

Your Ref : (16) in EP2/N7/A/52 Ax(1) Pt.13
Our Ref : (CV/2012/08)/M45/010/(F02113)

24 November 2014

By Hand

Environmental Impact Assessment Ordinance Register Office
Environmental Protection Department
27/F, Southorn Centre,
130 Hennessy Road,
Wanchai, Hong Kong

Attn.: Mr. Charles Pang

Dear Sirs,

Contract No. CV/2012/08
Liantang / Heung Yuen Wai Boundary Control Point -
Site Formation and Infrastructures – Contract 2

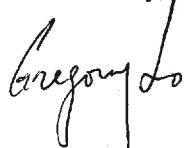
Environmental Permit No. EP-404/2011/A
Condition 3.4 – Revised Contamination Assessment Report (CAR)
– Po Kat Tsai and Loi Tung (Rev.4)

I refer to your above referenced letter dated 24 October 2014 enclosing comments on our Revised Contamination Assessment Report (CAR) – Po Kat Tsai and Loi Tung (Rev.3) submitted on 29 September 2014.

In response to the comments and with reference to Condition 3.4 of the Environmental Permit (EP) No. EP- 404/2011/A, on behalf of the Permit Holder, Civil Engineering and Development Department (CEDD), I would like to submit three hard copies of the Revised CAR – Po Kat Tsai and Loi Tung (Rev.4) certified by the ET Leader and verified by the IEC for your approval.

Should you have any queries, please contact the undersigned or our Mr. Perry Yam at tel. no. 2171 3350.

Yours faithfully,



Gregory Lo
Senior Resident Engineer
AECOM Asia Co. Ltd.

Encl.

c.c. CEDD/BCP	- Attn: Mr. B. K. Chow	- 1 hard copy
AECOM	- Attn: Mr. Francis Leong / Mr. Edward Yip	- 1 CD copy
SMEC(IEC)	- Attn: Mr. Anthony Wong	- 1 CD copy
AUES(ET)	- Attn: Mr. T. W. Tam	- w/o encl.

SM/GL/GW/PY/LQR/ptk



JOB NO.: TCS00670/13

**AGREEMENT NO. CE 45/2008 (CE)
LIANTANG/HEUNG YUEN WAI
BOUNDARY CONTROL POINT AND ASSOCIATED WORKS**

**CONTAMINATION ASSESSMENT REPORT (CAR) –
PO KAT TSAI AND LOI TUNG**

**PREPARED FOR
CIVIL ENGINEERING AND DEVELOPMENT
DEPARTMENT (CEDD)**

Quality Index

Date	Reference No.	Prepared By	Certified By
6 November 2014	TCS00670/13/600/R0227v4	 Ben Tam (Environmental Consultant)	 Tam Tak Wing (Environmental Team Leader)

Rev.	Date	Description
1	22 August 2014	First submission
2	5 September 2014	Amended according to IEC's comments
3	23 September 2014	Amended according to IEC's comments
4	6 November 2014	Amended against EPD's Comments dated 24 October 2014



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11 November 2014

Our ref: 7076192/L17197/Ry/AB/AW/rw
Your ref:

AECOM
8/F, Grand Central Plaza, Tower 2
138 Shatin Rural Committee Road
Shatin, N.T.

By Email & Post

Attention: Mr Gregory LO

Dear Sir

Agreement No. CE 45/2008 (CE)
Liantang/Heung Yuen Wai Boundary Control Point and Associated Works
Independent Environmental Checker – Investigation
Contract No. CV/2012/08
Revised Contamination Assessment Report – Po Kat Tsai and Loi Tung

With reference to the revised Contamination Assessment Report – Po Kat Tsai and Loi Tung (AUES ref.: TCS00670/13/600/R0227v4) certified by the ET Leader provided to us on 6 November 2014, please be noted that we have no adverse comments on the captioned submission. We herewith verify the captioned submission in accordance with Condition 3.4 of the Environmental Permit No. EP-404/2011/A.

Thank you for your attention and please do not hesitate to contact the undersigned on tel. 3995 8120 or by email to antony.wong@smec.com; or our Mr Francis LEE on tel. 3995 8144 or by email to francis.lee@smec.com.

Yours faithfully
For and on behalf of
SMEC Asia Limited

Antony WONG
Independent Environmental Checker

cc CEDD/BCP - Mr B.K. CHOW/Mr Pui Sang LI
AECOM - Mr Francis LEONG / Mr Perry YAM
AUES - Mr TW TAM

by fax: 3547 1659
by email
by email



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1 INTRODUCTION

- 1.1 **Liantang/Heung Yuen Wai Boundary Control Point and Associated Works** (hereinafter “The Project”) is a Designated Project (DP) to be implemented in accordance with the statutory Environmental Impact Assessment (EIA) which approved by the Director of Environmental Protection (DEP) in 24 March 2011. An Environmental Permit (EP) EP-404/2011 and EP-404/2011/A was obtained by the Civil Engineering & Development Department (CEDD) on 24 March 2011 and 28 October 2013 respectively for construction and operation of the Project. The Project Layout Plan is shown in *Appendix A*.

LAND CONTAMINATION DURING EIA STUDY

- 1.2 In order to fulfill the requirement in Clause 3.4.8.1(iv) of the EIA Study Brief, an initial Contamination Assessment Plan (CAP) based on the initial connecting road alignment was submitted on 31 August 2009 which accepted by the Environmental Protection Department (EPD) on 2 October 2009. In 2010, due to refinement of the alignment and change of scope of works during the design stage, a revised CAP was submitted on 31 May 2010 which accepted by EPD on 22 June 2010. In view of the recent refinement of the alignment section at Sha Tau Kok Road, the CAP was further updated and submitted again on 14 July 2010 which has been accepted by EPD on 12 October 2010.
- 1.3 The land contamination assessment was conducted based on information from the review of the historical/current land uses, desktop study and site inspection. Besides, some information was also collected from related Government Departments. According to the findings on the site appraisal of existing and historical land uses in the Study Area, adverse land contamination impacts are not expected during construction and operation phase of the proposed Liantang/Heung Yuen Wai Boundary Crossing Point (LT/HYW BCP), connecting roads and ventilation buildings. However, potential land contamination impact are identified at three areas which included 1) open area at Sha Tau Kok Road near Loi Tung (hereinafter “Loi Tung”), 2) works sites of ventilation building in Po Kat Tsai (hereinafter “Po Kat Tsai”) and 3) workshops in Fanling (hereinafter “Fanling”).
- 1.4 Site visit could not be performed at these three potential contamination areas during EIA study as the lands were occupied by private owner. Site investigation of the existing ground at these three areas was recommended in the EIA Report when site access could be granted or land acquisition. In addition, as mentioned in the EP-404/2011/A Condition 3.4, “*after resumption of private lands, site inspection shall be carried out to ascertain contaminative sources and hotspots of contamination. The revised Contamination Assessment Plan (CAP) with sampling and testing schedule shall be certified by the Environmental Team Leader (ETL) and verified by the Independent Environmental Checker (IEC), and submitted to EPD for approval*” should be followed.
- 1.5 Action-United Environmental Services & Consulting (hereinafter referred to “AUES”) has been appointed as the Land Contamination Specialist to carry out the land contamination assessment including site supervision and relevant report submission. Moreover, all sampling is carried out by the Contractor under supervision by AUES and Resident Engineer (RE). A Hong Kong Laboratory Accreditation Scheme (HOKLAS)-accredited laboratory is appointed to carry out HOKLAS-accredited chemical analysis.
- 1.6 When the CAP was prepared, the potential contamination area in Fanling was unable to access. Since the construction works at potential contamination areas in Po Kat Tsai and Loi Tung are needed to be commenced as soon as possible to avoid any delay of the construction programme, the revised CAP was split into two separate reports for submission. The revised CAP (Ref: TCS00670/13/600/R00132) which covered two potential contamination areas, Loi Tung and Po Kat Tsai, has been verified by IEC and submitted to EPD for endorsement on 2 April 2014. The revised CAP (Ref: TCS00670/13/600/R00163) for the potential contamination area in Fanling, has also been verified by IEC and submitted to EPD for endorsement on 20 May 2014.
- 1.7 For ease of reporting, the Contamination Assessment Report (CAR) is also split into two submissions. This Contamination Assessment Report (CAR) presents the site investigation findings at Loi Tung and Po Kat Tsai. In this assessment, soil and water sampling were performed

between 6 and 26 June 2014 under supervision of AUES and RE.

- 1.8 In this assessment, a total of 51 soil samples (include four duplicate samples) and 3 groundwater samples (included one duplicate sample) were collected, in which 27 representative soil samples and 2 duplicate samples were taken at Po Kat Tsai and 20 representative soil samples and 2 duplicate soil samples were collected at Loi Tung.
- 1.9 For groundwater sampling, 2 groundwater samples with 1 duplicate sample were collected at Loi Tung. Since no groundwater was observed in Po Kat Tsai, no water sampling was conducted.

OBJECTIVES OF THE CONTAMINATION ASSESSMENT

- 1.10 The objective of this contamination assessment is to verify the existing ground soil condition in Po Kat Tsai and Loi Tung and procedure to dispose of the contamination soil, if identified.
- 1.11 The CAR was conducted based on the following the guidelines and the approved submissions:
- “Guidance Note for Contaminated Land Assessment and Remediation” as issued by EPD on 15 August 2007;
 - “Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management” as issued by EPD on December 2007;
 - “Practice Guide for Investigation and Remediation of Contaminated Land” dated August 2011;
 - Agreement No. CE 45/2008 (CE) Liantang / Heung Yuen Wai Boundary Control Point and Associated Works of the Environmental Impact Assessment (EIA) Report Appendix 8.1; and
 - The Revised Contamination Assessment Plan (Reference TCS/00670/13/600/R0132 Rev.5 submitted on 22 July 2014.)

CHEMICALS OF CONCERN

- 1.12 According to the revised CAP, the chemical testing parameters for Po Kat Tsai and Loi Tung are listed below:
- Metals – Antimony, Arsenic, Barium, Cadmium, Chromium III & VI, Cobalt, Copper, Lead, Manganese, Mercury, Molybdenum, Nickel, Tin and Zinc;
 - Petroleum Carbon Ranges – Fractions C6-C8, Fractions C9-C16 and Fractions C17-C35;
 - Volatile Organic Compounds (VOCs) – Acetone, Benzene, Bromodichloromethane, 2-Butanone, Chloroform, Ethylbenzene, Methyl tert-Butyl Ether, Methylene Chloride, Styrene, Tetrachloroethene, Toluene, Trichloroethene, Xylenes (Total); and
 - Semi-volatile Organic Compounds (SVOCs) – Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, bis-(2-Ethylhexyl)phthalate, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Fluorene, Hexachlorobenzene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, Phenol and Pyrene.

REPORT STRUCTURE

- 1.13 This CAR is structured into the following sections:-:
- Section 1** Introduction
- Section 2** Sampling Locations and Assessment Methodology
- Section 3** Assessment Results
- Section 4** Conclusions and Recommendation

2 SAMPLING LOCATIONS AND METHODOLOGY

SOIL SAMPLING LOCATION

The works sites of ventilation building in Po Kat Tsai (covered area about 9,800m²)

- 2.1 Based on the observations during site visit on 24 January 2014, **nine (9)** sampling points in grid pattern were proposed for Po Kat Tsai in this assessment, which has been agreed by the IEC and EPD. The sampling locations to be performed in Po Kat Tsai are listed in **Table 2-1** and illustrated in **Appendix B**.

Table 2-1 Sampling Location of the Work Sites of the Ventilation Building in Po Kat Tsai

Position of Sampling Pit		Co-ordinates	
		Easting	Northing
PKT-01	a	834876	840138
	b	834874	840139
	c	834876	840140
	d	834877	840139
PKT-02	a	834899	840156
	b	834897	840157
	c	834899	840158
	d	834900	840157
PKT-03	a	834921	840174
	b	834919	840175
	c	834921	840176
	d	834922	840175
PKT-04	a	834898	840108
	b	834896	840109
	c	834898	840110
	d	834899	840109
PKT-05	a	834920	840127
	b	834918	840128
	c	834920	840129
	d	834921	840128
PKT-06	a	834942	840145
	b	834940	840146
	c	834942	840147
	d	834943	840146
PKT-07	a	834921	840096
	b	834919	840097
	c	834921	840098
	d	834922	840097
PKT-08	a	834940	840101
	b	834938	840102
	c	834940	840103
	d	834941	840102
PKT-09	a	834964	840121
	b	834962	840122
	c	834964	840123
	d	834965	840122

The open area of the Project site at Sha Tau Kok Road near Loi Tung

- 2.2 Based on the observations during site visit on 24 January 2014, **seven (7)** sampling points in grid pattern were proposed for Loi Tung in this assessment, which has been agreed by the IEC and EPD. The sampling locations to be performed in Loi Tung are listed in **Table 2-2** and illustrated in **Appendix B**.

Table 2-2 Sampling Location of the Open Area at Sha Tau Kok Road near Loi Tung

Position of Sampling Pit		Co-ordinates	
		Easting	Northing
SKT-A1-1	a	836521	842390
	b	836520	842392
	c	836522	842393
	d	836523	842391
SKT-A1-2	a	836528	842379
	b	836527	842381
	c	836529	842382
	d	836530	842380
SKT-A2-1	a	836537	842365
	b	836536	842367
	c	836538	842368
	d	836539	842366
SKT-A2-2	a	836550	842359
	b	836549	842361
	c	836551	842362
	d	836552	842360
SKT-A2-3	a	836561	842369
	b	836560	842371
	c	836562	842372
	d	836563	842370
SKT-A2-4	a	836573	842365
	b	836572	842367
	c	836574	842368
	d	836575	842366
SKT-A2-5	a	836587	842363
	b	836586	842365
	c	836588	842366
	d	836589	842364

SOIL SAMPLING DEPTH

- 2.3 For both assessment sites, the proposed final sampling depth of each sampling point is 3m below the existing ground or above groundwater level.

SOIL SAMPLING METHODOLOGY

- 2.4 Pit excavation with hand tools method was used to conduct soil sampling. The Contractor was responsible to conduct pit excavation and soil sampling, whereas a land contamination specialist and RE supervised all soil sampling process to ensure no cross contamination or any other forms of interferences occurred.
- 2.5 Excavator was used for pit excavation at existing ground until the proposed final depth reached. During soil sampling, the land contamination specialist would identify the location for soil collection. According to the revised CAP, soil samples were collected at 3 proposed depths i.e. 0.5m, 1.5m and 3.0m bgl or the final depth in each pit. A stainless steel hand-held trowel was used for soil sample collection. The collected soil samples were then put into a sample container (glass jar) which provided by the HOKLAS laboratory (ALS Technichem (HK) Pty Ltd) and stored in a cool box and maintained at a temperature of 4°C.
- 2.6 To avoid cross contamination, no excavation work was undertaken during raining day. All excavated soils from the pits were stored on the site and no offsite dispose was made.

In-Situ Measurements

- 2.7 For initial identification, soil samples were visually and olfactory inspected on the site. A

photo-ionization detector (PID) was used for initial screening to detect the headspace vapor concentrations. The PID was calibrated by ALS Technichem (HK) Pty Ltd using standard gas isobutylene to ensure the accuracy of the equipment prior to site measurement and the calibration certificate is shown in *Appendix C*. A land contamination specialist supervised all soil sampling process to ensure no cross contamination or any other forms of interferences occurred. Moreover, general description of the sampled soil would be given by land contamination specialist as well. The in-situ measurement results and soil description at Po Kat Tsai and Loi Tung are presented in *Tables 2-3* and *2-4* respectively.

Table 2-3 Summary Soil Sample Information, PID Measurement Results and Soil Description – the Assessment Site Po Kat Tsai

Pit No.	Sample ID	Depth, m bgl	Sampling Date / Time	Odour Intensity	PID (ppm)	Soil Description	Remarks
PKT-01	1	0.50	6-Jun-14 (16:30)	No odour perceived	0.2	Moist and dense. Reddish brown, slightly clayey sandy SILT with some gravel and cobble	
PKT-01	2	1.50	6-Jun-14 (16:40)	No odour perceived	0.1	Moist and dense. Yellowish brown spotted red, slightly clayey sandy SILT with some gravel	
PKT-01	3	3.00	6-Jun-14 (16:55)	No odour perceived	0.1	Moist and very dense. Yellowish brown spotted red, slightly clayey SILT with some sand stone	
PKT-02	1	0.50	9-Jun-14 (14:25)	No odour perceived	0.3	Moist and very dense. Yellowish reddish brown spotted brown, very clayey SILT with fine sand	
PKT-02	2	1.50	9-Jun-14 (14:35)	No odour perceived	0.1	Dry and very dense. Brownish yellowish red spotted yellow, fine sandy clayey SILT	
PKT-02	3	2.80	9-Jun-14 (14:45)	No odour perceived	0.0	Dry and very dense. Brownish yellowish red spotted yellow, fine sandy clayey SILT	SILT STONE encountered at 2.80m below ground level
PKT-03	1	0.50	6-Jun-14 (17:15)	No odour perceived	1.0	Moist and dense. Yellowish brown spotted red, slightly fine sandy clayey SILT	
PKT-03	2	1.50	6-Jun-14 (17:25)	No odour perceived	0.4	Moist and dense. Yellowish brown spotted red, slightly fine sandy clayey SILT	
PKT-03	3	3.00	6-Jun-14 (17:35)	No odour perceived	0.1	Moist and dense. Yellowish brown spotted red, slightly fine sandy clayey SILT	
PKT-04	1	0.50	6-Jun-14 (18:00)	No odour perceived	0.5	Moist and dense. Light yellowish brown spotted red, sandy very clayey SILT	
PKT-04	2	1.50	6-Jun-14 (18:10)	No odour perceived	0.2	Moist and very dense. Light yellowish brown spotted red, sandy very clayey SILT	
PKT-04	3	2.50	6-Jun-14 (18:40)	No odour perceived	0.0	Dry and very dense. Light yellowish pinkish brown spotted red, sandy very clayey SILT	SILT STONE encountered at 2.50m below ground level
PKT-05	1	0.50	7-Jun-14 (17:30)	No odour perceived	0.1	Moist and dense. Yellowish reddish brown spotted pink, fine sandy SILT / CLAY	
PKT-05	2	1.50	7-Jun-14 (17:35)	No odour perceived	0.1	Moist and dense. Yellowish reddish brown spotted pink, fine sandy SILT / CLAY	
PKT-05	3	3.00	7-Jun-14 (17:40)	No odour perceived	0.1	Moist and dense. Yellowish reddish brown, fine sandy SILT / CLAY	

Pit No.	Sample ID	Depth, m bgl	Sampling Date / Time	Odour Intensity	PID (ppm)	Soil Description	Remarks
PKT-06	1	0.50	9-Jun-14 (13:50)	No odour perceived	0.3	Moist and dense. Yellowish brown spotted red, slightly fine sandy clayey SILT	Duplicate sample (Dupl-2) collected
PKT-06	2	1.50	9-Jun-14 (14:05)	No odour perceived	0.2	Moist and dense. Yellowish brown spotted red, slightly fine sandy clayey SILT	
PKT-06	3	3.00	9-Jun-14 (14:10)	No odour perceived	0.1	Moist and dense. Yellowish brown spotted red, slightly fine sandy clayey SILT	
PKT-07	1	0.50	7-Jun-14 (18:05)	No odour perceived	0.5	Moist and very dense. Reddish brownish yellow, slightly sandy clayey SILT	
PKT-07	2	1.50	7-Jun-14 (18:20)	No odour perceived	0.2	Moist and very dense. Reddish brownish yellow, slightly sandy clayey SILT	
PKT-07	3	3.00	7-Jun-14 (18:30)	No odour perceived	0.2	Moist and dense. Light yellowish brown red, slightly sandy clayey SILT	
PKT-08	1	0.50	7-Jun-14 (16:40)	No odour perceived	0.3	Moist and very dense. Yellowish brown spotted red, sandy clayey SILT with some gravel	
PKT-08	2	1.50	7-Jun-14 (16:55)	No odour perceived	0.1	Moist and very dense. Yellowish brown spotted red, sandy clayey SILT with some gravel	Duplicate sample (Dupl-1) collected
PKT-08	3	3.00	7-Jun-14 (17:05)	No odour perceived	0.1	Dry and very dense. Yellowish reddish brown, fine sandy SILT / CLAY	
PKT-09	1	0.50	7-Jun-14 (15:55)	No odour perceived	0.7	Moist and dense. Yellowish brown spotted red, slightly fine sandy clayey SILT	
PKT-09	2	1.50	7-Jun-14 (16:05)	No odour perceived	0.3	Moist and dense. Yellowish brown spotted red, slightly fine sandy clayey SILT	
PKT-09	3	3.00	7-Jun-14 (16:15)	No odour perceived	0.1	Moist and dense. Yellowish brown spotted red, slightly fine sandy clayey SILT	

Table 2-4 Summary Soil Sample Information, PID Measurement Results and Soil Description – the Assessment Site Loi Tung

Pit No.	Sample ID	Depth, m bgl	Sampling Date / Time	Odour Intensity	PID (ppm)	Soil Description	Remarks
STK-A1-1	1	1.10	25-Jun-14 (17:10)	No odour perceived	1.4	Moist and dense. Dark reddish brown, slightly silty medium to coarse SAND	A concrete slab (about 900mm thickness) was observed on the existing ground. Groundwater encountered at 2.2m below the existing ground. So, initial and last sample collection respectively conducted at 1.1m and 2.2 below existing ground levels. Also water sample STK-W3 was collected on 25 Jun 2014
STK-A1-1	2	2.20	25-Jun-14 (17:20)	No odour perceived	0.8	Wet and firm. Greyish dark brown, slightly clayey silty gravel SAND.	
STK-A1-2	1	1.50	25-Jun-14 (16:25)	No odour perceived	2.7	Moist and dense. Orangish yellowish dark brown, slightly	Thickness of the existing concrete slab

Pit No.	Sample ID	Depth, m bgl	Sampling Date / Time	Odour Intensity	PID (ppm)	Soil Description	Remarks
						clayey silty SAND with some cobbles.	is 1000mm; therefore the first sample taken at 0.5m below the concrete slab (1.5m bgl), the second sample taken at 1.5m below the concrete slab (2.5m bgl) and the third sample taken at 3.00m below the concrete slab (4.00m bgl). Moreover, duplicate sample (Dupl-4) was collected at 2.5m bgl.
STK-A1-2	2	2.50	25-Jun-14 (16:30)	No odour perceived	0.7	Moist and firm. Light yellowish brown, clayey silty fine to medium SAND with some gravel.	
STK-A1-2	3	4.00	25-Jun-14 (16:50)	No odour perceived	0.4	Wet and loose. Light yellowish brownish pale, slightly clayey silty fine SAND.	
STK-A2-1	1	1.40	12-Jun-14 (16:15)	No odour perceived	0.1	Moist and dense. Dark yellowish brown spotted red, clayey silty fine to medium SAND with some gravel	
STK-A2-1	2	2.50	12-Jun-14 (16:50)	No odour perceived	0.1	Moist and dense. Dark yellowish brown spotted red, clayey silty fine to medium SAND with some gravel	
STK-A2-1	3	3.50	12-Jun-14 (17:00)	No odour perceived	0.0	Moist and dense. Dark yellowish brown spotted red, clayey silty fine to medium SAND with some gravel	
STK-A2-2	1	1.00	26-Jun-14 (16:25)	No odour perceived	4.2	Wet and firm. Yellowish brown spotted red, silty very clayey gravelly SAND with rock fragment.	A concrete slab (about 800mm thickness) was observed on the existing ground, so soil sampling was conducted at the depths 1.00m bgl, 2.00m bgl and 3.10m bgl.
STK-A2-2	2	2.00	26-Jun-14 (16:35)	No odour perceived	0.6	Wet and firm. Yellowish brown spotted red, silty very clayey gravelly SAND.	
STK-A2-2	3	3.10	26-Jun-14 (16:45)	No odour perceived	0.1	Wet and firm. Yellowish brown spotted red, silty very clayey gravelly SAND.	
STK-A2-3	1	0.50	11-Jun-14 (16:10)	No odour perceived	1.3	Moist and dense. Yellowish brown spotted red, slightly clayey very silty SAND with some gravel	
STK-A2-3	2	1.50	11-Jun-14 (16:20)	No odour perceived	0.7	Moist and very dense. Yellowish reddish brown, slightly clayey silty SAND with some gravel	
STK-A2-3	3	3.00	11-Jun-14 (16:30)	No odour perceived	0.4	Moist and very dense. Yellowish brownish red, slightly clayey fine sandy SILT with some silt stone	
STK-A2-4	1	0.50	11-Jun-14 (16:50)	No odour perceived	0.4	Moist and very dense. Yellowish reddish brown, sandy clayey SILT with some gravel	
STK-A2-4	2	1.50	11-Jun-14 (17:00)	No odour perceived	0.2	Moist and very dense. Yellowish reddish brown, sandy clayey SILT with some gravel	
STK-A2-4	3	3.00	11-Jun-14 (17:05)	No odour perceived	0.1	Moist and very dense. Light yellowish brown spotted pale, slightly clayey fine sandy SILT with gravel	Duplicate sample (Dupl-3) collected
STK-A2-5	1	0.50	11-Jun-14 (17:20)	No odour perceived	0.5	Moist and dense. Light yellowish brown spotted red, sandy very clayey SILT	Groundwater was encountered at 2.4m below the existing

Pit No.	Sample ID	Depth, m bgl	Sampling Date / Time	Odour Intensity	PID (ppm)	Soil Description	Remarks
STK-A2-5	2	1.50	11-Jun-14 (17:30)	No odour perceived	0.3	Moist to wet and very dense. Light yellowish brown spotted red, sandy very clayey SILT	ground. So, the last sample was collected above groundwater level. Furthermore, groundwater sample (STK-W1) and duplicate water sample (STK-W2) were collected on 24 Jun 2014
STK-A2-5	3	2.40	11-Jun-14 (17:40)	No odour perceived	0.1	Wet and dense. Yellowish reddish brown, slightly clayey very silty SAND	

2.8 All soil samples were delivered to a local HOKLAS-accredited laboratory (ALS Technichem (HK) Pty Ltd) to carry out chemical analysis. The Chain-of custody (COC) form was completed as part of the chemical analysis requirement and delivered to the laboratory as well.

2.9 Photograph record of soil samples is provided in *Appendix D*.

SOIL SAMPLE ANALYSIS

2.10 For chemical analysis, all soil samples were analyzed in accordance with the requirement in the Revised CAP. According to “Guidance Manual for Use of Risk-Based Remediation Goals for Contaminated Land Management”, all chemical analysis methods for soil assessment are accredited by the Hong Kong Laboratory Accreditation Scheme (HOKLAS). The testing method and the reporting limit provided by the laboratory is show in *Table 2-5*.

Table 2-5 Testing Method and Reporting Limit of the Chemical Analysis - Soil

Parameter	Methods	Reporting Limit (mg/kg)
a) Metals		
• Antimony	USEPA 6020	1
• Arsenic	USEPA 6020	1
• Barium	USEPA 6020	1
• Cadmium	USEPA 6020	0.2
• Chromium III	By Calculation	1
• Chromium VI	USEPA3060	1
• Cobalt	USEPA 6020	1
• Copper	USEPA 6020	1
• Lead	USEPA 6020	1
• Manganese	USEPA 6020	1
• Mercury	APHA3112B	0.2
• Molybdenum	USEPA 6020	1
• Tin	USEPA 6020	1
• Zinc	USEPA 6020	1
• Nickel	USEPA 6020	1
b) Petroleum Carbon Ranges	USEPA 8015/8260	
• Fractions C6 – C8		5
• Fractions C9 – C16		200
• Fractions C17 – C35		500
c) Volatile Organic Compounds (VOCs)	USEPA 8260	
• Acetone		50
• Benzene		0.2
• Bromodichloromethane		0.1
• 2-Butanone		5
• Chloroform		0.04
• Ethylbenzene		0.5
• Methyl tert-Butyl Ether		0.5
• Methylene Chloride		0.5
• Styrene		0.5
• Tetrachloroethene		0.04
• Toluene		0.5
• Trichloroethene		0.1

Parameter	Methods	Reporting Limit (mg/kg)
• Xylenes (total)		2
d) Semi-volatile Organic Compounds (SVOCs)	USEPA 8270	
• Acenaphthene		0.5
• Acenaphthylene		0.5
• Anthracene		0.5
• Benzo(a)anthracene		0.5
• Benzo(a)pyrene		0.05
• Benzo(b)fluoranthene		0.5
• Benzo(g,h,i)perylene		0.5
• Benzo(k)fluoranthene		0.5
• bis-(2-Ethylhexyl)phthalate		5
• Chrysene		0.5
• Dibenzo(a,h)anthracene		0.05
• Fluoranthene		0.5
• Fluorene		0.5
• Hexachlorobenzene		0.2
• Indeno(1,2,3-cd)pyrene		0.5
• Naphthalene		0.5
• Phenanthrene		0.5
• Phenol		0.5
• Pyrene		0.5

GROUNDWATER SAMPLING METHODOLOGY

- 2.11 Groundwater was not found in all sampling pits at Po Kat Tsai, thus no groundwater sampling was conducted for this assessment site. For Loi Tung assessment site, groundwater was encountered in sampling pits STK-1A-1 and STK-2A-5 and therefore groundwater sampling was undertaken.
- 2.12 According to the Revised CAP, water sample was collected from the base of sampling pit directly. In this assessment, three water samples (including duplicate sample) were collected in Loi Tung and the duplicate sample was split from water sample STK-2A-5. The detailed information of groundwater samples is shown *Table 2-6*.

Table 2-6 Groundwater Samples Collection information

Sample ID	Date of Sampling	Come from Soil Sampling Pit	Sampling Depth, m bgl	Remarks
STK-W1	24 June 2014	STK-2A-5	2.40 – 2.70	
STK-W2	24 June 2014	STK-2A-5	2.40 – 2.70	Duplicate water sample
STK-W3	25 June 2014	STK-1A-1	2.20 – 2.50	

Groundwater Sampling

- 2.13 The groundwater was collected at the base of the pits directly by an uPVC water sampler. Before groundwater sampling, field measurement including temperature, electrical conductivity and pH value were taken and at least three consecutive stable readings were obtained. The result of in-situ measurements are shown in *Table 2-7*.

Table 2-7 Results of Groundwater Sampling of In-situ Measurement

Sampling Day	Sampling Pit	Water Sample ID	In-situ Measurement		
			Temp. (°C)	pH	Conductivity (µS/m)
24-Jun-14	STK-2A-5	STK-W1 / STK-W2	24.4	5.77	133.6
			24.3	5.61	132.1
			24.3	5.63	124.9
			24.3	5.62	117.2
			24.2	5.61	123.9
25-Jun-14	STK-A1-1	STK-W3	26.3	6.70	377.1
			26.1	6.41	366.2
			26.0	6.38	358.1
			26.1	6.41	350.9
			26.1	6.40	357.1

2.14 Between each sampling events, all sampling tools or equipment were washed thoroughly and decontaminated with laboratory-grade detergent and then rinsed by demonized water. All collected groundwater samples were preserved in the identical manner as that for soil samples. All laboratory QA/QC and chain of custody procedures was properly followed.

GROUNDWATER SAMPLE ANALYSIS

2.15 The groundwater samples (including a duplicate sample) were delivered to a local HOKLAS-accredited laboratory (ALS Technichem (HK) Pty Ltd) on the same day to carry out chemical analysis. According to “Guidance Manual for Use of Risk-Based Remediation Goals for Contaminated Land Management”, all chemical analysis methods for groundwater assessment are accredited by the Hong Kong Laboratory Accreditation Scheme (HOKLAS). The chemicals analysis method and the reporting limit are shown in *Table 2-8*.

Table 2-8 Testing Method and Reporting Limit of the Chemical Analysis - Groundwater

Parameter	Methods	Reporting Limit (µg/L)
a) Metal - Mercury	APHA3112B	0.5
b) Petroleum Carbon Ranges	USEPA 8015	
• Fractions C6 – C8		20
• Fractions C9 – C16		500
• Fractions C17 – C35		500
c) Volatile Organic Compounds (VOCs)	USEPA 8260	
• Acetone		500
• Benzene		5
• Bromodichloromethane		5
• 2-Butanone		50
• Chloroform		5
• Ethylbenzene		5
• Methyl tert-Butyl Ether		5
• Methylene Chloride		50
• Styrene		5
• Tetrachloroethene		5
• Toluene		5
• Trichloroethene		5
• Xylenes (total)		20
d) Semi-volatile Organic Compounds (SVOCs)	USEPA 8270	
• Acenaphthene		2
• Acenaphthylene		2
• Anthracene		2
• Benzo(b)fluoranthene		1
• Chrysene		1
• Fluoranthene		2
• Fluorene		2
• Hexachlorobenzene		1
• Naphthalene		2
• Phenanthrene		2
• Pyrene		2

ASSESSMENT GUIDELINES

2.16 According to EIA Study, potential land contamination sites were storages for construction materials/ furniture and workshop for vehicle maintenance, therefore “industrial” scenario was selected under RBRG standard is used as the detection limit. This concentration of detection limit has been adopted by EPD as a new local remediation requirement from 15 August 2007.

2.17 Based on EIA Study, the soil and groundwater are evaluated by “industrial” scenario under Risk-based Remediation Goals and the suggested limits are listed in *Table 2-9*.

Table 2-9 Industrial of Risk-based Remediation Goals limits for Soil and Groundwater

Parameter		Soil		Groundwater	
		Industrial (mg/kg)	Soil Saturation Limit (mg/kg)	Industrial (mg/L)	Solubility Limit (mg/L)
Metals	Antimony	2.61E+02	NA	NA	NA
	Arsenic	1.96E+02	NA	NA	NA
	Barium	1.00E+04*	NA	NA	NA
	Cadmium	6.53E+02	NA	NA	NA
	Chromium III	1.00E+04*	NA	NA	NA
	Chromium VI	1.96E+03	NA	NA	NA
	Cobalt	1.00E+04*	NA	NA	NA
	Copper	1.00E+04*	NA	NA	NA
	Lead	2.29E+03	NA	NA	NA
	Manganese	1.00E+04*	NA	NA	NA
	Mercury	3.84E+01	NA	6.79E+00	NA
	Molybdenum	3.26E+03	NA	NA	NA
	Nickel	1.00E+04*	NA	NA	NA
	Tin	1.00E+04*	NA	NA	NA
Zinc	1.00E+04*	NA	NA	NA	
Petroleum Carbon Ranges	Fractions C6 – C8	1.00E+04*	1.00E+03	1.15E+03	5.23E+00
	Fractions C9 – C16	1.00E+04*	3.00E+03	9.98E+03	2.80E+00
	Fractions C17 – C35	1.00E+04*	5.00E+03	1.78E+02	2.80E+00
Volatile Organic Chemicals (VOCs)	Acetone	1.00E+04*	***	1.00E+04*	***
	Benzene	9.21E+00	3.36E+02	5.40E+01	1.75E+03
	Bromodichloromethane	2.85E+00	1.03E+03	2.62E+01	6.74E+03
	2-Butanone	1.00E+04*	***	1.00E+04*	***
	Chloroform	1.54E+00	1.10E+03	1.13E+01	7.92E+03
	Ethylbenzene	8.24E+03	1.38E+02	1.00E+04*	1.69E+02
	Methyl tert-Butyl Ether	7.01E+01	2.38E+03	1.81E+03	***
	Methylene Chloride	1.39E+01	9.21E+02	2.24E+02	***
	Styrene	1.00E+04*	4.97E+02	1.00E+04*	3.10E+02
	Tetrachloroethene	7.77E-01	9.71E+01	2.95E+00	2.00E+02
	Toluene	1.00E+04*	2.35E+02	1.00E+04*	5.26E+02
	Trichloroethene	5.68E+00	4.88E+02	1.42E+01	1.10E+03
Xylenes (total)	1.23E+03	1.50E+02	1.57E+03	1.75E+02	
Semi-Volatile Organic Chemicals (SVOCs)	Acenaphthene	1.00E+04*	6.02E+01	1.00E+04*	4.24E+00
	Acenaphthylene	1.00E+04*	1.98E+01	1.00E+04*	3.93E+00
	Anthracene	1.00E+04*	2.56E+00	1.00E+04*	4.34E-02
	Benzo(a)anthracene	9.18E+01	NA	NA	NA
	Benzo(a)pyrene	9.18E+00	NA	NA	NA
	Benzo(b)fluoranthene	1.78E+01	NA	7.53E+00	1.50E-03
	Benzo(g,h,i)perylene	1.00E+04*	NA	NA	NA
	Benzo(k)fluoranthene	9.18E+02	NA	NA	NA
	bis-(2-Ethylhexyl)phthalate	9.18E+01	NA	NA	NA
	Chrysene	1.14E+03	NA	8.12E+02	1.60E-03
	Dibenzo(a,h)anthracene	9.18E+00	NA	NA	NA
	Fluoranthene	1.00E+04*	NA	1.00E+04*	2.06E-01
	Fluorene	1.00E+04*	5.47E+01	1.00E+04*	1.98E+00
	Hexachlorobenzene	5.82E-01	NA	6.95E-01	6.20E+00
	Indeno(1,2,3-cd)pyrene	9.18E+01	NA	NA	NA
	Naphthalene	4.53E+02	1.25E+02	8.62E+02	3.10E+01
	Phenanthrene	1.00E+04*	2.80E+01	1.00E+04*	1.00E+00
Phenol	1.00E+04*	7.26E+03	NA	NA	
Pyrene	1.00E+04*	NA	1.00E+04*	1.35E-01	

Remark:

(*) indicates a 'ceiling limit' concentration.

(***) indicates that the solubility limit exceeds the 'ceiling limit' therefore the RBRG applies

PROCEDURE FOR EQUIPMENT DECONTAMINATION

- 2.18 Tap water, phosphate-free detergent (Decon[®] 90) and distilled water were used to clean all sampling tools. The decontamination work was supervised by the RE and a land contamination specialist or his delegates. The decontamination procedure was conducted as follows:
- The bucket of the excavator was decontaminated before each pit excavation to ensure no cross contamination;
 - All sampling tools were decontaminated after sampling at each sampling locations to prevent cross-contamination of samples; and
 - Prior leaving the site, all sampling equipments were washed to prevent potentially contamination of soil or surface water to be brought off site.
- 2.19 To verify the decontamination procedures on the site, two equipment blanks were collected to determine potential cross contamination between each sampling from the sampling tools used. The soil or groundwater sampling tools were rinsed by organic-free water and the rinsed water was collected in the equipment blanks. Equipment blanks were collected on 22 June 2014 and 25 June 2014 and then undertaken chemical analysis following *Section 1.11*.

QA/QC PROCEDURES

- 2.20 The quality control samples were collected during the course of soil and groundwater sampling. Duplicate soil samples were taken from potential contaminated areas. For soil sampling, a total of 4 duplicate samples were collected from two assessment areas. Moreover, one trip blank, one field blank and one duplicate sample were collected for groundwater sampling.

Trip/Travel Blank

- 2.21 The trip blank was prepared in the laboratory using organic-free water. The trip blank was brought to the site and remained unopened from the start of groundwater sampling to the delivery of samples to the laboratory and analyzed for BTEX i.e. Benzene, Toluene, Ethylbenzene and Xylenes (total).

Field Blank

- 2.22 The field blank was prepared in field using organic-free water by passing the water from a full bottle to an empty bottle at the most contaminated location on site. The field blank accompanied the project samples to the laboratory and analyzed for BTEX i.e. Benzene, Toluene, Ethylbenzene and Xylenes (total).

Duplicate Sample

- 2.23 The duplicate samples were collected as a split sample from soils and groundwater to carry out chemical analysis in accordance with *Section 1.1* requirements. These samples were delivered to the laboratory as two individual samples without any indication to the laboratory that they are duplicates. Detailed information of duplicate samples are listed below:

Table 2-10 Detailed Information of Duplicate Soil and Groundwater Samples

Matrix	Duplicate Sample	Original Sample	Sampling Date
Soil	Dupl-01	PKT-08/2/1.5m bgl	7 June 2014
Soil	Dupl-02	PKT-06/1/0.5m bgl	9 June 2014
Soil	Dupl-03	STK-A2-4/3/3.0m bgl	11 June 2014
Soil	Dupl-04	STK-A1-2/3/4.0m bgl	25 June 2014
Water	STK-W2	STK-W1	24 June 2014

3 ASSESSMENT RESULTS

SOIL SAMPLE LABORATORY RESULTS OF PO KAT TSAI

- 3.1 In this assessment, 29 soil samples (including two duplicate samples) were collected from Po Kat Tsai for chemical analysis. The assessment results were evaluated against the “industrial” scenario under Risk-based Remediation Goals limits as presented in **Table 2-9**. No groundwater sampling was conducted at Po Kat Tsai.
- 3.2 Summary of soil analysis result and laboratory report are provided in **Appendix E** and **Appendix F**.
- 3.3 The comparison of maximum detected concentrations to RBRGs and Soil Saturation Limit are presented in **Table 3-1**.

Table 3-1 Soil Data Summary and Comparison to RBRGs and C_{sat} – Po Kat Tsai

Chemical	Frequency of Detection (y/y)*			Range of Detected Concentration (mg/kg)		Industrial of Land Using (mg/kg)		Maximum Detected Concentration Exceeds
	X	Y	%	Max.	Min.	RBRGs	C _{sat}	
Volatile Organic Compounds (VOCs)								
Acetone	0	29	0.0	BRL		1.00E+04*	***	BRL
Benzene	0	29	0.0	BRL		9.21E+00	3.36E+02	BRL
Bromodichloromethane	0	29	0.0	BRL		2.85E+00	1.03E+03	BRL
2-Butanone	0	29	0.0	BRL		1.00E+04*	***	BRL
Chloroform	0	29	0.0	BRL		1.54E+00	1.10E+03	BRL
Ethylbenzene	0	29	0.0	BRL		8.24E+03	1.38E+02	BRL
Methyl tert-Butyl Ether	0	29	0.0	BRL		7.01E+01	2.38E+03	BRL
Methylene Chloride	0	29	0.0	BRL		1.39E+01	9.21E+02	BRL
Styrene	0	29	0.0	BRL		1.00E+04*	4.97E+02	BRL
Tetrachloroethene	0	29	0.0	BRL		7.77E-01	9.71E+01	BRL
Toluene	0	29	0.0	BRL		1.00E+04*	2.35E+02	BRL
Trichloroethene	0	29	0.0	BRL		5.68E+00	4.88E+02	BRL
Xylenes (Total)	0	29	0.0	BRL		1.23E+03	1.50E+02	BRL
Semi-Volatile Organic Compounds (SVOCs)								
Acenaphthene	0	29	0.0	BRL		1.00E+04*	6.02E+01	BRL
Acenaphthylene	0	29	0.0	BRL		1.00E+04*	1.98E+01	BRL
Anthracene	0	29	0.0	BRL		1.00E+04*	2.56E+00	BRL
Benzo(a)anthracene	0	29	0.0	BRL		9.18E+01	NA	BRL
Benzo(a)pyrene	0	29	0.0	BRL		9.18E+00	NA	BRL
Benzo(b)fluoranthene	0	29	0.0	BRL		1.78E+01	NA	BRL
Benzo(g,h,i)perylene	0	29	0.0	BRL		1.00E+04*	NA	BRL
Benzo(k)fluoranthene	0	29	0.0	BRL		9.18E+02	NA	BRL
Bis-(2-Ethylhexyl)phthalate	0	29	0.0	BRL		9.18E+01	NA	BRL
Chrysene	0	29	0.0	BRL		1.14E+03	NA	BRL
Dibenzo(a,h)anthracene	0	29	0.0	BRL		9.18E+00	NA	BRL
Fluoranthene	0	29	0.0	BRL		1.00E+04*	NA	BRL
Fluorene	0	29	0.0	BRL		1.00E+04*	5.47E+01	BRL
Hexachlorobenzene	0	29	0.0	BRL		5.82E-01	NA	BRL
Indeno(1,2,3-cd)pyrene	0	29	0.0	BRL		9.18E+01	NA	BRL
Naphthalene	0	29	0.0	BRL		4.53E+02	1.25E+02	BRL
Phenanthrene	0	29	0.0	BRL		1.00E+04*	2.80E+01	BRL
Phenol	0	29	0.0	BRL		1.00E+04*	7.26E+03	BRL
Pyrene	0	29	0.0	BRL		1.00E+04*	NA	BRL
Petroleum Carbon Ranges								
Fractions C6-C8	0	29	0.0	BRL		1.00E+04*	1.00E+03	BRL
Fractions C9-C16	0	29	0.0	BRL		1.00E+04*	3.00E+03	BRL
Fractions C17-C35	0	29	0.0	BRL		1.00E+04*	5.00E+03	BRL
Heavy Metal								
Antimony	1	29	3.4	1		2.61E+02	NA	<RBRGs
Arsenic	29	29	100.0	25	1	1.96E+02	NA	<RBRGs

Chemical	Frequency of Detection (y/y)*			Range of Detected Concentration (mg/kg)		Industrial of Land Using (mg/kg)		Maximum Detected Concentration Exceeds
	X	Y	%	Max.	Min.	RBRGs	C _{sat}	
Barium	29	29	100.0	198	16	1.00E+04*	NA	<RBRGs
Cadmium	0	29	0.0	BRL		6.53E+02	NA	BRL
Chromium III	29	29	100.0	12	2	1.00E+04*	NA	<RBRGs
Chromium VI	0	29	0.0	BRL		1.96E+03	NA	BRL
Cobalt	23	29	79.3	20	1	1.00E+04*	NA	<RBRGs
Copper	29	29	100.0	12	2	1.00E+04*	NA	<RBRGs
Lead	29	29	100.0	131	12	2.29E+03	NA	<RBRGs
Manganese	29	29	100.0	1680	31	1.00E+04*	NA	<RBRGs
Mercury	0	29	0.0	BRL		3.84E+01	NA	BRL
Molybdenum	4	29	13.8	1		3.26E+03	NA	<RBRGs
Nickel	25	29	86.2	4	1	1.00E+04*	NA	<RBRGs
Tin	1	29	3.4	1		1.00E+04*	NA	<RBRGs
Zinc	29	29	100.0	51	13	1.00E+04*	NA	<RBRGs

Remarks:

x = number of samples in which chemical was found above the method reporting limit

y = number of samples analyzed for chemical

BRL = Below Reporting Limit

NA = Non-Applicable

(*) indicates a 'ceiling limit' concentration.

SOIL AND WATER SAMPLES LABORATORY RESULTS OF LOI TUNG, SHA TAU KOK ROAD

- 3.4 In this assessment, 20 soil samples with 2 duplicate samples and 2 groundwater samples with 1 duplicate sample were collected from Loi Tung for chemical analysis. The assessment results were evaluated against the “industrial” scenario under Risk-based Remediation Goals limits as presented in **Table 2-9**.
- 3.5 Summary of soil analysis result and laboratory report are provided in **Appendix E** and **Appendix F**.
- 3.6 The comparison of maximum detected concentrations to RBRGs and Soil Saturation Limit are presented in **Table 3-2**.

Table 3-2 Soil Data Summary and Comparison to RBRGs and C_{sat} – Loi Tung, Sha Tau Kok Road

Chemical	Frequency of Detection (x/y)*			Range of Detected Concentration (mg/kg)		Industrial of Land Using (mg/kg)		Maximum Detected Concentration Exceeds
	X	Y	%	Max.	Min.	RBRGs	C _{sat}	
Volatile Organic Compounds (VOCs)								
Acetone	0	22	0.0	BRL		1.00E+04*	***	BRL
Benzene	0	22	0.0	BRL		9.21E+00	3.36E+02	BRL
Bromodichloromethane	0	22	0.0	BRL		2.85E+00	1.03E+03	BRL
2-Butanone	0	22	0.0	BRL		1.00E+04*	***	BRL
Chloroform	0	22	0.0	BRL		1.54E+00	1.10E+03	BRL
Ethylbenzene	0	22	0.0	BRL		8.24E+03	1.38E+02	BRL
Methyl tert-Butyl Ether	0	22	0.0	BRL		7.01E+01	2.38E+03	BRL
Methylene Chloride	0	22	0.0	BRL		1.39E+01	9.21E+02	BRL
Styrene	0	22	0.0	BRL		1.00E+04*	4.97E+02	BRL
Tetrachloroethene	0	22	0.0	BRL		7.77E-01	9.71E+01	BRL
Toluene	0	22	0.0	BRL		1.00E+04*	2.35E+02	BRL
Trichloroethene	0	22	0.0	BRL		5.68E+00	4.88E+02	BRL
Xylenes (Total)	0	22	0.0	BRL		1.23E+03	1.50E+02	BRL
Semi-Volatile Organic Compounds (SVOCs)								
Acenaphthene	0	22	0.0	BRL		1.00E+04*	6.02E+01	BRL
Acenaphthylene	0	22	0.0	BRL		1.00E+04*	1.98E+01	BRL
Anthracene	0	22	0.0	BRL		1.00E+04*	2.56E+00	BRL

Chemical	Frequency of Detection (x/y)*			Range of Detected Concentration (mg/kg)		Industrial of Land Using (mg/kg)		Maximum Detected Concentration Exceeds
	X	Y	%	Max.	Min.	RBRGs	C _{sat}	
Benzo(a)anthracene	0	22	0.0	BRL		9.18E+01	NA	BRL
Benzo(a)pyrene	0	22	0.0	BRL		9.18E+00	NA	BRL
Benzo(b)fluoranthene	0	22	0.0	BRL		1.78E+01	NA	BRL
Benzo(g,h,i)perylene	0	22	0.0	BRL		1.00E+04*	NA	BRL
Benzo(k)fluoranthene	0	22	0.0	BRL		9.18E+02	NA	BRL
Bis-(2-Ethylhexyl)phthalate	0	22	0.0	BRL		9.18E+01	NA	BRL
Chrysene	0	22	0.0	BRL		1.14E+03	NA	BRL
Dibenzo(a,h)anthracene	0	22	0.0	BRL		9.18E+00	NA	BRL
Fluoranthene	0	22	0.0	BRL		1.00E+04*	NA	BRL
Fluorene	0	22	0.0	BRL		1.00E+04*	5.47E+01	BRL
Hexachlorobenzene	0	22	0.0	BRL		5.82E-01	NA	BRL
Indeno(1,2,3-cd)pyrene	0	22	0.0	BRL		9.18E+01	NA	BRL
Naphthalene	0	22	0.0	BRL		4.53E+02	1.25E+02	BRL
Phenanthrene	0	22	0.0	BRL		1.00E+04*	2.80E+01	BRL
Phenol	0	22	0.0	BRL		1.00E+04*	7.26E+03	BRL
Pyrene	0	22	0.0	BRL		1.00E+04*	NA	BRL
Petroleum Carbon Ranges								
Fractions C6-C8	0	22	0.0	BRL		1.00E+04*	1.00E+03	BRL
Fractions C9-C16	0	22	0.0	BRL		1.00E+04*	3.00E+03	BRL
Fractions C17-C35	0	22	0.0	BRL		1.00E+04*	5.00E+03	BRL
Heavy Metal								
Antimony	3	22	13.6	2	1	2.61E+02	NA	<RBRGs
Arsenic	21	22	95.5	21	1	1.96E+02	NA	<RBRGs
Barium	22	22	100.0	75	18	1.00E+04*	NA	<RBRGs
Cadmium	1	22	4.5	0.4		6.53E+02	NA	<RBRGs
Chromium III	22	22	100.0	22	2	1.00E+04*	NA	<RBRGs
Chromium VI	0	22	0.0	BRL		1.96E+03	NA	BRL
Cobalt	8	22	36.4	4	1	1.00E+04*	NA	<RBRGs
Copper	22	22	100.0	18	1	1.00E+04*	NA	<RBRGs
Lead	22	22	100.0	105	10	2.29E+03	NA	<RBRGs
Manganese	22	22	100.0	275	13	1.00E+04*	NA	<RBRGs
Mercury	0	22	0.0	BRL		3.84E+01	NA	BRL
Molybdenum	19	22	86.4	9	1	3.26E+03	NA	<RBRGs
Nickel	16	22	72.7	10	1	1.00E+04*	NA	<RBRGs
Tin	12	22	54.5	4	1	1.00E+04*	NA	<RBRGs
Zinc	22	22	100.0	556	10	1.00E+04*	NA	<RBRGs

Remarks:

x = number of samples in which chemical was found above the method reporting limit

y = number of samples analyzed for chemical

BRL = Below Reporting Limit

NA = Non-Applicable

(*) indicates a 'ceiling limit' concentration.

- 3.7 The comparison of maximum detected concentrations to the RBRGs and Solubility Limit are presented in **Table 3-3**. The summary of result and laboratory report are shown in **Appendix E** and **Appendix F**.

Table 3-3 Groundwater Data Summary and Comparison to RBRGs and Solubility Limit – Loi Tung, Sha Tau Kok Road

Chemical	Frequency of Detection (x/y)*			Range of Detected Concentration (mg/kg)		Industrial of Land Using (mg/kg)		Maximum Detected Concentration Exceeds
	X	Y	%	Max.	Min.	RBRGs	Solubility Limit	
Volatile Organic Compounds (VOCs)								
Acetone	0	3	0.0	BRL		1.00E+04*	NA	BRL

Chemical	Frequency of Detection (x/y)*			Range of Detected Concentration (mg/kg)		Industrial of Land Using (mg/kg)		Maximum Detected Concentration Exceeds
	X	Y	%	Max.	Min.	RBRGs	Solubility Limit	
Benzene	0	3	0.0	BRL		5.40E+01	1.75E+03	BRL
Bromodichloromethane	0	3	0.0	BRL		2.62E+01	6.74E+03	BRL
2-Butanone	0	3	0.0	BRL		1.00E+04*	NA	BRL
Chloroform	0	3	0.0	BRL		1.13E+01	7.92E+03	BRL
Ethylbenzene	0	3	0.0	BRL		1.00E+04*	1.69E+02	BRL
Methyl tert-Butyl Ether	0	3	0.0	BRL		1.81E+03	NA	BRL
Methylene Chloride	0	3	0.0	BRL		2.24E+02	NA	BRL
Styrene	0	3	0.0	BRL		1.00E+04*	3.10E+02	BRL
Tetrachloroethene	0	3	0.0	BRL		2.95E+00	2.00E+02	BRL
Toluene	0	3	0.0	BRL		1.00E+04*	5.26E+02	BRL
Trichloroethene	0	3	0.0	BRL		1.42E+01	1.10E+03	BRL
Xylenes (total)	0	3	0.0	BRL		1.57E+03	1.75E+02	BRL
Semi-Volatile Organic Compounds (SVOCs)								
Acenaphthene	0	3	0.0	BRL		1.00E+04*	4.24E+00	BRL
Acenaphthylene	0	3	0.0	BRL		1.00E+04*	3.93E+00	BRL
Anthracene	0	3	0.0	BRL		1.00E+04*	4.34E-02	BRL
Benzo(b)fluoranthene	0	3	0.0	BRL		7.53E+00	1.50E-03	BRL
Chrysene	0	3	0.0	BRL		8.12E+02	1.60E-03	BRL
Fluoranthene	0	3	0.0	BRL		1.00E+04*	2.06E-01	BRL
Fluorene	0	3	0.0	BRL		1.00E+04*	1.98E+00	BRL
Hexachlorobenzene	0	3	0.0	BRL		6.95E-01	6.20E+00	BRL
Naphthalene	0	3	0.0	BRL		8.62E+02	3.10E+01	BRL
Phenanthrene	0	3	0.0	BRL		1.00E+04*	1.00E+00	BRL
Pyrene	0	3	0.0	BRL		1.00E+04*	1.35E-01	BRL
Petroleum Carbon Ranges								
Fractions C6 – C8	0	3	0.0	BRL		1.15E+03	5.23E+00	BRL
Fractions C9 – C16	0	3	0.0	BRL		9.98E+03	2.80E+00	BRL
Fractions C17 – C35	0	3	0.0	BRL		1.78E+02	2.80E+00	BRL
Metals								
Mercury	0	3	0.0	BRL		6.79E+00	NA	BRL

Remarks:

x = number of samples in which chemical was found above the method reporting limit

y = number of samples analyzed for chemical

BRL = Below Reporting Limit

NA = Non-Applicable

(*) indicates a 'ceiling limit' concentration.

DATA QUALITY

- 3.8 In this assessment, the QA/QC of soil and groundwater sampling was conducted in accordance with the revised CAP. Four soil and one groundwater duplicate samples were obtained for a full suite analysis. Besides, two equipment blanks and one field blank were sampled during the groundwater sampling process. The analysis for equipment blank to be tested is the same as representative sample, and field blank was only tested for BTEX i.e. Benzene, Toluene, Ethylbenzene and Xylenes (total).
- 3.9 The Relative Percent Difference (RPD) of the field QA/QC for soil and groundwater sample is listed in **Table 3-4**. The RPD acceptance criteria are revised where the analytical results are less than 10 times of reporting limit for a particular analysis.

Table 3-4 Acceptance Criteria for Field Quality Control Samples

Quality Control Samples	Acceptable Relative Percent Difference (RPD)/Results
Trip Blanks	Result = Non Detectable
Field Blanks	Result = Non Detectable
Rinsate Blanks	Result = Non Detectable
Blind Duplicates	RPD = 0% to 50% of mean concentration determined by both tests

$$\text{The Relative Percent Difference (RPD)} = \frac{(\text{Result 1} - \text{Result 2}) \times 100}{\text{Mean of Results 1 \& 2}}$$

3.10 Analytical results including soil and water for the duplicate samples and original samples found that the VOCs, SVOCs and Petroleum Carbon Ranges are below reporting limits. Furthermore, except for Chromium III, Cobalt, Copper and Nickel, other heavy metals were indicated below reporting limits or Relative Percent Difference within acceptable percentage. Nevertheless, overall parameters of the duplicate soil or groundwater samples are consistent with the original samples. A comparison of RPD values in heavy metal parameters among the soil duplicates is shown in **Table 3-5**. Moreover, a comparison of RPD values of the water duplicate is shown in **Table 3-6**.

Table 3-5 Summary of Relative Percent Difference (RPD) Value – Soil

Para.	Heavy Metal														
	Sb	As	Ba	Cd	CrIII	CrVI	Co	Cu	Pb	Mn	Hg	Mo	Ni	Sn	Zn
PKT-08/2/ 1.5m bgl	BRL	1	48	BRL	4	BRL	2	12	37	421	BRL	BRL	3	BRL	23
Dupl-01	BRL	1	51	BRL	2	BRL	2	6	34	358	BRL	BRL	2	BRL	24
RPD (%)	NA	0.0	6.1	NA	66.7	NA	0.0	66.7	8.5	16.2	NA	NA	40.0	NA	4.3
PKT-06/1/ 0.5m bgl	BRL	8	27	BRL	8	BRL	2	4	22	118	BRL	BRL	1	BRL	18
Dupl-02	BRL	5	18	BRL	5	BRL	1	2	14	75	BRL	BRL	BRL	BRL	13
RPD (%)	NA	46.2	40.0	NA	46.2	NA	66.7	66.7	44.4	44.6	NA	NA	NA	NA	32.3
STK-A2-4/3/ 3.0m bgl	BRL	BRL	37	BRL	6	BRL	BRL	2	23	28	BRL	1	2	1	18
Dupl-03	BRL	BRL	34	BRL	6	BRL	BRL	2	22	25	BRL	BRL	1	1	16
RPD (%)	NA	NA	8.5	NA	0.0	NA	NA	0.0	4.4	11.3	NA	NA	66.7	0.0	11.8
STK-A1-2/3/ 4.0m bgl	1	1	19	BRL	2	BRL	BRL	3	12	13	BRL	BRL	2	BRL	11
Dupl-04	BRL	3	27	BRL	5	BRL	BRL	3	15	29	BRL	4	BRL	BRL	17
RPD (%)	NA	100.0	34.0	NA	85.7	NA	NA	0.0	22.2	76.2	NA	NA	NA	NA	42.9

Note: BRL = Below Reporting Limit NA = Non-Applicable

Table 3-6 Summary of Relative Percent Difference (RPD) Value - Water

Para.	VOCs	SVOCs	TPH	Mercury
STK-W1 (collected from Sampling Pit STK-2A-5)	BRL	BRL	BRL	BRL
STK-W2 (Duplicate Sample)	BRL	BRL	BRL	BRL
RPD (%)	NA	NA	NA	NA

Note: BRL = Below Reporting Limit NA = Non-Applicable

3.11 Trip blank, field blank and equipment blank were also found below reporting limits. The QA/QC results shown that all chemical testing results are acceptable and reliability. All the laboratory reports are shown in **Appendix F**.

CONCLUSION

The works sites of ventilation building in Po Kat Tsai

- 3.12 According to **Table 3-1**, no exceedances were found in all soil samples collected from Po Kat Tsai in comparison with the RBRG Industrial and Soil Saturation Limit criteria. No groundwater sampling was conducted in this assessment. Moreover, no Non-Aqueous Phase Liquid (NAPL) was observed by visual inspection. It is concluded that the soil conditions in the assessment area is fallen within the acceptable level in accordance with the current remediation guidelines issued by HKSAR Government and no remediation action is therefore required.
- 3.13 Since groundwater was not encountered all sampling pits at Po Kat Tsai assessment site, it is estimated that groundwater should existed at over 3m below existing ground level.

The open area of the Project site at Sha Tau Kok Road near Loi Tung

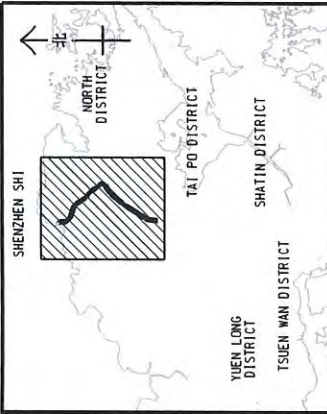
- 3.14 According to **Tables 3-2** and **3-3**, no exceedances were found in all soils and groundwater samples collected from Loi Ting in comparison with RBRG Industrial and all results were below Soil Saturation or Solubility Limits criteria. Moreover, no Non-Aqueous Phase Liquid (NAPL) was observed by visual inspection. It is concluded that the soil conditions in the assessment area is fallen within the acceptable level in accordance with the current remediation guidelines issued by HKSAR Government and no remediation action is therefore required.
- 3.15 Soil sampling was conducted at seven sampling pits in Loi Tung but only two sampling pits STK-A1-1 and STK-2A-5 encountered groundwater. In view of all sampling pits position and final depth of sampling, it is considered that the groundwater level in the assessment site should be irregular. Besides, the direction of groundwater flow should be toward north-west Ng Tung River.

4 CONCLUSIONS AND RECOMMENDATIONS

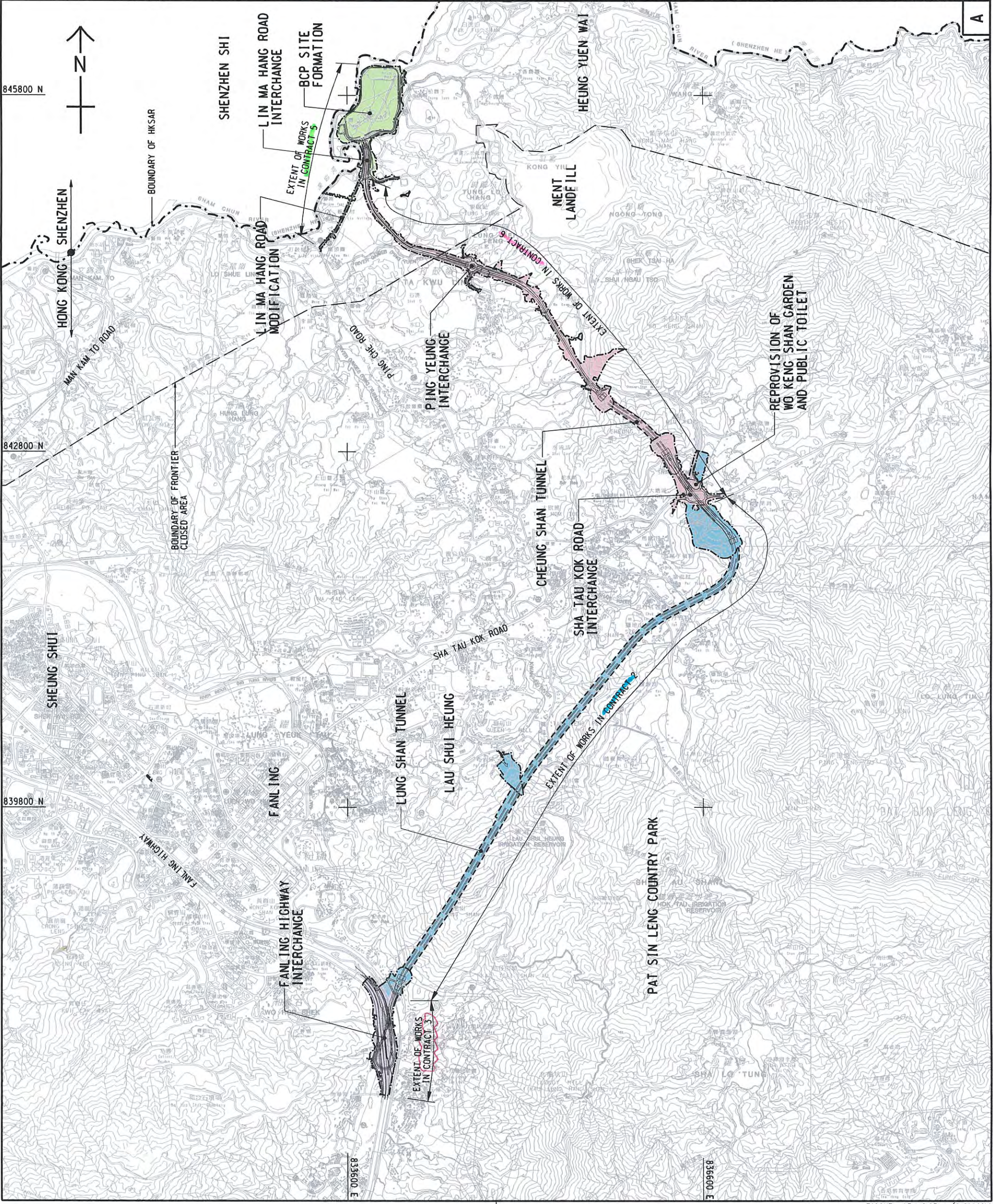
- 4.1 The objective of the land contamination assessment is to verify the soil condition of the site and whether remediation is required before the commencement of major construction activities. Site investigation work of the soil and groundwater were conducted at Po Kat Tsai and Loi Tung between 6 and 26 June 2014. The site investigation works were carried out in accordance with the Revised CAP and performed in compliance with the relevant guidelines on land contamination assessment issued by EPD.
- 4.2 In this assessment, 29 soil samples (including 2 duplicate samples) were collected from the work sites of the ventilation building in Po Kat Tsai. No groundwater sampling was conducted as no existing groundwater was noted in the pit. In addition, 22 soil samples (including 2 duplicate samples) and three water samples (including one duplicate sample) were collected from the open area at Sha Tau Kok Road near Loi Tung. All soil and water samples were delivered to ALS Technichem (HK) Pty Ltd for chemical analyses in accordance with the Revised CAP.
- 4.3 To ensure the collected groundwater is stable, in-situ measurements including temperature, pH and electrical conductivity was conducted at Loi Tung during water sampling. Extra samples such as field blank, trip blank and equipment blank were also taken for the QA/QC control.
- 4.4 The overall analytical results of soil and groundwater duplicate samples are achieved the RPD acceptable criteria. Moreover, trip blank, field blank and equipment blank were also found below detection limits. The QA/QC results shown that all chemical testing results are acceptable and reliability.
- 4.5 For the soil samples collected from both assessment sites, the chemical testing results were all found within the RBRG Industrial and Soil Saturation Limit of remedial criteria. For the groundwater samples collected from Loi Tung, all chemicals concentrations are below RBRG Industrial and Solubility Limit of remedial criteria. No Non-Aqueous Phase Liquid (NAPL) was observed during soil and groundwater sampling.
- 4.6 Based on the soil and groundwater samples results at both assessment sites, remediation is not required in accordance with the "Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management". Moreover, having checked that the soil test results are all below the RBRG limits for Urban Residential, Rural Residential and Public Parks. In conclusion, the existing soils in both assessment sites are acceptable for retaining and reusing. If off-site disposal is required, the Contractor should follow the waste disposal ordinance and contractual requirements of the project.

Appendix A

PROJECT LAYOUT PLAN



DRGNO. 60212563/PLP/001 圖號編號 圖號編號	
DRAWN BY 繪圖員 ZJ	CHECKED BY 校核員 (blank)
SCALE 比例尺 A1 1 : 15000	DATE 日期 (blank)
PROJECT LAYOUT PLAN 工程佈局圖	
AECOM	
土木工程師事務所 Civil Engineering and Development Department LANTIAN/HEUNG YUEN WAI BOUNDARY CONTROL POINT AND ASSOCIATED WORKS (SITE FORMATION AND INFRASTRUCTURE) (SITE FORMATION AND CONSTRUCTION)	
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Appendix B

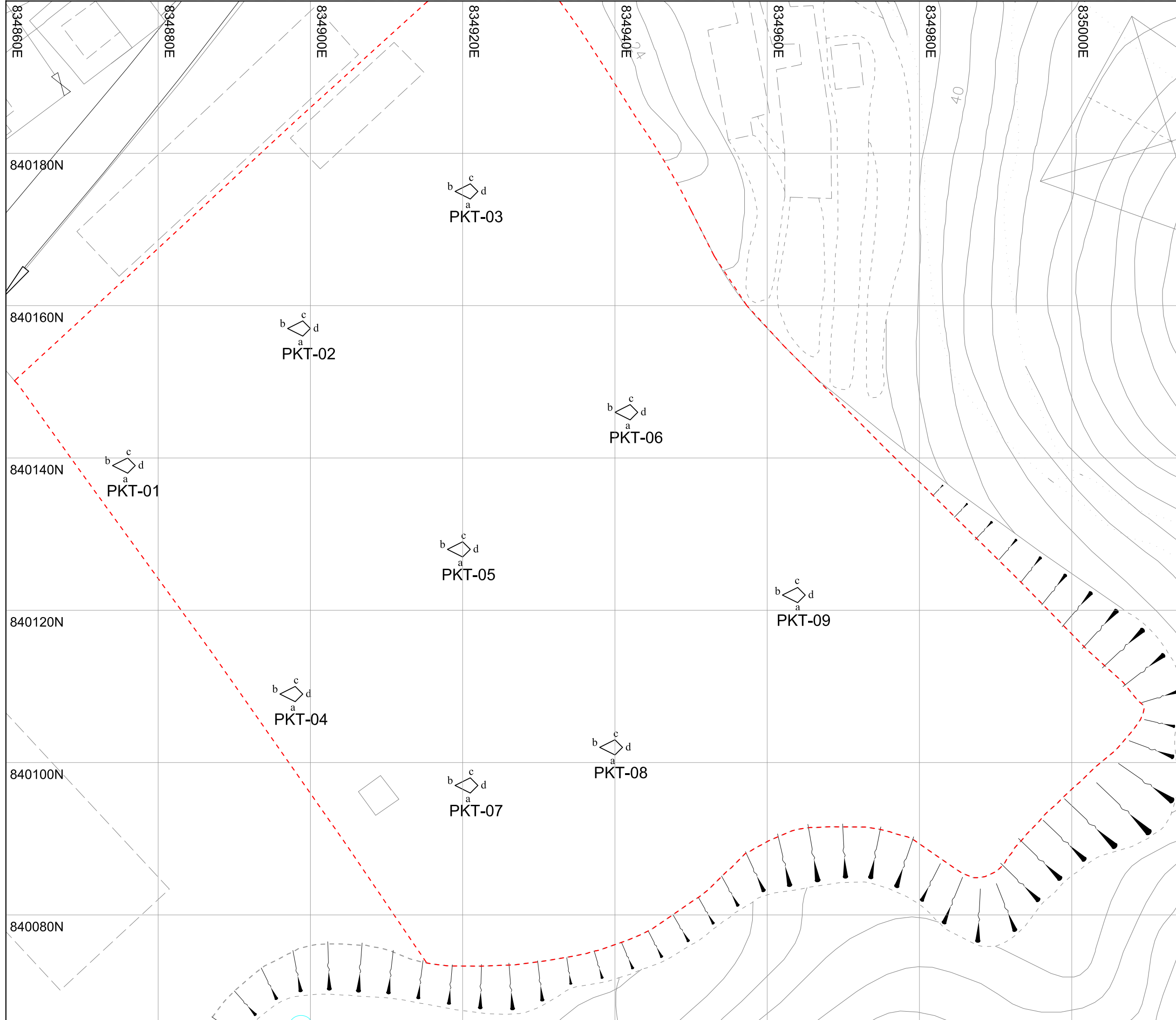
SOIL/GROUNDWATER SAMPLING LOCATION

The Work Sites of the Ventilation Building in Po Kat Tsai

Legends

 Assessment Site Boundary

 Soil Sampling Pit
PKT-01

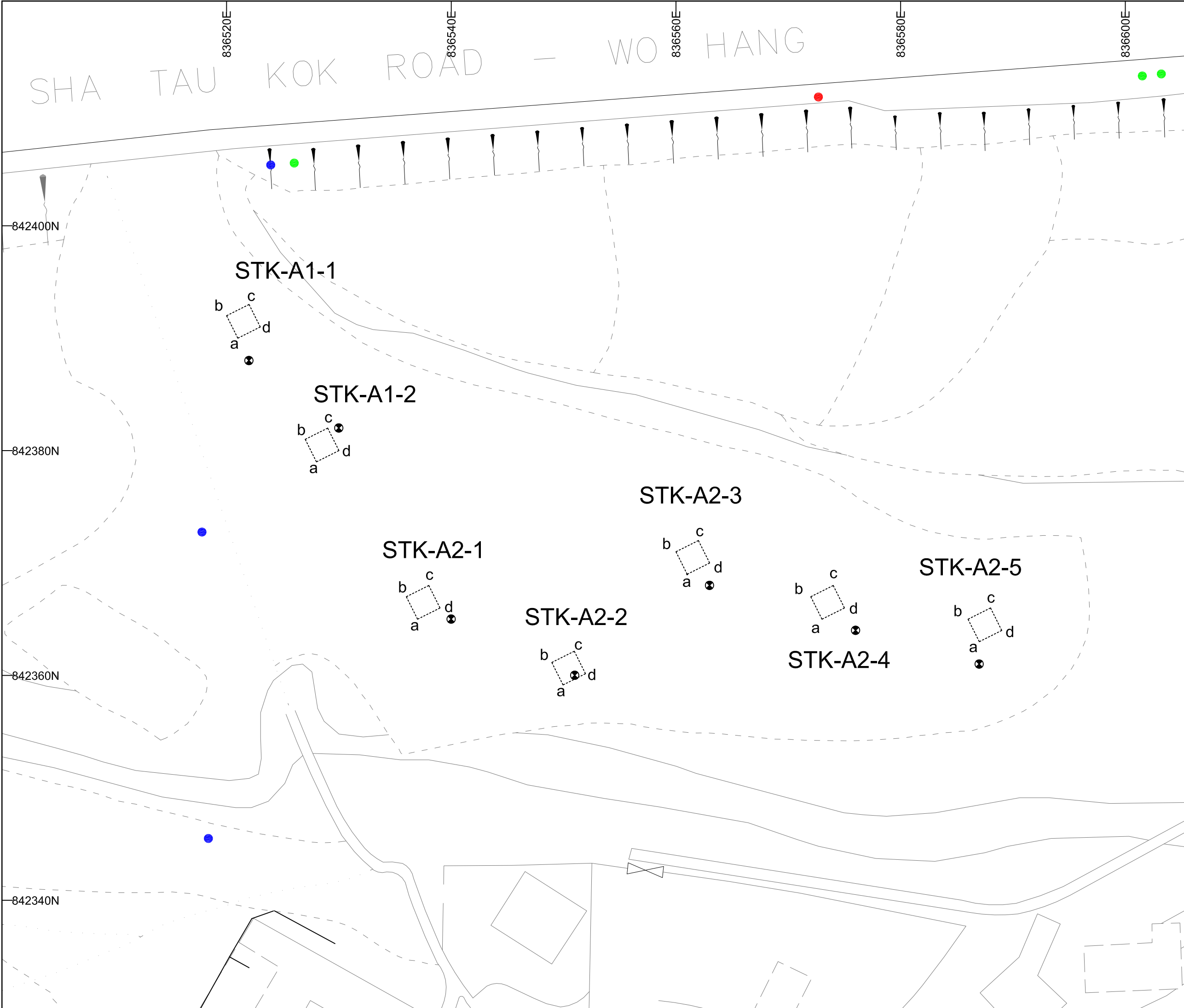


Sampling Pit ID	Point	Coordination	
		Easting	Northing
PKT-01	a	834876	840138
	b	834874	840139
	c	834876	840140
	d	834877	840139
PKT-02	a	834899	840156
	b	834897	840157
	c	834899	840158
	d	834900	840157
PKT-03	a	834921	840174
	b	834919	840175
	c	834921	840176
	d	834922	840175
PKT-04	a	834898	840108
	b	834896	840109
	c	834898	840110
	d	834899	840109
PKT-05	a	834920	840127
	b	834918	840128
	c	834920	840129
	d	834921	840128
PKT-06	a	834942	840145
	b	834940	840146
	c	834942	840147
	d	834943	840146
PKT-07	a	834921	840096
	b	834919	840097
	c	834921	840098
	d	834922	840097
PKT-08	a	834940	840101
	b	834938	840102
	c	834940	840103
	d	834941	840102
PKT-09	a	834964	840121
	b	834962	840122
	c	834964	840123
	d	834965	840122

FIGURE
MID VENTILATION BUILDING -
PO KAT TSAI
Sampling Pit Location



The Open Area at Sha Tau Kok Road near Loi Tung



Legends

- ⊗ Initial Proposed Sampling Point
- Soil Sampling Pit

	Soil Sampling Pit Coordination			Initial Proposed Sampling Point Coordination	
	Point	Easting	Northing	Easting	Northing
STK-A1-1	a	836521	842390	836522	842388
	b	836520	842392		
	c	836522	842393		
	d	836523	842391		
STK-A1-2	a	836528	842379	836530	842382
	b	836527	842381		
	c	836529	842382		
	d	836530	842380		
STK-A2-1	a	836537	842365	836540	842365
	b	836536	842367		
	c	836538	842368		
	d	836539	842366		
STK-A2-2	a	836550	842359	836551	842360
	b	836549	842361		
	c	836551	842362		
	d	836552	842360		
STK-A2-3	a	836561	842369	836563	842368
	b	836560	842371		
	c	836562	842372		
	d	836563	842370		
STK-A2-4	a	836573	842365	836563	842368
	b	836572	842367		
	c	836574	842368		
	d	836575	842366		
STK-A2-5	a	836587	842363	836587	842361
	b	836586	842365		
	c	836588	842366		
	d	836589	842364		

FIGURE
North Portal - Loi Tung
Sampling Pit Location



Appendix C

CALIBRATION CERTIFICATE OF PID



ALS Technichem (HK) Pty Ltd
11/F, Chung Shun Knitting Centre
1-3 Wing Yip Street
Kwai Chung, N.T., Hong Kong
T: +852 2610 1044
F: +852 2610 2021
www.alsglobal.com

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT: Mr Ivan Leung
CLIENT: ALS Technichem (HK) PTY LTD
ADDRESS: 11/F., Chung Shun Knitting Centre,
No 1-3 Wing Yip Street,
Kwai Chung, N.T.

WORK ORDER: HK1417502
LABORATORY: HONG KONG
DATE RECEIVED: 05/06/2014
DATE OF ISSUE: 05/06/2014
No of Equipment: 1

PROJECT:
SITE:

COMMENTS

It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory.

Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal acceptance criteria of ALS will be followed.

Scope of Test: PID Measurement
Description: Photo-ionization Detector
Brand Name: RAE
Model No.: Mini RAE
Serial No.: Ex-96.D.1328
Equipment No.: Hk1054
Date of Calibration: 05 June, 2014

NOTES

This is the Final Report and supersedes any preliminary report with this batch number.

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: HONG KONG

Address

ALS Technichem (HK) Pty Ltd
11/F Chung Shun Knitting Centre
1-3 Wing Yip Street
Kwai Chung
HONG KONG

Phone: 852-2610 1044
Fax: 852-2610 2021
Email: hongkong@alsglobal.com

Mr Leung Sai Ho, Ivan
Manager - Customer Services

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1417502
Date of Issue: 05/06/2014
Client: ALS Technichem (HK) PTY LTD



Description: Photo-ionization Detector
Brand Name: RAE
Model No.: Mini RAE
Serial No.: Ex-96.D.1328
Equipment No.: Hk1054
Date of Calibration: 05 June, 2014

Date of next Calibration: 04 June, 2015

Parameters: PID Measurement

Expected Reading (ppm)	Displayed Reading (ppm)
100 ppm	102 ppm
Allowing Deviation	± 10%



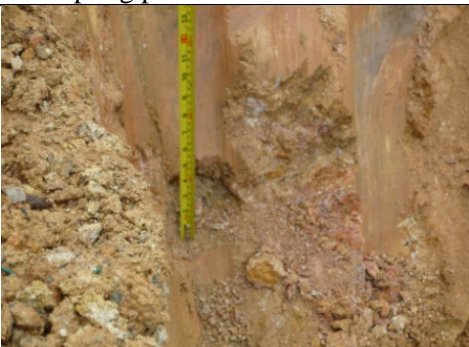



Mr Leung Sai Ho, Ivan
Manager - Customer Services

Appendix D




PHOTOGRAPH RECORD

The Work Sites of the Ventilation Building in Po Kat Tsai





PKT-01

	
<p>Photo 1: Status of sampling pit at middle section</p>	<p>Photo 2: Soil Sample directly collected from the sampling pit</p>
	
<p>Photo 3: Sampling depth measurement</p>	<p>Photo 4: Status of sampling pit at final depth (bottom)</p>
	
<p>Photo 5: Soil samples stored conditions</p>	<p>Photo 6: Soil Sample: PKT-01/1/0.5m bgl, PKT-01/2/1.5m bgl and PKT-01/3/3.0m bgl</p>





PKT-02

	
<p>Photo 1: Status of sampling pit at middle section</p>	<p>Photo 2: Status of sampling pit at final depth (bottom)</p>
	
<p>Photo 3: Soil Sample: PKT-02/1/0.5m bgl, PKT-02/2/1.5m bgl and PKT-02/3/2.8m bgl</p>	




PKT-03





	
<p>Photo 1: Soil sample directly collected from the pit</p>	<p>Photo 2: Soil sample directly collected from the pit bottom</p>
	
<p>Photo 3: Final depth measurement of the sampling pit</p>	<p>Photo 4: Soil Sample: PKT-03/1/0.5m bgl, PKT-03/2/1.5m bgl and PKT-03/3/3.0m bgl</p>





PKT-04

	
<p>Photo 1: Soil sample directly collected from the pit</p>	<p>Photo 2: Status of sampling pit at final depth (bottom)</p>
	
<p>Photo 3: The sampling pit final depth measurement</p>	<p>Photo 4: Soil Sample: PKT-04/1/0.5m bgl, PKT-04/2/1.5m bgl and PKT-04/3/2.5m bgl</p>





PKT-05

	
<p>Photo 1: Status of sampling pit at middle section</p>	<p>Photo 2: Status of the sampling pit bottom (Final depth)</p>
	
<p>Photo 3: Soil Sample: PKT-05/1/0.5m bgl, PKT-05/2/1.5m bgl and PKT-05/3/3.0m bgl</p>	





PKT-06	
	
Photo 1: Status of the sample pit at middle section	Photo 2: Status of the sampling pit at final depth (bottom)
	
Photo 3: Final depth measurement of the sampling pit	Photo 4: Soil Sample: PKT-06/1/0.5m bgl, PKT-06/2/1.5m bgl, PKT-06/3/3.0m bgl and Duplicate Sample Dupl-2

PKT-07	
	
Photo 1: Sampling pit excavation process	Photo 2: Status of the sampling pit of middle section
	
Photo 3: Status of the sampling pit at final depth (bottom)	Photo 4: Soil Sample: PKT-07/1/0.5m bgl, PKT-07/2/1.5m bgl and PKT-07/3/3.0m bgl

PKT-08

	
<p>Photo 1: Location of the sampling pit</p>	<p>Photo 2: Status of the sample pit at middle section</p>
	
<p>Photo 3: Status of the sampling pit at final depth (bottom)</p>	<p>Photo 4: Soil Sample: PKT-08/1/0.5m bgl, PKT-08/2/1.5m bgl, PKT-08/3/3.0m bgl and Duplicate Sample Dupl-1</p>

PKT-09

	
<p>Photo 1: Location of the sampling pit</p>	<p>Photo 2: Sampling pit excavation process</p>
	
<p>Photo 3: Representative soil sample was collected at the bucket of excavator</p>	<p>Photo 4: Soil Sample: PKT-09/1/0.5m bgl, PKT-09/2/1.5m bgl and PKT-09/3/3.0m bgl</p>

The Open Area at Sha Tau Kok Road near Loi Tung

STK-A1-1

	
<p>Photo 1: Location of Sampling Pit STK-A1-1</p>	<p>Photo 2: Soil Sampling conducted at the bucket of excavator level</p>
	
<p>Photo 3: Soil Samples STK-A1-1/1/1.1m bgl and STK-A1-1/2/2.2m bgl</p>	<p>Photo 4: Groundwater was observed below existing ground level 2.2m bgl</p>
	
<p>Photo 5: Groundwater Table measurement</p>	<p>Photo 6: Groundwater Sample GW-W3 collected from Sampling Pit STK-A1-1</p>

STK-A1-2



Photo 1:
Location of Sampling Pit STK-A1-2



Photo 2:
Soil Sampling Depth Measurement



Photo 3:
Soil sampling process at the bucket of excavator



Photo 4:
Soil sample collection





Photo 5:
The Sampling Pit final depth measurement



Photo 6:
Soil Samples: STK-A1-2/1/1.5m bgl,
STK-A1-2/2/2.5m bgl; STK-A1-2/3/4.0m bgl and
Duplicate sample Dupl-4

STK-A2-1

	
<p>Photo 1: Sampling Pit excavated process</p>	<p>Photo 2: Soil Sampling Depth Measurement</p>
	
<p>Photo 3: Status of the sampling pit at middle section</p>	<p>Photo 4: Status of the sampling pit of bottom</p>
	
<p>Photo 5: Representative Soil sampling process</p>	<p>Photo 6: Soil Sample: STK-A2-1/1/1.4m bgl, STK-A2-1/2/2.5m bgl and STK-A2-1/3/3.5m bgl</p>

STK-A2-2



Photo 1:
Sampling Pit excavated process



Photo 2:
Status of the sampling pit at middle section









Photo 3:
Status of the sampling pit of bottom



Photo 4:
Soil sample store conditions



Photo 5:
Soil Samples: STK-A2-2/1/1.0m bgl,
STK-A2-2/2/2.0m bgl, STK-A2-2/3/3.1m bgl and
Duplicate Sample

STK-A2-3	
	
Photo 1: Status of the sampling pit at middle section	Photo 2: Status of the sampling pit of bottom
	
Photo 3: Soil Samples: STK-A2-3/1/0.5m bgl, STK-A2-3/2/1.5m bgl and STK-A2-2/3/3.0m bgl	
STK-A2-4	
	
Photo 1: Status of the sampling pit at middle section	Photo 2: Status of the sampling pit of bottom
	
Photo 3: Soil Samples: STK-A2-4/1/0.5m bgl, STK-A2-4/2/1.5m bgl, STK-A2-4/3/3.0m bgl and Duplicate Sample Dupl-3	

STK-A2-5



Photo 1:
 Sampling Pit excavated process



Photo 2:
 Soil sampling conducted at the bucket of excavator



Photo 3:
 Soil sampling process at the bucket of excavator



Photo 4:
 Soil Samples: STK-A2-5/1/0.5m bgl,
 STK-A2-5/2/1.5m bgl and STK-A2-5/3/2.4m bgl



Photo 5:
 Groundwater was observed below existing ground level 2.4m bgl

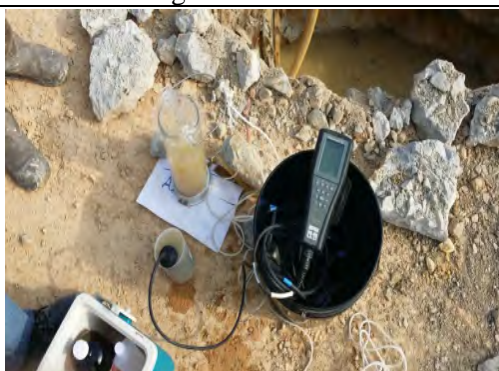


Photo 6:
 In-situ Measurement of groundwater sampling



Photo 7:
 Groundwater sampling process



Photo 8:
 Groundwater Sample GW-W1 and GW-W2 collected from Sampling Pit STK-A2-5

Appendix E

CHEMICAL RESULT SUMMARY

Agreement No. CE 45/2008 (CE) - Liantang/Heung Yuen Wai Boundary Control Point and Associated Work
Land Contamination Assessment Location: Loi Tung, Sha Tau Kok Road

Summary of Groundwater Samples Chemical Testing Results

Chemicals Analytical		Unit	Reporting Limit	Risk-based Remediation Goals limits		STK-GW1	STK-GW2	STK-GW3
						STK-2A-5	STK-2A-5	STK-1A-1
				Industrial	Solubility Limit (mg/L)		Duplicate Sample	
Metal	Mercury	µg/L	0.5	6.79E+00	NA	<0.5	<0.5	<0.5
Petroleum Carbon Ranges	Fractions C6-C8	µg/L	20	1.15E+03	5.23E+00	<20	<20	<20
	Fractions C9-C16	µg/L	500	9.98E+03	2.80E+00	<500	<500	<500
	Fractions C17-C35	µg/L	500	1.78E+02	2.80E+00	<500	<500	<500
Volatile Organic Compounds	Acetone	µg/L	500	1.00E+04*	***	<500	<500	<500
	Benzene	µg/L	5	5.40E+01	1.75E+03	<5	<5	<5
	Bromodichloromethane	µg/L	5	2.62E+01	6.74E+03	<5	<5	<5
	2-Butanone	µg/L	50	1.00E+04*	***	<50	<50	<50
	Chloroform	µg/L	5	1.13E+01	7.92E+03	<5	<5	<5
	Ethylbenzene	µg/L	5	1.00E+04*	1.69E+02	<5	<5	<5
	Methyl tert-Butyl Ether	µg/L	5	1.81E+03	***	<5	<5	<5
	Methylene Chloride	µg/L	50	2.24E+02	***	<50	<50	<50
	Styrene	µg/L	5	1.00E+04*	3.10E+02	<5	<5	<5
	Tetrachloroethene	µg/L	5	2.95E+00	2.00E+02	<5	<5	<5
	Toluene	µg/L	5	1.00E+04*	5.26E+02	<5	<5	<5
	Trichloroethene	µg/L	5	1.42E+01	1.10E+03	<5	<5	<5
	Xylenes (Total)	µg/L	20	1.57E+03	1.75E+02	<20	<20	<20
Semi-volatile Organic Compounds	Acenaphthene	µg/L	2	1.00E+04*	4.24E+00	<2	<2	<2
	Acenaphthylene	µg/L	2	1.00E+04*	3.93E+00	<2	<2	<2
	Anthracene	µg/L	2	1.00E+04*	4.34E-02	<2	<2	<2
	Benzo(b)fluoranthene	µg/L	1	7.53E+00	1.50E-03	<1	<1	<1
	Chrysene	µg/L	1	8.12E+02	1.60E-03	<1	<1	<1
	Fluoranthene	µg/L	2	1.00E+04*	2.06E-01	<2	<2	<2
	Fluorene	µg/L	2	1.00E+04*	1.98E+00	<2	<2	<2
	Hexachlorobenzene	µg/L	1	6.95E-01	6.20E+00	<1	<1	<1
	Naphthalene	µg/L	2	8.62E+02	3.10E+01	<2	<2	<2
	Phenanthrene	µg/L	2	1.00E+04*	1.00E+00	<2	<2	<2
	Pyrene	µg/L	2	1.00E+04*	1.35E-01	<2	<2	<2

Remark

(*) indicates a 'ceiling limit' concentration

(***) indicates that the solubility limit exceeds the 'ceiling limit' therefore the RBRG applies

Appendix F

LABORATORY DATA REPORT

The Work Sites of the Ventilation Building in Po Kat Tsai

CERTIFICATE OF ANALYSIS

Client	: ACTION UNITED ENVIRO SERVICES	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 24
Contact	: MR BEN TAM	Contact	: Fung Lim Chee, Richard	Work Order	: HK1418289
Address	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong	Amendment	: 1
E-mail	: Bentam@fordbusiness.com	E-mail	: Richard.Fung@alsglobal.com	Date Samples Received	: 09-JUN-2014
Telephone	: +852 2959 6059	Telephone	: +852 2610 1044	Issue Date	: 28-OCT-2014
Facsimile	: +852 2959 6079	Facsimile	: +852 2610 2021	No. of samples received	: 29
Project	: TCS00670_13	Quote number	: ----	No. of samples analysed	: 29
Order number	: ----				
C-O-C number	: H026273-H026275				
Site	: PO KAT TSAI				

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 19-JUN-2014

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific comments for Work Order: **HK1418289**

Sample(s) were received in a chilled condition.

Soil sample(s) analysed on an as received basis. Result(s) reported on a dry weight basis.

Soil sample(s) as received, digested by In-house method E-ASTM D3974-09 based on ASTM D3974-09, prior to determination of metals.

This report may not be reproduced except with prior written approval from the testing laboratory. Hong Kong Accreditation Service (HKAS) has accredited this laboratory (ALS Technichem (HK) Pty Ltd) under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories. The results shown in this certificate were determined by this laboratory in accordance with its terms of accreditation.

This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in the Electronic Transactions Ordinance of Hong Kong, Chapter 553, Section 6.

Signatories

Position

Authorised results for

Chan Ka Yu, Karen
Wong Wing, Kenneth

Manager - Organics
Manager - Metals

Organics
Inorganics



Analytical Results

Sub-Matrix: SOIL

				Client sample ID	PKT-01 (0.5M)	PKT-01 (1.5M)	PKT-01 (3.0M)	PKT-02 (0.5M)	PKT-02 (1.5M)
				Client sampling date / time	06-JUN-2014 16:30	06-JUN-2014 16:40	06-JUN-2014 16:55	09-JUN-2014 14:25	09-JUN-2014 14:35
Compound	CAS Number	LOR	Unit	HK1418289-001	HK1418289-002	HK1418289-003	HK1418289-004	HK1418289-005	
EA/ED: Physical and Aggregate Properties									
EA055: Moisture Content (dried @ 103°C)	----	0.1	%	18.4	9.1	16.2	14.1	17.0	
EG: Metals and Major Cations									
EG020: Antimony	7440-36-0	1	mg/kg	<1	<1	<1	<1	<1	
EG020: Arsenic	7440-38-2	1	mg/kg	6	17	14	5	3	
EG020: Barium	7440-39-3	1	mg/kg	92	45	25	29	39	
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
EG020: Cobalt	7440-48-4	1	mg/kg	20	3	1	<1	<1	
EG020: Copper	7440-50-8	1	mg/kg	5	5	9	4	3	
EG020: Lead	7439-92-1	1	mg/kg	131	19	20	12	14	
EG020: Manganese	7439-96-5	1	mg/kg	1680	160	124	67	52	
EG020: Molybdenum	7439-98-7	1	mg/kg	<1	<1	<1	<1	<1	
EG020: Nickel	7440-02-0	1	mg/kg	2	2	1	<1	<1	
EG020: Tin	7440-31-5	1	mg/kg	<1	<1	<1	<1	<1	
EG020: Zinc	7440-66-6	1	mg/kg	20	24	24	14	14	
EG036: Mercury	7439-97-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
EG049: Trivalent Chromium	16065-83-1	1	mg/kg	6	10	5	5	4	
EG3060: Hexavalent Chromium	18540-29-9	1	mg/kg	<1	<1	<1	<1	<1	
EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs)									
Naphthalene	91-20-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	
Acenaphthylene	208-96-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	
Acenaphthene	83-32-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	
Fluorene	86-73-7	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	
Phenanthrene	85-01-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	
Anthracene	120-12-7	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	
Fluoranthene	206-44-0	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	
Pyrene	129-00-0	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	
Benz(a)anthracene	56-55-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	
Chrysene	218-01-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	
Benzo(b)fluoranthene	205-99-2	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	
Benzo(k)fluoranthene	207-08-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	
Benzo(a)pyrene	50-32-8	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	
Indeno(1.2.3.cd)pyrene	193-39-5	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	
Dibenz(a,h)anthracene	53-70-3	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	
Benzo(g,h,i)perylene	191-24-2	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	
EP-076B: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate									
Phenol	108-95-2	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	
Hexachlorobenzene (HCB)	118-74-1	0.200	mg/kg	<0.200	<0.200	<0.200	<0.200	<0.200	
Bis(2-ethylhexyl)phthalate	117-81-7	5.00	mg/kg	<5.00	<5.00	<5.00	<5.00	<5.00	



Sub-Matrix: SOIL			Client sample ID	PKT-01 (0.5M)	PKT-01 (1.5M)	PKT-01 (3.0M)	PKT-02 (0.5M)	PKT-02 (1.5M)
			Client sampling date / time	06-JUN-2014 16:30	06-JUN-2014 16:40	06-JUN-2014 16:55	09-JUN-2014 14:25	09-JUN-2014 14:35
Compound	CAS Number	LOR	Unit	HK1418289-001	HK1418289-002	HK1418289-003	HK1418289-004	HK1418289-005
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)								
C6 - C8 Fraction	----	5	mg/kg	<5	<5	<5	<5	<5
C9 - C16 Fraction	----	200	mg/kg	<200	<200	<200	<200	<200
C17 - C35 Fraction	----	500	mg/kg	<500	<500	<500	<500	<500
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Xylenes (Total)	----	2.0	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
EP-074_SR-B: Oxygenated Compounds								
2-Propanone (Acetone)	67-64-1	50	mg/kg	<50	<50	<50	<50	<50
2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	<5	<5	<5
EP-074_SR-E: Halogenated Aliphatics								
Methylene chloride	75-09-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	79-01-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04
EP-074_SR-G: Trihalomethanes (THM)								
Chloroform	67-66-3	0.04	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP-074_SR-I: Methyl-tert-butyl Ether								
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates Surrogate control limits listed at end of this report.								
2-Fluorobiphenyl	321-60-8	0.1	%	108	98.2	83.9	94.4	84.1
4-Terphenyl-d14	1718-51-0	0.1	%	102	105	97.4	101	94.7
EP-080_SRS: TPH(Volatile)/BTEX Surrogate Surrogate control limits listed at end of this report.								
Dibromofluoromethane	1868-53-7	0.1	%	90.2	90.2	90.5	90.8	91.2
Toluene-D8	2037-26-5	0.1	%	98.9	99.4	100	99.2	102
4-Bromofluorobenzene	460-00-4	0.1	%	103	101	107	106	106
EP-074_SR-S: VOC Surrogates Surrogate control limits listed at end of this report.								
Dibromofluoromethane	1868-53-7	0.1	%	90.2	90.2	90.5	90.8	91.2
Toluene-D8	2037-26-5	0.1	%	98.9	99.4	100	99.2	102
4-Bromofluorobenzene	460-00-4	0.1	%	103	101	107	106	106



Sub-Matrix: SOIL			Client sample ID	PKT-02 (2.8M)	PKT-03 (0.5M)	PKT-03 (1.5M)	PKT-03 (3.0M)	PKT-04 (0.5M)
			Client sampling date / time	09-JUN-2014 14:45	06-JUN-2014 17:15	06-JUN-2014 17:25	06-JUN-2014 17:35	06-JUN-2014 18:00
Compound	CAS Number	LOR	Unit	HK1418289-006	HK1418289-007	HK1418289-008	HK1418289-009	HK1418289-010
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	---	0.1	%	11.6	13.5	14.0	17.4	16.8
EG: Metals and Major Cations								
EG020: Antimony	7440-36-0	1	mg/kg	<1	<1	<1	1	<1
EG020: Arsenic	7440-38-2	1	mg/kg	4	3	10	25	16
EG020: Barium	7440-39-3	1	mg/kg	16	32	40	22	37
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EG020: Cobalt	7440-48-4	1	mg/kg	<1	3	1	<1	2
EG020: Copper	7440-50-8	1	mg/kg	4	6	3	4	5
EG020: Lead	7439-92-1	1	mg/kg	12	47	16	20	27
EG020: Manganese	7439-96-5	1	mg/kg	88	236	72	57	156
EG020: Molybdenum	7439-98-7	1	mg/kg	<1	1	<1	1	1
EG020: Nickel	7440-02-0	1	mg/kg	1	2	1	<1	1
EG020: Tin	7440-31-5	1	mg/kg	<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	1	mg/kg	19	31	14	22	25
EG036: Mercury	7439-97-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EG049: Trivalent Chromium	16065-83-1	1	mg/kg	3	4	6	4	10
EG3060: Hexavalent Chromium	18540-29-9	1	mg/kg	<1	<1	<1	<1	<1
EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs)								
Naphthalene	91-20-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Acenaphthylene	208-96-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Acenaphthene	83-32-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Fluorene	86-73-7	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Phenanthrene	85-01-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Anthracene	120-12-7	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Fluoranthene	206-44-0	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Pyrene	129-00-0	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Benz(a)anthracene	56-55-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Chrysene	218-01-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Benzo(b)fluoranthene	205-99-2	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Benzo(k)fluoranthene	207-08-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Benzo(a)pyrene	50-32-8	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
Indeno(1.2.3.cd)pyrene	193-39-5	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Dibenz(a,h)anthracene	53-70-3	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(g,h,i)perylene	191-24-2	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP-076B: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate								
Phenol	108-95-2	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.200	mg/kg	<0.200	<0.200	<0.200	<0.200	<0.200
Bis(2-ethylhexyl)phthalate	117-81-7	5.00	mg/kg	<5.00	<5.00	<5.00	<5.00	<5.00
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)								



Sub-Matrix: SOIL			Client sample ID	PKT-02 (2.8M)	PKT-03 (0.5M)	PKT-03 (1.5M)	PKT-03 (3.0M)	PKT-04 (0.5M)
			Client sampling date / time	09-JUN-2014 14:45	06-JUN-2014 17:15	06-JUN-2014 17:25	06-JUN-2014 17:35	06-JUN-2014 18:00
Compound	CAS Number	LOR	Unit	HK1418289-006	HK1418289-007	HK1418289-008	HK1418289-009	HK1418289-010
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) - Continued								
C6 - C8 Fraction	----	5	mg/kg	<5	<5	<5	<5	<5
C9 - C16 Fraction	----	200	mg/kg	<200	<200	<200	<200	<200
C17 - C35 Fraction	----	500	mg/kg	<500	<500	<500	<500	<500
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Xylenes (Total)	----	2.0	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
EP-074_SR-B: Oxygenated Compounds								
2-Propanone (Acetone)	67-64-1	50	mg/kg	<50	<50	<50	<50	<50
2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	<5	<5	<5
EP-074_SR-E: Halogenated Aliphatics								
Methylene chloride	75-09-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	79-01-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04
EP-074_SR-G: Trihalomethanes (THM)								
Chloroform	67-66-3	0.04	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP-074_SR-I: Methyl-tert-butyl Ether								
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates Surrogate control limits listed at end of this report.								
2-Fluorobiphenyl	321-60-8	0.1	%	87.6	91.7	95.9	94.9	92.8
4-Terphenyl-d14	1718-51-0	0.1	%	96.5	102	100	104	112
EP-080_SRS: TPH(Volatile)/BTEX Surrogate Surrogate control limits listed at end of this report.								
Dibromofluoromethane	1868-53-7	0.1	%	91.2	93.0	91.0	94.4	91.1
Toluene-D8	2037-26-5	0.1	%	101	100	102	100	98.9
4-Bromofluorobenzene	460-00-4	0.1	%	106	106	105	104	107
EP-074_SR-S: VOC Surrogates Surrogate control limits listed at end of this report.								
Dibromofluoromethane	1868-53-7	0.1	%	91.2	93.0	91.0	94.4	91.1
Toluene-D8	2037-26-5	0.1	%	101	100	102	100	98.9
4-Bromofluorobenzene	460-00-4	0.1	%	106	106	105	104	107



Sub-Matrix: SOIL			Client sample ID	PKT-04 (1.5M)	PKT-04 (2.5M)	PKT-05 (0.5M)	PKT-05 (1.5M)	PKT-05 (3.0M)
			Client sampling date / time	06-JUN-2014 18:10	06-JUN-2014 18:40	07-JUN-2014 17:30	07-JUN-2014 17:35	07-JUN-2014 17:40
Compound	CAS Number	LOR	Unit	HK1418289-011	HK1418289-012	HK1418289-013	HK1418289-014	HK1418289-015
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	---	0.1	%	15.6	12.2	14.0	15.8	18.0
EG: Metals and Major Cations								
EG020: Antimony	7440-36-0	1	mg/kg	<1	<1	<1	<1	<1
EG020: Arsenic	7440-38-2	1	mg/kg	8	11	12	10	9
EG020: Barium	7440-39-3	1	mg/kg	38	75	34	30	34
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EG020: Cobalt	7440-48-4	1	mg/kg	1	1	1	5	2
EG020: Copper	7440-50-8	1	mg/kg	2	5	5	4	3
EG020: Lead	7439-92-1	1	mg/kg	18	25	44	28	23
EG020: Manganese	7439-96-5	1	mg/kg	99	85	249	148	31
EG020: Molybdenum	7439-98-7	1	mg/kg	<1	<1	1	<1	<1
EG020: Nickel	7440-02-0	1	mg/kg	1	1	1	2	2
EG020: Tin	7440-31-5	1	mg/kg	<1	<1	<1	<1	1
EG020: Zinc	7440-66-6	1	mg/kg	18	27	20	18	21
EG036: Mercury	7439-97-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EG049: Trivalent Chromium	16065-83-1	1	mg/kg	5	5	12	9	12
EG3060: Hexavalent Chromium	18540-29-9	1	mg/kg	<1	<1	<1	<1	<1
EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs)								
Naphthalene	91-20-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Acenaphthylene	208-96-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Acenaphthene	83-32-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Fluorene	86-73-7	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Phenanthrene	85-01-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Anthracene	120-12-7	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Fluoranthene	206-44-0	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Pyrene	129-00-0	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Benz(a)anthracene	56-55-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Chrysene	218-01-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Benzo(b)fluoranthene	205-99-2	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Benzo(k)fluoranthene	207-08-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Benzo(a)pyrene	50-32-8	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
Indeno(1.2.3.cd)pyrene	193-39-5	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Dibenz(a,h)anthracene	53-70-3	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(g,h,i)perylene	191-24-2	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP-076B: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate								
Phenol	108-95-2	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.200	mg/kg	<0.200	<0.200	<0.200	<0.200	<0.200
Bis(2-ethylhexyl)phthalate	117-81-7	5.00	mg/kg	<5.00	<5.00	<5.00	<5.00	<5.00
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)								



Sub-Matrix: SOIL			Client sample ID	PKT-04 (1.5M)	PKT-04 (2.5M)	PKT-05 (0.5M)	PKT-05 (1.5M)	PKT-05 (3.0M)
			Client sampling date / time	06-JUN-2014 18:10	06-JUN-2014 18:40	07-JUN-2014 17:30	07-JUN-2014 17:35	07-JUN-2014 17:40
Compound	CAS Number	LOR	Unit	HK1418289-011	HK1418289-012	HK1418289-013	HK1418289-014	HK1418289-015
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) - Continued								
C6 - C8 Fraction	----	5	mg/kg	<5	<5	<5	<5	<5
C9 - C16 Fraction	----	200	mg/kg	<200	<200	<200	<200	<200
C17 - C35 Fraction	----	500	mg/kg	<500	<500	<500	<500	<500
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Xylenes (Total)	----	2.0	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
EP-074_SR-B: Oxygenated Compounds								
2-Propanone (Acetone)	67-64-1	50	mg/kg	<50	<50	<50	<50	<50
2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	<5	<5	<5
EP-074_SR-E: Halogenated Aliphatics								
Methylene chloride	75-09-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	79-01-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04
EP-074_SR-G: Trihalomethanes (THM)								
Chloroform	67-66-3	0.04	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP-074_SR-I: Methyl-tert-butyl Ether								
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates Surrogate control limits listed at end of this report.								
2-Fluorobiphenyl	321-60-8	0.1	%	95.2	86.6	103	97.4	90.1
4-Terphenyl-d14	1718-51-0	0.1	%	95.7	95.8	113	103	97.3
EP-080_SRS: TPH(Volatile)/BTEX Surrogate Surrogate control limits listed at end of this report.								
Dibromofluoromethane	1868-53-7	0.1	%	94.7	93.7	92.3	95.3	95.1
Toluene-D8	2037-26-5	0.1	%	101	99.0	100	101	98.7
4-Bromofluorobenzene	460-00-4	0.1	%	107	104	105	108	108
EP-074_SR-S: VOC Surrogates Surrogate control limits listed at end of this report.								
Dibromofluoromethane	1868-53-7	0.1	%	94.7	93.7	92.3	95.3	95.1
Toluene-D8	2037-26-5	0.1	%	101	99.0	100	101	98.7
4-Bromofluorobenzene	460-00-4	0.1	%	107	104	105	108	108



Sub-Matrix: SOIL			Client sample ID	PKT-06 (0.5M)	PKT-06 (1.5M)	PKT-06 (3.0M)	PKT-07 (0.5M)	PKT-07 (1.5M)
			Client sampling date / time	09-JUN-2014 13:50	09-JUN-2014 14:05	09-JUN-2014 14:10	07-JUN-2014 18:05	07-JUN-2014 18:20
Compound	CAS Number	LOR	Unit	HK1418289-016	HK1418289-017	HK1418289-018	HK1418289-019	HK1418289-020
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	---	0.1	%	10.6	11.5	13.3	15.9	19.2
EG: Metals and Major Cations								
EG020: Antimony	7440-36-0	1	mg/kg	<1	<1	<1	<1	<1
EG020: Arsenic	7440-38-2	1	mg/kg	8	10	10	8	4
EG020: Barium	7440-39-3	1	mg/kg	27	23	198	31	24
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EG020: Cobalt	7440-48-4	1	mg/kg	2	<1	8	5	2
EG020: Copper	7440-50-8	1	mg/kg	4	3	4	6	4
EG020: Lead	7439-92-1	1	mg/kg	22	17	129	27	30
EG020: Manganese	7439-96-5	1	mg/kg	118	46	1100	332	174
EG020: Molybdenum	7439-98-7	1	mg/kg	<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	1	mg/kg	1	1	1	2	1
EG020: Tin	7440-31-5	1	mg/kg	<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	1	mg/kg	18	15	15	28	20
EG036: Mercury	7439-97-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EG049: Trivalent Chromium	16065-83-1	1	mg/kg	8	9	9	8	6
EG3060: Hexavalent Chromium	18540-29-9	1	mg/kg	<1	<1	<1	<1	<1
EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs)								
Naphthalene	91-20-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Acenaphthylene	208-96-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Acenaphthene	83-32-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Fluorene	86-73-7	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Phenanthrene	85-01-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Anthracene	120-12-7	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Fluoranthene	206-44-0	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Pyrene	129-00-0	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Benz(a)anthracene	56-55-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Chrysene	218-01-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Benzo(b)fluoranthene	205-99-2	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Benzo(k)fluoranthene	207-08-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Benzo(a)pyrene	50-32-8	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
Indeno(1.2.3.cd)pyrene	193-39-5	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Dibenz(a,h)anthracene	53-70-3	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(g,h,i)perylene	191-24-2	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP-076B: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate								
Phenol	108-95-2	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.200	mg/kg	<0.200	<0.200	<0.200	<0.200	<0.200
Bis(2-ethylhexyl)phthalate	117-81-7	5.00	mg/kg	<5.00	<5.00	<5.00	<5.00	<5.00
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)								



Sub-Matrix: SOIL			Client sample ID	PKT-06 (0.5M)	PKT-06 (1.5M)	PKT-06 (3.0M)	PKT-07 (0.5M)	PKT-07 (1.5M)
			Client sampling date / time	09-JUN-2014 13:50	09-JUN-2014 14:05	09-JUN-2014 14:10	07-JUN-2014 18:05	07-JUN-2014 18:20
Compound	CAS Number	LOR	Unit	HK1418289-016	HK1418289-017	HK1418289-018	HK1418289-019	HK1418289-020
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) - Continued								
C6 - C8 Fraction	----	5	mg/kg	<5	<5	<5	<5	<5
C9 - C16 Fraction	----	200	mg/kg	<200	<200	<200	<200	<200
C17 - C35 Fraction	----	500	mg/kg	<500	<500	<500	<500	<500
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Xylenes (Total)	----	2.0	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
EP-074_SR-B: Oxygenated Compounds								
2-Propanone (Acetone)	67-64-1	50	mg/kg	<50	<50	<50	<50	<50
2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	<5	<5	<5
EP-074_SR-E: Halogenated Aliphatics								
Methylene chloride	75-09-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	79-01-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04
EP-074_SR-G: Trihalomethanes (THM)								
Chloroform	67-66-3	0.04	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP-074_SR-I: Methyl-tert-butyl Ether								
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates Surrogate control limits listed at end of this report.								
2-Fluorobiphenyl	321-60-8	0.1	%	95.0	95.9	93.3	92.9	93.3
4-Terphenyl-d14	1718-51-0	0.1	%	89.3	104	103	98.4	96.0
EP-080_SRS: TPH(Volatile)/BTEX Surrogate Surrogate control limits listed at end of this report.								
Dibromofluoromethane	1868-53-7	0.1	%	91.0	91.7	91.9	93.2	91.8
Toluene-D8	2037-26-5	0.1	%	101	100	98.2	101	102
4-Bromofluorobenzene	460-00-4	0.1	%	107	104	106	106	104
EP-074_SR-S: VOC Surrogates Surrogate control limits listed at end of this report.								
Dibromofluoromethane	1868-53-7	0.1	%	91.0	91.7	91.9	93.2	91.8
Toluene-D8	2037-26-5	0.1	%	101	100	98.2	101	102
4-Bromofluorobenzene	460-00-4	0.1	%	107	104	106	106	104



Sub-Matrix: SOIL				Client sample ID	PKT-07 (3.0M)	PKT-08 (0.5M)	PKT-08 (1.5M)	PKT-08 (3.0M)	PKT-09 (0.5M)
				Client sampling date / time	07-JUN-2014 18:30	07-JUN-2014 16:40	07-JUN-2014 16:55	07-JUN-2014 17:05	07-JUN-2014 15:55
Compound	CAS Number	LOR	Unit	HK1418289-021	HK1418289-022	HK1418289-023	HK1418289-024	HK1418289-025	
EA/ED: Physical and Aggregate Properties									
EA055: Moisture Content (dried @ 103°C)	---	0.1	%	17.1	10.7	9.9	12.6	12.4	
EG: Metals and Major Cations									
EG020: Antimony	7440-36-0	1	mg/kg	<1	<1	<1	<1	<1	
EG020: Arsenic	7440-38-2	1	mg/kg	2	2	1	1	6	
EG020: Barium	7440-39-3	1	mg/kg	56	35	48	94	24	
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
EG020: Cobalt	7440-48-4	1	mg/kg	7	2	2	11	<1	
EG020: Copper	7440-50-8	1	mg/kg	5	8	12	9	4	
EG020: Lead	7439-92-1	1	mg/kg	63	43	37	51	20	
EG020: Manganese	7439-96-5	1	mg/kg	618	418	421	886	58	
EG020: Molybdenum	7439-98-7	1	mg/kg	<1	<1	<1	<1	<1	
EG020: Nickel	7440-02-0	1	mg/kg	2	1	3	4	1	
EG020: Tin	7440-31-5	1	mg/kg	<1	<1	<1	<1	<1	
EG020: Zinc	7440-66-6	1	mg/kg	26	20	23	51	16	
EG036: Mercury	7439-97-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
EG049: Trivalent Chromium	16065-83-1	1	mg/kg	4	2	4	2	8	
EG3060: Hexavalent Chromium	18540-29-9	1	mg/kg	<1	<1	<1	<1	<1	
EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs)									
Naphthalene	91-20-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	
Acenaphthylene	208-96-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	
Acenaphthene	83-32-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	
Fluorene	86-73-7	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	
Phenanthrene	85-01-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	
Anthracene	120-12-7	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	
Fluoranthene	206-44-0	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	
Pyrene	129-00-0	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	
Benz(a)anthracene	56-55-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	
Chrysene	218-01-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	
Benzo(b)fluoranthene	205-99-2	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	
Benzo(k)fluoranthene	207-08-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	
Benzo(a)pyrene	50-32-8	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	
Indeno(1.2.3.cd)pyrene	193-39-5	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	
Dibenz(a,h)anthracene	53-70-3	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	
Benzo(g,h,i)perylene	191-24-2	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	
EP-076B: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate									
Phenol	108-95-2	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	
Hexachlorobenzene (HCB)	118-74-1	0.200	mg/kg	<0.200	<0.200	<0.200	<0.200	<0.200	
Bis(2-ethylhexyl)phthalate	117-81-7	5.00	mg/kg	<5.00	<5.00	<5.00	<5.00	<5.00	
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)									



Sub-Matrix: SOIL				Client sample ID	PKT-07 (3.0M)	PKT-08 (0.5M)	PKT-08 (1.5M)	PKT-08 (3.0M)	PKT-09 (0.5M)
				Client sampling date / time	07-JUN-2014 18:30	07-JUN-2014 16:40	07-JUN-2014 16:55	07-JUN-2014 17:05	07-JUN-2014 15:55
Compound	CAS Number	LOR	Unit		HK1418289-021	HK1418289-022	HK1418289-023	HK1418289-024	HK1418289-025
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) - Continued									
C6 - C8 Fraction	----	5	mg/kg		<5	<5	<5	<5	<5
C9 - C16 Fraction	----	200	mg/kg		<200	<200	<200	<200	<200
C17 - C35 Fraction	----	500	mg/kg		<500	<500	<500	<500	<500
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg		<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Xylenes (Total)	----	2.0	mg/kg		<2.0	<2.0	<2.0	<2.0	<2.0
EP-074_SR-B: Oxygenated Compounds									
2-Propanone (Acetone)	67-64-1	50	mg/kg		<50	<50	<50	<50	<50
2-Butanone (MEK)	78-93-3	5	mg/kg		<5	<5	<5	<5	<5
EP-074_SR-E: Halogenated Aliphatics									
Methylene chloride	75-09-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	79-01-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
Tetrachloroethene	127-18-4	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	<0.04
EP-074_SR-G: Trihalomethanes (THM)									
Chloroform	67-66-3	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	<0.04
Bromodichloromethane	75-27-4	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP-074_SR-I: Methyl-tert-butyl Ether									
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates									
Surrogate control limits listed at end of this report.									
2-Fluorobiphenyl	321-60-8	0.1	%		93.7	88.6	91.8	90.1	92.6
4-Terphenyl-d14	1718-51-0	0.1	%		96.1	91.9	96.4	92.3	95.7
EP-080_SRS: TPH(Volatile)/BTEX Surrogate									
Surrogate control limits listed at end of this report.									
Dibromofluoromethane	1868-53-7	0.1	%		90.4	90.1	90.1	90.3	94.6
Toluene-D8	2037-26-5	0.1	%		101	100	100	99.7	97.6
4-Bromofluorobenzene	460-00-4	0.1	%		108	106	107	104	104
EP-074_SR-S: VOC Surrogates									
Surrogate control limits listed at end of this report.									
Dibromofluoromethane	1868-53-7	0.1	%		90.4	90.1	90.1	90.3	94.6
Toluene-D8	2037-26-5	0.1	%		101	100	100	99.7	97.6
4-Bromofluorobenzene	460-00-4	0.1	%		108	106	107	104	104



Sub-Matrix: SOIL				Client sample ID	PKT-09 (1.5M)	PKT-09 (3.0M)	DUP-1	DUP-2	
				Client sampling date / time	07-JUN-2014 16:05	07-JUN-2014 16:15	[07-JUN-2014]	[09-JUN-2014]	
Compound	CAS Number	LOR	Unit	HK1418289-026	HK1418289-027	HK1418289-028	HK1418289-029		
EA/ED: Physical and Aggregate Properties									
EA055: Moisture Content (dried @ 103°C)	---	0.1	%	14.7	13.3	10.0	11.0		
EG: Metals and Major Cations									
EG020: Antimony	7440-36-0	1	mg/kg	<1	<1	<1	<1		
EG020: Arsenic	7440-38-2	1	mg/kg	9	10	1	5		
EG020: Barium	7440-39-3	1	mg/kg	23	30	51	18		
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2		
EG020: Cobalt	7440-48-4	1	mg/kg	1	1	2	1		
EG020: Copper	7440-50-8	1	mg/kg	4	4	6	2		
EG020: Lead	7439-92-1	1	mg/kg	20	23	34	14		
EG020: Manganese	7439-96-5	1	mg/kg	46	42	358	75		
EG020: Molybdenum	7439-98-7	1	mg/kg	<1	<1	<1	<1		
EG020: Nickel	7440-02-0	1	mg/kg	1	1	2	<1		
EG020: Tin	7440-31-5	1	mg/kg	<1	<1	<1	<1		
EG020: Zinc	7440-66-6	1	mg/kg	17	26	24	13		
EG036: Mercury	7439-97-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2		
EG049: Trivalent Chromium	16065-83-1	1	mg/kg	9	11	2	5		
EG3060: Hexavalent Chromium	18540-29-9	1	mg/kg	<1	<1	<1	<1		
EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs)									
Naphthalene	91-20-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500		
Acenaphthylene	208-96-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500		
Acenaphthene	83-32-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500		
Fluorene	86-73-7	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500		
Phenanthrene	85-01-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500		
Anthracene	120-12-7	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500		
Fluoranthene	206-44-0	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500		
Pyrene	129-00-0	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500		
Benz(a)anthracene	56-55-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500		
Chrysene	218-01-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500		
Benzo(b)fluoranthene	205-99-2	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500		
Benzo(k)fluoranthene	207-08-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500		
Benzo(a)pyrene	50-32-8	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050		
Indeno(1.2.3.cd)pyrene	193-39-5	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500		
Dibenz(a,h)anthracene	53-70-3	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050		
Benzo(g,h,i)perylene	191-24-2	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500		
EP-076B: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate									
Phenol	108-95-2	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50		
Hexachlorobenzene (HCB)	118-74-1	0.200	mg/kg	<0.200	<0.200	<0.200	<0.200		
Bis(2-ethylhexyl)phthalate	117-81-7	5.00	mg/kg	<5.00	<5.00	<5.00	<5.00		
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)									



Sub-Matrix: SOIL				Client sample ID	PKT-09 (1.5M)	PKT-09 (3.0M)	DUP-1	DUP-2	
				Client sampling date / time	07-JUN-2014 16:05	07-JUN-2014 16:15	[07-JUN-2014]	[09-JUN-2014]	
Compound	CAS Number	LOR	Unit		HK1418289-026	HK1418289-027	HK1418289-028	HK1418289-029	
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) - Continued									
C6 - C8 Fraction	----	5	mg/kg		<5	<5	<5	<5	
C9 - C16 Fraction	----	200	mg/kg		<200	<200	<200	<200	
C17 - C35 Fraction	----	500	mg/kg		<500	<500	<500	<500	
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	
meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg		<1.0	<1.0	<1.0	<1.0	
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	
Xylenes (Total)	----	2.0	mg/kg		<2.0	<2.0	<2.0	<2.0	
EP-074_SR-B: Oxygenated Compounds									
2-Propanone (Acetone)	67-64-1	50	mg/kg		<50	<50	<50	<50	
2-Butanone (MEK)	78-93-3	5	mg/kg		<5	<5	<5	<5	
EP-074_SR-E: Halogenated Aliphatics									
Methylene chloride	75-09-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	
Trichloroethene	79-01-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	
Tetrachloroethene	127-18-4	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	
EP-074_SR-G: Trihalomethanes (THM)									
Chloroform	67-66-3	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	
Bromodichloromethane	75-27-4	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	
EP-074_SR-I: Methyl-tert-butyl Ether									
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates								Surrogate control limits listed at end of this report.	
2-Fluorobiphenyl	321-60-8	0.1	%		99.3	95.3	93.6	95.7	
4-Terphenyl-d14	1718-51-0	0.1	%		104	101	93.3	81.3	
EP-080_SRS: TPH(Volatile)/BTEX Surrogate								Surrogate control limits listed at end of this report.	
Dibromofluoromethane	1868-53-7	0.1	%		95.8	90.1	92.9	91.9	
Toluene-D8	2037-26-5	0.1	%		99.0	99.2	100	99.3	
4-Bromofluorobenzene	460-00-4	0.1	%		105	105	105	106	
EP-074_SR-S: VOC Surrogates								Surrogate control limits listed at end of this report.	
Dibromofluoromethane	1868-53-7	0.1	%		95.8	90.1	92.9	91.9	
Toluene-D8	2037-26-5	0.1	%		99.0	99.2	100	99.3	
4-Bromofluorobenzene	460-00-4	0.1	%		105	105	105	106	



Laboratory Duplicate (DUP) Report

Matrix: SOIL				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3487426)								
HK1415430-015	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	8.8	8.4	5.0
HK1415430-020	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	16.2	17.3	6.7
EA/ED: Physical and Aggregate Properties (QC Lot: 3487427)								
HK1418289-015	PKT-05 (3.0M)	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	18.0	17.9	0.0
HK1418289-025	PKT-09 (0.5M)	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	12.4	11.8	4.8
EG: Metals and Major Cations (QC Lot: 3488563)								
HK1418289-002	PKT-01 (1.5M)	EG036: Mercury	7439-97-6	0.2	mg/kg	<0.2	<0.2	0.0
HK1418289-011	PKT-04 (1.5M)	EG036: Mercury	7439-97-6	0.2	mg/kg	<0.2	<0.2	0.0
EG: Metals and Major Cations (QC Lot: 3488566)								
HK1418289-022	PKT-08 (0.5M)	EG036: Mercury	7439-97-6	0.2	mg/kg	<0.2	<0.2	0.0
HK1418420-002	Anonymous	EG036: Mercury	7439-97-6	0.2	mg/kg	<0.2	<0.2	0.0
EG: Metals and Major Cations (QC Lot: 3488572)								
HK1418289-002	PKT-01 (1.5M)	EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.0
		EG020: Antimony	7440-36-0	1	mg/kg	<1	<1	0.0
		EG020: Arsenic	7440-38-2	1	mg/kg	17	18	7.3
		EG020: Barium	7440-39-3	1	mg/kg	45	39	14.7
		EG020: Cobalt	7440-48-4	1	mg/kg	3	2	0.0
		EG020: Copper	7440-50-8	1	mg/kg	5	4	0.0
		EG020: Lead	7439-92-1	1	mg/kg	19	21	10.8
		EG020: Manganese	7439-96-5	1	mg/kg	160	163	2.4
		EG020: Molybdenum	7439-98-7	1	mg/kg	<1	1	0.0
		EG020: Nickel	7440-02-0	1	mg/kg	2	2	0.0
		EG020: Tin	7440-31-5	1	mg/kg	<1	<1	0.0
		EG020: Zinc	7440-66-6	1	mg/kg	24	25	0.0
HK1418289-011	PKT-04 (1.5M)	EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.0
		EG020: Antimony	7440-36-0	1	mg/kg	<1	<1	0.0
		EG020: Arsenic	7440-38-2	1	mg/kg	8	8	0.0
		EG020: Barium	7440-39-3	1	mg/kg	38	39	0.0
		EG020: Cobalt	7440-48-4	1	mg/kg	1	1	0.0
		EG020: Copper	7440-50-8	1	mg/kg	2	2	0.0
		EG020: Lead	7439-92-1	1	mg/kg	18	17	0.0
		EG020: Manganese	7439-96-5	1	mg/kg	99	105	5.9
		EG020: Molybdenum	7439-98-7	1	mg/kg	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	mg/kg	1	<1	0.0
		EG020: Tin	7440-31-5	1	mg/kg	<1	<1	0.0
		EG020: Zinc	7440-66-6	1	mg/kg	18	16	11.7
EG: Metals and Major Cations (QC Lot: 3488573)								
HK1418289-022	PKT-08 (0.5M)	EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.0
		EG020: Antimony	7440-36-0	1	mg/kg	<1	<1	0.0



Matrix: SOIL				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cations (QC Lot: 3488573) - Continued								
HK1418289-022	PKT-08 (0.5M)	EG020: Arsenic	7440-38-2	1	mg/kg	2	1	0.0
		EG020: Barium	7440-39-3	1	mg/kg	35	38	8.0
		EG020: Cobalt	7440-48-4	1	mg/kg	2	2	0.0
		EG020: Copper	7440-50-8	1	mg/kg	8	8	0.0
		EG020: Lead	7439-92-1	1	mg/kg	43	52	18.2
		EG020: Manganese	7439-96-5	1	mg/kg	418	458	9.2
		EG020: Molybdenum	7439-98-7	1	mg/kg	<1	<1	0.0
		EG020: Nickel	7440-02-0	1	mg/kg	1	<1	0.0
		EG020: Tin	7440-31-5	1	mg/kg	<1	<1	0.0
		EG020: Zinc	7440-66-6	1	mg/kg	20	20	0.0
HK1418420-002	Anonymous	EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.0
		EG020: Cobalt	7440-48-4	0.5	mg/kg	2.4	2.8	15.3
		EG020: Manganese	7439-96-5	0.5	mg/kg	213	232	8.6
		EG020: Tin	7440-31-5	0.5	mg/kg	3.4	4.0	18.0
		EG020: Antimony	7440-36-0	1	mg/kg	1	1	0.0
		EG020: Arsenic	7440-38-2	1	mg/kg	12	12	0.0
		EG020: Barium	7440-39-3	1	mg/kg	49	58	16.8
		EG020: Copper	7440-50-8	1	mg/kg	11	10	9.9
		EG020: Lead	7439-92-1	1	mg/kg	29	30	4.0
		EG020: Molybdenum	7439-98-7	1	mg/kg	3	3	0.0
EG020: Nickel	7440-02-0	1	mg/kg	4	4	0.0		
EG020: Zinc	7440-66-6	1	mg/kg	47	52	8.3		
EG: Metals and Major Cations (QC Lot: 3488577)								
HK1418289-002	PKT-01 (1.5M)	EG3060: Hexavalent Chromium	18540-29-9	1	mg/kg	<1	<1	0.0
HK1418289-012	PKT-04 (2.5M)	EG3060: Hexavalent Chromium	18540-29-9	1	mg/kg	<1	<1	0.0
EG: Metals and Major Cations (QC Lot: 3488579)								
HK1418289-022	PKT-08 (0.5M)	EG3060: Hexavalent Chromium	18540-29-9	1	mg/kg	<1	<1	0.0
EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 3475818)								
HK1417122-001	Anonymous	Fluoranthene	206-44-0	150	µg/kg	529	650	20.6
		Pyrene	129-00-0	150	µg/kg	562	718	24.2
		Benz(a)anthracene	56-55-3	150	µg/kg	248	288	14.7
		Chrysene	218-01-9	150	µg/kg	280	286	2.0
		Benzo(b)fluoranthene	205-99-2	150	µg/kg	331	348	5.1
		Benzo(k)fluoranthene	207-08-9	150	µg/kg	<150	<150	0.0
		Benzo(a)pyrene	50-32-8	150	µg/kg	305	326	6.4
		Indeno(1.2.3.cd)pyrene	193-39-5	150	µg/kg	183	200	8.5
		Dibenz(a,h)anthracene	53-70-3	150	µg/kg	<150	<150	0.0
		Benzo(g,h,i)perylene	191-24-2	150	µg/kg	166	181	8.8
		Naphthalene	91-20-3	50	µg/kg	81	66	20.4
		Acenaphthylene	208-96-8	50	µg/kg	<50	<50	0.0



Matrix: SOIL				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 3475818) - Continued								
HK1417122-001	Anonymous	Acenaphthene	83-32-9	50	µg/kg	<50	<50	0.0
		Fluorene	86-73-7	50	µg/kg	<50	<50	0.0
		Phenanthrene	85-01-8	50	µg/kg	112	109	2.6
		Anthracene	120-12-7	50	µg/kg	65	72	9.3
EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 3486794)								
HK1418289-001	PKT-01 (0.5M)	Benzo(a)pyrene	50-32-8	50	µg/kg	<50	<50	0.0
		Dibenz(a,h)anthracene	53-70-3	50	µg/kg	<50	<50	0.0
		Naphthalene	91-20-3	500	µg/kg	<500	<500	0.0
		Acenaphthylene	208-96-8	500	µg/kg	<500	<500	0.0
		Acenaphthene	83-32-9	500	µg/kg	<500	<500	0.0
		Fluorene	86-73-7	500	µg/kg	<500	<500	0.0
		Phenanthrene	85-01-8	500	µg/kg	<500	<500	0.0
		Anthracene	120-12-7	500	µg/kg	<500	<500	0.0
		Fluoranthene	206-44-0	500	µg/kg	<500	<500	0.0
		Pyrene	129-00-0	500	µg/kg	<500	<500	0.0
		Benz(a)anthracene	56-55-3	500	µg/kg	<500	<500	0.0
		Chrysene	218-01-9	500	µg/kg	<500	<500	0.0
		Benzo(b)fluoranthene	205-99-2	500	µg/kg	<500	<500	0.0
		Benzo(k)fluoranthene	207-08-9	500	µg/kg	<500	<500	0.0
Indeno(1.2.3.cd)pyrene	193-39-5	500	µg/kg	<500	<500	0.0		
Benzo(g,h,i)perylene	191-24-2	500	µg/kg	<500	<500	0.0		
EP-076B: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 3475818)								
HK1417122-001	Anonymous	Bis(2-ethylhexyl)phthalate	117-81-7	1000	µg/kg	<1000	<1000	0.0
		Hexachlorobenzene (HCB)	118-74-1	50	µg/kg	<50	<50	0.0
		Phenol	108-95-2	500	µg/kg	<500	<500	0.0
EP-076B: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 3486794)								
HK1418289-001	PKT-01 (0.5M)	Hexachlorobenzene (HCB)	118-74-1	200	µg/kg	<200	<200	0.0
		Phenol	108-95-2	500	µg/kg	<500	<500	0.0
		Bis(2-ethylhexyl)phthalate	117-81-7	5000	µg/kg	<5000	<5000	0.0
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3486780)								
HK1418289-001	PKT-01 (0.5M)	C6 - C8 Fraction	----	5	mg/kg	<5	<5	0.0
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3486782)								
HK1418289-021	PKT-07 (3.0M)	C6 - C8 Fraction	----	5	mg/kg	<5	<5	0.0
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3486793)								
HK1418289-001	PKT-01 (0.5M)	C9 - C16 Fraction	----	200	mg/kg	<200	<200	0.0
		C17 - C35 Fraction	----	500	mg/kg	<500	<500	0.0
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3486795)								
HK1418289-021	PKT-07 (3.0M)	C9 - C16 Fraction	----	200	mg/kg	<200	<200	0.0
		C17 - C35 Fraction	----	500	mg/kg	<500	<500	0.0
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 3482176)								



Matrix: SOIL				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 3482176) - Continued								
HK1417909-001	Anonymous	Benzene	71-43-2	0.1	mg/kg	<0.1	<0.1	0.0
		Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	0.0
		Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	0.0
		Styrene	100-42-5	0.2	mg/kg	<0.2	<0.2	0.0
		ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	0.0
		meta- & para-Xylene	108-38-3	0.4	mg/kg	<0.4	<0.4	0.0
		Xylenes (Total)	106-42-3	----	1.0	mg/kg	<1.0	<1.0
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 3486781)								
HK1418289-001	PKT-01 (0.5M)	Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0
		Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0
		Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0
		Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0
		ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0
		meta- & para-Xylene	108-38-3	1.0	mg/kg	<1.0	<1.0	0.0
		Xylenes (Total)	106-42-3	----	2.0	mg/kg	<2.0	<2.0
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 3486783)								
HK1418289-021	PKT-07 (3.0M)	Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0
		Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0
		Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0
		Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0
		ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0
		meta- & para-Xylene	108-38-3	1.0	mg/kg	<1.0	<1.0	0.0
		Xylenes (Total)	106-42-3	----	2.0	mg/kg	<2.0	<2.0
EP-074_SR-B: Oxygenated Compounds (QC Lot: 3482176)								
HK1417909-001	Anonymous	2-Propanone (Acetone)	67-64-1	2	mg/kg	<2	<2	0.0
		2-Butanone (MEK)	78-93-3	2	mg/kg	<2	<2	0.0
EP-074_SR-B: Oxygenated Compounds (QC Lot: 3486781)								
HK1418289-001	PKT-01 (0.5M)	2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.0
		2-Propanone (Acetone)	67-64-1	50	mg/kg	<50	<50	0.0
EP-074_SR-B: Oxygenated Compounds (QC Lot: 3486783)								
HK1418289-021	PKT-07 (3.0M)	2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.0
		2-Propanone (Acetone)	67-64-1	50	mg/kg	<50	<50	0.0
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3482176)								
HK1417909-001	Anonymous	Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	0.0
		Trichloroethene	79-01-6	0.1	mg/kg	<0.1	<0.1	0.0
		Methylene chloride	75-09-2	0.5	mg/kg	<0.5	<0.5	0.0
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3486781)								



Matrix: SOIL				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3486781) - Continued								
HK1418289-001	PKT-01 (0.5M)	Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	0.0
		Trichloroethene	79-01-6	0.1	mg/kg	<0.1	<0.1	0.0
		Methylene chloride	75-09-2	0.5	mg/kg	<0.5	<0.5	0.0
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3486783)								
HK1418289-021	PKT-07 (3.0M)	Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	0.0
		Trichloroethene	79-01-6	0.1	mg/kg	<0.1	<0.1	0.0
		Methylene chloride	75-09-2	0.5	mg/kg	<0.5	<0.5	0.0
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 3482176)								
HK1417909-001	Anonymous	Chloroform	67-66-3	0.04	mg/kg	<0.04	<0.04	0.0
		Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	<0.1	0.0
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 3486781)								
HK1418289-001	PKT-01 (0.5M)	Chloroform	67-66-3	0.04	mg/kg	<0.04	<0.04	0.0
		Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	<0.1	0.0
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 3486783)								
HK1418289-021	PKT-07 (3.0M)	Chloroform	67-66-3	0.04	mg/kg	<0.04	<0.04	0.0
		Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	<0.1	0.0
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 3482176)								
HK1417909-001	Anonymous	Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.2	mg/kg	<0.2	<0.2	0.0
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 3486781)								
HK1418289-001	PKT-01 (0.5M)	Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	mg/kg	<0.5	<0.5	0.0
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 3486783)								
HK1418289-021	PKT-07 (3.0M)	Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	mg/kg	<0.5	<0.5	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: SOIL				Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)		
						LCS	DCS	Low	High	Value	Control Limit	
EG: Metals and Major Cations (QC Lot: 3488563)												
EG036: Mercury	7439-97-6	0.02	mg/kg	<0.02	0.1 mg/kg	93.7	----	76	110	----	----	
EG: Metals and Major Cations (QC Lot: 3488566)												
EG036: Mercury	7439-97-6	0.02	mg/kg	<0.02	0.1 mg/kg	89.6	----	76	110	----	----	
EG: Metals and Major Cations (QC Lot: 3488572)												
EG020: Antimony	7440-36-0	1	mg/kg	<1	5 mg/kg	89.7	----	78	104	----	----	
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	96.4	----	75	109	----	----	
EG020: Barium	7440-39-3	1	mg/kg	<1	5 mg/kg	91.0	----	79	111	----	----	
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	94.0	----	81	109	----	----	
EG020: Cobalt	7440-48-4	1	mg/kg	<1	5 mg/kg	99.7	----	77	107	----	----	
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	100	----	79	105	----	----	
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	91.6	----	80	104	----	----	
EG020: Manganese	7439-96-5	1	mg/kg	<1	5 mg/kg	96.4	----	77	115	----	----	



Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3488572) - Continued											
EG020: Molybdenum	7439-98-7	1	mg/kg	<1	5 mg/kg	93.4	----	82	106	----	----
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	95.3	----	79	105	----	----
EG020: Tin	7440-31-5	1	mg/kg	<1	5 mg/kg	92.1	----	79	103	----	----
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	106	----	76	114	----	----
EG: Metals and Major Cations (QC Lot: 3488573)											
EG020: Antimony	7440-36-0	1	mg/kg	<1	5 mg/kg	93.6	----	78	104	----	----
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	92.0	----	75	109	----	----
EG020: Barium	7440-39-3	1	mg/kg	<1	5 mg/kg	97.6	----	79	111	----	----
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	101	----	81	109	----	----
EG020: Cobalt	7440-48-4	1	mg/kg	<1	5 mg/kg	98.3	----	77	107	----	----
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	94.9	----	79	105	----	----
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	91.2	----	80	104	----	----
EG020: Manganese	7439-96-5	1	mg/kg	<1	5 mg/kg	103	----	77	115	----	----
EG020: Molybdenum	7439-98-7	1	mg/kg	<1	5 mg/kg	92.3	----	82	106	----	----
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	92.6	----	79	105	----	----
EG020: Tin	7440-31-5	1	mg/kg	<1	5 mg/kg	96.6	----	79	103	----	----
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	109	----	76	114	----	----
EG: Metals and Major Cations (QC Lot: 3488577)											
EG3060: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	112	----	92	122	----	----
EG: Metals and Major Cations (QC Lot: 3488579)											
EG3060: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	114	----	92	122	----	----
EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 3475818)											
Naphthalene	91-20-3	25	µg/kg	<50	250 µg/kg	80.7	----	63	111	----	----
Acenaphthylene	208-96-8	25	µg/kg	<50	250 µg/kg	81.7	----	63	111	----	----
Acenaphthene	83-32-9	25	µg/kg	<50	250 µg/kg	82.9	----	67	108	----	----
Fluorene	86-73-7	25	µg/kg	<50	250 µg/kg	85.4	----	67	110	----	----
Phenanthrene	85-01-8	25	µg/kg	<50	250 µg/kg	83.1	----	67	108	----	----
Anthracene	120-12-7	25	µg/kg	<50	250 µg/kg	82.1	----	69	113	----	----
Fluoranthene	206-44-0	25	µg/kg	<50	250 µg/kg	87.7	----	71	114	----	----
Pyrene	129-00-0	25	µg/kg	<50	250 µg/kg	88.5	----	71	114	----	----
Benz(a)anthracene	56-55-3	25	µg/kg	<50	250 µg/kg	85.8	----	63	114	----	----
Chrysene	218-01-9	25	µg/kg	<50	250 µg/kg	104	----	67	122	----	----
Benzo(b)fluoranthene	205-99-2	25	µg/kg	<50	250 µg/kg	84.1	----	59	114	----	----
Benzo(k)fluoranthene	207-08-9	25	µg/kg	<50	250 µg/kg	76.9	----	64	119	----	----
Benzo(a)pyrene	50-32-8	25	µg/kg	<50	250 µg/kg	77.6	----	58	117	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	25	µg/kg	<50	250 µg/kg	92.2	----	51	115	----	----
Dibenz(a,h)anthracene	53-70-3	25	µg/kg	<50	250 µg/kg	104	----	59	114	----	----
Benzo(g,h,i)perylene	191-24-2	25	µg/kg	<50	250 µg/kg	89.8	----	58	120	----	----
EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 3486794)											



Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 3486794) - Continued											
Naphthalene	91-20-3	25	µg/kg	<50	25 µg/kg	84.4	----	63	111	----	----
Acenaphthylene	208-96-8	25	µg/kg	<50	25 µg/kg	84.8	----	63	111	----	----
Acenaphthene	83-32-9	25	µg/kg	<50	25 µg/kg	86.8	----	67	108	----	----
Fluorene	86-73-7	25	µg/kg	<50	25 µg/kg	87.1	----	67	110	----	----
Phenanthrene	85-01-8	25	µg/kg	<50	25 µg/kg	86.3	----	67	108	----	----
Anthracene	120-12-7	25	µg/kg	<50	25 µg/kg	85.5	----	69	113	----	----
Fluoranthene	206-44-0	25	µg/kg	<50	25 µg/kg	93.8	----	71	114	----	----
Pyrene	129-00-0	25	µg/kg	<50	25 µg/kg	94.9	----	71	114	----	----
Benz(a)anthracene	56-55-3	25	µg/kg	<50	25 µg/kg	86.8	----	63	114	----	----
Chrysene	218-01-9	25	µg/kg	<50	25 µg/kg	99.9	----	67	122	----	----
Benzo(b)fluoranthene	205-99-2	25	µg/kg	<50	25 µg/kg	92.5	----	59	114	----	----
Benzo(k)fluoranthene	207-08-9	25	µg/kg	<50	25 µg/kg	89.1	----	64	119	----	----
Benzo(a)pyrene	50-32-8	25	µg/kg	<50	25 µg/kg	97.9	----	58	117	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	25	µg/kg	<50	25 µg/kg	85.3	----	51	115	----	----
Dibenz(a,h)anthracene	53-70-3	25	µg/kg	<50	25 µg/kg	106	----	59	114	----	----
Benzo(g,h,i)perylene	191-24-2	25	µg/kg	<50	25 µg/kg	91.8	----	58	120	----	----
EP-076B: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 3475818)											
Phenol	108-95-2	25	µg/kg	<500	250 µg/kg	76.0	----	52	118	----	----
Hexachlorobenzene (HCB)	118-74-1	25	µg/kg	<50	250 µg/kg	78.5	----	54	113	----	----
Bis(2-ethylhexyl)phthalate	117-81-7	25	µg/kg	<1000	250 µg/kg	112	----	85	114	----	----
EP-076B: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 3486794)											
Phenol	108-95-2	25	µg/kg	<500	25 µg/kg	84.4	----	52	118	----	----
Hexachlorobenzene (HCB)	118-74-1	25	µg/kg	<50	25 µg/kg	78.4	----	54	113	----	----
Bis(2-ethylhexyl)phthalate	117-81-7	25	µg/kg	<1000	25 µg/kg	93.6	----	85	114	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3486780)											
C6 - C8 Fraction	----	5	mg/kg	<5	4.5 mg/kg	107	----	71	119	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3486782)											
C6 - C8 Fraction	----	5	mg/kg	<5	4.5 mg/kg	103	----	71	119	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3486793)											
C9 - C16 Fraction	----	200	mg/kg	<200	32 mg/kg	85.2	----	51	122	----	----
C17 - C35 Fraction	----	500	mg/kg	<500	90 mg/kg	72.5	----	11	129	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3486795)											
C9 - C16 Fraction	----	200	mg/kg	<200	32 mg/kg	82.3	----	51	122	----	----
C17 - C35 Fraction	----	500	mg/kg	<500	90 mg/kg	68.8	----	11	129	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 3482176)											
Benzene	71-43-2	0.1	mg/kg	<0.1	0.25 mg/kg	103	----	55	128	----	----
Toluene	108-88-3	0.2	mg/kg	<0.2	0.25 mg/kg	105	----	66	119	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.25 mg/kg	104	----	66	123	----	----



Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 3482176) - Continued											
meta- & para-Xylene	108-38-3	0.4	mg/kg	<0.4	0.50 mg/kg	104	----	78	122	----	----
	106-42-3										
Styrene	100-42-5	0.2	mg/kg	<0.2	0.25 mg/kg	102	----	87	111	----	----
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.25 mg/kg	98.0	----	72	125	----	----
Xylenes (Total)	----	1.0	mg/kg	<1.0	0.75 mg/kg	102	----	76	122	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 3486781)											
Benzene	71-43-2	0.1	mg/kg	<0.1	0.25 mg/kg	107	----	55	128	----	----
Toluene	108-88-3	0.2	mg/kg	<0.2	0.25 mg/kg	102	----	66	119	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.25 mg/kg	105	----	66	123	----	----
meta- & para-Xylene	108-38-3	0.4	mg/kg	<0.4	0.50 mg/kg	106	----	78	122	----	----
	106-42-3										
Styrene	100-42-5	0.2	mg/kg	<0.2	0.25 mg/kg	104	----	87	111	----	----
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.25 mg/kg	107	----	72	125	----	----
Xylenes (Total)	----	1.0	mg/kg	<1.0	0.75 mg/kg	106	----	76	122	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 3486783)											
Benzene	71-43-2	0.1	mg/kg	<0.1	0.25 mg/kg	100	----	55	128	----	----
Toluene	108-88-3	0.2	mg/kg	<0.2	0.25 mg/kg	102	----	66	119	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.25 mg/kg	104	----	66	123	----	----
meta- & para-Xylene	108-38-3	0.4	mg/kg	<0.4	0.50 mg/kg	103	----	78	122	----	----
	106-42-3										
Styrene	100-42-5	0.2	mg/kg	<0.2	0.25 mg/kg	103	----	87	111	----	----
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.25 mg/kg	105	----	72	125	----	----
Xylenes (Total)	----	1.0	mg/kg	<1.0	0.75 mg/kg	104	----	76	122	----	----
EP-074_SR-B: Oxygenated Compounds (QC Lot: 3482176)											
2-Propanone (Acetone)	67-64-1	2	mg/kg	<2	2.5 mg/kg	98.4	----	81	129	----	----
2-Butanone (MEK)	78-93-3	2	mg/kg	<2	2.5 mg/kg	97.1	----	61	133	----	----
EP-074_SR-B: Oxygenated Compounds (QC Lot: 3486781)											
2-Propanone (Acetone)	67-64-1	2	mg/kg	<2	2.5 mg/kg	106	----	81	129	----	----
2-Butanone (MEK)	78-93-3	2	mg/kg	<2	2.5 mg/kg	97.7	----	61	133	----	----
EP-074_SR-B: Oxygenated Compounds (QC Lot: 3486783)											
2-Propanone (Acetone)	67-64-1	2	mg/kg	<2	2.5 mg/kg	102	----	81	129	----	----
2-Butanone (MEK)	78-93-3	2	mg/kg	<2	2.5 mg/kg	96.1	----	61	133	----	----
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3482176)											
Methylene chloride	75-09-2	0.5	mg/kg	<0.5	0.25 mg/kg	105	----	84	131	----	----
Trichloroethene	79-01-6	0.1	mg/kg	<0.1	0.25 mg/kg	104	----	82	114	----	----
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	0.25 mg/kg	105	----	89	110	----	----
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3486781)											
Methylene chloride	75-09-2	0.5	mg/kg	<0.5	0.25 mg/kg	108	----	84	131	----	----
Trichloroethene	79-01-6	0.1	mg/kg	<0.1	0.25 mg/kg	104	----	82	114	----	----



Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3486781) - Continued											
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	0.25 mg/kg	103	----	89	110	----	----
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3486783)											
Methylene chloride	75-09-2	0.5	mg/kg	<0.5	0.25 mg/kg	107	----	84	131	----	----
Trichloroethene	79-01-6	0.1	mg/kg	<0.1	0.25 mg/kg	98.9	----	82	114	----	----
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	0.25 mg/kg	98.8	----	89	110	----	----
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 3482176)											
Chloroform	67-66-3	0.04	mg/kg	<0.04	0.25 mg/kg	102	----	77	113	----	----
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	0.25 mg/kg	105	----	71	125	----	----
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 3486781)											
Chloroform	67-66-3	0.04	mg/kg	<0.04	0.25 mg/kg	99.9	----	77	113	----	----
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	0.25 mg/kg	100	----	71	125	----	----
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 3486783)											
Chloroform	67-66-3	0.04	mg/kg	<0.04	0.25 mg/kg	101	----	77	113	----	----
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	0.25 mg/kg	97.9	----	71	125	----	----
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 3482176)											
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.2	mg/kg	<0.2	0.25 mg/kg	94.4	----	68	116	----	----
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 3486781)											
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.2	mg/kg	<0.2	0.25 mg/kg	101	----	68	116	----	----
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 3486783)											
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.2	mg/kg	<0.2	0.25 mg/kg	94.6	----	68	116	----	----



Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: SOIL

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3488563)										
HK1418289-001	PKT-01 (0.5M)	EG036: Mercury	7439-97-6	0.1 mg/kg	99.5	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 3488566)										
HK1418289-021	PKT-07 (3.0M)	EG036: Mercury	7439-97-6	0.1 mg/kg	85.4	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 3488572)										
HK1418289-001	PKT-01 (0.5M)	EG020: Antimony	7440-36-0	5 mg/kg	99.3	----	75	125	----	----
		EG020: Arsenic	7440-38-2	5 mg/kg	84.9	----	75	125	----	----
		EG020: Barium	7440-39-3	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Cadmium	7440-43-9	5 mg/kg	98.6	----	75	125	----	----
		EG020: Cobalt	7440-48-4	50 mg/kg	104	----	75	125	----	----
		EG020: Copper	7440-50-8	5 mg/kg	87.4	----	75	125	----	----
		EG020: Lead	7439-92-1	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Manganese	7439-96-5	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Molybdenum	7439-98-7	5 mg/kg	94.3	----	75	125	----	----
		EG020: Nickel	7440-02-0	5 mg/kg	96.1	----	75	125	----	----
EG020: Tin	7440-31-5	5 mg/kg	94.0	----	75	125	----	----		
EG020: Zinc	7440-66-6	50 mg/kg	102	----	75	125	----	----		
EG: Metals and Major Cations (QC Lot: 3488573)										
HK1418289-021	PKT-07 (3.0M)	EG020: Antimony	7440-36-0	5 mg/kg	95.9	----	75	125	----	----
		EG020: Arsenic	7440-38-2	5 mg/kg	94.5	----	75	125	----	----
		EG020: Barium	7440-39-3	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Cadmium	7440-43-9	5 mg/kg	101	----	75	125	----	----
		EG020: Cobalt	7440-48-4	5 mg/kg	89.8	----	75	125	----	----
		EG020: Copper	7440-50-8	5 mg/kg	83.7	----	75	125	----	----
		EG020: Lead	7439-92-1	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Manganese	7439-96-5	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Molybdenum	7439-98-7	5 mg/kg	97.0	----	75	125	----	----
		EG020: Nickel	7440-02-0	5 mg/kg	87.6	----	75	125	----	----
EG020: Tin	7440-31-5	5 mg/kg	92.6	----	75	125	----	----		
EG020: Zinc	7440-66-6	5 mg/kg	# Not Determined	----	75	125	----	----		
EG: Metals and Major Cations (QC Lot: 3488577)										



Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3488577) - Continued										
HK1418289-001	PKT-01 (0.5M)	EG3060: Hexavalent Chromium	18540-29-9	40 mg/kg	76.8	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 3488579)										
HK1418289-021	PKT-07 (3.0M)	EG3060: Hexavalent Chromium	18540-29-9	40 mg/kg	114	----	75	125	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3486780)										
HK1418289-002	PKT-01 (1.5M)	C6 - C8 Fraction	----	4.5 mg/kg	121	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3486782)										
HK1418289-022	PKT-08 (0.5M)	C6 - C8 Fraction	----	4.5 mg/kg	105	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3486793)										
HK1418289-002	PKT-01 (1.5M)	C9 - C16 Fraction	----	32 mg/kg	89.0	----	50	130	----	----
		C17 - C35 Fraction	----	90 mg/kg	68.3	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3486795)										
HK1418289-022	PKT-08 (0.5M)	C9 - C16 Fraction	----	32 mg/kg	82.2	----	50	130	----	----
		C17 - C35 Fraction	----	90 mg/kg	80.9	----	50	130	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates			
2-Fluorobiphenyl	321-60-8	50	130
4-Terphenyl-d14	1718-51-0	50	130
EP-080_SRS: TPH(Volatile)/BTEX Surrogate			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121
EP-074_SR-S: VOC Surrogates			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121

The Open Area at Sha Tau Kok Road near Loi Tung

CERTIFICATE OF ANALYSIS

Client	: ACTION UNITED ENVIRO SERVICES	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 16
Contact	: MR BEN TAM	Contact	: Fung Lim Chee, Richard	Work Order	: HK1418853
Address	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: Bentam@fordbusiness.com	E-mail	: Richard.Fung@alsglobal.com	Date Samples Received	: 13-JUN-2014
Telephone	: +852 2959 6059	Telephone	: +852 2610 1044	Issue Date	: 04-JUL-2014
Facsimile	: +852 2959 6079	Facsimile	: +852 2610 2021	No. of samples received	: 13
Project	: TCS00670_13	Quote number	: ----	No. of samples analysed	: 13
Order number	: ----				
C-O-C number	: H026287-H026288				
Site	: SHA TAU KOK ROAD				

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Hong Kong Accreditation Service (HKAS) has accredited this laboratory (ALS Technichem (HK) Pty Ltd) under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories. The results shown in this certificate were determined by this laboratory in accordance with its terms of accreditation.

This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in the Electronic Transactions Ordinance of Hong Kong, Chapter 553, Section 6.

Signatories	Position	Authorised results for
Chan Ka Yu, Karen	Assistant Manager - Organics	Organics
Wong Wing, Kenneth	Manager - Metals	Inorganics



General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 24-JUN-2014

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific comments for Work Order: **HK1418853**

Site Name: Sha Tau Kok Road near Lian Tang.

Sample(s) were picked up from client by ALS Technichem (HK) staff in a chilled condition.

Soil sample(s) analysed on an as received basis. Result(s) reported on a dry weight basis.

Soil sample(s) as received, digested by In-house method E-ASTM D3974-09 based on ASTM D3974-09, prior to determination of metals.



Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	STK-A2-1 (1.4M)	STK-A2-1 (2.5M)	STK-A2-1 (3.5M)	STK-A2-3 (0.5M)	STK-A2-3 (1.5M)
				12-JUN-2014 16:15	12-JUN-2014 16:50	12-JUN-2014 17:00	11-JUN-2014 16:10	11-JUN-2014 16:20
				HK1418853-001	HK1418853-002	HK1418853-003	HK1418853-004	HK1418853-005
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	----	0.1	%	15.3	12.6	13.4	11.9	10.0
EG: Metals and Major Cations								
EG020: Antimony	7440-36-0	1	mg/kg	2	<1	<1	<1	<1
EG020: Arsenic	7440-38-2	1	mg/kg	17	2	1	10	4
EG020: Barium	7440-39-3	1	mg/kg	52	19	22	38	36
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EG020: Cobalt	7440-48-4	1	mg/kg	1	<1	<1	2	<1
EG020: Copper	7440-50-8	1	mg/kg	10	2	4	16	4
EG020: Lead	7439-92-1	1	mg/kg	105	10	13	13	20
EG020: Manganese	7439-96-5	1	mg/kg	106	13	16	116	54
EG020: Molybdenum	7439-98-7	1	mg/kg	9	2	<1	2	3
EG020: Nickel	7440-02-0	1	mg/kg	4	<1	1	2	2
EG020: Tin	7440-31-5	1	mg/kg	2	<1	<1	2	1
EG020: Zinc	7440-66-6	1	mg/kg	44	10	15	25	17
EG036: Mercury	7439-97-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EG049: Trivalent Chromium	16065-83-1	1	mg/kg	22	5	4	9	8
EG3060: Hexavalent Chromium	18540-29-9	1	mg/kg	<1	<1	<1	<1	<1
EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs)								
Naphthalene	91-20-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Acenaphthylene	208-96-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Acenaphthene	83-32-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Fluorene	86-73-7	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Phenanthrene	85-01-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Anthracene	120-12-7	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Fluoranthene	206-44-0	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Pyrene	129-00-0	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Benz(a)anthracene	56-55-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Chrysene	218-01-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Benzo(b)fluoranthene	205-99-2	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Benzo(k)fluoranthene	207-08-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Benzo(a)pyrene	50-32-8	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
Indeno(1.2.3.cd)pyrene	193-39-5	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Dibenz(a,h)anthracene	53-70-3	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(g,h,i)perylene	191-24-2	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP-076B: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate								
Phenol	108-95-2	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.200	mg/kg	<0.200	<0.200	<0.200	<0.200	<0.200
Bis(2-ethylhexyl)phthalate	117-81-7	5.00	mg/kg	<5.00	<5.00	<5.00	<5.00	<5.00



Sub-Matrix: SOIL			Client sample ID	STK-A2-1 (1.4M)	STK-A2-1 (2.5M)	STK-A2-1 (3.5M)	STK-A2-3 (0.5M)	STK-A2-3 (1.5M)
			Client sampling date / time	12-JUN-2014 16:15	12-JUN-2014 16:50	12-JUN-2014 17:00	11-JUN-2014 16:10	11-JUN-2014 16:20
Compound	CAS Number	LOR	Unit	HK1418853-001	HK1418853-002	HK1418853-003	HK1418853-004	HK1418853-005
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)								
C6 - C8 Fraction	----	5	mg/kg	<5	<5	<5	<5	<5
C9 - C16 Fraction	----	200	mg/kg	<200	<200	<200	<200	<200
C17 - C35 Fraction	----	500	mg/kg	<500	<500	<500	<500	<500
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Xylenes (Total)	----	2.0	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
EP-074_SR-B: Oxygenated Compounds								
2-Propanone (Acetone)	67-64-1	50	mg/kg	<50	<50	<50	<50	<50
2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	<5	<5	<5
EP-074_SR-E: Halogenated Aliphatics								
Methylene chloride	75-09-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	79-01-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04
EP-074_SR-G: Trihalomethanes (THM)								
Chloroform	67-66-3	0.04	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP-074_SR-I: Methyl-tert-butyl Ether								
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates Surrogate control limits listed at end of this report.								
2-Fluorobiphenyl	321-60-8	0.1	%	96.4	92.4	98.8	104	97.7
4-Terphenyl-d14	1718-51-0	0.1	%	98.4	94.5	89.8	93.7	91.0
EP-080_SRS: TPH(Volatile)/BTEX Surrogate Surrogate control limits listed at end of this report.								
Dibromofluoromethane	1868-53-7	0.1	%	89.9	90.1	90.8	91.2	90.9
Toluene-D8	2037-26-5	0.1	%	99.8	99.9	101	100	101
4-Bromofluorobenzene	460-00-4	0.1	%	104	99.0	106	107	105
EP-074_SR-S: VOC Surrogates Surrogate control limits listed at end of this report.								
Dibromofluoromethane	1868-53-7	0.1	%	89.9	90.1	90.8	91.2	90.9
Toluene-D8	2037-26-5	0.1	%	99.8	99.9	101	100	101
4-Bromofluorobenzene	460-00-4	0.1	%	104	99.0	106	107	105



Sub-Matrix: SOIL			Client sample ID	STK-A2-3 (3.0M)	STK-A2-4 (0.5M)	STK-A2-4 (1.5M)	STK-A2-4 (3.0M)	STK-A2-5 (0.5M)
			Client sampling date / time	11-JUN-2014 16:30	11-JUN-2014 16:50	11-JUN-2014 17:00	11-JUN-2014 17:05	11-JUN-2014 17:20
Compound	CAS Number	LOR	Unit	HK1418853-006	HK1418853-007	HK1418853-008	HK1418853-009	HK1418853-010
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	---	0.1	%	16.7	9.4	18.0	18.5	13.7
EG: Metals and Major Cations								
EG020: Antimony	7440-36-0	1	mg/kg	<1	<1	<1	<1	<1
EG020: Arsenic	7440-38-2	1	mg/kg	4	8	8	<1	9
EG020: Barium	7440-39-3	1	mg/kg	23	51	55	37	55
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EG020: Cobalt	7440-48-4	1	mg/kg	<1	2	1	<1	2
EG020: Copper	7440-50-8	1	mg/kg	2	18	6	2	12
EG020: Lead	7439-92-1	1	mg/kg	12	23	29	23	30
EG020: Manganese	7439-96-5	1	mg/kg	19	253	32	28	190
EG020: Molybdenum	7439-98-7	1	mg/kg	2	3	6	1	4
EG020: Nickel	7440-02-0	1	mg/kg	<1	2	3	2	4
EG020: Tin	7440-31-5	1	mg/kg	<1	4	2	1	3
EG020: Zinc	7440-66-6	1	mg/kg	10	74	27	18	171
EG036: Mercury	7439-97-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EG049: Trivalent Chromium	16065-83-1	1	mg/kg	6	8	14	6	12
EG3060: Hexavalent Chromium	18540-29-9	1	mg/kg	<1	<1	<1	<1	<1
EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs)								
Naphthalene	91-20-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Acenaphthylene	208-96-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Acenaphthene	83-32-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Fluorene	86-73-7	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Phenanthrene	85-01-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Anthracene	120-12-7	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Fluoranthene	206-44-0	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	0.548
Pyrene	129-00-0	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	0.639
Benz(a)anthracene	56-55-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Chrysene	218-01-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Benzo(b)fluoranthene	205-99-2	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Benzo(k)fluoranthene	207-08-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Benzo(a)pyrene	50-32-8	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	0.338
Indeno(1.2.3.cd)pyrene	193-39-5	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Dibenz(a,h)anthracene	53-70-3	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	0.063
Benzo(g,h,i)perylene	191-24-2	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP-076B: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate								
Phenol	108-95-2	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.200	mg/kg	<0.200	<0.200	<0.200	<0.200	<0.200
Bis(2-ethylhexyl)phthalate	117-81-7	5.00	mg/kg	<5.00	<5.00	<5.00	<5.00	<5.00
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)								



Sub-Matrix: SOIL			Client sample ID	STK-A2-3 (3.0M)	STK-A2-4 (0.5M)	STK-A2-4 (1.5M)	STK-A2-4 (3.0M)	STK-A2-5 (0.5M)
			Client sampling date / time	11-JUN-2014 16:30	11-JUN-2014 16:50	11-JUN-2014 17:00	11-JUN-2014 17:05	11-JUN-2014 17:20
Compound	CAS Number	LOR	Unit	HK1418853-006	HK1418853-007	HK1418853-008	HK1418853-009	HK1418853-010
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) - Continued								
C6 - C8 Fraction	----	5	mg/kg	<5	<5	<5	<5	<5
C9 - C16 Fraction	----	200	mg/kg	<200	<200	<200	<200	<200
C17 - C35 Fraction	----	500	mg/kg	<500	<500	<500	<500	<500
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Xylenes (Total)	----	2.0	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
EP-074_SR-B: Oxygenated Compounds								
2-Propanone (Acetone)	67-64-1	50	mg/kg	<50	<50	<50	<50	<50
2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	<5	<5	<5
EP-074_SR-E: Halogenated Aliphatics								
Methylene chloride	75-09-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	79-01-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04
EP-074_SR-G: Trihalomethanes (THM)								
Chloroform	67-66-3	0.04	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP-074_SR-I: Methyl-tert-butyl Ether								
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates Surrogate control limits listed at end of this report.								
2-Fluorobiphenyl	321-60-8	0.1	%	97.2	109	94.8	91.9	96.7
4-Terphenyl-d14	1718-51-0	0.1	%	89.3	108	88.7	84.1	81.1
EP-080_SRS: TPH(Volatile)/BTEX Surrogate Surrogate control limits listed at end of this report.								
Dibromofluoromethane	1868-53-7	0.1	%	90.0	89.9	90.0	90.2	92.6
Toluene-D8	2037-26-5	0.1	%	101	100	99.5	101	99.4
4-Bromofluorobenzene	460-00-4	0.1	%	106	105	106	104	107
EP-074_SR-S: VOC Surrogates Surrogate control limits listed at end of this report.								
Dibromofluoromethane	1868-53-7	0.1	%	90.0	89.9	90.0	90.2	92.6
Toluene-D8	2037-26-5	0.1	%	101	100	99.5	101	99.4
4-Bromofluorobenzene	460-00-4	0.1	%	106	105	106	104	107



Sub-Matrix: SOIL				Client sample ID	STK-A2-5 (1.5M)	STK-A2-5 (2.4M)	DUP-3		
				Client sampling date / time	11-JUN-2014 17:30	11-JUN-2014 17:40	[11-JUN-2014]		
Compound	CAS Number	LOR	Unit		HK1418853-011	HK1418853-012	HK1418853-013		
EA/ED: Physical and Aggregate Properties									
EA055: Moisture Content (dried @ 103°C)	----	0.1	%		15.2	12.8	16.7		
EG: Metals and Major Cations									
EG020: Antimony	7440-36-0	1	mg/kg		<1	<1	<1		
EG020: Arsenic	7440-38-2	1	mg/kg		9	3	<1		
EG020: Barium	7440-39-3	1	mg/kg		54	18	34		
EG020: Cadmium	7440-43-9	0.2	mg/kg		0.4	<0.2	<0.2		
EG020: Cobalt	7440-48-4	1	mg/kg		2	<1	<1		
EG020: Copper	7440-50-8	1	mg/kg		11	1	2		
EG020: Lead	7439-92-1	1	mg/kg		28	12	22		
EG020: Manganese	7439-96-5	1	mg/kg		140	25	25		
EG020: Molybdenum	7439-98-7	1	mg/kg		4	1	<1		
EG020: Nickel	7440-02-0	1	mg/kg		4	<1	1		
EG020: Tin	7440-31-5	1	mg/kg		4	<1	1		
EG020: Zinc	7440-66-6	1	mg/kg		556	23	16		
EG036: Mercury	7439-97-6	0.2	mg/kg		<0.2	<0.2	<0.2		
EG049: Trivalent Chromium	16065-83-1	1	mg/kg		12	4	6		
EG3060: Hexavalent Chromium	18540-29-9	1	mg/kg		<1	<1	<1		
EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs)									
Naphthalene	91-20-3	0.500	mg/kg		<0.500	<0.500	<0.500		
Acenaphthylene	208-96-8	0.500	mg/kg		<0.500	<0.500	<0.500		
Acenaphthene	83-32-9	0.500	mg/kg		<0.500	<0.500	<0.500		
Fluorene	86-73-7	0.500	mg/kg		<0.500	<0.500	<0.500		
Phenanthrene	85-01-8	0.500	mg/kg		<0.500	<0.500	<0.500		
Anthracene	120-12-7	0.500	mg/kg		<0.500	<0.500	<0.500		
Fluoranthene	206-44-0	0.500	mg/kg		<0.500	<0.500	<0.500		
Pyrene	129-00-0	0.500	mg/kg		<0.500	<0.500	<0.500		
Benzo(a)anthracene	56-55-3	0.500	mg/kg		<0.500	<0.500	<0.500		
Chrysene	218-01-9	0.500	mg/kg		<0.500	<0.500	<0.500		
Benzo(b)fluoranthene	205-99-2	0.500	mg/kg		<0.500	<0.500	<0.500		
Benzo(k)fluoranthene	207-08-9	0.500	mg/kg		<0.500	<0.500	<0.500		
Benzo(a)pyrene	50-32-8	0.050	mg/kg		0.118	<0.050	<0.050		
Indeno(1.2.3.cd)pyrene	193-39-5	0.500	mg/kg		<0.500	<0.500	<0.500		
Dibenz(a,h)anthracene	53-70-3	0.050	mg/kg		<0.050	<0.050	<0.050		
Benzo(g,h,i)perylene	191-24-2	0.500	mg/kg		<0.500	<0.500	<0.500		
EP-076B: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate									
Phenol	108-95-2	0.50	mg/kg		<0.50	<0.50	<0.50		
Hexachlorobenzene (HCB)	118-74-1	0.200	mg/kg		<0.200	<0.200	<0.200		
Bis(2-ethylhexyl)phthalate	117-81-7	5.00	mg/kg		<5.00	<5.00	<5.00		
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)									



Sub-Matrix: SOIL				Client sample ID	STK-A2-5 (1.5M)	STK-A2-5 (2.4M)	DUP-3		
				Client sampling date / time	11-JUN-2014 17:30	11-JUN-2014 17:40	[11-JUN-2014]		
Compound	CAS Number	LOR	Unit		HK1418853-011	HK1418853-012	HK1418853-013		
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) - Continued									
C6 - C8 Fraction	----	5	mg/kg		<5	<5	<5		
C9 - C16 Fraction	----	200	mg/kg		<200	<200	<200		
C17 - C35 Fraction	----	500	mg/kg		<500	<500	<500		
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2		
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5		
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5		
meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg		<1.0	<1.0	<1.0		
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5		
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5		
Xylenes (Total)	----	2.0	mg/kg		<2.0	<2.0	<2.0		
EP-074_SR-B: Oxygenated Compounds									
2-Propanone (Acetone)	67-64-1	50	mg/kg		<50	<50	<50		
2-Butanone (MEK)	78-93-3	5	mg/kg		<5	<5	<5		
EP-074_SR-E: Halogenated Aliphatics									
Methylene chloride	75-09-2	0.5	mg/kg		<0.5	<0.5	<0.5		
Trichloroethene	79-01-6	0.1	mg/kg		<0.1	<0.1	<0.1		
Tetrachloroethene	127-18-4	0.04	mg/kg		<0.04	<0.04	<0.04		
EP-074_SR-G: Trihalomethanes (THM)									
Chloroform	67-66-3	0.04	mg/kg		<0.04	<0.04	<0.04		
Bromodichloromethane	75-27-4	0.1	mg/kg		<0.1	<0.1	<0.1		
EP-074_SR-I: Methyl-tert-butyl Ether									
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	mg/kg		<0.5	<0.5	<0.5		
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates Surrogate control limits listed at end of this report.									
2-Fluorobiphenyl	321-60-8	0.1	%		99.2	98.0	100		
4-Terphenyl-d14	1718-51-0	0.1	%		83.4	87.7	90.2		
EP-080_SRS: TPH(Volatile)/BTEX Surrogate Surrogate control limits listed at end of this report.									
Dibromofluoromethane	1868-53-7	0.1	%		89.9	89.9	90.0		
Toluene-D8	2037-26-5	0.1	%		101	100	102		
4-Bromofluorobenzene	460-00-4	0.1	%		106	104	105		
EP-074_SR-S: VOC Surrogates Surrogate control limits listed at end of this report.									
Dibromofluoromethane	1868-53-7	0.1	%		89.9	89.9	90.0		
Toluene-D8	2037-26-5	0.1	%		101	100	102		
4-Bromofluorobenzene	460-00-4	0.1	%		106	104	105		



Laboratory Duplicate (DUP) Report

Matrix: SOIL				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3498845)								
HK1418853-001	STK-A2-1 (1.4M)	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	15.3	15.1	1.4
HK1418853-011	STK-A2-5 (1.5M)	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	15.2	14.6	4.6
EG: Metals and Major Cations (QC Lot: 3496526)								
HK1418853-009	STK-A2-4 (3.0M)	EG036: Mercury	7439-97-6	0.2	mg/kg	<0.2	<0.2	0.0
EG: Metals and Major Cations (QC Lot: 3496532)								
HK1418830-003	Anonymous	EG020: Cadmium	7440-43-9	0.2	mg/kg	2.3	2.4	5.2
		EG020: Barium	7440-39-3	0.5	mg/kg	53.6	53.3	0.7
		EG020: Cobalt	7440-48-4	0.5	mg/kg	7.6	8.0	5.4
		EG020: Manganese	7439-96-5	0.5	mg/kg	160	162	0.9
		EG020: Tin	7440-31-5	0.5	mg/kg	39.6	39.9	1.0
		EG020: Antimony	7440-36-0	1	mg/kg	13	13	0.0
		EG020: Arsenic	7440-38-2	1	mg/kg	8	7	14.3
		EG020: Copper	7440-50-8	1	mg/kg	164	171	4.0
		EG020: Lead	7439-92-1	1	mg/kg	87	88	0.0
		EG020: Molybdenum	7439-98-7	1	mg/kg	29	29	0.0
		EG020: Nickel	7440-02-0	1	mg/kg	10	9	0.0
		EG020: Zinc	7440-66-6	1	mg/kg	19700	19100	3.2
HK1418853-009	STK-A2-4 (3.0M)	EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.0
		EG020: Antimony	7440-36-0	1	mg/kg	<1	<1	0.0
		EG020: Arsenic	7440-38-2	1	mg/kg	<1	<1	0.0
		EG020: Barium	7440-39-3	1	mg/kg	37	36	3.6
		EG020: Cobalt	7440-48-4	1	mg/kg	<1	<1	0.0
		EG020: Copper	7440-50-8	1	mg/kg	2	2	0.0
		EG020: Lead	7439-92-1	1	mg/kg	23	22	0.0
		EG020: Manganese	7439-96-5	1	mg/kg	28	28	0.0
		EG020: Molybdenum	7439-98-7	1	mg/kg	1	<1	0.0
		EG020: Nickel	7440-02-0	1	mg/kg	2	2	0.0
		EG020: Tin	7440-31-5	1	mg/kg	1	1	0.0
		EG020: Zinc	7440-66-6	1	mg/kg	18	17	6.4
EG: Metals and Major Cations (QC Lot: 3496534)								
HK1418853-002	STK-A2-1 (2.5M)	EG3060: Hexavalent Chromium	18540-29-9	1	mg/kg	<1	<1	0.0
HK1418853-012	STK-A2-5 (2.4M)	EG3060: Hexavalent Chromium	18540-29-9	1	mg/kg	<1	<1	0.0
EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 3488529)								
HK1418420-002	Anonymous	Acenaphthylene	208-96-8	50	µg/kg	<50	<50	0.0
		Acenaphthene	83-32-9	50	µg/kg	<50	<50	0.0
		Fluorene	86-73-7	50	µg/kg	<50	<50	0.0
		Phenanthrene	85-01-8	50	µg/kg	<50	<50	0.0
		Benz(a)anthracene	56-55-3	50	µg/kg	<50	<50	0.0
		Chrysene	218-01-9	50	µg/kg	54	<50	7.7



Matrix: SOIL				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 3488529) - Continued								
HK1418420-002	Anonymous	Benzo(b)fluoranthene	205-99-2	50	µg/kg	74	62	18.8
		Benzo(k)fluoranthene	207-08-9	50	µg/kg	<50	<50	0.0
		Indeno(1.2.3.cd)pyrene	193-39-5	50	µg/kg	56	<50	10.6
		Dibenz(a.h)anthracene	53-70-3	50	µg/kg	<50	<50	0.0
		Benzo(g.h.i)perylene	191-24-2	50	µg/kg	<50	<50	0.0
		Naphthalene	91-20-3	500	µg/kg	<500	<500	0.0
		Anthracene	120-12-7	500	µg/kg	<500	<500	0.0
		Fluoranthene	206-44-0	500	µg/kg	<500	<500	0.0
		Pyrene	129-00-0	500	µg/kg	<500	<500	0.0
		Benzo(a)pyrene	50-32-8	500	µg/kg	<500	<500	0.0
EP-076B: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 3488529)								
HK1418420-002	Anonymous	Hexachlorobenzene (HCB)	118-74-1	50	µg/kg	<50	<50	0.0
		Phenol	108-95-2	500	µg/kg	<500	<500	0.0
		Bis(2-ethylhexyl)phthalate	117-81-7	500	µg/kg	<500	<500	0.0
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3486782)								
HK1418289-021	Anonymous	C6 - C8 Fraction	----	5	mg/kg	<5	<5	0.0
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3486795)								
HK1418289-021	Anonymous	C9 - C16 Fraction	----	200	mg/kg	<200	<200	0.0
		C17 - C35 Fraction	----	500	mg/kg	<500	<500	0.0
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3494972)								
HK1418853-004	STK-A2-3 (0.5M)	C9 - C16 Fraction	----	200	mg/kg	<200	<200	0.0
		C17 - C35 Fraction	----	500	mg/kg	<500	<500	0.0
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3494975)								
HK1418853-004	STK-A2-3 (0.5M)	C6 - C8 Fraction	----	5	mg/kg	<5	<5	0.0
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 3486783)								
HK1418289-021	Anonymous	Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0
		Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0
		Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0
		Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0
		ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0
		meta- & para-Xylene	108-38-3	1.0	mg/kg	<1.0	<1.0	0.0
		Xylenes (Total)	106-42-3	----	2.0	mg/kg	<2.0	<2.0
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 3494976)								
HK1418853-004	STK-A2-3 (0.5M)	Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0
		Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0
		Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0
		Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0
		ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0



Matrix: SOIL				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 3494976) - Continued								
HK1418853-004	STK-A2-3 (0.5M)	meta- & para-Xylene	108-38-3	1.0	mg/kg	<1.0	<1.0	0.0
		Xylenes (Total)	106-42-3	2.0	mg/kg	<2.0	<2.0	0.0
EP-074_SR-B: Oxygenated Compounds (QC Lot: 3486783)								
HK1418289-021	Anonymous	2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.0
		2-Propanone (Acetone)	67-64-1	50	mg/kg	<50	<50	0.0
EP-074_SR-B: Oxygenated Compounds (QC Lot: 3494976)								
HK1418853-004	STK-A2-3 (0.5M)	2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.0
		2-Propanone (Acetone)	67-64-1	50	mg/kg	<50	<50	0.0
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3486783)								
HK1418289-021	Anonymous	Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	0.0
		Trichloroethene	79-01-6	0.1	mg/kg	<0.1	<0.1	0.0
		Methylene chloride	75-09-2	0.5	mg/kg	<0.5	<0.5	0.0
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3494976)								
HK1418853-004	STK-A2-3 (0.5M)	Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	0.0
		Trichloroethene	79-01-6	0.1	mg/kg	<0.1	<0.1	0.0
		Methylene chloride	75-09-2	0.5	mg/kg	<0.5	<0.5	0.0
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 3486783)								
HK1418289-021	Anonymous	Chloroform	67-66-3	0.04	mg/kg	<0.04	<0.04	0.0
		Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	<0.1	0.0
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 3494976)								
HK1418853-004	STK-A2-3 (0.5M)	Chloroform	67-66-3	0.04	mg/kg	<0.04	<0.04	0.0
		Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	<0.1	0.0
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 3486783)								
HK1418289-021	Anonymous	Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	mg/kg	<0.5	<0.5	0.0
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 3494976)								
HK1418853-004	STK-A2-3 (0.5M)	Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	mg/kg	<0.5	<0.5	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: SOIL				Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)		
						LCS	DCS	Low	High	Value	Control Limit	
EG: Metals and Major Cations (QC Lot: 3496526)												
EG036: Mercury	7439-97-6	0.02	mg/kg	<0.02	0.1 mg/kg	85.0	----	76	110	----	----	
EG: Metals and Major Cations (QC Lot: 3496532)												
EG020: Antimony	7440-36-0	1	mg/kg	<1	5 mg/kg	91.0	----	78	104	----	----	
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	87.6	----	75	109	----	----	
EG020: Barium	7440-39-3	1	mg/kg	<0.5	5 mg/kg	94.6	----	79	111	----	----	
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	97.4	----	81	109	----	----	
EG020: Cobalt	7440-48-4	1	mg/kg	<0.5	5 mg/kg	91.4	----	77	107	----	----	



Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3496532) - Continued											
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	91.6	----	79	105	----	----
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	90.8	----	80	104	----	----
EG020: Manganese	7439-96-5	1	mg/kg	<0.5	5 mg/kg	99.4	----	77	115	----	----
EG020: Molybdenum	7439-98-7	1	mg/kg	<1	5 mg/kg	93.0	----	82	106	----	----
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	90.8	----	79	105	----	----
EG020: Tin	7440-31-5	1	mg/kg	<0.5	5 mg/kg	97.6	----	79	103	----	----
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	90.0	----	76	114	----	----
EG: Metals and Major Cations (QC Lot: 3496534)											
EG3060: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	2.5 mg/kg	110	----	92	122	----	----
EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 3488529)											
Naphthalene	91-20-3	25	µg/kg	<50	25 µg/kg	96.3	----	63	111	----	----
Acenaphthylene	208-96-8	25	µg/kg	<50	25 µg/kg	96.0	----	63	111	----	----
Acenaphthene	83-32-9	25	µg/kg	<50	25 µg/kg	101	----	67	108	----	----
Fluorene	86-73-7	25	µg/kg	<50	25 µg/kg	106	----	67	110	----	----
Phenanthrene	85-01-8	25	µg/kg	<50	25 µg/kg	104	----	67	108	----	----
Anthracene	120-12-7	25	µg/kg	<50	25 µg/kg	101	----	69	113	----	----
Fluoranthene	206-44-0	25	µg/kg	<50	25 µg/kg	97.8	----	71	114	----	----
Pyrene	129-00-0	25	µg/kg	<50	25 µg/kg	95.1	----	71	114	----	----
Benz(a)anthracene	56-55-3	25	µg/kg	<50	25 µg/kg	110	----	63	114	----	----
Chrysene	218-01-9	25	µg/kg	<50	25 µg/kg	118	----	67	122	----	----
Benzo(b)fluoranthene	205-99-2	25	µg/kg	<50	25 µg/kg	112	----	59	114	----	----
Benzo(k)fluoranthene	207-08-9	25	µg/kg	<50	25 µg/kg	110	----	64	119	----	----
Benzo(a)pyrene	50-32-8	25	µg/kg	<50	25 µg/kg	114	----	58	117	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	25	µg/kg	<50	25 µg/kg	107	----	51	115	----	----
Dibenz(a,h)anthracene	53-70-3	25	µg/kg	<50	25 µg/kg	112	----	59	114	----	----
Benzo(g,h,i)perylene	191-24-2	25	µg/kg	<50	25 µg/kg	113	----	58	120	----	----
EP-076B: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 3488529)											
Phenol	108-95-2	25	µg/kg	<500	25 µg/kg	90.0	----	52	118	----	----
Hexachlorobenzene (HCB)	118-74-1	25	µg/kg	<50	25 µg/kg	96.9	----	54	113	----	----
Bis(2-ethylhexyl)phthalate	117-81-7	25	µg/kg	<1000	25 µg/kg	92.3	----	85	114	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3486782)											
C6 - C8 Fraction	----	5	mg/kg	<5	4.5 mg/kg	103	----	71	119	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3486795)											
C9 - C16 Fraction	----	200	mg/kg	<200	32 mg/kg	82.3	----	51	122	----	----
C17 - C35 Fraction	----	500	mg/kg	<500	90 mg/kg	68.8	----	11	129	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3494972)											
C9 - C16 Fraction	----	200	mg/kg	<200	32 mg/kg	89.4	----	51	122	----	----
C17 - C35 Fraction	----	500	mg/kg	<500	90 mg/kg	86.6	----	11	129	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3494975)											



Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3494975) - Continued											
C6 - C8 Fraction	----	5	mg/kg	<5	4.5 mg/kg	103	----	71	119	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 3486783)											
Benzene	71-43-2	0.1	mg/kg	<0.1	0.25 mg/kg	100	----	55	128	----	----
Toluene	108-88-3	0.2	mg/kg	<0.2	0.25 mg/kg	102	----	66	119	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.25 mg/kg	104	----	66	123	----	----
meta- & para-Xylene	108-38-3	0.4	mg/kg	<0.4	0.50 mg/kg	103	----	78	122	----	----
	106-42-3										
Styrene	100-42-5	0.2	mg/kg	<0.2	0.25 mg/kg	103	----	87	111	----	----
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.25 mg/kg	105	----	72	125	----	----
Xylenes (Total)	----	1.0	mg/kg	<1.0	0.75 mg/kg	104	----	76	122	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 3494976)											
Benzene	71-43-2	0.1	mg/kg	<0.1	0.25 mg/kg	105	----	55	128	----	----
Toluene	108-88-3	0.2	mg/kg	<0.2	0.25 mg/kg	104	----	66	119	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.25 mg/kg	108	----	66	123	----	----
meta- & para-Xylene	108-38-3	0.4	mg/kg	<0.4	0.50 mg/kg	105	----	78	122	----	----
	106-42-3										
Styrene	100-42-5	0.2	mg/kg	<0.2	0.25 mg/kg	100	----	87	111	----	----
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.25 mg/kg	106	----	72	125	----	----
Xylenes (Total)	----	1.0	mg/kg	<1.0	0.75 mg/kg	105	----	76	122	----	----
EP-074_SR-B: Oxygenated Compounds (QC Lot: 3486783)											
2-Propanone (Acetone)	67-64-1	2	mg/kg	<2	2.5 mg/kg	102	----	81	129	----	----
2-Butanone (MEK)	78-93-3	2	mg/kg	<2	2.5 mg/kg	96.1	----	61	133	----	----
EP-074_SR-B: Oxygenated Compounds (QC Lot: 3494976)											
2-Propanone (Acetone)	67-64-1	2	mg/kg	<2	2.5 mg/kg	108	----	81	129	----	----
2-Butanone (MEK)	78-93-3	2	mg/kg	<2	2.5 mg/kg	99.0	----	61	133	----	----
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3486783)											
Methylene chloride	75-09-2	0.5	mg/kg	<0.5	0.25 mg/kg	107	----	84	131	----	----
Trichloroethene	79-01-6	0.1	mg/kg	<0.1	0.25 mg/kg	98.9	----	82	114	----	----
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	0.25 mg/kg	98.8	----	89	110	----	----
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3494976)											
Methylene chloride	75-09-2	0.5	mg/kg	<0.5	0.25 mg/kg	106	----	84	131	----	----
Trichloroethene	79-01-6	0.1	mg/kg	<0.1	0.25 mg/kg	104	----	82	114	----	----
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	0.25 mg/kg	102	----	89	110	----	----
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 3486783)											
Chloroform	67-66-3	0.04	mg/kg	<0.04	0.25 mg/kg	101	----	77	113	----	----
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	0.25 mg/kg	97.9	----	71	125	----	----
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 3494976)											
Chloroform	67-66-3	0.04	mg/kg	<0.04	0.25 mg/kg	94.4	----	77	113	----	----
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	0.25 mg/kg	101	----	71	125	----	----



Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 3486783)											
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.2	mg/kg	<0.2	0.25 mg/kg	94.6	----	68	116	----	----
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 3494976)											
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.2	mg/kg	<0.2	0.25 mg/kg	98.4	----	68	116	----	----



Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: SOIL

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3496526)										
HK1418919-006	Anonymous	EG036: Mercury	7439-97-6	1 mg/kg	87.3	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 3496532)										
HK1418830-001	Anonymous	EG020: Antimony	7440-36-0	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Arsenic	7440-38-2	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Barium	7440-39-3	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Cadmium	7440-43-9	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Cobalt	7440-48-4	50 mg/kg	86.2	----	75	125	----	----
		EG020: Copper	7440-50-8	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Lead	7439-92-1	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Manganese	7439-96-5	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Molybdenum	7439-98-7	5 mg/kg	92.6	----	75	125	----	----
		EG020: Nickel	7440-02-0	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Tin	7440-31-5	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Zinc	7440-66-6	5 mg/kg	# Not Determined	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 3496534)										
HK1418853-001	STK-A2-1 (1.4M)	EG3060: Hexavalent Chromium	18540-29-9	2.5 mg/kg	107	----	75	125	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3486782)										
HK1418289-022	Anonymous	C6 - C8 Fraction	----	4.5 mg/kg	105	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3486795)										
HK1418289-022	Anonymous	C9 - C16 Fraction	----	32 mg/kg	82.2	----	50	130	----	----
		C17 - C35 Fraction	----	90 mg/kg	80.9	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3494972)										
HK1418853-005	STK-A2-3 (1.5M)	C9 - C16 Fraction	----	32 mg/kg	82.8	----	50	130	----	----
		C17 - C35 Fraction	----	90 mg/kg	82.0	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3494975)										
HK1418853-005	STK-A2-3 (1.5M)	C6 - C8 Fraction	----	4.5 mg/kg	110	----	50	130	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates			
2-Fluorobiphenyl	321-60-8	50	130
4-Terphenyl-d14	1718-51-0	50	130
EP-080_SRS: TPH(Volatile)/BTEX Surrogate			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121
EP-074_SR-S: VOC Surrogates			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121

CERTIFICATE OF ANALYSIS

Client	: ACTION UNITED ENVIRO SERVICES	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 7
Contact	: MR BEN TAM	Contact	: Fung Lim Chee, Richard	Work Order	: HK1418855
Address	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: Bentam@fordbusiness.com	E-mail	: Richard.Fung@alsglobal.com	Date Samples Received	: 13-JUN-2014
Telephone	: +852 2959 6059	Telephone	: +852 2610 1044	Issue Date	: 03-JUL-2014
Facsimile	: +852 2959 6079	Facsimile	: +852 2610 2021	No. of samples received	: 2
Project	: TCS00670_13	Quote number	: ----	No. of samples analysed	: 1
Order number	: ----				
C-O-C number	: H026286				
Site	: SHA TAU KOK ROAD				

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This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in the Electronic Transactions Ordinance of Hong Kong, Chapter 553, Section 6.

Signatories	Position	Authorised results for
Chan Ka Yu, Karen	Assistant Manager - Organics	Organics
Wong Wing, Kenneth	Manager - Metals	Inorganics



General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 27-JUN-2014

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific comments for Work Order: **HK1418855**

Site Name: Sha Tau Kok Road near Lian Tang.

Sample(s) were picked up from client by ALS Technichem (HK) staff in a chilled condition.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) were filtered prior to dissolved metal analysis.



Analytical Results

Sub-Matrix: WATER

Client sample ID

Client sampling date / time

				RINSATE BLANK				
				[12-JUN-2014]				
Compound	CAS Number	LOR	Unit	HK1418855-001				
EG: Metals and Major Cations - Filtered								
EG020: Antimony	7440-36-0	1	µg/L	<1				
EG020: Arsenic	7440-38-2	10	µg/L	<10				
EG020: Barium	7440-39-3	1	µg/L	<1				
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2				
EG020: Cobalt	7440-48-4	1	µg/L	<1				
EG020: Copper	7440-50-8	1	µg/L	<1				
EG020: Lead	7439-92-1	1	µg/L	<1				
EG020: Manganese	7439-96-5	1	µg/L	<1				
EG020: Molybdenum	7439-98-7	1	µg/L	<1				
EG020: Nickel	7440-02-0	1	µg/L	<1				
EG020: Tin	7440-31-5	1	µg/L	<1				
EG020: Zinc	7440-66-6	10	µg/L	<10				
EG036: Mercury	7439-97-6	0.5	µg/L	<0.5				
EG049: Trivalent Chromium	16065-83-1	20	µg/L	<20				
EG050: Hexavalent Chromium	18540-29-9	20	µg/L	<20				
EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs)								
Naphthalene	91-20-3	2.0	µg/L	<2.0				
Acenaphthylene	208-96-8	2.0	µg/L	<2.0				
Acenaphthene	83-32-9	2.0	µg/L	<2.0				
Fluorene	86-73-7	2.0	µg/L	<2.0				
Phenanthrene	85-01-8	2.0	µg/L	<2.0				
Anthracene	120-12-7	2.0	µg/L	<2.0				
Fluoranthene	206-44-0	2.0	µg/L	<2.0				
Pyrene	129-00-0	2.0	µg/L	<2.0				
Benz(a)anthracene	56-55-3	2.0	µg/L	<2.0				
Chrysene	218-01-9	1.0	µg/L	<1.0				
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0				
Benzo(k)fluoranthene	207-08-9	2.0	µg/L	<2.0				
Benzo(a)pyrene	50-32-8	0.2	µg/L	<0.2				
Indeno(1,2,3-cd)pyrene	193-39-5	2.0	µg/L	<2.0				
Dibenz(a,h)anthracene	53-70-3	2.0	µg/L	<2.0				
Benzo(g,h,i)perylene	191-24-2	2.0	µg/L	<2.0				
EP-076B: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate								
Phenol	108-95-2	2.0	µg/L	<2.0				
Hexachlorobenzene (HCB)	118-74-1	1.0	µg/L	<1.0				
Bis(2-ethylhexyl)phthalate	117-81-7	2.0	µg/L	<2.0				
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)								
C6 - C8 Fraction	----	20	µg/L	<20				
C9 - C16 Fraction	----	500	µg/L	<500				



Sub-Matrix: WATER			Client sample ID	RINSATE BLANK				
			Client sampling date / time	[12-JUN-2014]				
Compound	CAS Number	LOR	Unit	HK1418855-001				
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) - Continued								
C17 - C35 Fraction	----	500	µg/L	<500				
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)								
Benzene	71-43-2	5.0	µg/L	<5.0				
Toluene	108-88-3	5.0	µg/L	<5.0				
Ethylbenzene	100-41-4	5.0	µg/L	<5.0				
meta- & para-Xylene	108-38-3 106-42-3	10	µg/L	<10				
Styrene	100-42-5	5.0	µg/L	<5.0				
ortho-Xylene	95-47-6	5.0	µg/L	<5.0				
Xylenes (Total)	----	20	µg/L	<20				
EP-074_SR-B: Oxygenated Compounds								
2-Propanone (Acetone)	67-64-1	500	µg/L	<500				
2-Butanone (MEK)	78-93-3	50	µg/L	<50				
EP-074_SR-E: Halogenated Aliphatics								
Methylene chloride	75-09-2	50	µg/L	<50				
Trichloroethene	79-01-6	5.0	µg/L	<5.0				
Tetrachloroethene	127-18-4	5.0	µg/L	<5.0				
EP-074_SR-G: Trihalomethanes (THM)								
Chloroform	67-66-3	5.0	µg/L	5.7				
Bromodichloromethane	75-27-4	5.0	µg/L	<5.0				
EP-074_SR-I: Methyl-tert-butyl Ether								
Methyl tert-Butyl Ether (MTBE)	1634-04-4	5.0	µg/L	<5.0				
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates Surrogate control limits listed at end of this report.								
2-Fluorobiphenyl	321-60-8	0.1	%	52.2				
4-Terphenyl-d14	1718-51-0	0.1	%	60.5				
EP-080_SRS: TPH(Volatile)/BTEX Surrogate Surrogate control limits listed at end of this report.								
Dibromofluoromethane	1868-53-7	0.1	%	106				
Toluene-D8	2037-26-5	0.1	%	104				
4-Bromofluorobenzene	460-00-4	0.1	%	101				
EP-074_SR-S: VOC Surrogates Surrogate control limits listed at end of this report.								
Dibromofluoromethane	1868-53-7	0.1	%	106				
Toluene-D8	2037-26-5	0.1	%	104				
4-Bromofluorobenzene	460-00-4	0.1	%	101				



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cations - Filtered (QC Lot: 3496515)								
HK1418855-002	STK-A2-5	EG036: Mercury	7439-97-6	0.5	µg/L	<0.5	<0.5	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER				Method Blank (MB) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QC Lot: 3496515)											
EG036: Mercury	7439-97-6	0.05	µg/L	<0.05	2 µg/L	99.5	----	77	117	----	----
EG: Metals and Major Cations - Filtered (QC Lot: 3496516)											
EG020: Antimony	7440-36-0	1	µg/L	<1	100 µg/L	90.3	----	77	105	----	----
EG020: Arsenic	7440-38-2	10	µg/L	<10	100 µg/L	93.5	----	76	116	----	----
EG020: Barium	7440-39-3	1	µg/L	<1	100 µg/L	97.1	----	82	108	----	----
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	100 µg/L	92.4	----	81	107	----	----
EG020: Cobalt	7440-48-4	1	µg/L	<1	100 µg/L	96.3	----	82	106	----	----
EG020: Copper	7440-50-8	1	µg/L	<1	100 µg/L	98.5	----	79	113	----	----
EG020: Lead	7439-92-1	1	µg/L	<1	100 µg/L	94.2	----	82	108	----	----
EG020: Manganese	7439-96-5	1	µg/L	<1	100 µg/L	99.5	----	80	112	----	----
EG020: Molybdenum	7439-98-7	1	µg/L	<1	100 µg/L	95.8	----	83	109	----	----
EG020: Nickel	7440-02-0	1	µg/L	<1	100 µg/L	95.8	----	77	113	----	----
EG020: Tin	7440-31-5	10	µg/L	<10	100 µg/L	95.7	----	76	108	----	----
EG020: Zinc	7440-66-6	10	µg/L	<10	100 µg/L	95.9	----	77	115	----	----
EG: Metals and Major Cations - Filtered (QC Lot: 3496517)											
EG050: Hexavalent Chromium	18540-29-9	20	µg/L	<20	100 µg/L	101	----	80	106	----	----
EP-076: Polycyclic Aromatics Hydrocarbons (PAHs) (QC Lot: 3483458)											
Naphthalene	91-20-3	0.2	µg/L	<0.2	0.5 µg/L	52.9	----	50	98	----	----
Acenaphthylene	208-96-8	0.2	µg/L	<0.2	0.5 µg/L	52.4	----	47	97	----	----
Acenaphthene	83-32-9	0.2	µg/L	<0.2	0.5 µg/L	50.4	----	49	93	----	----
Fluorene	86-73-7	0.2	µg/L	<0.2	0.5 µg/L	52.9	----	52	92	----	----
Phenanthrene	85-01-8	0.2	µg/L	<0.2	0.5 µg/L	52.6	----	51	91	----	----
Anthracene	120-12-7	0.2	µg/L	<0.2	0.5 µg/L	52.4	----	48	95	----	----
Fluoranthene	206-44-0	0.2	µg/L	<0.2	0.5 µg/L	76.3	----	68	109	----	----
Pyrene	129-00-0	0.2	µg/L	<0.2	0.5 µg/L	81.0	----	69	111	----	----
Benz(a)anthracene	56-55-3	0.2	µg/L	<0.2	0.5 µg/L	89.8	----	64	119	----	----
Chrysene	218-01-9	0.2	µg/L	<0.2	0.5 µg/L	105	----	50	124	----	----
Benzo(b)fluoranthene	205-99-2	0.2	µg/L	<0.2	0.5 µg/L	86.0	----	54	124	----	----
Benzo(k)fluoranthene	207-08-9	0.2	µg/L	<0.2	0.5 µg/L	81.9	----	54	130	----	----
Benzo(a)pyrene	50-32-8	0.2	µg/L	<0.2	0.5 µg/L	85.8	----	60	120	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.2	µg/L	<0.2	0.5 µg/L	84.2	----	60	119	----	----
Dibenz(a,h)anthracene	53-70-3	0.2	µg/L	<0.2	0.5 µg/L	106	----	48	120	----	----



Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EP-076: Polycyclic Aromatics Hydrocarbons (PAHs) (QC Lot: 3483458) - Continued											
Benzo(g,h,i)perylene	191-24-2	0.2	µg/L	<0.2	0.5 µg/L	93.6	----	52	125	----	----
EP-076B: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 3483458)											
Phenol	108-95-2	5	µg/L	<5.0	0.5 µg/L	45.3	----	39	86	----	----
Hexachlorobenzene (HCB)	118-74-1	5	µg/L	<5.0	0.5 µg/L	53.0	----	51	96	----	----
Bis(2-ethylhexyl)phthalate	117-81-7	10	µg/L	<10.0	0.5 µg/L	105	----	78	123	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3494885)											
C9 - C16 Fraction	----	0.5	mg/L	<0.5	0.21 mg/L	73.3	----	14	106	----	----
C17 - C35 Fraction	----	0.5	mg/L	<0.5	0.60 mg/L	86.4	----	8	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3496521)											
C6 - C8 Fraction	----	0.02	mg/L	<0.02	0.03 mg/L	108	----	62	131	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 3494002)											
Benzene	71-43-2	0.5	µg/L	<0.5	2 µg/L	110	----	59	125	----	----
Toluene	108-88-3	0.5	µg/L	<0.5	2 µg/L	104	----	64	121	----	----
Ethylbenzene	100-41-4	0.5	µg/L	<0.5	2 µg/L	103	----	69	120	----	----
meta- & para-Xylene	108-38-3 106-42-3	1	µg/L	<1	4 µg/L	99.2	----	76	119	----	----
Styrene	100-42-5	0.5	µg/L	<0.5	2 µg/L	94.8	----	80	116	----	----
ortho-Xylene	95-47-6	0.5	µg/L	<0.5	2 µg/L	101	----	72	122	----	----
Xylenes (Total)	----	2	µg/L	<2	6 µg/L	99.8	----	75	120	----	----
EP-074_SR-B: Oxygenated Compounds (QC Lot: 3494002)											
2-Propanone (Acetone)	67-64-1	5	µg/L	<5	20 µg/L	96.9	----	81	130	----	----
2-Butanone (MEK)	78-93-3	5	µg/L	<5	20 µg/L	93.3	----	63	127	----	----
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3494002)											
Methylene chloride	75-09-2	5	µg/L	<5	2 µg/L	104	----	80	126	----	----
Trichloroethene	79-01-6	0.5	µg/L	<0.5	2 µg/L	104	----	77	114	----	----
Tetrachloroethene	127-18-4	0.5	µg/L	<0.5	2 µg/L	97.2	----	82	113	----	----
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 3494002)											
Chloroform	67-66-3	0.5	µg/L	<0.5	2 µg/L	106	----	72	118	----	----
Bromodichloromethane	75-27-4	0.5	µg/L	<0.5	2 µg/L	104	----	74	115	----	----
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 3494002)											
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	µg/L	<0.5	2 µg/L	95.9	----	64	119	----	----



Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QC Lot: 3496515)										
HK1418855-001	RINSATE BLANK	EG036: Mercury	7439-97-6	2 µg/L	91.0	----	75	125	----	----
EG: Metals and Major Cations - Filtered (QC Lot: 3496516)										
HK1418855-001	RINSATE BLANK	EG020: Antimony	7440-36-0	100 µg/L	90.7	----	75	125	----	----
		EG020: Arsenic	7440-38-2	100 µg/L	97.7	----	75	125	----	----
		EG020: Barium	7440-39-3	100 µg/L	98.9	----	75	125	----	----
		EG020: Cadmium	7440-43-9	100 µg/L	91.2	----	75	125	----	----
		EG020: Cobalt	7440-48-4	100 µg/L	95.8	----	75	125	----	----
		EG020: Copper	7440-50-8	100 µg/L	96.1	----	75	125	----	----
		EG020: Lead	7439-92-1	100 µg/L	95.0	----	75	125	----	----
		EG020: Manganese	7439-96-5	100 µg/L	97.6	----	75	125	----	----
		EG020: Molybdenum	7439-98-7	100 µg/L	94.1	----	75	125	----	----
		EG020: Nickel	7440-02-0	100 µg/L	97.7	----	75	125	----	----
EG020: Tin	7440-31-5	100 µg/L	93.8	----	75	125	----	----		
EG020: Zinc	7440-66-6	100 µg/L	95.1	----	75	125	----	----		
EG: Metals and Major Cations - Filtered (QC Lot: 3496517)										
HK1418855-001	RINSATE BLANK	EG050: Hexavalent Chromium	18540-29-9	100 µg/L	99.3	----	75	125	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates			
2-Fluorobiphenyl	321-60-8	50	130
4-Terphenyl-d14	1718-51-0	50	130
EP-080_SRS: TPH(Volatile)/BTEX Surrogate			
Dibromofluoromethane	1868-53-7	86	118
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115
EP-074_SR-S: VOC Surrogates			
Dibromofluoromethane	1868-53-7	86	118
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115

CERTIFICATE OF ANALYSIS

Client	: ACTION UNITED ENVIRO SERVICES	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 3
Contact	: MR BEN TAM	Contact	: Fung Lim Chee, Richard	Work Order	: HK1418895
Address	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: Bentam@fordbusiness.com	E-mail	: Richard.Fung@alsglobal.com		
Telephone	: +852 2959 6059	Telephone	: +852 2610 1044		
Facsimile	: +852 2959 6079	Facsimile	: +852 2610 2021		
Project	: TCS00670_13	Quote number	: ----	Date Samples Received	: 13-JUN-2014
Order number	: ----			Issue Date	: 30-JUN-2014
C-O-C number	: H026301			No. of samples received	: 1
Site	: SHA TAU KOK ROAD			No. of samples analysed	: 1

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 18-JUN-2014

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific comments for Work Order: **HK1418895**

Site Name: Sha Tau Kok Road near Lian Tang.

Sample(s) were picked up from client by ALS Technichem (HK) staff in a chilled condition.

Water sample(s) analysed and reported on an as received basis.

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This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in the Electronic Transactions Ordinance of Hong Kong, Chapter 553, Section 6.

Signatories

Position

Authorised results for

Chan Ka Yu, Karen

Assistant Manager - Organics

Organics



Analytical Results

Sub-Matrix: WATER

Client sample ID

FIELD BLANK

Client sampling date / time

[13-JUN-2014]

Compound	CAS Number	LOR	Unit	HK1418895-001				
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)								
Benzene	71-43-2	5.0	µg/L	<5.0				
Toluene	108-88-3	5.0	µg/L	<5.0				
Ethylbenzene	100-41-4	5.0	µg/L	<5.0				
meta- & para-Xylene	108-38-3 106-42-3	10	µg/L	<10				
ortho-Xylene	95-47-6	5.0	µg/L	<5.0				
Xylenes (Total)	----	20	µg/L	<20				
EP-074_SR-S: VOC Surrogates								
Surrogate control limits listed at end of this report.								
Dibromofluoromethane	1868-53-7	0.1	%	102				
Toluene-D8	2037-26-5	0.1	%	103				
4-Bromofluorobenzene	460-00-4	0.1	%	99.5				



Laboratory Duplicate (DUP) Report

- No Laboratory Duplicate (DUP) Results are required to be reported.

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 3494002)											
Benzene	71-43-2	0.5	µg/L	<0.5	2 µg/L	110	----	59	125	----	----
Toluene	108-88-3	0.5	µg/L	<0.5	2 µg/L	104	----	64	121	----	----
Ethylbenzene	100-41-4	0.5	µg/L	<0.5	2 µg/L	103	----	69	120	----	----
meta- & para-Xylene	108-38-3	1	µg/L	<1	4 µg/L	99.2	----	76	119	----	----
	106-42-3										
ortho-Xylene	95-47-6	0.5	µg/L	<0.5	2 µg/L	101	----	72	122	----	----
Xylenes (Total)	----	2	µg/L	<2	6 µg/L	99.8	----	75	120	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP-074_SR-S: VOC Surrogates			
Dibromofluoromethane	1868-53-7	86	118
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115

CERTIFICATE OF ANALYSIS

Client	: ACTION UNITED ENVIRO SERVICES	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 5
Contact	: MR BEN TAM	Contact	: Fung Lim Chee, Richard	Work Order	: HK1420505
Address	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: Bentam@fordbusiness.com	E-mail	: Richard.Fung@alsglobal.com		
Telephone	: +852 2959 6059	Telephone	: +852 2610 1044		
Facsimile	: +852 2959 6079	Facsimile	: +852 2610 2021		
Project	: TCS00670_13	Quote number	: ----	Date Samples Received	: 25-JUN-2014
Order number	: ----			Issue Date	: 11-JUL-2014
C-O-C number	: H026502			No. of samples received	: 2
Site	: LIAN TANG			No. of samples analysed	: 2

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 07-JUL-2014

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific comments for Work Order: **HK1420505**

Sample(s) were picked up from client by ALS Technichem (HK) staff in a chilled condition.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) were filtered prior to dissolved metal analysis.

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This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in the Electronic Transactions Ordinance of Hong Kong, Chapter 553, Section 6.

Signatories

Position

Authorised results for

Chan Ka Yu, Karen
Wong Wing, Kenneth

Assistant Manager - Organics
Manager - Metals

Organics
Inorganics



Analytical Results

Sub-Matrix: WATER

Compound	CAS Number	LOR	Unit	Client sample ID	STK - GW1	STK - GW2			
				Client sampling date / time	[24-JUN-2014]	[24-JUN-2014]			
				HK1420505-001	HK1420505-002				
EG: Metals and Major Cations - Filtered									
EG036: Mercury	7439-97-6	0.5	µg/L		<0.5	<0.5			
EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs)									
Naphthalene	91-20-3	2.0	µg/L		<2.0	<2.0			
Acenaphthylene	208-96-8	2.0	µg/L		<2.0	<2.0			
Acenaphthene	83-32-9	2.0	µg/L		<2.0	<2.0			
Fluorene	86-73-7	2.0	µg/L		<2.0	<2.0			
Phenanthrene	85-01-8	2.0	µg/L		<2.0	<2.0			
Anthracene	120-12-7	2.0	µg/L		<2.0	<2.0			
Fluoranthene	206-44-0	2.0	µg/L		<2.0	<2.0			
Pyrene	129-00-0	2.0	µg/L		<2.0	<2.0			
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0			
Benzo(b)fluoranthene	205-99-2	1.0	µg/L		<1.0	<1.0			
EP-076B: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate									
Hexachlorobenzene (HCB)	118-74-1	1.0	µg/L		<1.0	<1.0			
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)									
C6 - C8 Fraction	----	20	µg/L		<20	<20			
C9 - C16 Fraction	----	500	µg/L		<500	<500			
C17 - C35 Fraction	----	500	µg/L		<500	<500			
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)									
Benzene	71-43-2	5.0	µg/L		<5.0	<5.0			
Toluene	108-88-3	5.0	µg/L		<5.0	<5.0			
Ethylbenzene	100-41-4	5.0	µg/L		<5.0	<5.0			
meta- & para-Xylene	108-38-3 106-42-3	10	µg/L		<10	<10			
Styrene	100-42-5	5.0	µg/L		<5.0	<5.0			
ortho-Xylene	95-47-6	5.0	µg/L		<5.0	<5.0			
Xylenes (Total)	----	20	µg/L		<20	<20			
EP-074_SR-B: Oxygenated Compounds									
2-Propanone (Acetone)	67-64-1	500	µg/L		<500	<500			
2-Butanone (MEK)	78-93-3	50	µg/L		<50	<50			
EP-074_SR-E: Halogenated Aliphatics									
Methylene chloride	75-09-2	50	µg/L		<50	<50			
Trichloroethene	79-01-6	5.0	µg/L		<5.0	<5.0			
Tetrachloroethene	127-18-4	5.0	µg/L		<5.0	<5.0			
EP-074_SR-G: Trihalomethanes (THM)									
Chloroform	67-66-3	5.0	µg/L		<5.0	<5.0			
Bromodichloromethane	75-27-4	5.0	µg/L		<5.0	<5.0			
EP-074_SR-I: Methyl-tert-butyl Ether									
Methyl tert-Butyl Ether (MTBE)	1634-04-4	5.0	µg/L		<5.0	<5.0			



Sub-Matrix: WATER				Client sample ID	STK - GW1	STK - GW2			
				Client sampling date / time	[24-JUN-2014]	[24-JUN-2014]			
Compound	CAS Number	LOR	Unit	HK1420505-001	HK1420505-002				
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates								Surrogate control limits listed at end of this report.	
2-Fluorobiphenyl	321-60-8	0.1	%	51.2	55.8				
4-Terphenyl-d14	1718-51-0	0.1	%	107	79.4				
EP-080_SRS: TPH(Volatile)/BTEX Surrogate								Surrogate control limits listed at end of this report.	
Dibromofluoromethane	1868-53-7	0.1	%	106	107				
Toluene-D8	2037-26-5	0.1	%	101	103				
4-Bromofluorobenzene	460-00-4	0.1	%	97.5	95.1				
EP-074_SR-S: VOC Surrogates								Surrogate control limits listed at end of this report.	
Dibromofluoromethane	1868-53-7	0.1	%	106	107				
Toluene-D8	2037-26-5	0.1	%	101	103				
4-Bromofluorobenzene	460-00-4	0.1	%	97.5	95.1				



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cations - Filtered (QC Lot: 3522815)								
HK1420505-002	STK - GW2	EG036: Mercury	7439-97-6	0.5	µg/L	<0.5	<0.5	0.0
HK1420579-002	Anonymous	EG036: Mercury	7439-97-6	0.05	µg/L	<0.05	<0.05	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER				Method Blank (MB) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QC Lot: 3522815)											
EG036: Mercury	7439-97-6	0.05	µg/L	<0.05	0.2 µg/L	98.5	----	77	117	----	----
EP-076: Polycyclic Aromatics Hydrocarbons (PAHs) (QC Lot: 3522898)											
Naphthalene	91-20-3	0.2	µg/L	<0.2	0.5 µg/L	50.8	----	50	98	----	----
Acenaphthylene	208-96-8	0.2	µg/L	<0.2	0.5 µg/L	50.7	----	47	97	----	----
Acenaphthene	83-32-9	0.2	µg/L	<0.2	0.5 µg/L	69.5	----	49	93	----	----
Fluorene	86-73-7	0.2	µg/L	<0.2	0.5 µg/L	69.8	----	52	92	----	----
Phenanthrene	85-01-8	0.2	µg/L	<0.2	0.5 µg/L	52.0	----	51	91	----	----
Anthracene	120-12-7	0.2	µg/L	<0.2	0.5 µg/L	51.4	----	48	95	----	----
Fluoranthene	206-44-0	0.2	µg/L	<0.2	0.5 µg/L	72.6	----	68	109	----	----
Pyrene	129-00-0	0.2	µg/L	<0.2	0.5 µg/L	76.7	----	69	111	----	----
Chrysene	218-01-9	0.2	µg/L	<0.2	0.5 µg/L	103	----	50	124	----	----
Benzo(b)fluoranthene	205-99-2	0.2	µg/L	<0.2	0.5 µg/L	91.2	----	54	124	----	----
EP-076B: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 3522898)											
Hexachlorobenzene (HCB)	118-74-1	5	µg/L	<5.0	0.5 µg/L	69.6	----	51	96	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3521235)											
C6 - C8 Fraction	----	0.02	mg/L	<0.02	0.03 mg/L	99.7	----	62	131	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3522899)											
C9 - C16 Fraction	----	0.5	mg/L	<0.5	0.21 mg/L	55.5	----	14	106	----	----
C17 - C35 Fraction	----	0.5	mg/L	<0.5	0.45 mg/L	80.9	----	8	130	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 3516529)											
Benzene	71-43-2	0.5	µg/L	<0.5	2 µg/L	107	----	59	125	----	----
Toluene	108-88-3	0.5	µg/L	<0.5	2 µg/L	108	----	64	121	----	----
Ethylbenzene	100-41-4	0.5	µg/L	<0.5	2 µg/L	110	----	69	120	----	----
meta- & para-Xylene	108-38-3	1	µg/L	<1	4 µg/L	97.8	----	76	119	----	----
	106-42-3										
Styrene	100-42-5	0.5	µg/L	<0.5	2 µg/L	103	----	80	116	----	----
ortho-Xylene	95-47-6	0.5	µg/L	<0.5	2 µg/L	107	----	72	122	----	----
Xylenes (Total)	----	2	µg/L	<2	6 µg/L	101	----	75	120	----	----
EP-074_SR-B: Oxygenated Compounds (QC Lot: 3516529)											
2-Propanone (Acetone)	67-64-1	5	µg/L	<5	20 µg/L	96.3	----	81	130	----	----
2-Butanone (MEK)	78-93-3	5	µg/L	<5	20 µg/L	94.3	----	63	127	----	----



Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3516529)											
Methylene chloride	75-09-2	5	µg/L	<5	2 µg/L	107	----	80	126	----	----
Trichloroethene	79-01-6	0.5	µg/L	<0.5	2 µg/L	106	----	77	114	----	----
Tetrachloroethene	127-18-4	0.5	µg/L	<0.5	2 µg/L	101	----	82	113	----	----
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 3516529)											
Chloroform	67-66-3	0.5	µg/L	<0.5	2 µg/L	102	----	72	118	----	----
Bromodichloromethane	75-27-4	0.5	µg/L	<0.5	2 µg/L	104	----	74	115	----	----
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 3516529)											
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	µg/L	<0.5	2 µg/L	102	----	64	119	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QC Lot: 3522815)										
HK1420507-003	Anonymous	EG036: Mercury	7439-97-6	0.2 µg/L	94.0	----	75	125	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates			
2-Fluorobiphenyl	321-60-8	50	130
4-Terphenyl-d14	1718-51-0	50	130
EP-080_SRS: TPH(Volatile)/BTEX Surrogate			
Dibromofluoromethane	1868-53-7	86	118
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115
EP-074_SR-S: VOC Surrogates			
Dibromofluoromethane	1868-53-7	86	118
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115

CERTIFICATE OF ANALYSIS

Client	: ACTION UNITED ENVIRO SERVICES	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 7
Contact	: MR BEN TAM	Contact	: Fung Lim Chee, Richard	Work Order	: HK1420507
Address	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: Bentam@fordbusiness.com	E-mail	: Richard.Fung@alsglobal.com		
Telephone	: +852 2959 6059	Telephone	: +852 2610 1044		
Facsimile	: +852 2959 6079	Facsimile	: +852 2610 2021		
Project	: TCS00670_13	Quote number	: ----	Date Samples Received	: 25-JUN-2014
Order number	: ----			Issue Date	: 11-JUL-2014
C-O-C number	: H026503			No. of samples received	: 3
Site	: LIAN TANG			No. of samples analysed	: 3

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 10-JUL-2014

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific comments for Work Order: **HK1420507**

Sample(s) were picked up from client by ALS Technichem (HK) staff in a chilled condition.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) were filtered prior to dissolved metal analysis.

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This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in the Electronic Transactions Ordinance of Hong Kong, Chapter 553, Section 6.

Signatories

Position

Authorised results for

Chan Ka Yu, Karen
Wong Wing, Kenneth

Assistant Manager - Organics
Manager - Metals

Organics
Inorganics



Analytical Results

Sub-Matrix: WATER

Compound	CAS Number	LOR	Unit	Client sample ID	Client sample ID	Client sample ID	Client sample ID
				Client sampling date / time	Client sampling date / time	Client sampling date / time	Client sampling date / time
				TRIP BLANK	FIELD BLANK	RINSATE BLANK	
				[24-JUN-2014]	[24-JUN-2014]	[24-JUN-2014]	
				HK1420507-001	HK1420507-002	HK1420507-003	
EG: Metals and Major Cations - Filtered							
EG020: Antimony	7440-36-0	1	µg/L	----	----	<1	
EG020: Arsenic	7440-38-2	10	µg/L	----	----	<10	
EG020: Barium	7440-39-3	1	µg/L	----	----	<1	
EG020: Cadmium	7440-43-9	0.2	µg/L	----	----	<0.2	
EG020: Cobalt	7440-48-4	1	µg/L	----	----	<1	
EG020: Copper	7440-50-8	1	µg/L	----	----	<1	
EG020: Lead	7439-92-1	1	µg/L	----	----	<1	
EG020: Manganese	7439-96-5	1	µg/L	----	----	2	
EG020: Molybdenum	7439-98-7	1	µg/L	----	----	<1	
EG020: Nickel	7440-02-0	1	µg/L	----	----	<1	
EG020: Tin	7440-31-5	1	µg/L	----	----	<1	
EG020: Zinc	7440-66-6	10	µg/L	----	----	<10	
EG036: Mercury	7439-97-6	0.5	µg/L	----	----	<0.5	
EG049: Trivalent Chromium	16065-83-1	20	µg/L	----	----	<20	
EG050: Hexavalent Chromium	18540-29-9	20	µg/L	----	----	<20	
EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs)							
Naphthalene	91-20-3	2.0	µg/L	----	----	<2.0	
Acenaphthylene	208-96-8	2.0	µg/L	----	----	<2.0	
Acenaphthene	83-32-9	2.0	µg/L	----	----	<2.0	
Fluorene	86-73-7	2.0	µg/L	----	----	<2.0	
Phenanthrene	85-01-8	2.0	µg/L	----	----	<2.0	
Anthracene	120-12-7	2.0	µg/L	----	----	<2.0	
Fluoranthene	206-44-0	2.0	µg/L	----	----	<2.0	
Pyrene	129-00-0	2.0	µg/L	----	----	<2.0	
Benz(a)anthracene	56-55-3	2.0	µg/L	----	----	<2.0	
Chrysene	218-01-9	1.0	µg/L	----	----	<1.0	
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	----	----	<1.0	
Benzo(k)fluoranthene	207-08-9	2.0	µg/L	----	----	<2.0	
Benzo(a)pyrene	50-32-8	0.2	µg/L	----	----	<0.2	
Indeno(1.2.3.cd)pyrene	193-39-5	2.0	µg/L	----	----	<2.0	
Dibenz(a,h)anthracene	53-70-3	2.0	µg/L	----	----	<2.0	
Benzo(g,h,i)perylene	191-24-2	2.0	µg/L	----	----	<2.0	
EP-076B: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate							
Phenol	108-95-2	2.0	µg/L	----	----	<2.0	
Hexachlorobenzene (HCB)	118-74-1	1.0	µg/L	----	----	<1.0	
Bis(2-ethylhexyl)phthalate	117-81-7	2.0	µg/L	----	----	<2.0	
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)							
C6 - C8 Fraction	----	20	µg/L	----	----	<20	
C9 - C16 Fraction	----	500	µg/L	----	----	<500	



Sub-Matrix: WATER				Client sample ID	TRIP BLANK	FIELD BLANK	RINSATE BLANK		
				Client sampling date / time	[24-JUN-2014]	[24-JUN-2014]	[24-JUN-2014]		
Compound	CAS Number	LOR	Unit	HK1420507-001	HK1420507-002	HK1420507-003			
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) - Continued									
C17 - C35 Fraction	---	500	µg/L	----	----	<500			
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)									
Benzene	71-43-2	5.0	µg/L	<5.0	<5.0	<5.0			
Toluene	108-88-3	5.0	µg/L	<5.0	<5.0	<5.0			
Ethylbenzene	100-41-4	5.0	µg/L	<5.0	<5.0	<5.0			
meta- & para-Xylene	108-38-3 106-42-3	10	µg/L	<10	<10	<10			
Styrene	100-42-5	5.0	µg/L	----	----	<5.0			
ortho-Xylene	95-47-6	5.0	µg/L	<5.0	<5.0	<5.0			
Xylenes (Total)	---	20	µg/L	<20	<20	<20			
EP-074_SR-B: Oxygenated Compounds									
2-Propanone (Acetone)	67-64-1	500	µg/L	----	----	<500			
2-Butanone (MEK)	78-93-3	50	µg/L	----	----	<50			
EP-074_SR-E: Halogenated Aliphatics									
Methylene chloride	75-09-2	50	µg/L	----	----	<50			
Trichloroethene	79-01-6	5.0	µg/L	----	----	<5.0			
Tetrachloroethene	127-18-4	5.0	µg/L	----	----	<5.0			
EP-074_SR-G: Trihalomethanes (THM)									
Chloroform	67-66-3	5.0	µg/L	----	----	7.3			
Bromodichloromethane	75-27-4	5.0	µg/L	----	----	<5.0			
EP-074_SR-I: Methyl-tert-butyl Ether									
Methyl tert-Butyl Ether (MTBE)	1634-04-4	5.0	µg/L	----	----	<5.0			
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates Surrogate control limits listed at end of this report.									
2-Fluorobiphenyl	321-60-8	0.1	%	----	----	51.4			
4-Terphenyl-d14	1718-51-0	0.1	%	----	----	91.2			
EP-080_SRS: TPH(Volatile)/BTEX Surrogate Surrogate control limits listed at end of this report.									
Dibromofluoromethane	1868-53-7	0.1	%	----	----	106			
Toluene-D8	2037-26-5	0.1	%	----	----	104			
4-Bromofluorobenzene	460-00-4	0.1	%	----	----	97.6			
EP-074_SR-S: VOC Surrogates Surrogate control limits listed at end of this report.									
Dibromofluoromethane	1868-53-7	0.1	%	106	107	106			
Toluene-D8	2037-26-5	0.1	%	104	101	104			
4-Bromofluorobenzene	460-00-4	0.1	%	97.5	98.2	97.6			



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cations - Filtered (QC Lot: 3522815)								
HK1420505-002	Anonymous	EG036: Mercury	7439-97-6	0.5	µg/L	<0.5	<0.5	0.0
HK1420579-002	Anonymous	EG036: Mercury	7439-97-6	0.05	µg/L	<0.05	<0.05	0.0
EG: Metals and Major Cations - Filtered (QC Lot: 3522816)								
HK1420579-002	Anonymous	EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	<0.2	0.0
		EG020: Antimony	7440-36-0	1	µg/L	<1	<1	0.0
		EG020: Barium	7440-39-3	1	µg/L	618	620	0.3
		EG020: Cobalt	7440-48-4	1	µg/L	<1	<1	0.0
		EG020: Copper	7440-50-8	1	µg/L	<1	<1	0.0
		EG020: Lead	7439-92-1	1	µg/L	<1	<1	0.0
		EG020: Manganese	7439-96-5	1	µg/L	430	432	0.3
		EG020: Molybdenum	7439-98-7	1	µg/L	10	10	0.0
		EG020: Nickel	7440-02-0	1	µg/L	<1	<1	0.0
		EG020: Tin	7440-31-5	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	12	14	17.2
		EG020: Zinc	7440-66-6	10	µg/L	<10	<10	0.0
		HK1420579-013	Anonymous	EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2
EG020: Antimony	7440-36-0			1	µg/L	<1	<1	0.0
EG020: Barium	7440-39-3			1	µg/L	210	215	1.9
EG020: Cobalt	7440-48-4			1	µg/L	<1	<1	0.0
EG020: Copper	7440-50-8			1	µg/L	1	1	0.0
EG020: Lead	7439-92-1			1	µg/L	<1	<1	0.0
EG020: Manganese	7439-96-5			1	µg/L	487	497	2.2
EG020: Molybdenum	7439-98-7			1	µg/L	4	3	0.0
EG020: Nickel	7440-02-0			1	µg/L	<1	1	0.0
EG020: Tin	7440-31-5			1	µg/L	<1	<1	0.0
EG020: Arsenic	7440-38-2			10	µg/L	<10	<10	0.0
EG020: Zinc	7440-66-6			10	µg/L	<10	<10	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER				Method Blank (MB) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QC Lot: 3522815)											
EG036: Mercury	7439-97-6	0.05	µg/L	<0.05	0.2 µg/L	98.5	----	77	117	----	----
EG: Metals and Major Cations - Filtered (QC Lot: 3522816)											
EG020: Antimony	7440-36-0	1	µg/L	<1	100 µg/L	96.2	----	77	105	----	----
EG020: Arsenic	7440-38-2	10	µg/L	<10	100 µg/L	92.0	----	76	116	----	----
EG020: Barium	7440-39-3	1	µg/L	<1	100 µg/L	99.1	----	82	108	----	----
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	100 µg/L	96.0	----	81	107	----	----



Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QC Lot: 3522816) - Continued											
EG020: Cobalt	7440-48-4	1	µg/L	<1	100 µg/L	100	----	82	106	----	----
EG020: Copper	7440-50-8	1	µg/L	<1	100 µg/L	97.6	----	79	113	----	----
EG020: Lead	7439-92-1	1	µg/L	<1	100 µg/L	100	----	82	108	----	----
EG020: Manganese	7439-96-5	1	µg/L	<1	100 µg/L	99.4	----	80	112	----	----
EG020: Molybdenum	7439-98-7	1	µg/L	<1	100 µg/L	99.9	----	83	109	----	----
EG020: Nickel	7440-02-0	1	µg/L	<1	100 µg/L	97.3	----	77	113	----	----
EG020: Tin	7440-31-5	10	µg/L	<10	100 µg/L	93.8	----	76	108	----	----
EG020: Zinc	7440-66-6	10	µg/L	<10	100 µg/L	98.8	----	77	115	----	----
EG: Metals and Major Cations - Filtered (QC Lot: 3522817)											
EG050: Hexavalent Chromium	18540-29-9	20	µg/L	<20	100 µg/L	96.2	----	80	106	----	----
EP-076: Polycyclic Aromatics Hydrocarbons (PAHs) (QC Lot: 3522898)											
Naphthalene	91-20-3	0.2	µg/L	<0.2	0.5 µg/L	50.8	----	50	98	----	----
Acenaphthylene	208-96-8	0.2	µg/L	<0.2	0.5 µg/L	50.7	----	47	97	----	----
Acenaphthene	83-32-9	0.2	µg/L	<0.2	0.5 µg/L	69.5	----	49	93	----	----
Fluorene	86-73-7	0.2	µg/L	<0.2	0.5 µg/L	69.8	----	52	92	----	----
Phenanthrene	85-01-8	0.2	µg/L	<0.2	0.5 µg/L	52.0	----	51	91	----	----
Anthracene	120-12-7	0.2	µg/L	<0.2	0.5 µg/L	51.4	----	48	95	----	----
Fluoranthene	206-44-0	0.2	µg/L	<0.2	0.5 µg/L	72.6	----	68	109	----	----
Pyrene	129-00-0	0.2	µg/L	<0.2	0.5 µg/L	76.7	----	69	111	----	----
Benz(a)anthracene	56-55-3	0.2	µg/L	<0.2	0.5 µg/L	89.6	----	64	119	----	----
Chrysene	218-01-9	0.2	µg/L	<0.2	0.5 µg/L	103	----	50	124	----	----
Benzo(b)fluoranthene	205-99-2	0.2	µg/L	<0.2	0.5 µg/L	91.2	----	54	124	----	----
Benzo(k)fluoranthene	207-08-9	0.2	µg/L	<0.2	0.5 µg/L	84.3	----	54	130	----	----
Benzo(a)pyrene	50-32-8	0.2	µg/L	<0.2	0.5 µg/L	87.0	----	60	120	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.2	µg/L	<0.2	0.5 µg/L	93.5	----	60	119	----	----
Dibenz(a,h)anthracene	53-70-3	0.2	µg/L	<0.2	0.5 µg/L	107	----	48	120	----	----
Benzo(g,h,i)perylene	191-24-2	0.2	µg/L	<0.2	0.5 µg/L	101	----	52	125	----	----
EP-076B: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 3522898)											
Phenol	108-95-2	5	µg/L	<5.0	0.5 µg/L	52.0	----	39	86	----	----
Hexachlorobenzene (HCB)	118-74-1	5	µg/L	<5.0	0.5 µg/L	69.6	----	51	96	----	----
Bis(2-ethylhexyl)phthalate	117-81-7	10	µg/L	<10.0	0.5 µg/L	100	----	78	123	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3521235)											
C6 - C8 Fraction	----	0.02	mg/L	<0.02	0.03 mg/L	99.7	----	62	131	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3522899)											
C9 - C16 Fraction	----	0.5	mg/L	<0.5	0.21 mg/L	55.5	----	14	106	----	----
C17 - C35 Fraction	----	0.5	mg/L	<0.5	0.45 mg/L	80.9	----	8	130	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 3516529)											
Benzene	71-43-2	0.5	µg/L	<0.5	2 µg/L	107	----	59	125	----	----
Toluene	108-88-3	0.5	µg/L	<0.5	2 µg/L	108	----	64	121	----	----



Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 3516529) - Continued											
Ethylbenzene	100-41-4	0.5	µg/L	<0.5	2 µg/L	110	----	69	120	----	----
meta- & para-Xylene	108-38-3 106-42-3	1	µg/L	<1	4 µg/L	97.8	----	76	119	----	----
Styrene	100-42-5	0.5	µg/L	<0.5	2 µg/L	103	----	80	116	----	----
ortho-Xylene	95-47-6	0.5	µg/L	<0.5	2 µg/L	107	----	72	122	----	----
Xylenes (Total)	----	2	µg/L	<2	6 µg/L	101	----	75	120	----	----
EP-074_SR-B: Oxygenated Compounds (QC Lot: 3516529)											
2-Propanone (Acetone)	67-64-1	5	µg/L	<5	20 µg/L	96.3	----	81	130	----	----
2-Butanone (MEK)	78-93-3	5	µg/L	<5	20 µg/L	94.3	----	63	127	----	----
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3516529)											
Methylene chloride	75-09-2	5	µg/L	<5	2 µg/L	107	----	80	126	----	----
Trichloroethene	79-01-6	0.5	µg/L	<0.5	2 µg/L	106	----	77	114	----	----
Tetrachloroethene	127-18-4	0.5	µg/L	<0.5	2 µg/L	101	----	82	113	----	----
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 3516529)											
Chloroform	67-66-3	0.5	µg/L	<0.5	2 µg/L	102	----	72	118	----	----
Bromodichloromethane	75-27-4	0.5	µg/L	<0.5	2 µg/L	104	----	74	115	----	----
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 3516529)											
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	µg/L	<0.5	2 µg/L	102	----	64	119	----	----



Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: WATER

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QC Lot: 3522815)										
HK1420507-003	RINSATE BLANK	EG036: Mercury	7439-97-6	0.2 µg/L	94.0	----	75	125	----	----
EG: Metals and Major Cations - Filtered (QC Lot: 3522816)										
HK1420579-012	Anonymous	EG020: Antimony	7440-36-0	100 µg/L	92.5	----	75	125	----	----
		EG020: Arsenic	7440-38-2	100 µg/L	95.5	----	75	125	----	----
		EG020: Barium	7440-39-3	100 µg/L	# Not Determined	----	75	125	----	----
		EG020: Cadmium	7440-43-9	100 µg/L	96.3	----	75	125	----	----
		EG020: Cobalt	7440-48-4	100 µg/L	99.8	----	75	125	----	----
		EG020: Copper	7440-50-8	100 µg/L	92.6	----	75	125	----	----
		EG020: Lead	7439-92-1	100 µg/L	96.0	----	75	125	----	----
		EG020: Manganese	7439-96-5	100 µg/L	# Not Determined	----	75	125	----	----
		EG020: Molybdenum	7439-98-7	100 µg/L	105	----	75	125	----	----
		EG020: Nickel	7440-02-0	100 µg/L	93.1	----	75	125	----	----
EG020: Tin	7440-31-5	100 µg/L	94.5	----	75	125	----	----		
EG020: Zinc	7440-66-6	100 µg/L	96.0	----	75	125	----	----		

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates			
2-Fluorobiphenyl	321-60-8	50	130
4-Terphenyl-d14	1718-51-0	50	130
EP-080_SRS: TPH(Volatile)/BTEX Surrogate			
Dibromofluoromethane	1868-53-7	86	118
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115
EP-074_SR-S: VOC Surrogates			
Dibromofluoromethane	1868-53-7	86	118
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115

CERTIFICATE OF ANALYSIS

Client	: ACTION UNITED ENVIRO SERVICES	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 17
Contact	: MR BEN TAM	Contact	: Fung Lim Chee, Richard	Work Order	: HK1420626
Address	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: Bentam@fordbusiness.com	E-mail	: Richard.Fung@alsglobal.com	Date Samples Received	: 26-JUN-2014
Telephone	: +852 2959 6059	Telephone	: +852 2610 1044	Issue Date	: 15-JUL-2014
Facsimile	: +852 2959 6079	Facsimile	: +852 2610 2021	No. of samples received	: 10
Project	: TCS00670_13	Quote number	: ----	No. of samples analysed	: 10
Order number	: ----				
C-O-C number	: H026501				
Site	: LIAN TANG				

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Hong Kong Accreditation Service (HKAS) has accredited this laboratory (ALS Technichem (HK) Pty Ltd) under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories. The results shown in this certificate were determined by this laboratory in accordance with its terms of accreditation.

This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in the Electronic Transactions Ordinance of Hong Kong, Chapter 553, Section 6.

Signatories	Position	Authorised results for
Chan Ka Yu, Karen	Assistant Manager - Organics	Organics
Chan Siu Ming, Vico	Manager - Inorganics	Inorganics
Wong Wing, Kenneth	Manager - Metals	Inorganics



General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 10-JUL-2014

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific comments for Work Order: **HK1420626**

Site Name: Sha Tau Kok Road near Lian Tang.

Sample(s) were picked up from client by ALS Technichem (HK) staff in a chilled condition.

Water sample(s) analysed and reported on an as received basis.

Water sample(s) were filtered prior to dissolved metal analysis.

Soil sample(s) analysed on an as received basis. Result(s) reported on a dry weight basis.

Soil sample(s) as received, digested by In-house method E-ASTM D3974-09 based on ASTM D3974-09, prior to determination of metals.



Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				STK-A1-1 (1.1M)	STK-A1-1 (2.2M)	STK-A1-2 (1.5M)	STK-A1-2 (2.5M)	STK-A1-2 (4.0M)
				25-JUN-2014 17:10	25-JUN-2014 17:20	25-JUN-2014 16:25	25-JUN-2014 16:30	25-JUN-2014 16:50
Compound	CAS Number	LOR	Unit	HK1420626-002	HK1420626-003	HK1420626-004	HK1420626-005	HK1420626-006
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	----	0.1	%	21.9	15.5	11.0	13.2	13.7
EG: Metals and Major Cations								
EG020: Antimony	7440-36-0	1	mg/kg	2	<1	<1	<1	<1
EG020: Arsenic	7440-38-2	1	mg/kg	21	8	10	4	1
EG020: Barium	7440-39-3	1	mg/kg	75	48	32	28	19
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EG020: Cobalt	7440-48-4	1	mg/kg	4	1	<1	<1	<1
EG020: Copper	7440-50-8	1	mg/kg	12	6	13	3	3
EG020: Lead	7439-92-1	1	mg/kg	22	21	18	15	12
EG020: Manganese	7439-96-5	1	mg/kg	275	238	275	24	13
EG020: Molybdenum	7439-98-7	1	mg/kg	3	3	3	2	<1
EG020: Nickel	7440-02-0	1	mg/kg	10	2	2	1	2
EG020: Tin	7440-31-5	1	mg/kg	2	1	2	<1	<1
EG020: Zinc	7440-66-6	1	mg/kg	40	27	46	17	11
EG036: Mercury	7439-97-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EG049: Trivalent Chromium	16065-83-1	1	mg/kg	9	10	12	6	2
EG3060: Hexavalent Chromium	18540-29-9	1	mg/kg	<1	<1	<1	<1	<1
EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs)								
Naphthalene	91-20-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Acenaphthylene	208-96-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Acenaphthene	83-32-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Fluorene	86-73-7	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Phenanthrene	85-01-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Anthracene	120-12-7	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Fluoranthene	206-44-0	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Pyrene	129-00-0	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Benz(a)anthracene	56-55-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Chrysene	218-01-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Benzo(b)fluoranthene	205-99-2	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Benzo(k)fluoranthene	207-08-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Benzo(a)pyrene	50-32-8	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
Indeno(1.2.3.cd)pyrene	193-39-5	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Dibenz(a,h)anthracene	53-70-3	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(g,h,i)perylene	191-24-2	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
EP-076B: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate								
Phenol	108-95-2	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.200	mg/kg	<0.200	<0.200	<0.200	<0.200	<0.200
Bis(2-ethylhexyl)phthalate	117-81-7	5.00	mg/kg	<5.00	<5.00	<5.00	<5.00	<5.00



Sub-Matrix: SOIL			Client sample ID	STK-A1-1 (1.1M)	STK-A1-1 (2.2M)	STK-A1-2 (1.5M)	STK-A1-2 (2.5M)	STK-A1-2 (4.0M)
			Client sampling date / time	25-JUN-2014 17:10	25-JUN-2014 17:20	25-JUN-2014 16:25	25-JUN-2014 16:30	25-JUN-2014 16:50
Compound	CAS Number	LOR	Unit	HK1420626-002	HK1420626-003	HK1420626-004	HK1420626-005	HK1420626-006
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)								
C6 - C8 Fraction	----	5	mg/kg	<5	<5	<5	<5	<5
C9 - C16 Fraction	----	200	mg/kg	<200	<200	<200	<200	<200
C17 - C35 Fraction	----	500	mg/kg	<500	<500	<500	<500	<500
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Xylenes (Total)	----	2.0	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
EP-074_SR-B: Oxygenated Compounds								
2-Propanone (Acetone)	67-64-1	50	mg/kg	<50	<50	<50	<50	<50
2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	<5	<5	<5
EP-074_SR-E: Halogenated Aliphatics								
Methylene chloride	75-09-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	79-01-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04
EP-074_SR-G: Trihalomethanes (THM)								
Chloroform	67-66-3	0.04	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP-074_SR-I: Methyl-tert-butyl Ether								
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates							Surrogate control limits listed at end of this report.	
2-Fluorobiphenyl	321-60-8	0.1	%	90.7	96.9	108	77.9	76.0
4-Terphenyl-d14	1718-51-0	0.1	%	95.2	91.6	105	85.9	88.8
EP-080_SRS: TPH(Volatile)/BTEX Surrogate							Surrogate control limits listed at end of this report.	
Dibromofluoromethane	1868-53-7	0.1	%	90.1	89.8	90.1	90.8	90.0
Toluene-D8	2037-26-5	0.1	%	99.2	101	99.6	102	102
4-Bromofluorobenzene	460-00-4	0.1	%	103	104	103	103	102
EP-074_SR-S: VOC Surrogates							Surrogate control limits listed at end of this report.	
Dibromofluoromethane	1868-53-7	0.1	%	90.1	89.8	90.1	90.8	90.0
Toluene-D8	2037-26-5	0.1	%	99.2	101	99.6	102	102
4-Bromofluorobenzene	460-00-4	0.1	%	103	104	103	103	102



Sub-Matrix: SOIL			Client sample ID	DUP-4	STK-A2-2 (1.0M)	STK-A2-2 (2.0M)	STK-A2-2 (3.1M)	
			Client sampling date / time	[25-JUN-2014]	26-JUN-2014 16:25	26-JUN-2014 16:35	26-JUN-2014 16:45	
Compound	CAS Number	LOR	Unit	HK1420626-007	HK1420626-008	HK1420626-009	HK1420626-010	
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	---	0.1	%	13.6	14.7	13.2	14.8	
EG: Metals and Major Cations								
EG020: Antimony	7440-36-0	1	mg/kg	1	<1	<1	<1	
EG020: Arsenic	7440-38-2	1	mg/kg	3	16	11	5	
EG020: Barium	7440-39-3	1	mg/kg	27	20	19	20	
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	
EG020: Cobalt	7440-48-4	1	mg/kg	<1	<1	<1	<1	
EG020: Copper	7440-50-8	1	mg/kg	3	4	3	3	
EG020: Lead	7439-92-1	1	mg/kg	15	14	13	11	
EG020: Manganese	7439-96-5	1	mg/kg	29	57	19	18	
EG020: Molybdenum	7439-98-7	1	mg/kg	4	4	2	3	
EG020: Nickel	7440-02-0	1	mg/kg	<1	1	<1	<1	
EG020: Tin	7440-31-5	1	mg/kg	<1	<1	<1	<1	
EG020: Zinc	7440-66-6	1	mg/kg	17	14	12	13	
EG036: Mercury	7439-97-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	
EG049: Trivalent Chromium	16065-83-1	1	mg/kg	5	18	7	6	
EG3060: Hexavalent Chromium	18540-29-9	1	mg/kg	<1	<1	<1	<1	
EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs)								
Naphthalene	91-20-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	
Acenaphthylene	208-96-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	
Acenaphthene	83-32-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	
Fluorene	86-73-7	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	
Phenanthrene	85-01-8	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	
Anthracene	120-12-7	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	
Fluoranthene	206-44-0	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	
Pyrene	129-00-0	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	
Benz(a)anthracene	56-55-3	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	
Chrysene	218-01-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	
Benzo(b)fluoranthene	205-99-2	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	
Benzo(k)fluoranthene	207-08-9	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	
Benzo(a)pyrene	50-32-8	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Indeno(1.2.3.cd)pyrene	193-39-5	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	
Dibenz(a,h)anthracene	53-70-3	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	
Benzo(g,h,i)perylene	191-24-2	0.500	mg/kg	<0.500	<0.500	<0.500	<0.500	
EP-076B: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate								
Phenol	108-95-2	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	
Hexachlorobenzene (HCB)	118-74-1	0.200	mg/kg	<0.200	<0.200	<0.200	<0.200	
Bis(2-ethylhexyl)phthalate	117-81-7	5.00	mg/kg	<5.00	<5.00	<5.00	<5.00	
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)								



Sub-Matrix: SOIL			Client sample ID	DUP-4	STK-A2-2 (1.0M)	STK-A2-2 (2.0M)	STK-A2-2 (3.1M)	
			Client sampling date / time	[25-JUN-2014]	26-JUN-2014 16:25	26-JUN-2014 16:35	26-JUN-2014 16:45	
Compound	CAS Number	LOR	Unit	HK1420626-007	HK1420626-008	HK1420626-009	HK1420626-010	
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) - Continued								
C6 - C8 Fraction	----	5	mg/kg	<5	<5	<5	<5	
C9 - C16 Fraction	----	200	mg/kg	<200	<200	<200	<200	
C17 - C35 Fraction	----	500	mg/kg	<500	<500	<500	<500	
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	
meta- & para-Xylene	108-38-3 106-42-3	1.0	mg/kg	<1.0	<1.0	<1.0	<1.0	
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	
Xylenes (Total)	----	2.0	mg/kg	<2.0	<2.0	<2.0	<2.0	
EP-074_SR-B: Oxygenated Compounds								
2-Propanone (Acetone)	67-64-1	50	mg/kg	<50	<50	<50	<50	
2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	<5	<5	
EP-074_SR-E: Halogenated Aliphatics								
Methylene chloride	75-09-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	
Trichloroethene	79-01-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	<0.04	<0.04	
EP-074_SR-G: Trihalomethanes (THM)								
Chloroform	67-66-3	0.04	mg/kg	<0.04	<0.04	<0.04	<0.04	
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	
EP-074_SR-I: Methyl-tert-butyl Ether								
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates							Surrogate control limits listed at end of this report.	
2-Fluorobiphenyl	321-60-8	0.1	%	91.6	95.3	83.2	61.4	
4-Terphenyl-d14	1718-51-0	0.1	%	99.7	96.1	88.4	64.7	
EP-080_SRS: TPH(Volatile)/BTEX Surrogate							Surrogate control limits listed at end of this report.	
Dibromofluoromethane	1868-53-7	0.1	%	90.6	90.6	90.0	91.1	
Toluene-D8	2037-26-5	0.1	%	101	99.6	99.3	100	
4-Bromofluorobenzene	460-00-4	0.1	%	102	103	103	104	
EP-074_SR-S: VOC Surrogates							Surrogate control limits listed at end of this report.	
Dibromofluoromethane	1868-53-7	0.1	%	90.6	90.6	90.0	91.1	
Toluene-D8	2037-26-5	0.1	%	101	99.6	99.3	100	
4-Bromofluorobenzene	460-00-4	0.1	%	102	103	103	104	



Sub-Matrix: WATER			Client sample ID	STK-GW3				
			Client sampling date / time	[25-JUN-2014]				
Compound	CAS Number	LOR	Unit	HK1420626-001				
EG: Metals and Major Cations - Filtered								
EG036: Mercury	7439-97-6	0.5	µg/L	<0.5				
EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs)								
Naphthalene	91-20-3	2.0	µg/L	<2.0				
Acenaphthylene	208-96-8	2.0	µg/L	<2.0				
Acenaphthene	83-32-9	2.0	µg/L	<2.0				
Fluorene	86-73-7	2.0	µg/L	<2.0				
Phenanthrene	85-01-8	2.0	µg/L	<2.0				
Anthracene	120-12-7	2.0	µg/L	<2.0				
Fluoranthene	206-44-0	2.0	µg/L	<2.0				
Pyrene	129-00-0	2.0	µg/L	<2.0				
Chrysene	218-01-9	1.0	µg/L	<1.0				
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0				
EP-076B: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate								
Hexachlorobenzene (HCB)	118-74-1	1.0	µg/L	<1.0				
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH)								
C6 - C8 Fraction	----	20	µg/L	<20				
C9 - C16 Fraction	----	500	µg/L	<500				
C17 - C35 Fraction	----	500	µg/L	<500				
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH)								
Benzene	71-43-2	5.0	µg/L	<5.0				
Toluene	108-88-3	5.0	µg/L	<5.0				
Ethylbenzene	100-41-4	5.0	µg/L	<5.0				
meta- & para-Xylene	108-38-3 106-42-3	10	µg/L	<10				
Styrene	100-42-5	5.0	µg/L	<5.0				
ortho-Xylene	95-47-6	5.0	µg/L	<5.0				
Xylenes (Total)	----	20	µg/L	<20				
EP-074_SR-B: Oxygenated Compounds								
2-Propanone (Acetone)	67-64-1	500	µg/L	<500				
2-Butanone (MEK)	78-93-3	50	µg/L	<50				
EP-074_SR-E: Halogenated Aliphatics								
Methylene chloride	75-09-2	50	µg/L	<50				
Trichloroethene	79-01-6	5.0	µg/L	<5.0				
Tetrachloroethene	127-18-4	5.0	µg/L	<5.0				
EP-074_SR-G: Trihalomethanes (THM)								
Chloroform	67-66-3	5.0	µg/L	<5.0				
Bromodichloromethane	75-27-4	5.0	µg/L	<5.0				
EP-074_SR-I: Methyl-tert-butyl Ether								
Methyl tert-Butyl Ether (MTBE)	1634-04-4	5.0	µg/L	<5.0				
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates								

Surrogate control limits listed at end of this report.



Sub-Matrix: WATER				Client sample ID	STK-GW3				
				Client sampling date / time	[25-JUN-2014]				
Compound	CAS Number	LOR	Unit	HK1420626-001					
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates - Continued								Surrogate control limits listed at end of this report.	
2-Fluorobiphenyl	321-60-8	0.1	%	57.2					
4-Terphenyl-d14	1718-51-0	0.1	%	86.5					
EP-080_SRS: TPH(Volatile)/BTEX Surrogate								Surrogate control limits listed at end of this report.	
Dibromofluoromethane	1868-53-7	0.1	%	104					
Toluene-D8	2037-26-5	0.1	%	103					
4-Bromofluorobenzene	460-00-4	0.1	%	95.2					
EP-074_SR-S: VOC Surrogates								Surrogate control limits listed at end of this report.	
Dibromofluoromethane	1868-53-7	0.1	%	104					
Toluene-D8	2037-26-5	0.1	%	103					
4-Bromofluorobenzene	460-00-4	0.1	%	95.2					



Laboratory Duplicate (DUP) Report

Matrix: SOIL				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3525433)								
HK1420346-004	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	0.1	0.2	0.0
HK1420387-005	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	29.2	30.3	3.8
EA/ED: Physical and Aggregate Properties (QC Lot: 3525434)								
HK1420626-006	STK-A1-2 (4.0M)	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	13.7	12.5	8.9
HK1420689-006	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	7.7	7.3	6.1
EG: Metals and Major Cations (QC Lot: 3522829)								
HK1420626-009	STK-A2-2 (2.0M)	EG036: Mercury	7439-97-6	0.2	mg/kg	<0.2	<0.2	0.0
EG: Metals and Major Cations (QC Lot: 3522836)								
HK1420404-002	Anonymous	EG020: Cadmium	7440-43-9	0.2	mg/kg	0.5	0.5	0.0
		EG020: Barium	7440-39-3	0.5	mg/kg	82.2	84.1	2.3
		EG020: Cobalt	7440-48-4	0.5	mg/kg	20.2	19.5	3.4
		EG020: Manganese	7439-96-5	0.5	mg/kg	962	1060	9.5
		EG020: Tin	7440-31-5	0.5	mg/kg	3.1	2.9	5.1
		EG020: Antimony	7440-36-0	1	mg/kg	3	3	0.0
		EG020: Arsenic	7440-38-2	1	mg/kg	31	29	6.6
		EG020: Copper	7440-50-8	1	mg/kg	53	52	2.2
		EG020: Lead	7439-92-1	1	mg/kg	42	40	4.3
		EG020: Molybdenum	7439-98-7	1	mg/kg	2	1	0.0
		EG020: Nickel	7440-02-0	1	mg/kg	43	41	3.4
		EG020: Zinc	7440-66-6	1	mg/kg	136	127	7.3
		HK1420566-007	Anonymous	EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2
EG020: Barium	7440-39-3			0.5	mg/kg	39.8	45.3	13.1
EG020: Cobalt	7440-48-4			0.5	mg/kg	11.4	10.8	5.2
EG020: Manganese	7439-96-5			0.5	mg/kg	555	541	2.6
EG020: Tin	7440-31-5			0.5	mg/kg	1.4	1.3	0.0
EG020: Antimony	7440-36-0			1	mg/kg	<1	<1	0.0
EG020: Arsenic	7440-38-2			1	mg/kg	5	5	0.0
EG020: Copper	7440-50-8			1	mg/kg	10	9	0.0
EG020: Lead	7439-92-1			1	mg/kg	18	17	6.6
EG020: Molybdenum	7439-98-7			1	mg/kg	3	3	0.0
EG020: Nickel	7440-02-0			1	mg/kg	26	24	9.8
EG020: Zinc	7440-66-6			1	mg/kg	82	76	7.1
EG: Metals and Major Cations (QC Lot: 3522838)								
HK1420626-009	STK-A2-2 (2.0M)	EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.0
		EG020: Antimony	7440-36-0	1	mg/kg	<1	<1	0.0
		EG020: Arsenic	7440-38-2	1	mg/kg	11	10	0.0
		EG020: Barium	7440-39-3	1	mg/kg	19	17	11.7
		EG020: Cobalt	7440-48-4	1	mg/kg	<1	<1	0.0
		EG020: Copper	7440-50-8	1	mg/kg	3	3	0.0



Matrix: SOIL				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cations (QC Lot: 3522838) - Continued								
HK1420626-009	STK-A2-2 (2.0M)	EG020: Lead	7439-92-1	1	mg/kg	13	11	11.2
		EG020: Manganese	7439-96-5	1	mg/kg	19	17	10.8
		EG020: Molybdenum	7439-98-7	1	mg/kg	2	2	0.0
		EG020: Nickel	7440-02-0	1	mg/kg	<1	<1	0.0
		EG020: Tin	7440-31-5	1	mg/kg	<1	<1	0.0
		EG020: Zinc	7440-66-6	1	mg/kg	12	10	17.6
EG: Metals and Major Cations (QC Lot: 3522841)								
HK1420626-003	STK-A1-1 (2.2M)	EG3060: Hexavalent Chromium	18540-29-9	1	mg/kg	<1	<1	0.0
EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 3521548)								
HK1420389-001	Anonymous	Fluoranthene	206-44-0	150	µg/kg	<150	<150	0.0
		Pyrene	129-00-0	150	µg/kg	<150	<150	0.0
		Benz(a)anthracene	56-55-3	150	µg/kg	<150	<150	0.0
		Chrysene	218-01-9	150	µg/kg	<150	<150	0.0
		Benzo(b)fluoranthene	205-99-2	150	µg/kg	<150	<150	0.0
		Benzo(k)fluoranthene	207-08-9	150	µg/kg	<150	<150	0.0
		Benzo(a)pyrene	50-32-8	150	µg/kg	<150	<150	0.0
		Indeno(1.2.3.cd)pyrene	193-39-5	150	µg/kg	<150	<150	0.0
		Dibenz(a,h)anthracene	53-70-3	150	µg/kg	<150	<150	0.0
		Benzo(g,h,i)perylene	191-24-2	150	µg/kg	<150	<150	0.0
		Naphthalene	91-20-3	50	µg/kg	<50	<50	0.0
		Acenaphthylene	208-96-8	50	µg/kg	<50	<50	0.0
		Acenaphthene	83-32-9	50	µg/kg	<50	<50	0.0
		Fluorene	86-73-7	50	µg/kg	<50	<50	0.0
		Phenanthrene	85-01-8	50	µg/kg	<50	<50	0.0
		Anthracene	120-12-7	50	µg/kg	<50	<50	0.0
EP-076B: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 3521548)								
HK1420389-001	Anonymous	Bis(2-ethylhexyl)phthalate	117-81-7	1000	µg/kg	<1000	<1000	0.0
		Hexachlorobenzene (HCB)	118-74-1	50	µg/kg	<50	<50	0.0
		Phenol	108-95-2	500	µg/kg	<500	<500	0.0
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3521597)								
HK1420626-002	STK-A1-1 (1.1M)	C9 - C16 Fraction	----	200	mg/kg	<200	<200	0.0
		C17 - C35 Fraction	----	500	mg/kg	<500	<500	0.0
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3521598)								
HK1420626-002	STK-A1-1 (1.1M)	C6 - C8 Fraction	----	5	mg/kg	<5	<5	0.0
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 3521238)								
HK1420545-001	Anonymous	Benzene	71-43-2	0.1	mg/kg	<0.1	<0.1	0.0
		Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	0.0
		Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	0.0
		Styrene	100-42-5	0.2	mg/kg	<0.2	<0.2	0.0
		ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	0.0



Matrix: SOIL				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 3521238) - Continued								
HK1420545-001	Anonymous	meta- & para-Xylene	108-38-3	0.4	mg/kg	<0.4	<0.4	0.0
		Xylenes (Total)	106-42-3	1.0	mg/kg	<1.0	<1.0	0.0
EP-074_SR-B: Oxygenated Compounds (QC Lot: 3521238)								
HK1420545-001	Anonymous	2-Propanone (Acetone)	67-64-1	2	mg/kg	<2	<2	0.0
		2-Butanone (MEK)	78-93-3	2	mg/kg	<2	<2	0.0
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3521238)								
HK1420545-001	Anonymous	Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	<0.04	0.0
		Trichloroethene	79-01-6	0.1	mg/kg	<0.1	<0.1	0.0
		Methylene chloride	75-09-2	0.5	mg/kg	<0.5	<0.5	0.0
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 3521238)								
HK1420545-001	Anonymous	Chloroform	67-66-3	0.04	mg/kg	<0.04	<0.04	0.0
		Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	<0.1	0.0
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 3521238)								
HK1420545-001	Anonymous	Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.2	mg/kg	<0.2	<0.2	0.0

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EG: Metals and Major Cations - Filtered (QC Lot: 3522818)								
HK1420579-013	Anonymous	EG036: Mercury	7439-97-6	0.05	µg/L	<0.05	<0.05	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: SOIL				Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)		
						LCS	DCS	Low	High	Value	Control Limit	
EG: Metals and Major Cations (QC Lot: 3522829)												
EG036: Mercury	7439-97-6	0.02	mg/kg	<0.02	0.1 mg/kg	88.7	----	76	110	----	----	
EG: Metals and Major Cations (QC Lot: 3522836)												
EG020: Antimony	7440-36-0	1	mg/kg	<1	5 mg/kg	87.9	----	78	104	----	----	
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	95.7	----	75	109	----	----	
EG020: Barium	7440-39-3	1	mg/kg	<1	5 mg/kg	92.8	----	79	111	----	----	
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	98.2	----	81	109	----	----	
EG020: Cobalt	7440-48-4	1	mg/kg	<1	5 mg/kg	95.4	----	77	107	----	----	
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	92.1	----	79	105	----	----	
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	85.2	----	80	104	----	----	
EG020: Manganese	7439-96-5	1	mg/kg	<1	5 mg/kg	113	----	77	115	----	----	
EG020: Molybdenum	7439-98-7	1	mg/kg	<1	5 mg/kg	91.7	----	82	106	----	----	
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	92.1	----	79	105	----	----	
EG020: Tin	7440-31-5	1	mg/kg	<1	5 mg/kg	91.4	----	79	103	----	----	
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	107	----	76	114	----	----	
EG: Metals and Major Cations (QC Lot: 3522838)												



Matrix: SOIL		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3522838) - Continued											
EG020: Antimony	7440-36-0	1	mg/kg	<1	5 mg/kg	87.2	----	78	104	----	----
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	90.6	----	75	109	----	----
EG020: Barium	7440-39-3	1	mg/kg	<1	5 mg/kg	92.6	----	79	111	----	----
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	94.8	----	81	109	----	----
EG020: Cobalt	7440-48-4	1	mg/kg	<1	5 mg/kg	94.9	----	77	107	----	----
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	92.8	----	79	105	----	----
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	87.8	----	80	104	----	----
EG020: Manganese	7439-96-5	1	mg/kg	<1	5 mg/kg	106	----	77	115	----	----
EG020: Molybdenum	7439-98-7	1	mg/kg	<1	5 mg/kg	93.4	----	82	106	----	----
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	93.6	----	79	105	----	----
EG020: Tin	7440-31-5	1	mg/kg	<1	5 mg/kg	89.8	----	79	103	----	----
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	108	----	76	114	----	----
EG: Metals and Major Cations (QC Lot: 3522841)											
EG3060: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	2.5 mg/kg	115	----	92	122	----	----
EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 3521548)											
Naphthalene	91-20-3	25	µg/kg	<50	25 µg/kg	88.8	----	63	111	----	----
Acenaphthylene	208-96-8	25	µg/kg	<50	25 µg/kg	81.6	----	63	111	----	----
Acenaphthene	83-32-9	25	µg/kg	<50	25 µg/kg	86.8	----	67	108	----	----
Fluorene	86-73-7	25	µg/kg	<50	25 µg/kg	88.0	----	67	110	----	----
Phenanthrene	85-01-8	25	µg/kg	<50	25 µg/kg	83.9	----	67	108	----	----
Anthracene	120-12-7	25	µg/kg	<50	25 µg/kg	83.4	----	69	113	----	----
Fluoranthene	206-44-0	25	µg/kg	<50	25 µg/kg	84.2	----	71	114	----	----
Pyrene	129-00-0	25	µg/kg	<50	25 µg/kg	85.4	----	71	114	----	----
Benz(a)anthracene	56-55-3	25	µg/kg	<50	25 µg/kg	82.7	----	63	114	----	----
Chrysene	218-01-9	25	µg/kg	<50	25 µg/kg	101	----	67	122	----	----
Benzo(b)fluoranthene	205-99-2	25	µg/kg	<50	25 µg/kg	81.2	----	59	114	----	----
Benzo(k)fluoranthene	207-08-9	25	µg/kg	<50	25 µg/kg	80.6	----	64	119	----	----
Benzo(a)pyrene	50-32-8	25	µg/kg	<50	25 µg/kg	76.8	----	58	117	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	25	µg/kg	<50	25 µg/kg	76.0	----	51	115	----	----
Dibenz(a,h)anthracene	53-70-3	25	µg/kg	<50	25 µg/kg	80.4	----	59	114	----	----
Benzo(g,h,i)perylene	191-24-2	25	µg/kg	<50	25 µg/kg	76.3	----	58	120	----	----
EP-076B: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 3521548)											
Phenol	108-95-2	25	µg/kg	<500	25 µg/kg	84.8	----	52	118	----	----
Hexachlorobenzene (HCB)	118-74-1	25	µg/kg	<50	25 µg/kg	81.2	----	54	113	----	----
Bis(2-ethylhexyl)phthalate	117-81-7	25	µg/kg	<1000	25 µg/kg	106	----	85	114	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3521597)											
C9 - C16 Fraction	----	200	mg/kg	<200	32 mg/kg	79.8	----	51	122	----	----
C17 - C35 Fraction	----	500	mg/kg	<500	67.5 mg/kg	81.6	----	11	129	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3521598)											



Matrix: SOIL		Method Blank (MB) Report				Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3521598) - Continued											
C6 - C8 Fraction	----	5	mg/kg	<5	4.5 mg/kg	95.5	----	71	119	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 3521238)											
Benzene	71-43-2	0.1	mg/kg	<0.1	0.25 mg/kg	98.1	----	55	128	----	----
Toluene	108-88-3	0.2	mg/kg	<0.2	0.25 mg/kg	104	----	66	119	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.25 mg/kg	108	----	66	123	----	----
meta- & para-Xylene	108-38-3	0.4	mg/kg	<0.4	0.50 mg/kg	104	----	78	122	----	----
	106-42-3										
Styrene	100-42-5	0.2	mg/kg	<0.2	0.25 mg/kg	100	----	87	111	----	----
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.25 mg/kg	108	----	72	125	----	----
Xylenes (Total)	----	1.0	mg/kg	<1.0	0.75 mg/kg	106	----	76	122	----	----
EP-074_SR-B: Oxygenated Compounds (QC Lot: 3521238)											
2-Propanone (Acetone)	67-64-1	2	mg/kg	<2	2.5 mg/kg	98.4	----	81	129	----	----
2-Butanone (MEK)	78-93-3	2	mg/kg	<2	2.5 mg/kg	101	----	61	133	----	----
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3521238)											
Methylene chloride	75-09-2	0.5	mg/kg	<0.5	0.25 mg/kg	91.7	----	84	131	----	----
Trichloroethene	79-01-6	0.1	mg/kg	<0.1	0.25 mg/kg	99.1	----	82	114	----	----
Tetrachloroethene	127-18-4	0.04	mg/kg	<0.04	0.25 mg/kg	98.0	----	89	110	----	----
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 3521238)											
Chloroform	67-66-3	0.04	mg/kg	<0.04	0.25 mg/kg	97.0	----	77	113	----	----
Bromodichloromethane	75-27-4	0.1	mg/kg	<0.1	0.25 mg/kg	91.0	----	71	125	----	----
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 3521238)											
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.2	mg/kg	<0.2	0.25 mg/kg	106	----	68	116	----	----

Matrix: WATER		Method Blank (MB) Report				Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QC Lot: 3522818)											
EG036: Mercury	7439-97-6	0.05	µg/L	<0.05	0.2 µg/L	94.5	----	77	117	----	----
EP-076: Polycyclic Aromatics Hydrocarbons (PAHs) (QC Lot: 3522898)											
Naphthalene	91-20-3	0.2	µg/L	<0.2	0.5 µg/L	50.8	----	50	98	----	----
Acenaphthylene	208-96-8	0.2	µg/L	<0.2	0.5 µg/L	50.7	----	47	97	----	----
Acenaphthene	83-32-9	0.2	µg/L	<0.2	0.5 µg/L	69.5	----	49	93	----	----
Fluorene	86-73-7	0.2	µg/L	<0.2	0.5 µg/L	69.8	----	52	92	----	----
Phenanthrene	85-01-8	0.2	µg/L	<0.2	0.5 µg/L	52.0	----	51	91	----	----
Anthracene	120-12-7	0.2	µg/L	<0.2	0.5 µg/L	51.4	----	48	95	----	----
Fluoranthene	206-44-0	0.2	µg/L	<0.2	0.5 µg/L	72.6	----	68	109	----	----
Pyrene	129-00-0	0.2	µg/L	<0.2	0.5 µg/L	76.7	----	69	111	----	----
Chrysene	218-01-9	0.2	µg/L	<0.2	0.5 µg/L	103	----	50	124	----	----
Benzo(b)fluoranthene	205-99-2	0.2	µg/L	<0.2	0.5 µg/L	91.2	----	54	124	----	----



Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EP-076B: Phenol, Hexachlorobenzene and Bis(2-ethylhexyl) Phthalate (QC Lot: 3522898)											
Hexachlorobenzene (HCB)	118-74-1	5	µg/L	<5.0	0.5 µg/L	69.6	----	51	96	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3521235)											
C6 - C8 Fraction	----	0.02	mg/L	<0.02	0.03 mg/L	99.7	----	62	131	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3522899)											
C9 - C16 Fraction	----	0.5	mg/L	<0.5	0.21 mg/L	55.5	----	14	106	----	----
C17 - C35 Fraction	----	0.5	mg/L	<0.5	0.45 mg/L	80.9	----	8	130	----	----
EP-074_SR-A: Monocyclic Aromatic Hydrocarbons (MAH) (QC Lot: 3521243)											
Benzene	71-43-2	0.5	µg/L	<0.5	2 µg/L	102	----	59	125	----	----
Toluene	108-88-3	0.5	µg/L	<0.5	2 µg/L	111	----	64	121	----	----
Ethylbenzene	100-41-4	0.5	µg/L	<0.5	2 µg/L	106	----	69	120	----	----
meta- & para-Xylene	108-38-3 106-42-3	1	µg/L	<1	4 µg/L	103	----	76	119	----	----
Styrene	100-42-5	0.5	µg/L	<0.5	2 µg/L	96.3	----	80	116	----	----
ortho-Xylene	95-47-6	0.5	µg/L	<0.5	2 µg/L	106	----	72	122	----	----
Xylenes (Total)	----	2	µg/L	<2	6 µg/L	104	----	75	120	----	----
EP-074_SR-B: Oxygenated Compounds (QC Lot: 3521243)											
2-Propanone (Acetone)	67-64-1	5	µg/L	<5	20 µg/L	90.4	----	81	130	----	----
2-Butanone (MEK)	78-93-3	5	µg/L	<5	20 µg/L	92.7	----	63	127	----	----
EP-074_SR-E: Halogenated Aliphatics (QC Lot: 3521243)											
Methylene chloride	75-09-2	5	µg/L	<5	2 µg/L	101	----	80	126	----	----
Trichloroethene	79-01-6	0.5	µg/L	<0.5	2 µg/L	101	----	77	114	----	----
Tetrachloroethene	127-18-4	0.5	µg/L	<0.5	2 µg/L	102	----	82	113	----	----
EP-074_SR-G: Trihalomethanes (THM) (QC Lot: 3521243)											
Chloroform	67-66-3	0.5	µg/L	<0.5	2 µg/L	98.2	----	72	118	----	----
Bromodichloromethane	75-27-4	0.5	µg/L	<0.5	2 µg/L	86.6	----	74	115	----	----
EP-074_SR-I: Methyl-tert-butyl Ether (QC Lot: 3521243)											
Methyl tert-Butyl Ether (MTBE)	1634-04-4	0.5	µg/L	<0.5	2 µg/L	90.5	----	64	119	----	----



Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

Matrix: SOIL

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 3522829)										
HK1420626-008	STK-A2-2 (1.0M)	EG036: Mercury	7439-97-6	1 mg/kg	104	----	75	125	----	----
EG: Metals and Major Cations (QC Lot: 3522836)										
HK1420404-001	Anonymous	EG020: Antimony	7440-36-0	5 mg/kg	89.2	----	75	125	----	----
		EG020: Arsenic	7440-38-2	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Barium	7440-39-3	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Cadmium	7440-43-9	5 mg/kg	99.6	----	75	125	----	----
		EG020: Cobalt	7440-48-4	50 mg/kg	88.0	----	75	125	----	----
		EG020: Copper	7440-50-8	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Lead	7439-92-1	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Manganese	7439-96-5	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Molybdenum	7439-98-7	5 mg/kg	98.5	----	75	125	----	----
		EG020: Nickel	7440-02-0	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Tin	7440-31-5	5 mg/kg	89.9	----	75	125	----	----
EG020: Zinc	7440-66-6	5 mg/kg	# Not Determined	----	75	125	----	----		
EG: Metals and Major Cations (QC Lot: 3522838)										
HK1420626-008	STK-A2-2 (1.0M)	EG020: Antimony	7440-36-0	5 mg/kg	87.3	----	75	125	----	----
		EG020: Arsenic	7440-38-2	50 mg/kg	96.6	----	75	125	----	----
		EG020: Barium	7440-39-3	50 mg/kg	94.8	----	75	125	----	----
		EG020: Cadmium	7440-43-9	5 mg/kg	95.8	----	75	125	----	----
		EG020: Cobalt	7440-48-4	5 mg/kg	93.6	----	75	125	----	----
		EG020: Copper	7440-50-8	5 mg/kg	86.8	----	75	125	----	----
		EG020: Lead	7439-92-1	50 mg/kg	89.5	----	75	125	----	----
		EG020: Manganese	7439-96-5	5 mg/kg	# Not Determined	----	75	125	----	----
		EG020: Molybdenum	7439-98-7	5 mg/kg	89.9	----	75	125	----	----
		EG020: Nickel	7440-02-0	5 mg/kg	90.2	----	75	125	----	----
		EG020: Tin	7440-31-5	5 mg/kg	87.9	----	75	125	----	----
EG020: Zinc	7440-66-6	5 mg/kg	103	----	75	125	----	----		
EG: Metals and Major Cations (QC Lot: 3522841)										
HK1420626-002	STK-A1-1 (1.1M)	EG3060: Hexavalent Chromium	18540-29-9	2.5 mg/kg	117	----	75	125	----	----



Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3521597)										
HK1420626-003	STK-A1-1 (2.2M)	C9 - C16 Fraction	----	32 mg/kg	71.3	----	50	130	----	----
		C17 - C35 Fraction	----	67.5 mg/kg	82.7	----	50	130	----	----
EP-071HK_SR: Total Petroleum Hydrocarbons (TPH) (QC Lot: 3521598)										
HK1420626-003	STK-A1-1 (2.2M)	C6 - C8 Fraction	----	4.5 mg/kg	98.7	----	50	130	----	----

Matrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
					MS	MSD	Low	High	Value	Control Limit
EG: Metals and Major Cations - Filtered (QC Lot: 3522818)										
HK1420579-012	Anonymous	EG036: Mercury	7439-97-6	0.2 µg/L	93.0	----	75	125	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates			
2-Fluorobiphenyl	321-60-8	50	130
4-Terphenyl-d14	1718-51-0	50	130
EP-080_SRS: TPH(Volatile)/BTEX Surrogate			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121
EP-074_SR-S: VOC Surrogates			
Dibromofluoromethane	1868-53-7	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121

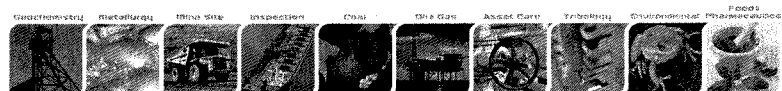
Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates			
2-Fluorobiphenyl	321-60-8	50	130
4-Terphenyl-d14	1718-51-0	50	130
EP-080_SRS: TPH(Volatile)/BTEX Surrogate			
Dibromofluoromethane	1868-53-7	86	118
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115
EP-074_SR-S: VOC Surrogates			
Dibromofluoromethane	1868-53-7	86	118



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP-074_SR-S: VOC Surrogates - Continued			
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115

Appendix G

Chain of Custody Form



Turnaround Times

Standard laboratory turnaround time is **10 working days** for chemical testing from receipt of samples for the routine tests quoted. Work orders received at the laboratory after 12pm are deemed received the following day for the calculation of turnaround times.

Service Inclusions

The service offered by ALS will include the following additional items at no extra charge.

- Sample containers appropriately prepared, labelled and pre-dosed with preservatives.
- Cooler boxes to facilitate the "refrigeration" of samples en route to the laboratory. (We recommend the use of ice for chilling samples and ice bricks only for maintaining the temperature of samples that have already been chilled).
- On call access to ALS technical expertise.

Sample Container Requirements

ALS provides pre-treated and labelled sample containers, for all analytical work to be conducted at the laboratory. Samples for analysis should be chilled whilst en route to the laboratory. **Please contact the laboratory for bottle arrangement.**

Soil Samples

Test Parameter	Label Colour	Container Type (Preservation)
INORGANICS/ORGANICS		
All testing	Orange	One x 250ml glass (none) Teflon Linear

Groundwater Samples

Test Parameter	Label Colour	Container Type (Preservation)
METALS		
Heavy Metals (Total / Lab Filtered)		One x 250 ml plastic (none)
ORGANICS		
VOCs/BTEX/PCR(C ₆ -C ₉)	Maroon	Two x 40 ml amber vials (HCl)
Semi-volatile Organics, PCR (C ₁₀ -C ₃₅)	Orange	One x 1 L amber glass (none)
Cyanide		One x 250ml plastic (NaOH)

Express Services

And we can offer express turnaround time services upon request, the additional charges as follows:

Express TAT Services	Price Schedule
5 Working days TAT express services	original prices +50%

** The express TAT services must be specially arranged and agreed by ALS in advance.

QUOTATION: HK/616a/14

(Please quote this number with all relevant sample submissions and refer to quotation validity below)

COMPANY:	Action United Environmental Services	DATE :	12 June 2014
ATTENTION:	Mr Tam	PHONE:	2959 6059
EMAIL:	twtam@fordbusiness.com	NO OF PAGES:	5 pages
PROJECT:	Agreement No. CE 45/2008 (CE) Liantang / Heung Yuen Wai Boundary Crossing Point and Associated Works Contamination Impact Assessment (Updated)		
FROM:	Ivan Leung	VALID UNTIL:	29 July 2014

Dear Mr Tam,

Further to your enquiry, thank you for providing ALS the opportunity to submit this quotation covering your analytical testing requirements. ALS is very keen to work with you on this important, strategic, monitoring project, delivering high quality data, good communication and timely and reliable service.

This quotation has been developed based on information provided. Please refer to all sections within this quotation to ensure that we have scoped your project correctly. Please do not hesitate to contact ALS for updating or reissuing, should this be required.

Acceptance of this quotation is required within 90 days from date of issue. Please advise ALS (via email) upon acceptance, to allow this quote to be loaded into our Laboratory Information Management System and/or to order the required sample containers.

Yours Sincerely,

Reviewed and Approved by:

Ivan Leung
Manager-Customer Services
ALS Laboratory Group
Environmental Division – Hong Kong

Agreed and Accepted by:

Name of Signatory:
Company Chop and Authority Signature
Date



Analytical Charges

RBRG: Land Contamination

Analyte Description	ALS Method Code	In-house Method Reference	Reporting Limit			Unit Cost (HK\$)
			Soil (mg/kg)	Ground Water (µg/L)	Blanks (µg/L)	
Metals						
Lead	EG020*	USEPA6020	1	NR [®]	1	
Antimony			1	NR [®]	1	
Arsenic			1	NR [®]	10	
Barium			1	NR [®]	1	
Cadmium			0.2	NR [®]	0.2	
Cobalt			1	NR [®]	1	
Copper			1	NR [®]	1	
Manganese			1	NR [®]	1	
Molybdenum			1	NR [®]	1	
Nickel			1	NR [®]	1	
Tin			1	NR [®]	1	
Zinc			1	NR [®]	10	
Mercury	EG036*	APHA3112B	0.2	0.5	0.5	
Chromium III [^]	EG049*	By Calculation	1	NR [®]	20	
Chromium VI	EG3060* in soil EG050* in water	USEPA3060 APHA 3500 Cr: D	1	NR [®]	20	
Volatile Organic Compounds						
Acetone	EP074SR*	USEPA 8260	50	500	500	
Benzene			0.2	5	5	
Bromodichloromethane			0.1	5	5	
2-Butanone			5	50	50	
Chloroform			0.04	5	5	
Ethylbenzene			0.5	5	5	
Methyl tert-Butyl Ether			0.5	5	5	
Methylene Chloride			0.5	50	50	
Styrene			0.5	5	5	
Tetrachloroethene			0.04	5	5	
Toluene			0.5	5	5	
Trichloroethene			0.1	5	5	
Xylenes (sum of meta & para, ortho)			2	20	20	
Petroleum Carbon Ranges (PCR)						
C6 - C8	EP071HK_SR*	USEPA 8015/8260	5	20	20	
C9 - C16			200	500	500	
C17 - C35			500	500	500	

*The laboratory is HOKLAS accredited for the in-house method as quoted. The relevant method references are as listed.

[^] Chromium III = Total Chromium – Chromium VI

[®] NR = Not required

** QC groundwater sample shall be conducted Hg testing.



2) RBRG: Land Contamination

Analyte Description	ALS Method Code	In-house Method Reference	Reporting Limit			Unit Cost (HK\$)
			Soil (mg/kg)	Ground Water (µg/L)	Blanks (µg/L)	
Semivolatile Organic Compounds						
Acenaphthene	EP076HK*	USEPA 8270	0.5	2	2	
Acenaphthylene			0.5	2	2	
Anthracene			0.5	2	2	
Benzo(a)anthracene			0.5	NR [®]	2	
Benzo(a)pyrene			0.05	NR [®]	0.2	
Benzo(b)fluoranthene			0.5	1	1	
Benzo(k)fluoranthene			0.5	NR [®]	2	
Benzo(g,h,i)perylene			0.5	NR [®]	2	
Bis(2-Ethylhexyl)phthalate			5	NR [®]	2	
Chrysene			0.5	1	1	
Dibenzo(a,h)anthracene			0.05	NR [®]	2	
Fluoranthene			0.5	2	2	
Fluorene			0.5	2	2	
Hexachlorobenzene			0.2	1	1	
Indeno(1,2,3-cd)pyrene			0.5	NR [®]	2	
Naphthalene			0.5	2	2	
Phenanthrene			0.5	2	2	
Phenol			0.5	NR [®]	2	
Pyrene			0.5	2	2	
Total PCBs	EP066*	USEPA8270	0.1	1	1	
Free Cyanide	EK025MD	APHA 4500CN:B,C, E & I	1	NR [®]	0.01 mg/L	

*The laboratory is HOKLAS accredited for the in-house method as quoted. The relevant method references are as listed.

[^] Chromium III = Total Chromium – Chromium VI

[®] NR = Not required

samples will be collected at the depths 0.5m, 1.5m and 3.0m below ground level. If groundwater is encountered at sampling pits, groundwater sampling will be performed to carry out the assessment.

- 3.12 If contaminants are revealed during site investigation, more samples would be collected as trace the extension of contaminants.

POTENTIAL CONTAMINANTS

- 3.13 Land contamination assessment of chemicals analytical would be in accordance with Table 2-2 of Section 2 of the "Practice Guide for Investigation and Remediation of Contaminated Land" requirements to conduct.

The works sites of ventilation building in Po Kat Tsai

- 3.14 According to the site history Po Kat Tsai of the assessment site is from abandoned agricultural land formed in the 1990's and was first used as open storage. It then turned into open storage and warehouse of construction materials until it was handover to the Project. So, chemicals analytical are proposed for Po Kat Tsai assessment site below:

- Metals – Antimony, Arsenic, Barium, Cadmium, Chromium III & VI, Cobalt, Copper, Lead, Manganese, Mercury, Molybdenum, Nickel, Tin, Zinc;
- Petroleum Carbon Ranges – Fractions C6-C8, Fractions C9-C16 and Fractions C17-C35;
- Volatile Organic Compounds (VOCs) – Acetone, Benzene, Bromodichloromethane, 2-Butanone, Chloroform, Ethylbenzene, Methyl tert-Butyl Ether, Methylene Chloride, Styrene, Tetrachloroethene, Toluene, Trichloroethene, Xylenes (Total);
- Semi-volatile Organic Compounds (SVOCs) – Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, bis-(2-Ethylhexyl)phthalate, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Fluorene, Hexachlorobenzene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, Phenol and Pyrene;

The open area of the Project site at Sha Tau Kok Road near Loi Tung

- 3.15 According to the site history an open storage of construction materials and vehicle tyre fixing and replacement services were observed on Loi Tung assessment site. So, chemicals analytical are proposed for Loi Tung assessment sites A1 and A2 below:

- Metals – Antimony, Arsenic, Barium, Cadmium, Chromium III & VI, Cobalt, Copper, Lead, Manganese, Mercury, Molybdenum, Nickel, Tin, Zinc;
- Petroleum Carbon Ranges – Fractions C6-C8, Fractions C9-C16 and Fractions C17-C35;
- Volatile Organic Compounds (VOCs) – Acetone, Benzene, Bromodichloromethane, 2-Butanone, Chloroform, Ethylbenzene, Methyl tert-Butyl Ether, Methylene Chloride, Styrene, Tetrachloroethene, Toluene, Trichloroethene, Xylenes (Total);
- Semi-volatile Organic Compounds (SVOCs) – Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, bis-(2-Ethylhexyl)phthalate, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Fluorene, Hexachlorobenzene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, Phenol and Pyrene;

SOIL SAMPLE METHODOLOGY

- 3.16 Soil sampling by pit excavation was recommended. During investigation, pit excavation will be supervised by a land contamination specialist and Resident Engineer to ensure that no cross contamination or any other forms of interferences. Moreover, AUES would be also responsible to monitor and supervise all the soil and water sampling.
- 3.17 Excavator or hand digging would be used for pit excavation. Sampling pit excavation would be from existing ground until the proposed final depth. All soil samples will be collected using a stainless steel hand-held trowel. Representative soil sample, at least three will be collected from each designated sampling point at the side wall or bottom.

4 QA/QC PROCEDURES

- 4.1 The quality control samples will be collected in the course of soil and groundwater sampling. Duplicate soil samples will be taken from potential contaminated areas. For the groundwater sample, one trip/travel blank, one field blank and duplicate sample will be taken respectively.

Trip/Travel Blank

- 4.2 The trip blank will be prepared in the laboratory using organic-free water. The trip blank will remain unopened and accompanied from the start of sampling to delivery of samples to the laboratory and analyzed for BTEX i.e. Benzene, Toluene, Ethylbenzene and Xylenes (total). The trip blank would be collect and analysis for each groundwater samples delivery event. Number of trip blank would be depended groundwater delivery event.

Field Blank

- 4.3 The field blank will be prepared in field using organic-free water by passing the water from a full bottle to an empty bottle at the most contaminated location on site. The field blank accompanied the project samples to the laboratory and analyzed for BTEX i.e. Benzene, Toluene, Ethylbenzene and Xylenes (total). The field blank would be collect for each groundwater sampling date. Number of field blank sample collection would be depended on how many day to conduct groundwater sampling.

Duplicate Sample

- 4.4 The duplicate sample(s) will be collected as a split sample from soil and groundwater; and also chemical analysis is equivalent to the original sample(s). These samples will be delivered to the laboratory as two individual samples without any indication to the laboratory that they have been duplicated. The duplicate sample(s) will be one per twenty soil or groundwater samples to collect. According to the numbers of soil and groundwater samples as collected from these two areas, two duplicate soil samples and one duplicate groundwater sample as predicted for each area.

PROCEDURE FOR DECONTAMINATING EQUIPMENT AND SAMPLING TOOLS

- 4.5 Tap water, phosphate-free detergent (Decon[®] 90) and distilled water would be used for cleaning the digging and sampling tools/equipment. The decontamination required to be conducted as follows:
- All using equipment/tools decontamination will be perform before each sampling pit excavation to ensure no cross contamination;
 - All sampling tools will be decontaminated between sampling locations to prevent cross-contamination of samples; and
 - All sampling equipment will be washed down prior to leaving site to prevent potentially contaminated soil or surface water being transported off-site
- 4.6 The land contamination specialist or his delegates or the appointed competent person of Engineer Representative would be monitored and supervised all decontamination work.
- 4.7 Furthermore, equipment blank will be collected to determine potential cross contamination between samples and potential influences from the sampling tools used. It will collect from assessment site by the sampling equipment rinse to verify decontamination procedures and background or ambient airborne contaminants on the site. The equipment blank collection will be one per twenty soil samples or groundwater samples to conduct. According to the numbers of soil and groundwater samples as collected from these two areas, two equipment blank samples are predicted for each area.

Rinsate Blank