickness (mm)=	
Depth to top of screen* (m)=	0.60		

Calculations		**Notes**	
Depth of water (m)=		Evidence of sludge etc:	
Well volume of water (L)=		Evidence of freezing/siltation: (compare to installation record)	
Length screen collecting water (m)=			

Development/Purging Information

Equipment:

Date & Time	Volume Removed (L)	Temperature (°C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water

Water Sampling		**Soil Sampling**	
Date and time collected:		Date and time collected:	
Sample Number - Water:		Sample Number - Soil:	14328/29
Sample containers:		Sample containers:	Jars/Wps
Procedure/Equipment:		Procedure/Equipment:	Plastic Scoops
Water description:		Soil description:	sand/gravel, adjacent to beach
Filtration: (Y/N)		GPS	491370 7626723
Acidification: (Y/N)			
Sampling Equipment Decontamination: (Y/N)		Sampling Equipment Decontamination: (Y/N)	
Number washes:		Number washes:	
Number rinses:		Number rinses:	

n/a=not applicable

*From ground surface. Unless this is stated, all measurements are assumed to be from the top of the casing.

Grey shaded cells indicates information obtained from original installation record.

Table XX: Monitoring Well Sampling Log

Site Name:	Fox-1
Date of Sampling Event:	Aug 17
Names of Samplers:	Tom, Alnina
Monitoring Well ID:	MW-26
Facility:	East Beach LF

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:		Procedure/Equipment:	
Well height above ground (m)=	0.37	Depth to water surface (m)=	
Diameter of well (m)=	0.04	Static water level* (m)=	
Depth of installation* (m)=	3	Depth to bottom (m)=	1.19 (dry)
Length screened section (m)=	1.5	Free product thickness (mm)=	
Depth to top of screen* (m)=	0.60		

Calculations		Notes	
Depth of water (m)=		Evidence of sludge etc:	
Well volume of water (L)=		Evidence of freezing/siltation: (compare to installation record)	
Length screen collecting water (m)=			

Development/Purging Information

Equipment:

Date & Time	Volume Removed (L)	Temperature (°C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water

Water Sampling		Soil Sampling	
Date and time collected:		Date and time collected:	4:45 pm
Sample Number - Water:		Sample Number - Soil:	14324/25 26/27
Sample containers:		Sample containers:	Jars/Wps
Procedure/Equipment:		Procedure/Equipment:	Plastic Scoops
Water description:		Soil description:	gravel/~0 cm,
Filtration: (Y/N)		GPS	0491234 7626592
Acidification: (Y/N)			
Sampling Equipment Decontamination: (Y/N)		Sampling Equipment Decontamination: (Y/N)	
Number washes:		Number washes:	
Number rinses:		Number rinses:	

n/a=not applicable

*From ground surface. Unless this is stated, all measurements are assumed to be from the top of the casing.

Grey shaded cells indicates information obtained from original installation record.

Table XX: Monitoring Well Sampling Log

Site Name:	FOX-M
Date of Sampling Event:	Aug 13
Names of Samplers:	Tom, Alaina
Monitoring Well ID:	MW-27
Facility:	East Beach LF

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:		Procedure/Equipment:	
Well height above ground (m)=	0.40	Depth to water surface (m)=	dry
Diameter of well (m)=	0.04	Static water level* (m)=	
Depth of installation* (m)=	3	Depth to bottom (m)=	1.30
Length screened section (m)=	1.5	Free product thickness (mm)=	
Depth to top of screen* (m)=	0.60		

Calculations		Notes	
Depth of water (m)=		Evidence of sludge etc:	
Well volume of water (L)=		Evidence of freezing/siltation: (compare to installation record)	
Length screen collecting water (m)=			

Development/Purging Information

Equipment:

Date & Time	Volume Removed (L)	Temperature (°C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water

Water Sampling		Soil Sampling	
Date and time collected:		Date and time collected:	
Sample Number - Water:		Sample Number - Soil:	1432/21 22123
Sample containers:		Sample containers:	Jars / Wps
Procedure/Equipment:		Procedure/Equipment:	Plastic Scoops
Water description:		Soil description:	gravel, some OM, beach, dry not
Filtration: (Y/N)		GPS	491081 7026148
Acidification: (Y/N)			
Sampling Equipment Decontamination: (Y/N)		Sampling Equipment Decontamination: (Y/N)	
Number washes:		Number washes:	
Number rinses:		Number rinses:	

n/a=not applicable

*From ground surface. Unless this is stated, all measurements are assumed to be from the top of the casing.

Grey shaded cells indicates information obtained from original installation record.

Table XX: Monitoring Well Sampling Log

Site Name:	FOX-1
Date of Sampling Event:	Aug 13
Names of Samplers:	Jan, Alwin
Monitoring Well ID:	MW-78
Facility:	East Beach LF

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:		Procedure/Equipment:	
Well height above ground (m)=	0.52	Depth to water surface (m)=	#
Diameter of well (m)=	0.04	Static water level* (m)=	
Depth of installation* (m)=	3	Depth to bottom (m)=	1.52 (dry)
Length screened section (m)=	1.5	Free product thickness (mm)=	
Depth to top of screen* (m)=	0.60		

Calculations		Notes	
Depth of water (m)=		Evidence of sludge etc:	
Well volume of water (L)=		Evidence of freezing/siltation: (compare to installation record)	
Length screen collecting water (m)=			

Development/Purging Information

Equipment:

Date & Time	Volume Removed (L)	Temperature (°C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water

Water Sampling		Soil Sampling	
Date and time collected:		Date and time collected:	4 pm
Sample Number - Water:		Sample Number - Soil:	14316/17 18/19
Sample containers:		Sample containers:	Jars / Wps
Procedure/Equipment:		Procedure/Equipment:	Plastic Scoops
Water description:		Soil description:	cobbles, sand, no OM adjacent to creek
Filtration: (Y/N)		GPS	490926 7626409
Acidification: (Y/N)			
Sampling Equipment Decontamination: (Y/N)		Sampling Equipment Decontamination: (Y/N)	
Number washes:		Number washes:	
Number rinses:		Number rinses:	

n/a=not applicable

*From ground surface. Unless this is stated, all measurements are assumed to be from the top of the casing.

Grey shaded cells indicates information obtained from original installation record.

Table XX: Monitoring Well Sampling Log

Site Name:	FOX-M
Date of Sampling Event:	Aug 17
Names of Samplers:	Tam, Alaina
Monitoring Well ID:	MW-79
Facility:	East Beach LF

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:		Procedure/Equipment:	
Well height above ground (m)=	0.40	Depth to water surface (m)=	0.75
Diameter of well (m)=	0.04	Static water level* (m)=	
Depth of installation* (m)=	3	Depth to bottom (m)=	1.10
Length screened section (m)=	1.5	Free product thickness (mm)=	
Depth to top of screen* (m)=	0.60		

Calculations		Notes	
Depth of water (m)=		Evidence of sludge etc:	
Well volume of water (L)=		Evidence of freezing/siltation: (compare to installation record)	
Length screen collecting water (m)=			

Development/Purging Information

Equipment:

Date & Time	Volume Removed (L)	Temperature (°C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water
	0.4	11.1	6	1608	40.5	clear
	0.4	10.6	6	1680	31.1	clear

Water Sampling		Soil Sampling	
Date and time collected:		Date and time collected:	
Sample Number - Water:	1975	Sample Number - Soil:	14312/13 14314/15
Sample containers:		Sample containers:	Jars / Wps
Procedure/Equipment:		Procedure/Equipment:	Plastic Scoops
Water description:		Soil description:	Cobbles, only went to max 5cm depth, low OM
Filtration: (Y/N)		GPS	490986 7626558
Acidification: (Y/N)			
Sampling Equipment Decontamination: (Y/N)		Sampling Equipment Decontamination: (Y/N)	
Number washes:		Number washes:	
Number rinses:		Number rinses:	

n/a=not applicable

*From ground surface. Unless this is stated, all measurements are assumed to be from the top of the casing.

Grey shaded cells indicates information obtained from original installation record.

Table XX: Monitoring Well Sampling Log

Site Name:	FOX-M
Date of Sampling Event:	Aug 15
Names of Samplers:	Tom, Alaina
Monitoring Well ID:	MW-36
Facility:	East Beach LF

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:		Procedure/Equipment:	
Well height above ground (m)=	0.28	Depth to water surface (m)=	0.60
Diameter of well (m)=	0.04	Static water level* (m)=	
Depth of installation* (m)=	3	Depth to bottom (m)=	1.20
Length screened section (m)=	1.5	Free product thickness (mm)=	
Depth to top of screen* (m)=	0.60		

Calculations		Notes	
Depth of water (m)=		Evidence of sludge etc:	
Well volume of water (L)=		Evidence of freezing/siltation: (compare to installation record)	
Length screen collecting water (m)=			

Development/Purging Information

Equipment:

Date & Time	Volume Removed (L)	Temperature (°C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water
	0.75	8.2	5.5	1058	265	brown
	0.75	9.2	6	1610	396	brown

Water Sampling		Soil Sampling	
Date and time collected:		Date and time collected:	
Sample Number - Water:	14052	Sample Number - Soil:	14342/43
Sample containers:		Sample containers:	Jars / Ups
Procedure/Equipment:		Procedure/Equipment:	Plastic Scoops
Water description:	brown	Soil description:	gravel, minor veg./reeds adj. to pond
Filtration: (Y/N)		GPS	49/274 7626675
Acidification: (Y/N)			
Sampling Equipment Decontamination: (Y/N)		Sampling Equipment Decontamination: (Y/N)	
Number washes:		Number washes:	
Number rinses:		Number rinses:	

n/a=not applicable

*From ground surface. Unless this is stated, all measurements are assumed to be from the top of the casing.

Grey shaded cells indicates information obtained from original installation record.

Table XX: Monitoring Well Sampling Log

Site Name:	FOX-M
Date of Sampling Event:	Aug 15
Names of Samplers:	Tom, Alison
Monitoring Well ID:	MW-31
Facility:	East Beach LF

Water Sample Measured Data

Condition of Well:	Good		
Procedure/Equipment:		Procedure/Equipment:	
Well height above ground (m)=	0.41	Depth to water surface (m)=	
Diameter of well (m)=	0.04	Static water level* (m)=	
Depth of installation* (m)=	3	Depth to bottom (m)=	1.23
Length screened section (m)=	1.5	Free product thickness (mm)=	
Depth to top of screen* (m)=	0.60		

Calculations		**Notes**	
Depth of water (m)=	dry.	Evidence of sludge etc:	
Well volume of water (L)=		Evidence of freezing/siltation: (compare to installation record)	
Length screen collecting water (m)=			

Development/Purging Information

Equipment:

Date & Time	Volume Removed (L)	Temperature (°C)	pH	Conductivity (uS/cm)	Turbidity (NTU)	Description of water

Water Sampling		**Soil Sampling**	
Date and time collected:		Date and time collected:	
Sample Number - Water:		Sample Number - Soil:	14341 340
Sample containers:		Sample containers:	5-1/4ps
Procedure/Equipment:		Procedure/Equipment:	Plastic Scoops
Water description:		Soil description:	gravel, minor veg; sl to sand
Filtration: (Y/N)		GPS	0491511 7626938
Acidification: (Y/N)			
Sampling Equipment Decontamination: (Y/N)		Sampling Equipment Decontamination: (Y/N)	
Number washes:		Number washes:	
Number rinses:		Number rinses:	

n/a=not applicable

*From ground surface. Unless this is stated, all measurements are assumed to be from the top of the casing.

Grey shaded cells indicates information obtained from original installation record.

CHAIN OF CUSTODY REPORT

Cooler Identification: **2011.FOX-M-mon-DLCU.1**
Site Name: **HALL BEACH**
Date - Packed: **20110816**
Date - Sent: **20110816**
Date - Received:
Report Results To: **Partridge, Tom**
Project Code: **FOX-M-mon-DLCU**

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Kingston, ON K7K 7B4
Tel: (613) 541-6000, Ext: 6818/6819
Fax: (613) 541-6820

Comments: soil samples

Prepared By:	**Partridge, Tom**
Signature/Date:	2011/08/16 (yyyymmdd)
Relinquished By:	**Partridge, Tom**
Signature/Date:	2011/08/16 (yyyymmdd)
Received By (Print Name):	
Signature/Date:	2011/__/__ (yyyymmdd)

Check	TN	Quantity	Storage Medium	Sample Matrix	Date Collected	Storage Instruction
	14300	1	Whirlpaks	Soil	20110815	Refrigerate
	14301	1	Whirlpaks	Soil	20110813	Refrigerate
	14302	1	Whirlpaks	Soil	20110813	Refrigerate
	14303	1	Whirlpaks	Soil	20110813	Refrigerate
	14304	1	Whirlpaks	Soil	20110813	Refrigerate
	14305	1	Whirlpaks	Soil	20110813	Refrigerate
	14306	1	Whirlpaks	Soil	20110813	Refrigerate
	14307	1	Whirlpaks	Soil	20110813	Refrigerate
	14308	1	Whirlpaks	Soil	20110813	Refrigerate
	14309	1	Whirlpaks	Soil	20110813	Refrigerate
	14310	1	Whirlpaks	Soil	20110813	Refrigerate
	14311	1	Whirlpaks	Soil	20110813	Refrigerate
	14312	1	Whirlpaks	Soil	20110813	Refrigerate
	14313	1	Whirlpaks	Soil	20110813	Refrigerate
	14314	1	Whirlpaks	Soil	20110813	Refrigerate
	14315	1	Whirlpaks	Soil	20110813	Refrigerate
	14316	1	Whirlpaks	Soil	20110813	Refrigerate
	14317	1	Whirlpaks	Soil	20110813	Refrigerate

Check	TN	Quantity	Storage Medium	Sample Matrix	Date Collected	Storage Instruction
	14318	1	Whirlpaks	Soil	20110813	Refrigerate
	14319	1	Whirlpaks	Soil	20110813	Refrigerate
	14320	1	Whirlpaks	Soil	20110813	Refrigerate
	14321	1	Whirlpaks	Soil	20110813	Refrigerate
	14322	1	Whirlpaks	Soil	20110813	Refrigerate
	14323	1	Whirlpaks	Soil	20110813	Refrigerate
	14324	1	Whirlpaks	Soil	20110813	Refrigerate
	14325	1	Whirlpaks	Soil	20110813	Refrigerate
	14326	1	Whirlpaks	Soil	20110813	Refrigerate
	14327	1	Whirlpaks	Soil	20110813	Refrigerate
	14328	1	Whirlpaks	Soil	20110815	Refrigerate
	14329	1	Whirlpaks	Soil	20110815	Refrigerate
	14330	1	Whirlpaks	Soil	20110815	Refrigerate
	14331	1	Whirlpaks	Soil	20110815	Refrigerate
	14332	1	Whirlpaks	Soil	20110815	Refrigerate
	14333	1	Whirlpaks	Soil	20110815	Refrigerate
	14334	1	Whirlpaks	Soil	20110815	Refrigerate
	14335	1	Whirlpaks	Soil	20110815	Refrigerate
	14336	1	Whirlpaks	Soil	20110815	Refrigerate
	14337	1	Whirlpaks	Soil	20110815	Refrigerate
	14338	1	Whirlpaks	Soil	20110815	Refrigerate
	14339	1	Whirlpaks	Soil	20110815	Refrigerate
	14340	1	Whirlpaks	Soil	20110815	Refrigerate
	14341	1	Whirlpaks	Soil	20110815	Refrigerate
	14342	1	Whirlpaks	Soil	20110815	Refrigerate
	14343	1	Whirlpaks	Soil	20110815	Refrigerate

CHAIN OF CUSTODY REPORT

Cooler Identification: **2011.FOX-M-mon-DLCU.2**
Site Name: **HALL BEACH**
Date - Packed: **20110816**
Date - Sent: **20110816**
Date - Received:
Report Results To: **Partridge, Tom**
Project Code: **FOX-M-mon-DLCU**

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Fax: (613) 541-6820

Comments: soil samples

Prepared By:	**Partridge, Tom**
Signature/Date:	2011/08/16 (yyyymmdd)
Relinquished By:	**Partridge, Tom**
Signature/Date:	2011/08/16 (yyyymmdd)
Received By (Print Name):	
Signature/Date:	2011/__/__ (yyyymmdd)

Check	TN	Quantity	Storage Medium	Sample Matrix	Date Collected	Storage Instruction
	14300	1	Jar 125ml Glass #1	Soil	20110815	Freeze
	14301	1	Jar 125ml Glass #1	Soil	20110813	Freeze
	14302	1	Jar 125ml Glass #1	Soil	20110813	Freeze
	14303	1	Jar 125ml Glass #1	Soil	20110813	Freeze
	14304	1	Jar 125ml Glass #1	Soil	20110813	Freeze
	14305	1	Jar 125ml Glass #1	Soil	20110813	Freeze
	14306	1	Jar 125ml Glass #1	Soil	20110813	Freeze
	14307	1	Jar 125ml Glass #1	Soil	20110813	Freeze
	14308	1	Jar 125ml Glass #1	Soil	20110813	Freeze
	14309	1	Jar 125ml Glass #1	Soil	20110813	Freeze
	14310	1	Jar 125ml Glass #1	Soil	20110813	Freeze
	14311	1	Jar 125ml Glass #1	Soil	20110813	Freeze
	14312	1	Jar 125ml Glass #1	Soil	20110813	Freeze
	14313	1	Jar 125ml Glass #1	Soil	20110813	Freeze
	14314	1	Jar 125ml Glass #1	Soil	20110813	Freeze
	14315	1	Jar 125ml Glass #1	Soil	20110813	Freeze
	14316	1	Jar 125ml Glass #1	Soil	20110813	Freeze
	14317	1	Jar 125ml Glass #1	Soil	20110813	Freeze

Check	TN	Quantity	Storage Medium	Sample Matrix	Date Collected	Storage Instruction
	14318	1	Jar 125ml Glass #1	Soil	20110813	Freeze
	14319	1	Jar 125ml Glass #1	Soil	20110813	Freeze
	14320	1	Jar 125ml Glass #1	Soil	20110813	Freeze
	14321	1	Jar 125ml Glass #1	Soil	20110813	Freeze
	14322	1	Jar 125ml Glass #1	Soil	20110813	Freeze
	14323	1	Jar 125ml Glass #1	Soil	20110813	Freeze
	14324	1	Jar 125ml Glass #1	Soil	20110813	Freeze
	14325	1	Jar 125ml Glass #1	Soil	20110813	Freeze
	14326	1	Jar 125ml Glass #1	Soil	20110813	Freeze
	14327	1	Jar 125ml Glass #1	Soil	20110813	Freeze
	14328	1	Jar 125ml Glass #1	Soil	20110815	Freeze
	14329	1	Jar 125ml Glass #1	Soil	20110815	Freeze
	14330	1	Jar 125ml Glass #1	Soil	20110815	Freeze
	14331	1	Jar 125ml Glass #1	Soil	20110815	Freeze
	14332	1	Jar 125ml Glass #1	Soil	20110815	Freeze
	14333	1	Jar 125ml Glass #1	Soil	20110815	Freeze
	14334	1	Jar 125ml Glass #1	Soil	20110815	Freeze
	14335	1	Jar 125ml Glass #1	Soil	20110815	Freeze
	14336	1	Jar 125ml Glass #1	Soil	20110815	Freeze
	14337	1	Jar 125ml Glass #1	Soil	20110815	Freeze
	14338	1	Jar 125ml Glass #1	Soil	20110815	Freeze
	14339	1	Jar 125ml Glass #1	Soil	20110815	Freeze
	14340	1	Jar 125ml Glass #1	Soil	20110815	Freeze
	14341	1	Jar 125ml Glass #1	Soil	20110815	Freeze
	14342	1	Jar 125ml Glass #1	Soil	20110815	Freeze
	14343	1	Jar 125ml Glass #1	Soil	20110815	Freeze

CHAIN OF CUSTODY REPORT

Cooler Identification: **2011.FOX-M-mon-DLCU.3**
Site Name: **HALL BEACH**
Date - Packed: **20110816**
Date - Sent: **20110816**
Date - Received:
Report Results To: **Partridge, Tom**
Project Code: **FOX-M-mon-DLCU**

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Tel: (613) 541-6000, Ext: 6818/6819
Fax: (613) 541-6820

Comments: water samples

Prepared By:	**Partridge, Tom**
Signature/Date:	2011/08/16 (yyyymmdd)
Relinquished By:	**Partridge, Tom**
Signature/Date:	2011/08/16 (yyyymmdd)
Received By (Print Name):	
Signature/Date:	2011/__/__ (yyyymmdd)

Check	TN	Quantity	Storage Medium	Sample Matrix	Date Collected	Storage Instruction
	14345	1	Bottle 1L Plastic	Groundwater	20110813	Refrigerate
	14345	1	Bottle 1L Teflon	Groundwater	20110813	Refrigerate
	14345	1	Bottle 250ml Glass	Groundwater	20110813	Refrigerate
	14346	1	Bottle 1L Plastic	Groundwater	20110813	Refrigerate
	14346	1	Bottle 1L Teflon	Groundwater	20110813	Refrigerate
	14346	1	Bottle 250ml Glass	Groundwater	20110813	Refrigerate
	14347	1	Bottle 1L Plastic	Groundwater	20110813	Refrigerate
	14347	1	Bottle 1L Teflon	Groundwater	20110813	Refrigerate
	14347	1	Bottle 250ml Glass	Groundwater	20110813	Refrigerate
	14348	1	Bottle 1L Plastic	Groundwater	20110813	Refrigerate
	14348	1	Bottle 1L Teflon	Groundwater	20110813	Refrigerate
	14348	1	Bottle 250ml Glass	Groundwater	20110813	Refrigerate
	14349	1	Bottle 1L Plastic	Groundwater	20110813	Refrigerate
	14349	1	Bottle 1L Teflon	Groundwater	20110813	Refrigerate
	14349	1	Bottle 250ml Glass	Groundwater	20110813	Refrigerate

CHAIN OF CUSTODY REPORT

Cooler Identification: **2011.FOX-M-mon-DLCU.4**
Site Name: **HALL BEACH**
Date - Packed: **20110816**
Date - Sent: **20110816**
Date - Received:
Report Results To: **Partridge, Tom**
Project Code: **FOX-M-mon-DLCU**

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Tel: (613) 541-6000, Ext: 6818/6819
Fax: (613) 541-6820

Comments: water samples

Prepared By:	**Partridge, Tom**
Signature/Date:	2011/08/16 (yyyymmdd)
Relinquished By:	**Partridge, Tom**
Signature/Date:	2011/08/16 (yyyymmdd)
Received By (Print Name):	
Signature/Date:	2011/__/__ (yyyymmdd)

Check	TN	Quantity	Storage Medium	Sample Matrix	Date Collected	Storage Instruction
	14350	1	Bottle 1L Plastic	Groundwater	20110813	Refrigerate
	14350	1	Bottle 1L Teflon	Groundwater	20110813	Refrigerate
	14350	1	Bottle 250ml Glass	Groundwater	20110813	Refrigerate
	14351	1	Bottle 1L Plastic	Groundwater	20110815	Refrigerate
	14351	1	Bottle 1L Teflon	Groundwater	20110815	Refrigerate
	14351	1	Bottle 250ml Glass	Groundwater	20110815	Refrigerate
	14352	1	Bottle 1L Plastic	Groundwater	20110815	Refrigerate
	14352	1	Bottle 1L Teflon	Groundwater	20110815	Refrigerate
	14352	1	Bottle 250ml Glass	Groundwater	20110815	Refrigerate
	14353	1	Bottle 1L Plastic	Groundwater	20110815	Refrigerate
	14353	1	Bottle 1L Teflon	Groundwater	20110815	Refrigerate
	14353	1	Bottle 250ml Glass	Groundwater	20110815	Refrigerate
	14354	1	Bottle 1L Plastic	Groundwater	20110815	Refrigerate
	14354	1	Bottle 1L Teflon	Groundwater	20110815	Refrigerate
	14354	1	Bottle 250ml Glass	Groundwater	20110815	Refrigerate

Thermistor Annual Maintenance Report

Contractor Name: AECOM	Inspection Date: Aug 15, 2011
Prepared By: D. Elwood	

Thermistor Information

Site Name:	Fox-M	Thermistor Location	east of mon-hut (background)		
Thermistor Number:	HB2	Inclination	Vertical		
Install Date:		First Date Event		Last Date Event	
Coordinates and Elevation	N		E		Elev
Length of Cable (m)	10	Cable Lead Above Ground (m)	1.5	Nodal Points	11
Datalogger Serial #				Cable Serial Number	

Thermistor Inspection

	Good	Needs Maintenance
Casing	?	? no casing
Cover	?	? no cover
Data Logger	?	? no datalogger
Cable	? ✓	? good
Beads	? ✓	?
Battery Installation Date		no battery
Battery Levels	Main	Aux

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	8.541	
2	165.97	
3	12.114	
4	2.617	
5	11.451	
6	9.208	
7	15.163	
8	15.468	

Bead	ohms	Degrees C
9	19.173	
10	20.79	
11	19.60	

Observations and Proposed Maintenance

beads 2 & 4 not functioning

Thermistor Annual Maintenance Report

Contractor Name: AECOM	Inspection Date: VT-1
Prepared By: D. Elwood	

Thermistor Information

Site Name: Fox-M		Thermistor Location S central Tier II	
Thermistor Number:		Inclination	
Install Date:		First Date Event	Last Date Event
Coordinates and Elevation	N	E	Elev
Length of Cable (m)	Cable Lead Above Ground (m)	Nodal Points	
Datalogger Serial #		Cable Serial Number	

Thermistor Inspection

	Good	Needs Maintenance
Casing	? ✓	?
Cover	? ✓	?
Data Logger	? ✓	?
Cable	? ✓	?
Beads	?	?
Battery Installation Date		replace battery
Battery Levels	Main 11.34 (good)	Aux 12.04 (good)

Manual Ground Temperature Readings

Bead	ohms	Degrees C

Bead	ohms	Degrees C

Observations and Proposed Maintenance

mw @ 39%

Thermistor Annual Maintenance Report

Contractor Name: AECOM	Inspection Date: Aug 13/2011
Prepared By: D. Elwood	

Thermistor Information

Site Name:	Foxm	Thermistor Location	VT-2 (SW corner Tier II)
Thermistor Number:	VT-2	Inclination	
Install Date:		First Date Event	Last Date Event
Coordinates and Elevation	N	E	Elev
Length of Cable (m)	Cable Lead Above Ground (m)	Nodal Points	
Datalogger Serial #		Cable Serial Number	

Thermistor Inspection

	Good	Needs Maintenance
Casing	? ✓	?
Cover	? ✓	?
Data Logger	? ✓	?
Cable	? ✓	?
Beads	?	?
Battery Installation Date		
Battery Levels	Main 11.34 (good)	Aux 12.77 (good)

Manual Ground Temperature Readings

Bead	ohms	Degrees C

Bead	ohms	Degrees C

Observations and Proposed Maintenance

new 39% full good

Thermistor Annual Maintenance Report

Contractor Name: AECOM	Inspection Date: Aug 15, 2011
Prepared By: D. Elwood	

Thermistor Information

Site Name:	Fox-W	Thermistor Location	Tier II South
Thermistor Number:	VT-2	Inclination	
Install Date:		First Date Event	Last Date Event
Coordinates and Elevation	N	E	Elev
Length of Cable (m)	Cable Lead Above Ground (m)	Nodal Points	
Datalogger Serial #		Cable Serial Number	

Thermistor Inspection

	Good	Needs Maintenance
Casing	? ✓	?
Cover	? ✓	?
Data Logger	? ✓	?
Cable	? ✓	?
Beads	? ✓	?
Battery Installation Date		replace battery
Battery Levels	Main	Aux

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	10.074	
2	13.297	
3	16.111	
4	17.494	
5	18.735	
6	20.43	
7	21.46	

Bead	ohms	Degrees C

Observations and Proposed Maintenance

Thermistor Annual Maintenance Report

Contractor Name: AECOM	Inspection Date: Aug 13/2011
Prepared By: D. Elwood	

Thermistor Information

Site Name: Fox-m		Thermistor Location NE corner	
Thermistor Number: VT-3		Inclination	
Install Date:		First Date Event	Last Date Event
Coordinates and Elevation	N	E	Elev
Length of Cable (m)	Cable Lead Above Ground (m)	Nodal Points	
Datalogger Serial #		Cable Serial Number	

Thermistor Inspection

	Good	Needs Maintenance
Casing	? ✓	?
Cover	? ✓	?
Data Logger	? ✓	?
Cable	? ✓	?
Beads	? ✓	?
Battery Installation Date		needs replac ~~Feb~~
Battery Levels	Main 11.34 (good)	Aux 11.68 (fair/poor)

Manual Ground Temperature Readings

Bead	ohms	Degrees C

Bead	ohms	Degrees C

Observations and Proposed Maintenance

Thermistor Annual Maintenance Report

Contractor Name:	Inspection Date:
Prepared By:	

Thermistor Information

Site Name:		Thermistor Location	
Thermistor Number:	VT-3	Inclination	
Install Date:		First Date Event	Last Date Event
Coordinates and Elevation	N	E	Elev
Length of Cable (m)	Cable Lead Above Ground (m)	Nodal Points	
Datalogger Serial #		Cable Serial Number	

Thermistor Inspection

	Good	Needs Maintenance
Casing	?	?
Cover	?	?
Data Logger	?	?
Cable	?	?
Beads	?	?
Battery Installation Date		
Battery Levels	Main	Aux

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	9.863	
2	13.209	
3	15.794	
4	17.125	
5	18.216	
6	19.146	
7	20.01	
8	20.71	

Bead	ohms	Degrees C
9	21.25	
10	22.90	
11	22.95	

Observations and Proposed Maintenance

Thermistor Annual Maintenance Report

Contractor Name: AECOM	Inspection Date: Aug 15, 2014
Prepared By: D. Elwood	

Thermistor Information

Site Name: Fox-m		Thermistor Location Tier II landfill (North	
Thermistor Number: VT-4		Inclination	
Install Date:	First Date Event		Last Date Event
Coordinates and Elevation	N 7626838	E 491007	Elev
Length of Cable (m)	Cable Lead Above Ground (m)	Nodal Points	
Datalogger Serial #		Cable Serial Number	

Thermistor Inspection

	Good	Needs Maintenance
Casing	? ✓	?
Cover	? ✓	?
Data Logger	? ✓	?
Cable	? ✓	? minor cracking @ connector
Beads	?	?
Battery Installation Date		
Battery Levels	Main 11.34 V (good)	Aux 11.07 V (replaced)

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	—	
2	266.3	
3	260.7	
4	248.8	
5	262.3	
6	250.9	
7	269.0	

Bead	ohms	Degrees C

Observations and Proposed Maintenance

Thermistor Annual Maintenance Report

Contractor Name: AECOM	Inspection Date: Aug 15, 2011
Prepared By: D. Elwood	

Thermistor Information

Site Name: Fox-M		Thermistor Location	
Thermistor Number: VT-5		Inclination	
Install Date:		First Date Event	Last Date Event
Coordinates and Elevation	N	E	Elev
Length of Cable (m)	Cable Lead Above Ground (m)	Nodal Points	
Datalogger Serial #		Cable Serial Number	

Thermistor Inspection

	Good	Needs Maintenance
Casing	? ✓	?
Cover	? ✓	?
Data Logger	? ✓	?
Cable	? ✓	?
Beads	? ✓	?
Battery Installation Date		
Battery Levels	Main	Aux

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	9.257	
2	12.891	
3	15.865	
4	17.191	
5	18.708	
6	19.691	
7	20.47	

Bead	ohms	Degrees C

Observations and Proposed Maintenance

Thermistor Annual Maintenance Report

Contractor Name: ~~VT-6~~ AECOM	Inspection Date: Aug 13, 2011
Prepared By: D. Elwood	

Thermistor Information

Site Name:	Fox-M	Thermistor Location	Beach landfill
Thermistor Number:	VT-6	Inclination	
Install Date:		First Date Event	Last Date Event
Coordinates and Elevation	N 7626952	E 490897	Elev
Length of Cable (m)	Cable Lead Above Ground (m)	Nodal Points	
Datalogger Serial #		Cable Serial Number	

Thermistor Inspection

	Good	Needs Maintenance
Casing	? ✓	?
Cover	? ✓	?
Data Logger	? ✓ ✓	?
Cable	?	?
Beads	?	?
Battery Installation Date		replace battery
Battery Levels	Main 11.34 (good)	Aux 12.04 (good)

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	8.656	
2	11.224	
3	14.241	
4	16.456	
5	17.171	
6	18.047	
7	18.935	
8	19.857	

Bead	ohms	Degrees C
~~9~~ 10	20.74	
~~11~~	—	
~~12~~		
~~13~~		
~~14~~		
~~15~~		
~~16~~		
~~17~~		

Observations and Proposed Maintenance

memory @ 39%

Thermistor Annual Maintenance Report

Contractor Name: AECOM	Inspection Date: Aug 15, 2014
Prepared By: D. Elwood	

Thermistor Information

Site Name: Fox-M		Thermistor Location: East Beach	
Thermistor Number: UT-7		Inclination: vertical	
Install Date:		First Date Event	Last Date Event
Coordinates and Elevation	N 7424743	E 491383	Elev
Length of Cable (m)	Cable Lead Above Ground (m)	Nodal Points 9	
Datalogger Serial # 07010006		Cable Serial Number TS0701000C (UT-7)	

Thermistor Inspection

	Good	Needs Maintenance
Casing	?✓	?
Cover	?✓	? new lock required
Data Logger	?✓	?
Cable	?✓	?
Beads	?	?
Battery Installation Date		
Battery Levels	Main 11.34 V (good)	Aux 11.80 (replace)

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	8.419	
2	9.904	
3	13.006	
4	15.655	
5	16.850	
6	17.769	
7	18.838	
8	19.817	

Bead	ohms	Degrees C
9	20.86	

Observations and Proposed Maintenance

memory @ 39%

Thermistor Annual Maintenance Report

Contractor Name: AECOM	Inspection Date: Aug 13, 2011
Prepared By: D. Elwood	

Thermistor Information

Site Name:	Fox-M	Thermistor Location	
Thermistor Number:	VT-8	Inclination	
Install Date:		First Date Event	Last Date Event
Coordinates and Elevation	N 7626818	E 491371	Elev
Length of Cable (m)	Cable Lead Above Ground (m)	Nodal Points 9	
Datalogger Serial # 07040022		Cable Serial Number TS070400022 (VT-8)	

Thermistor Inspection

	Good	Needs Maintenance
Casing	? ✓	?
Cover	? ✓	? new lock
Data Logger	? ✓	?
Cable	? ✓	? minor cracking @ connection (ok)
Beads	?	?
Battery Installation Date		
Battery Levels	Main 11.34 good	Aux 13.02 good

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	8.984	
2	11.055	
3	13.876	
4	16.040	
5	17.113	
6	18.108	
7	19.096	
8	19.985	

Bead	ohms	Degrees C
9	20.79	
10		

Observations and Proposed Maintenance

memory 38°C

Thermistor Annual Maintenance Report

Contractor Name: AECOM	Inspection Date: Aug 13, 2014
Prepared By: D. Elwood	

Thermistor Information

Site Name:	FOX-M	Thermistor Location	
Thermistor Number:	VT-9	Inclination	
Install Date:		First Date Event	Last Date Event
Coordinates and Elevation	N 7627041	E 0491580	Elev
Length of Cable (m)	Cable Lead Above Ground (m)	Nodal Points	9
Datalogger Serial #	07060017	Cable Serial Number	TS07060017 (VT-9)

Thermistor Inspection

	Good	Needs Maintenance
Casing	?	?
Cover	?	?
Data Logger	?	?
Cable	?	?
Beads	?	?
Battery Installation Date		replace battery
Battery Levels	Main 11.34 (good)	Aux 12.53 (Fair)

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	9,239	
2	9,574	
3	12,045	
4	14,484	
5	16,431	
6	17,306	
7	18,446	
8	19,363	

Bead	ohms	Degrees C
9	20.31	
10		

Observations and Proposed Maintenance

Thermistor Annual Maintenance Report

Contractor Name: AECOM	Inspection Date: Aug 13/2011
Prepared By: D ELWOOD	

Thermistor Information

Site Name:	Foy-m	Thermistor Location	
Thermistor Number:	VT-10	Inclination	
Install Date:		First Date Event	Last Date Event
Coordinates and Elevation	N 7627284	E 491604	Elev
Length of Cable (m)	Cable Lead Above Ground (m)	Nodal Points	9
Datalogger Serial #	07060003	Cable Serial Number	TS7060003 (VS-10)

Thermistor Inspection

	Good	Needs Maintenance
Casing	? ✓	?
Cover	? ✓	?
Data Logger	? ✓	? slight cracking @ connection
Cable	? ✓	?
Beads	?	?
Battery Installation Date		replace batteries
Battery Levels	Main 11.34 (good)	Aux 11.56 (fair)

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	8.731	
2	10.482	
3	13.713	
4	15.700	
5	16.866	
6	17.787	
7	18.854	
8	19.695	

Bead	ohms	Degrees C
9	20.55	

Observations and Proposed Maintenance

Thermistor Annual Maintenance Report

Contractor Name: AECOM	Inspection Date: Aug 13, 2011
Prepared By: D. ELWOOD	

Thermistor Information

Site Name: Fox-M		Thermistor Location	
Thermistor Number: VT-11		Inclination	
Install Date:		First Date Event	Last Date Event
Coordinates and Elevation	N 7627316	E 491568	Elev
Length of Cable (m)	Cable Lead Above Ground (m)	Nodal Points	
Datalogger Serial # 7060002		Cable Serial Number TS07060002 (VT-11)	

Thermistor Inspection

	Good	Needs Maintenance
Casing	? ✓	?
Cover	? ✓	?
Data Logger	? ✓	?
Cable	? ✓	?
Beads	? ✓	?
Battery Installation Date		replace battery
Battery Levels	Main 11.34 (good)	Aux 12.65 (fair)

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	8,204	
2	9,817	
3	13,560	
4	15,550	
5	16,925	
6	17,927	
7	19 008	
8	19,947	

Bead	ohms	Degrees C
9	20.85	

Observations and Proposed Maintenance

memory 39%