



Improvement Dredging for Lamma Power Station Navigation Channel

Sediment Quality Baseline Review Report

October 2018

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香港電燈有限公司
The Hongkong Electric Co., Ltd.



ENVIRONMENTAL IMPACT ASSESSMENT (EIA) ORDINANCE, CAP. 499

ENVIRONMENTAL PERMIT NO. EP-535/2017

**IMPROVEMENT DREDGING FOR
LAMMA POWER STATION NAVIGATION CHANNEL**

Report Title	Sediment Quality Baseline Review Report (October 2018)
Date	31 October 2018
Certified by	 (Mr. Kenneth Fung, Environmental Team Leader)
Verified by	 Mr. Y T Tang (AECOM Asia Company Limited, Independent Environmental Checker)

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1 Introduction

1.1 Project Background

The Lamma Power Station Navigation Channel (the “Channel”) located adjacent to the Lamma Power Station (LPS) near Hong Kong’s West Lamma Channel, was formed in 1981, and has been periodically dredged in the past to address the effects of natural siltation in order to meet the operational requirements for safe navigation of coal vessels.

An Environmental Impact Assessment (EIA) study for the proposed improvement dredging at the Channel was completed in March 2017 and approved by the Director of Environmental Protection (DEP) in October 2017 (Register No.: AEIAR-212/2017). The proposed improvement dredging is to re-profile the Channel to a target depth of -16.5 mPD with estimated in-situ dredging quantity of 3.2 million m³, subject to fine-tuning against the actual existing seabed profile. The project location is shown in **Figure 1**.

Based on latest information and subject to obtaining the relevant consents and approvals, the improvement dredging works is tentatively scheduled for commencement in the first quarter of 2019.

To review the baseline sediment quality conditions within the project area, a Sediment Sampling and Testing Plan (SSTP) was prepared in accordance with the Environment, Transport and Works Bureau Technical Circular (Works) No. 34/2002, and the Practice Note for Authorized Persons and Registered Structural Engineers – Management Framework for 111 Disposal of Dredged/Excavated Sediment (PNAP ADV-21) under the Dumping at Sea Ordinance, Cap. 466 (DASO). The SSTP was approved by the Environmental Protection Department (EPD) on 31 January 2018.

1.2 Purpose of this Report

This Sediment Quality Baseline Review (SQBR) is prepared in accordance with the requirements specified in Clause 2.11 of the EP (No. EP-535/2017) and details the findings of the sediment sampling and testing undertaken within the project area and the subsequent classification and delineation of the sediment under DASO. It should be noted that these findings have been reported in the Preliminary Sediment Quality Report (PSQR) prepared under DASO that was submitted to EPD on 10 May 2018 with confirmation of no objection from EPD received on 16 May 2018 (see **Appendix C**).

2 Sediment Sampling

2.1 Sampling Plan

Sediment sampling was conducted in accordance with the approved SSTP and the “Guidelines for Sediment Assessment” under the PNAP ADV-21, on 28 February 2018 and 1 March 2018. A total of 69 samples were collected and delivered to the laboratory for testing on the same dates. Based on Tier I review of existing information for site contamination assessment in the approved SSTP, the dredged sediment from this Project is expected to have a low contamination level and fall under the Category L. Therefore, seabed surface sampling at a 200 x 200m grid was conducted in accordance with PNAP ADV-21.

2.2 Sampling Location and Analytical Method Adopted

The actual sampling locations slightly deviated from the proposed ones in the approved SSTP (i.e. within 6 m), however these were still within the sampling grids shown in **Figure 2**. The actual sampling locations were set using a differential global positioning system (dGPS) and are presented in **Table 1** and **Figure 3**. At each sampling location, the water depth was measured using an echo sounder. The seabed surface mPD was calculated taking the Cheung Chau Hong Kong Observatory (HKO) station as reference for real time mPD. Water depth data is also presented in **Table 1**.

Table 1: Actual Sediment Sampling Locations

Sample ID	Date	Time	Coordinates		Water Depth (m)	Real time Height of Tide at Cheung Chau (mPD)	Seabed Surface Level (mPD)
			Easting	Northing			
S1	01/3/2018	13:17	828641	805503	16.8	0.98	-15.82
S2	01/3/2018	13:24	828838	805495	17.5	0.93	-16.57
S3	01/3/2018	13:29	829043	805499	17.8	0.92	-16.88
S4	01/3/2018	13:12	828624	805703	16.3	0.98	-15.32
S5	01/3/2018	13:07	828824	805696	16.7	0.98	-15.72
S6	01/3/2018	13:02	829018	805705	16.3	0.98	-15.32
S7	01/3/2018	12:50	828596	805903	15.4	1.04	-14.36
S8	01/3/2018	12:54	828786	805903	16.5	1.04	-15.46
S9	28/2/2018	11:05	828993	805901	14.8	1.28	-13.52
S10	28/2/2018	10:58	828555	806101	13.5	1.31	-12.19
S11	01/3/2018	12:42	828755	806102	16.0	1.04	-14.96
S12	01/3/2018	12:38	828961	806103	14.0	1.07	-12.93
S13	01/3/2018	12:23	828529	806302	14.4	1.12	-13.28
S14	01/3/2018	12:27	828729	806296	15.8	1.09	-14.71
S15	01/3/2018	12:31	828930	806305	14.1	1.09	-13.01
S16	01/3/2018	12:19	828499	806497	13.9	1.12	-12.78
S17	01/3/2018	12:17	828699	806503	16.1	1.15	-14.95
S18	28/2/2018	10:49	828899	806497	13.2	1.34	-11.86
S19	01/3/2018	11:54	828463	806700	14.0	1.20	-12.8
S20	01/3/2018	12:00	828666	806696	16.5	1.19	-15.31
S21	01/3/2018	12:05	828861	806702	12.4	1.17	-11.23
S22	01/3/2018	09:39	828433	806898	15.0	1.18	-13.82

Sample ID	Date	Time	Coordinates		Water Depth (m)	Real time Height of Tide at Cheung Chau (mPD)	Seabed Surface Level (mPD)
			Easting	Northing			
S23	28/2/2018	10:42	828633	806905	15.3	1.36	-13.94
S24	01/3/2018	09:29	828834	806902	12.9	1.18	-11.72
S25	01/3/2018	09:16	828403	807099	13.2	1.18	-12.02
S26	01/3/2018	09:20	828597	807097	16.0	1.18	-14.82
S27	01/3/2018	09:24	828796	807103	12.2	1.18	-11.02
S28	01/3/2018	09:12	828341	807301	13.0	1.20	-11.8
S29	01/3/2018	09:08	828535	807304	16.0	1.20	-14.8
S30	01/3/2018	09:04	828740	807303	13.0	1.20	-11.8
S31	01/3/2018	08:48	828135	807503	11.8	1.25	-10.55
S32	28/2/2018	10:37	828340	807501	16.0	1.37	-14.63
S33	01/3/2018	08:55	828534	807498	16.1	1.25	-14.85
S34	01/3/2018	09:00	828734	807497	11.3	1.20	-10.1
S35	28/2/2018	16:21	828068	807703	11.5	1.56	-9.94
S36	28/2/2018	16:17	828277	807702	15.8	1.56	-14.24
S37	28/2/2018	16:12	828470	807703	17.1	1.49	-15.61
S38	28/2/2018	16:07	828668	807704	12.6	1.49	-11.11
S39	28/2/2018	15:43	827880	807903	13.5	1.32	-12.18
S40	28/2/2018	15:47	828086	807904	16.1	1.36	-14.74
S41	28/2/2018	15:53	828287	807902	17.3	1.36	-15.94
S42	28/2/2018	15:57	828483	807904	17.7	1.43	-16.27
S43	28/2/2018	16:02	828679	807897	13.2	1.43	-11.77
S44	28/2/2018	15:37	827799	808103	11.4	1.31	-10.09
S45	28/2/2018	15:30	828006	808102	15.4	1.30	-14.1
S46	28/2/2018	15:24	828197	808103	17.5	1.23	-16.27
S47	28/2/2018	10:29	828400	808104	17.4	1.40	-16
S48	28/2/2018	15:18	828599	808103	13.4	1.23	-12.17
S49	28/2/2018	14:52	827780	808295	11.4	1.14	-10.26
S50	28/2/2018	14:57	827988	808298	16.2	1.14	-15.06
S51	28/2/2018	15:04	828179	808297	17.0	1.17	-15.83
S52	28/2/2018	15:08	828380	808299	17.0	1.18	-15.82
S53	28/2/2018	15:14	828584	808306	11.4	1.23	-10.17
S54	28/2/2018	10:21	827805	808497	11.7	1.41	-10.29
S55	28/2/2018	14:48	828002	808504	15.7	1.11	-14.59
S56	28/2/2018	14:43	828204	808497	16.6	1.11	-15.49
S57	28/2/2018	14:39	828409	808505	16.3	1.09	-15.21
S58	28/2/2018	14:23	827791	808698	13.3	1.05	-12.25
S59	28/2/2018	14:26	827996	808702	15.6	1.05	-14.55
S60	28/2/2018	14:30	828196	808699	16.2	1.08	-15.12
S61	28/2/2018	14:34	828397	808698	15.8	1.11	-14.69
S62	28/2/2018	14:18	827785	808903	11.2	1.04	-10.16
S63	28/2/2018	14:13	827993	808903	15.0	1.04	-13.96
S64	28/2/2018	10:00	828184	808903	15.6	1.41	-14.19
S65	28/2/2018	14:09	828393	808902	15.6	1.04	-14.56
S66	28/2/2018	13:46	827864	809098	12.5	1.03	-11.47
S67	28/2/2018	13:50	828066	809104	13.5	1.04	-12.46

Sample ID	Date	Time	Coordinates		Water Depth (m)	Real time Height of Tide at Cheung Chau (mPD)	Seabed Surface Level (mPD)
			Easting	Northing			
S68	28/2/2018	13:56	828267	809099	15.4	1.04	-14.36
S69	28/2/2018	14:03	828469	809101	11.4	1.02	-10.38

Surface marine sediment samples were collected at each sampling location using a stainless steel Van Veen Grab. The Record of Sediment Sampling & Collection Under ETWB TC(W) No. 34/2002/PNAP ADV-21 are presented in **Appendix A**.

2.3 Sample Handling, Transportation and Storage

All samples were kept in clean solvent washed glass jars with Teflon lined lids or heavy-duty plastic bags, in accordance with the recommendations of PNAP ADV-21 for sediment chemical tests. Each glass jar containing the sediment samples was uniquely labelled with sample ID and other information such as sampling date and time was recorded in the Field Data Log Sheet. Each glass jar was put into a cooler maintained at 4°C or lower in the dark without freezing before delivery to the laboratory. Samples were delivered to laboratory immediately after the samples were collected and were promptly analysed.

3 Chemical Testing

3.1 Chemical Screening Plan

The chemical tests for the sediment samples were carried out within two weeks after they were collected, in order to ensure that the reporting and approval times would not exceed the maximum holding times of samples in the event that these would require subsequent biological testing.

Chemical screening tests of all sediment samples were conducted by ALS Technichem (HK) Pty Ltd, which is accredited by the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for environmental testing. The sediment sample analysis for Particle Size Distribution was conducted by Gammon Construction Limited which is also accredited by HOKLAS for specific laboratory activities as listed in the HOKLAS directory of Accredited Laboratories.

All samples were tested for the chemical screening parameters given in Appendix B of PNAP ADV-21, with the exception of Tributyltin (TBT). As the Project area is not a ship maintenance area, it is not expected that the TBT level would affect the classification of the sediment and therefore the testing for TBT was not performed.

The chemical testing parameters and analytical methods for the preparation and determination of each parameter are shown in **Table 2**.

Table 2: Chemical Testing Parameters and Analytical Methods for Sediment Samples

Parameters	Analytical Method (USEPA Method)	Reporting Limit
Metals (mg/ kg dry wt.)		
Cadmium (Cd)	6020A	0.2
Chromium (Cr)	6020A	1
Copper (Cu)	6020A	1
Mercury (Hg)	6020A	0.05
Nickel (Ni)	6020A	1
Lead (Pb)	6020A	1
Silver (Ag)	6020A	0.1
Zinc (Zn)	6020A	1
Metalloids (mg/ kg dry wt.)		
Arsenic (As)	6020A	1
Organic-PAH (µg/kg dry wt.)		
Low Molecular Weight PAHs+	8270	50 (single congener) 550 (total)
High Molecular Weight PAHs++	8270	150 (single congener) 1700 (total)
Organic-non-PAH (µg/kg dry wt.)		
Total PCBs+++	8082 / 8270	3 (single congener) 18 (total)
Other		
Particle Size Distribution	GEOSPEC3, 2001, Test 8.1*	NA

Notes:

- ^ Other equivalent methods may be used subject to the approval of DEP.
- + Low molecular weight PAHs include acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene, and phenanthrene

++	High molecular weight PAHs include benzo[a]anthracene, benzo[a]pyrene, chrysene, dibenzo[a,h]anthracene, fluoranthene, pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, indeno[1,2,3-c,d]pyrene and benzo[g,h,i]perylene
+++	Total PCBs include 2,4' diCB, 2,2',5 triCB, 2,4,4'triCB, 2,2'3,5'tetraCB, 2,2',5,5'tetraCB, 2,3',4,4'tetraCB, 3,3',4,4'tetraCB, 2,2',4,5,5'pentaCB, 2,3,3',4, 4'pentaCB, 2,3',4,4',5 pentaCB, 3,3',4,4',5 pentaCB, 2,2',3,3',4,4' hexaCB, 2,2',3,4,4',5' hexaCB, 2,2',4,4',5,5' hexaCB, 3,3',4,4',5,5' hexaCB, 2,2',3,3',4,4',5 heptaCB, 2,2',3,4,4',5,5' heptaCB, 2,2',3,4',5,5',6 heptaCB (ref: the "summation" column of Table 9.3 of Evaluation of Dredge Material Proposed for Discharge in Waters of the U.S.- Testing Manual (The Inland Testing Manual) published by USEPA.
*	Non – USEPA Method
NA	Not Applicable

3.2 Classification Criteria of Sediment

The sediment quality was assessed according to the sediment quality criteria in Appendix A of PNAP ADV-21. As specified in the PNAP ADV-21, sediments are classified into three categories based on their contaminant levels. The classification is as follow:

- Category L:** Sediment with all contaminant levels not exceeding the Lower Chemical Exceedance Level (LCEL). The material must be dredged, transported and disposed of in a manner which minimizes the loss of contaminants either into solution or by resuspension.
- Category M:** Sediment with any one or more contaminant levels exceeding the Lower Chemical Exceedance Level (LCEL) and none exceeding the Upper Chemical Exceedance Level (UCEL). The material must be dredged and transported with care, and must be effectively isolated from the environment upon final disposal unless appropriate biological tests demonstrate that the material will not adversely affect the marine environment.
- Category H:** Sediment with any one or more contaminant levels exceeding the Upper Chemical Exceedance Level (UCEL). The material must be dredged and transported with great care, and must be effectively isolated from the environment upon final disposal.

The sediment quality criteria for the classification of sediment are shown in **Table 3**.

Table 3: Sediment Quality Criteria for the Classification of Sediment

Parameters	Lower Chemical Exceedance Level (LCEL)	Upper Chemical Exceedance Level (UCEL)
Metals (mg/kg dry weight)		
Cadmium (Cd)	1.5	4
Chromium (Cr)	80	160
Copper (Cu)	65	110
Mercury (Hg)	0.5	1
Nickel (Ni)	40	40
Lead (Pb)	75	110
Silver (Ag)	1	2
Zinc (Zn)	200	270
Metalloid (mg/kg dry weight)		
Arsenic (As)	12	42
Organic-PAHs (µg/kg dry weight)		
Low Molecular Weight PAHs	550	3160
High Molecular Weight PAHs	1700	9600
Organic non-PAHs (µg/kg dry weight)		
Total PCBs	23	180

3.3 Chemical Testing Results and Sediment Classification

Table 4 summarises the chemical testing results of the sediment samples at sampling locations S1 to S69 presented in **Figure 2**. Based on the screening results, all sediment samples were identified to pertain to the sediment classification Category L.

The chemical screening laboratory reports of the sediment samples are presented in **Appendix B**.

Table 4: Chemical Testing Results for Sediment Samples S1 to S69

Analyte Description			Silver	Arsenic	Cadmium	Chromium	Copper	Nickel	Lead	Zinc	Mercury	Total Polychlorinated biphenyls	Low M.W. PAHs	High M.W. PAHs	Classification
Unit (In dry Wt basis)			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	µg/kg	µg/kg	
Reporting Limits			0.1	1	0.2	1	1	1	1	1	0.05	18	550	1700	
Lower Chemical Exceedance Level (LCEL)			1	12	1.5	80	65	40	75	200	0.5	23	550	1700	
Upper Chemical Exceedance Level (UCEL)			<u>2</u>	<u>42</u>	<u>4</u>	<u>160</u>	<u>110</u>	<u>40</u>	<u>110</u>	<u>270</u>	<u>1</u>	<u>180</u>	<u>3160</u>	<u>9600</u>	
10 x (LCEL)			<u>10</u>	<u>120</u>	<u>15</u>	<u>800</u>	<u>650</u>	<u>400</u>	<u>750</u>	<u>2000</u>	<u>5</u>	<u>230</u>	<u>5500</u>	<u>17000</u>	
Sample Description															
ALS Lab ID	Sample ID	Sampling Date													
HK1818827001	S64	28/02/2018	<0.1	8	<0.2	33	11	21	22	75	<0.05	<18	<550	<1700	L
HK1818827002	S54	28/02/2018	0.2	9	<0.2	31	18	18	29	83	0.07	<18	<550	<1700	L
HK1818827003	S47	28/02/2018	0.2	10	<0.2	42	26	27	35	108	0.09	<18	<550	<1700	L
HK1818827004	S32	28/02/2018	<0.1	7	<0.2	31	10	20	20	67	<0.05	<18	<550	<1700	L
HK1818827005	S23	28/02/2018	<0.1	9	<0.2	35	18	22	30	85	0.07	<18	<550	<1700	L
HK1818827006	S18	28/02/2018	0.1	10	<0.2	44	24	29	37	108	0.08	<18	<550	<1700	L
HK1818827007	S10	28/02/2018	<0.1	9	<0.2	32	16	21	28	80	0.07	<18	<550	<1700	L
HK1818827008	S9	28/02/2018	0.1	9	<0.2	43	25	29	37	109	0.08	<18	<550	<1700	L
HK1818827009	S66	28/02/2018	0.2	9	<0.2	36	33	21	31	98	0.08	<18	<550	<1700	L
HK1818827010	S67	28/02/2018	0.1	10	<0.2	40	19	21	33	102	0.07	<18	<550	<1700	L
HK1818827011	S68	28/02/2018	0.1	8	<0.2	35	16	18	30	84	0.07	<18	<550	<1700	L
HK1818827012	S69	28/02/2018	<0.1	6	<0.2	22	11	12	21	57	0.06	<18	<550	<1700	L
HK1818827013	S65	28/02/2018	0.1	7	<0.2	32	18	19	30	82	0.07	<18	<550	<1700	L
HK1818827014	S63	28/02/2018	0.2	9	<0.2	37	19	20	30	95	0.08	<18	<550	<1700	L
HK1818827015	S62	28/02/2018	0.2	10	<0.2	35	20	20	28	94	0.09	<18	<550	<1700	L
HK1818827016	S58	28/02/2018	0.2	9	<0.2	32	18	19	29	88	0.08	<18	<550	<1700	L
HK1818827017	S59	28/02/2018	0.2	10	<0.2	37	20	21	32	98	0.08	<18	<550	<1700	L
HK1818827018	S60	28/02/2018	0.2	10	<0.2	44	27	28	38	114	0.24	<18	<550	<1700	L
HK1818827019	S61	28/02/2018	0.2	9	<0.2	46	30	29	40	118	0.12	<18	<550	<1700	L
HK1818827020	S57	28/02/2018	0.2	10	<0.2	47	30	30	40	120	0.11	<18	<550	<1700	L

Analyte Description			Silver	Arsenic	Cadmium	Chromium	Copper	Nickel	Lead	Zinc	Mercury	Total Polychlorinated biphenyls	Low M.W. PAHs	High M.W. PAHs	Classification
HK1818827021	S56	28/02/2018	0.2	9	<0.2	42	26	27	37	107	0.1	<18	<550	<1700	L
HK1818827022	S55	28/02/2018	0.1	9	<0.2	33	18	19	30	90	0.08	<18	<550	<1700	L
HK1818827023	S49	28/02/2018	0.1	8	<0.2	31	17	19	28	82	0.08	<18	<550	<1700	L
HK1818827024	S50	28/02/2018	0.1	8	<0.2	29	13	16	27	77	0.06	<18	<550	<1700	L
HK1818827025	S51	28/02/2018	0.2	9	<0.2	43	27	28	37	110	0.1	<18	<550	<1700	L
HK1818827026	S52	28/02/2018	0.2	10	<0.2	44	27	28	37	112	0.09	<18	<550	<1700	L
HK1818827027	S53	28/02/2018	0.2	10	<0.2	43	27	28	36	111	0.09	<18	<550	<1700	L
HK1818827028	S48	28/02/2018	0.2	10	<0.2	46	32	29	40	119	0.12	<18	<550	<1700	L
HK1818827029	S46	28/02/2018	0.2	10	<0.2	46	27	30	40	116	0.11	<18	<550	<1700	L
HK1818827030	S45	28/02/2018	<0.1	5	<0.2	18	10	11	18	45	<0.05	<18	<550	<1700	L
HK1818827031	S44	28/02/2018	0.2	7	<0.2	28	17	17	27	73	0.06	<18	<550	<1700	L
HK1818827032	S39	28/02/2018	0.1	8	<0.2	30	17	19	29	80	0.08	<18	<550	<1700	L
HK1818827033	S40	28/02/2018	<0.1	8	<0.2	31	13	20	24	72	<0.05	<18	<550	<1700	L
HK1818827034	S41	28/02/2018	0.2	9	<0.2	44	26	29	39	110	0.1	<18	<550	<1700	L
HK1818827035	S42	28/02/2018	0.2	10	<0.2	40	24	26	35	102	0.09	<18	<550	<1700	L
HK1818827036	S43	28/02/2018	0.1	10	<0.2	42	23	28	37	105	0.1	<18	<550	<1700	L
HK1818827037	S38	28/02/2018	0.2	10	<0.2	47	30	30	41	120	0.12	<18	<550	<1700	L
HK1818827038	S37	28/02/2018	0.2	10	<0.2	44	36	29	38	112	0.08	<18	<550	<1700	L
HK1818827039	S36	28/02/2018	0.1	9	<0.2	38	21	25	34	94	0.08	<18	<550	<1700	L
HK1818827040	S35	28/02/2018	<0.1	7	<0.2	21	11	13	23	54	0.05	<18	<550	<1700	L
HK1819068001	S31	01/03/2018	<0.1	6	<0.2	22	13	14	20	57	0.1	<18	<550	<1700	L
HK1819068002	S33	01/03/2018	0.1	7	<0.2	33	21	23	29	87	0.09	<18	<550	<1700	L
HK1819068003	S34	01/03/2018	0.2	10	<0.2	41	26	28	35	106	0.1	<18	<550	<1700	L
HK1819068004	S30	01/03/2018	0.2	10	<0.2	42	25	28	34	107	0.1	<18	<550	<1700	L
HK1819068005	S29	01/03/2018	0.1	10	<0.2	42	24	29	35	105	0.09	<18	<550	<1700	L
HK1819068006	S28	01/03/2018	<0.1	5	<0.2	23	13	15	20	56	0.06	<18	<550	<1700	L
HK1819068007	S25	01/03/2018	0.1	8	<0.2	32	18	21	27	79	0.08	<18	<550	<1700	L
HK1819068008	S26	01/03/2018	0.1	9	<0.2	32	16	21	26	78	0.06	<18	<550	<1700	L
HK1819068009	S27	01/03/2018	0.2	9	<0.2	45	30	30	38	116	0.12	<18	<550	<1700	L
HK1819068010	S24	01/03/2018	0.1	9	<0.2	44	24	30	37	108	0.11	<18	<550	<1700	L

Analyte Description			Silver	Arsenic	Cadmium	Chromium	Copper	Nickel	Lead	Zinc	Mercury	Total Polychlorinated biphenyls	Low M.W. PAHs	High M.W. PAHs	Classification
HK1819068011	S22	01/03/2018	0.1	9	<0.2	42	24	29	36	104	0.1	<18	<550	<1700	L
HK1819068012	S19	01/03/2018	0.1	10	<0.2	39	22	27	32	96	0.09	<18	<550	<1700	L
HK1819068013	S20	01/03/2018	0.1	9	<0.2	43	24	30	36	108	0.13	<18	<550	<1700	L
HK1819068014	S21	01/03/2018	0.1	10	<0.2	37	20	25	30	98	0.12	<18	<550	<1700	L
HK1819068015	S17	01/03/2018	0.1	10	<0.2	36	20	25	30	90	0.09	<18	<550	<1700	L
HK1819068016	S16	01/03/2018	0.1	9	<0.2	35	19	24	29	86	0.08	<18	<550	<1700	L
HK1819068017	S13	01/03/2018	0.1	10	<0.2	36	20	24	30	87	0.1	<18	<550	<1700	L
HK1819068018	S14	01/03/2018	0.1	9	<0.2	41	24	28	34	100	0.1	<18	<550	<1700	L
HK1819068019	S15	01/03/2018	0.1	10	<0.2	36	19	25	30	90	0.08	<18	<550	<1700	L
HK1819068020	S12	01/03/2018	0.1	10	<0.2	39	21	27	32	95	0.08	<18	<550	<1700	L
HK1819068021	S11	01/03/2018	0.1	10	<0.2	44	24	30	38	107	0.09	<18	<550	<1700	L
HK1819068022	S7	01/03/2018	0.1	9	<0.2	36	19	25	31	89	0.09	<18	<550	<1700	L
HK1819068023	S8	01/03/2018	0.2	9	<0.2	44	27	30	38	113	0.12	<18	<550	<1700	L
HK1819068024	S6	01/03/2018	0.1	11	<0.2	38	20	26	32	90	0.11	<18	<550	<1700	L
HK1819068025	S5	01/03/2018	0.2	11	<0.2	40	23	27	33	96	0.08	<18	<550	<1700	L
HK1819068026	S4	01/03/2018	0.1	10	<0.2	38	20	26	34	93	0.1	<18	<550	<1700	L
HK1819068027	S1	01/03/2018	0.1	10	<0.2	35	19	24	30	84	0.08	<18	<550	<1700	L
HK1819068028	S2	01/03/2018	0.1	10	<0.2	40	22	28	34	99	0.1	<18	<550	<1700	L
HK1819068029	S3	01/03/2018	0.1	10	<0.2	38	22	26	34	96	0.12	<18	<550	<1700	L

Notes:

Value that exceed LCEL

Value that exceed UCEL

Value that exceed 10 x LCEL

Total PCB: Total PCBs calculated through summation of the 18 PCB congeners, based on raw data above the limit of detection of 1ug/kg. For detailed information on the individual congeners please refer to the certificate of analysis for the work order in **Appendix B**.

3.4 Quality Control Measures

All chemical sediment sampling tests were conducted by ALS Technichem (HK) Pty Limited, whereas the analysis for Particle Size Distribution was conducted by Gammon Construction Limited. Both laboratories are accredited by HOKLAS.

For chemical screening, the following Quality Assurance (QA) / Quality Control (QC) measures were adopted, as required by HOKLAS:

- Method Blank
- Duplicate (at 5% level i.e. one for every 20 samples)
- Matrix Spike (at 5% level i.e. one for every 20 samples)

The data quality objectives are shown in **Table 5**.

Table 5: Data Quality Objectives for Chemical Screening

Quality Controls	Acceptance Criteria
Method Blank	Less than method detection limit (MDL)
Duplicate	Agree within $\pm 25\%$ of the mean of duplicate results
Matrix Spike	Agree within $\pm 25\%$ of the recovery of spike concentration (except for organic testing which falls within the recovery control limits of 50 – 130%)

The QA/QC results for chemical screening are presented in **Appendix B**. For method blank, all the QA/QC results were below their respective MDLs. QA/QC results for duplicate and matrix spike were within the range of acceptable levels.

4 Conclusion

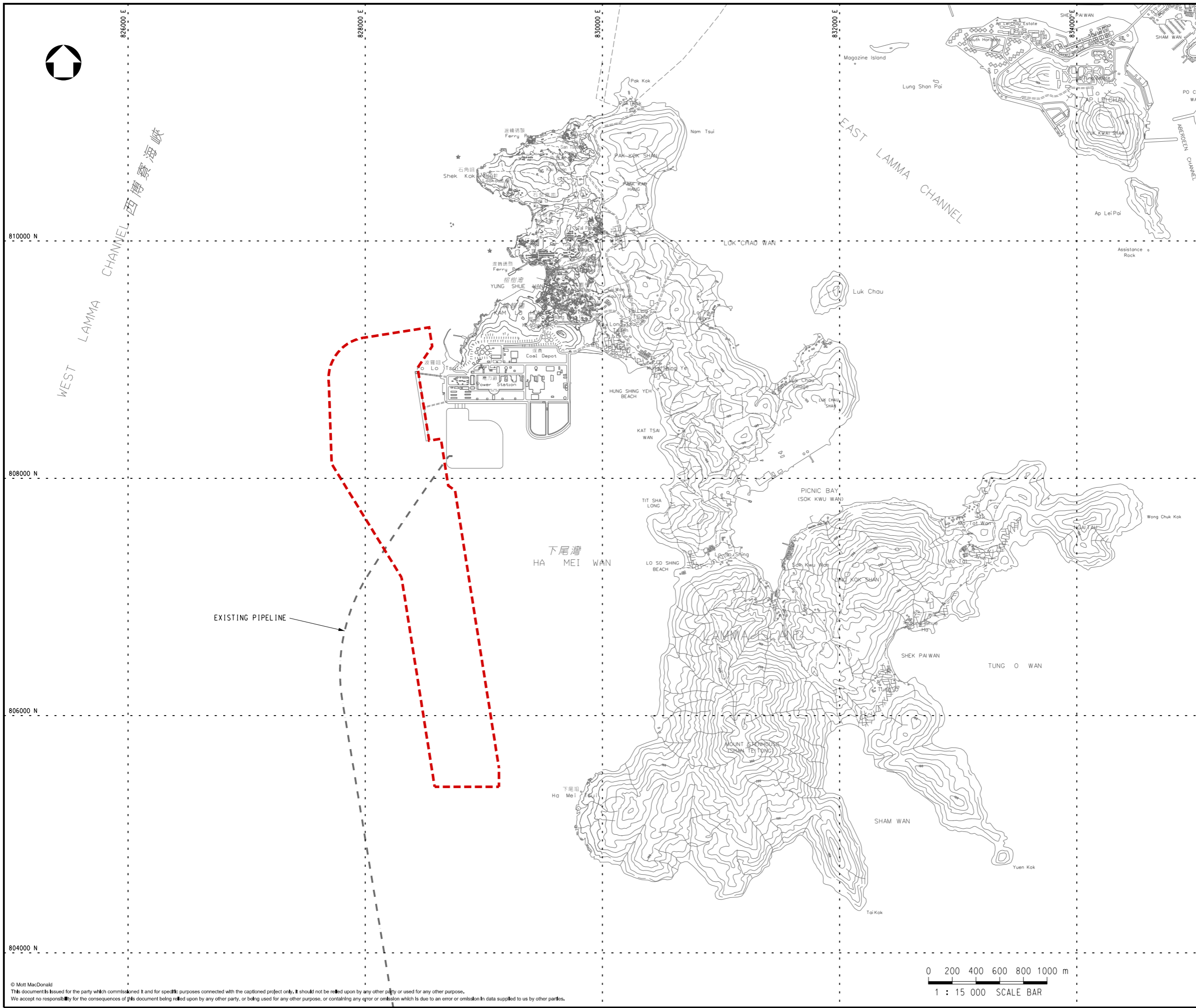
Between 28 February 2018 and 1 March 2018, sediment samples at sampling locations S1 to S69 were collected in accordance with the requirements of the approved SSTP. Chemical screening was conducted on all the sediment samples and the results indicated that all sediment samples fell under the sediment classification Category L. As stipulated in the approved SSTP and summarised in **Table 6**, the chemical testing results were in line with past six sediment quality investigation studies conducted in and around the C111hannel since 1994. Hence, the proposed improvement dredging sediment quantity is also classified as of Category L and suitable for Type 1 - Open Sea Disposal, in accordance with the PNAP ADV-21.

Table 6: Comparison with Past Sediment Quality Investigation Results

Sediment Quality Investigation Conducted in:		1994 ¹		1997 ²		1998 ³		2003 ⁴		2008 ⁵		2014 ⁶		2018 (Current)	
Analyte Description	Unit	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Silver	mg/kg	-	-	-	-	-	-	0.2	0.2	<0.1	0.39	0.1	0.4	<0.1	0.2
Arsenic	mg/kg	-	-	-	-	-	-	7	9	5.4	10	8	12	5	11
Cadmium	mg/kg	<0.02	<0.02	<0.5	<0.5	<0.5	<0.5	0.23	0.39	<0.2	0.21	<0.2	<0.2	<0.2	<0.2
Chromium	mg/kg	27	45	13	43	7	46	26	39	20	53	34	52	18	47
Copper	mg/kg	7.2	36	<10	24	<10	24	18	24	<7.0	37	14	36	10	36
Nickel	mg/kg	13	19	<6	24	<6	23	18	24	15	31	21	32	11	30
Lead	mg/kg	17	43	<15	29	<15	39	38	45	27	61	32	50	18	41
Zinc	mg/kg	53	100	37	86	15	130	98	120	47	130	85	142	45	120
Mercury	mg/kg	<0.05	0.23	<0.4	<0.4	<0.4	<0.4	0.07	0.13	0.09	0.4	0.05	0.32	<0.05	0.24
Total PCBs	µg/kg	-	-	-	-	-	-	<3	<3	<3	<3	<3	<3	<18	<18
Low M.W. PAHs	µg/kg	-	-	-	-	-	-	30	31	<55	<55	<50	<50	<550	<550
High M.W. PAHs	µg/kg	-	-	-	-	-	-	55	103	<170	<170	<150	<150	<1700	<1700

Notes:

1. Sediment Quality Report, HEC Lamma Power Station Jetty & Navigation Channel Modification Works, Axis Environmental (1995)
2. Sediment Quality Report, HEC Lamma Power Station Turning Basin Enlargement Works, Hyder Consulting Limited (1997)
3. Sediment Quality Report, Environmental Impact Assessment of a 1,800MW Gas-fired Power Station at Lamma Extension, ERM (1998)
4. Preliminary Sediment Quality Report, HEC Lamma Power Station Extension Submarine Gas Pipeline Sediment Sampling and Testing for Dredging, Hong Kong Productivity Council (2003)
5. Preliminary Sediment Quality Report, Lamma Power Station, Improvement Dredging for Navigation Channel Chemical Screening for Determination of Sediment Quality, ENSR (2008)
6. Preliminary Sediment Quality Report, Chemical Screening for Determination of Sediment Quality for Improvement Dredging of Navigation Channel of Lamma Power Station, AECOM (2014)



Notes

Key to symbols

--- PROJECT BOUNDARY

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	MAY 18	MING	FIRST ISSUE	NN	EC

MOTT MACDONALD

20/F AIA Kowloon Tower
Landmark East
100 How Ming Street
Kwun Tong, Kowloon
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F +852 2827 1823
W mottmac.com

Client

港燈 HK Electric

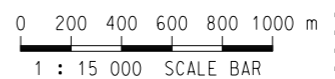
Project

IMPROVEMENT DREDGING FOR LAMMA POWER STATION NAVIGATION CHANNEL

Title

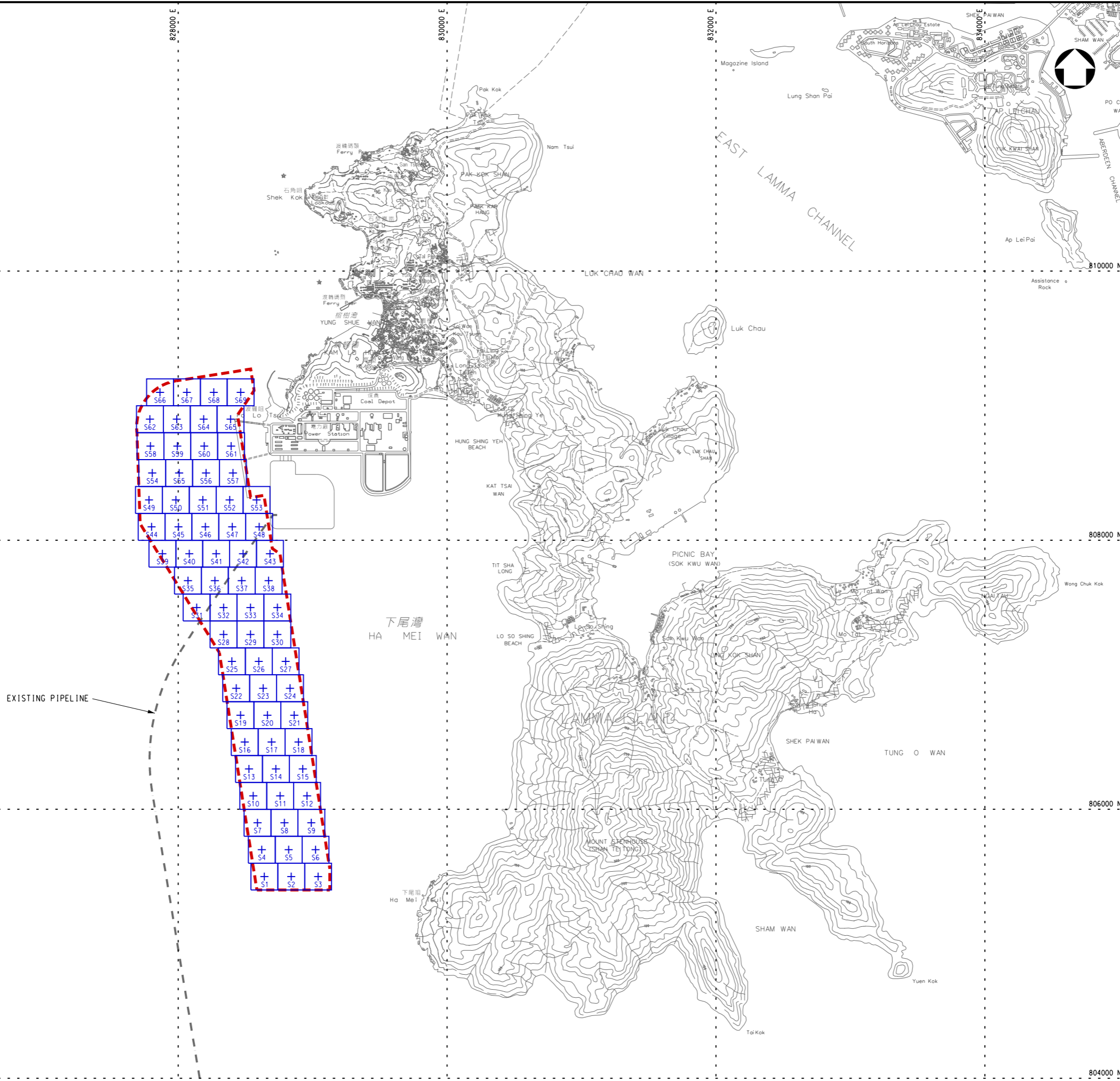
LOCATION OF DREDGING AREA

Designed	DC	Eng check	DC
Drawn	MING	Coordination	DC
Dwg check	DC	Approved	EC
Scale at A1	1:15000	Status	PRE
Rev	P1		
Drawing Number	FIGURE 1		



COORDINATES OF SAMPLING LOCATIONS

POINT	EASTING	NORTHING
S1	828641	805500
S2	828841	805500
S3	829041	805500
S4	828621	805700
S5	828821	805700
S6	829021	805700
S7	828590	805900
S8	828790	805900
S9	828990	805900
S10	828558	806100
S11	828758	806100
S12	828958	806100
S13	828526	806300
S14	828726	806300
S15	828926	806300
S16	828495	806500
S17	828695	806500
S18	828895	806500
S19	828463	806700
S20	828663	806700
S21	828863	806700
S22	828431	806900
S23	828631	806900
S24	828831	806900
S25	828399	807100
S26	828599	807100
S27	828799	807100
S28	828337	807300
S29	828537	807300
S30	828737	807300
S31	828137	807500
S32	828337	807500
S33	828537	807500
S34	828737	807500
S35	828072	807700
S36	828272	807700
S37	828472	807700
S38	828672	807700
S39	827882	807900
S40	828082	807900
S41	828282	807900
S42	828482	807900
S43	828682	807900
S44	827802	808100
S45	828002	808100
S46	828202	808100
S47	828402	808100
S48	828602	808100
S49	827783	808300
S50	827983	808300
S51	828183	808300
S52	828383	808300
S53	828583	808300
S54	827807	808500
S55	828007	808500
S56	828207	808500
S57	828407	808500
S58	827793	808700
S59	827993	808700
S60	828193	808700
S61	828393	808700
S62	827789	808900
S63	827989	808900
S64	828189	808900
S65	828389	808900
S66	827865	809100
S67	828065	809100
S68	828265	809100
S69	828465	809100



Notes

Key to symbols

--- PROJECT BOUNDARY

+ S1 SAMPLING LOCATIONS

Reference drawings

P1	MAY 18	MING	FIRST ISSUE	NN	EC
Rev	Date	Drawn	Description	Ch'k'd	App'd

MOTT MACDONALD

20/F AIA Kowloon Tower
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100 How Ming Street
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F +852 2827 1823
W mottmac.com

Client

港燈 HK Electric

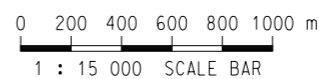
Project

IMPROVEMENT DREDGING FOR LAMMA POWER STATION NAVIGATION CHANNEL

Title

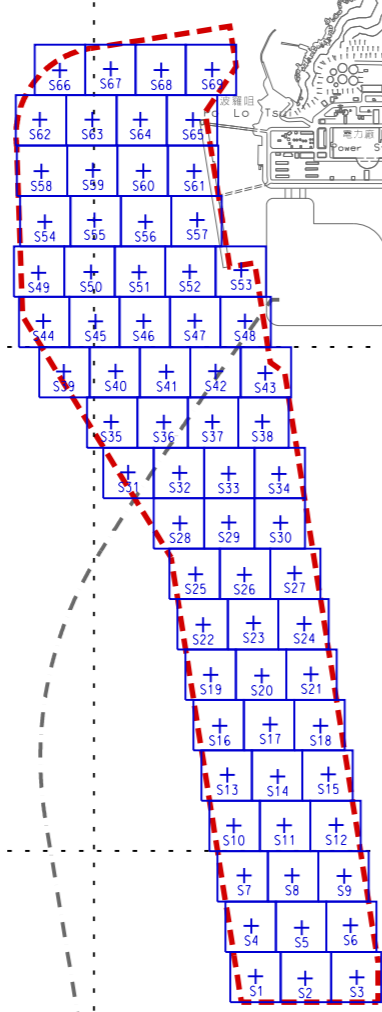
PROPOSED SAMPLING LOCATIONS

Designed	DC	Eng check	DC
Drawn	MING	Coordination	DC
Dwg check	DC	Approved	EC
Scale at A1	Status	Rev	
1:15000	PRE	P1	
Drawing Number	FIGURE 2		

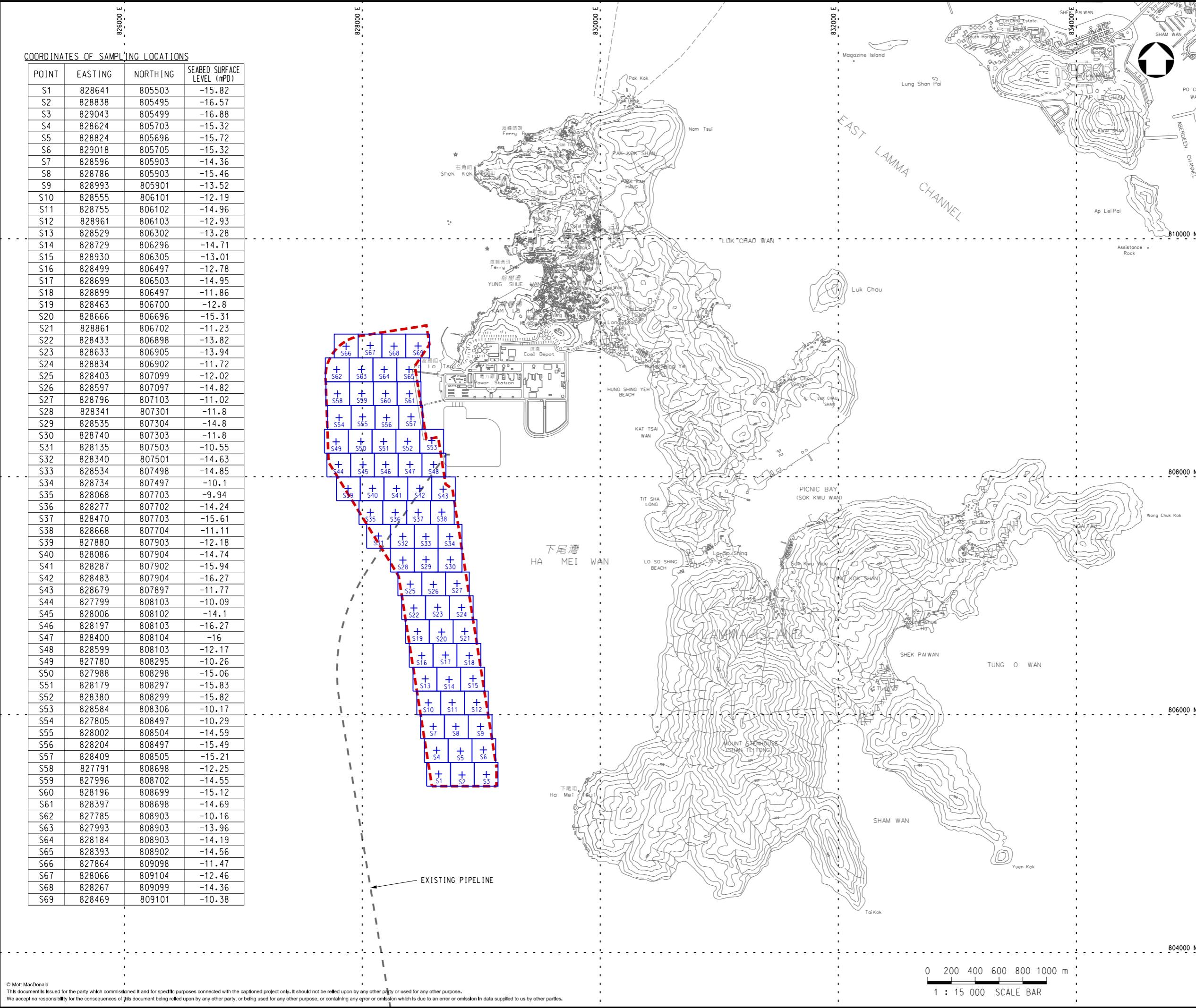


COORDINATES OF SAMPLING LOCATIONS

POINT	EASTING	NORTHING	SEABED SURFACE LEVEL (mPD)
S1	828641	805503	-15.82
S2	828838	805495	-16.57
S3	829043	805499	-16.88
S4	828624	805703	-15.32
S5	828824	805696	-15.72
S6	829018	805705	-15.32
S7	828596	805903	-14.36
S8	828786	805903	-15.46
S9	828993	805901	-13.52
S10	828555	806101	-12.19
S11	828755	806102	-14.96
S12	828961	806103	-12.93
S13	828529	806302	-13.28
S14	828729	806296	-14.71
S15	828930	806305	-13.01
S16	828499	806497	-12.78
S17	828699	806503	-14.95
S18	828899	806497	-11.86
S19	828463	806700	-12.8
S20	828666	806696	-15.31
S21	828861	806702	-11.23
S22	828433	806898	-13.82
S23	828633	806905	-13.94
S24	828834	806902	-11.72
S25	828403	807099	-12.02
S26	828597	807097	-14.82
S27	828796	807103	-11.02
S28	828341	807301	-11.8
S29	828535	807304	-14.8
S30	828740	807303	-11.8
S31	828135	807503	-10.55
S32	828340	807501	-14.63
S33	828534	807498	-14.85
S34	828734	807497	-10.1
S35	828068	807703	-9.94
S36	828277	807702	-14.24
S37	828470	807703	-15.61
S38	828668	807704	-11.11
S39	827880	807903	-12.18
S40	828086	807904	-14.74
S41	828287	807902	-15.94
S42	828483	807904	-16.27
S43	828679	807897	-11.77
S44	827799	808103	-10.09
S45	828006	808102	-14.1
S46	828197	808103	-16.27
S47	828400	808104	-16
S48	828599	808103	-12.17
S49	827780	808295	-10.26
S50	827988	808298	-15.06
S51	828179	808297	-15.83
S52	828380	808299	-15.82
S53	828584	808306	-10.17
S54	827805	808497	-10.29
S55	828002	808504	-14.59
S56	828204	808497	-15.49
S57	828409	808505	-15.21
S58	827791	808698	-12.25
S59	827996	808702	-14.55
S60	828196	808699	-15.12
S61	828397	808698	-14.69
S62	827785	808903	-10.16
S63	827993	808903	-13.96
S64	828184	808903	-14.19
S65	828393	808902	-14.56
S66	827864	809098	-11.47
S67	828066	809104	-12.46
S68	828267	809099	-14.36
S69	828469	809101	-10.38



EXISTING PIPELINE



Notes

Key to symbols

- PROJECT BOUNDARY
- + S_i SAMPLING LOCATIONS

Reference drawings

P1	MAY 18	MING	FIRST ISSUE	NN	EC
Rev	Date	Drawn	Description	Ch'k'd	App'd

Client

港燈
HK Electric

Project

IMPROVEMENT DREDGING FOR
LAMMA POWER STATION
NAVIGATION CHANNEL

Title

ACTUAL SAMPLING LOCATIONS

Designed	NN	Eng check	NN
Drawn	MING	Coordination	DC
Dwg check	NN	Approved	EC
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Drawing Number		Rev	P1

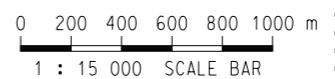


FIGURE 3

Appendices

A.	Record of Sediment Sampling & Collection Under ETWB TC(W) No. 34/2002/PNAP ADV-21	14
B.	Chemical Screening Results	15
C.	EPD's Letter of No Objection to PSQR	16

A. Record of Sediment Sampling & Collection Under ETWB TC(W) No. 34/2002/PNAP ADV-21

RECORD OF SEDIMENT SAMPLING & COLLECTION UNDER ETWB TC(W) NO. 34/2002/PNAP 252

(Sheet 1 of 5)

Project Name: Improvement Dredging for Lamma Power Station Navigation Channel		Contract No:
Name of Project Proponent: Mott MacDonald Hong Kong Limited		ALS TECHNICHEM (HK) PTY LTD
Address: 20/F., AIA Kowloon Tower, Landmark East, 100 How Ming Street, Kwun Tong, Kowloon, Hong Kong		11 FLOOR
Contact Person: Dulcie Chan		20 FEB 2010
Telephone No.: 28285970	E-mail address: Dulcie.chan@mottmac.com	Fax No.:
		BY: <i>Dulcie Chan</i> 18-45

RECEIVED

Sediment Sampling

Sample ID No.	Sampling Date & Time	Sampling Location (latitude/longitude or Northing/Easting)	Sampling Depth (starting & finishing levels)	Method of Collection (e.g. grab, vibrocore, etc)	Analysis requested						Remarks		
					Metals	Metalloid	LMW PAHs	HMW PAHs	Total PCBs	TBT		Others (Please specify)	
S64	28/2 1000	E828184, N808903	Surface	Grab	✓	✓	✓	✓	✓	PSD	15.6 m	1.41 m	mPD from HKO
S54	28/2 1021	E827805, N808497	Surface	Grab	✓	✓	✓	✓	✓	PSD	11.7 m	1.41 m	
S47	28/2 1029	E828400, N808104	Surface	Grab	✓	✓	✓	✓	✓	PSD	17.4 m	1.40 m	
S32	28/2 1037	E828340, N807501	Surface	Grab	✓	✓	✓	✓	✓	PSD	16.0 m	1.37 m	
S23	28/2 1042	E828633, N806905	Surface	Grab	✓	✓	✓	✓	✓	PSD	15.3 m	1.36 m	
S18	28/2 1049	E828899, N806497	Surface	Grab	✓	✓	✓	✓	✓	PSD	13.2 m	1.34 m	
S10	28/2 1058	E828555, N806101	Surface	Grab	✓	✓	✓	✓	✓	PSD	13.5 m	1.31 m	
S9	28/2 1105	E828993, N805901	Surface	Grab	✓	✓	✓	✓	✓	PSD	14.8 m	1.28 m	
S66	28/2 1346	E827864, N809098	Surface	Grab	✓	✓	✓	✓	✓	PSD	12.5 m	1.03 m	

Sampling Conducted by:		Sampling Supervised by (if any):		Samples Received by:	
Company Name: Enovative Environmental Service Limited	Company Name: Mott MacDonald Hong Kong Ltd.	Name of Laboratory: ALS HK			
Address:	Address:	Address:			
Person-in-charge: Thomas Wong	Responsible Person: Thomas Chan	Signature: <i>Thomas Chan</i>	Responsible Person: <i>Refuse Issue</i>	Signature: <i>[Signature]</i>	Signature:
Phone No: 9733 5039	Phone No.: 2828 5967	Date & Time: 28/2 17:00	Phone No.: 2828 1818	Date & Time: 18-45	Date & Time: 20 FEB 2010

(17:00)

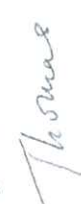

RECORD OF SEDIMENT SAMPLING & COLLECTION UNDER ETWB TC(W) NO. 34/2002/PNAP 252

(Sheet 2 of 5)

Project Name: Improvement Dredging for Lamma Power Station Navigation Channel	Contract No.:
Name of Project Proponent: Mott Macdonald Hong Kong Limited	ALS TECHNICHEM (HK) PTY LTD 11 FLOOR
Address: 20/F, AIA Kowloon Tower, Landmark East, 100 How Ming Street, Kwun Tong, Kowloon, Hong Kong	20 FEB 2010
Contact Person: Dulcie Chan	RECEIVED Feb 18-11
Telephone No.: 28285970	Fax No.:
E-mail address: Dulcie.chan@mottmac.com	

Sediment Sampling

Sample ID No.	Sampling Date & Time	Sampling Location (latitude/longitude or Northing/Easting)	Sampling Depth (starting & finishing levels)	Method of Collection (e.g. grab, vibrocore, etc)	Analysis requested					Remarks			
					Metals	Metalloid	LMW PAHs	HMW PAHs	Total PCBs		TBT	Others (please specify)	
S67	28/2 1350	E828066, N809104	Surface	Grab	✓	✓	✓	✓	✓	PSD	13.5 m	1.04 m	Water depth; mPD from HKO
S68	28/2 1356	E828267, N809099	Surface	Grab	✓	✓	✓	✓	✓	PSD	15.4 m	1.04 m	
S69	28/2 1403	E828469, N809101	Surface	Grab	✓	✓	✓	✓	✓	PSD	11.4 m	1.02 m	
S65	28/2 1409	E828393, N808902	Surface	Grab	✓	✓	✓	✓	✓	PSD	15.6 m	1.04 m	
S63	28/2 1413	E827993, N808903	Surface	Grab	✓	✓	✓	✓	✓	PSD	15.0 m	1.04 m	
S62	28/2 1418	E827785, N808903	Surface	Grab	✓	✓	✓	✓	✓	PSD	11.2 m	1.04 m	
S58	28/2 1423	E827791, N808698	Surface	Grab	✓	✓	✓	✓	✓	PSD	13.3 m	1.05 m	
S59	28/2 1426	E827996, N808702	Surface	Grab	✓	✓	✓	✓	✓	PSD	15.6 m	1.05 m	
S60	28/2 1430	E828196, N808699	Surface	Grab	✓	✓	✓	✓	✓	PSD	16.2 m	1.08 m	

Sampling Conducted by:		Sampling Supervised by (if any):		Samples Received by:	
Company Name: Enovative Environmental Service Limited		Company Name: Mott Macdonald Hong Kong Ltd.		Name of Laboratory: ALS HK	
Address:		Address:		Address:	
Person-in-charge: Thomas Wong	Signature: 	Responsible Person: Thomas Chan	Signature: 	Responsible Person: 	Signature: 
Phone No: 9733 5039	Date & Time: 28/2 17:00	Phone No.: 7828-5967	Date & Time: 28/2/10	Phone No.:	Date & Time: 18-11

20 FEB 2010

(17.00)

RECORD OF SEDIMENT SAMPLING & COLLECTION UNDER ETWB TC(W) NO. 34/2002/PNAP 252

Project Name: Improvement Dredging for Lamma Power Station Navigation Channel		Contract No.:
Name of Project Proponent: Mott MacDonald Hong Kong Limited		ALS TECHNICHEM (HK) PTY LTD 11 FLOOR
Address: 20/F., AIA Kowloon Tower, Landmark East, 100 How Ming Street, Kwun Tong, Kowloon, Hong Kong		28 FEB 2018
Contact Person: Dulcie Chan		RECEIVED
Telephone No.: 28285970	E-mail address: Dulcie.chan@mottmac.com	By: <i>Kepin Lau</i> (8-45)

Sediment Sampling

Sample ID No.	Sampling Date & Time	Sampling Location (latitude/longitude or Northing/Easting)	Sampling Depth (starting & finishing levels)	Method of Collection (e.g. grab, vibrocore, etc)	Analysis requested						Remarks		
					Metals	Metalloid	LMW PAHs	HMW PAHs	Total PCBs	TBT		Others (please specify)	
S61	28/2 1434	E828397, N808698	Surface	Grab	✓	✓	✓	✓	✓	PSD	15.8 m	1.11 m	Water depth; mPD from HKO
S57	28/2 1439	E828409, N808505	Surface	Grab	✓	✓	✓	✓	✓	PSD	16.3 m	1.09 m	
S56	28/2 1443	E828204, N808497	Surface	Grab	✓	✓	✓	✓	✓	PSD	16.6 m	1.11 m	
S55	28/2 1448	E828002, N808504	Surface	Grab	✓	✓	✓	✓	✓	PSD	15.7 m	1.11 m	
S49	28/2 1452	E827780, N808295	Surface	Grab	✓	✓	✓	✓	✓	PSD	11.4 m	1.14 m	
S50	28/2 1457	E827988, N808298	Surface	Grab	✓	✓	✓	✓	✓	PSD	16.2 m	1.14 m	
S51	28/2 1504	E828179, N808297	Surface	Grab	✓	✓	✓	✓	✓	PSD	17.0 m	1.17 m	
S52	28/2 1508	E828380, N808299	Surface	Grab	✓	✓	✓	✓	✓	PSD	17.0 m	1.18 m	
S53	28/2 1514	E828584, N808306	Surface	Grab	✓	✓	✓	✓	✓	PSD	11.4 m	1.23 m	

Sampling Conducted by:		Sampling Supervised by (if any):		Samples Received by:	
Company Name: Enovative Environmental Service Limited		Company Name: <i>Mott MacDonald Hong Kong Ltd</i>		Name of Laboratory: <i>ALS HK</i>	
Address:		Address:		Address:	
Person-in-charge: Thomas Wong	Signature: <i>Thomas</i>	Responsible Person: <i>Thomas Chan</i>	Signature: <i>Allen</i>	Responsible Person: <i>Kepin Lau</i>	Signature: <i>Arifun</i>
Phone No: 9733 5039	Date & Time: 28/2 17:00	Phone No.: <i>288-5867</i>	Date & Time: <i>28/2/18</i>	Phone No.:	Date & Time: <i>18-45</i>

17:00

28 FEB 2018

RECORD OF SEDIMENT SAMPLING & COLLECTION UNDER ETWB TC(W) NO. 34/2002/PNAP 252

Project Name: Improvement Dredging for Lamma Power Station Navigation Channel		Contract No.: ALS TECHNICHEM (HK) PTY LTD	
Name of Project Proponent: Mott Macdonald Hong Kong Limited		11 FLOOR	
Address: 20/F., AIA Kowloon Tower, Landmark East, 100 How Ming Street, Kwun Tong, Kowloon, Hong Kong		2 8 FEB 2018	
Contact Person: Dulcie Chan		RECEIVED	
Telephone No.: 28285970		E-mail address: Dulcie.chan@mottmac.com	
		BY: <i>Kefin</i> 18:44	
		Fax No.: RECEIVED	

Sediment Sampling

Sample ID No.	Sampling Date & Time	Sampling Location (latitude/longitude or Northing/Easting)	Sampling Depth (starting & finishing levels)	Method of Collection (e.g. grab, vibrocore, etc)	Analysis requested						Remarks	
					Metals	Metallloid	LMW PAHs	HMW PAHs	Total PCBs	TBT		Others (please specify)
S48	28/2 1518	E828599, N808103	Surface	Grab	✓	✓	✓	✓	✓	PSD	13.4 m	mPD from HKO
S46	28/2 1524	E828197, N808103	Surface	Grab	✓	✓	✓	✓	✓	PSD	17.5 m	1.23 m
S45	28/2 1530	E828006, N808102	Surface	Grab	✓	✓	✓	✓	✓	PSD	15.4 m	1.30 m
S44	28/2 1537	E827799, N808103	Surface	Grab	✓	✓	✓	✓	✓	PSD	11.4 m	1.31 m
S39	28/2 1543	E827880, N807903	Surface	Grab	✓	✓	✓	✓	✓	PSD	13.5 m	1.32 m
S40	28/2 1547	E828086, N807904	Surface	Grab	✓	✓	✓	✓	✓	PSD	16.1 m	1.36 m
S41	28/2 1553	E828287, N807902	Surface	Grab	✓	✓	✓	✓	✓	PSD	17.3 m	1.36 m
S42	28/2 1557	E828483, N807904	Surface	Grab	✓	✓	✓	✓	✓	PSD	17.7 m	1.43 m
S43	28/2 1602	E828679, N807897	Surface	Grab	✓	✓	✓	✓	✓	PSD	13.2 m	1.43 m

Sampling Conducted by:		Sampling Supervised by (if any):		Samples Received by:	
Company Name: Enovative Environmental Service Limited		Company Name: <i>Mott MacDonald Hong Kong Ltd.</i>		Name of Laboratory: <i>ALS HK</i>	
Address:		Address:		Address:	
Person-in-charge: Thomas Wong	Signature: <i>Thomas Wong</i>	Responsible Person: <i>Thomas Chan</i>	Signature: <i>A. Chan</i>	Responsible Person: <i>Kefin Lee</i>	Signature: <i>Kefin Lee</i>
Phone No: 9733 5039	Date & Time: 28/2 17:00	Phone No.: <i>2828-5967</i>	Date & Time: <i>28/2/18</i>	Phone No.:	Date & Time: <i>18:44</i>
2 8 FEB 2018					

RECORD OF SEDIMENT SAMPLING & COLLECTION UNDER ETWB TC(W) NO. 34/2002/PNAP 252

Project Name: Improvement Dredging for Lamma Power Station Navigation Channel		Contract No: ALS TECHNICHEM (HK) PTY LTD
Name of Project Proponent: Mott Macdonald Hong Kong Limited		11 FLOOR
Address: 20/F, AIA Kowloon Tower, Landmark East, 100 How Ming Street, Kwun Tong, Kowloon, Hong Kong		28 FEB 2018
Contact Person: Dulcie Chan		RECEIVED
Telephone No.: 28285970	E-mail address: Dulcie.chan@mottmac.com	BY: <i>Ketw</i> 18/2/18
Fax No.:		

Sediment Sampling

Sample ID No.	Sampling Date & Time	Sampling Location (latitude/longitude or Northing/Easting)	Sampling Depth (starting & finishing levels)	Method of Collection (e.g. grab, vibrocore, etc)	Analysis requested					Remarks	
					Metals	Metalloid	LMW PAHs	HMW PAHs	Total PCBs		TBT
S38	28/2 1607	E828668, N807704	Surface	Grab	✓	✓	✓	✓	✓	PSD	Water depth: 1.49 m mPD from HKO
S37	28/2 1612	E828470, N807703	Surface	Grab	✓	✓	✓	✓	✓	PSD	1.49 m
S36	28/2 1617	E828277, N807702	Surface	Grab	✓	✓	✓	✓	✓	PSD	1.56 m
S35	28/2 1621	E828068, N807703	Surface	Grab	✓	✓	✓	✓	✓	PSD	1.56 m

Sampling Conducted by:		Sampling Supervised by (if any):		Samples Received by:	
Company Name: Enovative Environmental Service Limited	Company Name: <i>Mott MacDonald Hong Kong Ltd.</i>	Name of Laboratory: <i>ALS HK</i>			
Address:	Address:	Address:			
Person-in-charge: Thomas Wong	Responsible Person: <i>Thomas Chan</i>	Responsible Person: <i>Ketw Lau</i>	Signature: <i>[Signature]</i>		
Signature: <i>Thomas</i>	Signature: <i>[Signature]</i>	Signature: <i>[Signature]</i>	Date & Time: <i>18-2-18</i>		
Phone No: 9733 5039	Phone No: <i>2828-5467</i>	Phone No: <i>2828-5467</i>	Date & Time: <i>28/2/18</i>		

28 FEB 2018

RECORD OF SEDIMENT SAMPLING & COLLECTION UNDER ETWB TC(W) NO. 34/2002/PNAP 252

(Sheet 1 of 4)

Project Name: Improvement Dredging for Lamma Power Station Navigation Channel Name of Project Proponent: Mott MacDonald Hong Kong Limited Address: 20/F., AIA Kowloon Tower, Landmark East, 100 How Ming Street, Kwun Tong, Kowloon, Hong Kong Contact Person: Dulcie Chan Telephone No.: 28285970 E-mail address: Dulcie.chan@mottmac.com	Contract No.: ALS TECHNICHEM (HK) PTY LTD 11 FLOOR - 1 MAR 2018 RECEIVED BY: <i>Kefee</i> 16-18
---	---

Sediment Sampling

Sample ID No.	Sampling Date & Time	Sampling Location (latitude/longitude or Northing/Easting)	Sampling Depth (starting & finishing levels)	Method of Collection (e.g. grab, vibrocore, etc)	Analysis requested					Remarks	
					Metals	Metalloid	LMW PAHs	HMW PAHs	Total PCBs		TBT
S31	01/3 0848	E828135, N807503	Surface	Grab	✓	✓	✓	✓	✓	PSD	Water depth: mPD from HKO 11.8 m 1.25 m
S33	01/3 0855	E828534, N807498	Surface	Grab	✓	✓	✓	✓	✓	PSD	16.1 m 1.25 m
S34	01/3 0900	E828734, N807497	Surface	Grab	✓	✓	✓	✓	✓	PSD	11.3 m 1.2 m
S30	01/3 0904	E828740, N807303	Surface	Grab	✓	✓	✓	✓	✓	PSD	13.0 m 1.2 m
S29	01/3 0908	E828535, N807304	Surface	Grab	✓	✓	✓	✓	✓	PSD	16.0 m 1.2 m
S28	01/3 0912	E828341, N807301	Surface	Grab	✓	✓	✓	✓	✓	PSD	13.0 m 1.2 m
S25	01/3 0916	E828403, N807099	Surface	Grab	✓	✓	✓	✓	✓	PSD	13.2 m 1.18 m
S26	01/3 0920	E828597, N807097	Surface	Grab	✓	✓	✓	✓	✓	PSD	16.0 m 1.18 m
S27	01/3 0924	E828796, N807103	Surface	Grab	✓	✓	✓	✓	✓	PSD	12.2 m 1.18 m

Sampling Conducted by:		Sampling Supervised by (if any):		Samples Received by:	
Company Name: Enovative Environmental Service Limited		Company Name: <i>Mott MacDonald Hong Kong Ltd.</i>		Name of Laboratory: <i>ALS HK</i>	
Address:		Address:		Address:	
Person-in-charge: Thomas Wong	Signature: <i>Thomas</i>	Responsible Person: <i>Thomas Chan</i>	Signature: <i>Thomas Chan</i>	Responsible Person: <i>Kefee Chan</i>	Signature: <i>Kefee</i>
Phone No: 9733 5039	Date & Time: 1/3 14:00	Phone No.: <i>2828 5967</i>	Date & Time: <i>1/3/18</i>	Phone No.:	Date & Time: <i>16-18</i>

(4/20)

- 1 MAR 2018

RECORD OF SEDIMENT SAMPLING & COLLECTION UNDER ETWB TC(W) NO. 34/2002/PNAP 252

(Sheet 2 of 4)

Project Name: Improvement Dredging for Lamma Power Station Navigation Channel		Contract No:
Name of Project Proponent: Mott Macdonald Hong Kong Limited		ALS TECHNICHEM (HK) PTY LTD 11 FLOOR
Address: 20/F., AIA Kowloon Tower, Landmark East, 100 How Ming Street, Kwun Tong, Kowloon, Hong Kong		- 1 MAR 2018
Contact Person: Dulcie Chan		RECEIVED BY: <i>Ketse</i> 16/10
Telephone No.: 28285970	E-mail address: Dulcie.chan@mottmac.com	

Sediment Sampling

Sample ID No.	Sampling Date & Time	Sampling Location (latitude/longitude or Northing/Easting)	Sampling Depth (starting & finishing levels)	Method of Collection (e.g. grab, vibrocore, etc)	Analysis requested					Remarks			
					Metals	Metalloid	LMW PAHs	HMW PAHs	Total PCBs		TBT	Others (please specify)	
S24	01/3 0929	E828834, N806902	Surface	Grab	✓	✓	✓	✓	✓	PSD	12.9 m	1.18 m	mPD from HKO
S22	01/3 0939	E828433, N806898	Surface	Grab	✓	✓	✓	✓	✓	PSD	15.0 m	1.18 m	
S19	01/3 1154	E828463, N806700	Surface	Grab	✓	✓	✓	✓	✓	PSD	14.0 m	1.2 m	
S20	01/3 1200	E828666, N806696	Surface	Grab	✓	✓	✓	✓	✓	PSD	16.5 m	1.19 m	
S21	01/3 1205	E828861, N806702	Surface	Grab	✓	✓	✓	✓	✓	PSD	12.4 m	1.17 m	
S17	01/3 1217	E828699, N806503	Surface	Grab	✓	✓	✓	✓	✓	PSD	16.1 m	1.15 m	
S16	01/3 1219	E828499, N806497	Surface	Grab	✓	✓	✓	✓	✓	PSD	13.9 m	1.12 m	
S13	01/3 1223	E828529, N806302	Surface	Grab	✓	✓	✓	✓	✓	PSD	14.4 m	1.12 m	
S14	01/3 1227	E828729, N806296	Surface	Grab	✓	✓	✓	✓	✓	PSD	15.8 m	1.09 m	

Sampling Conducted by:		Sampling Supervised by (if any):		Samples Received by:	
Company Name: Enovative Environmental Service Limited		Company Name: <i>Mott Macdonald Hong Kong Ltd.</i>		Name of Laboratory: <i>ALS HK</i>	
Address:		Address:		Address:	
Person-in-charge: Thomas Wong	Signature: <i>Thomas Wong</i>	Responsible Person: <i>Thomas Chan</i>	Signature: <i>Thomas Chan</i>	Responsible Person: <i>Ketse Lau</i>	Signature: <i>Ketse Lau</i>
Phone No: 9733 5039	Date & Time: 1/3 14:00	Phone No.: <i>2828 5967</i>	Date & Time: <i>1/3/18</i>	Phone No.:	Date & Time: <i>16/10</i>

(4/00)

- 1 MAR 2018

RECORD OF SEDIMENT SAMPLING & COLLECTION UNDER ETWB TC(W) NO. 34/2002/PNAP 252

(Sheet 3 of 4)

Project Name: Improvement Dredging for Lamma Power Station Navigation Channel		Contract No:
Name of Project Proponent: Mott Macdonald Hong Kong Limited		ALS TECHNICHEM (HK) PTY LTD 11 FLGR
Address: 20/F, AIA Kowloon Tower, Landmark East, 100 How Ming Street, Kwun Tong, Kowloon, Hong Kong		- 1 MAR 2018
Contact Person: Dulcie Chan		RECEIVED BY: <i>Ketia</i> 16/3/18
Telephone No.: 28285970	E-mail address: Dulcie.chan@mottmac.com	

Sediment Sampling

Sample ID No.	Sampling Date & Time	Sampling Location (latitude/ longitude or Northing/ Easting)	Sampling Depth (starting & finishing levels)	Method of Collection (e.g. grab, vibrocore, etc)	Analysis requested						Remarks		
					Metals	Metalloid	LMW PAHs	HMW PAHs	Total PCBs	TBT		Others (please specify)	
S15	01/3 1231	E828930, N806305	Surface	Grab	✓	✓	✓	✓	✓	PSD	14.1 m	1.09 m	Water depth; mPD from HKO
S12	01/3 1238	E828961, N806103	Surface	Grab	✓	✓	✓	✓	✓	PSD	14.0 m	1.07 m	
S11	01/3 1242	E828755, N806102	Surface	Grab	✓	✓	✓	✓	✓	PSD	16.0 m	1.04 m	
S7	01/3 1250	E828596, N805903	Surface	Grab	✓	✓	✓	✓	✓	PSD	15.4 m	1.04 m	
S8	01/3 1254	E828786, N805903	Surface	Grab	✓	✓	✓	✓	✓	PSD	16.5 m	1.04 m	
S6	01/3 1302	E829018, N805705	Surface	Grab	✓	✓	✓	✓	✓	PSD	16.3 m	0.98 m	
S5	01/3 1307	E828824, N805696	Surface	Grab	✓	✓	✓	✓	✓	PSD	16.7 m	0.98 m	
S4	01/3 1312	E828624, N805703	Surface	Grab	✓	✓	✓	✓	✓	PSD	16.3 m	0.98 m	
S1	01/3 1317	E828641, N805503	Surface	Grab	✓	✓	✓	✓	✓	PSD	16.8 m	0.98 m	

Sampling Conducted by:		Sampling Supervised by (if any):		Samples Received by:	
Company Name: Enovative Environmental Service Limited	Address:	Company Name: <i>Mott Macdonald Hong Kong Ltd.</i>	Address:	Name of Laboratory: <i>ALS HK</i>	Address:
Person-in-charge: Thomas Wong	Signature: <i>Thomas</i>	Responsible Person: <i>Thomas Chan</i>	Signature: <i>A. Chan</i>	Responsible Person: <i>Ketia Lau</i>	Signature: <i>Ketia Lau</i>
Phone No: 9733 5039	Date & Time: 1/3 14:00	Phone No.: <i>2828-5967</i>	Date & Time: <i>1/3/18</i>	Phone No.:	Date & Time: <i>16/3/18</i>

14:00

- 1 MAR 2018

RECORD OF SEDIMENT SAMPLING & COLLECTION UNDER ETWB TC(W) NO. 34/2002/PNAP 252

(Sheet 4 of 4)

Project Name: Improvement Dredging for Lamma Power Station Navigation Channel		Contract No:
Name of Project Proponent: Mott MacDonald Hong Kong Limited		ALS TECHNICHEM (HK) PTY LTD
Address: 20/F., AIA Kowloon Tower, Landmark East, 100 How Ming Street, Kwun Tong, Kowloon, Hong Kong		11 FLOOR
Contact Person: Dulcie Chan		- 1 MAR 2018
Telephone No.: 28285970	E-mail address: Dulcie.chan@mottmac.com	Fax No:
Sediment Sampling		BY: <u>Ketse</u> <u>16-10</u>

Sample ID No.	Sampling Date & Time	Sampling Location (latitude/longitude or Northing/Easting)	Sampling Depth (starting & finishing levels)	Method of Collection (e.g. grab, vibrocore, etc)	Analysis requested					Remarks	
					Metals	Metalloid	LMW PAHs	HMW PAHs	Total PCBs		TBT
S2	01/3 1324	E828838, N805495	Surface	Grab	✓	✓	✓	✓	✓	PSD	Water depth: mPD from HKO 17.5 m
S3	01/3 1329	E829043, N805499	Surface	Grab	✓	✓	✓	✓	✓	PSD	17.8 m

Sampling Conducted by:		Sampling Supervised by (if any):		Samples Received by:	
Company Name: Enovative Environmental Service Limited		Company Name: <u>Mott MacDonald Hong Kong Ltd.</u>		Name of Laboratory: <u>ALS HK</u>	
Address:		Address:		Address:	
Person-in-charge: Thomas Wong	Signature: <u>Thomas Wong</u>	Responsible Person: <u>Thomas Chan</u>	Signature: <u>[Signature]</u>	Responsible Person: <u>Ketse Lau</u>	Signature: <u>[Signature]</u>
Phone No: 9733 5039	Date & Time: 1/3 14:00	Phone No.: <u>2828-5967</u>	Date & Time: <u>1/3/18</u>	Phone No.:	Date & Time: <u>16-10</u>
		14:00		- 1 MAR 2018	

B. Chemical Screening Results

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES






CERTIFICATE OF ANALYSIS

Client	: MOTT MACDONALD HONG KONG LIMITED	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 30
Contact	: DULCIE CHAN	Contact	: Ivan Leung	Work Order	: HK1818827
Address	: 20/F., AIA KOWLOON TOWER, LANDMARK EAST, 100 HOW MING STREET, KWUN TONG, KOWLOON HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong	Amendment	: 1
E-mail	: Dulcie.chan@mottmac.com	E-mail	: ivan.leung@alsglobal.com		
Telephone	: +852 2828 5933	Telephone	: 26101044		
Facsimile	: +852 2828 1823	Facsimile	: +852 2610 2021		
Project	: IMPROVEMENT DREDGING FOR LAMMA POWER STATION NAVIGATION CHANNEL (392653)			Date Samples Received	: 28-Feb-2018
Order number	: ---	Quote number	: HKE/2693a/2017_R2	Issue Date	: 09-Apr-2018
C-O-C number	: ---			No. of samples received	: 40
Site	: ---			No. of samples analysed	: 40

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Hong Kong Accreditation Service (HKAS) has accredited this laboratory, ALS Technichem (HK) Pty Ltd (Reg. No. HOKLAS 066) under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories.

This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	Position	Authorised results for
Anh Ngoc Huynh . 	Senior Chemist	Organics
Chan Siu Ming , Vico 	Manager - Inorganics	Inorganics
Wong Wing , Kenneth 	Manager - Metals	Metals

ALS Technichem (HK) Pty Ltd
Part of the **ALS Laboratory Group**

11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong
Tel: +852 2610 1044 Fax: +852 2610 2021 www.alsglobal.com



Page Number : 2 of 30
Client : MOTT MACDONALD HONG KONG LIMITED
Work Order : HK1818827, Amendment 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. Testing period is from 28-Feb-2018 to 14-Mar-2018.
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: HK1818827

Sample(s) were received in chilled condition.

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

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

Total PCBs results (Method: EP065) are not HOKLAS accredited. The values are calculated from summation of the 18PCB congeners, based on Limit of Detection (LOD) of 1 ug/kg.

Low and High M.W. PAHs results (Method: EP076HK) are not HOKLAS accredited. Low M.W. PAHs is sum of Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene;

High M.W. PAHs is sum of Fluoranthene, Pyrene, Benz(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1.2.3.cd)pyrene, Dibenz(a,h)anthracene,

Benzo(g,h,i)perylene.



Analytical Results

Compound	CAS Number	LOR	Client sample ID		S64	S54	S47	S32	S23
			Client sampling date / time	Unit					
Sub-Matrix: SEDIMENT									
EA/ED: Physical and Aggregate Properties									
EA055: Moisture Content (dried @ 103°C)	----	0.1	%	47.7	40.4	58.4	44.8	57.4	
EG: Metals and Major Cations									
EG020: Arsenic	7440-38-2	1	mg/kg	8	9	10	7	9	
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
EG020: Chromium	7440-47-3	1	mg/kg	33	31	42	31	35	
EG020: Copper	7440-50-8	1	mg/kg	11	18	26	10	18	
EG020: Lead	7439-92-1	1	mg/kg	22	29	35	20	30	
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	0.07	0.09	<0.05	0.07	
EG020: Nickel	7440-02-0	1	mg/kg	21	18	27	20	22	
EG020: Silver	7440-22-4	0.1	mg/kg	<0.1	0.2	0.2	<0.1	<0.1	
EG020: Zinc	7440-66-6	1	mg/kg	75	83	108	67	85	
EP-065: PCB Single Congeners									
EP065: PCB 8	34883-43-7	3	µg/kg	<3	<3	<3	<3	<3	
EP065: PCB 18	37680-65-2	3	µg/kg	<3	<3	<3	<3	<3	
EP065: PCB 28	7012-37-5	3	µg/kg	<3	<3	<3	<3	<3	
EP065: PCB 44	41464-39-5	3	µg/kg	<3	<3	<3	<3	<3	
EP065: PCB 52	35693-99-3	3	µg/kg	<3	<3	<3	<3	<3	
EP065: PCB 66	32598-10-0	3	µg/kg	<3	<3	<3	<3	<3	
EP065: PCB 77	32598-13-3	3	µg/kg	<3	<3	<3	<3	<3	
EP065: PCB 101	37680-73-2	3	µg/kg	<3	<3	<3	<3	<3	
EP065: PCB 105	32598-14-4	3	µg/kg	<3	<3	<3	<3	<3	
EP065: PCB 118	31508-00-6	3	µg/kg	<3	<3	<3	<3	<3	
EP065: PCB 126	57465-28-8	3	µg/kg	<3	<3	<3	<3	<3	
EP065: PCB 128	38380-07-3	3	µg/kg	<3	<3	<3	<3	<3	
EP065: PCB 138	35065-28-2	3	µg/kg	<3	<3	<3	<3	<3	
EP065: PCB 153	35065-27-1	3	µg/kg	<3	<3	<3	<3	<3	
EP065: PCB 169	32774-16-6	3	µg/kg	<3	<3	<3	<3	<3	
EP065: PCB 170	35065-30-6	3	µg/kg	<3	<3	<3	<3	<3	
EP065: PCB 180	35065-29-3	3	µg/kg	<3	<3	<3	<3	<3	



Sub-Matrix: SEDIMENT		Client sample ID		S64	S54	S47	S32	S23
Compound	CAS Number	LOR	Unit	Client sampling date / time	Client sampling date / time	Client sampling date / time	Client sampling date / time	Client sampling date / time
EP-065: PCB Sindle Condensers - Continued								
EP065: PCB 187	52663-68-0	3	µg/kg	28-Feb-2018 10:00	28-Feb-2018 10:21	28-Feb-2018 10:29	28-Feb-2018 10:37	28-Feb-2018 10:42
EP065: Total Polychlorinated biphenyls	----	18	µg/kg		HK1818827-001	HK1818827-002	HK1818827-004	HK1818827-005
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)								
EP076HK: Naphthalene	91-20-3	50	µg/kg		<3	<3	<3	<3
EP076HK: Acenaphthylene	208-96-8	50	µg/kg		<18	<18	<18	<18
EP076HK: Acenaphthene	83-32-9	50	µg/kg		<50	<50	<50	<50
EP076HK: Fluorene	86-73-7	50	µg/kg		<50	<50	<50	<50
EP076HK: Phenanthrene	85-01-8	50	µg/kg		<50	<50	<50	<50
EP076HK: Anthracene	120-12-7	50	µg/kg		<50	<50	<50	<50
EP076HK: Fluoranthene	206-44-0	150	µg/kg		<150	<150	<150	<150
EP076HK: Pyrene	129-00-0	150	µg/kg		<150	<150	<150	<150
EP076HK: Benz(a)anthracene	56-55-3	150	µg/kg		<150	<150	<150	<150
EP076HK: Chrysene	218-01-9	150	µg/kg		<150	<150	<150	<150
EP076HK: Benzo(b)fluoranthene	205-99-2	150	µg/kg		<150	<150	<150	<150
EP076HK: Benzo(k)fluoranthene	207-08-9	150	µg/kg		<150	<150	<150	<150
EP076HK: Benzo(a)pyrene	50-32-8	150	µg/kg		<150	<150	<150	<150
EP076HK: Indeno(1,2,3-cd)pyrene	193-39-5	150	µg/kg		<150	<150	<150	<150
EP076HK: Dibenz(a,h)anthracene	53-70-3	150	µg/kg		<150	<150	<150	<150
EP076HK: Benzo(g,h,i)perylene	191-24-2	150	µg/kg		<150	<150	<150	<150
EP076HK: Low M.W. PAHs	----	550	µg/kg		<550	<550	<550	<550
EP076HK: High M.W. PAHs	----	1700	µg/kg		<1700	<1700	<1700	<1700
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates								
EP076HK: 2-Fluorobiphenyl	321-60-8	0.1	%		77.8	83.1	81.1	87.9
EP076HK: 4-Terphenyl-d14	1718-51-0	0.1	%		77.1	81.9	80.1	86.5
EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate								
EP065: Decachlorobiphenyl	2051-24-3	0.1	%		81.2	56.1	82.1	93.2



Sub-Matrix: SEDIMENT		Client sample ID		S18	S10	S9	S66	S67
		Client sampling date / time		28-Feb-2018 10:49	28-Feb-2018 10:58	28-Feb-2018 11:05	28-Feb-2018 13:46	28-Feb-2018 13:50
Compound	CAS Number	LOR	Unit	HK1818827-006	HK1818827-007	HK1818827-008	HK1818827-009	HK1818827-010
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	----	0.1	%	64.1	47.2	62.3	46.1	48.2
EG: Metals and Major Cations								
EG020: Arsenic	7440-38-2	1	mg/kg	10	9	9	9	10
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EG020: Chromium	7440-47-3	1	mg/kg	44	32	43	36	40
EG020: Copper	7440-50-8	1	mg/kg	24	16	25	33	19
EG020: Lead	7439-92-1	1	mg/kg	37	28	37	31	33
EG020: Mercury	7439-97-6	0.05	mg/kg	0.08	0.07	0.08	0.08	0.07
EG020: Nickel	7440-02-0	1	mg/kg	29	21	29	21	21
EG020: Silver	7440-22-4	0.1	mg/kg	0.1	<0.1	0.1	0.2	0.1
EG020: Zinc	7440-66-6	1	mg/kg	108	80	109	98	102
EP-065: PCB Single Congeners								
EP065: PCB 8	34883-43-7	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 18	37680-65-2	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 28	7012-37-5	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 44	41464-39-5	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 52	35693-99-3	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 66	32598-10-0	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 77	32598-13-3	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 101	37680-73-2	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 105	32598-14-4	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 118	31508-00-6	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 126	57465-28-8	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 128	38380-07-3	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 138	35065-28-2	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 153	35065-27-1	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 169	32774-16-6	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 170	35065-30-6	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 180	35065-29-3	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 187	52663-68-0	3	µg/kg	<3	<3	<3	<3	<3



Sub-Matrix: SEDIMENT		Client sample ID		S18	S10	S9	S66	S67
Compound	CAS Number	LOR	Unit	28-Feb-2018 10:49 HK1818827-006	28-Feb-2018 10:58 HK1818827-007	28-Feb-2018 11:05 HK1818827-008	28-Feb-2018 13:46 HK1818827-009	28-Feb-2018 13:50 HK1818827-010
EP-065: PCB Single Conceners - Continued								
EP065: Total Polychlorinated biphenyls	----	18	µg/kg	<18	<18	<18	<18	<18
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)								
EP076HK: Naphthalene	91-20-3	50	µg/kg	<50	<50	<50	<50	<50
EP076HK: Acenaphthylene	208-96-8	50	µg/kg	<50	<50	<50	<50	<50
EP076HK: Acenaphthene	83-32-9	50	µg/kg	<50	<50	<50	<50	<50
EP076HK: Fluorene	86-73-7	50	µg/kg	<50	<50	<50	<50	<50
EP076HK: Phenanthrene	85-01-8	50	µg/kg	<50	<50	<50	<50	<50
EP076HK: Anthracene	120-12-7	50	µg/kg	<50	<50	<50	<50	<50
EP076HK: Fluoranthene	206-44-0	150	µg/kg	<150	<150	<150	<150	<150
EP076HK: Pyrene	129-00-0	150	µg/kg	<150	<150	<150	<150	<150
EP076HK: Benz(a)anthracene	56-55-3	150	µg/kg	<150	<150	<150	<150	<150
EP076HK: Chrysene	218-01-9	150	µg/kg	<150	<150	<150	<150	<150
EP076HK: Benzo(b)fluoranthene	205-99-2	150	µg/kg	<150	<150	<150	<150	<150
EP076HK: Benzo(k)fluoranthene	207-08-9	150	µg/kg	<150	<150	<150	<150	<150
EP076HK: Benzo(a)pyrene	50-32-8	150	µg/kg	<150	<150	<150	<150	<150
EP076HK: Indeno(1,2,3-cd)pyrene	193-39-5	150	µg/kg	<150	<150	<150	<150	<150
EP076HK: Dibenz(a,h)anthracene	53-70-3	150	µg/kg	<150	<150	<150	<150	<150
EP076HK: Benzo(g,h,i)perylene	191-24-2	150	µg/kg	<150	<150	<150	<150	<150
EP076HK: Low M.W. PAHs	----	550	µg/kg	<550	<550	<550	<550	<550
EP076HK: High M.W. PAHs	----	1700	µg/kg	<1700	<1700	<1700	<1700	<1700
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates								
EP076HK: 2-Fluorobiphenyl	321-60-8	0.1	%	89.6	85.4	89.0	81.8	83.5
EP076HK: 4-Terphenyl-d14	1718-51-0	0.1	%	88.7	83.0	89.2	81.4	83.3
EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate								
EP065: Decachlorobiphenyl	2051-24-3	0.1	%	82.7	98.4	89.2	68.5	91.9



Sub-Matrix: SEDIMENT		Client sample ID		S62	S63	S65	S69	S68	S66	S67	S62
Compound	CAS Number	LOR	Unit	Client sampling date / time	Client sampling date / time	Client sampling date / time	Client sampling date / time	Client sampling date / time	Client sampling date / time	Client sampling date / time	Client sampling date / time
EP-065: PCB Sindle Condensers - Continued											
EP065: Total Polychlorinated biphenyls	----	18	µg/kg	28-Feb-2018 13:56	28-Feb-2018 14:03	28-Feb-2018 14:09	28-Feb-2018 14:13	28-Feb-2018 14:18	28-Feb-2018 14:24	28-Feb-2018 14:30	28-Feb-2018 14:36
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)											
EP076HK: Naphthalene	91-20-3	50	µg/kg	<18	<18	<18	<18	<18	<18	<18	<18
EP076HK: Acenaphthylene	208-96-8	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Acenaphthene	83-32-9	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Fluorene	86-73-7	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Phenanthrene	85-01-8	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Anthracene	120-12-7	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Fluoranthene	206-44-0	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Pyrene	129-00-0	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Benz(a)anthracene	56-55-3	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Chrysene	218-01-9	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Benzo(b)fluoranthene	205-99-2	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Benzo(k)fluoranthene	207-08-9	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Benzo(a)pyrene	50-32-8	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Indeno(1,2,3-cd)pyrene	193-39-5	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Dibenz(a,h)anthracene	53-70-3	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Benzo(g,h,i)perylene	191-24-2	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Low M.W. PAHs	----	550	µg/kg	<550	<550	<550	<550	<550	<550	<550	<550
EP076HK: High M.W. PAHs	----	1700	µg/kg	<1700	<1700	<1700	<1700	<1700	<1700	<1700	<1700
EP-076S: Polycyclic Aromatic Hydrocarbons (PAHs) Surrogates											
EP076HK: 2-Fluorobiphenyl	321-60-8	0.1	%	82.3	83.2	80.5	82.0	85.1	82.0	85.1	85.1
EP076HK: 4-Terphenyl-d14	1718-51-0	0.1	%	81.9	83.8	78.5	82.4	83.4	82.4	83.4	83.4
EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate											
EP065: Decachlorobiphenyl	2051-24-3	0.1	%	91.3	82.7	65.5	68.6	82.4	68.6	82.4	82.4



Sub-Matrix: SEDIMENT		Client sample ID		S58	S59	S60	S61	S57
Compound	CAS Number	LOR	Unit	Client sampling date / time	28-Feb-2018 14:26	28-Feb-2018 14:30	28-Feb-2018 14:34	28-Feb-2018 14:39
				HK1818827-016	HK1818827-017	HK1818827-018	HK1818827-019	HK1818827-020
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	----	0.1	%	44.0	44.1	62.0	63.8	57.7
EG: Metals and Major Cations								
EG020: Arsenic	7440-38-2	1	mg/kg	9	10	10	9	10
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EG020: Chromium	7440-47-3	1	mg/kg	32	37	44	46	47
EG020: Copper	7440-50-8	1	mg/kg	18	20	27	30	30
EG020: Lead	7439-92-1	1	mg/kg	29	32	38	40	40
EG020: Mercury	7439-97-6	0.05	mg/kg	0.08	0.08	0.24	0.12	0.11
EG020: Nickel	7440-02-0	1	mg/kg	19	21	28	29	30
EG020: Silver	7440-22-4	0.1	mg/kg	0.2	0.2	0.2	0.2	0.2
EG020: Zinc	7440-66-6	1	mg/kg	88	98	114	118	120
EP-065: PCB Single Congeners								
EP065: PCB 8	34883-43-7	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 18	37680-65-2	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 28	7012-37-5	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 44	41464-39-5	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 52	35693-99-3	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 66	32598-10-0	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 77	32598-13-3	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 101	37680-73-2	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 105	32598-14-4	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 118	31508-00-6	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 126	57465-28-8	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 128	38380-07-3	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 138	35065-28-2	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 153	35065-27-1	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 169	32774-16-6	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 170	35065-30-6	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 180	35065-29-3	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 187	52663-68-0	3	µg/kg	<3	<3	<3	<3	<3



Sub-Matrix: SEDIMENT		Client sample ID		Client sampling date / time		S58		S59		S60		S61		S57	
Compound	CAS Number	LOR	Unit	S58	S59	S60	S61	S57	S58	S59	S60	S61	S57	S58	S59
EP-065: PCB Sindle Conceners - Continued															
EP065: Total Polychlorinated biphenyls	----	18	µg/kg	<18	<18	<18	<18	<18	<18	<18	<18	<18	<18	<18	<18
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)															
EP076HK: Naphthalene	91-20-3	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Acenaphthylene	208-96-8	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Acenaphthene	83-32-9	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Fluorene	86-73-7	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Phenanthrene	85-01-8	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Anthracene	120-12-7	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Fluoranthene	206-44-0	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Pyrene	129-00-0	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Benz(a)anthracene	56-55-3	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Chrysene	218-01-9	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Benzo(b)fluoranthene	205-99-2	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Benzo(k)fluoranthene	207-08-9	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Benzo(a)pyrene	50-32-8	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Indeno(1,2,3-cd)pyrene	193-39-5	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Dibenz(a,h)anthracene	53-70-3	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Benzo(g,h,i)perylene	191-24-2	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Low M.W. PAHs	----	550	µg/kg	<550	<550	<550	<550	<550	<550	<550	<550	<550	<550	<550	<550
EP076HK: High M.W. PAHs	----	1700	µg/kg	<1700	<1700	<1700	<1700	<1700	<1700	<1700	<1700	<1700	<1700	<1700	<1700
EP-076S: Polycyclic Aromatic Hydrocarbons (PAHs) Surrogates															
EP076HK: 2-Fluorobiphenyl	321-60-8	0.1	%	81.7	82.7	81.9	82.2	78.2	81.7	82.7	81.9	82.2	78.2	81.7	82.7
EP076HK: 4-Terphenyl-d14	1718-51-0	0.1	%	80.4	82.3	82.7	81.0	77.8	80.4	82.3	82.7	81.0	77.8	80.4	82.3
EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate															
EP065: Decachlorobiphenyl	2051-24-3	0.1	%	69.9	58.2	62.6	81.0	64.2	69.9	58.2	62.6	81.0	64.2	69.9	58.2



Sub-Matrix: SEDIMENT		Client sample ID		S56	S55	S49	S50	S51	
Compound	CAS Number	LOR	Unit	Client sampling date / time	28-Feb-2018 14:43	28-Feb-2018 14:48	28-Feb-2018 14:52	28-Feb-2018 14:57	28-Feb-2018 15:04
EA/ED: Physical and Aggregate Properties		----	%		62.5	48.4	47.8	36.8	63.5
EG: Metals and Major Cations									
EG020: Arsenic	7440-38-2	1	mg/kg		9	9	8	8	9
EG020: Cadmium	7440-43-9	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
EG020: Chromium	7440-47-3	1	mg/kg		42	33	31	29	43
EG020: Copper	7440-50-8	1	mg/kg		26	18	17	13	27
EG020: Lead	7439-92-1	1	mg/kg		37	30	28	27	37
EG020: Mercury	7439-97-6	0.05	mg/kg		0.10	0.08	0.08	0.06	0.10
EG020: Nickel	7440-02-0	1	mg/kg		27	19	19	16	28
EG020: Silver	7440-22-4	0.1	mg/kg		0.2	0.1	0.1	0.1	0.2
EG020: Zinc	7440-66-6	1	mg/kg		107	90	82	77	110
EP-065: PCB Single Congeners									
EP065: PCB 8	34883-43-7	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 18	37680-65-2	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 28	7012-37-5	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 44	41464-39-5	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 52	35693-99-3	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 66	32598-10-0	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 77	32598-13-3	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 101	37680-73-2	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 105	32598-14-4	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 118	31508-00-6	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 126	57465-28-8	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 128	38380-07-3	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 138	35065-28-2	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 153	35065-27-1	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 169	32774-16-6	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 170	35065-30-6	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 180	35065-29-3	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 187	52663-68-0	3	µg/kg		<3	<3	<3	<3	<3



Sub-Matrix: SEDIMENT		Client sample ID		Client sampling date / time		CAS Number		LOR		Unit	
Compound											
EP-065: PCB Sindle Conceners - Continued											
EP065: Total Polychlorinated biphenyls	----	18	µg/kg	<18	<18	<18	<18	<18	<18	<18	<18
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)											
EP076HK: Naphthalene	91-20-3	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Acenaphthylene	208-96-8	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Acenaphthene	83-32-9	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Fluorene	86-73-7	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Phenanthrene	85-01-8	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Anthracene	120-12-7	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Fluoranthene	206-44-0	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Pyrene	129-00-0	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Benz(a)anthracene	56-55-3	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Chrysene	218-01-9	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Benzo(b)fluoranthene	205-99-2	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Benzo(k)fluoranthene	207-08-9	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Benzo(a)pyrene	50-32-8	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Indeno(1,2,3-cd)pyrene	193-39-5	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Dibenz(a,h)anthracene	53-70-3	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Benzo(g,h,i)perylene	191-24-2	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Low M.W. PAHs	----	550	µg/kg	<550	<550	<550	<550	<550	<550	<550	<550
EP076HK: High M.W. PAHs	----	1700	µg/kg	<1700	<1700	<1700	<1700	<1700	<1700	<1700	<1700
EP-076S: Polycyclic Aromatic Hydrocarbons (PAHs) Surrogates											
EP076HK: 2-Fluorobiphenyl	321-60-8	0.1	%	83.4	78.0	78.0	78.0	78.0	78.0	74.1	78.7
EP076HK: 4-Terphenyl-d14	1718-51-0	0.1	%	82.6	79.0	79.0	76.2	75.2	75.2	75.2	78.8
EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate											
EP065: Decachlorobiphenyl	2051-24-3	0.1	%	54.8	73.7	69.1	63.5	63.5	63.5	63.5	79.5



Sub-Matrix: SEDIMENT		Client sample ID		S52	S53	S48	S46	S45	
Compound	CAS Number	LOR	Unit	Client sampling date / time	28-Feb-2018 15:14	28-Feb-2018 15:18	28-Feb-2018 15:24	28-Feb-2018 15:30	
					HK1818827-026	HK1818827-027	HK1818827-028	HK1818827-030	
EA/ED: Physical and Aggregate Properties				EA055: Moisture Content (dried @ 103°C)	61.9	61.7	64.5	34.3	
EG: Metals and Major Cations				EG020: Arsenic	10	10	10	5	
		0.1	%		<0.2	<0.2	<0.2	<0.2	
					44	46	46	18	
					27	32	27	10	
					37	40	40	18	
		0.05	mg/kg		0.09	0.12	0.11	<0.05	
		1	mg/kg		28	29	30	11	
		0.1	mg/kg		0.2	0.2	0.2	<0.1	
		1	mg/kg		112	119	116	45	
EP-065: PCB Single Congeners									
EP065: PCB 8	34883-43-7	3	µg/kg		<3	<3	<3	<3	
EP065: PCB 18	37680-65-2	3	µg/kg		<3	<3	<3	<3	
EP065: PCB 28	7012-37-5	3	µg/kg		<3	<3	<3	<3	
EP065: PCB 44	41464-39-5	3	µg/kg		<3	<3	<3	<3	
EP065: PCB 52	35693-99-3	3	µg/kg		<3	<3	<3	<3	
EP065: PCB 66	32598-10-0	3	µg/kg		<3	<3	<3	<3	
EP065: PCB 77	32598-13-3	3	µg/kg		<3	<3	<3	<3	
EP065: PCB 101	37680-73-2	3	µg/kg		<3	<3	<3	<3	
EP065: PCB 105	32598-14-4	3	µg/kg		<3	<3	<3	<3	
EP065: PCB 118	31508-00-6	3	µg/kg		<3	<3	<3	<3	
EP065: PCB 126	57465-28-8	3	µg/kg		<3	<3	<3	<3	
EP065: PCB 128	38380-07-3	3	µg/kg		<3	<3	<3	<3	
EP065: PCB 138	35065-28-2	3	µg/kg		<3	<3	<3	<3	
EP065: PCB 153	35065-27-1	3	µg/kg		<3	<3	<3	<3	
EP065: PCB 169	32774-16-6	3	µg/kg		<3	<3	<3	<3	
EP065: PCB 170	35065-30-6	3	µg/kg		<3	<3	<3	<3	
EP065: PCB 180	35065-29-3	3	µg/kg		<3	<3	<3	<3	
EP065: PCB 187	52663-68-0	3	µg/kg		<3	<3	<3	<3	



Sub-Matrix: SEDIMENT		Client sample ID		S52	S53	S48	S46	S45	
Compound	CAS Number	LOR	Unit	28-Feb-2018 15:08	28-Feb-2018 15:14	28-Feb-2018 15:18	28-Feb-2018 15:24	28-Feb-2018 15:30	
				HK1818827-026	HK1818827-027	HK1818827-028	HK1818827-029	HK1818827-030	
EP-065: PCB Sindle Conceners - Continued									
EP065: Total Polychlorinated biphenyls	----	18	µg/kg	<18	<18	<18	<18	<18	
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)									
EP076HK: Naphthalene	91-20-3	50	µg/kg	<50	<50	<50	<50	<50	
EP076HK: Acenaphthylene	208-96-8	50	µg/kg	<50	<50	<50	<50	<50	
EP076HK: Acenaphthene	83-32-9	50	µg/kg	<50	<50	<50	<50	<50	
EP076HK: Fluorene	86-73-7	50	µg/kg	<50	<50	<50	<50	<50	
EP076HK: Phenanthrene	85-01-8	50	µg/kg	<50	<50	<50	<50	<50	
EP076HK: Anthracene	120-12-7	50	µg/kg	<50	<50	<50	<50	<50	
EP076HK: Fluoranthene	206-44-0	150	µg/kg	<150	<150	<150	<150	<150	
EP076HK: Pyrene	129-00-0	150	µg/kg	<150	<150	<150	<150	<150	
EP076HK: Benz(a)anthracene	56-55-3	150	µg/kg	<150	<150	<150	<150	<150	
EP076HK: Chrysene	218-01-9	150	µg/kg	<150	<150	<150	<150	<150	
EP076HK: Benzo(b)fluoranthene	205-99-2	150	µg/kg	<150	<150	<150	<150	<150	
EP076HK: Benzo(k)fluoranthene	207-08-9	150	µg/kg	<150	<150	<150	<150	<150	
EP076HK: Benzo(a)pyrene	50-32-8	150	µg/kg	<150	<150	<150	<150	<150	
EP076HK: Indeno(1,2,3-cd)pyrene	193-39-5	150	µg/kg	<150	<150	<150	<150	<150	
EP076HK: Dibenz(a,h)anthracene	53-70-3	150	µg/kg	<150	<150	<150	<150	<150	
EP076HK: Benzo(g,h,i)perylene	191-24-2	150	µg/kg	<150	<150	<150	<150	<150	
EP076HK: Low M.W. PAHs	----	550	µg/kg	<550	<550	<550	<550	<550	
EP076HK: High M.W. PAHs	----	1700	µg/kg	<1700	<1700	<1700	<1700	<1700	
EP-076S: Polycyclic Aromatic Hydrocarbons (PAHs) Surrogates									
EP076HK: 2-Fluorobiphenyl	321-60-8	0.1	%	80.7	85.5	77.7	81.9	76.1	
EP076HK: 4-Terphenyl-d14	1718-51-0	0.1	%	81.0	84.6	77.7	81.0	76.5	
EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate									
EP065: Decachlorobiphenyl	2051-24-3	0.1	%	69.4	90.4	68.7	60.6	54.6	



Sub-Matrix: SEDIMENT		Client sample ID		Client sampling date / time		CAS Number		LOR		Unit	
Compound											
EA/ED: Physical and Aggregate Properties											
EA055: Moisture Content (dried @ 103°C)		----	0.1	%	38.3	47.9	46.3	63.8	56.5	S44	S42
EG: Metals and Major Cations											
EG020: Arsenic	7440-38-2	1		mg/kg	7	8	8	9	10	S44	S42
EG020: Cadmium	7440-43-9	0.2		mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	S44	S42
EG020: Chromium	7440-47-3	1		mg/kg	28	30	31	44	40	S44	S42
EG020: Copper	7440-50-8	1		mg/kg	17	17	13	26	24	S44	S42
EG020: Lead	7439-92-1	1		mg/kg	27	29	24	39	35	S44	S42
EG020: Mercury	7439-97-6	0.05		mg/kg	0.06	0.08	<0.05	0.10	0.09	S44	S42
EG020: Nickel	7440-02-0	1		mg/kg	17	19	20	29	26	S44	S42
EG020: Silver	7440-22-4	0.1		mg/kg	0.2	0.1	<0.1	0.2	0.2	S44	S42
EG020: Zinc	7440-66-6	1		mg/kg	73	80	72	110	102	S44	S42
EP-065: PCB Single Congeners											
EP065: PCB 8	34883-43-7	3		µg/kg	<3	<3	<3	<3	<3	S44	S42
EP065: PCB 18	37680-65-2	3		µg/kg	<3	<3	<3	<3	<3	S44	S42
EP065: PCB 28	7012-37-5	3		µg/kg	<3	<3	<3	<3	<3	S44	S42
EP065: PCB 44	41464-39-5	3		µg/kg	<3	<3	<3	<3	<3	S44	S42
EP065: PCB 52	35693-99-3	3		µg/kg	<3	<3	<3	<3	<3	S44	S42
EP065: PCB 66	32598-10-0	3		µg/kg	<3	<3	<3	<3	<3	S44	S42
EP065: PCB 77	32598-13-3	3		µg/kg	<3	<3	<3	<3	<3	S44	S42
EP065: PCB 101	37680-73-2	3		µg/kg	<3	<3	<3	<3	<3	S44	S42
EP065: PCB 105	32598-14-4	3		µg/kg	<3	<3	<3	<3	<3	S44	S42
EP065: PCB 118	31508-00-6	3		µg/kg	<3	<3	<3	<3	<3	S44	S42
EP065: PCB 126	57465-28-8	3		µg/kg	<3	<3	<3	<3	<3	S44	S42
EP065: PCB 128	38380-07-3	3		µg/kg	<3	<3	<3	<3	<3	S44	S42
EP065: PCB 138	35065-28-2	3		µg/kg	<3	<3	<3	<3	<3	S44	S42
EP065: PCB 153	35065-27-1	3		µg/kg	<3	<3	<3	<3	<3	S44	S42
EP065: PCB 169	32774-16-6	3		µg/kg	<3	<3	<3	<3	<3	S44	S42
EP065: PCB 170	35065-30-6	3		µg/kg	<3	<3	<3	<3	<3	S44	S42
EP065: PCB 180	35065-29-3	3		µg/kg	<3	<3	<3	<3	<3	S44	S42
EP065: PCB 187	52663-68-0	3		µg/kg	<3	<3	<3	<3	<3	S44	S42



Sub-Matrix: SEDIMENT		Client sample ID		S44	S39	S40	S41	S42
Compound	CAS Number	LOR	Unit	Client sampling date / time	Client sampling date / time	Client sampling date / time	Client sampling date / time	Client sampling date / time
EP-065: PCB Sindle Conceners - Continued	----	18	µg/kg	28-Feb-2018 15:37	28-Feb-2018 15:43	28-Feb-2018 15:47	28-Feb-2018 15:53	28-Feb-2018 15:57
EP065: Total Polychlorinated biphenyls	----	18	µg/kg	HK1818827-031	HK1818827-032	HK1818827-033	HK1818827-034	HK1818827-035
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)								
EP076HK: Naphthalene	91-20-3	50	µg/kg	<50	<50	<50	<50	<50
EP076HK: Acenaphthylene	208-96-8	50	µg/kg	<50	<50	<50	<50	<50
EP076HK: Acenaphthene	83-32-9	50	µg/kg	<50	<50	<50	<50	<50
EP076HK: Fluorene	86-73-7	50	µg/kg	<50	<50	<50	<50	<50
EP076HK: Phenanthrene	85-01-8	50	µg/kg	<50	<50	<50	<50	<50
EP076HK: Anthracene	120-12-7	50	µg/kg	<50	<50	<50	<50	<50
EP076HK: Fluoranthene	206-44-0	150	µg/kg	<150	<150	<150	<150	<150
EP076HK: Pyrene	129-00-0	150	µg/kg	<150	<150	<150	<150	<150
EP076HK: Benz(a)anthracene	56-55-3	150	µg/kg	<150	<150	<150	<150	<150
EP076HK: Chrysene	218-01-9	150	µg/kg	<150	<150	<150	<150	<150
EP076HK: Benzo(b)fluoranthene	205-99-2	150	µg/kg	<150	<150	<150	<150	<150
EP076HK: Benzo(k)fluoranthene	207-08-9	150	µg/kg	<150	<150	<150	<150	<150
EP076HK: Benzo(a)pyrene	50-32-8	150	µg/kg	<150	<150	<150	<150	<150
EP076HK: Indeno(1,2,3-cd)pyrene	193-39-5	150	µg/kg	<150	<150	<150	<150	<150
EP076HK: Dibenz(a,h)anthracene	53-70-3	150	µg/kg	<150	<150	<150	<150	<150
EP076HK: Benzo(g,h,i)perylene	191-24-2	150	µg/kg	<150	<150	<150	<150	<150
EP076HK: Low M.W. PAHs	----	550	µg/kg	<550	<550	<550	<550	<550
EP076HK: High M.W. PAHs	----	1700	µg/kg	<1700	<1700	<1700	<1700	<1700
EP-076S: Polycyclic Aromatic Hydrocarbons (PAHs) Surrogates								
EP076HK: 2-Fluorobiphenyl	321-60-8	0.1	%	74.3	85.8	81.4	77.6	79.4
EP076HK: 4-Terphenyl-d14	1718-51-0	0.1	%	73.8	84.6	81.0	79.4	80.6
EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate								
EP065: Decachlorobiphenyl	2051-24-3	0.1	%	61.3	78.5	86.3	71.6	61.4



Sub-Matrix: SEDIMENT		Client sample ID		S35
Compound	CAS Number	LOR	Unit	S36
Client sampling date / time		Client sampling date / time		S37
EA/ED: Physical and Aggregate Properties		EA/ED: Physical and Aggregate Properties		S38
EA055: Moisture Content (dried @ 103°C)		EA055: Moisture Content (dried @ 103°C)		S39
EG: Metals and Major Cations		EG: Metals and Major Cations		S40
		0.1	%	S41
EG020: Arsenic	7440-38-2	1	mg/kg	10
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2
EG020: Chromium	7440-47-3	1	mg/kg	47
EG020: Copper	7440-50-8	1	mg/kg	30
EG020: Lead	7439-92-1	1	mg/kg	41
EG020: Mercury	7439-97-6	0.05	mg/kg	0.12
EG020: Nickel	7440-02-0	1	mg/kg	30
EG020: Silver	7440-22-4	0.1	mg/kg	0.2
EG020: Zinc	7440-66-6	1	mg/kg	120
EP-065: PCB Single Congeners				
EP065: PCB 8	34883-43-7	3	µg/kg	<3
EP065: PCB 18	37680-65-2	3	µg/kg	<3
EP065: PCB 28	7012-37-5	3	µg/kg	<3
EP065: PCB 44	41464-39-5	3	µg/kg	<3
EP065: PCB 52	35693-99-3	3	µg/kg	<3
EP065: PCB 66	32598-10-0	3	µg/kg	<3
EP065: PCB 77	32598-13-3	3	µg/kg	<3
EP065: PCB 101	37680-73-2	3	µg/kg	<3
EP065: PCB 105	32598-14-4	3	µg/kg	<3
EP065: PCB 118	31508-00-6	3	µg/kg	<3
EP065: PCB 126	57465-28-8	3	µg/kg	<3
EP065: PCB 128	38380-07-3	3	µg/kg	<3
EP065: PCB 138	35065-28-2	3	µg/kg	<3
EP065: PCB 153	35065-27-1	3	µg/kg	<3
EP065: PCB 169	32774-16-6	3	µg/kg	<3
EP065: PCB 170	35065-30-6	3	µg/kg	<3
EP065: PCB 180	35065-29-3	3	µg/kg	<3
EP065: PCB 187	52663-68-0	3	µg/kg	<3
S35				32.7
S36				58.4
S37				55.7
S38				63.0
S39				59.6
S40				63.0
S41				55.7
S42				58.4
S43				63.0
S44				59.6
S45				63.0
S46				55.7
S47				58.4
S48				63.0
S49				59.6
S50				63.0
S51				55.7
S52				58.4
S53				63.0
S54				59.6
S55				63.0
S56				55.7
S57				58.4
S58				63.0
S59				59.6
S60				63.0
S61				55.7
S62				58.4
S63				63.0
S64				59.6
S65				63.0
S66				55.7
S67				58.4
S68				63.0
S69				59.6
S70				63.0
S71				55.7
S72				58.4
S73				63.0
S74				59.6
S75				63.0
S76				55.7
S77				58.4
S78				63.0
S79				59.6
S80				63.0
S81				55.7
S82				58.4
S83				63.0
S84				59.6
S85				63.0
S86				55.7
S87				58.4
S88				63.0
S89				59.6
S90				63.0
S91				55.7
S92				58.4
S93				63.0
S94				59.6
S95				63.0
S96				55.7
S97				58.4
S98				63.0
S99				59.6
S100				63.0



Sub-Matrix: SEDIMENT		Client sample ID		Client sampling date / time		CAS Number		LOR		Unit	
Compound		S43	S38	S37	S36	S35					
EP-065: PCB Sindle Conceners - Continued											
EP065: Total Polychlorinated biphenyls	----	<18	<18	<18	<18	<18					
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)											
EP076HK: Naphthalene	91-20-3	<50	<50	<50	<50	<50	50	µg/kg			
EP076HK: Acenaphthylene	208-96-8	<50	<50	<50	<50	<50	50	µg/kg			
EP076HK: Acenaphthene	83-32-9	<50	<50	<50	<50	<50	50	µg/kg			
EP076HK: Fluorene	86-73-7	<50	<50	<50	<50	<50	50	µg/kg			
EP076HK: Phenanthrene	85-01-8	<50	<50	<50	<50	<50	50	µg/kg			
EP076HK: Anthracene	120-12-7	<50	<50	<50	<50	<50	50	µg/kg			
EP076HK: Fluoranthene	206-44-0	<150	<150	<150	<150	<150	150	µg/kg			
EP076HK: Pyrene	129-00-0	<150	<150	<150	<150	<150	150	µg/kg			
EP076HK: Benz(a)anthracene	56-55-3	<150	<150	<150	<150	<150	150	µg/kg			
EP076HK: Chrysene	218-01-9	<150	<150	<150	<150	<150	150	µg/kg			
EP076HK: Benzo(b)fluoranthene	205-99-2	<150	<150	<150	<150	<150	150	µg/kg			
EP076HK: Benzo(k)fluoranthene	207-08-9	<150	<150	<150	<150	<150	150	µg/kg			
EP076HK: Benzo(a)pyrene	50-32-8	<150	<150	<150	<150	<150	150	µg/kg			
EP076HK: Indeno(1,2,3-cd)pyrene	193-39-5	<150	<150	<150	<150	<150	150	µg/kg			
EP076HK: Dibenz(a,h)anthracene	53-70-3	<150	<150	<150	<150	<150	150	µg/kg			
EP076HK: Benzo(g,h,i)perylene	191-24-2	<150	<150	<150	<150	<150	150	µg/kg			
EP076HK: Low M.W. PAHs	----	<550	<550	<550	<550	<550	550	µg/kg			
EP076HK: High M.W. PAHs	----	<1700	<1700	<1700	<1700	<1700	1700	µg/kg			
EP-076S: Polycyclic Aromatic Hydrocarbons (PAHs) Surrogates											
EP076HK: 2-Fluorobiphenyl	321-60-8	80.3	78.7	66.9	103	79.5	0.1	%			
EP076HK: 4-Terphenyl-d14	1718-51-0	83.6	78.5	67.1	99.1	80.4	0.1	%			
EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate											
EP065: Decachlorobiphenyl	2051-24-3	70.9	68.0	61.8	80.4	68.8	0.1	%			



Laboratory Duplicate (DUP) Report

Laboratory sample ID		Client sample ID	Method/Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
Laboratory Duplicate (DUP) Report									
Matrix: SOIL									
EA/ED: Physical and Aggregate Properties (QC Lot: 1476536)									
HK1818827-001	S64		EA055: Moisture Content (dried @ 103°C)	----	0.1	%	47.7	47.6	0.00
HK1818827-011	S68		EA055: Moisture Content (dried @ 103°C)	----	0.1	%	41.3	41.0	0.739
EA/ED: Physical and Aggregate Properties (QC Lot: 1476537)									
HK1818827-021	S66		EA055: Moisture Content (dried @ 103°C)	----	0.1	%	62.5	62.5	0.00
HK1818827-031	S44		EA055: Moisture Content (dried @ 103°C)	----	0.1	%	38.3	38.2	0.317
EG: Metals and Major Cations (QC Lot: 1471731)									
HK1818827-002	S54		EG020: Mercury	7439-97-6	0.05	mg/kg	0.07	0.08	0.00
			EG020: Silver	7440-22-4	0.1	mg/kg	0.2	0.2	0.00
			EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.00
			EG020: Arsenic	7440-38-2	1	mg/kg	9	9	0.00
			EG020: Chromium	7440-47-3	1	mg/kg	31	33	5.85
			EG020: Copper	7440-50-8	1	mg/kg	18	18	0.00
			EG020: Lead	7439-92-1	1	mg/kg	29	29	0.00
			EG020: Nickel	7440-02-0	1	mg/kg	18	19	6.04
			EG020: Zinc	7440-66-6	1	mg/kg	83	88	5.32
EG: Metals and Major Cations (QC Lot: 1471732)									
HK1818827-022	S55		EG020: Mercury	7439-97-6	0.05	mg/kg	0.08	0.06	18.8
			EG020: Silver	7440-22-4	0.1	mg/kg	0.1	0.1	0.00
			EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.00
			EG020: Arsenic	7440-38-2	1	mg/kg	9	9	0.00
			EG020: Chromium	7440-47-3	1	mg/kg	33	34	0.00
			EG020: Copper	7440-50-8	1	mg/kg	18	18	0.00
			EG020: Lead	7439-92-1	1	mg/kg	30	32	6.97
			EG020: Nickel	7440-02-0	1	mg/kg	19	20	0.00
			EG020: Zinc	7440-66-6	1	mg/kg	90	91	1.27
EP-065: PCB Single Congeners (QC Lot: 1469103)									
HK1818827-001	S64		Total Polychlorinated biphenyls	----	18	µg/kg	<18	<18	0.00
			PCB 8	34883-43-7	3	µg/kg	<3	<3	0.00
			PCB 18	37680-65-2	3	µg/kg	<3	<3	0.00
			PCB 28	7012-37-5	3	µg/kg	<3	<3	0.00



Matrix: SOIL		Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-065: PCB Single Congeners (QC Lot: 1469103) - Continued								
HK1818827-001	S64	PCB 44	41464-39-5	3	µg/kg	<3	<3	0.00
		PCB 52	35693-99-3	3	µg/kg	<3	<3	0.00
		PCB 66	32598-10-0	3	µg/kg	<3	<3	0.00
		PCB 77	32598-13-3	3	µg/kg	<3	<3	0.00
		PCB 101	37680-73-2	3	µg/kg	<3	<3	0.00
		PCB 105	32598-14-4	3	µg/kg	<3	<3	0.00
		PCB 118	31508-00-6	3	µg/kg	<3	<3	0.00
		PCB 126	57465-28-8	3	µg/kg	<3	<3	0.00
		PCB 128	38380-07-3	3	µg/kg	<3	<3	0.00
		PCB 138	35065-28-2	3	µg/kg	<3	<3	0.00
		PCB 153	35065-27-1	3	µg/kg	<3	<3	0.00
		PCB 169	32774-16-6	3	µg/kg	<3	<3	0.00
		PCB 170	35065-30-6	3	µg/kg	<3	<3	0.00
		PCB 180	35065-29-3	3	µg/kg	<3	<3	0.00
		PCB 187	52663-68-0	3	µg/kg	<3	<3	0.00
EP-065: PCB Single Congeners (QC Lot: 1469104)								
HK1818827-021	S56	Total Polychlorinated biphenyls	----	18	µg/kg	<18	<18	0.00
		PCB 8	34883-43-7	3	µg/kg	<3	<3	0.00
		PCB 18	37680-65-2	3	µg/kg	<3	<3	0.00
		PCB 28	7012-37-5	3	µg/kg	<3	<3	0.00
		PCB 44	41464-39-5	3	µg/kg	<3	<3	0.00
		PCB 52	35693-99-3	3	µg/kg	<3	<3	0.00
		PCB 66	32598-10-0	3	µg/kg	<3	<3	0.00
		PCB 77	32598-13-3	3	µg/kg	<3	<3	0.00
		PCB 101	37680-73-2	3	µg/kg	<3	<3	0.00
		PCB 105	32598-14-4	3	µg/kg	<3	<3	0.00
		PCB 118	31508-00-6	3	µg/kg	<3	<3	0.00
		PCB 126	57465-28-8	3	µg/kg	<3	<3	0.00
		PCB 128	38380-07-3	3	µg/kg	<3	<3	0.00
		PCB 138	35065-28-2	3	µg/kg	<3	<3	0.00
		PCB 153	35065-27-1	3	µg/kg	<3	<3	0.00



Matrix: SOIL		Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-065: PCB Single Congeners (QC Lot: 1469104) - Continued								
HK1818827-021	S56	PCB 169	32774-16-6	3	µg/kg	<3	<3	0.00
		PCB 170	35065-30-6	3	µg/kg	<3	<3	0.00
		PCB 180	35065-29-3	3	µg/kg	<3	<3	0.00
		PCB 187	52663-68-0	3	µg/kg	<3	<3	0.00
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 1469102)								
HK1818827-001	S64	High M.W. PAHs	----	1700	µg/kg	<1700	<1700	0.00
		Naphthalene	91-20-3	50	µg/kg	<50	<50	0.00
		Acenaphthylene	208-96-8	50	µg/kg	<50	<50	0.00
		Acenaphthene	83-32-9	50	µg/kg	<50	<50	0.00
		Fluorene	86-73-7	50	µg/kg	<50	<50	0.00
		Phenanthrene	85-01-8	50	µg/kg	<50	<50	0.00
		Anthracene	120-12-7	50	µg/kg	<50	<50	0.00
		Fluoranthene	206-44-0	50	µg/kg	<150	<150	0.00
		Pyrene	129-00-0	50	µg/kg	<150	<150	0.00
		Benz(a)anthracene	56-55-3	50	µg/kg	<150	<150	0.00
		Chrysene	218-01-9	50	µg/kg	<150	<150	0.00
		Benzo(b)fluoranthene	205-99-2	50	µg/kg	<150	<150	0.00
		Benzo(k)fluoranthene	207-08-9	50	µg/kg	<150	<150	0.00
		Benzo(a)pyrene	50-32-8	50	µg/kg	<150	<150	0.00
		Indeno(1,2,3-cd)pyrene	193-39-5	50	µg/kg	<150	<150	0.00
		Dibenz(a,h)anthracene	53-70-3	50	µg/kg	<150	<150	0.00
		Benzo(g,h,i)perylene	191-24-2	50	µg/kg	<150	<150	0.00
		Low M.W. PAHs	----	550	µg/kg	<550	<550	0.00
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 1469105)								
HK1818827-021	S56	High M.W. PAHs	----	1700	µg/kg	<1700	<1700	0.00
		Naphthalene	91-20-3	50	µg/kg	<50	<50	0.00
		Acenaphthylene	208-96-8	50	µg/kg	<50	<50	0.00
		Acenaphthene	83-32-9	50	µg/kg	<50	<50	0.00
		Fluorene	86-73-7	50	µg/kg	<50	<50	0.00
		Phenanthrene	85-01-8	50	µg/kg	<50	<50	0.00
		Anthracene	120-12-7	50	µg/kg	<50	<50	0.00



Matrix: SOIL		Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 1469105) - Continued								
HK1818827-021	S56	Fluoranthene	206-44-0	50	µg/kg	<150	<150	0.00
		Pyrene	129-00-0	50	µg/kg	<150	<150	0.00
		Benz(a)anthracene	56-55-3	50	µg/kg	<150	<150	0.00
		Chrysene	218-01-9	50	µg/kg	<150	<150	0.00
		Benzo(b)fluoranthene	205-99-2	50	µg/kg	<150	<150	0.00
		Benzo(k)fluoranthene	207-08-9	50	µg/kg	<150	<150	0.00
		Benzo(a)pyrene	50-32-8	50	µg/kg	<150	<150	0.00
		Indeno(1,2,3-cd)pyrene	193-39-5	50	µg/kg	<150	<150	0.00
		Dibenz(a,h)anthracene	53-70-3	50	µg/kg	<150	<150	0.00
		Benzo(g,h,i)perylene	191-24-2	50	µg/kg	<150	<150	0.00
		Low M.W. PAHs	----	550	µg/kg	<550	<550	0.00

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	LCS	DCS	Recovery Limits (%)	Value	Control Limit	RPD (%)
EG: Metals and Major Cations (QC Lot: 1471731)											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	89.9	----	85	115	----	----
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	99.2	----	85	115	----	----
EG020: Chromium	7440-47-3	1	mg/kg	<1	5 mg/kg	91.2	----	85	115	----	----
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	98.9	----	85	115	----	----
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	100	----	85	115	----	----
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	0.1 mg/kg	110	----	85	115	----	----
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	92.6	----	85	115	----	----
EG020: Silver	7440-22-4	0.1	mg/kg	<0.1	5 mg/kg	105	----	85	115	----	----
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	104	----	85	115	----	----
EG: Metals and Major Cations (QC Lot: 1471732)											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	90.0	----	85	115	----	----
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	101	----	85	115	----	----
EG020: Chromium	7440-47-3	1	mg/kg	<1	5 mg/kg	95.0	----	85	115	----	----



Method: Compound		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
		CAS Number	LOR	Unit	Result	Spike Concentration	LCS	DCS	Recovery Limits (%)	RPD (%)	Control Limit
Matrix: SOIL											
EG: Metals and Major Cations (QC Lot: 1471732) - Continued											
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	103	-----	85	115	-----	-----
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	108	-----	85	115	-----	-----
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	0.1 mg/kg	107	-----	85	115	-----	-----
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	96.5	-----	85	115	-----	-----
EG020: Silver	7440-22-4	0.1	mg/kg	<0.1	5 mg/kg	108	-----	85	115	-----	-----
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	95.9	-----	85	115	-----	-----
EP-065: PCB Single Congeners (QC Lot: 1469103)											
PCB 8	34883-43-7	3	µg/kg	<3	5 µg/kg	77.8	-----	61	106	-----	-----
PCB 18	37680-65-2	3	µg/kg	<3	5 µg/kg	79.2	-----	65	95	-----	-----
PCB 28	7012-37-5	3	µg/kg	<3	5 µg/kg	82.8	-----	61	113	-----	-----
PCB 44	41464-39-5	3	µg/kg	<3	5 µg/kg	81.9	-----	59	114	-----	-----
PCB 52	35693-99-3	3	µg/kg	<3	5 µg/kg	85.3	-----	61	111	-----	-----
PCB 66	32598-10-0	3	µg/kg	<3	5 µg/kg	99.0	-----	52	116	-----	-----
PCB 77	32598-13-3	3	µg/kg	<3	5 µg/kg	90.6	-----	60	120	-----	-----
PCB 101	37680-73-2	3	µg/kg	<3	5 µg/kg	88.0	-----	66	119	-----	-----
PCB 105	32598-14-4	3	µg/kg	<3	5 µg/kg	92.0	-----	67	116	-----	-----
PCB 118	31508-00-6	3	µg/kg	<3	5 µg/kg	95.8	-----	67	117	-----	-----
PCB 126	57465-28-8	3	µg/kg	<3	5 µg/kg	87.2	-----	63	113	-----	-----
PCB 128	38380-07-3	3	µg/kg	<3	5 µg/kg	90.6	-----	69	115	-----	-----
PCB 138	35065-28-2	3	µg/kg	<3	5 µg/kg	104	-----	70	111	-----	-----
PCB 153	35065-27-1	3	µg/kg	<3	5 µg/kg	93.3	-----	68	119	-----	-----
PCB 169	32774-16-6	3	µg/kg	<3	5 µg/kg	109	-----	70	109	-----	-----
PCB 170	35065-30-6	3	µg/kg	<3	5 µg/kg	90.6	-----	73	119	-----	-----
PCB 180	35065-29-3	3	µg/kg	<3	5 µg/kg	94.0	-----	72	110	-----	-----
PCB 187	52663-68-0	3	µg/kg	<3	5 µg/kg	89.0	-----	68	118	-----	-----
Total Polychlorinated biphenyls	-----	18	µg/kg	<18	-----	-----	-----	-----	-----	-----	-----
EP-065: PCB Single Congeners (QC Lot: 1469104)											
PCB 8	34883-43-7	3	µg/kg	<3	5 µg/kg	71.0	-----	61	106	-----	-----
PCB 18	37680-65-2	3	µg/kg	<3	5 µg/kg	74.0	-----	65	95	-----	-----
PCB 28	7012-37-5	3	µg/kg	<3	5 µg/kg	74.8	-----	61	113	-----	-----



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	LCS	Spike Recovery (%)	DCS	Recovery Limits(%)		RPD (%)	Control Limit
									Low	High		
EP-065: PCB Single Congeners (QC Lot: 1469104) - Continued												
PCB 44	41464-39-5	3	µg/kg	<3	5 µg/kg	75.9	-----	-----	59	114	-----	-----
PCB 52	35693-99-3	3	µg/kg	<3	5 µg/kg	79.1	-----	-----	61	111	-----	-----
PCB 66	32598-10-0	3	µg/kg	<3	5 µg/kg	67.8	-----	-----	52	116	-----	-----
PCB 77	32598-13-3	3	µg/kg	<3	5 µg/kg	77.2	-----	-----	60	120	-----	-----
PCB 101	37680-73-2	3	µg/kg	<3	5 µg/kg	73.1	-----	-----	66	119	-----	-----
PCB 105	32598-14-4	3	µg/kg	<3	5 µg/kg	74.1	-----	-----	67	116	-----	-----
PCB 118	31508-00-6	3	µg/kg	<3	5 µg/kg	73.7	-----	-----	67	117	-----	-----
PCB 126	57465-28-8	3	µg/kg	<3	5 µg/kg	80.6	-----	-----	63	113	-----	-----
PCB 128	38380-07-3	3	µg/kg	<3	5 µg/kg	73.5	-----	-----	69	115	-----	-----
PCB 138	35065-28-2	3	µg/kg	<3	5 µg/kg	101	-----	-----	70	111	-----	-----
PCB 153	35065-27-1	3	µg/kg	<3	5 µg/kg	73.4	-----	-----	68	119	-----	-----
PCB 169	32774-16-6	3	µg/kg	<3	5 µg/kg	93.2	-----	-----	70	109	-----	-----
PCB 170	35065-30-6	3	µg/kg	<3	5 µg/kg	85.3	-----	-----	73	119	-----	-----
PCB 180	35065-29-3	3	µg/kg	<3	5 µg/kg	87.1	-----	-----	72	110	-----	-----
PCB 187	52663-68-0	3	µg/kg	<3	5 µg/kg	79.4	-----	-----	68	118	-----	-----
Total Polychlorinated biphenyls	-----	18	µg/kg	<18	-----	-----	-----	-----	-----	-----	-----	-----
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 1469102)												
Naphthalene	91-20-3	50	µg/kg	<50	25 µg/kg	87.7	-----	-----	67	100	-----	-----
Acenaphthylene	208-96-8	50	µg/kg	<50	25 µg/kg	82.4	-----	-----	42	92	-----	-----
Acenaphthene	83-32-9	50	µg/kg	<50	25 µg/kg	86.8	-----	-----	53	101	-----	-----
Fluorene	86-73-7	50	µg/kg	<50	25 µg/kg	88.9	-----	-----	58	106	-----	-----
Phenanthrene	85-01-8	50	µg/kg	<50	25 µg/kg	90.0	-----	-----	66	98	-----	-----
Anthracene	120-12-7	50	µg/kg	<50	25 µg/kg	79.7	-----	-----	47	82	-----	-----
Fluoranthene	206-44-0	50	µg/kg	<50	25 µg/kg	94.4	-----	-----	58	107	-----	-----
Pyrene	129-00-0	50	µg/kg	<50	25 µg/kg	93.7	-----	-----	52	104	-----	-----
Benz(a)anthracene	56-55-3	50	µg/kg	<50	25 µg/kg	89.2	-----	-----	49	100	-----	-----
Chrysene	218-01-9	50	µg/kg	<50	25 µg/kg	93.6	-----	-----	59	115	-----	-----
Benzo(b)fluoranthene	205-99-2	50	µg/kg	<50	25 µg/kg	89.2	-----	-----	42	133	-----	-----
Benzo(k)fluoranthene	207-08-9	50	µg/kg	<50	25 µg/kg	94.4	-----	-----	52	109	-----	-----
Benzo(a)pyrene	50-32-8	50	µg/kg	<50	25 µg/kg	80.4	-----	-----	47	81	-----	-----



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 (%)		Value	RPD (%)	Control Limit
				MS	MSD	MS	MSD	Low	High			
Matrix: SOIL												
EG: Metals and Major Cations (QC Lot: 1471731)												
HK1818827-001	S64	EG020: Arsenic	7440-38-2	5 mg/kg	104	-----	-----	75	125	-----	-----	-----
		EG020: Cadmium	7440-43-9	5 mg/kg	104	-----	-----	75	125	-----	-----	-----
		EG020: Chromium	7440-47-3	5 mg/kg	97.5	-----	-----	75	125	-----	-----	-----
		EG020: Copper	7440-50-8	5 mg/kg	97.0	-----	-----	75	125	-----	-----	-----
		EG020: Lead	7439-92-1	5 mg/kg	84.9	-----	-----	75	125	-----	-----	-----
		EG020: Mercury	7439-97-6	0.1 mg/kg	77.5	-----	-----	75	125	-----	-----	-----
		EG020: Nickel	7440-02-0	5 mg/kg	93.1	-----	-----	75	125	-----	-----	-----
		EG020: Silver	7440-22-4	5 mg/kg	104	-----	-----	75	125	-----	-----	-----
		EG020: Zinc	7440-66-6	5 mg/kg	# Not Determined	-----	-----	75	125	-----	-----	-----
EG: Metals and Major Cations (QC Lot: 1471732)												
HK1818827-021	S56	EG020: Arsenic	7440-38-2	5 mg/kg	96.7	-----	-----	75	125	-----	-----	-----
		EG020: Cadmium	7440-43-9	5 mg/kg	99.4	-----	-----	75	125	-----	-----	-----
		EG020: Chromium	7440-47-3	5 mg/kg	84.1	-----	-----	75	125	-----	-----	-----
		EG020: Copper	7440-50-8	5 mg/kg	88.0	-----	-----	75	125	-----	-----	-----
		EG020: Lead	7439-92-1	5 mg/kg	81.5	-----	-----	75	125	-----	-----	-----
		EG020: Mercury	7439-97-6	0.1 mg/kg	79.1	-----	-----	75	125	-----	-----	-----
		EG020: Nickel	7440-02-0	5 mg/kg	85.7	-----	-----	75	125	-----	-----	-----
		EG020: Silver	7440-22-4	5 mg/kg	101	-----	-----	75	125	-----	-----	-----
		EG020: Zinc	7440-66-6	5 mg/kg	# Not Determined	-----	-----	75	125	-----	-----	-----
EP-065: PCB Single Congeners (QC Lot: 1469103)												
HK1818827-003	S47	PCB 8	34863-43-7	5 µg/kg	81.8	-----	-----	50	130	-----	-----	-----
		PCB 18	37680-65-2	5 µg/kg	82.6	-----	-----	50	130	-----	-----	-----
		PCB 28	7012-37-5	5 µg/kg	85.3	-----	-----	50	130	-----	-----	-----



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	MSD	Low	High	Value	
HK1818827-003	S47	PCB 44	41464-39-5	5 µg/kg	92.2	-----	-----	50	130	-----	-----
		PCB 52	35693-99-3	5 µg/kg	89.6	-----	-----	50	130	-----	-----
		PCB 66	32598-10-0	5 µg/kg	89.7	-----	-----	50	130	-----	-----
		PCB 77	32598-13-3	5 µg/kg	95.2	-----	-----	50	130	-----	-----
		PCB 101	37680-73-2	5 µg/kg	103	-----	-----	50	130	-----	-----
		PCB 105	32598-14-4	5 µg/kg	99.7	-----	-----	50	130	-----	-----
		PCB 118	31508-00-6	5 µg/kg	96.1	-----	-----	50	130	-----	-----
		PCB 126	57465-28-8	5 µg/kg	103	-----	-----	50	130	-----	-----
		PCB 128	38380-07-3	5 µg/kg	96.7	-----	-----	50	130	-----	-----
		PCB 138	35065-28-2	5 µg/kg	108	-----	-----	50	130	-----	-----
		PCB 153	35065-27-1	5 µg/kg	102	-----	-----	50	130	-----	-----
		PCB 169	32774-16-6	5 µg/kg	81.8	-----	-----	50	130	-----	-----
		PCB 170	35065-30-6	5 µg/kg	106	-----	-----	50	130	-----	-----
		PCB 180	35065-29-3	5 µg/kg	104	-----	-----	50	130	-----	-----
		PCB 187	52663-68-0	5 µg/kg	91.5	-----	-----	50	130	-----	-----

EP-065: PCB Single Congeners (QC Lot: 1469103) - Continued



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-065: PCB Single Congeners (QC Lot: 1469104) HK1818827-022 S55		PCB 8	34883-43-7	5 µg/kg	58.6	-----	50	130	-----	-----	
		PCB 18	37680-65-2	5 µg/kg	67.6	-----	50	130	-----	-----	
		PCB 28	7012-37-5	5 µg/kg	64.7	-----	50	130	-----	-----	
		PCB 44	41464-39-5	5 µg/kg	65.5	-----	50	130	-----	-----	
		PCB 52	35693-99-3	5 µg/kg	63.6	-----	50	130	-----	-----	
		PCB 66	32598-10-0	5 µg/kg	67.4	-----	50	130	-----	-----	
		PCB 77	32598-13-3	5 µg/kg	55.2	-----	50	130	-----	-----	
		PCB 101	37680-73-2	5 µg/kg	55.9	-----	50	130	-----	-----	
		PCB 105	32598-14-4	5 µg/kg	59.6	-----	50	130	-----	-----	
		PCB 118	31508-00-6	5 µg/kg	58.7	-----	50	130	-----	-----	
		PCB 126	57465-28-8	5 µg/kg	57.0	-----	50	130	-----	-----	
		PCB 128	38380-07-3	5 µg/kg	63.2	-----	50	130	-----	-----	
		PCB 138	35065-28-2	5 µg/kg	67.4	-----	50	130	-----	-----	
		PCB 153	35065-27-1	5 µg/kg	60.4	-----	50	130	-----	-----	
		PCB 169	32774-16-6	5 µg/kg	89.4	-----	50	130	-----	-----	
		PCB 170	35065-30-6	5 µg/kg	77.3	-----	50	130	-----	-----	



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-065: PCB Single Congeners (QC Lot: 1469104) - Continued											
HK1818827-022	S55	PCB 180	35065-29-3	5 µg/kg	62.6	-----	50	130	-----	-----	
		PCB 187	52663-68-0	5 µg/kg	62.2	-----	50	130	-----	-----	
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 1469102)											
HK1818827-002	S54	Naphthalene	91-20-3	250 µg/kg	84.4	-----	50	130	-----	-----	
		Acenaphthylene	208-96-8	250 µg/kg	86.9	-----	50	130	-----	-----	
		Acenaphthene	83-32-9	250 µg/kg	83.5	-----	50	130	-----	-----	
		Fluorene	86-73-7	250 µg/kg	85.0	-----	50	130	-----	-----	
		Phenanthrene	85-01-8	250 µg/kg	87.6	-----	50	130	-----	-----	
		Anthracene	120-12-7	250 µg/kg	80.7	-----	50	130	-----	-----	
		Fluoranthene	206-44-0	250 µg/kg	91.6	-----	50	130	-----	-----	
		Pyrene	129-00-0	250 µg/kg	90.4	-----	50	130	-----	-----	
		Benz(a)anthracene	56-55-3	250 µg/kg	88.1	-----	50	130	-----	-----	
		Chrysene	218-01-9	250 µg/kg	86.8	-----	50	130	-----	-----	
		Benzo(b)fluoranthene	205-99-2	250 µg/kg	88.2	-----	50	130	-----	-----	
		Benzo(k)fluoranthene	207-08-9	250 µg/kg	89.3	-----	50	130	-----	-----	
		Benzo(a)pyrene	50-32-8	250 µg/kg	85.4	-----	50	130	-----	-----	
		Indeno(1,2,3-cd)pyrene	193-39-5	250 µg/kg	64.2	-----	50	130	-----	-----	
		Dibenz(a,h)anthracene	53-70-3	250 µg/kg	64.5	-----	50	130	-----	-----	
		Benzo(g,h,i)perylene	191-24-2	250 µg/kg	63.0	-----	50	130	-----	-----	
EP-078HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 1469105)											
HK1818827-023	S49	Naphthalene	91-20-3	250 µg/kg	69.7	-----	50	130	-----	-----	
		Acenaphthylene	208-96-8	250 µg/kg	73.0	-----	50	130	-----	-----	
		Acenaphthene	83-32-9	250 µg/kg	69.2	-----	50	130	-----	-----	
		Fluorene	86-73-7	250 µg/kg	70.0	-----	50	130	-----	-----	
		Phenanthrene	85-01-8	250 µg/kg	69.6	-----	50	130	-----	-----	
		Anthracene	120-12-7	250 µg/kg	70.7	-----	50	130	-----	-----	
		Fluoranthene	206-44-0	250 µg/kg	73.6	-----	50	130	-----	-----	
		Pyrene	129-00-0	250 µg/kg	72.9	-----	50	130	-----	-----	



Laboratory sample ID		Client sample ID	Method: Compound	CAS Number	Spike Recovery (%)			Recovery Limits (%)			RPD (%)
					MS	MSD	Value	Low	High	Control Limit	
Matrix: SOIL											
Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report											
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 1469105) - Continued											
HK1818827-023	S49		Benz(a)anthracene	56-55-3	250 µg/kg	69.0	-----	50	130	-----	-----
			Chrysene	218-01-9	250 µg/kg	76.1	-----	50	130	-----	-----
			Benzo(b)fluoranthene	205-99-2	250 µg/kg	64.6	-----	50	130	-----	-----
			Benzo(k)fluoranthene	207-08-9	250 µg/kg	78.4	-----	50	130	-----	-----
			Benzo(a)pyrene	50-32-8	250 µg/kg	69.0	-----	50	130	-----	-----
			Indeno(1,2,3-cd)pyrene	193-39-5	250 µg/kg	60.3	-----	50	130	-----	-----
			Dibenz(a,h)anthracene	53-70-3	250 µg/kg	53.7	-----	50	130	-----	-----
			Benzo(g,h,i)perylene	191-24-2	250 µg/kg	53.7	-----	50	130	-----	-----

Surrogate Control Limits

Sub-Matrix: SEDIMENT		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-065S: PCB Congeners and Organochlorine Pesticides Surrogate			
Decachlorobiphenyl	2051-24-3	50	130



ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

SUB-CONTRACTING REPORT

CONTACT	: DULCIE CHAN	WORK ORDER	: HK1818845
CLIENT	: MOTT MACDONALD HONG KONG LIMITED		
ADDRESS	: 20/F., AIA KOWLOON TOWER, LANDMARK EAST, 100 HOW MING STREET, KWUN TONG, KOWLOON HONG KONG	SUB-BATCH	: 1
		DATE RECEIVED	: 28-FEB-2018
		DATE OF ISSUE	: 21-MAR-2018
PROJECT	: IMPROVEMENT DREDGING FOR LAMMA POWER STATION NAVIGATION CHANNEL (392653)	NO. OF SAMPLES	: 40
		CLIENT ORDER	: ----

General Comments

- Sample(s) were received in chilled condition.
- Sediment sample(s) analysed on an as received basis. Result(s) reported on dry weight basis.
- Particle size distribution was subcontracted to and analysed by Gammon Construction Limited.

Signatories

This document has been signed by those names that appear on this report and are the authorised signatories

Signatories

Position

Richard Fung  General Manager

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.

ALS Technichem (HK) Pty Ltd
Part of the ALS Laboratory Group

11/F. Chung Shun Knitting Centre 1 - 3 Wing Yip Street Kwai Chung N.T. Hong Kong
Tel. +852 2610 1044 Fax. +852 2610 2021 www.alsglobal.com

WORK ORDER : HK1818845
SUB-BATCH : 1
CLIENT : MOTT MACDONALD HONG KONG LIMITED
PROJECT : IMPROVEMENT DREDGING FOR LAMMA POWER STATION NAVIGATION CHANNEL
(392653)



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK1818845-001	S64	SEDIMENT	28-Feb-2018 10:00	J2999-272.25
HK1818845-002	S54	SEDIMENT	28-Feb-2018 10:21	J2999-272.25
HK1818845-003	S47	SEDIMENT	28-Feb-2018 10:29	J2999-272.25
HK1818845-004	S32	SEDIMENT	28-Feb-2018 10:37	J2999-272.25
HK1818845-005	S23	SEDIMENT	28-Feb-2018 10:42	J2999-272.25
HK1818845-006	S18	SEDIMENT	28-Feb-2018 10:49	J2999-272.25
HK1818845-007	S10	SEDIMENT	28-Feb-2018 10:58	J2999-272.25
HK1818845-008	S9	SEDIMENT	28-Feb-2018 11:05	J2999-272.25
HK1818845-009	S66	SEDIMENT	28-Feb-2018 13:46	J2999-272.25
HK1818845-010	S67	SEDIMENT	28-Feb-2018 13:50	J2999-272.25
HK1818845-011	S68	SEDIMENT	28-Feb-2018 13:56	J2999-272.25
HK1818845-012	S69	SEDIMENT	28-Feb-2018 14:03	J2999-272.25
HK1818845-013	S65	SEDIMENT	28-Feb-2018 14:09	J2999-272.25
HK1818845-014	S63	SEDIMENT	28-Feb-2018 14:13	J2999-272.25
HK1818845-015	S62	SEDIMENT	28-Feb-2018 14:18	J2999-272.25
HK1818845-016	S58	SEDIMENT	28-Feb-2018 14:23	J2999-272.25
HK1818845-017	S59	SEDIMENT	28-Feb-2018 14:26	J2999-272.25
HK1818845-018	S60	SEDIMENT	28-Feb-2018 14:30	J2999-272.25
HK1818845-019	S61	SEDIMENT	28-Feb-2018 14:34	J2999-272.25
HK1818845-020	S57	SEDIMENT	28-Feb-2018 14:39	J2999-272.25
HK1818845-021	S56	SEDIMENT	28-Feb-2018 14:43	J2999-272.25
HK1818845-022	S55	SEDIMENT	28-Feb-2018 14:48	J2999-272.25
HK1818845-023	S49	SEDIMENT	28-Feb-2018 14:52	J2999-272.25
HK1818845-024	S50	SEDIMENT	28-Feb-2018 14:57	J2999-272.25
HK1818845-025	S51	SEDIMENT	28-Feb-2018 15:04	J2999-272.25
HK1818845-026	S52	SEDIMENT	28-Feb-2018 15:08	J2999-272.25
HK1818845-027	S53	SEDIMENT	28-Feb-2018 15:14	J2999-272.25
HK1818845-028	S48	SEDIMENT	28-Feb-2018 15:18	J2999-272.25
HK1818845-029	S46	SEDIMENT	28-Feb-2018 15:24	J2999-272.25
HK1818845-030	S45	SEDIMENT	28-Feb-2018 15:30	J2999-272.25
HK1818845-031	S44	SEDIMENT	28-Feb-2018 15:37	J2999-272.25
HK1818845-032	S39	SEDIMENT	28-Feb-2018 15:43	J2999-272.25
HK1818845-033	S40	SEDIMENT	28-Feb-2018 15:47	J2999-272.25
HK1818845-034	S41	SEDIMENT	28-Feb-2018 15:53	J2999-272.25
HK1818845-035	S42	SEDIMENT	28-Feb-2018 15:57	J2999-272.25
HK1818845-036	S43	SEDIMENT	28-Feb-2018 16:02	J2999-272.25
HK1818845-037	S38	SEDIMENT	28-Feb-2018 16:07	J2999-272.25
HK1818845-038	S37	SEDIMENT	28-Feb-2018 16:12	J2999-272.25
HK1818845-039	S36	SEDIMENT	28-Feb-2018 16:17	J2999-272.25
HK1818845-040	S35	SEDIMENT	28-Feb-2018 16:21	J2999-272.25

**TEST CERTIFICATE
SUMMARY OF SOIL CLASSIFICATION TEST RESULT
GEOSPEC 3 : 2001**



Report No. : J2999-272.25

Customer : ALS Technichem (HK) Pty Ltd

Job No. : J2999

Works Order No. : 272

Project : -

Contract No.:

Date : 05/03/2018

Sample ID	Sample		Δ Moisture Content (%)	Test 6.1 Liquid Limit (%)	Test 6.1 Plastic Limit (%)	Test 6.1 Plasticity Index (%)	Test 6.2 Liquidity Index	Passing 425µm Test Sieve (%)	Preparation Method	Particle Size Distribution				Description	Sample Origin	
	No.	Type								Depth (m)	# Test Method	Gravel (%)	Sand (%)			Silt (%)
HK1818845-001	S64	D								1.5,7	3	22	48	27	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1818845-002	S54	D								1.5,7	2	40	34	24	Dark grey, sandy SILT/CLAY with shell fragments	- †
HK1818845-003	S47	D								1.5,7	0	5	59	36	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1818845-004	S32	D								1.5,7	4	33	44	19	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1818845-005	S23	D								1.5,7	7	30	40	23	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1818845-006	S18	D								1.5,7	0	4	59	37	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1818845-007	S10	D								1.5,7	3	22	51	24	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1818845-008	S9	D								1.5,7	0	1	63	36	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1818845-009	S66	D								1.5,7	0	35	42	23	Dark grey, sandy SILT/CLAY with shell fragments	- †
HK1818845-010	S67	D								1.5,7	0	41	34	25	Dark grey, sandy SILT/CLAY with shell fragments	- †

Legend
 Δ = Test Method in accordance with GEOSPEC 3 : 2001 Test 5.1 Moisture Content at 45 °C ± 5°C (A). Test 5.2 Moisture Content at 105 °C ± 5°C (B). Test 5.3 Comparative Moisture Content 45/105 °C ± 5°C (C)
 # = Test Method in accordance with GEOSPEC3 : 2001 Test 8.1 (1), 8.2 (2), 8.3 (3), 8.4 (4), 8.5 (5), 8.6 (6), 8.7 (7).

Symbols : U - Undisturbed Sample; P - Piston Sample; N.P. - Non Plastic; A.D. - Air Dried; Sampling History - Refer the Individual Test Report.
 L.B. - Large Disturbed Sample; M - Mazzer Sample; A.R. - As Received; O.D. - Oven Dried; Estimated Uncertainty † - Refer the Individual Test Report.
 BLK - Block Sample; D - Small Disturbed Sample; H.P. - Hand Picked; W.S. - Wet Sieved;
 SPTL - SPT Split-Barrel Sample; PT - Portable triple tube Sample; PT - Moisture Content for A.I.L. Test.

Notes: IS - Insufficient Sample; TF - To Follow on supplementary Report.

Checked by : T K Lam Approved By : Lau Wan Cheong Deputy Laboratory Manager Date : 20/03/2018

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Technology Centre

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Form GESS001 / Jun.30.13 / Issue 1 / Rev 3

TEST CERTIFICATE
SUMMARY OF SOIL CLASSIFICATION TEST RESULT
GEOSPEC 3 : 2001



Report No : J2999-272.25

Customer : ALS Technichem (HK) Pty Ltd

Job No. : J2999

Works Order No. : 272

Project : -

Contract No.:

Date : 05/03/2018

Sample ID	Sample		Δ Moisture Content (%)	Test 6.1 Liquid Limit (%)	Test 6.1 Plastic Limit (%)	Test 6.1 Plasticity Index (%)	Test 6.2 Liquidity Index	Passing 425µm Sieve (%)	Preparation Method	Particle Size Distribution				Description	Sample Origin	
	No.	Type								Depth (m)	# Test Method	Gravel (%)	Sand (%)			Silt (%)
HK1818845-011	S68	D								1,5,7	8	36	33	23	Dark grey, sandy SILT/CLAY with shell fragments	- †
HK1818845-012	S69	D								1,5,7	5	63	15	17	Dark grey, gravelly, silty, very clayey SAND with shell fragments	- †
HK1818845-013	S65	D								1,5,7	1	19	51	29	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1818845-014	S63	D								1,5,7	0	42	36	22	Dark grey, sandy SILT/CLAY with shell fragments	- †
HK1818845-015	S62	D								1,5,7	1	36	40	23	Dark grey, sandy SILT/CLAY with shell fragments	- †
HK1818845-016	S58	D								1,5,7	0	35	40	25	Dark grey, sandy SILT/CLAY with shell fragments	- †
HK1818845-017	S59	D								1,5,7	0	37	41	22	Dark grey, sandy SILT/CLAY with shell fragments	- †
HK1818845-018	S60	D								1,5,7	0	5	59	36	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1818845-019	S61	D								1,5,7	0	4	62	34	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1818845-020	S57	D								1,5,7	0	4	58	38	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †

Legend : Δ = Test Method in accordance with GEOSPEC 3 : 2001 Test 5.1 Moisture Content at 45 °C ± 5°C (A). Test 5.2 Moisture Content at 105 °C ± 5°C (B). Test 5.3 Comparative Moisture Content 45/105 °C ± 5°C (C)
 # = Test Method in accordance with GEOSPEC 3 : 2001 Test 8.1 (1), 8.2 (2), 8.3 (3), 8.4 (4), 8.5 (5), 8.6 (6), 8.7 (7).

Symbols : U - Undisturbed Sample; P - Piston Sample; N.P. - Non Plastic; A.D. - Air Dried; LB - Large Disturbed Sample; M - Mazier Sample; A.R. - As Received; O.D. - Oven Dried; BLK - Block Sample; D - Small Disturbed Sample; H.P. - Hand Picked; W.S. - Wet Sieved; SPTL - SPT Split-Barrel Sample; PT - Potable triple tube Sample; PT - Moisture Content for A.I. Test.

Notes : IS - Insufficient Sample; Tf - To Follow on supplementary Report.
 Checked by : TK Lam
 Approved By : Lau Wai Cheong
 Deputy Laboratory Manager

Date : 20/03/2018

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TEST CERTIFICATE
SUMMARY OF SOIL CLASSIFICATION TEST RESULT
GEOSPEC 3 : 2001



Report No : J2999-272.25

Works Order No. : 272

Customer : ALS Technichem (HK) Pty Ltd

Job No. : J2999

Project : -

Contract No.:

Date : 05/03/2018

Sample ID No.	Sample		Δ Moisture Content (%)	Test 6.1 Liquid Limit (%)	Test 6.1 Plastic Limit (%)	Test 6.1 Plasticity Index (%)	Test 6.2 Liquidity Index	Passing 425µm Sieve (%)	Preparation Method	Particle Size Distribution				Description	Sample Origin	
	No.	Type								Depth (m)	# Test Method	Gravel (%)	Sand (%)			Silt (%)
HK1818845-021	S56	D								1.5.7	0	5	61	34	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1818845-022	S55	D								1.5.7	0	38	42	20	Dark grey, sandy SILT/CLAY with shell fragments	- †
HK1818845-023	S49	D								1.5.7	3	46	29	22	Dark grey, sandy SILT/CLAY with shell fragments	- †
HK1818845-024	S50	D								1.5.7	0	50	30	20	Dark grey, sandy SILT/CLAY with shell fragments	- †
HK1818845-025	S51	D								1.5.7	0	3	62	35	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1818845-026	S52	D								1.5.7	0	7	60	33	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1818845-027	S53	D								1.5.7	0	3	63	34	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1818845-028	S48	D								1.5.7	0	0	63	37	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1818845-029	S46	D								1.5.7	0	2	62	36	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1818845-030	S45	D								1.5.7	10	62	14	14	Dark grey, gravelly, silty, clayey SAND with shell fragments	- †

Legend: A = Test Method in accordance with GEOSPEC 3 : 2001 Test 5.1 Moisture Content at 45 °C ± 5°C (A). Test 5.2 Moisture Content at 105 °C ± 5°C (B). Test 5.3 Comparative Moisture Content 45/105 °C ± 5°C (C)
 # = Test Method in accordance with GEOSPEC 3 : 2001 Test 8 (1), 8.2 (2), 8.3 (3), 8.4 (4), 8.5 (5), 8.6 (6), 8.7 (7).

Symbols: U - Undisturbed Sample; L.B - Large Disturbed Sample; B.L.K - Block Sample; S.P.T.L - SPT Split-Barrel Sample; P - Piston Sample; M - Mazier Sample; D - Small Disturbed Sample; P.T - Portable triple tube Sample; A.D - Air Dried; O.D - Oven Dried; W.S - Wet Sieved; N.P - Non Plastic; A.R - As Received; H.P - Hand Picked; PT - Moisture Content for A.I. Test; S.M - Moisture Content for A.I. Test

Notes: IS - Insufficient Sample; TF - To Follow on supplementary Report
 Checked by: T K Lam
 Approved By: Lau Wei Cheong, Deputy Laboratory Manager
 Date: 20/03/2018

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**TEST CERTIFICATE
SUMMARY OF SOIL CLASSIFICATION TEST RESULT
GEOSPEC 3 : 2001**



Report No : J2999-272.25

Customer : ALS Technichem (HK) Pty Ltd

Job No. : J2999

Works Order No. : 272

Project : -

Contract No.:

Date : 05/03/2018

Sample ID No.	Sample		Δ Moisture Content (%)	Test 6.1 Liquid Limit (%)	Test 6.1 Plastic Limit (%)	Test 6.1 Plasticity Index (%)	Test 6.2 Liquidity Index	Passing 425µm Sieve (%)	Preparation Method	Particle Size Distribution			Sample Origin			
	No.	Type								Depth (m)	# Test Method	Gravel (%)		Sand (%)	Silt Clay (%)	
HK1818845-031	S44	D								1.5.7	3	34	38	25	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1818845-032	S39	D								1.5.7	6	49	26	19	Dark grey, sandy SILT/CLAY with shell fragments	- †
HK1818845-033	S40	D								1.5.7	1	22	45	32	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1818845-034	S41	D								1.5.7	0	3	63	34	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1818845-035	S42	D								1.5.7	0	5	62	33	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1818845-036	S43	D								1.5.7	0	2	65	33	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1818845-037	S38	D								1.5.7	0	1	63	36	Dark grey, slightly sandy SILT/CLAY	- †
HK1818845-038	S37	D								1.5.7	0	4	62	34	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1818845-039	S36	D								1.5.7	2	23	46	29	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1818845-040	S35	D								1.5.7	4	57	20	19	Dark grey, sandy SILT/CLAY with shell fragments	- †

Legend: Δ = Test Method in accordance with GEOSPEC 3 : 2001 Test 5.1 Moisture Content at 45 °C ± 5°C (A), Test 5.2 Moisture Content at 105 °C ± 5°C (B), Test 5.3 Comparative Moisture Content 45/105 °C ± 5°C (C)
= Test Method in accordance with GEOSPEC 3 : 2001 Test 8.1 (1), 8.2 (2), 8.3 (3), 8.4 (4), 8.5 (5), 8.6 (6), 8.7 (7)

Symbols: U - Undisturbed Sample; P - Piston Sample; N.P. - Non Plastic; A.D. - Air Dried; LB - Large Disturbed Sample; M - Mazier Sample; A.R. - As Received; O.D. - Oven Dried; BLK - Block Sample; D - Small Disturbed Sample; H.P. - Hand Picked; W.S. - Wet Sieved; SPTL - SPT Split-Barrel Sample; PT - Portable triple tube Sample; PT* - Moisture Content for A.L. Test.

Notes: IS - Insufficient Sample; TF - To Follow on supplementary Report.
Checked by: T K Lam
Approved By: Lau Wah Cheong Deputy Laboratory Manager
Date: 20/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project :

Report No. : J2999-272.25

Date Received : 05/03/2018
 Tested Date : 14/03/2018

Works Order No. : 272
 Sample ID No. : HK1818845-001
 Sample No. : S64
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin :

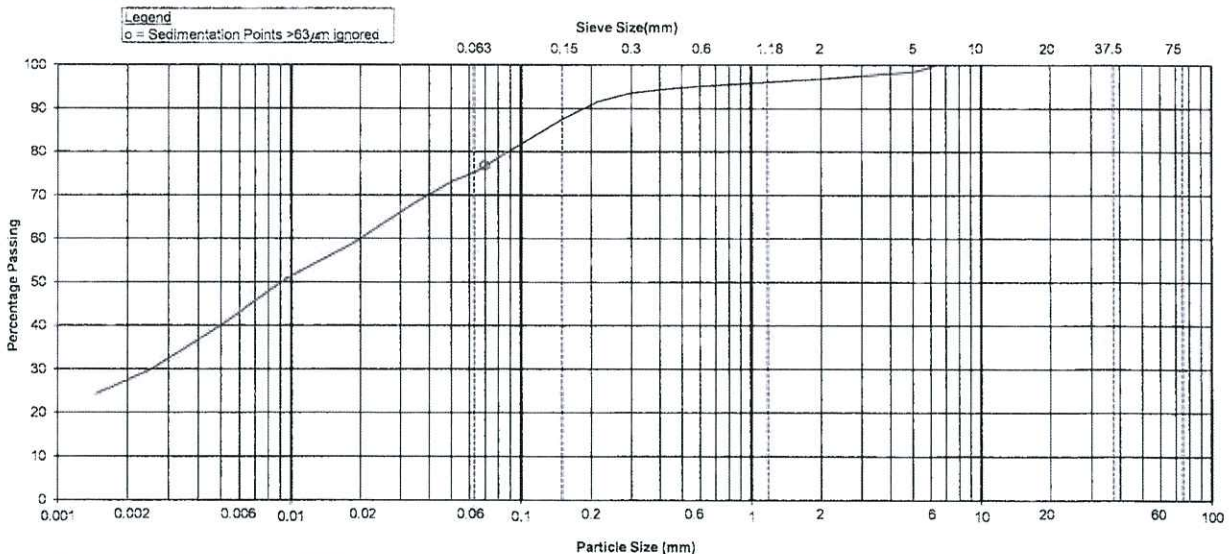
Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate † Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0696	-	77	-
14.0 mm	100	-	-	0.0497	-	73	-
10.0 mm	100	-	-	0.0355	-	69	-
6.30 mm	100	-	-	0.0254	-	64	-
5.00 mm	98	-	-	0.0182	-	59	-
3.35 mm	98	-	-	0.0096	-	51	-
2.00 mm	97	-	-	0.0049	-	40	-
1.18 mm	96	-	-	0.0025	-	30	-
600 µm	95	-	-	0.0015	-	24	-
425 µm	94	-	-				
300 µm	94	-	-				
212 µm	92	-	-				
150 µm	88	-	-				
63 µm	75	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
 Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
 Sampling History : As received
 The presence of any visible organic matter in the soil : None

SUMMARY :
 Gravel (%) : 3
 Sand (%) : 22
 Silt (%) : 48
 Clay (%) : 27



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COB-BLES
	SILT			SAND			GRAVEL			

Technician : K Y Sun

Checked By : T K Lam

Approved By : Lau Wai Cheong

Date : 14/03/2018

Date : 20/03/2018

Date : 20/03/2018

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Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.25

Date Received : 05/03/2018
 Tested Date : 12/03/2018

Works Order No. : 272
 Sample ID No. : HK1818845-002
 Sample No. : S54
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : †

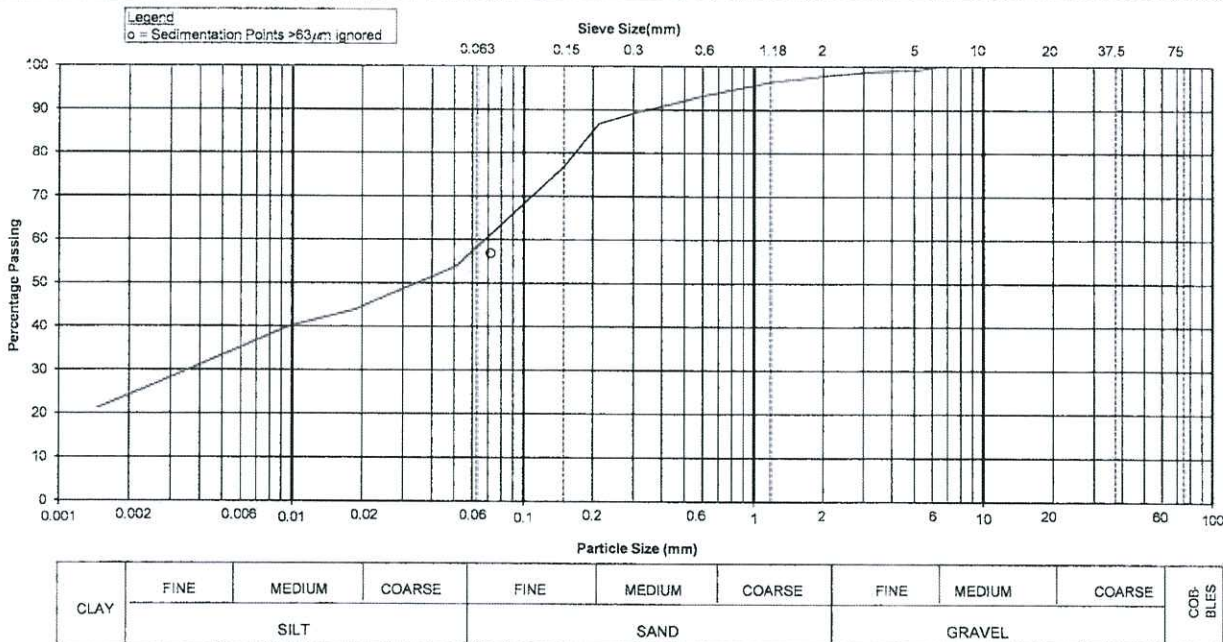
Description : Dark grey, sandy SILT/CLAY with shell fragments

Sieve Method : Method A † Upon request * Delete as appropriate ‡ Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	Expanded Uncertainty of the Percent Passing (%)	Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0716	-	57	-
14.0 mm	100	-	-	0.0510	-	54	-
10.0 mm	100	-	-	0.0364	-	51	-
6.30 mm	100	-	-	0.0260	-	47	-
5.00 mm	99	-	-	0.0185	-	44	-
3.35 mm	99	-	-	0.0097	-	40	-
2.00 mm	98	-	-	0.0049	-	33	-
1.18 mm	96	-	-	0.0025	-	27	-
600 µm	93	-	-	0.0015	-	21	-
425 µm	91	-	-				
300 µm	89	-	-				
212 µm	87	-	-				
150 µm	77	-	-				
63 µm	58	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
 Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
 Sampling History : As received
 The presence of any visible organic matter in the soil : None

SUMMARY :
 Gravel (%) : 2
 Sand (%) : 40
 Silt (%) : 34
 Clay (%) : 24



Form: GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun Checked By : TK Lam Approved By : Lau Wai Cheong
 Date : 12/03/2018 Date : 17/03/2018 Date : 17/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.25

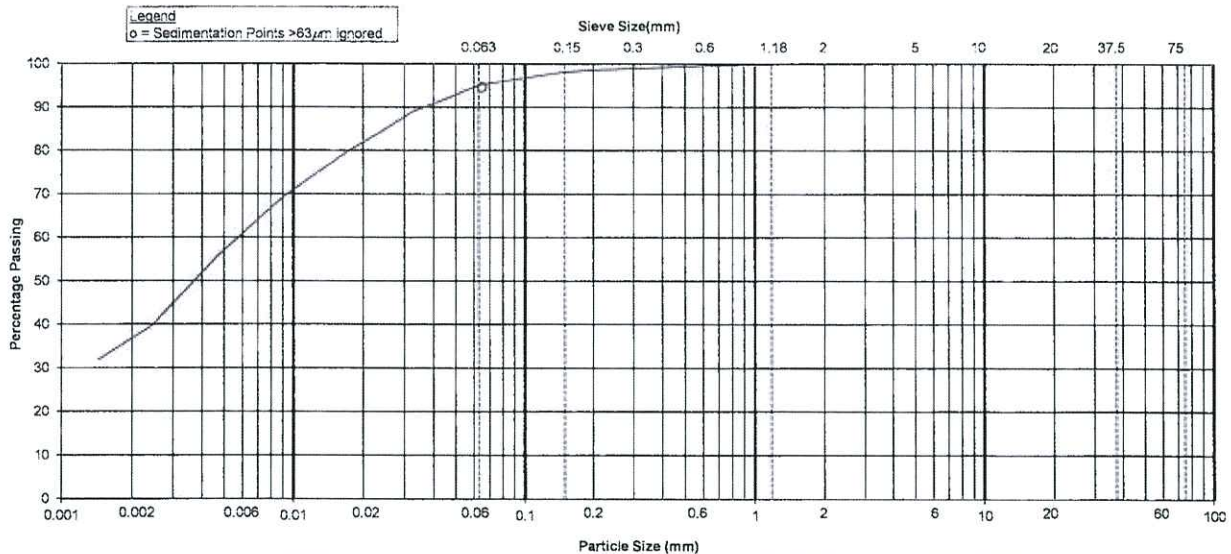
Date Received : 05/03/2018
 Tested Date : 14/03/2018

Works Order No. : 272
 Sample ID No. : HK1818845-003
 Sample No. : S47
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : -†

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate † Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed) : 2.65 #	Dispersant Details : Sodium hexametaphosphate, Sodium carbonate	Sampling History : As received	The presence of any visible organic matter in the soil : None
100.0 mm	100	-	-	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
75.0 mm	100	-	-	0.0646	-	95	-
63.0 mm	100	-	-	0.0461	-	92	-
50.0 mm	100	-	-	0.0329	-	89	-
37.5 mm	100	-	-	0.0236	-	84	-
28.0 mm	100	-	-	0.0169	-	80	-
20.0 mm	100	-	-	0.0090	-	69	-
14.0 mm	100	-	-	0.0047	-	56	-
10.0 mm	100	-	-	0.0024	-	40	-
6.30 mm	100	-	-	0.0014	-	32	-
5.00 mm	100	-	-	SUMMARY :			
3.35 mm	100	-	-	Gravel (%)	:	0	
2.00 mm	100	-	-	Sand (%)	:	5	
1.18 mm	100	-	-	Silt (%)	:	59	
600 µm	100	-	-	Clay (%)	:	36	
425 µm	99	-	-				
300 µm	99	-	-				
212 µm	99	-	-				
150 µm	98	-	-				
63 µm	95	-	-				
0 µm	0	-	-				



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COBBLES
	SILT			SAND			GRAVEL			

Technician : K Y Sun

Checked By : T K Lam

Approved By : Lau Wai Cheong

Date : 14/03/2018

Date : 20/03/2018

Date : 20/03/2018

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Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.25

Date Received : 05/03/2018
 Tested Date : 12/03/2018

Works Order No. : 272
 Sample ID No. : HK1818845-004
 Sample No. : S32
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : †

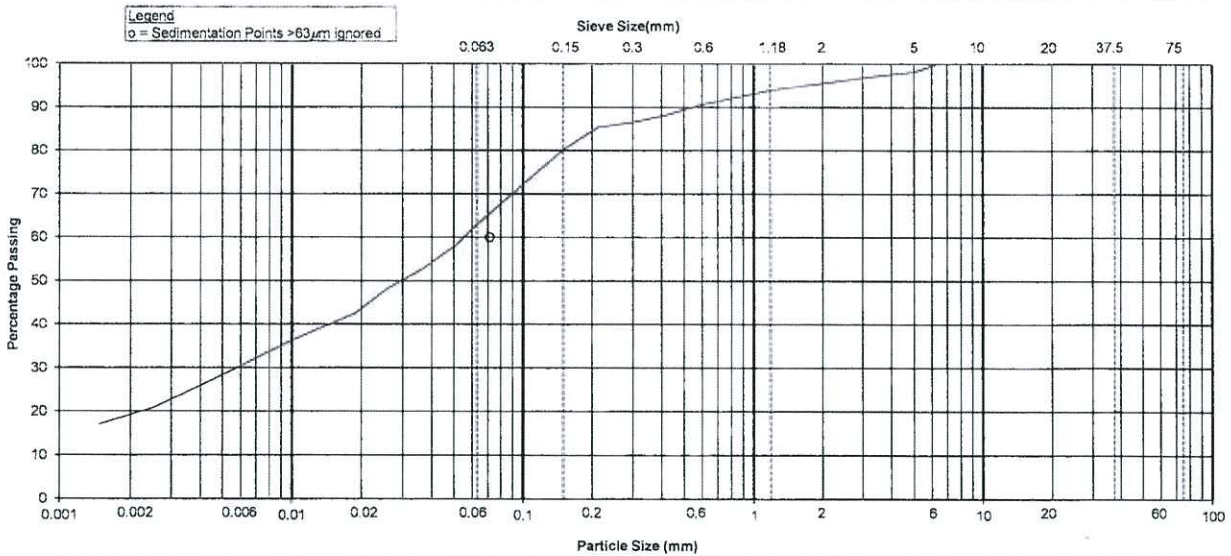
Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate † Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	Expanded Uncertainty of the Percent Passing (%)	Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0712	-	60	-
14.0 mm	100	-	-	0.0506	-	58	-
10.0 mm	100	-	-	0.0363	-	53	-
6.30 mm	100	-	-	0.0260	-	48	-
5.00 mm	98	-	-	0.0186	-	42	-
3.35 mm	97	-	-	0.0098	-	36	-
2.00 mm	96	-	-	0.0050	-	28	-
1.18 mm	94	-	-	0.0025	-	21	-
600 µm	91	-	-	0.0015	-	17	-
425 µm	88	-	-				
300 µm	87	-	-				
212 µm	85	-	-				
150 µm	80	-	-				
63 µm	63	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
 Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
 Sampling History : As received
 The presence of any visible organic matter in the soil : None

SUMMARY :
 Gravel (%) : 4
 Sand (%) : 33
 Silt (%) : 44
 Clay (%) : 19



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COBBLES
	SILT			SAND			GRAVEL			

Technician : K Y Sun

Checked By : T K Lam

Approved By : Lau Wai Cheong

Date : 12/03/2018

Date : 17/03/2018

Date : 17/03/2018

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**TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)**



Job No. : J2999
Customer : ALS Technichem (HK) Pty Ltd
Project : -

Contract No. :

Report No. : J2999-272.25

Date Received : 05/03/2018
Tested Date : 12/03/2018

Works Order No. : 272
Sample ID No. : HK1818845-005
Sample No. : S23
Sample Depth (m) :
Specimen Depth (m) :
Sample Type : Small Disturbed
Sample Origin : -

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A

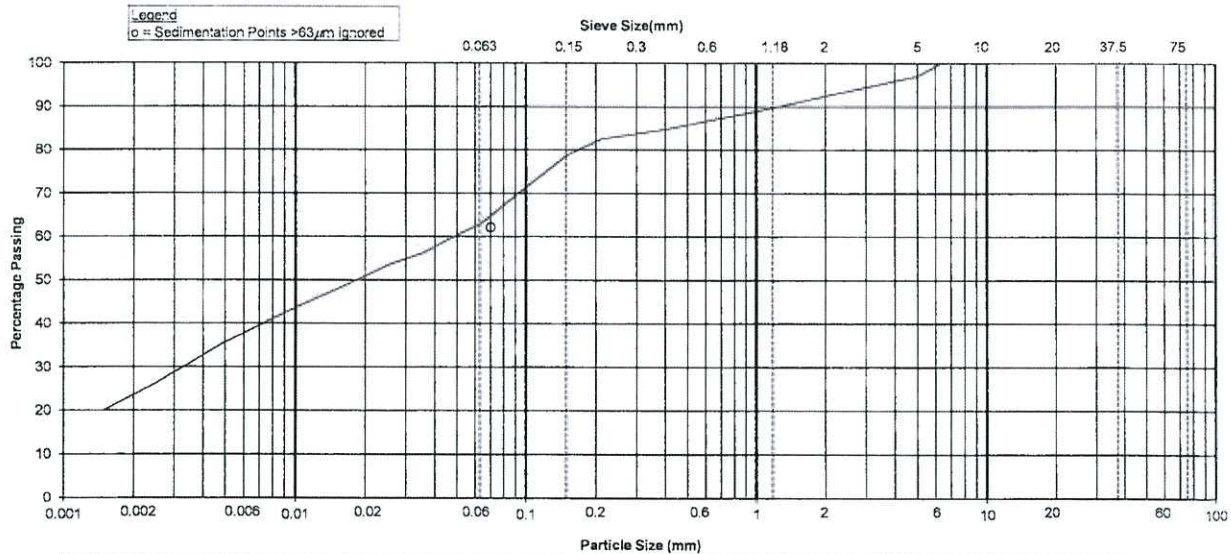
^ Upon request * Delete as appropriate

† Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0698	-	62	-
14.0 mm	100	-	-	0.0496	-	60	-
10.0 mm	100	-	-	0.0355	-	56	-
6.30 mm	100	-	-	0.0253	-	54	-
5.00 mm	97	-	-	0.0181	-	50	-
3.35 mm	95	-	-	0.0095	-	43	-
2.00 mm	93	-	-	0.0049	-	35	-
1.18 mm	90	-	-	0.0025	-	26	-
600 µm	87	-	-	0.0015	-	20	-
425 µm	85	-	-				
300 µm	84	-	-				
212 µm	83	-	-				
150 µm	79	-	-				
63 µm	63	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
Sampling History : As received
The presence of any visible organic matter in the soil : None

SUMMARY :			
Gravel (%) :	7		
Sand (%) :	30		
Silt (%) :	40		
Clay (%) :	23		



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COB- BLES
	SILT			SAND			GRAVEL			

Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun

Checked By : T K Lam

Approved By : Lau Wai Cheong

Date : 12/03/2018

Date : 17/03/2018

Date : 17/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.25

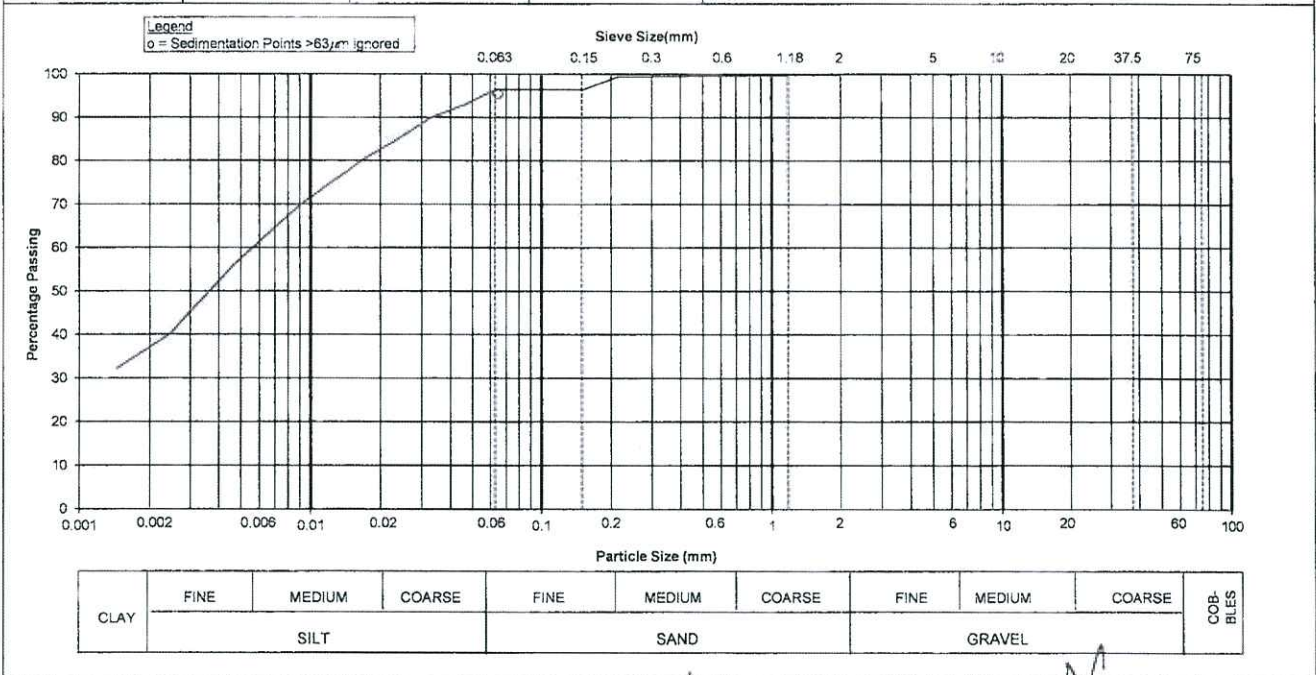
Date Received : 05/03/2018
 Tested Date : 13/03/2018

Works Order No. : 272
 Sample ID No. : HK1818845-006
 Sample No. : S18
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : -

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate † Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed) :			
100.0 mm	100	-	-	2.65 #			
75.0 mm	100	-	-	Dispersant Details :	Sodium hexametaphosphate, Sodium carbonate		
63.0 mm	100	-	-	Sampling History :	As received		
50.0 mm	100	-	-	The presence of any visible organic matter in the soil : None			
37.5 mm	100	-	-	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
28.0 mm	100	-	-	0.0645	-	96	-
20.0 mm	100	-	-	0.0460	-	93	-
14.0 mm	100	-	-	0.0328	-	90	-
10.0 mm	100	-	-	0.0236	-	85	-
6.30 mm	100	-	-	0.0169	-	80	-
5.00 mm	100	-	-	0.0090	-	70	-
3.35 mm	100	-	-	0.0047	-	56	-
2.00 mm	100	-	-	0.0024	-	40	-
1.18 mm	100	-	-	0.0014	-	32	-
600 µm	100	-	-	SUMMARY :			
425 µm	100	-	-	Gravel (%) :	0		
300 µm	99	-	-	Sand (%) :	4		
212 µm	99	-	-	Silt (%) :	59		
150 µm	96	-	-	Clay (%) :	37		
63 µm	96	-	-				
0 µm	0	-	-				



Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun Checked By : T K Lam Approved By : Lau Wai Cheong
 Date : 13/03/2018 Name : T K Lam Signatory : Lau Wai Cheong
 Date : 20/03/2018 Date : 20/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.25

Date Received : 05/03/2018
 Tested Date : 12/03/2018

Works Order No. : 272
 Sample ID No. : HK1818845-007
 Sample No. : S10
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : -

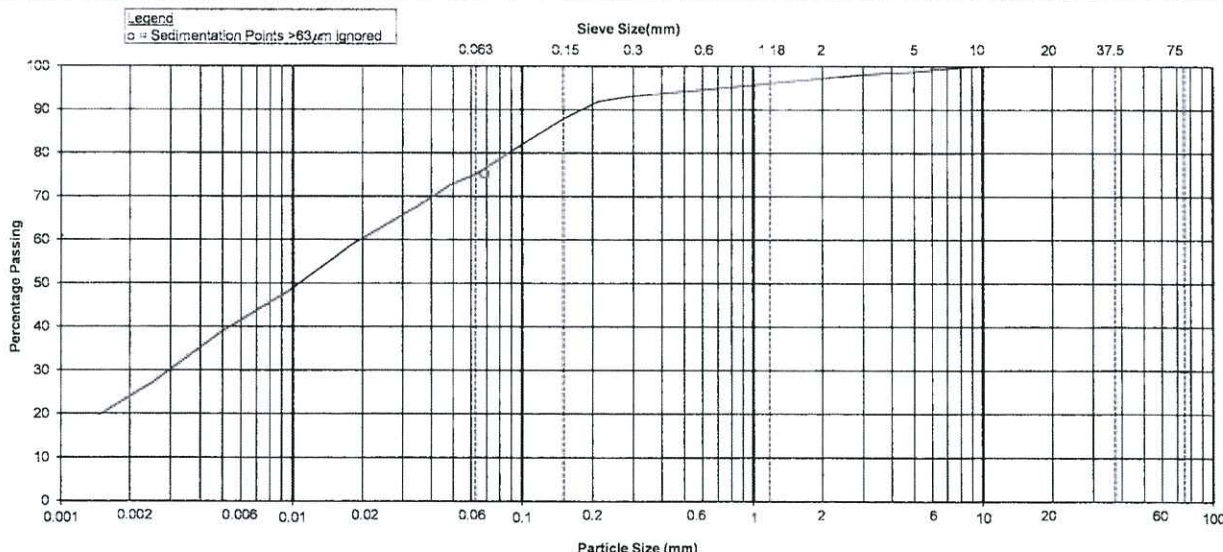
Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate † Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0684	-	75	-
14.0 mm	100	-	-	0.0487	-	73	-
10.0 mm	100	-	-	0.0349	-	68	-
6.30 mm	99	-	-	0.0250	-	63	-
5.00 mm	99	-	-	0.0179	-	59	-
3.35 mm	98	-	-	0.0095	-	48	-
2.00 mm	97	-	-	0.0049	-	39	-
1.18 mm	96	-	-	0.0025	-	27	-
600 µm	95	-	-	0.0015	-	20	-
425 µm	94	-	-				
300 µm	93	-	-				
212 µm	92	-	-				
150 µm	88	-	-				
63 µm	75	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
 Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
 Sampling History : As received
 The presence of any visible organic matter in the soil : None

SUMMARY :
 Gravel (%) : 3
 Sand (%) : 22
 Silt (%) : 51
 Clay (%) : 24



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COB- BLES
	SILT			SAND			GRAVEL			

Form GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun Checked By : TK Lam Approved By : Lau Wai Cheong
 Date : 12/03/2018 Date : 17/03/2018 Date : 17/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.25

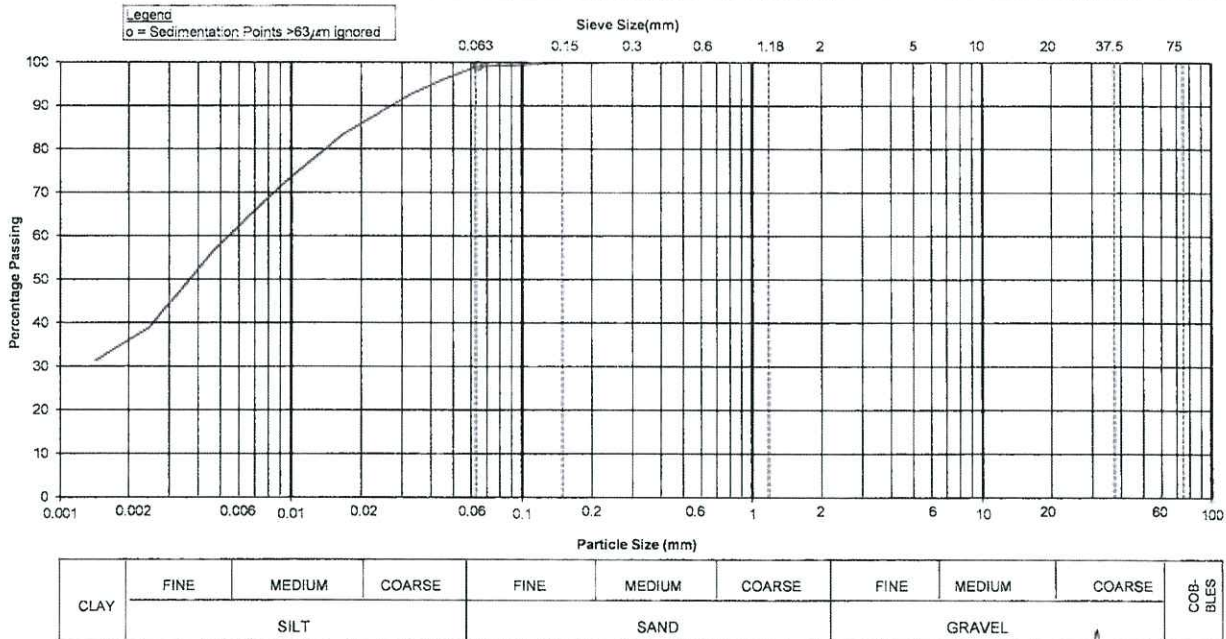
Date Received : 05/03/2018
 Tested Date : 13/03/2018

Works Order No. : 272
 Sample ID No. : HK1818845-008
 Sample No. : S9
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : -

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate † Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed) : 2.65 #	Dispersant Details : Sodium hexametaphosphate, Sodium carbonate		
100.0 mm	100	-	-	Sampling History : As received	The presence of any visible organic matter in the soil : None		
75.0 mm	100	-	-	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
63.0 mm	100	-	-	0.0639	-	99	-
50.0 mm	100	-	-	0.0457	-	96	-
37.5 mm	100	-	-	0.0326	-	93	-
28.0 mm	100	-	-	0.0234	-	88	-
20.0 mm	100	-	-	0.0168	-	84	-
14.0 mm	100	-	-	0.0090	-	71	-
10.0 mm	100	-	-	0.0047	-	57	-
6.30 mm	100	-	-	0.0024	-	39	-
5.00 mm	100	-	-	0.0014	-	31	-
3.35 mm	100	-	-	SUMMARY :			
2.00 mm	100	-	-	Gravel (%)	:	0	
1.18 mm	100	-	-	Sand (%)	:	1	
600 µm	100	-	-	Silt (%)	:	63	
425 µm	100	-	-	Clay (%)	:	36	
300 µm	100	-	-				
212 µm	100	-	-				
150 µm	100	-	-				
63 µm	99	-	-				
0 µm	0	-	-				



Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun Checked By : [Signature] Approved By : [Signature]
 Date : 13/03/2018 Name : T K Lam Signatory : Lau Wan Cheong
 Date : 17/03/2018 Date : 17/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.25

Date Received : 05/03/2018
 Tested Date : 08/03/2018

Works Order No. : 272
 Sample ID No : HK1818845-009
 Sample No : S66
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : *

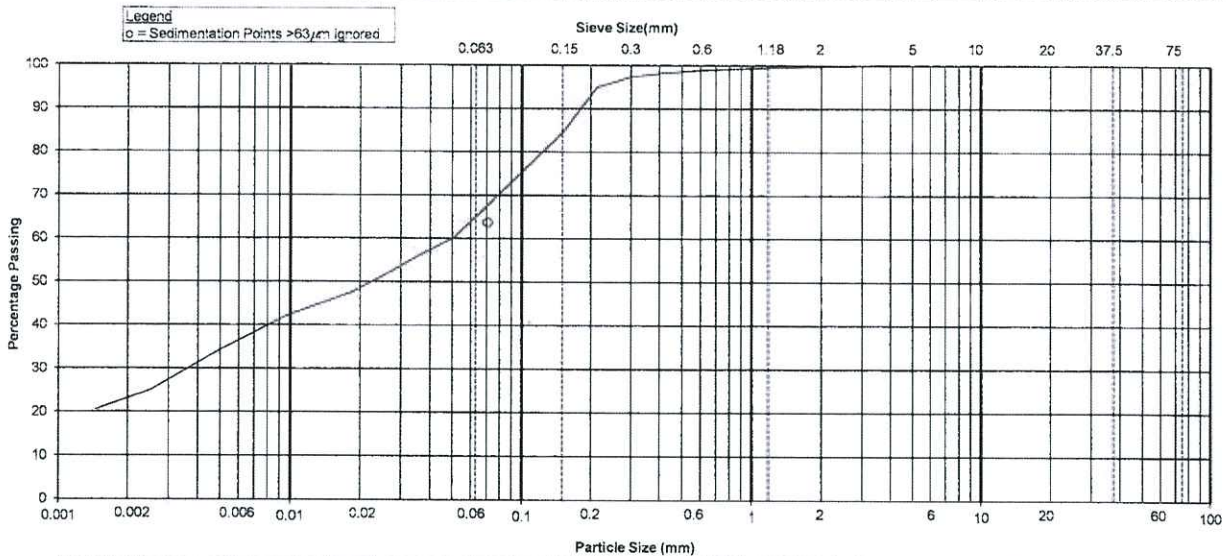
Description : Dark grey, sandy SILT/CLAY with shell fragments

Sieve Method : Method A

* Upon request * Delete as appropriate

* Information provided by customer

SIEVE ANALYSIS	Percent Passing (%)	* Expanded Uncertainty of the Percent Passing (%)	* Cumulative Percent Passing with Expanded Uncertainty (%)	SEDIMENTATION ANALYSIS			
				Particle Diameter (mm)	* Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	* Expanded Uncertainty of % finer than D (%)
				Specific Gravity (# if assumed) : 2.65 #			
				Dispersant Details : Sodium hexametaphosphate, Sodium carbonate			
				Sampling History : As received			
				The presence of any visible organic matter in the soil : None			
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0708	-	64	-
14.0 mm	100	-	-	0.0505	-	60	-
10.0 mm	100	-	-	0.0361	-	56	-
6.30 mm	100	-	-	0.0258	-	52	-
5.00 mm	100	-	-	0.0184	-	48	-
3.35 mm	100	-	-	0.0096	-	42	-
2.00 mm	100	-	-	0.0049	-	34	-
1.18 mm	100	-	-	0.0025	-	25	-
600 µm	99	-	-	0.0015	-	21	-
425 µm	98	-	-				
300 µm	97	-	-				
212 µm	95	-	-				
150 µm	85	-	-				
63 µm	65	-	-				
0 µm	0	-	-				
				SUMMARY :			
				Gravel (%) : 0			
				Sand (%) : 35			
				Silt (%) : 42			
				Clay (%) : 23			



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COB-BLES
	SILT			SAND			GRAVEL			

Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun

Checked By : T K Lam

Approved By : Lau Wai Cheong

Date : 08/03/2018

Date : 15/03/2018

Date : 15/03/2018

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**TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)**



Job No. : J2999
Customer : ALS Technichem (HK) Pty Ltd
Project : -

Contract No. :
Sieve Method : Method A
^ Upon request * Delete as appropriate

Report No. : J2999-272.25

Works Order No. : 272
Sample ID No. : HK1818845-010
Sample No. : S67
Sample Depth (m) :
Specimen Depth (m) :
Sample Type : Small Disturbed
Sample Origin : -

Date Received : 05/03/2018
Tested Date : 07/03/2018

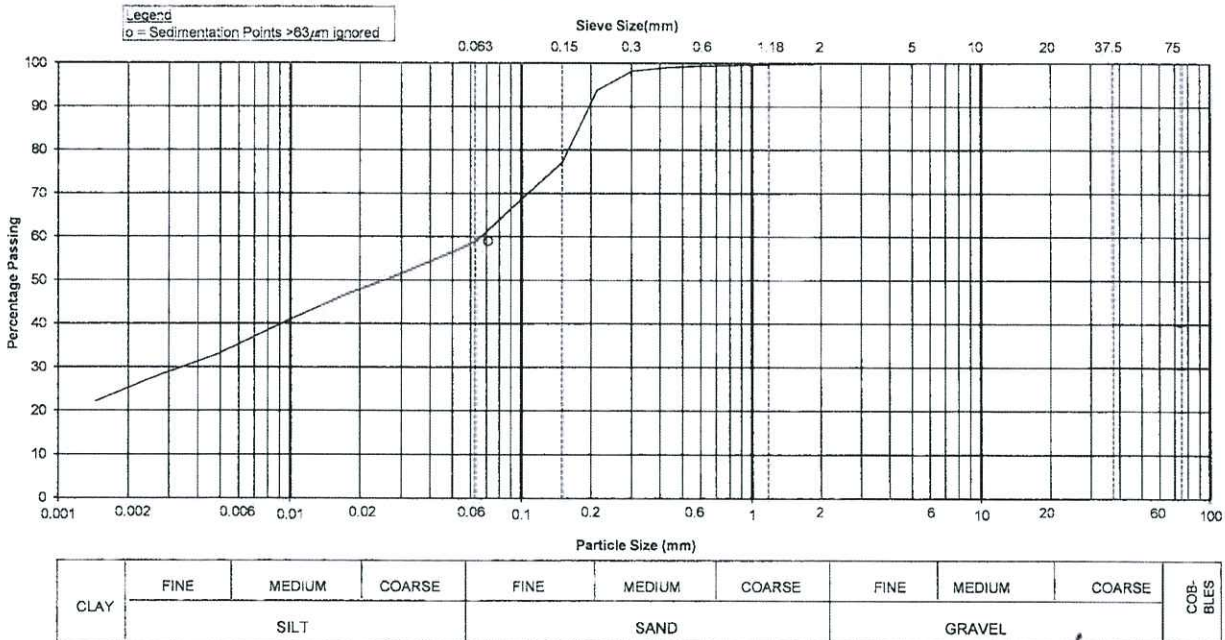
Description : Dark grey, sandy SILT/CLAY with shell fragments

Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0710	-	59	-
14.0 mm	100	-	-	0.0505	-	57	-
10.0 mm	100	-	-	0.0360	-	53	-
6.30 mm	100	-	-	0.0257	-	50	-
5.00 mm	100	-	-	0.0183	-	47	-
3.35 mm	100	-	-	0.0096	-	41	-
2.00 mm	100	-	-	0.0049	-	33	-
1.18 mm	100	-	-	0.0025	-	27	-
600 µm	99	-	-	0.0015	-	22	-
425 µm	99	-	-				
300 µm	98	-	-				
212 µm	94	-	-				
150 µm	77	-	-				
63 µm	59	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
Sampling History : As received
The presence of any visible organic matter in the soil : None

SUMMARY :			
Gravel (%) :	0		
Sand (%) :	41		
Silt (%) :	34		
Clay (%) :	25		



Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun

Checked By : T K Lam

Approved By : Lau Wai Cheong

Date : 07/03/2018

Date : 13/03/2018

Date : 13/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.25

Date Received : 05/03/2018
 Tested Date : 08/03/2018

Works Order No. : 272
 Sample ID No. : HK1818845-011
 Sample No. : S68
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : †

Description : Dark grey, sandy SILT/CLAY with shell fragments

Sieve Method : Method A

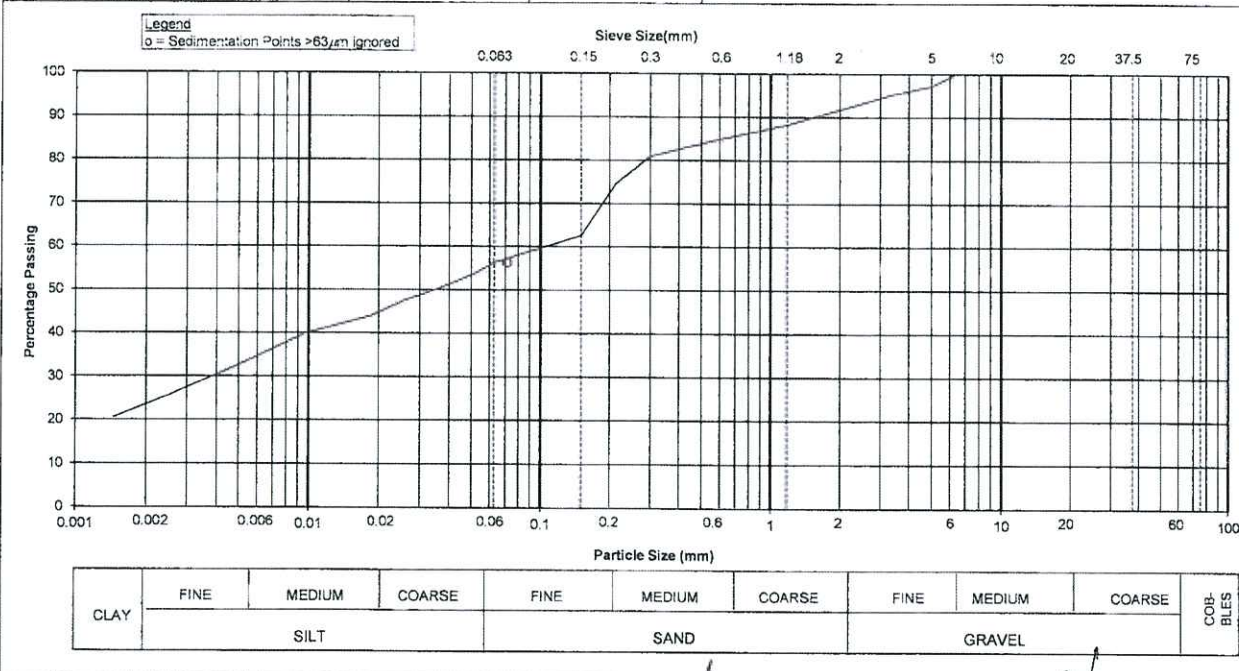
† Upon request * Delete as appropriate

† Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	Expanded Uncertainty of the Percent Passing (%)	Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0712	-	56	-
14.0 mm	100	-	-	0.0507	-	54	-
10.0 mm	100	-	-	0.0362	-	50	-
6.30 mm	100	-	-	0.0258	-	48	-
5.00 mm	97	-	-	0.0184	-	44	-
3.35 mm	95	-	-	0.0096	-	40	-
2.00 mm	92	-	-	0.0049	-	33	-
1.18 mm	88	-	-	0.0025	-	26	-
600 µm	85	-	-	0.0015	-	21	-
425 µm	83	-	-				
300 µm	81	-	-				
212 µm	75	-	-				
150 µm	63	-	-				
63 µm	56	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
 Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
 Sampling History : As received
 The presence of any visible organic matter in the soil : None

SUMMARY :
 Gravel (%) : 8
 Sand (%) : 36
 Silt (%) : 33
 Clay (%) : 23



Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun

Checked By : TK Lam

Approved By : Lau Wai Cheong

Date : 08/03/2018

Date : 15/03/2018

Date : 15/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project :

Report No. : J2999-272.25

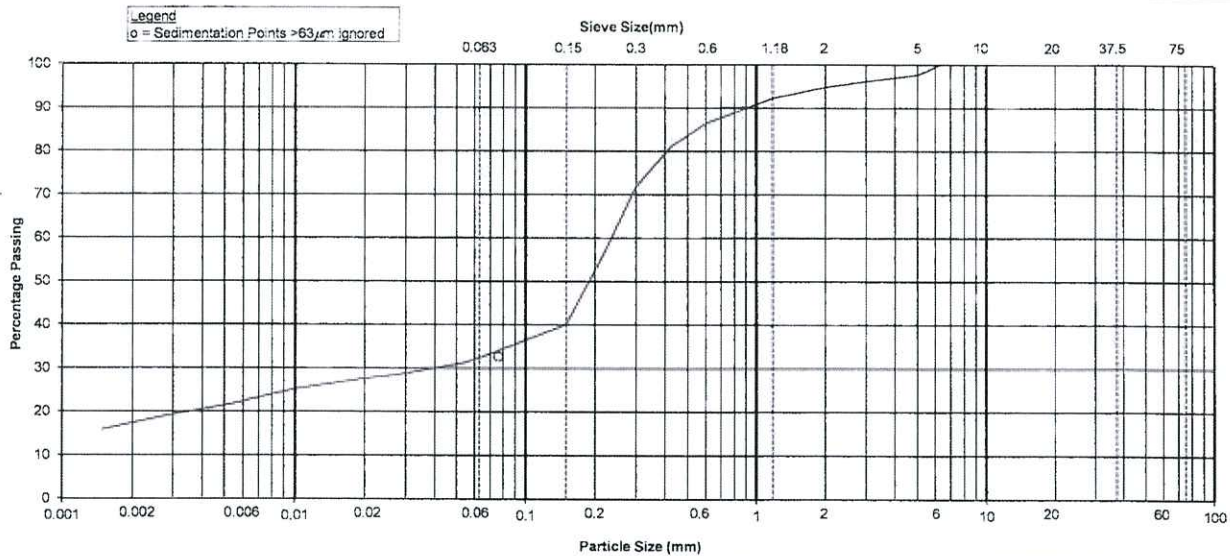
Works Order No. : 272
 Sample ID No. : HK1818845-012
 Sample No. : S69
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin :

Date Received : 05/03/2018
 Tested Date : 08/03/2018

Description : Dark grey, gravelly, silty, very clayey SAND with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate † Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed):			
100.0 mm	100	-	-	2.65 #			
75.0 mm	100	-	-	Dispersant Details : Sodium hexametaphosphate, Sodium carbonate			
63.0 mm	100	-	-	Sampling History : As received			
50.0 mm	100	-	-	The presence of any visible organic matter in the soil : None			
37.5 mm	100	-	-	Particle Diameter	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
28.0 mm	100	-	-	(mm)			
20.0 mm	100	-	-	0.0760	-	33	-
14.0 mm	100	-	-	0.0539	-	31	-
10.0 mm	100	-	-	0.0382	-	30	-
6.30 mm	100	-	-	0.0271	-	29	-
5.00 mm	98	-	-	0.0192	-	28	-
3.35 mm	97	-	-	0.0100	-	25	-
2.00 mm	95	-	-	0.0050	-	22	-
1.18 mm	92	-	-	0.0025	-	19	-
600 µm	87	-	-	0.0015	-	16	-
425 µm	81	-	-	SUMMARY :			
300 µm	72	-	-	Gravel (%)	:	5	
212 µm	55	-	-	Sand (%)	:	63	
150 µm	40	-	-	Silt (%)	:	15	
63 µm	32	-	-	Clay (%)	:	17	
0 µm	0	-	-				



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COB- BLES
	SILT			SAND			GRAVEL			

Form: GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun

Checked By : T K Lam

Approved By : Lau Wai Cheong

Date : 08/03/2018

Date : 15/03/2018

Date : 15/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project :

Report No. : J2999-272.25

Date Received : 05/03/2018
 Tested Date : 08/03/2018

Works Order No. : 272
 Sample ID No. : HK1818845-013
 Sample No. : S65
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : †

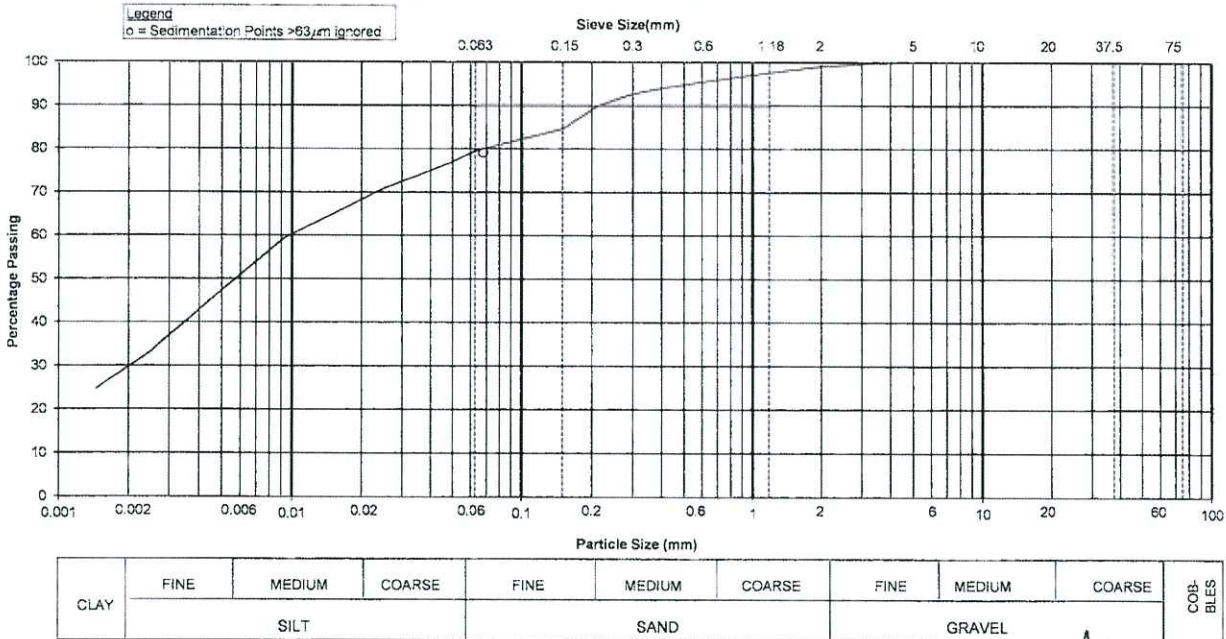
Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A

^ Upon request * Delete as appropriate

† Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed)			
100.0 mm	100	-	-	2.65 #			
75.0 mm	100	-	-	Dispersant Details : Sodium hexametaphosphate, Sodium carbonate			
63.0 mm	100	-	-	Sampling History : As received			
50.0 mm	100	-	-	The presence of any visible organic matter in the soil : None			
37.5 mm	100	-	-	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
28.0 mm	100	-	-	0.0676	-	79	-
20.0 mm	100	-	-	0.0482	-	77	-
14.0 mm	100	-	-	0.0343	-	74	-
10.0 mm	100	-	-	0.0245	-	71	-
6.30 mm	100	-	-	0.0175	-	67	-
5.00 mm	100	-	-	0.0092	-	59	-
3.35 mm	100	-	-	0.0048	-	47	-
2.00 mm	99	-	-	0.0025	-	33	-
1.18 mm	98	-	-	0.0014	-	25	-
600 µm	95	-	-	SUMMARY :			
425 µm	94	-	-	Gravel (%)	:	1	
300 µm	93	-	-	Sand (%)	:	19	
212 µm	90	-	-	Silt (%)	:	51	
150 µm	85	-	-	Clay (%)	:	29	
63 µm	80	-	-				
0 µm	0	-	-				



Form : GESR003.5 / Jun. 30.13 / Issue 1 / Rev 2

Technician : K Y Sun
 Date : 08/03/2018

Checked By : T K Lam
 Date : 15/03/2018

Approved By : Lau Wai Cheong
 Date : 15/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999
 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.25

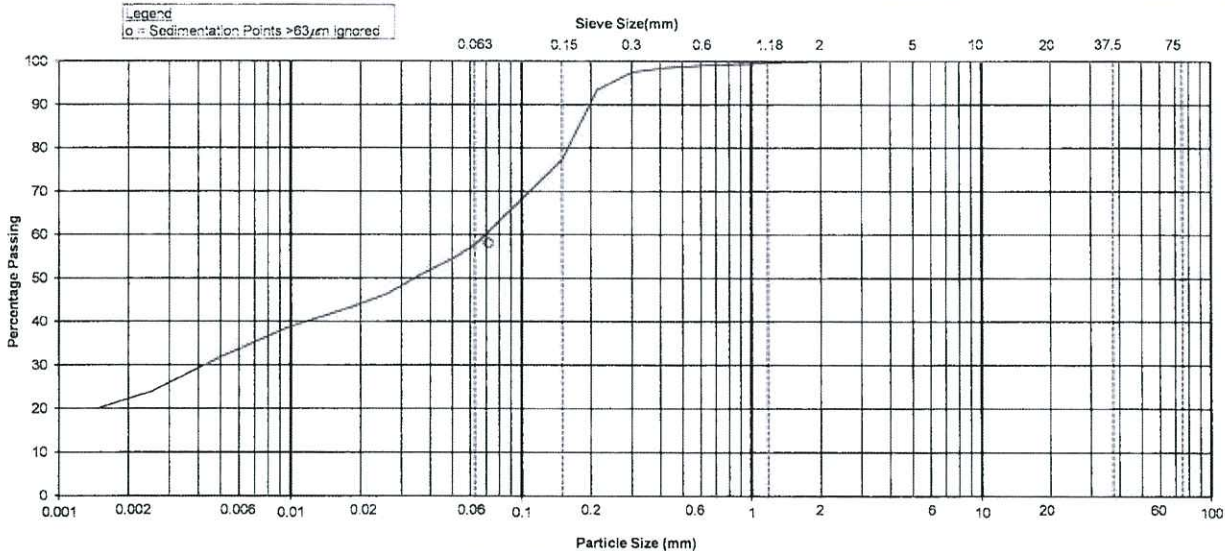
Date Received : 05/03/2018
 Tested Date : 08/03/2018

Works Order No. : 272
 Sample ID No. : HK1818845-014
 Sample No. : S63
 Sample Depth (m)
 Specimen Depth (m)
 Sample Type : Small Disturbed
 Sample Origin :
 † Information provided by customer

Description : Dark grey, sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed) :			
100.0 mm	100	-	-	2.65 #	Dispersant Details : Sodium hexametaphosphate, Sodium carbonate		
75.0 mm	100	-	-	Sampling History : As received			
63.0 mm	100	-	-	The presence of any visible organic matter in the soil : None			
50.0 mm	100	-	-	Particle Diameter	^ Expanded Uncertainty of the Particle Diameter	% Finer than D _K	^ Expanded Uncertainty of % finer than D
37.5 mm	100	-	-	(mm)	(mm)	(%)	(%)
28.0 mm	100	-	-	0.0715	-	58	-
20.0 mm	100	-	-	0.0510	-	55	-
14.0 mm	100	-	-	0.0365	-	51	-
10.0 mm	100	-	-	0.0261	-	46	-
6.30 mm	100	-	-	0.0186	-	44	-
5.00 mm	100	-	-	0.0097	-	39	-
3.35 mm	100	-	-	0.0049	-	32	-
2.00 mm	100	-	-	0.0025	-	24	-
1.18 mm	100	-	-	0.0015	-	20	-
600 µm	99	-	-	SUMMARY :			
425 µm	99	-	-	Gravel (%) :	0		
300 µm	98	-	-	Sand (%) :	42		
212 µm	93	-	-	Silt (%) :	36		
150 µm	77	-	-	Clay (%) :	22		
63 µm	58	-	-				
0 µm	0	-	-				



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COB- BLES
	SILT			SAND			GRAVEL			

Technician : K.Y. Sun
 Date : 08/03/2018

Checked By : TK Lam
 Date : 15/03/2018

Approved By : Lau Wai Cheong
 Date : 15/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project :

Report No. : J2999-272.25

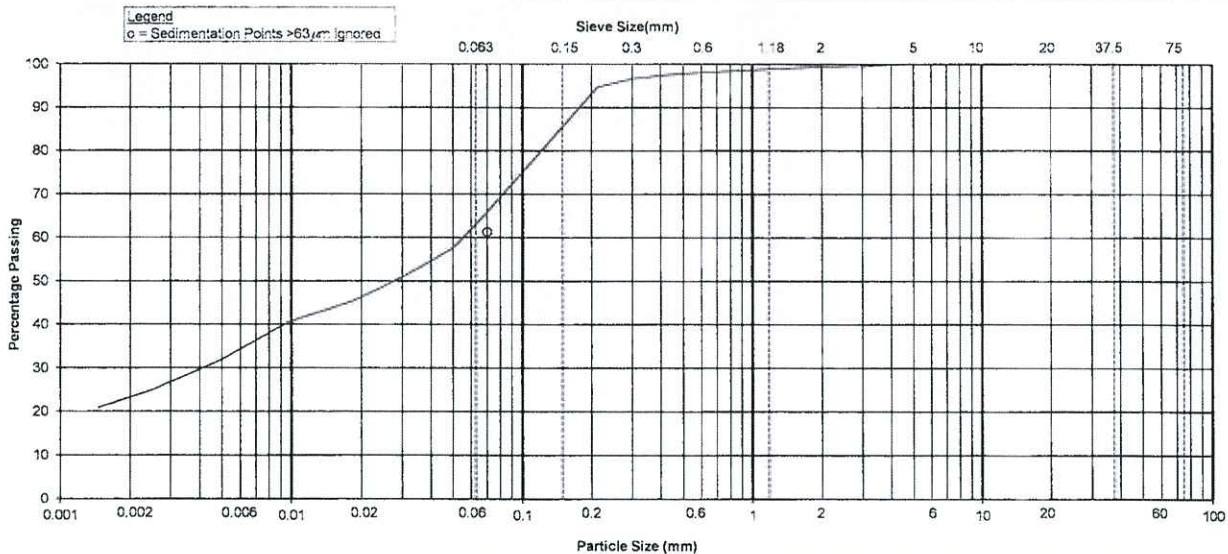
Date Received : 05/03/2018
 Tested Date : 07/03/2018

Works Order No. : 272
 Sample ID No. : HK1818845-015
 Sample No. : S62
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin :

Description : Dark grey, sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate † Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed) :			
100.0 mm	100	-	-	2.65 #			
75.0 mm	100	-	-	Dispersant Details : Sodium hexametaphosphate, Sodium carbonate			
63.0 mm	100	-	-	Sampling History : As received			
50.0 mm	100	-	-	The presence of any visible organic matter in the soil : None			
37.5 mm	100	-	-	Particle Diameter	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
28.0 mm	100	-	-	(mm)			
20.0 mm	100	-	-	0.0700	-	61	-
14.0 mm	100	-	-	0.0501	-	58	-
10.0 mm	100	-	-	0.0359	-	53	-
6.30 mm	100	-	-	0.0257	-	49	-
5.00 mm	100	-	-	0.0183	-	45	-
3.35 mm	100	-	-	0.0096	-	40	-
2.00 mm	99	-	-	0.0049	-	32	-
1.18 mm	99	-	-	0.0025	-	25	-
600 µm	98	-	-	0.0015	-	21	-
425 µm	98	-	-	SUMMARY :			
300 µm	97	-	-	Gravel (%)	:	1	
212 µm	95	-	-	Sand (%)	:	36	
150 µm	86	-	-	Silt (%)	:	40	
63 µm	63	-	-	Clay (%)	:	23	
0 µm	0	-	-				



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COBBLES
	SILT			SAND			GRAVEL			

Technician : K Y Sun
 Date : 07/03/2018

Checked By : T K Lam
 Date : 13/03/2018

Approved By : Lau Wai Cheong
 Date : 13/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.25
 Works Order No. : 272
 Sample ID No. : HK1818845-016
 Sample No. : S58
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : -

Date Received : 05/03/2018
 Tested Date : 07/03/2018

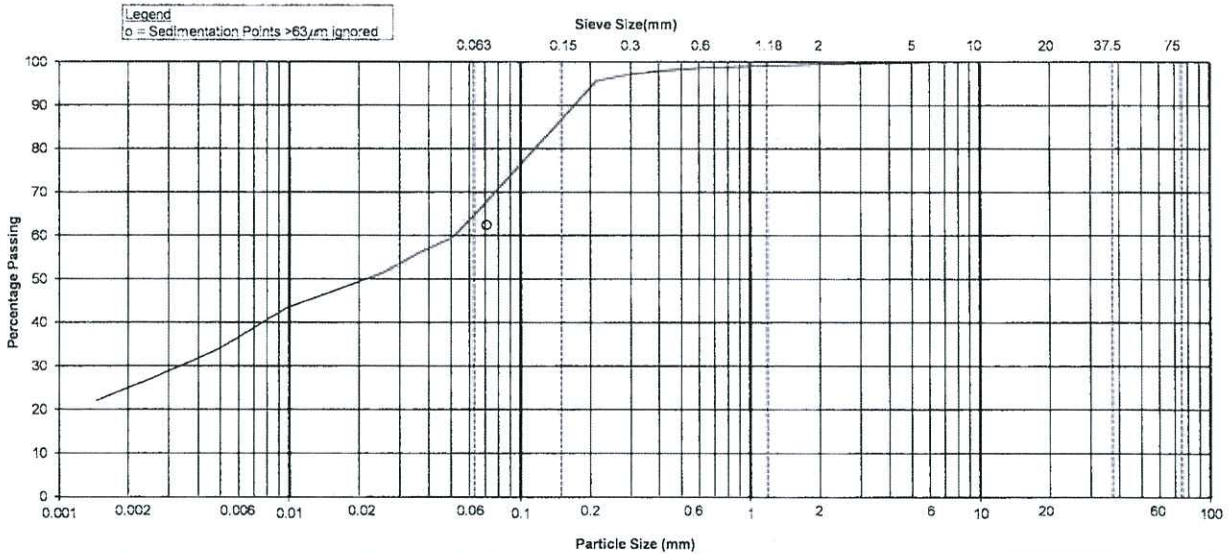
Description : Dark grey, sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate † Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	*Expanded Uncertainty of the Percent Passing (%)	*Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	^Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0708	-	62	-
14.0 mm	100	-	-	0.0505	-	60	-
10.0 mm	100	-	-	0.0360	-	56	-
6.30 mm	100	-	-	0.0258	-	52	-
5.00 mm	100	-	-	0.0184	-	49	-
3.35 mm	100	-	-	0.0096	-	43	-
2.00 mm	100	-	-	0.0049	-	34	-
1.18 mm	99	-	-	0.0025	-	27	-
600 µm	99	-	-	0.0015	-	22	-
425 µm	98	-	-				
300 µm	97	-	-				
212 µm	96	-	-				
150 µm	87	-	-				
63 µm	65	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
 Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
 Sampling History : As received
 The presence of any visible organic matter in the soil : None

SUMMARY :
 Gravel (%) : 0
 Sand (%) : 35
 Silt (%) : 40
 Clay (%) : 25



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COB- BLES
	SILT			SAND			GRAVEL			

Technician : K Y Sun

Checked By : T K Lam

Approved By : Lau Wai Cheong

Date : 07/03/2018

Date : 13/03/2018

Date : 13/03/2018

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Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Contract No. :

Report No. : J2999-272.25

Date Received : 05/03/2018
 Tested Date : 08/03/2018

Works Order No. : 272
 Sample ID No. : HK1818845-017
 Sample No. : S59
 Sample Depth (m)
 Specimen Depth (m)
 Sample Type : Small Disturbed
 Sample Origin : -[‡]

Description : Dark grey, sandy SILT/CLAY with shell fragments

Sieve Method : Method A

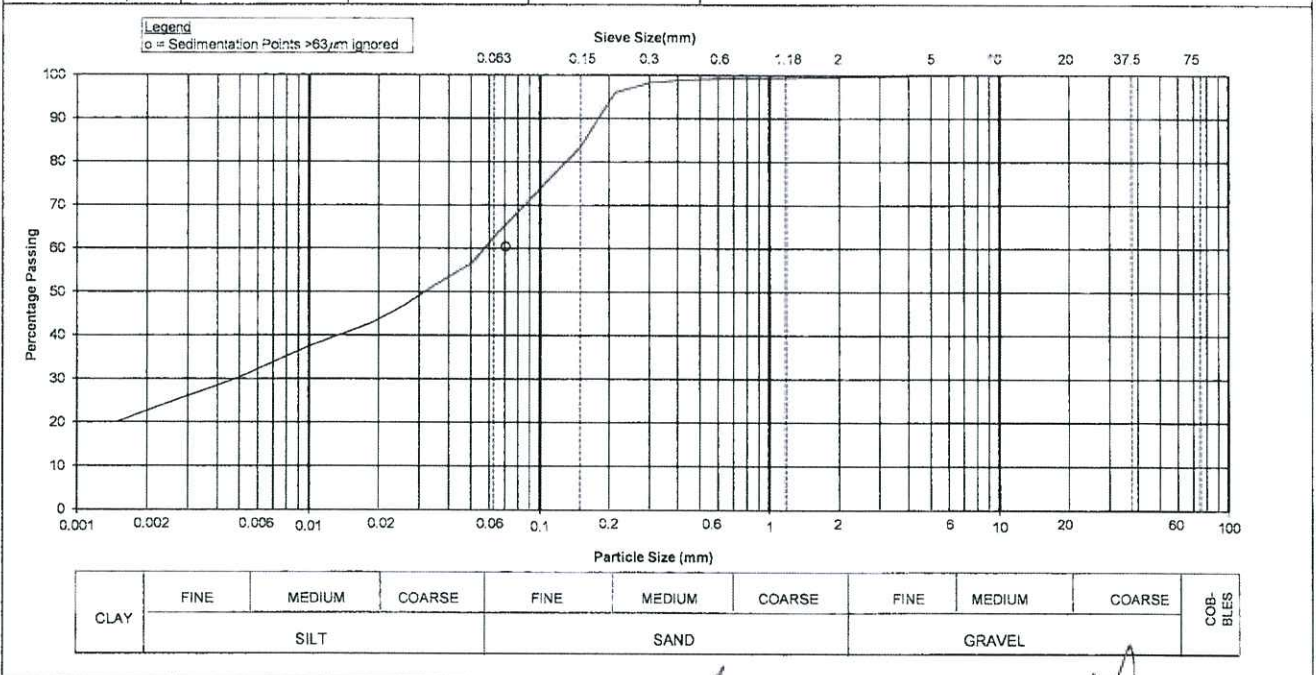
[^] Upon request * Delete as appropriate

[‡] Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	[^] Expanded Uncertainty of the Percent Passing (%)	[^] Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	[^] Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D _K (%)	[^] Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0705	-	60	-
14.0 mm	100	-	-	0.0504	-	57	-
10.0 mm	100	-	-	0.0361	-	52	-
6.30 mm	100	-	-	0.0259	-	47	-
5.00 mm	100	-	-	0.0185	-	43	-
3.35 mm	100	-	-	0.0097	-	37	-
2.00 mm	100	-	-	0.0049	-	30	-
1.18 mm	99	-	-	0.0025	-	25	-
600 μm	99	-	-	0.0015	-	20	-
425 μm	99	-	-				
300 μm	98	-	-				
212 μm	96	-	-				
150 μm	84	-	-				
63 μm	63	-	-				
0 μm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
 Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
 Sampling History : As received
 The presence of any visible organic matter in the soil : None

SUMMARY :
 Gravel (%) : 0
 Sand (%) : 37
 Silt (%) : 41
 Clay (%) : 22



Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun
 Date : 08/03/2018

Checked By : T K Lam
 Date : 15/03/2018

Approved By : Lau Wai Cheong
 Date : 15/03/2018

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**TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)**



Job No. : J2999 Contract No. :
Customer : ALS Technichem (HK) Pty Ltd
Project : -

Report No. : J2999-272.25

Date Received : 05/03/2018
Tested Date : 08/03/2018

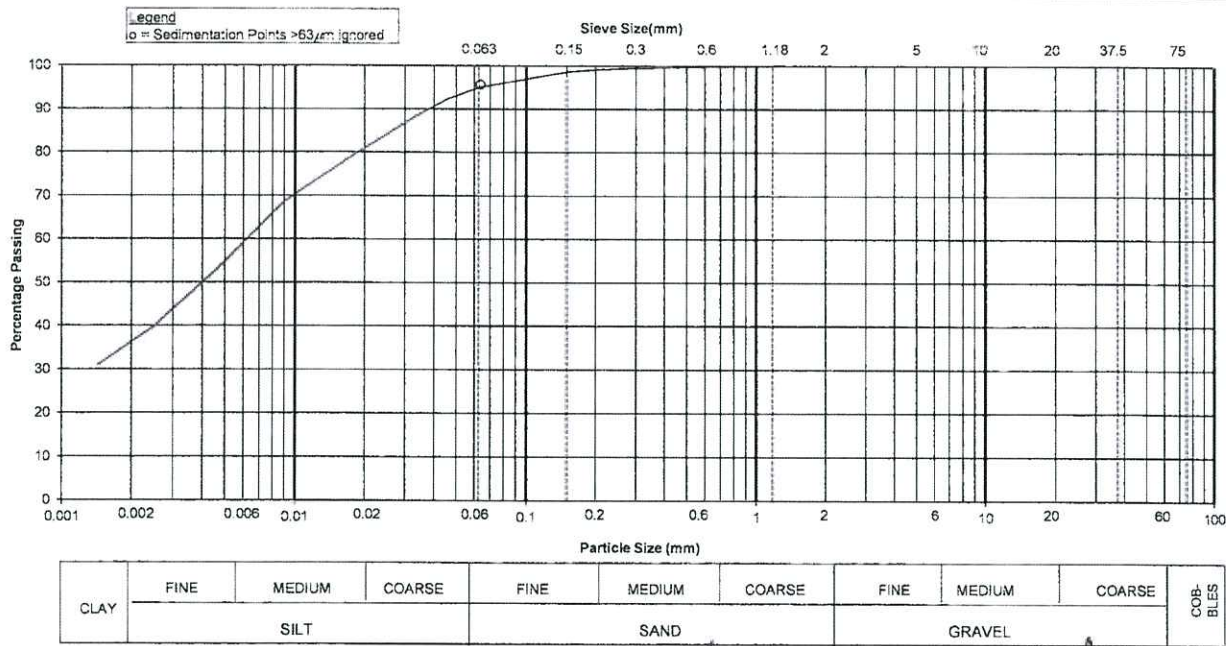
Works Order No. : 272
Sample ID No. : HK1818845-018
Sample No. : S60
Sample Depth (m)
Specimen Depth (m)
Sample Type : Small Disturbed
Sample Origin : -

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate † Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^Expanded Uncertainty of the Percent Passing (%)	^Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	^Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0635	-	96	-
14.0 mm	100	-	-	0.0454	-	92	-
10.0 mm	100	-	-	0.0326	-	88	-
6.30 mm	100	-	-	0.0234	-	83	-
5.00 mm	100	-	-	0.0168	-	79	-
3.35 mm	100	-	-	0.0089	-	69	-
2.00 mm	100	-	-	0.0047	-	53	-
1.18 mm	100	-	-	0.0024	-	40	-
600 µm	100	-	-	0.0014	-	31	-
425 µm	100	-	-				
300 µm	99	-	-				
212 µm	99	-	-				
150 µm	99	-	-				
63 µm	95	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #			
Dispersant Details : Sodium hexametaphosphate, Sodium carbonate			
Sampling History : As received			
The presence of any visible organic matter in the soil : None			
SUMMARY :			
Gravel (%)	:	0	
Sand (%)	:	5	
Silt (%)	:	59	
Clay (%)	:	36	



Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun Checked By : TK Lam Approved By : Lau Wai Cheong
Date : 08/03/2018 Date : 15/03/2018 Date : 15/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project :

Report No. : J2999-272.25

Date Received : 05/03/2018
 Tested Date : 08/03/2018

Works Order No. : 272
 Sample ID No. : HK1818845-019
 Sample No. : S61
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : †

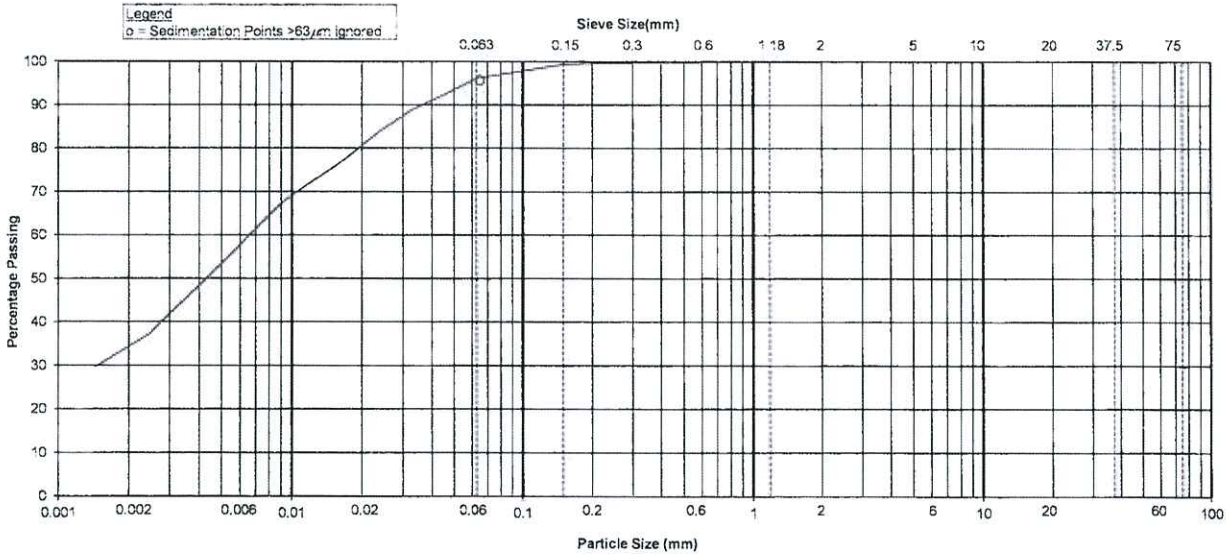
Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A † Upon request * Delete as appropriate ‡ Information provided by customer

SIEVE ANALYSIS	Percent Passing (%)	* Expanded Uncertainty of the Percent Passing (%)	* Cumulative Percent Passing with Expanded Uncertainty (%)	SEDIMENTATION ANALYSIS			
				Particle Diameter (mm)	† Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	† Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0649	-	96	-
14.0 mm	100	-	-	0.0463	-	93	-
10.0 mm	100	-	-	0.0331	-	89	-
6.30 mm	100	-	-	0.0238	-	84	-
5.00 mm	100	-	-	0.0171	-	78	-
3.35 mm	100	-	-	0.0091	-	68	-
2.00 mm	100	-	-	0.0047	-	52	-
1.18 mm	100	-	-	0.0024	-	37	-
600 µm	100	-	-	0.0014	-	30	-
425 µm	100	-	-				
300 µm	100	-	-				
212 µm	100	-	-				
150 µm	99	-	-				
63 µm	96	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
 Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
 Sampling History : As received
 The presence of any visible organic matter in the soil : None

SUMMARY :
 Gravel (%) : 0
 Sand (%) : 4
 Silt (%) : 62
 Clay (%) : 34



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COB- BLES
	SILT			SAND			GRAVEL			

Technician : K Y Sun

Checked By : T K Lam
 Name : T K Lam
 Date : 13/03/2018

Approved By : Lau Wai Cheong
 Signatory : Lau Wai Cheong
 Date : 13/03/2018

Date : 08/03/2018

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Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999
 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.25

Date Received : 05/03/2018
 Tested Date : 08/03/2018

Works Order No. : 272
 Sample ID No. : HK1818845-020
 Sample No. : S57
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : -

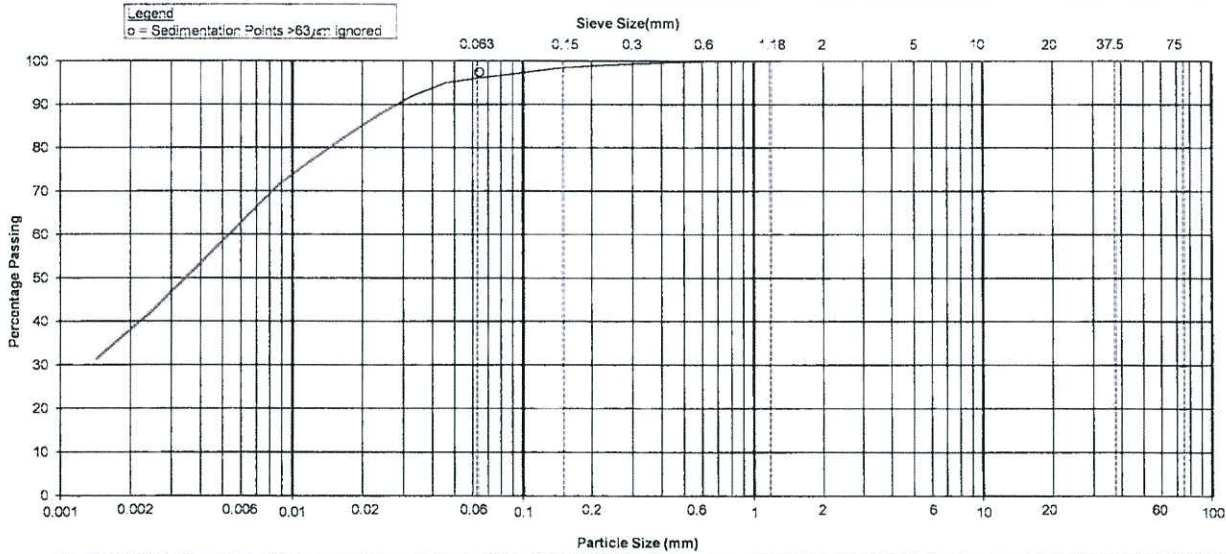
Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A

* Upon request * Delete as appropriate

† Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	Expanded Uncertainty of the Percent Passing (%)	Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed) :			
100.0 mm	100	-	-	2.65 #			
75.0 mm	100	-	-	Dispersant Details : Sodium hexametaphosphate, Sodium carbonate			
63.0 mm	100	-	-	Sampling History : As received			
50.0 mm	100	-	-	The presence of any visible organic matter in the soil : None			
37.5 mm	100	-	-	Particle Diameter	Expanded Uncertainty of the Particle Diameter	% Finer than D K	Expanded Uncertainty of % finer than D
28.0 mm	100	-	-	(mm)	(mm)	(%)	(%)
20.0 mm	100	-	-	0.0641	-	97	-
14.0 mm	100	-	-	0.0457	-	95	-
10.0 mm	100	-	-	0.0326	-	92	-
6.30 mm	100	-	-	0.0234	-	87	-
5.00 mm	100	-	-	0.0168	-	82	-
3.35 mm	100	-	-	0.0089	-	72	-
2.00 mm	100	-	-	0.0046	-	57	-
1.18 mm	100	-	-	0.0024	-	42	-
600 µm	100	-	-	0.0014	-	31	-
425 µm	100	-	-	SUMMARY :			
300 µm	99	-	-	Gravel (%)	:	0	
212 µm	99	-	-	Sand (%)	:	4	
150 µm	98	-	-	Silt (%)	:	58	
63 µm	96	-	-	Clay (%)	:	38	
0 µm	0	-	-				



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COBBLES
	SILT			SAND			GRAVEL			

Technician : K Y Sun

Checked By : TK Lam
 Name : TK Lam
 Date : 13/03/2018

Approved By : Law Wai Cheong
 Signatory : Law Wai Cheong
 Date : 13/03/2018

Date : 08/03/2018

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Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Contract No. :

Report No. : J2999-272.25

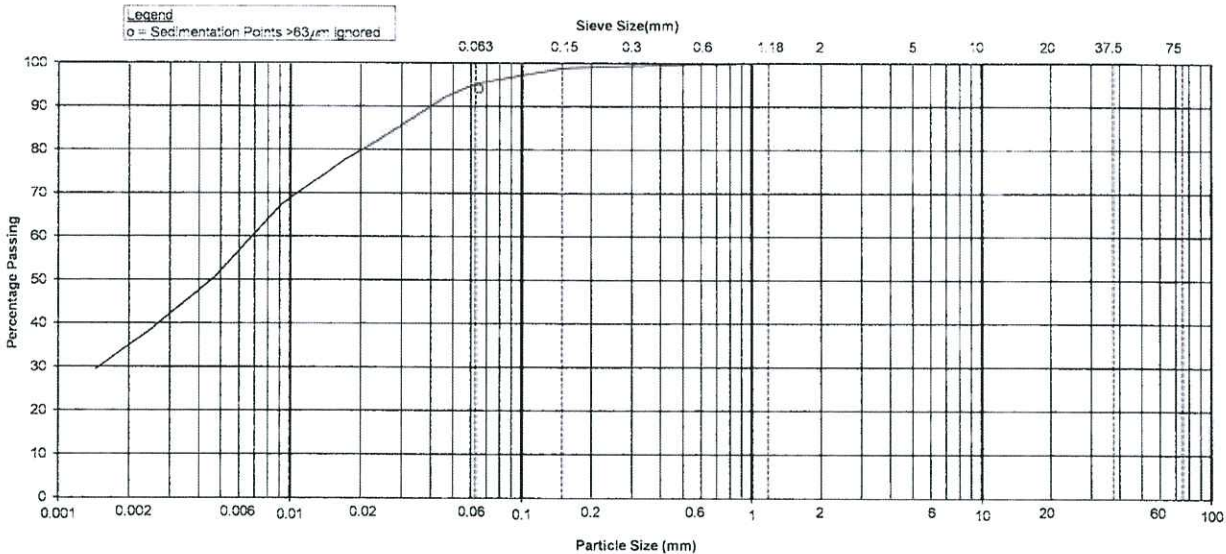
Works Order No. : 272
 Sample ID No. : HK1818845-021
 Sample No. : S56
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : -

Date Received : 05/03/2018
 Tested Date : 08/03/2018

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate † Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	* Expanded Uncertainty of the Percent Passing (%)	* Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed)			
100.0 mm	100	-	-	2.65 #			
75.0 mm	100	-	-	Dispersant Details : Sodium hexametaphosphate. Sodium carbonate			
63.0 mm	100	-	-	Sampling History : As received			
50.0 mm	100	-	-	The presence of any visible organic matter in the soil : None			
37.5 mm	100	-	-	Particle Diameter (mm)	* Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	* Expanded Uncertainty of % finer than D (%)
28.0 mm	100	-	-	0.0646	-	94	-
20.0 mm	100	-	-	0.0460	-	92	-
14.0 mm	100	-	-	0.0330	-	87	-
10.0 mm	100	-	-	0.0237	-	82	-
6.30 mm	100	-	-	0.0170	-	78	-
5.00 mm	100	-	-	0.0090	-	67	-
3.35 mm	100	-	-	0.0047	-	51	-
2.00 mm	100	-	-	0.0024	-	38	-
1.18 mm	100	-	-	0.0014	-	29	-
600 µm	100	-	-	SUMMARY :			
425 µm	100	-	-	Gravel (%)	:	0	
300 µm	99	-	-	Sand (%)	:	5	
212 µm	99	-	-	Silt (%)	:	61	
150 µm	99	-	-	Clay (%)	:	34	
63 µm	95	-	-				
0 µm	0	-	-				



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COBBLES
	SILT			SAND			GRAVEL			

Technician : K Y Sun
 Date : 08/03/2018

Checked By : T K Lam
 Date : 15/03/2018

Approved By : Lau Wai Cheong
 Date : 15/03/2018

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Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project :

Report No. : J2999-272.25

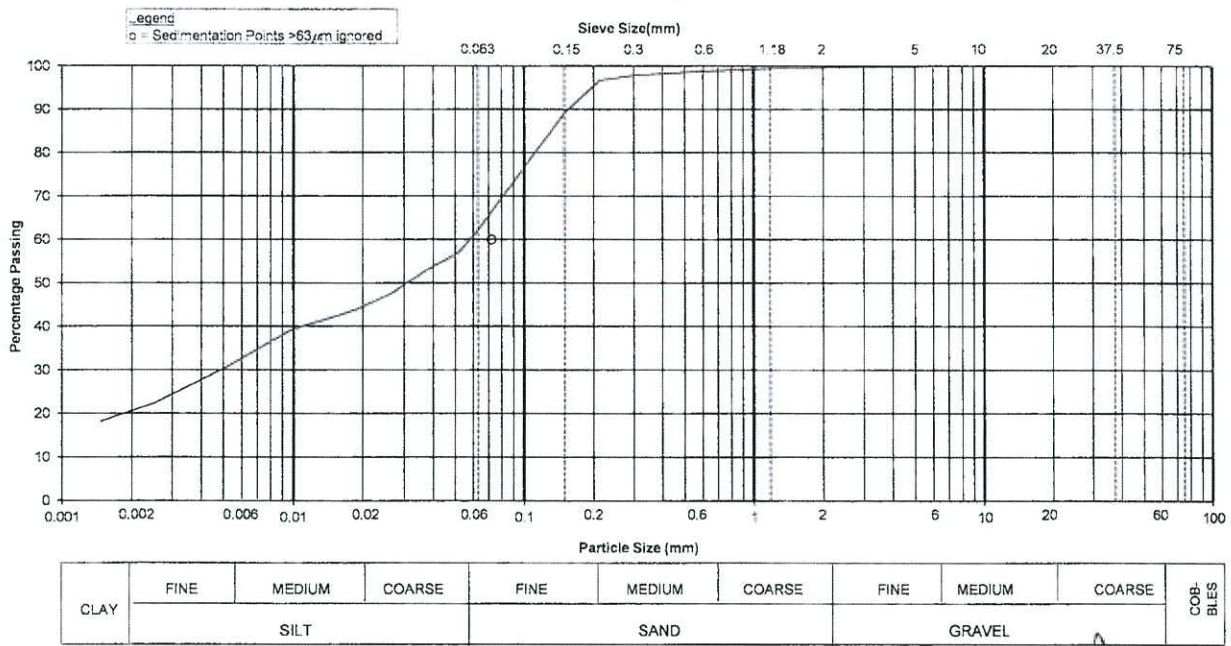
Date Received : 05/03/2018
 Tested Date : 13/03/2018

Works Order No. : 272
 Sample ID No. : HK1818845-022
 Sample No. : S55
 Sample Depth (m)
 Specimen Depth (m)
 Sample Type : Small Disturbed
 Sample Origin :

Description : Dark grey, sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate ‡ Information provided by customer

SIEVE ANALYSIS	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	* Cumulative Percent Passing with Expanded Uncertainty (%)	SEDIMENTATION ANALYSIS			
				Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
Sieve Size				Specific Gravity (# if assumed) : 2.65 #			
100.0 mm	100	-	-	Dispersant Details : Sodium hexametaphosphate, Sodium carbonate			
75.0 mm	100	-	-	Sampling History : As received			
63.0 mm	100	-	-	The presence of any visible organic matter in the soil : None			
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0719	-	60	-
14.0 mm	100	-	-	0.0512	-	57	-
10.0 mm	100	-	-	0.0366	-	53	-
6.30 mm	100	-	-	0.0262	-	48	-
5.00 mm	100	-	-	0.0187	-	44	-
3.35 mm	100	-	-	0.0097	-	39	-
2.00 mm	100	-	-	0.0050	-	30	-
1.18 mm	99	-	-	0.0025	-	22	-
600 µm	99	-	-	0.0015	-	18	-
425 µm	98	-	-	SUMMARY :			
300 µm	98	-	-	Gravel (%)	:	0	
212 µm	97	-	-	Sand (%)	:	38	
150 µm	89	-	-	Silt (%)	:	42	
63 µm	62	-	-	Clay (%)	:	20	
0 µm	0	-	-				



Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun Checked By : T K Lam Approved By : Lau Wai Cheong
 Date : 13/03/2018 Date : 17/03/2018 Date : 17/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.25

Date Received : 05/03/2018
 Tested Date : 12/03/2018

Works Order No. : 272
 Sample ID No. : HK1818845-023
 Sample No. : S49
 Sample Depth (m)
 Specimen Depth (m)
 Sample Type : Small Disturbed
 Sample Origin

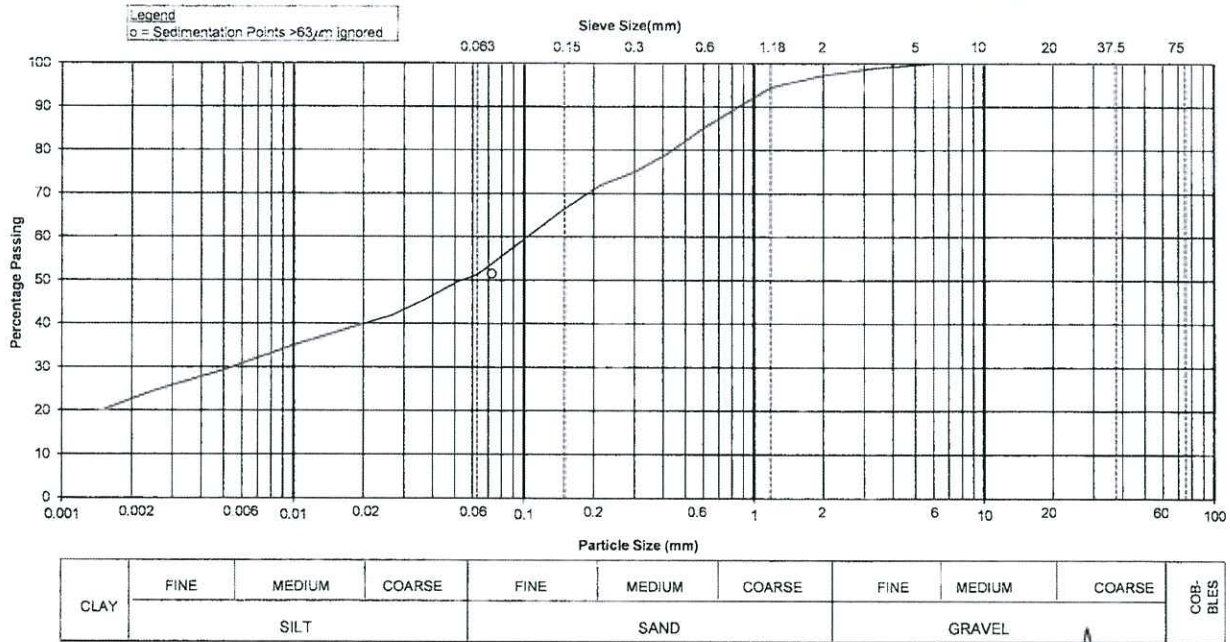
Description : Dark grey, sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate † Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0723	-	52	-
14.0 mm	100	-	-	0.0514	-	50	-
10.0 mm	100	-	-	0.0367	-	46	-
6.30 mm	100	-	-	0.0262	-	42	-
5.00 mm	100	-	-	0.0187	-	40	-
3.35 mm	99	-	-	0.0098	-	35	-
2.00 mm	97	-	-	0.0049	-	29	-
1.18 mm	94	-	-	0.0025	-	25	-
600 µm	85	-	-	0.0015	-	20	-
425 µm	80	-	-				
300 µm	75	-	-				
212 µm	72	-	-				
150 µm	67	-	-				
63 µm	51	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
 Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
 Sampling History : As received
 The presence of any visible organic matter in the soil : None

SUMMARY :
 Gravel (%) : 3
 Sand (%) : 46
 Silt (%) : 29
 Clay (%) : 22



Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun

Checked By : TK Lam
 Name : TK Lam
 Date : 17/03/2018

Approved By : Lau Wai Cheong
 Signatory : Lau Wai Cheong
 Date : 17/03/2018

Date : 12/03/2018

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Technology Centre
 21 Chun Wang Street, Tseung Kwan O Industrial Estate,
 Tseung Kwan O, N.T. Tel : 26991980, Fax : 26917547

TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.25

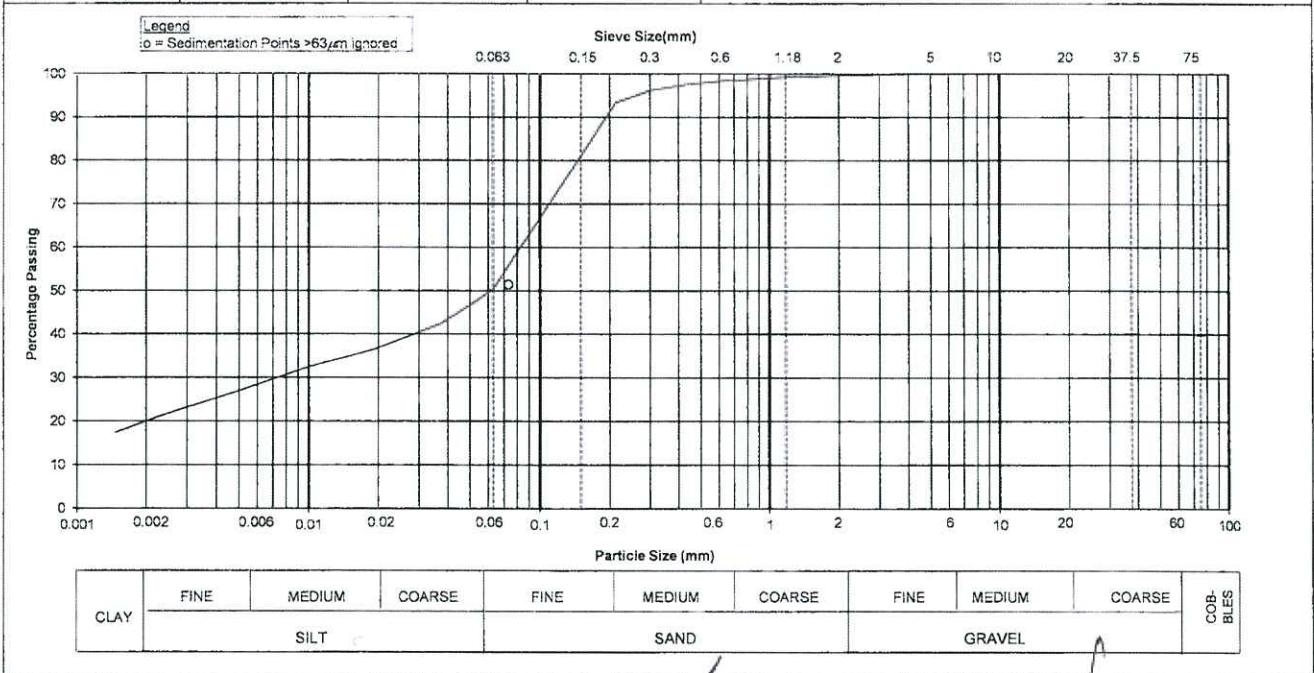
Date Received : 05/03/2018
 Tested Date : 13/03/2018

Works Order No. : 272
 Sample ID No. : HK1818845-024
 Sample No. : S50
 Sample Depth (m)
 Specimen Depth (m)
 Sample Type : Small Disturbed
 Sample Origin :

Description : Dark grey, sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate † Information provided by customer

SIEVE ANALYSIS	Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	SEDIMENTATION ANALYSIS						
					Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)			
	100.0 mm	100	-	-	Specific Gravity (# if assumed) : 2.65 #						
	75.0 mm	100	-	-	Dispersant Details : Sodium hexametaphosphate, Sodium carbonate						
	63.0 mm	100	-	-	Sampling History : As received						
	50.0 mm	100	-	-	The presence of any visible organic matter in the soil : None						
	37.5 mm	100	-	-							
	28.0 mm	100	-	-							
	20.0 mm	100	-	-	0.0730	-	51	-			
	14.0 mm	100	-	-	0.0522	-	47	-			
	10.0 mm	100	-	-	0.0373	-	42	-			
	6.30 mm	100	-	-	0.0266	-	39	-			
	5.00 mm	100	-	-	0.0189	-	36	-			
	3.35 mm	100	-	-	0.0099	-	32	-			
	2.00 mm	100	-	-	0.0050	-	27	-			
	1.18 mm	99	-	-	0.0025	-	22	-			
	600 µm	98	-	-	0.0015	-	17	-			
	425 µm	98	-	-	SUMMARY :						
	300 µm	96	-	-					Gravel (%)	:	0
	212 µm	93	-	-					Sand (%)	:	50
	150 µm	81	-	-					Silt (%)	:	30
	63 µm	50	-	-					Clay (%)	:	20
	0 µm	0	-	-							



Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun Checked By : [Signature] Approved By : [Signature]
 Date : 13/03/2018 Name : T K Lam Signatory : Lau Wai Cheong
 Date : 17/03/2018 Date : 17/03/2018

Hong Kong Accreditation Service (HKAS) has accredited this laboratory (Reg. No. 055 - TEST) under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories. This report shall not be reproduced unless with prior written approval from this laboratory.

**TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)**



Job No : J2999 Contract No. :
Customer : ALS Technichem (HK) Pty Ltd
Project : -

Report No. : J2999-272.25

Date Received : 05/03/2018
Tested Date : 13/03/2018

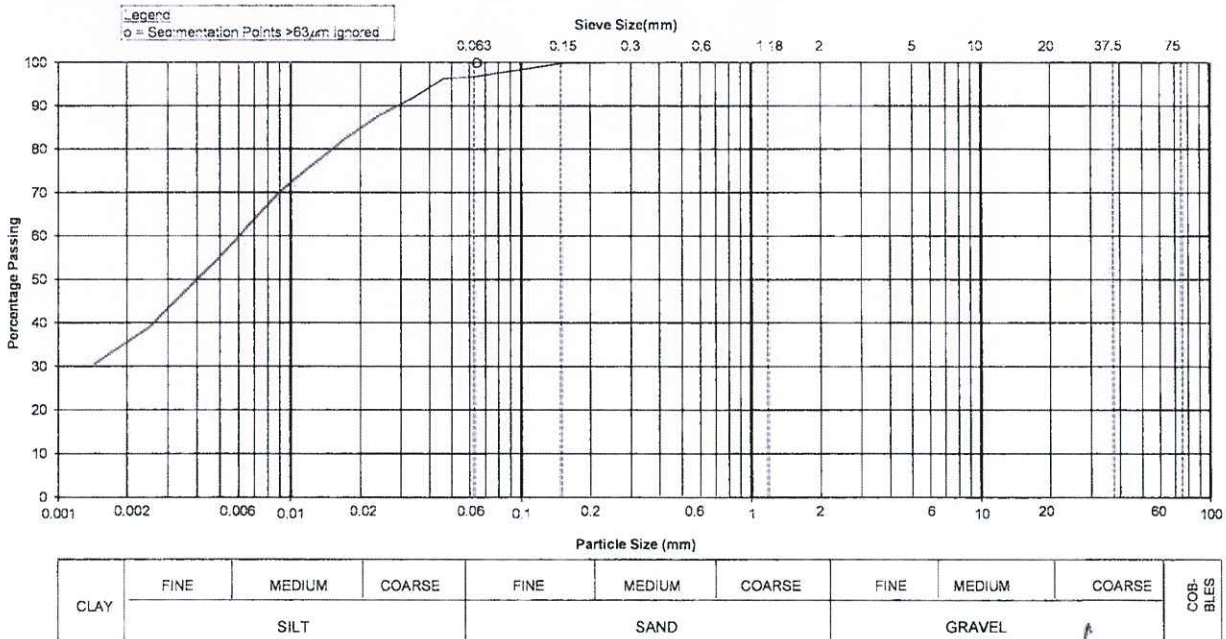
Works Order No. : 272
Sample ID No. : HK1818845-025
Sample No. : S51
Sample Depth (m) :
Specimen Depth (m) :
Sample Type : Small Disturbed
Sample Origin : ‡

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate

‡ Information provided by customer

SIEVE ANALYSIS	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	SEDIMENTATION ANALYSIS			
				Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
Sieve Size							
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0643	-	100	-
14.0 mm	100	-	-	0.0460	-	96	-
10.0 mm	100	-	-	0.0330	-	92	-
6.30 mm	100	-	-	0.0236	-	87	-
5.00 mm	100	-	-	0.0169	-	82	-
3.35 mm	100	-	-	0.0090	-	70	-
2.00 mm	100	-	-	0.0047	-	54	-
1.18 mm	100	-	-	0.0024	-	39	-
600 µm	100	-	-	0.0014	-	31	-
425 µm	100	-	-				
300 µm	100	-	-				
212 µm	100	-	-				
150 µm	100	-	-				
63 µm	97	-	-				
0 µm	0	-	-				
				Specific Gravity (# if assumed) : 2.65 # Dispersant Details : Sodium hexametaphosphate, Sodium carbonate Sampling History : As received The presence of any visible organic matter in the soil : None			
				SUMMARY : Gravel (%) : 0 Sand (%) : 3 Silt (%) : 62 Clay (%) : 35			



Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun

Checked By : T K Lam

Approved By : Lau Wai Cheong

Date : 13/03/2018

Date : 17/03/2018

Date : 17/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.25

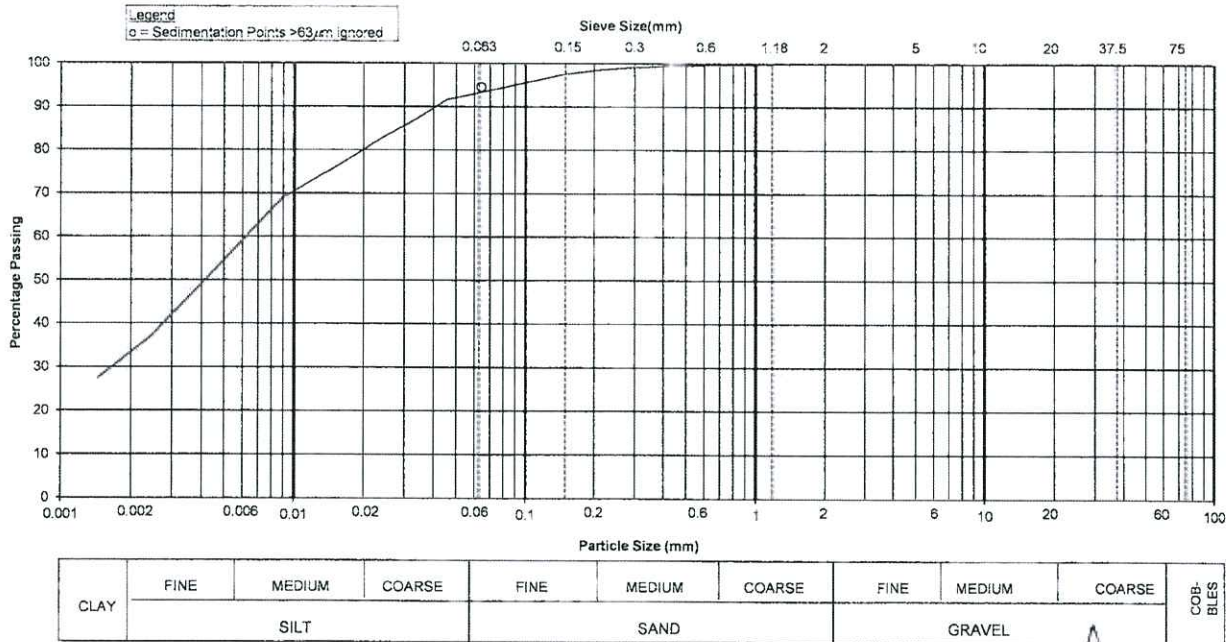
Date Received : 05/03/2018
 Tested Date : 09/03/2018

Works Order No. : 272
 Sample ID No. : HK1818845-026
 Sample No. : S52
 Sample Depth (m)
 Specimen Depth (m)
 Sample Type : Small Disturbed
 Sample Origin :

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate † Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed) : 2.65 #	Dispersant Details : Sodium hexametaphosphate, Sodium carbonate	Sampling History : As received	The presence of any visible organic matter in the soil : None
100.0 mm	100	-	-	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
75.0 mm	100	-	-	0.0639	-	95	-
63.0 mm	100	-	-	0.0456	-	92	-
50.0 mm	100	-	-	0.0328	-	87	-
37.5 mm	100	-	-	0.0235	-	83	-
28.0 mm	100	-	-	0.0169	-	78	-
20.0 mm	100	-	-	0.0089	-	69	-
14.0 mm	100	-	-	0.0047	-	53	-
10.0 mm	100	-	-	0.0024	-	37	-
6.30 mm	100	-	-	0.0014	-	28	-
5.00 mm	100	-	-	SUMMARY :			
3.35 mm	100	-	-	Gravel (%) :	0		
2.00 mm	100	-	-	Sand (%) :	7		
1.18 mm	100	-	-	Silt (%) :	60		
600 µm	100	-	-	Clay (%) :	33		
425 µm	99	-	-				
300 µm	99	-	-				
212 µm	99	-	-				
150 µm	98	-	-				
63 µm	93	-	-				
0 µm	0	-	-				



Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun

Checked By : TK Lam
 Name : TK Lam
 Date : 15/03/2018

Approved By : Lau Wai Cheong
 Signatory : Lau Wai Cheong
 Date : 15/03/2018

Date : 09/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Contract No. :

Report No. : J2999-272.25

Date Received : 05/03/2018
 Tested Date : 09/03/2018

Works Order No. : 272
 Sample ID No. : HK1818845-027
 Sample No. : S53
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : -

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

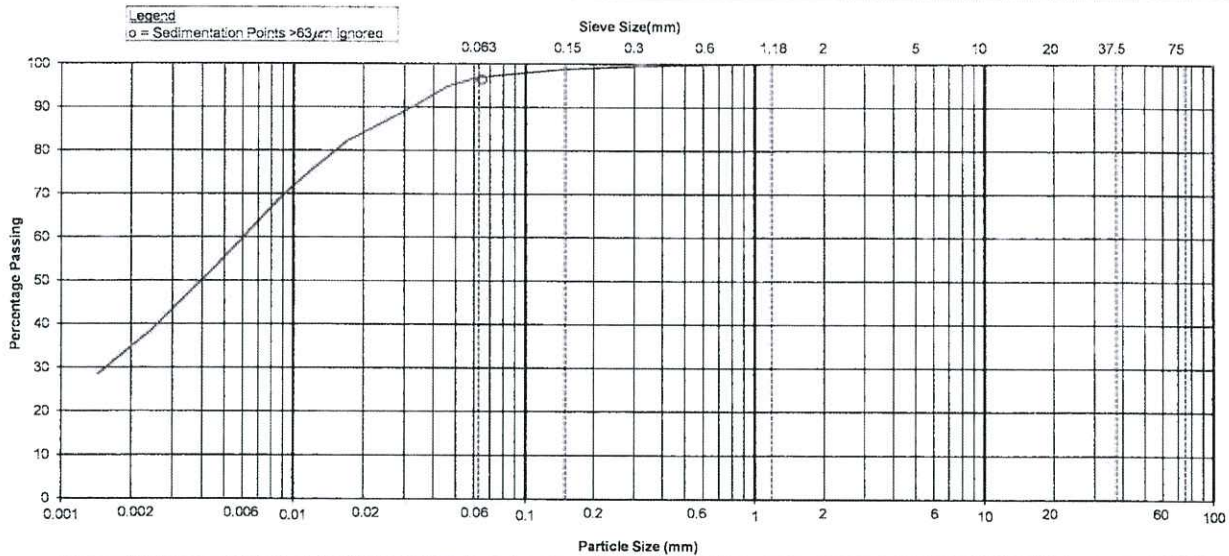
Sieve Method : Method A

^ Upon request

* Delete as appropriate

† Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed) :			
100.0 mm	100	-	-	2.65 #	Dispersant Details : Sodium hexametaphosphate, Sodium carbonate		
75.0 mm	100	-	-	Sampling History :	As received		
63.0 mm	100	-	-	The presence of any visible organic matter in the soil : None			
50.0 mm	100	-	-	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
37.5 mm	100	-	-	0.0645	-	96	-
28.0 mm	100	-	-	0.0459	-	95	-
20.0 mm	100	-	-	0.0329	-	90	-
14.0 mm	100	-	-	0.0235	-	86	-
10.0 mm	100	-	-	0.0169	-	82	-
6.30 mm	100	-	-	0.0090	-	70	-
5.00 mm	100	-	-	0.0047	-	54	-
3.35 mm	100	-	-	0.0024	-	39	-
2.00 mm	100	-	-	0.0014	-	29	-
1.18 mm	100	-	-	SUMMARY :			
600 µm	100	-	-	Gravel (%) :	0		
425 µm	100	-	-	Sand (%) :	3		
300 µm	99	-	-	Silt (%) :	63		
212 µm	99	-	-	Clay (%) :	34		
150 µm	99	-	-				
63 µm	97	-	-				
0 µm	0	-	-				



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COBBLES
	SILT			SAND			GRAVEL			

Technician : K Y Sun

Checked By : TK Lam

Approved By : Lau Wai Cheong

Date : 09/03/2018

Date : 15/03/2018

Date : 15/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.25

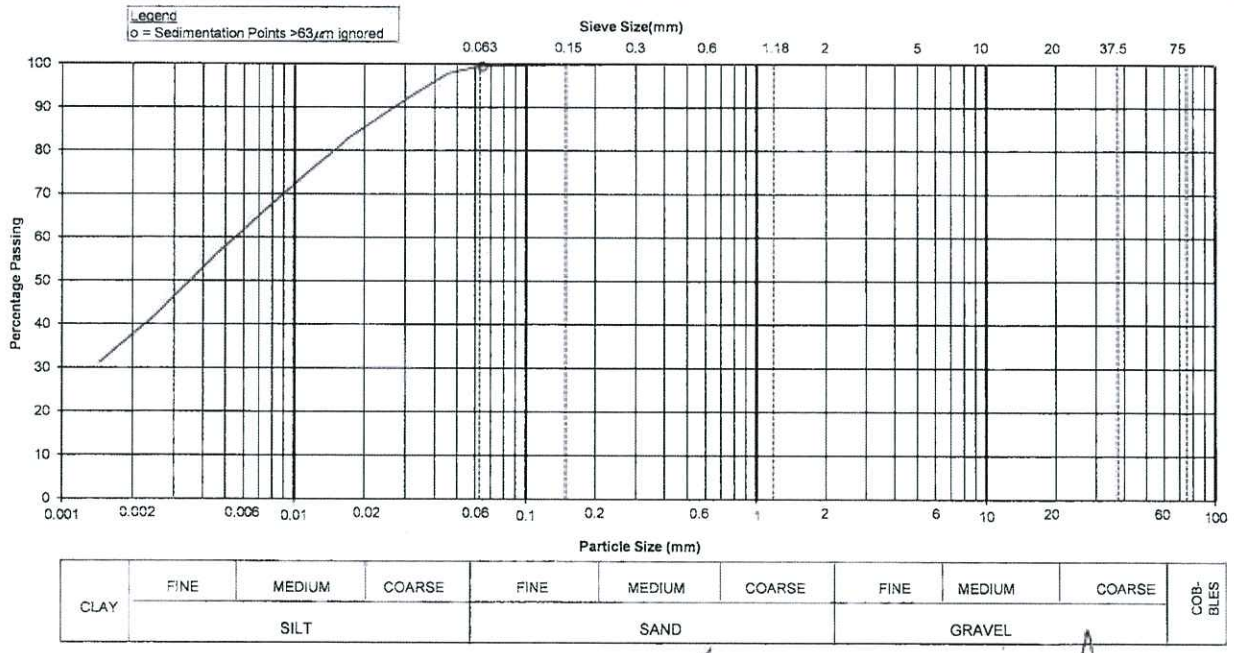
Date Received : 05/03/2018
 Tested Date : 09/03/2018

Works Order No. : 272
 Sample ID No. : HK1818845-028
 Sample No. : S48
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : ‡

Description : Dark grey, SILT/CLAY

Sieve Method : Method A ^ Upon request * Delete as appropriate ‡ Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed) :			
100.0 mm	100	-	-	2.65 #			
75.0 mm	100	-	-	Dispersant Details : Sodium hexametaphosphate, Sodium carbonate			
63.0 mm	100	-	-	Sampling History : As received			
50.0 mm	100	-	-	The presence of any visible organic matter in the soil : None			
37.5 mm	100	-	-	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
28.0 mm	100	-	-	0.0643	-	99	-
20.0 mm	100	-	-	0.0457	-	98	-
14.0 mm	100	-	-	0.0328	-	93	-
10.0 mm	100	-	-	0.0235	-	88	-
6.30 mm	100	-	-	0.0169	-	83	-
5.00 mm	100	-	-	0.0090	-	70	-
3.35 mm	100	-	-	0.0047	-	57	-
2.00 mm	100	-	-	0.0024	-	42	-
1.18 mm	100	-	-	0.0014	-	31	-
600 µm	100	-	-	SUMMARY :			
425 µm	100	-	-	Gravel (%) :	0		
300 µm	100	-	-	Sand (%) :	0		
212 µm	100	-	-	Silt (%) :	63		
150 µm	100	-	-	Clay (%) :	37		
63 µm	100	-	-				
0 µm	0	-	-				



Form : GESR003.5 / Jun. 30.13 / Issue 1 / Rev 2

Technician : K Y Sun
 Date : 09/03/2018

Checked By : TK Lam
 Date : 15/03/2018

Approved By : Lau Wai Cheong
 Date : 15/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999
 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project :

Report No. : J2999-272.25

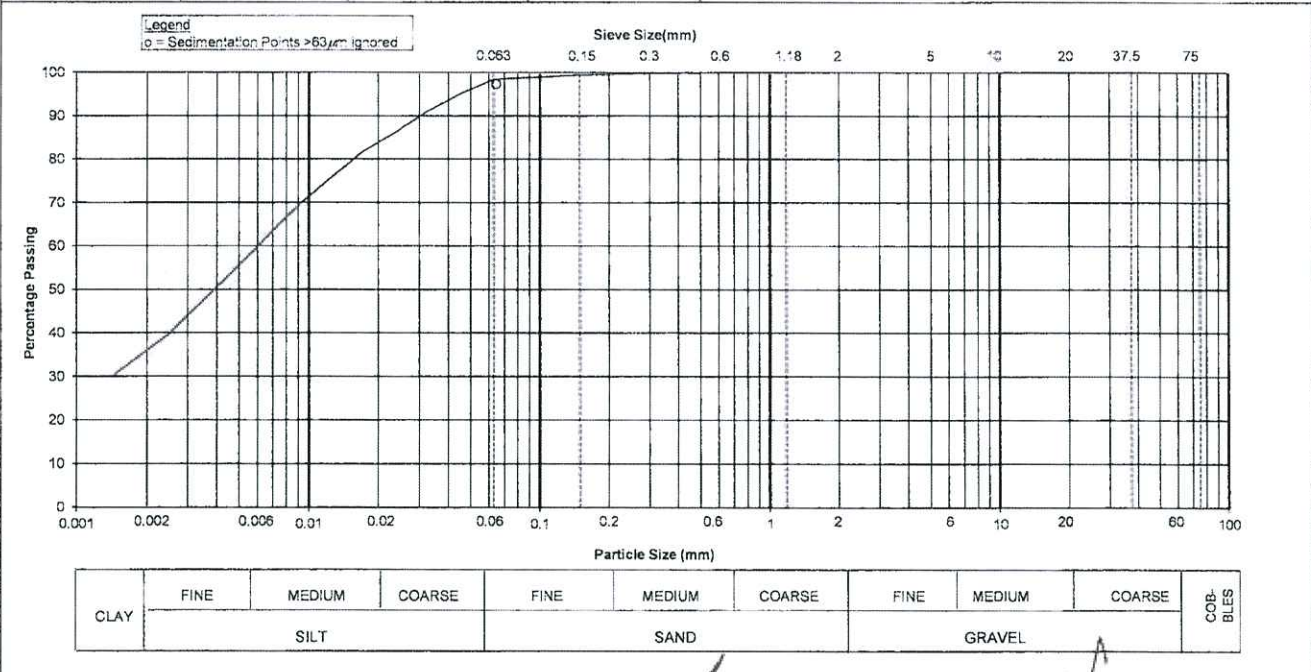
Works Order No. : 272
 Sample ID No. : HK1818845-029
 Sample No. : S46
 Sample Depth (m)
 Specimen Depth (m)
 Sample Type : Small Disturbed
 Sample Origin :

Date Received : 05/03/2018
 Tested Date : 09/03/2018

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate † Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	* Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed) : 2.65 #	Dispersant Details : Sodium hexametaphosphate, Sodium carbonate	Sampling History : As received	The presence of any visible organic matter in the soil : None
100.0 mm	100	-	-	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-				
14.0 mm	100	-	-				
10.0 mm	100	-	-				
6.30 mm	100	-	-				
5.00 mm	100	-	-				
3.35 mm	100	-	-				
2.00 mm	100	-	-				
1.18 mm	100	-	-				
600 µm	100	-	-	0.0642	-	97	-
425 µm	100	-	-	0.0457	-	95	-
300 µm	100	-	-	0.0327	-	91	-
212 µm	100	-	-	0.0235	-	86	-
150 µm	99	-	-	0.0169	-	82	-
63 µm	98	-	-	0.0090	-	69	-
0 µm	0	-	-	0.0047	-	54	-
				0.0024	-	40	-
				0.0014	-	30	-
				SUMMARY :			
				Gravel (%) : 0			
				Sand (%) : 2			
				Silt (%) : 62			
				Clay (%) : 36			



Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun Checked By : T K Lam Approved By : Lau Wai Cheong
 Date : 09/03/2018 Date : 15/03/2018 Date : 15/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Contract No. :

Report No. : J2999-272.25

Works Order No. : 272
 Sample ID No. : HK1818845-030
 Sample No. : S45
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : -

Date Received : 05/03/2018
 Tested Date : 09/03/2018

Description : Dark grey, gravelly, silty, clayey SAND with shell fragments

Sieve Method : Method A

^ Upon request

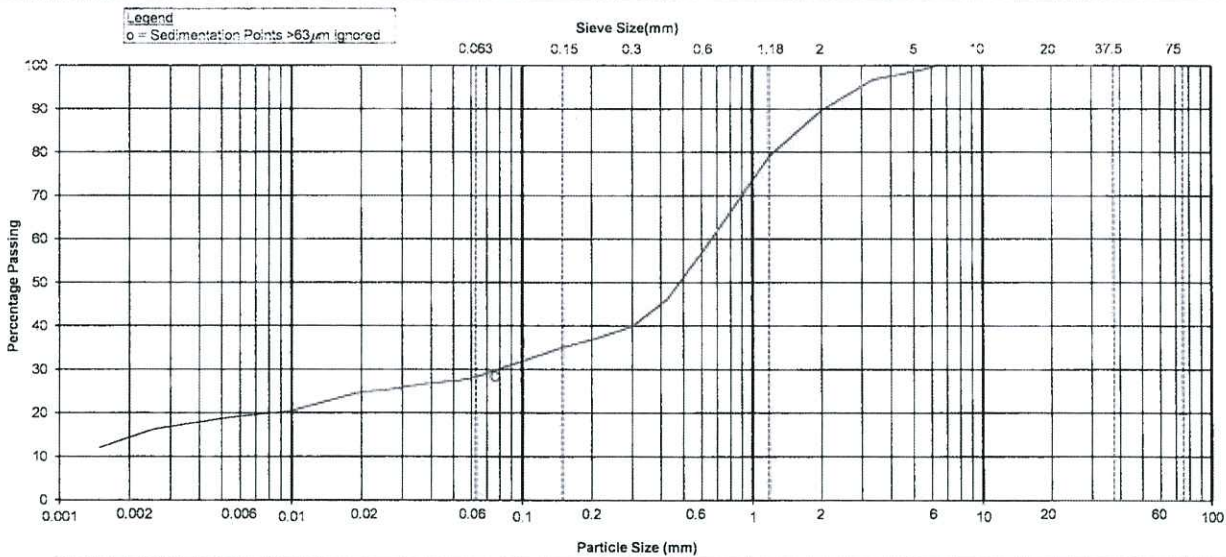
* Delete as appropriate

‡ Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	* Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D _K (%)	^ Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0761	-	28	-
14.0 mm	100	-	-	0.0540	-	28	-
10.0 mm	100	-	-	0.0382	-	27	-
6.30 mm	100	-	-	0.0271	-	26	-
5.00 mm	99	-	-	0.0192	-	25	-
3.35 mm	97	-	-	0.0100	-	20	-
2.00 mm	90	-	-	0.0050	-	19	-
1.18 mm	79	-	-	0.0025	-	16	-
600 μm	57	-	-	0.0015	-	12	-
425 μm	46	-	-				
300 μm	40	-	-				
212 μm	37	-	-				
150 μm	35	-	-				
63 μm	28	-	-				
0 μm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
 Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
 Sampling History : As received
 The presence of any visible organic matter in the soil : None

SUMMARY :
 Gravel (%) : 10
 Sand (%) : 62
 Silt (%) : 14
 Clay (%) : 14



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COB- BLES
	SILT			SAND			GRAVEL			

Technician : K Y Sun

Checked By :
 Name : T K Lam
 Date : 15/03/2018

Approved By :
 Signatory : Lau Wai Cheong
 Date : 15/03/2018

Date : 09/03/2018

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Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Contract No. :

Report No. : J2999-272.25

Date Received : 05/03/2018
 Tested Date : 12/03/2018

Works Order No. : 272
 Sample ID No. : HK1818845-031
 Sample No. : S44
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : -

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A

^ Upon request

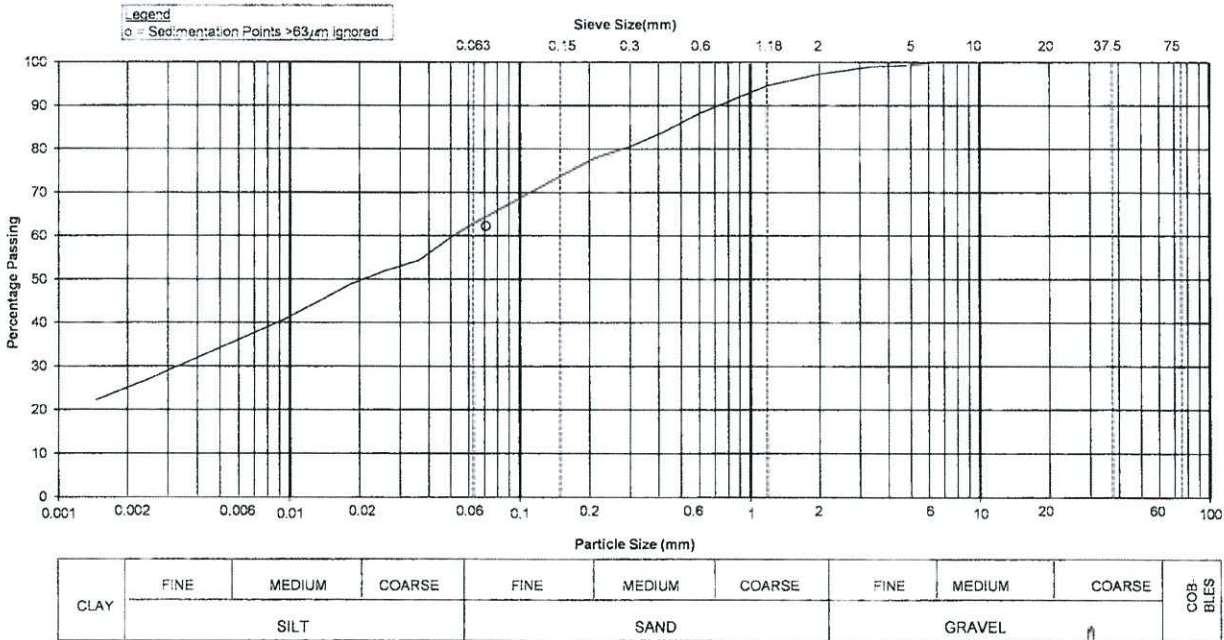
* Delete as appropriate

‡ Information provided by customer

SIEVE ANALYSIS	Percent Passing (%)	^Expanded Uncertainty of the Percent Passing (%)	^Cumulative Percent Passing with Expanded Uncertainty (%)	SEDIMENTATION ANALYSIS			
				Particle Diameter (mm)	^Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0709	-	62	-
14.0 mm	100	-	-	0.0505	-	60	-
10.0 mm	100	-	-	0.0362	-	54	-
6.30 mm	100	-	-	0.0258	-	52	-
5.00 mm	99	-	-	0.0184	-	49	-
3.35 mm	99	-	-	0.0097	-	41	-
2.00 mm	97	-	-	0.0049	-	34	-
1.18 mm	95	-	-	0.0025	-	27	-
600 µm	88	-	-	0.0015	-	22	-
425 µm	84	-	-				
300 µm	81	-	-				
212 µm	78	-	-				
150 µm	74	-	-				
63 µm	63	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
 Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
 Sampling History : As received
 The presence of any visible organic matter in the soil : None

SUMMARY :
 Gravel (%) : 3
 Sand (%) : 34
 Silt (%) : 38
 Clay (%) : 25



Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun

Checked By : T K Lam

Approved By : Lau Wai Cheong

Date : 12/03/2018

Date : 17/03/2018

Date : 17/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.25

Date Received : 05/03/2018
 Tested Date : 12/03/2018

Works Order No. : 272
 Sample ID No. : HK1818845-032
 Sample No. : S39
 Sample Depth (m)
 Specimen Depth (m)
 Sample Type : Small Disturbed
 Sample Origin :

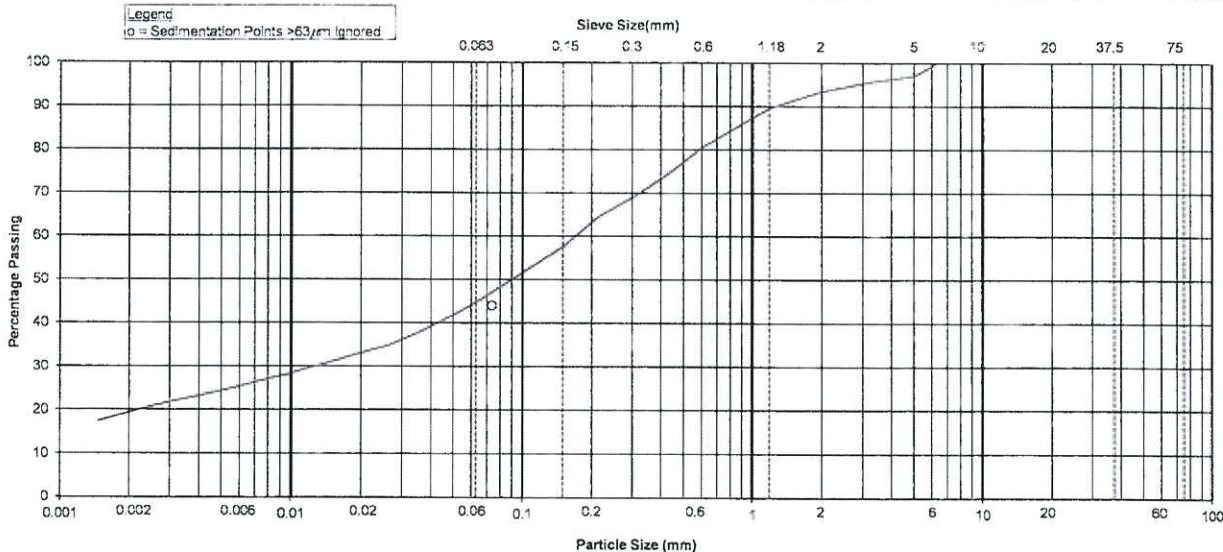
Description : Dark grey, sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate ‡ Information provided by customer

SIEVE ANALYSIS	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	SEDIMENTATION ANALYSIS			
				Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0732	-	44	-
14.0 mm	100	-	-	0.0520	-	42	-
10.0 mm	100	-	-	0.0372	-	38	-
6.30 mm	100	-	-	0.0266	-	35	-
5.00 mm	97	-	-	0.0189	-	33	-
3.35 mm	96	-	-	0.0099	-	28	-
2.00 mm	94	-	-	0.0050	-	24	-
1.18 mm	90	-	-	0.0025	-	21	-
600 µm	81	-	-	0.0015	-	17	-
425 µm	74	-	-				
300 µm	69	-	-				
212 µm	64	-	-				
150 µm	58	-	-				
63 µm	45	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
 Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
 Sampling History : As received
 The presence of any visible organic matter in the soil : None

SUMMARY :
 Gravel (%) : 6
 Sand (%) : 49
 Silt (%) : 26
 Clay (%) : 19



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COB-BLES
	SILT			SAND			GRAVEL			

Form: GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun Checked By : T K Lam Approved By : Lau Wai Cheong
 Date : 12/03/2018 Date : 17/03/2018 Date : 17/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No.
 Customer : ALS Technichem (HK) Pty Ltd
 Project :

Report No. : J2999-272.25

Date Received : 05/03/2018
 Tested Date : 14/03/2018

Works Order No. : 272
 Sample ID No. : HK1818845-033
 Sample No. : S40
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : *

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

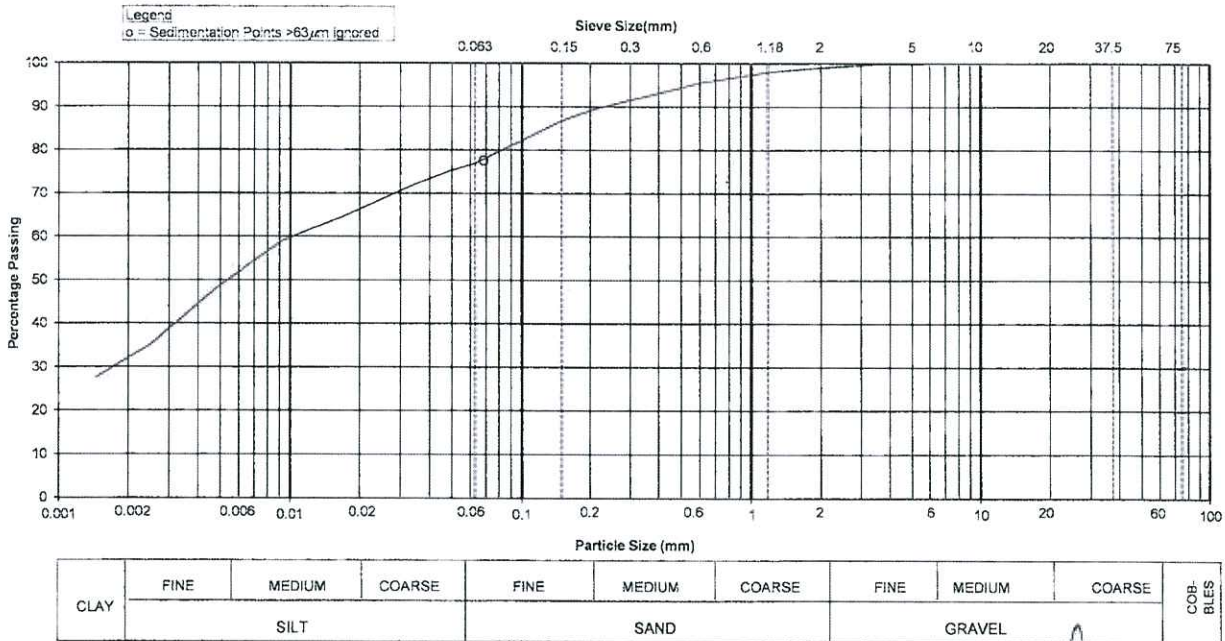
Sieve Method : Method A * Upon request * Delete as appropriate

* Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	* Expanded Uncertainty of the Percent Passing (%)	* Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	* Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	* Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-				
14.0 mm	100	-	-				
10.0 mm	100	-	-				
6.30 mm	100	-	-				
5.00 mm	100	-	-				
3.35 mm	100	-	-				
2.00 mm	99	-	-				
1.18 mm	98	-	-				
600 µm	96	-	-				
425 µm	94	-	-				
300 µm	92	-	-				
212 µm	90	-	-				
150 µm	87	-	-				
63 µm	77	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
Sampling History : As received
The presence of any visible organic matter in the soil : None

SUMMARY :			
Gravel (%)	:	1	
Sand (%)	:	22	
Silt (%)	:	45	
Clay (%)	:	32	



Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun
 Date : 14/03/2018

Checked By : TK Lam
 Name : TK Lam
 Date : 20/03/2018

Approved By : Lau Wai Cheong
 Signatory : Lau Wai Cheong
 Date : 20/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999
 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.25

Works Order No. : 272
 Sample ID No. : HK1818845-034
 Sample No. : S41
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : -

Date Received : 05/03/2018
 Tested Date : 09/03/2018

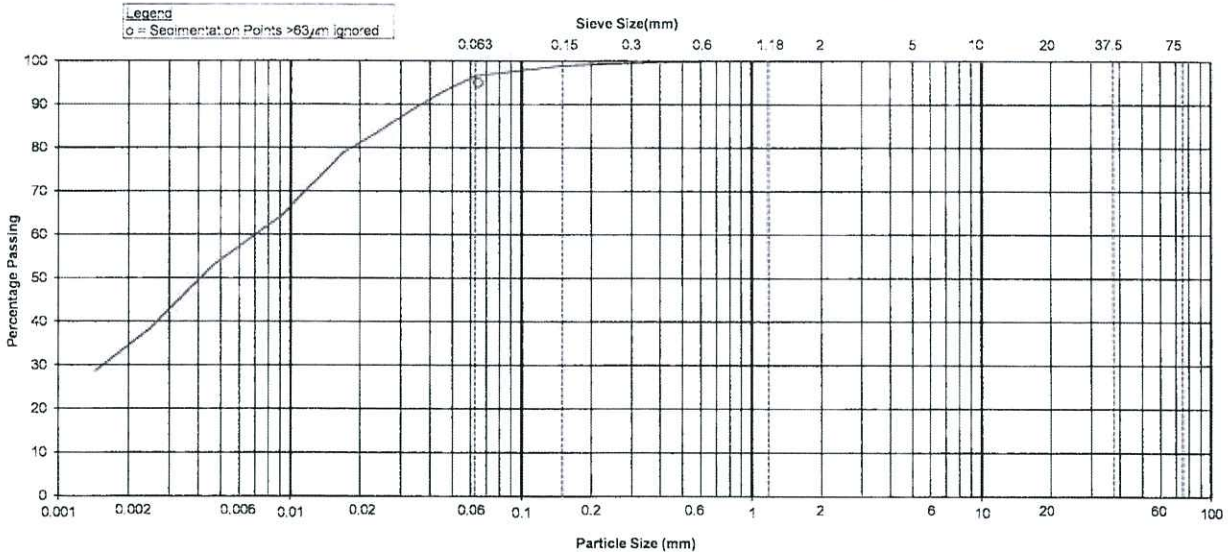
Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate ‡ Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	Expanded Uncertainty of the Percent Passing (%)	Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0645	-	95	-
14.0 mm	100	-	-	0.0459	-	93	-
10.0 mm	100	-	-	0.0329	-	89	-
6.30 mm	100	-	-	0.0236	-	84	-
5.00 mm	100	-	-	0.0169	-	79	-
3.35 mm	100	-	-	0.0091	-	64	-
2.00 mm	100	-	-	0.0047	-	53	-
1.18 mm	100	-	-	0.0024	-	38	-
600 µm	100	-	-	0.0014	-	29	-
425 µm	100	-	-				
300 µm	100	-	-				
212 µm	99	-	-				
150 µm	99	-	-				
63 µm	97	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
 Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
 Sampling History : As received
 The presence of any visible organic matter in the soil : None

SUMMARY :
 Gravel (%) : 0
 Sand (%) : 3
 Silt (%) : 63
 Clay (%) : 34



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COBBLES
	SILT			SAND			GRAVEL			

Technician : K Y Sun Checked By : T K Lam Approved By : Lau Wai Cheong
 Date : 09/03/2018 Date : 15/03/2018 Date : 15/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project :

Report No. : J2999-272.25

Date Received : 05/03/2018
 Tested Date : 13/03/2018

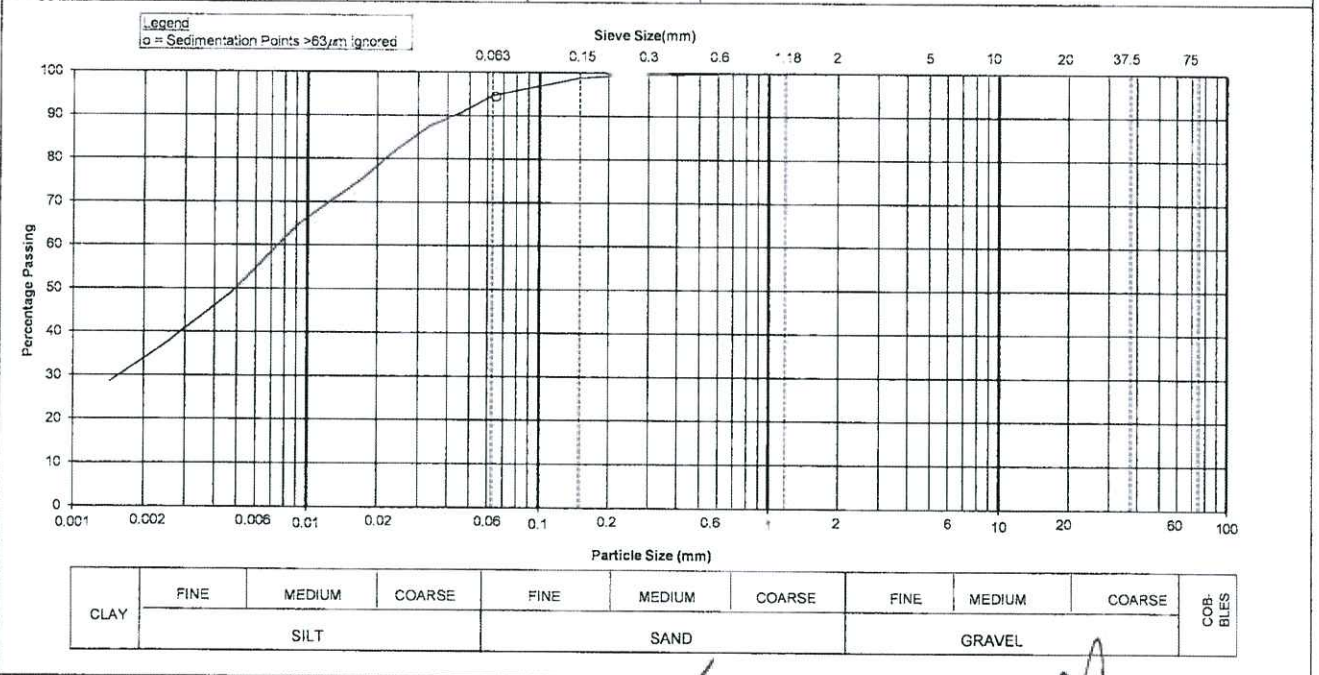
Works Order No. : 272
 Sample ID No. : HK1818845-035
 Sample No. : S42
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin :

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate

* Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS				
Sieve Size	Percent Passing (%)	^Expanded Uncertainty of the Percent Passing (%)	^Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed) :	Particle Diameter (mm)	^Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-	2.65 #	0.0648	-	94	-
75.0 mm	100	-	-	Dispersant Details : Sodium hexametaphosphate, Sodium carbonate	0.0464	-	91	-
63.0 mm	100	-	-	Sampling History : As received	0.0331	-	87	-
50.0 mm	100	-	-	The presence of any visible organic matter in the soil : None	0.0238	-	82	-
37.5 mm	100	-	-		0.0172	-	75	-
28.0 mm	100	-	-		0.0091	-	65	-
20.0 mm	100	-	-		0.0047	-	49	-
14.0 mm	100	-	-		0.0024	-	37	-
10.0 mm	100	-	-		0.0014	-	29	-
6.30 mm	100	-	-					
5.00 mm	100	-	-					
3.35 mm	100	-	-					
2.00 mm	100	-	-					
1.18 mm	100	-	-					
600 μm	100	-	-					
425 μm	100	-	-					
300 μm	100	-	-					
212 μm	99	-	-					
150 μm	99	-	-					
63 μm	95	-	-					
0 μm	0	-	-					
				SUMMARY :				
				Gravel (%) : 0				
				Sand (%) : 5				
				Silt (%) : 62				
				Clay (%) : 33				



Form : GESR003 5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun

Checked By :
 Name : T K Lam
 Date : 17/03/2018

Approved By :
 Signatory : Lau Wai Cheong
 Date : 17/03/2018

Date : 13/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Contract No. :

Report No. : J2999-272.25

Date Received : 05/03/2018
 Tested Date : 14/03/2018

Works Order No. : 272
 Sample ID No : HK1818845-036
 Sample No. : S43
 Sample Depth (m)
 Specimen Depth (m)
 Sample Type : Small Disturbed
 Sample Origin :

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

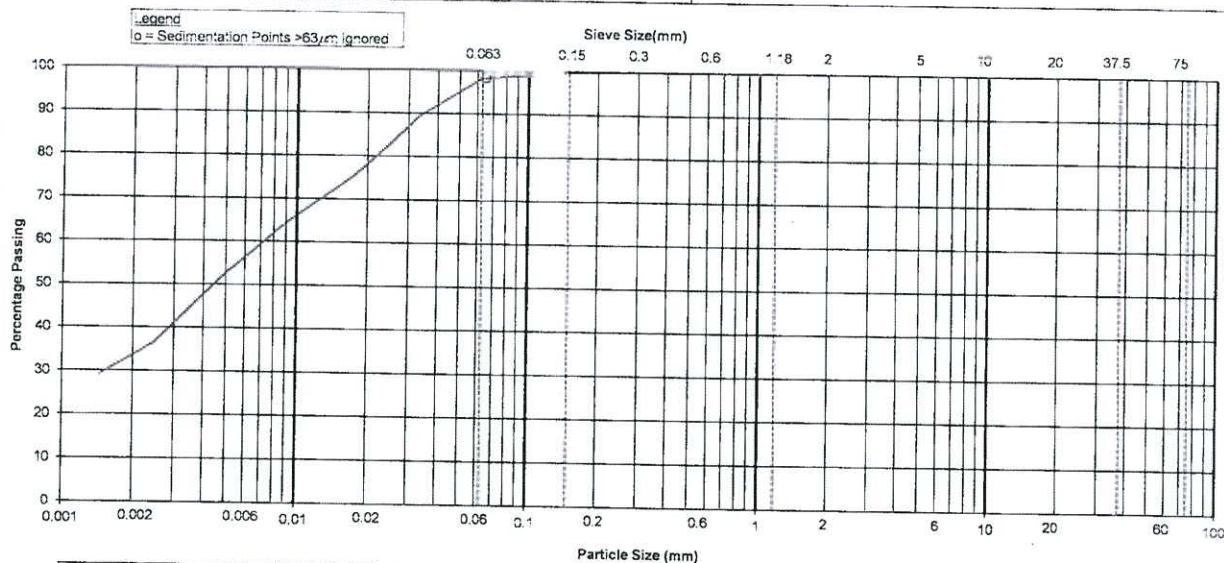
Sieve Method : Method A ^ Upon request * Delete as appropriate

† Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS				
Sieve Size	Percent Passing (%)	^Expanded Uncertainty of the Percent Passing (%)	^Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed) : 2.65 #	Particle Diameter (mm)	^Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-	Dispersant Details : Sodium hexametaphosphate, Sodium carbonate	0.0647	-	98	-
75.0 mm	100	-	-	Sampling History : As received	0.0463	-	94	-
63.0 mm	100	-	-	The presence of any visible organic matter in the soil : None	0.0332	-	89	-
50.0 mm	100	-	-		0.0240	-	82	-
37.5 mm	100	-	-		0.0173	-	75	-
28.0 mm	100	-	-		0.0092	-	65	-
20.0 mm	100	-	-		0.0047	-	52	-
14.0 mm	100	-	-		0.0025	-	37	-
10.0 mm	100	-	-		0.0014	-	29	-
6.30 mm	100	-	-					
5.00 mm	100	-	-					
3.35 mm	100	-	-					
2.00 mm	100	-	-					
1.18 mm	100	-	-					
600 µm	100	-	-					
425 µm	100	-	-					
300 µm	100	-	-					
212 µm	100	-	-					
150 µm	100	-	-					
63 µm	98	-	-					
0 µm	0	-	-					

SUMMARY :

Gravel (%)	:	0
Sand (%)	:	2
Silt (%)	:	65
Clay (%)	:	33



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COBBLES
	SILT			SAND			GRAVEL			

Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun
 Date : 14/03/2018

Checked By : T K Lam
 Date : 20/03/2018

Approved By : Lau Wai Cheong
 Date : 20/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.25

Date Received : 05/03/2018
 Tested Date : 12/03/2018

Works Order No. : 272
 Sample ID No. : HK1818845-037
 Sample No. : S38
 Sample Depth (m)
 Specimen Depth (m)
 Sample Type : Small Disturbed
 Sample Origin : *

Description : Dark grey, slightly sandy SILT/CLAY

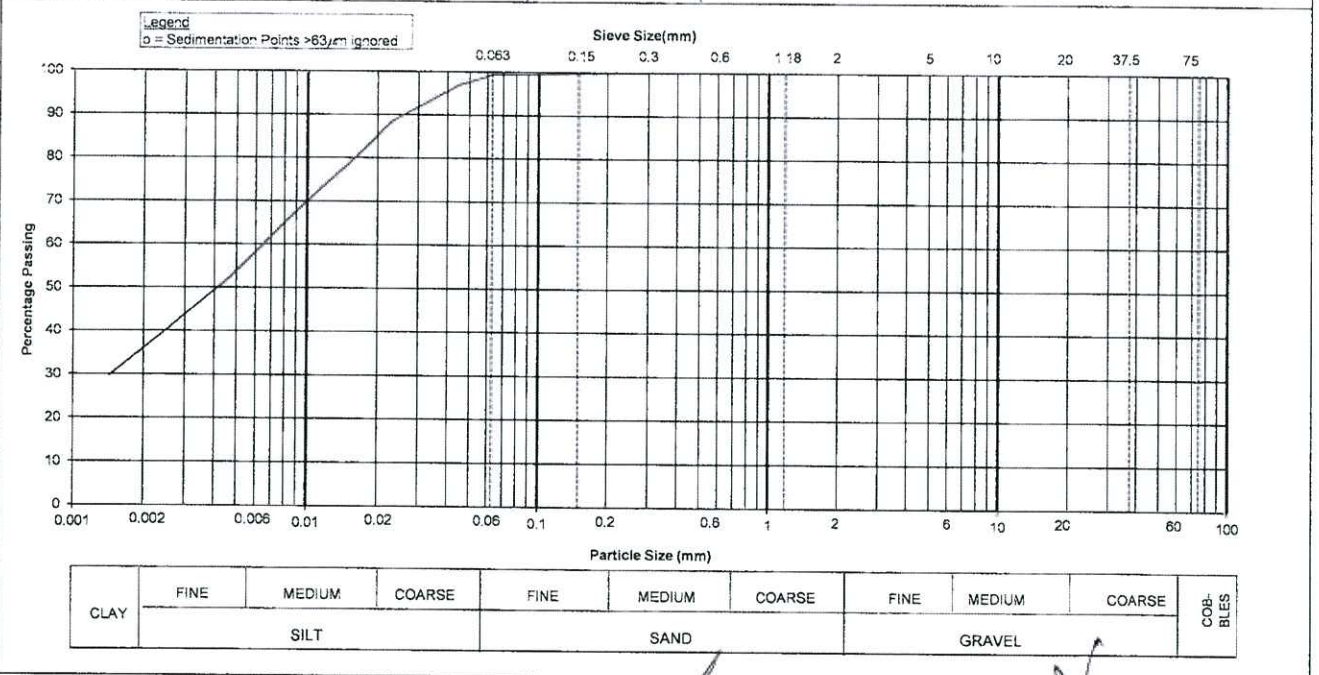
Sieve Method : Method A ^ Upon request * Delete as appropriate

† Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-				
14.0 mm	100	-	-				
10.0 mm	100	-	-				
6.30 mm	100	-	-				
5.00 mm	100	-	-				
3.35 mm	100	-	-				
2.00 mm	100	-	-				
1.18 mm	100	-	-				
600 µm	100	-	-				
425 µm	100	-	-				
300 µm	100	-	-				
212 µm	100	-	-				
150 µm	100	-	-				
63 µm	99	-	-				
0 µm	0	-	-				

SEDIMENTATION ANALYSIS			
Specific Gravity (# if assumed) :	2.65 #		
Dispersant Details :	Sodium hexametaphosphate, Sodium carbonate		
Sampling History :	As received		
The presence of any visible organic matter in the soil : None			
Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
0.0625	-	99	-
0.0445	-	97	-
0.0319	-	93	-
0.0229	-	88	-
0.0166	-	81	-
0.0089	-	68	-
0.0047	-	52	-
0.0024	-	40	-
0.0014	-	30	-

SUMMARY :			
Gravel (%)	:	0	
Sand (%)	:	1	
Silt (%)	:	63	
Clay (%)	:	36	



Form: GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun Checked By : TK Lam Approved By : Lau Wai Cheong
 Date : 12/03/2018 Date : 17/03/2018 Date : 17/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No.
 Customer : ALS Technichem (HK) Pty Ltd
 Project :

Report No. : J2999-272.25

Date Received : 05/03/2018
 Tested Date : 13/03/2018

Works Order No. : 272
 Sample ID No. : HK1818845-038
 Sample No. : S37
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin :

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

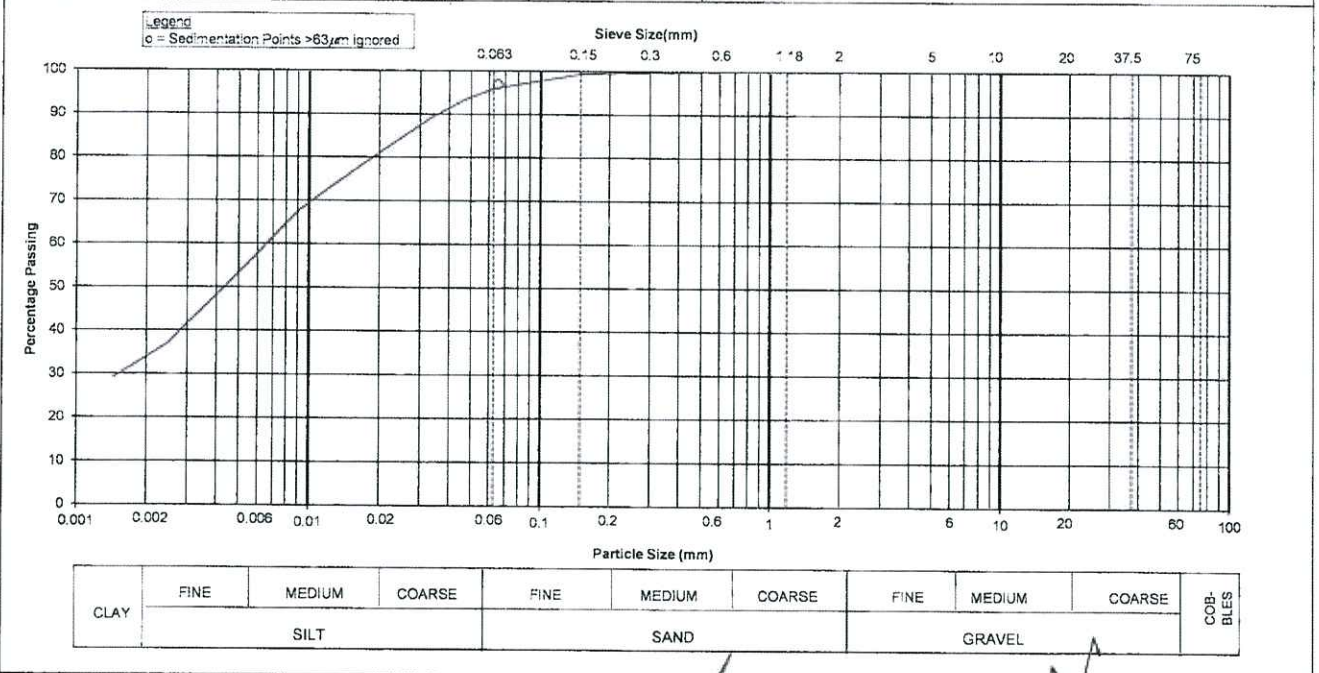
Sieve Method : Method A * Upon request * Delete as appropriate

* Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	* Expanded Uncertainty of the Percent Passing (%)	* Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	* Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	* Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-	0.0650	-	97	-
75.0 mm	100	-	-	0.0465	-	93	-
63.0 mm	100	-	-	0.0333	-	89	-
50.0 mm	100	-	-	0.0239	-	84	-
37.5 mm	100	-	-	0.0171	-	79	-
28.0 mm	100	-	-	0.0091	-	68	-
20.0 mm	100	-	-	0.0047	-	52	-
14.0 mm	100	-	-	0.0024	-	37	-
10.0 mm	100	-	-	0.0014	-	29	-
6.30 mm	100	-	-				
5.00 mm	100	-	-				
3.35 mm	100	-	-				
2.00 mm	100	-	-				
1.18 mm	100	-	-				
600 µm	100	-	-				
425 µm	100	-	-				
300 µm	100	-	-				
212 µm	100	-	-				
150 µm	99	-	-				
63 µm	96	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
 Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
 Sampling History : As received
 The presence of any visible organic matter in the soil : None

SUMMARY :
 Gravel (%) : 0
 Sand (%) : 4
 Silt (%) : 62
 Clay (%) : 34



Form: GFESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun Checked By : T K Lam Approved By : Lau Wai Cheong
 Date : 13/03/2018 Date : 17/03/2018 Date : 17/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.25

Date Received : 05/03/2018
 Tested Date : 13/03/2018

Works Order No. : 272
 Sample ID No. : HK1818845-039
 Sample No. : S36
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : †

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

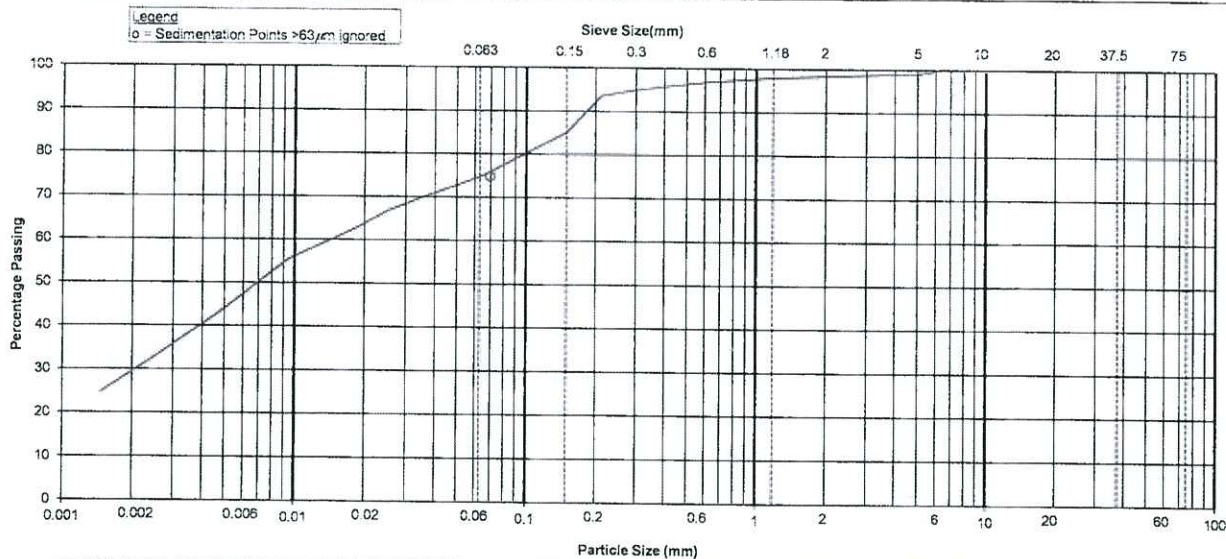
Sieve Method : Method A † Upon request * Delete as appropriate

† Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-	0.0696	-	75	-
75.0 mm	100	-	-	0.0495	-	73	-
63.0 mm	100	-	-	0.0353	-	70	-
50.0 mm	100	-	-	0.0251	-	67	-
37.5 mm	100	-	-	0.0180	-	62	-
28.0 mm	100	-	-	0.0094	-	55	-
20.0 mm	100	-	-	0.0048	-	44	-
14.0 mm	100	-	-	0.0025	-	33	-
10.0 mm	100	-	-	0.0015	-	25	-
6.30 mm	100	-	-				
5.00 mm	99	-	-				
3.35 mm	99	-	-				
2.00 mm	98	-	-				
1.18 mm	98	-	-				
600 µm	97	-	-				
425 µm	96	-	-				
300 µm	95	-	-				
212 µm	94	-	-				
150 µm	85	-	-				
63 µm	75	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
 Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
 Sampling History : As received
 The presence of any visible organic matter in the soil : None

SUMMARY :
 Gravel (%) : 2
 Sand (%) : 23
 Silt (%) : 46
 Clay (%) : 29



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COB- BLES
	SILT			SAND			GRAVEL			

Technician : K Y Sun

Checked By :
 Name : T K Lam
 Date : 17/03/2018

Approved By :
 Signatory : Lau Wai Cheong
 Date : 17/03/2018

Date : 13/03/2018

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 Tseung Kwan O, N.T. Tel : 26991980, Fax : 26917547

TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.25

Date Received : 05/03/2018
 Tested Date : 13/03/2018

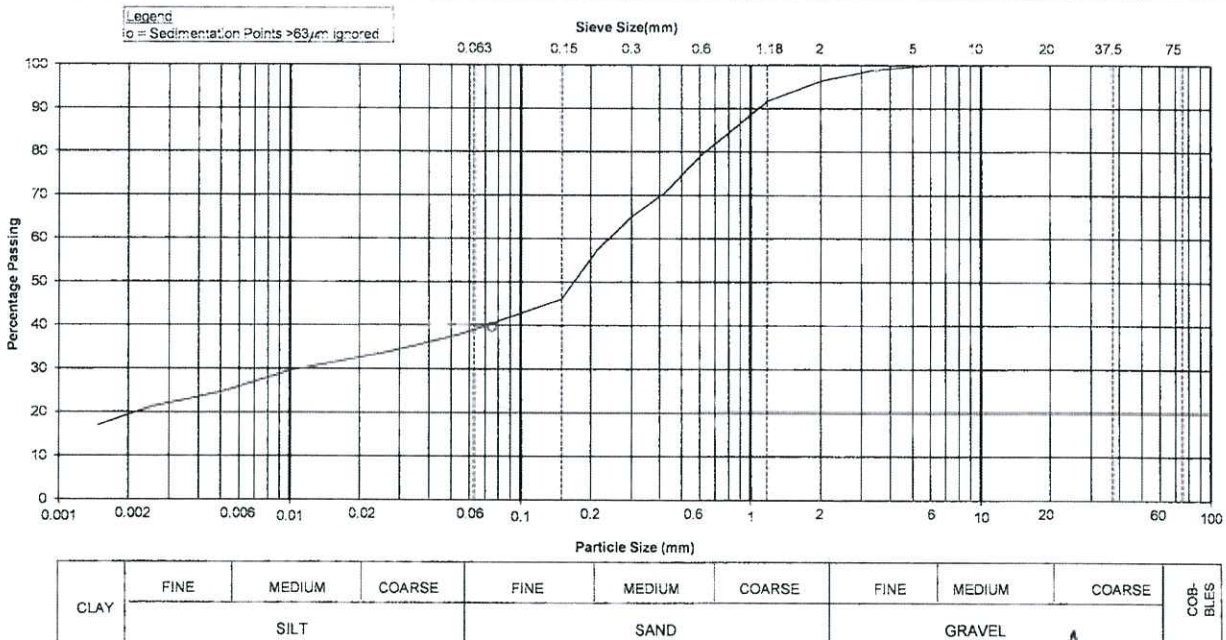
Works Order No. : 272
 Sample ID No. : HK1818845-040
 Sample No. : S35
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : -

Description : Dark grey, sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate

† Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed):			
100.0 mm	100	-	-	2.65 #			
75.0 mm	100	-	-	Dispersant Details : Sodium hexametaphosphate, Sodium carbonate			
63.0 mm	100	-	-	Sampling History : As received			
50.0 mm	100	-	-	The presence of any visible organic matter in the soil : None			
37.5 mm	100	-	-	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
28.0 mm	100	-	-	0.0749	-	40	-
20.0 mm	100	-	-	0.0532	-	38	-
14.0 mm	100	-	-	0.0378	-	36	-
10.0 mm	100	-	-	0.0268	-	34	-
6.30 mm	100	-	-	0.0191	-	32	-
5.00 mm	100	-	-	0.0099	-	30	-
3.35 mm	99	-	-	0.0050	-	25	-
2.00 mm	96	-	-	0.0025	-	21	-
1.18 mm	92	-	-	0.0015	-	17	-
600 µm	79	-	-	SUMMARY :			
425 µm	71	-	-	Gravel (%)	:	4	
300 µm	65	-	-	Sand (%)	:	57	
212 µm	57	-	-	Silt (%)	:	20	
150 µm	46	-	-	Clay (%)	:	19	
63 µm	39	-	-				
0 µm	0	-	-				



Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun

Checked By :
 Name : T.K. Lam
 Date : 17/03/2018

Approved By :
 Signatory : Lau Wai Cheong
 Date : 17/03/2018

Date : 13/03/2018

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 21 Chun Wang Street, Tseung Kwan O Industrial Estate,
 Tseung Kwan O, N.T. Tel : 26991980, Fax : 26917547

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

Client : MOTT MACDONALD HONG KONG LIMITED
Laboratory : ALS Technichem (HK) Pty Ltd Page : 1 of 26

Contact : DULCIE CHAN
Contact : Ivan Leung Work Order : HK1819068

Address : 20/F., AIA KOWLOON TOWER, LANDMARK EAST, 100 HOW MING STREET, KWUN TONG, KOWLOON HONG KONG
Address : 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong Amendment : 1

E-mail : Dulcie.chan@mottmac.com
E-mail : ivan.leung@alsglobal.com

Telephone : +852 2828 5933
Telephone : 26101044

Facsimile : +852 2828 1823
Facsimile : +852 2610 2021

Project : IMPROVEMENT DREDGING FOR LAMMA POWER STATION NAVIGATION CHANNEL (392653)
Date Samples Received : 01-Mar-2018

Order number : ---
Quote number : HKE/2693a/2017_R2 Issue Date : 09-Apr-2018

C-O-C number : ---
No. of samples received : 29

Site : ---
No. of samples analysed : 29

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This document has been signed by those names that appear on this report and are the authorised signatories.

Signatories	Position	Authorised results for
Anth Ngoc Huynh .	Senior Chemist	Organics
Chan Siu Ming , Vico	Manager - Inorganics	Inorganics
Wong Wing , Kenneth	Manager - Metals	Metals

ALS Technichem (HK) Pty Ltd
Part of the ALS Laboratory Group

11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong
Tel: +852 2610 1044 Fax: +852 2610 2021 www.alsglobal.com



Page Number : 2 of 26
Client : MOTT MACDONALD HONG KONG LIMITED
Work Order : HK1819068, Amendment 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. Testing period is from 01-Mar-2018 to 15-Mar-2018.
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: HK1819068

Sample(s) were received in chilled condition.

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

Total PCBs results (Method: EP065) are not HOKLAS accredited. The values are calculated from summation of the 18PCB congeners, based on Limit of Detection (LOD) of 1 ug/kg.

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

Low and High M.W. PAHs results (Method: EP076HK) are not HOKLAS accredited. Low M.W. PAHs is sum of Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene; High M.W. PAHs is sum of Fluoranthene, Pyrene, Benz(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1.2.3.cd)pyrene, Dibenz(a,h)anthracene, Benzo(g,h,i)perylene.



Analytical Results

Compound	CAS Number	LOR	Client sample ID		S31	S33	S34	S30	S29
			Client sampling date / time	Unit					
EA/ED: Physical and Aggregate Properties									
EA055: Moisture Content (dried @ 103°C)	----	0.1	%		43.3	53.4	60.3	59.5	64.0
EG: Metals and Major Cations									
EG020: Arsenic	7440-38-2	1	mg/kg		6	7	10	10	10
EG020: Cadmium	7440-43-9	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
EG020: Chromium	7440-47-3	1	mg/kg		22	33	41	42	42
EG020: Copper	7440-50-8	1	mg/kg		13	21	26	25	24
EG020: Lead	7439-92-1	1	mg/kg		20	29	35	34	35
EG020: Mercury	7439-97-6	0.05	mg/kg		0.10	0.09	0.10	0.10	0.09
EG020: Nickel	7440-02-0	1	mg/kg		14	23	28	28	29
EG020: Silver	7440-22-4	0.1	mg/kg		<0.1	0.1	0.2	0.2	0.1
EG020: Zinc	7440-66-6	1	mg/kg		57	87	106	107	105
EP-065: PCB Single Congeners									
EP065: PCB 8	34883-43-7	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 18	37680-65-2	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 28	7012-37-5	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 44	41464-39-5	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 52	35693-99-3	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 66	32598-10-0	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 77	32598-13-3	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 101	37680-73-2	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 105	32598-14-4	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 118	31508-00-6	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 126	57465-28-8	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 128	38380-07-3	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 138	35065-28-2	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 153	35065-27-1	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 169	32774-16-6	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 170	35065-30-6	3	µg/kg		<3	<3	<3	<3	<3
EP065: PCB 180	35065-29-3	3	µg/kg		<3	<3	<3	<3	<3



Sub-Matrix: SEDIMENT

Compound	CAS Number	LOR	Client sampling date / time		S31	S33	S34	S30	S29
			Client sample ID	Unit					
EP-065: PCB Single Congeners - Continued									
EP065: PCB 187	52663-68-0	3		01-Mar-2018 08:48	HK1819068-001	<3		01-Mar-2018 09:04	HK1819068-005
EP065: Total Polychlorinated biphenyls	----	18		01-Mar-2018 08:55	HK1819068-002	<3		01-Mar-2018 09:00	HK1819068-004
				01-Mar-2018 08:55	HK1819068-003	<3		01-Mar-2018 09:00	HK1819068-005
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)									
EP076HK: Naphthalene	91-20-3	50	µg/kg	01-Mar-2018 08:48	HK1819068-001	<3		01-Mar-2018 09:04	HK1819068-005
EP076HK: Acenaphthylene	208-96-8	50	µg/kg	01-Mar-2018 08:55	HK1819068-002	<3		01-Mar-2018 09:00	HK1819068-004
EP076HK: Acenaphthene	83-32-9	50	µg/kg	01-Mar-2018 08:55	HK1819068-002	<3		01-Mar-2018 09:00	HK1819068-004
EP076HK: Fluorene	86-73-7	50	µg/kg	01-Mar-2018 08:55	HK1819068-002	<3		01-Mar-2018 09:00	HK1819068-004
EP076HK: Phenanthrene	85-01-8	50	µg/kg	01-Mar-2018 08:55	HK1819068-002	<3		01-Mar-2018 09:00	HK1819068-004
EP076HK: Anthracene	120-12-7	50	µg/kg	01-Mar-2018 08:55	HK1819068-002	<3		01-Mar-2018 09:00	HK1819068-004
EP076HK: Fluoranthene	206-44-0	150	µg/kg	01-Mar-2018 08:55	HK1819068-002	<3		01-Mar-2018 09:00	HK1819068-004
EP076HK: Pyrene	129-00-0	150	µg/kg	01-Mar-2018 08:55	HK1819068-002	<3		01-Mar-2018 09:00	HK1819068-004
EP076HK: Benz(a)anthracene	56-55-3	150	µg/kg	01-Mar-2018 08:55	HK1819068-002	<3		01-Mar-2018 09:00	HK1819068-004
EP076HK: Chrysene	218-01-9	150	µg/kg	01-Mar-2018 08:55	HK1819068-002	<3		01-Mar-2018 09:00	HK1819068-004
EP076HK: Benzo(b)fluoranthene	205-99-2	150	µg/kg	01-Mar-2018 08:55	HK1819068-002	<3		01-Mar-2018 09:00	HK1819068-004
EP076HK: Benzo(k)fluoranthene	207-08-9	150	µg/kg	01-Mar-2018 08:55	HK1819068-002	<3		01-Mar-2018 09:00	HK1819068-004
EP076HK: Benzo(a)pyrene	50-32-8	150	µg/kg	01-Mar-2018 08:55	HK1819068-002	<3		01-Mar-2018 09:00	HK1819068-004
EP076HK: Indeno(1,2,3-cd)pyrene	193-39-5	150	µg/kg	01-Mar-2018 08:55	HK1819068-002	<3		01-Mar-2018 09:00	HK1819068-004
EP076HK: Dibenz(a,h)anthracene	53-70-3	150	µg/kg	01-Mar-2018 08:55	HK1819068-002	<3		01-Mar-2018 09:00	HK1819068-004
EP076HK: Benzo(g,h,i)perylene	191-24-2	150	µg/kg	01-Mar-2018 08:55	HK1819068-002	<3		01-Mar-2018 09:00	HK1819068-004
EP076HK: Low M.W. PAHs	----	550	µg/kg	01-Mar-2018 08:55	HK1819068-002	<3		01-Mar-2018 09:00	HK1819068-004
EP076HK: High M.W. PAHs	----	1700	µg/kg	01-Mar-2018 08:55	HK1819068-002	<3		01-Mar-2018 09:00	HK1819068-004
EP-076S: Polycyclic Aromatic Hydrocarbons (PAHs) Surrogates									
EP076HK: 2-Fluorobiphenyl	321-60-8	0.1	%	01-Mar-2018 08:55	HK1819068-002	<3		01-Mar-2018 09:00	HK1819068-004
EP076HK: 4-Terphenyl-d14	1718-51-0	0.1	%	01-Mar-2018 08:55	HK1819068-002	<3		01-Mar-2018 09:00	HK1819068-004
EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate									
EP065: Decachlorobiphenyl	2051-24-3	0.1	%	01-Mar-2018 08:55	HK1819068-002	<3		01-Mar-2018 09:00	HK1819068-004



Sub-Matrix: SEDIMENT		Client sample ID		S24	S27	S26	S25	S28	S25	S26	S27	S24	
Compound	CAS Number	LOR	Unit	01-Mar-2018 09:12	01-Mar-2018 09:16	01-Mar-2018 09:20	01-Mar-2018 09:24	01-Mar-2018 09:29	HK1819068-006	HK1819068-007	HK1819068-008	HK1819068-009	HK1819068-010
EP-065: PCB Single Conceners - Continued													
EP065: Total Polychlorinated biphenyls	----	18	µg/kg	<18	<18	<18	<18	<18	<18	<18	<18	<18	<18
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)													
EP076HK: Naphthalene	91-20-3	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Acenaphthylene	208-96-8	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Acenaphthene	83-32-9	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Fluorene	86-73-7	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Phenanthrene	85-01-8	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Anthracene	120-12-7	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Fluoranthene	206-44-0	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Pyrene	129-00-0	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Benz(a)anthracene	56-55-3	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Chrysene	218-01-9	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Benzo(b)fluoranthene	205-99-2	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Benzo(k)fluoranthene	207-08-9	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Benzo(a)pyrene	50-32-8	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Indeno(1,2,3-cd)pyrene	193-39-5	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Dibenz(a,h)anthracene	53-70-3	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Benzo(g,h,i)perylene	191-24-2	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Low M.W. PAHs	----	550	µg/kg	<550	<550	<550	<550	<550	<550	<550	<550	<550	<550
EP076HK: High M.W. PAHs	----	1700	µg/kg	<1700	<1700	<1700	<1700	<1700	<1700	<1700	<1700	<1700	<1700
EP-076S: Polycyclic Aromatic Hydrocarbons (PAHs) Surrogates													
EP076HK: 2-Fluorobiphenyl	321-60-8	0.1	%	88.3	88.3	87.4	84.9	89.9	88.3	87.4	84.9	89.9	89.9
EP076HK: 4-Terphenyl-d14	1718-51-0	0.1	%	88.9	88.2	89.2	84.8	89.4	88.2	89.2	84.8	89.4	89.4
EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate													
EP065: Decachlorobiphenyl	2051-24-3	0.1	%	81.6	71.4	71.1	92.9	78.7	81.6	71.1	92.9	78.7	78.7



Sub-Matrix: SEDIMENT		Client sample ID		S22	S19	S20	S21	S17
Compound	CAS Number	LOR	Unit	01-Mar-2018 09:39 HK1819068-011	01-Mar-2018 11:54 HK1819068-012	01-Mar-2018 12:00 HK1819068-013	01-Mar-2018 12:05 HK1819068-014	01-Mar-2018 12:17 HK1819068-015
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	----	0.1	%	64.6	62.5	64.7	54.1	52.8
EG: Metals and Major Cations								
EG020: Arsenic	7440-38-2	1	mg/kg	9	10	9	10	10
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EG020: Chromium	7440-47-3	1	mg/kg	42	39	43	37	36
EG020: Copper	7440-50-8	1	mg/kg	24	22	24	20	20
EG020: Lead	7439-92-1	1	mg/kg	36	32	36	30	30
EG020: Mercury	7439-97-6	0.05	mg/kg	0.10	0.09	0.13	0.12	0.09
EG020: Nickel	7440-02-0	1	mg/kg	29	27	30	25	25
EG020: Silver	7440-22-4	0.1	mg/kg	0.1	0.1	0.1	0.1	0.1
EG020: Zinc	7440-66-6	1	mg/kg	104	96	108	98	90
EP-065: PCB Single Congeners								
EP065: PCB 8	34883-43-7	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 18	37680-65-2	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 28	7012-37-5	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 44	41464-39-5	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 52	35693-99-3	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 66	32598-10-0	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 77	32598-13-3	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 101	37680-73-2	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 105	32598-14-4	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 118	31508-00-6	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 126	57465-28-8	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 128	38380-07-3	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 138	35065-28-2	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 153	35065-27-1	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 169	32774-16-6	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 170	35065-30-6	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 180	35065-29-3	3	µg/kg	<3	<3	<3	<3	<3
EP065: PCB 187	52663-68-0	3	µg/kg	<3	<3	<3	<3	<3



Sub-Matrix: SEDIMENT		Client sample ID		S17
Compound	CAS Number	LOR	Client sampling date / time	S21
				S20
				S19
				S22
				S18
EP-065: PCB Single Condensers - Continued				
EP065: Total Polychlorinated biphenyls	----	18	01-Mar-2018 09:39	<18
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)				
EP076HK: Naphthalene	91-20-3	50	01-Mar-2018 11:54	<50
EP076HK: Acenaphthylene	208-96-8	50	01-Mar-2018 12:00	<50
EP076HK: Acenaphthene	83-32-9	50	01-Mar-2018 12:05	<50
EP076HK: Fluorene	86-73-7	50	01-Mar-2018 12:00	<50
EP076HK: Phenanthrene	85-01-8	50	01-Mar-2018 11:54	<50
EP076HK: Anthracene	120-12-7	50	01-Mar-2018 09:39	<50
EP076HK: Fluoranthene	206-44-0	150	01-Mar-2018 11:54	<150
EP076HK: Pyrene	129-00-0	150	01-Mar-2018 09:39	<150
EP076HK: Benz(a)anthracene	56-55-3	150	01-Mar-2018 11:54	<150
EP076HK: Chrysene	218-01-9	150	01-Mar-2018 12:00	<150
EP076HK: Benzo(b)fluoranthene	205-99-2	150	01-Mar-2018 12:05	<150
EP076HK: Benzo(k)fluoranthene	207-08-9	150	01-Mar-2018 12:00	<150
EP076HK: Benzo(a)pyrene	50-32-8	150	01-Mar-2018 11:54	<150
EP076HK: Indeno(1,2,3-cd)pyrene	193-39-5	150	01-Mar-2018 09:39	<150
EP076HK: Dibenz(a,h)anthracene	53-70-3	150	01-Mar-2018 11:54	<150
EP076HK: Benzo(g,h,i)perylene	191-24-2	150	01-Mar-2018 12:00	<150
EP076HK: Low M.W. PAHs	----	550	01-Mar-2018 12:05	<550
EP076HK: High M.W. PAHs	----	1700	01-Mar-2018 12:00	<1700
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates				
EP076HK: 2-Fluorobiphenyl	321-60-8	0.1	01-Mar-2018 11:54	80.2
EP076HK: 4-Terphenyl-d14	1718-51-0	0.1	01-Mar-2018 09:39	83.7
EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate				
EP065: Decachlorobiphenyl	2051-24-3	0.1	01-Mar-2018 11:54	74.3
			01-Mar-2018 12:00	80.8
			01-Mar-2018 12:05	83.6
			01-Mar-2018 12:00	85.1
			01-Mar-2018 11:54	85.3
			01-Mar-2018 09:39	77.2



Sub-Matrix: SEDIMENT		Client sample ID		S16	S13	S14	S15	S12
Compound	CAS Number	LOR	Unit	Client sampling date / time	01-Mar-2018 12:23	01-Mar-2018 12:27	01-Mar-2018 12:31	01-Mar-2018 12:38
					HK1819068-017	HK1819068-018	HK1819068-019	HK1819068-020
EA/ED: Physical and Aggregate Properties								
EA055: Moisture Content (dried @ 103°C)	----	0.1	%		54.8	62.6	55.3	56.2
EG: Metals and Major Cations								
EG020: Arsenic	7440-38-2	1	mg/kg		10	9	10	10
EG020: Cadmium	7440-43-9	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2
EG020: Chromium	7440-47-3	1	mg/kg		36	41	36	39
EG020: Copper	7440-50-8	1	mg/kg		20	24	19	21
EG020: Lead	7439-92-1	1	mg/kg		30	34	30	32
EG020: Mercury	7439-97-6	0.05	mg/kg		0.10	0.10	0.08	0.08
EG020: Nickel	7440-02-0	1	mg/kg		24	28	25	27
EG020: Silver	7440-22-4	0.1	mg/kg		0.1	0.1	0.1	0.1
EG020: Zinc	7440-66-6	1	mg/kg		87	100	90	95
EP-065: PCB Single Congeners								
EP065: PCB 8	34883-43-7	3	µg/kg		<3	<3	<3	<3
EP065: PCB 18	37680-65-2	3	µg/kg		<3	<3	<3	<3
EP065: PCB 28	7012-37-5	3	µg/kg		<3	<3	<3	<3
EP065: PCB 44	41464-39-5	3	µg/kg		<3	<3	<3	<3
EP065: PCB 52	35693-99-3	3	µg/kg		<3	<3	<3	<3
EP065: PCB 66	32598-10-0	3	µg/kg		<3	<3	<3	<3
EP065: PCB 77	32598-13-3	3	µg/kg		<3	<3	<3	<3
EP065: PCB 101	37680-73-2	3	µg/kg		<3	<3	<3	<3
EP065: PCB 105	32598-14-4	3	µg/kg		<3	<3	<3	<3
EP065: PCB 118	31508-00-6	3	µg/kg		<3	<3	<3	<3
EP065: PCB 126	57465-28-8	3	µg/kg		<3	<3	<3	<3
EP065: PCB 128	38380-07-3	3	µg/kg		<3	<3	<3	<3
EP065: PCB 138	35065-28-2	3	µg/kg		<3	<3	<3	<3
EP065: PCB 153	35065-27-1	3	µg/kg		<3	<3	<3	<3
EP065: PCB 169	32774-16-6	3	µg/kg		<3	<3	<3	<3
EP065: PCB 170	35065-30-6	3	µg/kg		<3	<3	<3	<3
EP065: PCB 180	35065-29-3	3	µg/kg		<3	<3	<3	<3
EP065: PCB 187	52663-68-0	3	µg/kg		<3	<3	<3	<3



Sub-Matrix: SEDIMENT		Client sample ID		S12	S15	S14	S13	S16	S17	S18	S19	S20
Compound	CAS Number	LOR	Unit	01-Mar-2018 12:38	01-Mar-2018 12:31	01-Mar-2018 12:27	01-Mar-2018 12:23	01-Mar-2018 12:19	01-Mar-2018 12:15	01-Mar-2018 12:11	01-Mar-2018 12:07	01-Mar-2018 12:03
				HK1819068-020	HK1819068-019	HK1819068-018	HK1819068-017	HK1819068-016	HK1819068-015	HK1819068-014	HK1819068-013	HK1819068-012
EP-065: PCB Single Congeners - Continued												
EP065: Total Polychlorinated biphenyls	----	18	µg/kg	<18	<18	<18	<18	<18	<18	<18	<18	<18
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)												
EP076HK: Naphthalene	91-20-3	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Acenaphthylene	208-96-8	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Acenaphthene	83-32-9	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Fluorene	86-73-7	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Phenanthrene	85-01-8	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Anthracene	120-12-7	50	µg/kg	<50	<50	<50	<50	<50	<50	<50	<50	<50
EP076HK: Fluoranthene	206-44-0	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Pyrene	129-00-0	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Benz(a)anthracene	56-55-3	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Chrysene	218-01-9	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Benzo(b)fluoranthene	205-99-2	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Benzo(k)fluoranthene	207-08-9	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Benzo(a)pyrene	50-32-8	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Indeno(1,2,3-cd)pyrene	193-39-5	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Dibenzo(a,h)anthracene	53-70-3	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Benzo(g,h,i)perylene	191-24-2	150	µg/kg	<150	<150	<150	<150	<150	<150	<150	<150	<150
EP076HK: Low M.W. PAHs	----	550	µg/kg	<550	<550	<550	<550	<550	<550	<550	<550	<550
EP076HK: High M.W. PAHs	----	1700	µg/kg	<1700	<1700	<1700	<1700	<1700	<1700	<1700	<1700	<1700
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates												
EP076HK: 2-Fluorobiphenyl	321-60-8	0.1	%	83.7	77.1	76.4	82.2	83.7	77.1	76.4	82.2	75.1
EP076HK: 4-Terphenyl-d14	1718-51-0	0.1	%	84.2	79.2	77.4	82.6	84.2	79.2	77.4	82.6	74.8
EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate												
EP065: Decachlorobiphenyl	2051-24-3	0.1	%	68.9	79.6	82.5	71.9	68.9	79.6	82.5	71.9	71.8



Sub-Matrix: SEDIMENT		Client sample ID		S7	S8	S6	S5
Compound	CAS Number	LOR	Unit	01-Mar-2018 12:50 HK1819068-022	01-Mar-2018 12:54 HK1819068-023	01-Mar-2018 13:02 HK1819068-024	01-Mar-2018 13:07 HK1819068-025
EA/ED: Physical and Aggregate Properties							
EA055: Moisture Content (dried @ 103°C)	----	0.1	%	55.3	62.6	56.3	55.3
EG: Metals and Major Cations							
EG020: Arsenic	7440-38-2	1	mg/kg	9	9	11	11
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2
EG020: Chromium	7440-47-3	1	mg/kg	36	44	38	40
EG020: Copper	7440-50-8	1	mg/kg	19	27	20	23
EG020: Lead	7439-92-1	1	mg/kg	31	38	32	33
EG020: Mercury	7439-97-6	0.05	mg/kg	0.09	0.12	0.11	0.08
EG020: Nickel	7440-02-0	1	mg/kg	25	30	26	27
EG020: Silver	7440-22-4	0.1	mg/kg	0.1	0.2	0.1	0.2
EG020: Zinc	7440-66-6	1	mg/kg	89	113	90	96
EP-065: PCB Single Congeners							
EP065: PCB 8	34883-43-7	3	µg/kg	<3	<3	<3	<3
EP065: PCB 18	37680-65-2	3	µg/kg	<3	<3	<3	<3
EP065: PCB 28	7012-37-5	3	µg/kg	<3	<3	<3	<3
EP065: PCB 44	41464-39-5	3	µg/kg	<3	<3	<3	<3
EP065: PCB 52	35693-99-3	3	µg/kg	<3	<3	<3	<3
EP065: PCB 66	32598-10-0	3	µg/kg	<3	<3	<3	<3
EP065: PCB 77	32598-13-3	3	µg/kg	<3	<3	<3	<3
EP065: PCB 101	37680-73-2	3	µg/kg	<3	<3	<3	<3
EP065: PCB 105	32598-14-4	3	µg/kg	<3	<3	<3	<3
EP065: PCB 118	31508-00-6	3	µg/kg	<3	<3	<3	<3
EP065: PCB 126	57465-28-8	3	µg/kg	<3	<3	<3	<3
EP065: PCB 128	38380-07-3	3	µg/kg	<3	<3	<3	<3
EP065: PCB 138	35065-28-2	3	µg/kg	<3	<3	<3	<3
EP065: PCB 153	35065-27-1	3	µg/kg	<3	<3	<3	<3
EP065: PCB 169	32774-16-6	3	µg/kg	<3	<3	<3	<3
EP065: PCB 170	35065-30-6	3	µg/kg	<3	<3	<3	<3
EP065: PCB 180	35065-29-3	3	µg/kg	<3	<3	<3	<3
EP065: PCB 187	52663-68-0	3	µg/kg	<3	<3	<3	<3



Sub-Matrix: SEDIMENT		Client sample ID		S7	S8	S6	S5
Compound	CAS Number	LOR	Unit	01-Mar-2018 12:50 HK1819068-022	01-Mar-2018 12:54 HK1819068-023	01-Mar-2018 13:02 HK1819068-024	01-Mar-2018 13:07 HK1819068-025
EP-065: PCB Single Conceners - Continued							
EP065: Total Polychlorinated biphenyls	----	18	µg/kg	<18	<18	<18	<18
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)							
EP076HK: Naphthalene	91-20-3	50	µg/kg	<50	<50	<50	<50
EP076HK: Acenaphthylene	208-96-8	50	µg/kg	<50	<50	<50	<50
EP076HK: Acenaphthene	83-32-9	50	µg/kg	<50	<50	<50	<50
EP076HK: Fluorene	86-73-7	50	µg/kg	<50	<50	<50	<50
EP076HK: Phenanthrene	85-01-8	50	µg/kg	<50	<50	<50	<50
EP076HK: Anthracene	120-12-7	50	µg/kg	<50	<50	<50	<50
EP076HK: Fluoranthene	206-44-0	150	µg/kg	<150	<150	<150	<150
EP076HK: Pyrene	129-00-0	150	µg/kg	<150	<150	<150	<150
EP076HK: Benz(a)anthracene	56-55-3	150	µg/kg	<150	<150	<150	<150
EP076HK: Chrysene	218-01-9	150	µg/kg	<150	<150	<150	<150
EP076HK: Benzo(b)fluoranthene	205-99-2	150	µg/kg	<150	<150	<150	<150
EP076HK: Benzo(k)fluoranthene	207-08-9	150	µg/kg	<150	<150	<150	<150
EP076HK: Benzo(a)pyrene	50-32-8	150	µg/kg	<150	<150	<150	<150
EP076HK: Indeno(1,2,3-cd)pyrene	193-39-5	150	µg/kg	<150	<150	<150	<150
EP076HK: Dibenzo(a,h)anthracene	53-70-3	150	µg/kg	<150	<150	<150	<150
EP076HK: Benzo(g,h,i)perylene	191-24-2	150	µg/kg	<150	<150	<150	<150
EP076HK: Low M.W. PAHs	----	550	µg/kg	<550	<550	<550	<550
EP076HK: High M.W. PAHs	----	1700	µg/kg	<1700	<1700	<1700	<1700
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates							
EP076HK: 2-Fluorobiphenyl	321-60-8	0.1	%	80.8	75.5	77.5	74.7
EP076HK: 4-Terphenyl-d14	1718-51-0	0.1	%	80.3	76.1	79.5	75.6
EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate							
EP065: Decachlorobiphenyl	2051-24-3	0.1	%	79.5	75.8	71.7	64.9



Sub-Matrix: SEDIMENT		Client sample ID					
Compound	CAS Number	LOR	Unit	S4	S1	S2	S3
EA/ED: Physical and Aggregate Properties		Client sampling date / time	%	59.4	51.2	57.5	58.4
EA055: Moisture Content (dried @ 103°C)	----	0.1	%	59.4	51.2	57.5	58.4
EG: Metals and Major Cations							
EG020: Arsenic	7440-38-2	1	mg/kg	10	10	10	10
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2
EG020: Chromium	7440-47-3	1	mg/kg	38	35	40	38
EG020: Copper	7440-50-8	1	mg/kg	20	19	22	22
EG020: Lead	7439-92-1	1	mg/kg	34	30	34	34
EG020: Mercury	7439-97-6	0.05	mg/kg	0.10	0.08	0.10	0.12
EG020: Nickel	7440-02-0	1	mg/kg	26	24	28	26
EG020: Silver	7440-22-4	0.1	mg/kg	0.1	0.1	0.1	0.1
EG020: Zinc	7440-66-6	1	mg/kg	93	84	99	96
EP-065: PCB Single Congeners							
EP065: PCB 8	34883-43-7	3	µg/kg	<3	<3	<3	<3
EP065: PCB 18	37680-65-2	3	µg/kg	<3	<3	<3	<3
EP065: PCB 28	7012-37-5	3	µg/kg	<3	<3	<3	<3
EP065: PCB 44	41464-39-5	3	µg/kg	<3	<3	<3	<3
EP065: PCB 52	35693-99-3	3	µg/kg	<3	<3	<3	<3
EP065: PCB 66	32598-10-0	3	µg/kg	<3	<3	<3	<3
EP065: PCB 77	32598-13-3	3	µg/kg	<3	<3	<3	<3
EP065: PCB 101	37680-73-2	3	µg/kg	<3	<3	<3	<3
EP065: PCB 105	32598-14-4	3	µg/kg	<3	<3	<3	<3
EP065: PCB 118	31508-00-6	3	µg/kg	<3	<3	<3	<3
EP065: PCB 126	57465-28-8	3	µg/kg	<3	<3	<3	<3
EP065: PCB 128	38380-07-3	3	µg/kg	<3	<3	<3	<3
EP065: PCB 138	35065-28-2	3	µg/kg	<3	<3	<3	<3
EP065: PCB 153	35065-27-1	3	µg/kg	<3	<3	<3	<3
EP065: PCB 169	32774-16-6	3	µg/kg	<3	<3	<3	<3
EP065: PCB 170	35065-30-6	3	µg/kg	<3	<3	<3	<3
EP065: PCB 180	35065-29-3	3	µg/kg	<3	<3	<3	<3
EP065: PCB 187	52663-68-0	3	µg/kg	<3	<3	<3	<3



Sub-Matrix: SEDIMENT		Client sample ID					
Compound	CAS Number	LOR	Unit	S4	S1	S2	S3
			Client sampling date / time				
EP-065: PCB Single Condensers - Continued	----	18	µg/kg	<18	<18	<18	<18
EP065: Total Polychlorinated biphenyls				01-Mar-2018 13:12	01-Mar-2018 13:17	01-Mar-2018 13:24	01-Mar-2018 13:29
				HK1819068-026	HK1819068-027	HK1819068-028	HK1819068-029
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs)							
EP076HK: Naphthalene	91-20-3	50	µg/kg	<50	<50	<50	<50
EP076HK: Acenaphthylene	208-96-8	50	µg/kg	<50	<50	<50	<50
EP076HK: Acenaphthene	83-32-9	50	µg/kg	<50	<50	<50	<50
EP076HK: Fluorene	86-73-7	50	µg/kg	<50	<50	<50	<50
EP076HK: Phenanthrene	85-01-8	50	µg/kg	<50	<50	<50	<50
EP076HK: Anthracene	120-12-7	50	µg/kg	<50	<50	<50	<50
EP076HK: Fluoranthene	206-44-0	150	µg/kg	<150	<150	<150	<150
EP076HK: Pyrene	129-00-0	150	µg/kg	<150	<150	<150	<150
EP076HK: Benz(a)anthracene	56-55-3	150	µg/kg	<150	<150	<150	<150
EP076HK: Chrysene	218-01-9	150	µg/kg	<150	<150	<150	<150
EP076HK: Benzo(b)fluoranthene	205-99-2	150	µg/kg	<150	<150	<150	<150
EP076HK: Benzo(k)fluoranthene	207-08-9	150	µg/kg	<150	<150	<150	<150
EP076HK: Benzo(a)pyrene	50-32-8	150	µg/kg	<150	<150	<150	<150
EP076HK: Indeno(1,2,3-cd)pyrene	193-39-5	150	µg/kg	<150	<150	<150	<150
EP076HK: Dibenz(a,h)anthracene	53-70-3	150	µg/kg	<150	<150	<150	<150
EP076HK: Benzo(g,h,i)perylene	191-24-2	150	µg/kg	<150	<150	<150	<150
EP076HK: Low M.W. PAHs	----	550	µg/kg	<550	<550	<550	<550
EP076HK: High M.W. PAHs	----	1700	µg/kg	<1700	<1700	<1700	<1700
EP-076S: Polycyclic Aromatic Hydrocarbons (PAHs) Surrogates							
EP076HK: 2-Fluorobiphenyl	321-60-8	0.1	%	67.2	70.9	80.9	80.9
EP076HK: 4-Terphenyl-d14	1718-51-0	0.1	%	68.3	72.4	82.4	80.6
EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate							
EP065: Decachlorobiphenyl	2051-24-3	0.1	%	67.3	74.2	76.7	74.8



Laboratory Duplicate (DUP) Report

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: 1479468)									
HK1819068-001	S31	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	43.3	43.5	0.398	
HK1819068-011	S22	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	64.6	64.6	0.00	
EA/ED: Physical and Aggregate Properties (QC Lot: 1479469)									
HK1819068-021	S11	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	66.1	65.8	0.440	
HK1819839-002	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	7.6	7.8	2.09	
EG: Metals and Major Cations (QC Lot: 1471729)									
HK1819068-002	S33	EG020: Mercury	7439-97-6	0.05	mg/kg	0.09	0.10	11.8	
		EG020: Silver	7440-22-4	0.1	mg/kg	0.1	0.1	0.00	
		EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.00	
		EG020: Arsenic	7440-38-2	1	mg/kg	7	7	0.00	
		EG020: Chromium	7440-47-3	1	mg/kg	33	34	0.00	
		EG020: Copper	7440-50-8	1	mg/kg	21	21	0.00	
		EG020: Lead	7439-92-1	1	mg/kg	29	29	0.00	
		EG020: Nickel	7440-02-0	1	mg/kg	23	23	0.00	
		EG020: Zinc	7440-66-6	1	mg/kg	87	88	1.30	
EG: Metals and Major Cations (QC Lot: 1471730)									
HK1819068-022	S7	EG020: Mercury	7439-97-6	0.05	mg/kg	0.09	0.09	0.00	
		EG020: Silver	7440-22-4	0.1	mg/kg	0.1	0.1	0.00	
		EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.00	
		EG020: Arsenic	7440-38-2	1	mg/kg	9	10	0.00	
		EG020: Chromium	7440-47-3	1	mg/kg	36	36	0.00	
		EG020: Copper	7440-50-8	1	mg/kg	19	19	0.00	
		EG020: Lead	7439-92-1	1	mg/kg	31	30	0.00	
		EG020: Nickel	7440-02-0	1	mg/kg	25	25	0.00	
		EG020: Zinc	7440-66-6	1	mg/kg	89	88	1.57	
EP-065: PCB Single Congeners (QC Lot: 1472173)									
HK1819068-001	S31	Total Polychlorinated biphenyls	----	18	µg/kg	<18	<18	0.00	
		PCB 8	34883-43-7	3	µg/kg	<3	<3	0.00	
		PCB 18	37680-65-2	3	µg/kg	<3	<3	0.00	
		PCB 28	7012-37-5	3	µg/kg	<3	<3	0.00	



Matrix: SOIL		Laboratory Duplicate (DUP) Report								
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)		
EP-065: PCB Single Congeners (QC Lot: 1472173) - Continued										
HK1819068-001	S31	PCB 44	41464-39-5	3	µg/kg	<3	<3	0.00		
		PCB 52	35693-99-3	3	µg/kg	<3	<3	0.00		
		PCB 66	32598-10-0	3	µg/kg	<3	<3	0.00		
		PCB 77	32598-13-3	3	µg/kg	<3	<3	0.00		
		PCB 101	37680-73-2	3	µg/kg	<3	<3	0.00		
		PCB 105	32598-14-4	3	µg/kg	<3	<3	0.00		
		PCB 118	31508-00-6	3	µg/kg	<3	<3	0.00		
		PCB 126	57465-28-8	3	µg/kg	<3	<3	0.00		
		PCB 128	38380-07-3	3	µg/kg	<3	<3	0.00		
		PCB 138	35065-28-2	3	µg/kg	<3	<3	0.00		
		PCB 153	35065-27-1	3	µg/kg	<3	<3	0.00		
		PCB 169	32774-16-6	3	µg/kg	<3	<3	0.00		
		PCB 170	35065-30-6	3	µg/kg	<3	<3	0.00		
		PCB 180	35065-29-3	3	µg/kg	<3	<3	0.00		
		PCB 187	52663-68-0	3	µg/kg	<3	<3	0.00		
		EP-065: PCB Single Congeners (QC Lot: 1472176)								
		HK1819068-016	S16	Total Polychlorinated biphenyls	----	18	µg/kg	<18	<18	0.00
				PCB 8	34883-43-7	3	µg/kg	<3	<3	0.00
PCB 18	37680-65-2			3	µg/kg	<3	<3	0.00		
PCB 28	7012-37-5			3	µg/kg	<3	<3	0.00		
PCB 44	41464-39-5			3	µg/kg	<3	<3	0.00		
PCB 52	35693-99-3			3	µg/kg	<3	<3	0.00		
PCB 66	32598-10-0			3	µg/kg	<3	<3	0.00		
PCB 77	32598-13-3			3	µg/kg	<3	<3	0.00		
PCB 101	37680-73-2			3	µg/kg	<3	<3	0.00		
PCB 105	32598-14-4			3	µg/kg	<3	<3	0.00		
PCB 118	31508-00-6			3	µg/kg	<3	<3	0.00		
PCB 126	57465-28-8			3	µg/kg	<3	<3	0.00		
PCB 128	38380-07-3			3	µg/kg	<3	<3	0.00		
PCB 138	35065-28-2			3	µg/kg	<3	<3	0.00		
PCB 153	35065-27-1			3	µg/kg	<3	<3	0.00		



Matrix: SOIL		Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EP-065: PCB Single Congeners (QC Lot: 1472176) - Continued								
HK1819068-016	S16	PCB 169	32774-16-6	3	µg/kg	<3	<3	0.00
		PCB 170	35065-30-6	3	µg/kg	<3	<3	0.00
		PCB 180	35065-29-3	3	µg/kg	<3	<3	0.00
		PCB 187	52663-68-0	3	µg/kg	<3	<3	0.00
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 1472174)								
HK1819068-001	S31	High M.W. PAHs	----	1700	µg/kg	<1700	<1700	0.00
		Naphthalene	91-20-3	50	µg/kg	<50	<50	0.00
		Acenaphthylene	208-96-8	50	µg/kg	<50	<50	0.00
		Acenaphthene	83-32-9	50	µg/kg	<50	<50	0.00
		Fluorene	86-73-7	50	µg/kg	<50	<50	0.00
		Phenanthrene	85-01-8	50	µg/kg	<50	<50	0.00
		Anthracene	120-12-7	50	µg/kg	<50	<50	0.00
		Fluoranthene	206-44-0	50	µg/kg	<150	<150	0.00
		Pyrene	129-00-0	50	µg/kg	<150	<150	0.00
		Benz(a)anthracene	56-55-3	50	µg/kg	<150	<150	0.00
		Chrysene	218-01-9	50	µg/kg	<150	<150	0.00
		Benzo(b)fluoranthene	205-99-2	50	µg/kg	<150	<150	0.00
		Benzo(k)fluoranthene	207-08-9	50	µg/kg	<150	<150	0.00
		Benzo(a)pyrene	50-32-8	50	µg/kg	<150	<150	0.00
		Indeno(1,2,3-cd)pyrene	193-39-5	50	µg/kg	<150	<150	0.00
		Dibenz(a,h)anthracene	53-70-3	50	µg/kg	<150	<150	0.00
		Benzo(g,h,i)perylene	191-24-2	50	µg/kg	<150	<150	0.00
		Low M.W. PAHs	----	550	µg/kg	<550	<550	0.00
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 1472177)								
HK1819068-016	S16	High M.W. PAHs	----	1700	µg/kg	<1700	<1700	0.00
		Naphthalene	91-20-3	50	µg/kg	<50	<50	0.00
		Acenaphthylene	208-96-8	50	µg/kg	<50	<50	0.00
		Acenaphthene	83-32-9	50	µg/kg	<50	<50	0.00
		Fluorene	86-73-7	50	µg/kg	<50	<50	0.00
		Phenanthrene	85-01-8	50	µg/kg	<50	<50	0.00
		Anthracene	120-12-7	50	µg/kg	<50	<50	0.00



Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	RPD (%)
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 1472177) - Continued						
HK1819068-016	S16	Fluoranthene	206-44-0	50	µg/kg	0.00
		Pyrene	129-00-0	50	µg/kg	0.00
		Benz(a)anthracene	56-55-3	50	µg/kg	0.00
		Chrysene	218-01-9	50	µg/kg	0.00
		Benzo(b)fluoranthene	205-99-2	50	µg/kg	0.00
		Benzo(k)fluoranthene	207-08-9	50	µg/kg	0.00
		Benzo(a)pyrene	50-32-8	50	µg/kg	0.00
		Indeno(1,2,3-cd)pyrene	193-39-5	50	µg/kg	0.00
		Dibenz(a,h)anthracene	53-70-3	50	µg/kg	0.00
		Benzo(g,h,i)perylene	191-24-2	50	µg/kg	0.00
		Low M.W. PAHs	----	550	µg/kg	0.00

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

Method Blank (MB) Report				Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	LCS	DCS	Recovery Limits (%)	RPD (%)
						Low	High	Value	Control Limit
EG: Metals and Major Cations (QC Lot: 1471729)									
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	85	115	-----	-----
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	85	115	-----	-----
EG020: Chromium	7440-47-3	1	mg/kg	<1	5 mg/kg	85	115	-----	-----
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	85	115	-----	-----
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	85	115	-----	-----
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	0.1 mg/kg	85	115	-----	-----
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	85	115	-----	-----
EG020: Silver	7440-22-4	0.1	mg/kg	<0.1	5 mg/kg	85	115	-----	-----
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	85	115	-----	-----
EG: Metals and Major Cations (QC Lot: 1471730)									
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	85	115	-----	-----
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	85	115	-----	-----
EG020: Chromium	7440-47-3	1	mg/kg	<1	5 mg/kg	85	115	-----	-----



Method Compound		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report								
		CAS Number	LOR	Unit	Result	Spike Concentration	LCS	Spike Recovery (%)	DCS	Recovery Limits (%)	Value	RPD (%)	Control Limit
Matrix: SOIL													
EG: Metals and Major Cations (QC Lot: 1471730) - Continued													
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	104	-----	-----	85	115	-----	-----	-----
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	104	-----	-----	85	115	-----	-----	-----
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	0.1 mg/kg	111	-----	-----	85	115	-----	-----	-----
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	101	-----	-----	85	115	-----	-----	-----
EG020: Silver	7440-22-4	0.1	mg/kg	<0.1	5 mg/kg	87.1	-----	-----	85	115	-----	-----	-----
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	91.7	-----	-----	85	115	-----	-----	-----
EP-065: PCB Single Congeners (QC Lot: 1472173)													
PCB 8	34883-43-7	3	µg/kg	<3	5 µg/kg	74.8	-----	-----	61	106	-----	-----	-----
PCB 18	37680-65-2	3	µg/kg	<3	5 µg/kg	76.7	-----	-----	65	95	-----	-----	-----
PCB 28	7012-37-5	3	µg/kg	<3	5 µg/kg	109	-----	-----	61	113	-----	-----	-----
PCB 44	41464-39-5	3	µg/kg	<3	5 µg/kg	108	-----	-----	59	114	-----	-----	-----
PCB 52	35693-99-3	3	µg/kg	<3	5 µg/kg	96.1	-----	-----	61	111	-----	-----	-----
PCB 66	32598-10-0	3	µg/kg	<3	5 µg/kg	106	-----	-----	52	116	-----	-----	-----
PCB 77	32598-13-3	3	µg/kg	<3	5 µg/kg	114	-----	-----	60	120	-----	-----	-----
PCB 101	37680-73-2	3	µg/kg	<3	5 µg/kg	98.4	-----	-----	66	119	-----	-----	-----
PCB 105	32598-14-4	3	µg/kg	<3	5 µg/kg	98.4	-----	-----	67	116	-----	-----	-----
PCB 118	31508-00-6	3	µg/kg	<3	5 µg/kg	103	-----	-----	67	117	-----	-----	-----
PCB 126	57465-28-8	3	µg/kg	<3	5 µg/kg	103	-----	-----	63	113	-----	-----	-----
PCB 128	38380-07-3	3	µg/kg	<3	5 µg/kg	96.9	-----	-----	69	115	-----	-----	-----
PCB 138	35065-28-2	3	µg/kg	<3	5 µg/kg	99.6	-----	-----	70	111	-----	-----	-----
PCB 153	35065-27-1	3	µg/kg	<3	5 µg/kg	93.2	-----	-----	68	119	-----	-----	-----
PCB 169	32774-16-6	3	µg/kg	<3	5 µg/kg	104	-----	-----	70	109	-----	-----	-----
PCB 170	35065-30-6	3	µg/kg	<3	5 µg/kg	111	-----	-----	73	119	-----	-----	-----
PCB 180	35065-29-3	3	µg/kg	<3	5 µg/kg	103	-----	-----	72	110	-----	-----	-----
PCB 187	52663-68-0	3	µg/kg	<3	5 µg/kg	96.6	-----	-----	68	118	-----	-----	-----
Total Polychlorinated biphenyls	-----	18	µg/kg	<18	-----	-----	-----	-----	-----	-----	-----	-----	-----
EP-065: PCB Single Congeners (QC Lot: 1472176)													
PCB 8	34883-43-7	3	µg/kg	<3	5 µg/kg	75.7	-----	-----	61	106	-----	-----	-----
PCB 18	37680-65-2	3	µg/kg	<3	5 µg/kg	83.8	-----	-----	65	95	-----	-----	-----
PCB 28	7012-37-5	3	µg/kg	<3	5 µg/kg	103	-----	-----	61	113	-----	-----	-----



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	LCS	Spike Recovery (%)	DCS	Recovery Limits (%)	Value	RPD (%)	Control Limit
									Low	High		
EP-065: PCB Single Congeners (QC Lot: 1472176) - Continued												
PCB 44	41464-39-5	3	µg/kg	<3	5 µg/kg	107	-----	-----	59	114	-----	-----
PCB 52	35693-99-3	3	µg/kg	<3	5 µg/kg	103	-----	-----	61	111	-----	-----
PCB 66	32598-10-0	3	µg/kg	<3	5 µg/kg	110	-----	-----	52	116	-----	-----
PCB 77	32598-13-3	3	µg/kg	<3	5 µg/kg	87.2	-----	-----	60	120	-----	-----
PCB 101	37680-73-2	3	µg/kg	<3	5 µg/kg	86.0	-----	-----	66	119	-----	-----
PCB 105	32598-14-4	3	µg/kg	<3	5 µg/kg	88.4	-----	-----	67	116	-----	-----
PCB 118	31508-00-6	3	µg/kg	<3	5 µg/kg	89.5	-----	-----	67	117	-----	-----
PCB 126	57465-28-8	3	µg/kg	<3	5 µg/kg	92.7	-----	-----	63	113	-----	-----
PCB 128	38380-07-3	3	µg/kg	<3	5 µg/kg	87.5	-----	-----	69	115	-----	-----
PCB 138	35065-28-2	3	µg/kg	<3	5 µg/kg	87.8	-----	-----	70	111	-----	-----
PCB 153	35065-27-1	3	µg/kg	<3	5 µg/kg	86.7	-----	-----	68	119	-----	-----
PCB 169	32774-16-6	3	µg/kg	<3	5 µg/kg	93.8	-----	-----	70	109	-----	-----
PCB 170	35065-30-6	3	µg/kg	<3	5 µg/kg	87.5	-----	-----	73	119	-----	-----
PCB 180	35065-29-3	3	µg/kg	<3	5 µg/kg	87.2	-----	-----	72	110	-----	-----
PCB 187	52663-68-0	3	µg/kg	<3	5 µg/kg	85.7	-----	-----	68	118	-----	-----
Total Polychlorinated biphenyls	-----	18	µg/kg	<18	-----	-----	-----	-----	-----	-----	-----	-----
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 1472174)												
Naphthalene	91-20-3	50	µg/kg	<50	25 µg/kg	91.2	-----	-----	67	100	-----	-----
Acenaphthylene	208-96-8	50	µg/kg	<50	25 µg/kg	76.7	-----	-----	42	92	-----	-----
Acenaphthene	83-32-9	50	µg/kg	<50	25 µg/kg	93.3	-----	-----	53	101	-----	-----
Fluorene	86-73-7	50	µg/kg	<50	25 µg/kg	96.9	-----	-----	58	106	-----	-----
Phenanthrene	85-01-8	50	µg/kg	<50	25 µg/kg	96.7	-----	-----	66	98	-----	-----
Anthracene	120-12-7	50	µg/kg	<50	25 µg/kg	76.5	-----	-----	47	82	-----	-----
Fluoranthene	206-44-0	50	µg/kg	<50	25 µg/kg	98.1	-----	-----	58	107	-----	-----
Pyrene	129-00-0	50	µg/kg	<50	25 µg/kg	104	-----	-----	52	104	-----	-----
Benz(a)anthracene	56-55-3	50	µg/kg	<50	25 µg/kg	96.1	-----	-----	49	100	-----	-----
Chrysene	218-01-9	50	µg/kg	<50	25 µg/kg	97.8	-----	-----	59	115	-----	-----
Benzo(b)fluoranthene	205-99-2	50	µg/kg	<50	25 µg/kg	101	-----	-----	42	133	-----	-----
Benzo(k)fluoranthene	207-08-9	50	µg/kg	<50	25 µg/kg	105	-----	-----	52	109	-----	-----
Benzo(a)pyrene	50-32-8	50	µg/kg	<50	25 µg/kg	79.1	-----	-----	47	81	-----	-----



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

Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)			Recovery Limits (%)			RPD (%)	Control Limit
					MS	MSD	Low	High	Value			
EG: Metals and Major Cations (QC Lot: 1471729)												
HK1819068-001	S31	EG020: Arsenic	7440-38-2	5 mg/kg	96.8	-----	75	125	-----	-----	-----	
		EG020: Cadmium	7440-43-9	5 mg/kg	93.4	-----	75	125	-----	-----	-----	
		EG020: Chromium	7440-47-3	5 mg/kg	93.1	-----	75	125	-----	-----	-----	
		EG020: Copper	7440-50-8	5 mg/kg	92.6	-----	75	125	-----	-----	-----	
		EG020: Lead	7439-92-1	5 mg/kg	99.9	-----	75	125	-----	-----	-----	
		EG020: Mercury	7439-97-6	0.1 mg/kg	98.0	-----	75	125	-----	-----	-----	
		EG020: Nickel	7440-02-0	5 mg/kg	95.4	-----	75	125	-----	-----	-----	
		EG020: Silver	7440-22-4	5 mg/kg	81.4	-----	75	125	-----	-----	-----	
		EG020: Zinc	7440-66-6	5 mg/kg	# Not Determined	-----	75	125	-----	-----	-----	
EG: Metals and Major Cations (QC Lot: 1471730)												
HK1819068-021	S11	EG020: Arsenic	7440-38-2	5 mg/kg	96.4	-----	75	125	-----	-----	-----	
		EG020: Cadmium	7440-43-9	5 mg/kg	92.1	-----	75	125	-----	-----	-----	
		EG020: Chromium	7440-47-3	5 mg/kg	95.6	-----	75	125	-----	-----	-----	
		EG020: Copper	7440-50-8	5 mg/kg	94.2	-----	75	125	-----	-----	-----	
		EG020: Lead	7439-92-1	5 mg/kg	83.4	-----	75	125	-----	-----	-----	
		EG020: Mercury	7439-97-6	0.1 mg/kg	98.4	-----	75	125	-----	-----	-----	
		EG020: Nickel	7440-02-0	5 mg/kg	97.9	-----	75	125	-----	-----	-----	
		EG020: Silver	7440-22-4	5 mg/kg	82.7	-----	75	125	-----	-----	-----	
		EG020: Zinc	7440-66-6	5 mg/kg	# Not Determined	-----	75	125	-----	-----	-----	
EP-065: PCB Single Congeners (QC Lot: 1472173)												
HK1819068-002	S33	PCB 8	34883-43-7	5 µg/kg	70.0	-----	50	130	-----	-----	-----	
		PCB 18	37680-65-2	5 µg/kg	77.2	-----	50	130	-----	-----	-----	
		PCB 28	7012-37-5	5 µg/kg	81.7	-----	50	130	-----	-----	-----	



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 (%)	Control Limit
					MS	MSD	Low	High		
EP-065: PCB Single Congeners (QC Lot: 1472173) - Continued HK1819068-002 S33		PCB 44	41464-39-5	5 µg/kg	89.9	-----	50	130	-----	-----
		PCB 52	35693-99-3	5 µg/kg	95.0	-----	50	130	-----	-----
		PCB 66	32598-10-0	5 µg/kg	86.7	-----	50	130	-----	-----
		PCB 77	32598-13-3	5 µg/kg	88.2	-----	50	130	-----	-----
		PCB 101	37680-73-2	5 µg/kg	88.4	-----	50	130	-----	-----
		PCB 105	32598-14-4	5 µg/kg	88.9	-----	50	130	-----	-----
		PCB 118	31508-00-6	5 µg/kg	92.2	-----	50	130	-----	-----
		PCB 126	57465-28-8	5 µg/kg	91.9	-----	50	130	-----	-----
		PCB 128	38380-07-3	5 µg/kg	89.6	-----	50	130	-----	-----
		PCB 138	35065-28-2	5 µg/kg	90.8	-----	50	130	-----	-----
		PCB 153	35065-27-1	5 µg/kg	90.7	-----	50	130	-----	-----
		PCB 169	32774-16-6	5 µg/kg	91.4	-----	50	130	-----	-----
		PCB 170	35065-30-6	5 µg/kg	86.9	-----	50	130	-----	-----
		PCB 180	35065-29-3	5 µg/kg	86.1	-----	50	130	-----	-----
		PCB 187	52663-68-0	5 µg/kg	86.8	-----	50	130	-----	-----



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	
Matrix: SOIL											
EP-065: PCB Single Congeners (QC Lot: 1472176)											
HK1819068-017	S13	PCB 8	34883-43-7	5 µg/kg	64.6	-----	50	130	-----	-----	
		PCB 18	37680-65-2	5 µg/kg	71.3	-----	50	130	-----	-----	
		PCB 28	7012-37-5	5 µg/kg	76.0	-----	50	130	-----	-----	
		PCB 44	41464-39-5	5 µg/kg	80.4	-----	50	130	-----	-----	
		PCB 52	35693-99-3	5 µg/kg	81.9	-----	50	130	-----	-----	
		PCB 66	32598-10-0	5 µg/kg	80.2	-----	50	130	-----	-----	
		PCB 77	32598-13-3	5 µg/kg	76.4	-----	50	130	-----	-----	
		PCB 101	37680-73-2	5 µg/kg	76.6	-----	50	130	-----	-----	
		PCB 105	32598-14-4	5 µg/kg	79.9	-----	50	130	-----	-----	
		PCB 118	31508-00-6	5 µg/kg	80.9	-----	50	130	-----	-----	
		PCB 126	57465-28-8	5 µg/kg	82.8	-----	50	130	-----	-----	
		PCB 128	38380-07-3	5 µg/kg	79.8	-----	50	130	-----	-----	
		PCB 138	35065-28-2	5 µg/kg	81.1	-----	50	130	-----	-----	
		PCB 153	35065-27-1	5 µg/kg	79.4	-----	50	130	-----	-----	
		PCB 169	32774-16-6	5 µg/kg	84.3	-----	50	130	-----	-----	
		PCB 170	35065-30-6	5 µg/kg	79.9	-----	50	130	-----	-----	



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 (%)	Control Limit
					MS	MSD	Low	High		
EP-065: PCB Single Congeners (QC Lot: 1472176) - Continued										
HK1819068-017	S13	PCB 180	35065-29-3	5 µg/kg	79.6	-----	50	130	-----	-----
		PCB 187	52663-68-0	5 µg/kg	77.8	-----	50	130	-----	-----
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 1472174)										
HK1819068-003	S34	Naphthalene	91-20-3	250 µg/kg	80.3	-----	50	130	-----	-----
		Acenaphthylene	208-96-8	250 µg/kg	83.2	-----	50	130	-----	-----
		Acenaphthene	83-32-9	250 µg/kg	77.4	-----	50	130	-----	-----
		Fluorene	86-73-7	250 µg/kg	79.5	-----	50	130	-----	-----
		Phenanthrene	85-01-8	250 µg/kg	81.0	-----	50	130	-----	-----
		Anthracene	120-12-7	250 µg/kg	78.2	-----	50	130	-----	-----
		Fluoranthene	206-44-0	250 µg/kg	82.8	-----	50	130	-----	-----
		Pyrene	129-00-0	250 µg/kg	82.3	-----	50	130	-----	-----
		Benz(a)anthracene	56-55-3	250 µg/kg	76.5	-----	50	130	-----	-----
		Chrysene	218-01-9	250 µg/kg	83.1	-----	50	130	-----	-----
		Benzo(b)fluoranthene	205-99-2	250 µg/kg	78.0	-----	50	130	-----	-----
		Benzo(k)fluoranthene	207-08-9	250 µg/kg	86.2	-----	50	130	-----	-----
		Benzo(a)pyrene	50-32-8	250 µg/kg	74.3	-----	50	130	-----	-----
		Indeno(1,2,3-cd)pyrene	193-39-5	250 µg/kg	65.8	-----	50	130	-----	-----
		Dibenz(a,h)anthracene	53-70-3	250 µg/kg	57.2	-----	50	130	-----	-----
		Benzo(g,h,i)perylene	191-24-2	250 µg/kg	54.0	-----	50	130	-----	-----
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 1472177)										
HK1819068-017	S13	Naphthalene	91-20-3	250 µg/kg	76.4	-----	50	130	-----	-----
		Acenaphthylene	208-96-8	250 µg/kg	78.2	-----	50	130	-----	-----
		Acenaphthene	83-32-9	250 µg/kg	73.8	-----	50	130	-----	-----
		Fluorene	86-73-7	250 µg/kg	73.8	-----	50	130	-----	-----
		Phenanthrene	85-01-8	250 µg/kg	74.2	-----	50	130	-----	-----
		Anthracene	120-12-7	250 µg/kg	71.7	-----	50	130	-----	-----
		Fluoranthene	206-44-0	250 µg/kg	78.9	-----	50	130	-----	-----
		Pyrene	129-00-0	250 µg/kg	77.8	-----	50	130	-----	-----



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 (%)	Control Limit
				MS	MSD	Low	High	Value			
EP-076HK: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 1472177) - Continued											
HK1819068-017	S13	Benz(a)anthracene	56-55-3	250 µg/kg	71.5	-----	50	130	-----	-----	-----
		Chrysene	218-01-9	250 µg/kg	80.3	-----	50	130	-----	-----	-----
		Benzo(b)fluoranthene	205-99-2	250 µg/kg	71.4	-----	50	130	-----	-----	-----
		Benzo(k)fluoranthene	207-08-9	250 µg/kg	76.9	-----	50	130	-----	-----	-----
		Benzo(a)pyrene	50-32-8	250 µg/kg	69.5	-----	50	130	-----	-----	-----
		Indeno(1,2,3-cd)pyrene	193-39-5	250 µg/kg	66.8	-----	50	130	-----	-----	-----
		Dibenz(a,h)anthracene	53-70-3	250 µg/kg	54.7	-----	50	130	-----	-----	-----
		Benzo(g,h,i)perylene	191-24-2	250 µg/kg	53.6	-----	50	130	-----	-----	-----

Surrogate Control Limits

Sub-Matrix: SEDIMENT

Compound	CAS Number	Recovery Limits (%)	
		Low	High
EP-076S: Polycyclic Aromatic Hydrocarbons (PAHs) Surrogates			
2-Fluorobiphenyl	321-60-8	50	130
4-Terphenyl-d14	1718-51-0	50	130
EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate			
Decachlorobiphenyl	2051-24-3	50	130

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES



SUB-CONTRACTING REPORT

CONTACT	: DULCIE CHAN	WORK ORDER	: HK1819072
CLIENT	: MOTT MACDONALD HONG KONG LIMITED		
ADDRESS	: 20/F., AIA KOWLOON TOWER, LANDMARK EAST, 100 HOW MING STREET, KWUN TONG, KOWLOON HONG KONG	SUB-BATCH	: 1
		DATE RECEIVED	: 2-MAR-2018
		DATE OF ISSUE	: 23-MAR-2018
PROJECT	: IMPROVEMENT DREDGING FOR LAMMA POWER STATION NAVIGATION CHANNEL (392653)	NO. OF SAMPLES	: 29
		CLIENT ORDER	: ----

General Comments

- Sample(s) were received in chilled condition.
- Sediment sample(s) analysed on an as received basis. Result(s) reported on dry weight basis.
- Particle size distribution was subcontracted to and analysed by Gammon Construction Limited.

Signatories

This document has been signed by those names that appear on this report and are the authorised signatories

Signatories

Position

Richard Fung

General Manager

R.F.

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.

ALS Technichem (HK) Pty Ltd
Part of the ALS Laboratory Group

11/F. Chung Shun Knitting Centre 1 - 3 Wing Yip Street Kwai Chung N.T. Hong Kong
Tel. +852 2610 1044 Fax. +852 2610 2021 www.alsglobal.com

WORK ORDER : HK1819072
 SUB-BATCH : 1
 CLIENT : MOTT MACDONALD HONG KONG LIMITED
 PROJECT : IMPROVEMENT DREDGING FOR LAMMA POWER STATION NAVIGATION CHANNEL
 (392653)



ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK1819072-001	S31	SEDIMENT	01-Mar-2018 08:48	J2999-272.26
HK1819072-002	S33	SEDIMENT	01-Mar-2018 08:55	J2999-272.26
HK1819072-003	S34	SEDIMENT	01-Mar-2018 09:00	J2999-272.26
HK1819072-004	S30	SEDIMENT	01-Mar-2018 09:04	J2999-272.26
HK1819072-005	S29	SEDIMENT	01-Mar-2018 09:08	J2999-272.26
HK1819072-006	S28	SEDIMENT	01-Mar-2018 09:12	J2999-272.26
HK1819072-007	S25	SEDIMENT	01-Mar-2018 09:16	J2999-272.26
HK1819072-008	S26	SEDIMENT	01-Mar-2018 09:20	J2999-272.26
HK1819072-009	S27	SEDIMENT	01-Mar-2018 09:24	J2999-272.26
HK1819072-010	S24	SEDIMENT	01-Mar-2018 09:29	J2999-272.26
HK1819072-011	S22	SEDIMENT	01-Mar-2018 09:39	J2999-272.26
HK1819072-012	S19	SEDIMENT	01-Mar-2018 11:54	J2999-272.26
HK1819072-013	S20	SEDIMENT	01-Mar-2018 12:00	J2999-272.26
HK1819072-014	S21	SEDIMENT	01-Mar-2018 12:05	J2999-272.26
HK1819072-015	S17	SEDIMENT	01-Mar-2018 12:17	J2999-272.26
HK1819072-016	S16	SEDIMENT	01-Mar-2018 12:19	J2999-272.26
HK1819072-017	S13	SEDIMENT	01-Mar-2018 12:23	J2999-272.26
HK1819072-018	S14	SEDIMENT	01-Mar-2018 12:27	J2999-272.26
HK1819072-019	S15	SEDIMENT	01-Mar-2018 12:31	J2999-272.26
HK1819072-020	S12	SEDIMENT	01-Mar-2018 12:38	J2999-272.26
HK1819072-021	S11	SEDIMENT	01-Mar-2018 12:42	J2999-272.26
HK1819072-022	S7	SEDIMENT	01-Mar-2018 12:50	J2999-272.26
HK1819072-023	S8	SEDIMENT	01-Mar-2018 12:54	J2999-272.26
HK1819072-024	S6	SEDIMENT	01-Mar-2018 13:02	J2999-272.26
HK1819072-025	S5	SEDIMENT	01-Mar-2018 13:07	J2999-272.26
HK1819072-026	S4	SEDIMENT	01-Mar-2018 13:12	J2999-272.26
HK1819072-027	S1	SEDIMENT	01-Mar-2018 13:17	J2999-272.26
HK1819072-028	S2	SEDIMENT	01-Mar-2018 13:24	J2999-272.26
HK1819072-029	S3	SEDIMENT	01-Mar-2018 13:29	J2999-272.26

TEST CERTIFICATE
SUMMARY OF SOIL CLASSIFICATION TEST RESULT
GEOSPEC 3 : 2001



Report No : J2999-272.26

Customer : ALS Technichem (HK) Pty Ltd

Job No. : J2999

Works Order No. : 272

Project : -

Contract No.:

Date : 05/03/2018

Sample ID No.	Sample		Δ Moisture Content (%)	Test 6.1 Liquid Limit (%)	Test 6.1 Plastic Limit (%)	Test 6.1 Plasticity Index (%)	Test 6.2 Liquidity Index (%)	Passing 425-μm Sieve (%)	Preparation Method	Particle Size Distribution			Description	Sample Origin		
	No.	Type								Depth (m)	# Test Method	Gravel (%)			Sand (%)	Silt Clay (%)
HK1819072-001	S31	D								1,5,7	5	49	25	21	Dark grey, sandy SILT/CLAY with shell fragments	- ‡
HK1819072-002	S33	D								1,5,7	0	5	65	30	Dark grey, slightly sandy SILT/CLAY with shell fragments	- ‡
HK1819072-003	S34	D								1,5,7	1	2	58	39	Dark grey, slightly sandy SILT/CLAY with shell fragments	- ‡
HK1819072-004	S30	D								1,5,7	0	2	62	36	Dark grey, slightly sandy SILT/CLAY with shell fragments	- ‡
HK1819072-005	S29	D								1,5,7	0	5	64	31	Dark grey, slightly sandy SILT/CLAY with shell fragments	- ‡
HK1819072-006	S28	D								1,5,7	4	53	22	21	Dark grey, sandy SILT/CLAY with shell fragments	- ‡
HK1819072-007	S25	D								1,5,7	3	38	34	25	Dark grey, sandy SILT/CLAY with shell fragments	- ‡
HK1819072-008	S26	D								1,5,7	1	27	46	26	Dark grey, slightly sandy SILT/CLAY with shell fragments	- ‡
HK1819072-009	S27	D								1,5,7	0	4	66	30	Dark grey, slightly sandy SILT/CLAY with shell fragments	- ‡
HK1819072-010	S24	D								1,5,7	0	0	61	39	Dark grey, SILT/CLAY with shell fragments	- ‡

Legend : Δ = Test Method in accordance with GEOSPEC 3 : 2001 Test 5.1 Moisture Content at 45 °C ± 5°C (A), Test 5.2 Moisture Content at 105 °C ± 5°C (B), Test 5.3 Comparative Moisture Content 45/105 °C ± 5°C (C)
 # = Test Method in accordance with GEOSPEC 3 : 2001 Test 8.1 (1), 8.2 (2), 8.3 (3), 8.4 (4), 8.5 (5), 8.6 (6), 8.7 (7).

Symbols : U - Undisturbed Sample; P - Piston Sample; N.P. - Non Plastic; A.D. - Air Dried; Sampling History - Refer the Individual Test Report;
 LB - Large Disturbed Sample; M - Mazier Sample; A.R. - As Received; O.D. - Oven Dried; Estimated Uncertainty - Refer the Individual Test Report.
 BLK - Block Sample; D - Small Disturbed Sample; H.P. - Hand Picked; W.S. - Wet Sieved;
 SPTL - SPT Split-Barrel Sample; PT - Portable triple tube Sample; ‡ - Information provided by customer.

Notes: IS - Insufficient Sample; Tf - To Follow on supplementary Report.

Checked by : T K Lam

Approved By : Lau Wai Cheong
 Deputy Laboratory Manager

Date : 22/03/2018

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Technology Centre

21 Chun Wang Street, Tseung Kwan O Industrial Estate,
 Tseung Kwan O, N.T. Tel: 26991980, Fax: 26917547

**TEST CERTIFICATE
SUMMARY OF SOIL CLASSIFICATION TEST RESULT
GEOSPEC 3 : 2001**



Report No : J2999-272.26

Customer : ALS Technichem (HK) Pty Ltd

Job No. : J2999

Works Order No. : 272

Project : -

Contract No.:

Date : 05/03/2018

Sample ID No.	Sample		Δ Moisture Content (%)	Test 6.1 Liquid Limit (%)	Test 6.1 Plastic Limit (%)	Test 6.1 Plasticity Index (%)	Test 6.2 Liquidity Index	Passing 425µm Sieve Test (%)	Preparation Method	Particle Size Distribution			Description	Sample Origin		
	No.	Type								Depth (m)	# Test Method	Gravel (%)			Sand (%)	Silt (%)
HK1819072-011	S22	D								1,5,7	0	12	53	35	Dark grey, slightly sandy SILT/CLAY with shell fragments	- ‡
HK1819072-012	S19	D								1,5,7	8	27	38	27	Dark grey, slightly sandy SILT/CLAY with shell fragments	- ‡
HK1819072-013	S20	D								1,5,7	0	1	59	40	Dark grey, slightly sandy SILT/CLAY with shell fragments	- ‡
HK1819072-014	S21	D								1,5,7	1	19	51	29	Dark grey, slightly sandy SILT/CLAY with shell fragments	- ‡
HK1819072-015	S17	D								1,5,7	3	19	51	27	Dark grey, slightly sandy SILT/CLAY with shell fragments	- ‡
HK1819072-016	S16	D								1,5,7	2	18	61	19	Dark grey, slightly sandy SILT/CLAY with shell fragments	- ‡
HK1819072-017	S13	D								1,5,7	3	23	54	20	Dark grey, slightly sandy SILT/CLAY with shell fragments	- ‡
HK1819072-018	S14	D								1,5,7	0	1	61	38	Dark grey, slightly sandy SILT/CLAY with shell fragments	- ‡
HK1819072-019	S15	D								1,5,7	0	9	60	31	Dark grey, slightly sandy SILT/CLAY with shell fragments	- ‡
HK1819072-020	S12	D								1,5,7	2	16	53	29	Dark grey, slightly sandy SILT/CLAY with shell fragments	- ‡

Legend : Δ = Test Method in accordance with GEOSPEC 3 : 2001 Test 5.1 Moisture Content at 45 °C ± 5°C (A), Test 5.2 Moisture Content at 105°C ± 5°C (B), Test 5.3 Comparative Moisture Content 45/105 °C± 5°C (C)
= Test Method in accordance with GEOSPEC3 : 2001 Test 8.1 (1), 8.2 (2), 8.3 (3), 8.4 (4), 8.5 (5), 8.6 (6), 8.7 (7).

Symbols : U - Undisturbed Sample; P - Piston Sample; N.P. - Non Plastic; A.D. - Air Dried; Sampling History - Refer the Individual Test Report;
LB - Large Disturbed Sample; M - Mazier Sample; A.R. - As Received; O.D. - Oven Dried; Estimated Uncertainty - Refer the Individual Test Report.
BLK - Block Sample; D - Small Disturbed Sample; H.P. - Hand Picked; W.S. - Wet Sieved;
SPTL - SPT Split-Barrel Sample; PT - Portable triple tube Sample; - Moisture Content for A.L. Test.

Notes: IS - Insufficient Sample; Tf - To Follow on supplementary Report.

Checked by : T K Lam

Approved By : Lau Wai Cheong
Deputy Laboratory Manager

Date : 22/03/2018

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Technology Centre

21 Chun Wang Street, Tseung Kwan O Industrial Estate,
Tseung Kwan O, N.T. Tel.:26991980, Fax : 26917547

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Form : GEOS001 / Jun.30.13 / Issue 1 / Rev 3

**TEST CERTIFICATE
SUMMARY OF SOIL CLASSIFICATION TEST RESULT
GEOSPEC 3 : 2001**



Report No : J2999-272.26

Customer : ALS Technichem (HK) Pty Ltd

Job No. : J2999

Works Order No. : 272

Project : -

Contract No.:

Date : 05/03/2018

Sample ID	Sample		Δ Moisture Content (%)	Test 6.1 Liquid Limit (%)	Test 6.1 Plastic Limit (%)	Test 6.1 Plasticity Index (%)	Test 6.2 Liquidity Index	Passing 425µm Sieve (%)	Preparation Method	Particle Size Distribution				Description	Sample Origin
	No.	Type								Depth (m)	# Test Method	Gravel (%)	Sand (%)		
HK1819072-021	S11	D								1,5,7	0	59	41	Dark grey, SILT/CLAY with shell fragments	- †
HK1819072-022	S7	D								1,5,7	4	19	50	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1819072-023	S8	D								1,5,7	0	62	35	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1819072-024	S6	D								1,5,7	2	18	53	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1819072-025	S5	D								1,5,7	1	7	59	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1819072-026	S4	D								1,5,7	1	19	52	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1819072-027	S1	D								1,5,7	1	19	51	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1819072-028	S2	D								1,5,7	0	11	58	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †
HK1819072-029	S3	D								1,5,7	0	14	54	Dark grey, slightly sandy SILT/CLAY with shell fragments	- †

Legend : Δ = Test Method in accordance with GEOSPEC 3 : 2001 Test 5.1 Moisture Content at 45 °C ± 5°C (A), Test 5.2 Moisture Content at 105 °C ± 5°C (B), Test 5.3 Comparative Moisture Content 45/105 °C ± 5°C (C)
= Test Method in accordance with GEOSPEC3 : 2001 Test 8.1 (1), 8.2 (2), 8.3 (3), 8.4 (4), 8.5 (5), 8.6 (6), 8.7 (7).

Symbols : U - Undisturbed Sample; P - Piston Sample; N.P. - Non Plastic; A.D. - Air Dried; LB - Large Disturbed Sample; M - Mazier Sample; A.R. - As Received; O.D. - Oven Dried; BLK - Block Sample; D - Small Disturbed Sample; H.P. - Hand Picked; W.S. - Wet Sieved; SPTL - SPT Split-Barrel Sample; PT - Portable triple tube Sample; PT - Moisture Content for A.L. Test.

Notes : IS - Insufficient Sample; Tf - To Follow on supplementary Report.

Checked by : T K Lam Approved By : Lau Wai Cheong Deputy Laboratory Manager Date : 22/03/2018

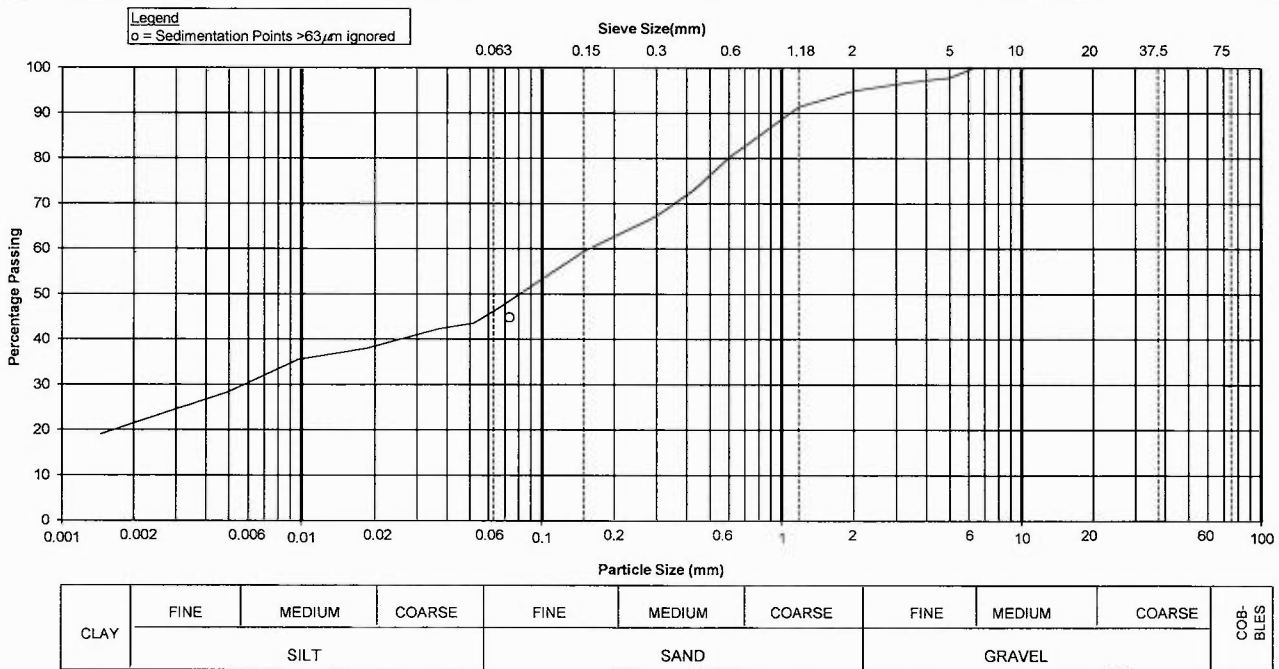
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Technology Centre
21 Chun Wang Street, Tseung Kwan O Industrial Estate,
Tseung Kwan O, N.T. Tel.:26991980, Fax.: 26917547

TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)

Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -
 Date Received : 05/03/2018
 Tested Date : 16/03/2018
 Description : Dark grey, sandy SILT/CLAY with shell fragments
 Sieve Method : Method A ^ Upon request * Delete as appropriate † Information provided by customer
 Report No. : J2999-272.26
 Works Order No. : 272
 Sample ID No. : HK1819072-001
 Sample No. : S31
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : †

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^Expanded Uncertainty of the Percent Passing (%)	^Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed) :			
100.0 mm	100	-	-	2.65 #			
75.0 mm	100	-	-	Dispersant Details :	Sodium hexametaphosphate, Sodium carbonate		
63.0 mm	100	-	-	Sampling History :	As received		
50.0 mm	100	-	-	The presence of any visible organic matter in the soil : None			
37.5 mm	100	-	-	Particle Diameter (mm)	^Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D (%)	^Expanded Uncertainty of % finer than D (%)
28.0 mm	100	-	-	0.0728	-	45	-
20.0 mm	100	-	-	0.0517	-	44	-
14.0 mm	100	-	-	0.0367	-	42	-
10.0 mm	100	-	-	0.0261	-	40	-
6.30 mm	100	-	-	0.0186	-	38	-
5.00 mm	98	-	-	0.0097	-	36	-
3.35 mm	97	-	-	0.0049	-	28	-
2.00 mm	95	-	-	0.0025	-	23	-
1.18 mm	91	-	-	0.0015	-	19	-
600 µm	80	-	-	SUMMARY :			
425 µm	73	-	-	Gravel (%) :	5		
300 µm	67	-	-	Sand (%) :	49		
212 µm	64	-	-	Silt (%) :	25		
150 µm	60	-	-	Clay (%) :	21		
63 µm	46	-	-				
0 µm	0	-	-				



Technician : K Y Sun Checked By : T K Lam Approved By : Lau Wai Cheong
 Date : 16/03/2018 Date : 22/03/2018 Date : 22/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.26

Date Received : 05/03/2018
 Tested Date : 09/03/2018

Works Order No. : 272
 Sample ID No. : HK1819072-002
 Sample No. : S33
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : †

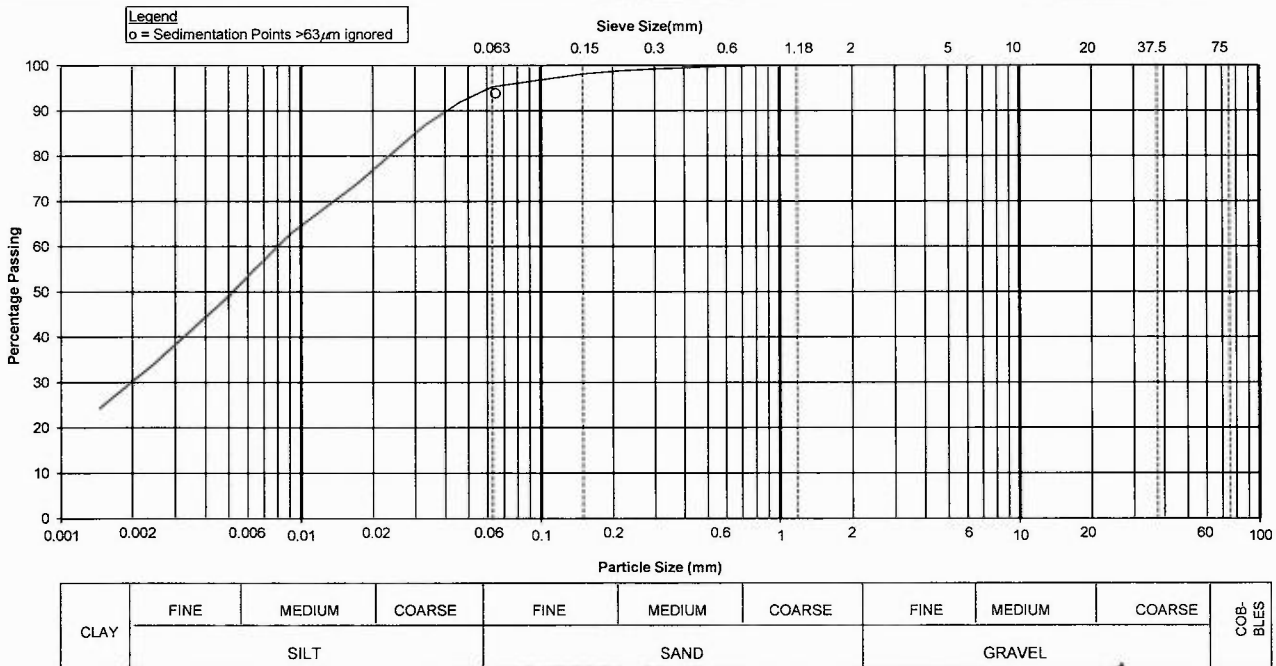
Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate

† Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0646	-	94	-
14.0 mm	100	-	-	0.0460	-	92	-
10.0 mm	100	-	-	0.0330	-	87	-
6.30 mm	100	-	-	0.0238	-	81	-
5.00 mm	100	-	-	0.0172	-	74	-
3.35 mm	100	-	-	0.0091	-	63	-
2.00 mm	100	-	-	0.0048	-	48	-
1.18 mm	100	-	-	0.0025	-	34	-
600 µm	100	-	-	0.0015	-	24	-
425 µm	100	-	-				
300 µm	99	-	-				
212 µm	99	-	-				
150 µm	98	-	-				
63 µm	95	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #			
Dispersant Details : Sodium hexametaphosphate, Sodium carbonate			
Sampling History : As received			
The presence of any visible organic matter in the soil : None			
SUMMARY :			
Gravel (%)	:	0	
Sand (%)	:	5	
Silt (%)	:	65	
Clay (%)	:	30	



Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun
 Date : 09/03/2018

Checked By : [Signature]
 Name : TK Lam
 Date : 15/03/2018

Approved By : [Signature]
 Signatory : Lau Wai Cheong
 Date : 15/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.26

Date Received : 05/03/2018
 Tested Date : 15/03/2018

Works Order No. : 272
 Sample ID No. : HK1819072-003
 Sample No. : S34
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : ‡

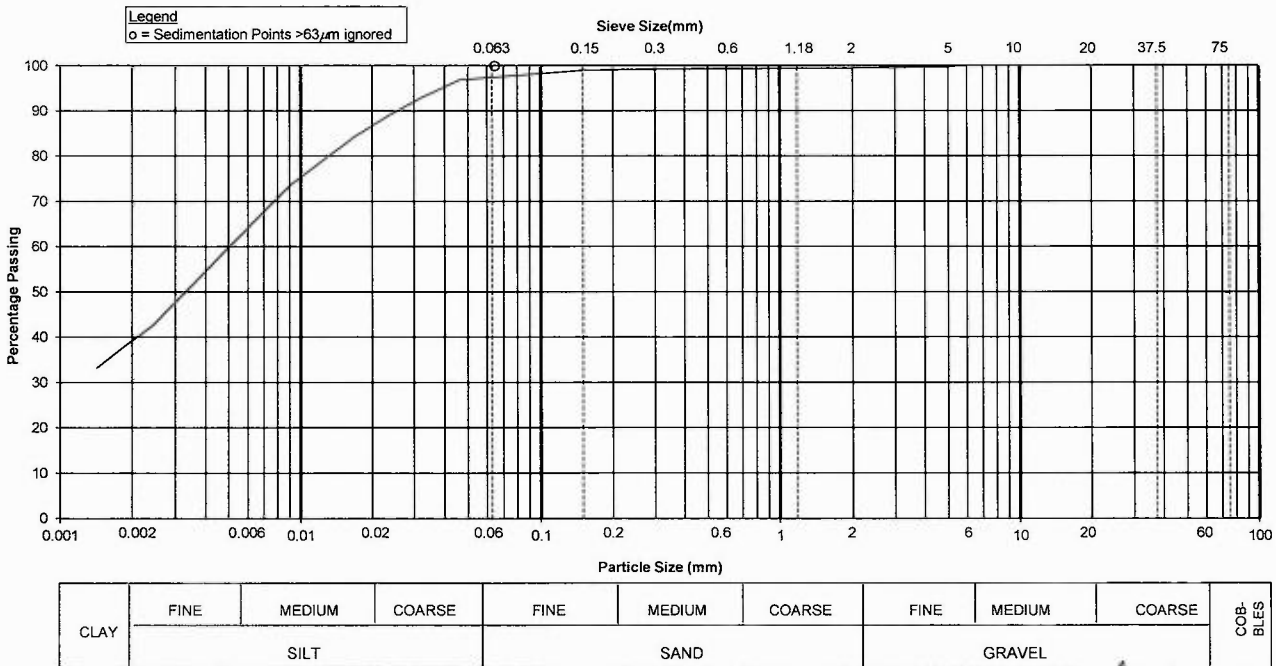
Description : Dark grey, slightly sandy SILT/CLAY with shell fragments
 Sieve Method : Method A ^ Upon request * Delete as appropriate

‡ Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^Expanded Uncertainty of the Percent Passing (%)	^Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	^Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0644	-	100	-
14.0 mm	100	-	-	0.0460	-	97	-
10.0 mm	100	-	-	0.0329	-	93	-
6.30 mm	100	-	-	0.0235	-	89	-
5.00 mm	100	-	-	0.0169	-	84	-
3.35 mm	100	-	-	0.0090	-	73	-
2.00 mm	99	-	-	0.0047	-	58	-
1.18 mm	99	-	-	0.0024	-	43	-
600 µm	99	-	-	0.0014	-	33	-
425 µm	99	-	-				
300 µm	99	-	-				
212 µm	99	-	-				
150 µm	99	-	-				
63 µm	97	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #			
Dispersant Details : Sodium hexametaphosphate, Sodium carbonate			
Sampling History : As received			
The presence of any visible organic matter in the soil : None			

SUMMARY :			
Gravel (%)	:	1	
Sand (%)	:	2	
Silt (%)	:	58	
Clay (%)	:	39	



Form : CESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun
 Date : 15/03/2018

Checked By : T K Lam
 Date : 22/03/2018

Approved By : Lau Wai Cheong
 Date : 22/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.26

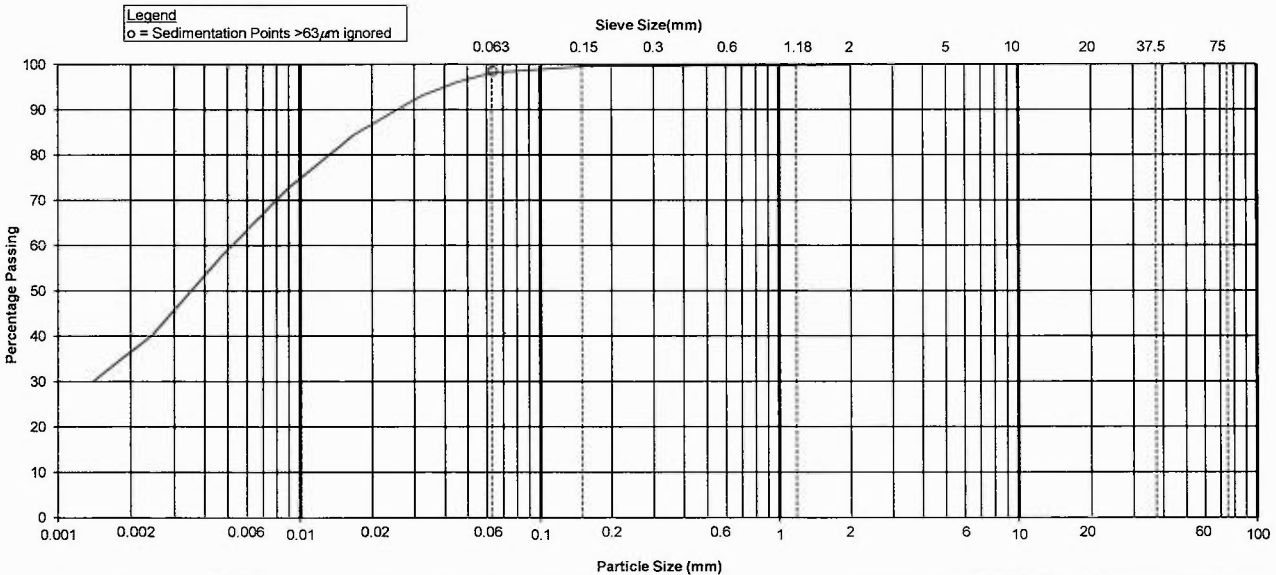
Works Order No. : 272
 Sample ID No. : HK1819072-004
 Sample No. : S30
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : †

Date Received : 05/03/2018
 Tested Date : 15/03/2018

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A † Upon request * Delete as appropriate † Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed) :			
100.0 mm	100	-	-	2.65 #			
75.0 mm	100	-	-	Dispersant Details : Sodium hexametaphosphate, Sodium carbonate			
63.0 mm	100	-	-	Sampling History : As received			
50.0 mm	100	-	-	The presence of any visible organic matter in the soil : None			
37.5 mm	100	-	-	Particle Diameter (mm)	^ Expanded Uncertainty of Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
28.0 mm	100	-	-	0.0635	-	99	-
20.0 mm	100	-	-	0.0453	-	96	-
14.0 mm	100	-	-	0.0323	-	93	-
10.0 mm	100	-	-	0.0232	-	89	-
6.30 mm	100	-	-	0.0166	-	84	-
5.00 mm	100	-	-	0.0089	-	73	-
3.35 mm	100	-	-	0.0046	-	57	-
2.00 mm	100	-	-	0.0024	-	40	-
1.18 mm	100	-	-	0.0014	-	30	-
600 µm	100	-	-	SUMMARY :			
425 µm	100	-	-	Gravel (%) :	0		
300 µm	100	-	-	Sand (%) :	2		
212 µm	100	-	-	Silt (%) :	62		
150 µm	100	-	-	Clay (%) :	36		
63 µm	98	-	-				
0 µm	0	-	-				



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COBBLES
	SILT			SAND			GRAVEL			

Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun
 Date : 15/03/2018

Checked By :
 Name : T K Lam
 Date : 22/03/2018

Approved By :
 Signatory : Lau Wai Cheong
 Date : 22/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.26

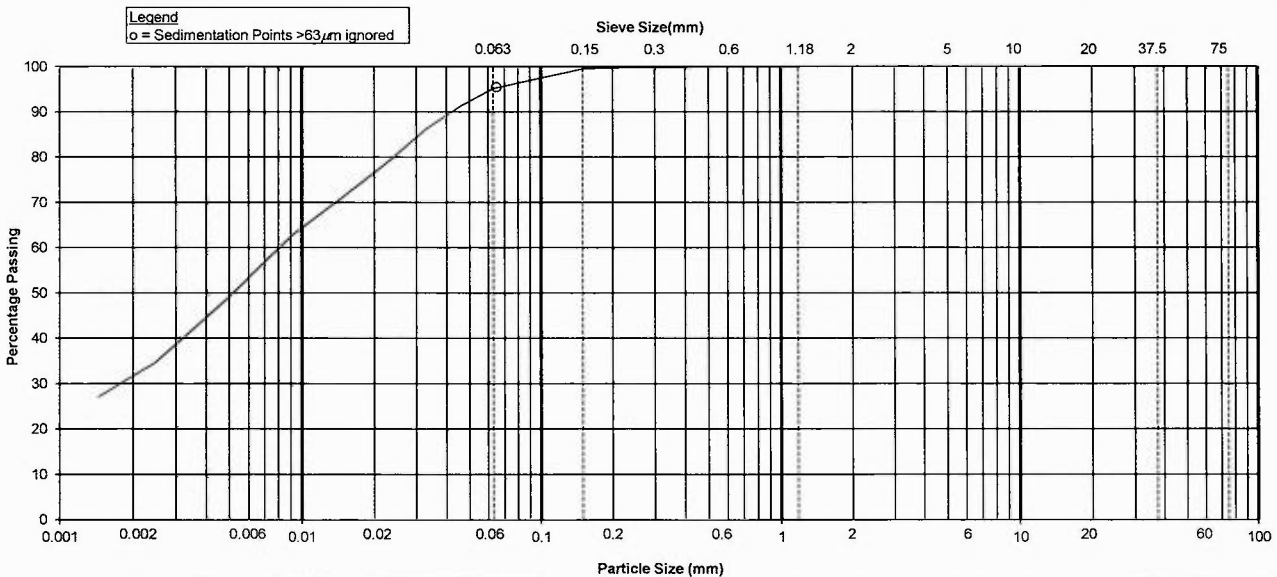
Date Received : 05/03/2018
 Tested Date : 15/03/2018

Works Order No. : 272
 Sample ID No. : HK1819072-005
 Sample No. : S29
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : ‡

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A † Upon request * Delete as appropriate ‡ Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed) :			
100.0 mm	100	-	-	2.65 #			
75.0 mm	100	-	-	Dispersant Details : Sodium hexametaphosphate, Sodium carbonate			
63.0 mm	100	-	-	Sampling History : As received			
50.0 mm	100	-	-	The presence of any visible organic matter in the soil : None			
37.5 mm	100	-	-	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
28.0 mm	100	-	-	0.0646	-	96	-
20.0 mm	100	-	-	0.0462	-	91	-
14.0 mm	100	-	-	0.0332	-	86	-
10.0 mm	100	-	-	0.0239	-	80	-
6.30 mm	100	-	-	0.0172	-	74	-
5.00 mm	100	-	-	0.0092	-	63	-
3.35 mm	100	-	-	0.0048	-	48	-
2.00 mm	100	-	-	0.0025	-	35	-
1.18 mm	100	-	-	0.0014	-	27	-
600 µm	100	-	-	SUMMARY :			
425 µm	100	-	-	Gravel (%) :	0		
300 µm	100	-	-	Sand (%) :	5		
212 µm	100	-	-	Silt (%) :	64		
150 µm	100	-	-	Clay (%) :	31		
63 µm	95	-	-				
0 µm	0	-	-				



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COBBLES
	SILT			SAND			GRAVEL			

Technician : K Y Sun
 Date : 15/03/2018

Checked By : T K Lam
 Date : 20/03/2018

Approved By : Lau Wei Cheong
 Date : 20/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Report No. : J2999-272.26

Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

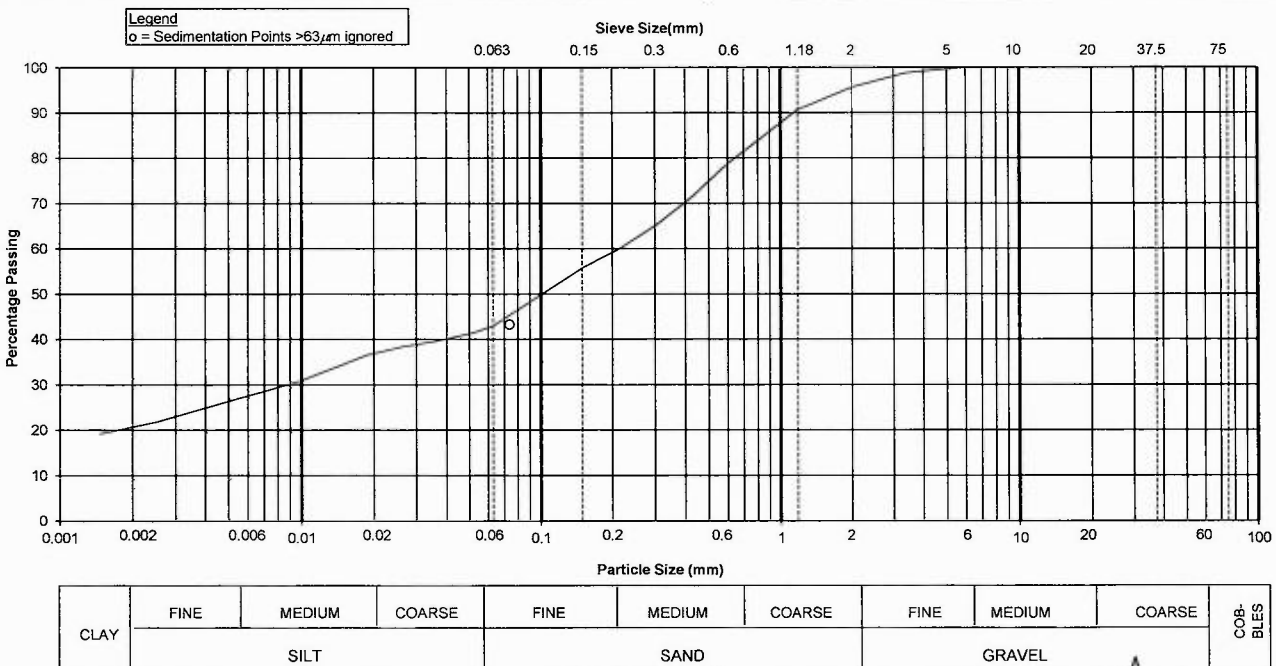
Works Order No. : 272
 Sample ID No. : HK1819072-006
 Sample No. : S28
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : †

Date Received : 05/03/2018
 Tested Date : 14/03/2018

Description : Dark grey, sandy SILT/CLAY with shell fragments

Sieve Method : Method A † Upon request * Delete as appropriate ‡ Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed) :			
100.0 mm	100	-	-	2.65 #			
75.0 mm	100	-	-	Dispersant Details :	Sodium hexametaphosphate, Sodium carbonate		
63.0 mm	100	-	-	Sampling History :	As received		
50.0 mm	100	-	-	The presence of any visible organic matter in the soil : None			
37.5 mm	100	-	-	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
28.0 mm	100	-	-	0.0736	-	43	-
20.0 mm	100	-	-	0.0523	-	42	-
14.0 mm	100	-	-	0.0372	-	40	-
10.0 mm	100	-	-	0.0264	-	38	-
6.30 mm	100	-	-	0.0187	-	37	-
5.00 mm	100	-	-	0.0098	-	31	-
3.35 mm	99	-	-	0.0050	-	26	-
2.00 mm	96	-	-	0.0025	-	22	-
1.18 mm	91	-	-	0.0015	-	19	-
600 µm	79	-	-	SUMMARY :			
425 µm	71	-	-	Gravel (%) :	4		
300 µm	65	-	-	Sand (%) :	53		
212 µm	60	-	-	Silt (%) :	22		
150 µm	56	-	-	Clay (%) :	21		
63 µm	43	-	-				
0 µm	0	-	-				



Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun
 Date : 14/03/2018

Checked By :
 Name : T K Lam
 Date : 20/03/2018

Approved By :
 Signatory : Lau Wai Cheong
 Date : 20/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Report No. : J2999-272.26

Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

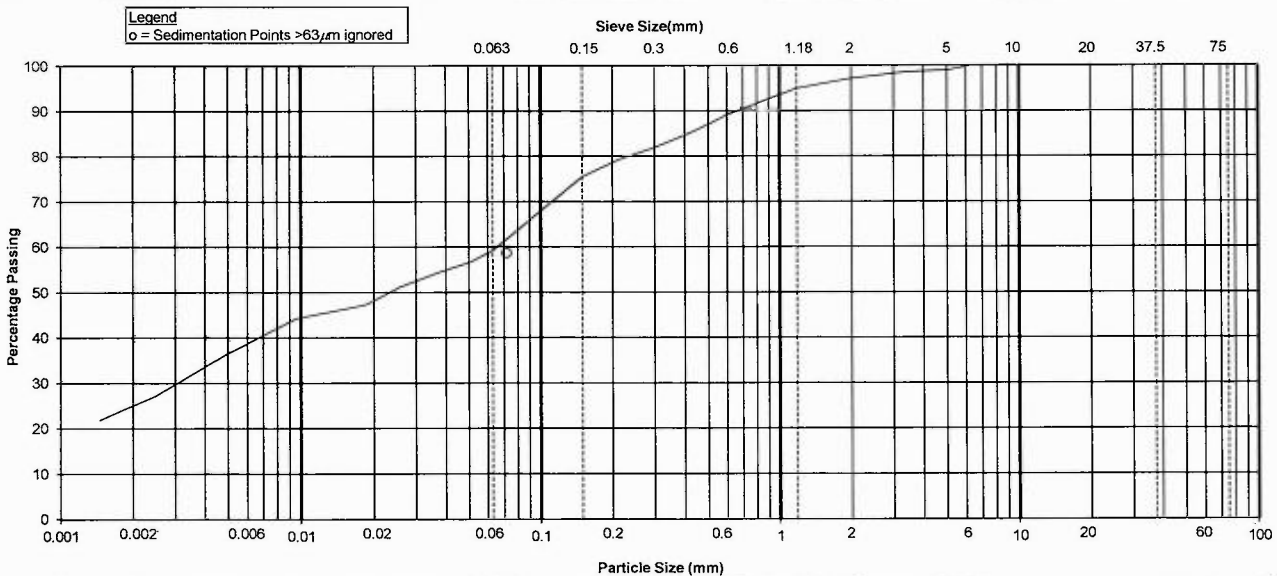
Works Order No. : 272
 Sample ID No. : HK1819072-007
 Sample No. : S25
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : ‡

Date Received : 05/03/2018
 Tested Date : 09/03/2018

Description : Dark grey, sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate ‡ Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed) :			
100.0 mm	100	-	-	2.65 #			
75.0 mm	100	-	-	Dispersant Details :	Sodium hexametaphosphate, Sodium carbonate		
63.0 mm	100	-	-	Sampling History :	As received		
50.0 mm	100	-	-	The presence of any visible organic matter in the soil : None			
37.5 mm	100	-	-	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
28.0 mm	100	-	-	0.0716	-	59	-
20.0 mm	100	-	-	0.0509	-	57	-
14.0 mm	100	-	-	0.0362	-	54	-
10.0 mm	100	-	-	0.0258	-	51	-
6.30 mm	100	-	-	0.0184	-	47	-
5.00 mm	99	-	-	0.0096	-	44	-
3.35 mm	99	-	-	0.0049	-	36	-
2.00 mm	97	-	-	0.0025	-	27	-
1.18 mm	95	-	-	0.0015	-	22	-
600 µm	89	-	-	SUMMARY :			
425 µm	85	-	-	Gravel (%) :	3		
300 µm	82	-	-	Sand (%) :	38		
212 µm	79	-	-	Silt (%) :	34		
150 µm	76	-	-	Clay (%) :	25		
63 µm	59	-	-				
0 µm	0	-	-				



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COBBLES
	SILT			SAND			GRAVEL			

Technician : K Y Sun
 Date : 09/03/2018

Checked By : T K Lam
 Name : T K Lam
 Date : 15/03/2018

Approved By : Lau Wai Cheong
 Signatory : Lau Wai Cheong
 Date : 15/03/2018

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Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.26

Date Received : 05/03/2018
 Tested Date : 16/03/2018

Works Order No. : 272
 Sample ID No. : HK1819072-008
 Sample No. : S26
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : †

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

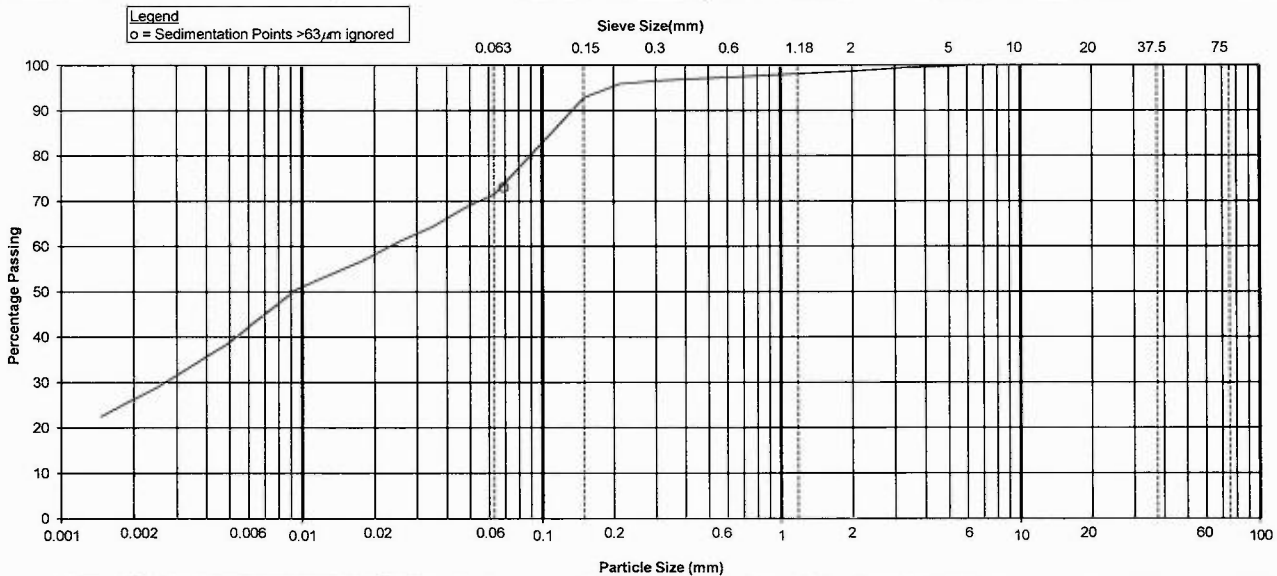
Sieve Method : Method A

^ Upon request

* Delete as appropriate

† Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed) :			
100.0 mm	100	-	-	2.65 #			
75.0 mm	100	-	-	Dispersant Details :	Sodium hexametaphosphate, Sodium carbonate		
63.0 mm	100	-	-	Sampling History :	As received		
50.0 mm	100	-	-	The presence of any visible organic matter in the soil : None			
37.5 mm	100	-	-	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
28.0 mm	100	-	-	0.0690	-	73	-
20.0 mm	100	-	-	0.0493	-	69	-
14.0 mm	100	-	-	0.0353	-	65	-
10.0 mm	100	-	-	0.0252	-	61	-
6.30 mm	100	-	-	0.0180	-	57	-
5.00 mm	100	-	-	0.0094	-	51	-
3.35 mm	99	-	-	0.0049	-	39	-
2.00 mm	99	-	-	0.0025	-	29	-
1.18 mm	98	-	-	0.0015	-	23	-
600 µm	97	-	-	SUMMARY :			
425 µm	97	-	-	Gravel (%) :	1		
300 µm	97	-	-	Sand (%) :	27		
212 µm	96	-	-	Silt (%) :	46		
150 µm	93	-	-	Clay (%) :	26		
63 µm	72	-	-				
0 µm	0	-	-				



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COBBLES
	SILT			SAND			GRAVEL			

Technician : K Y Sun
 Date : 16/03/2018

Checked By :
 Name : T K Lam
 Date : 22/03/2018

Approved By :
 Signatory : Lau Wai Cheong
 Date : 22/03/2018

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Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.26

Date Received : 05/03/2018
 Tested Date : 15/03/2018

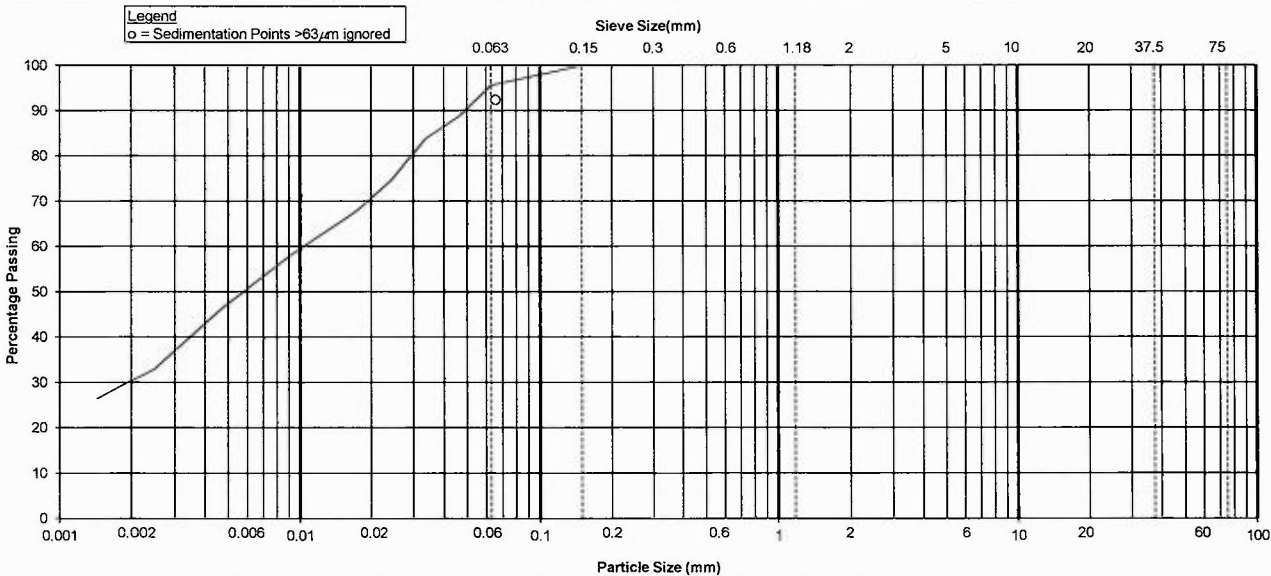
Works Order No. : 272
 Sample ID No. : HK1819072-009
 Sample No. : S27
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : ‡

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate

‡ Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed) :			
100.0 mm	100	-	-	2.65 #			
75.0 mm	100	-	-	Dispersant Details :	Sodium hexametaphosphate, Sodium carbonate		
63.0 mm	100	-	-	Sampling History :	As received		
50.0 mm	100	-	-	The presence of any visible organic matter in the soil : None			
37.5 mm	100	-	-	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
28.0 mm	100	-	-	0.0654	-	92	-
20.0 mm	100	-	-	0.0468	-	89	-
14.0 mm	100	-	-	0.0336	-	84	-
10.0 mm	100	-	-	0.0244	-	75	-
6.30 mm	100	-	-	0.0175	-	68	-
5.00 mm	100	-	-	0.0093	-	58	-
3.35 mm	100	-	-	0.0048	-	47	-
2.00 mm	100	-	-	0.0025	-	33	-
1.18 mm	100	-	-	0.0014	-	26	-
600 µm	100	-	-	SUMMARY :			
425 µm	100	-	-	Gravel (%)	:	0	
300 µm	100	-	-	Sand (%)	:	4	
212 µm	100	-	-	Silt (%)	:	66	
150 µm	100	-	-	Clay (%)	:	30	
63 µm	96	-	-				
0 µm	0	-	-				



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COBBLES
	SILT			SAND			GRAVEL			

Technician : K Y Sun
 Date : 15/03/2018

Checked By : TK Lam
 Name : TK Lam
 Date : 20/03/2018

Approved By : Lau Wai Cheong
 Signatory : Lau Wai Cheong
 Date : 20/03/2018

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Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Report No. : J2999-272.26

Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Works Order No. : 272
 Sample ID No. : HK1819072-010
 Sample No. : S24
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : ‡

Date Received : 05/03/2018
 Tested Date : 15/03/2018

Description : Dark grey, SILT/CLAY with shell fragments

Sieve Method : Method A

^ Upon request

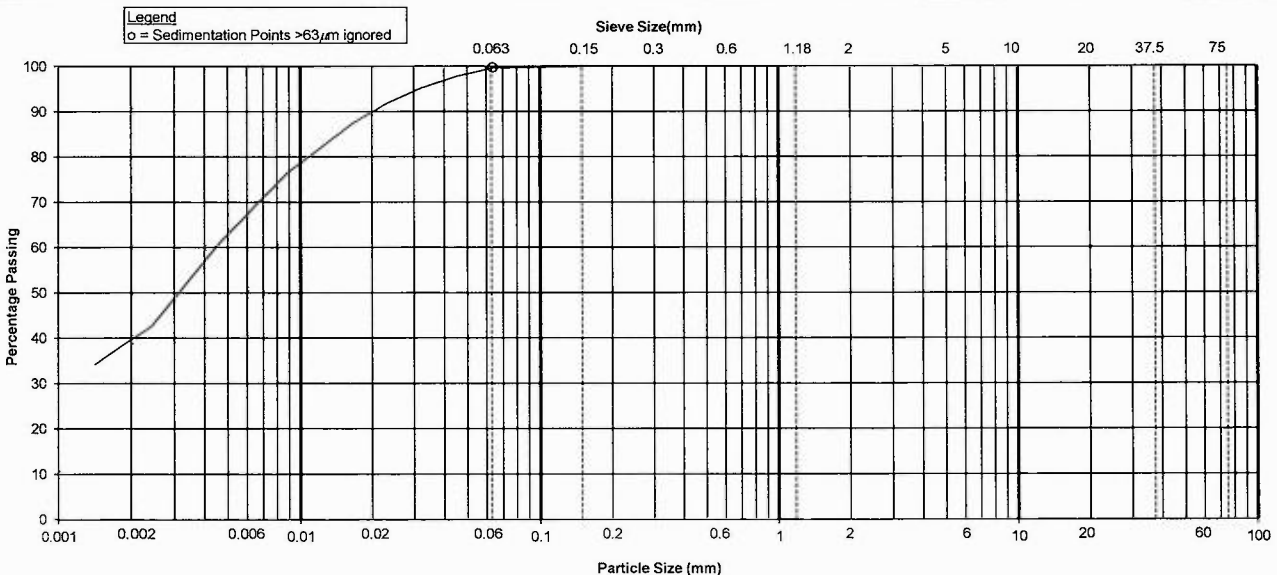
* Delete as appropriate

‡ Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^Expanded Uncertainty of the Percent Passing (%)	^Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	^Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0635	-	100	-
14.0 mm	100	-	-	0.0452	-	98	-
10.0 mm	100	-	-	0.0322	-	95	-
6.30 mm	100	-	-	0.0230	-	92	-
5.00 mm	100	-	-	0.0165	-	87	-
3.35 mm	100	-	-	0.0088	-	76	-
2.00 mm	100	-	-	0.0046	-	61	-
1.18 mm	100	-	-	0.0024	-	43	-
600 µm	100	-	-	0.0014	-	34	-
425 µm	100	-	-				
300 µm	100	-	-				
212 µm	100	-	-				
150 µm	100	-	-				
63 µm	100	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
 Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
 Sampling History : As received
 The presence of any visible organic matter in the soil : None

SUMMARY :
 Gravel (%) : 0
 Sand (%) : 0
 Silt (%) : 61
 Clay (%) : 39



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COB-BLES
	SILT			SAND			GRAVEL			

Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun

Checked By :

Approved By :

Date : 15/03/2018

Name : T K Lam
 Date : 20/03/2018

Signatory : Lau Wai Cheong
 Date : 20/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Report No. : J2999-272.26

Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Works Order No. : 272
 Sample ID No. : HK1819072-011
 Sample No. : S22
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : †

Date Received : 05/03/2018
 Tested Date : 15/03/2018

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

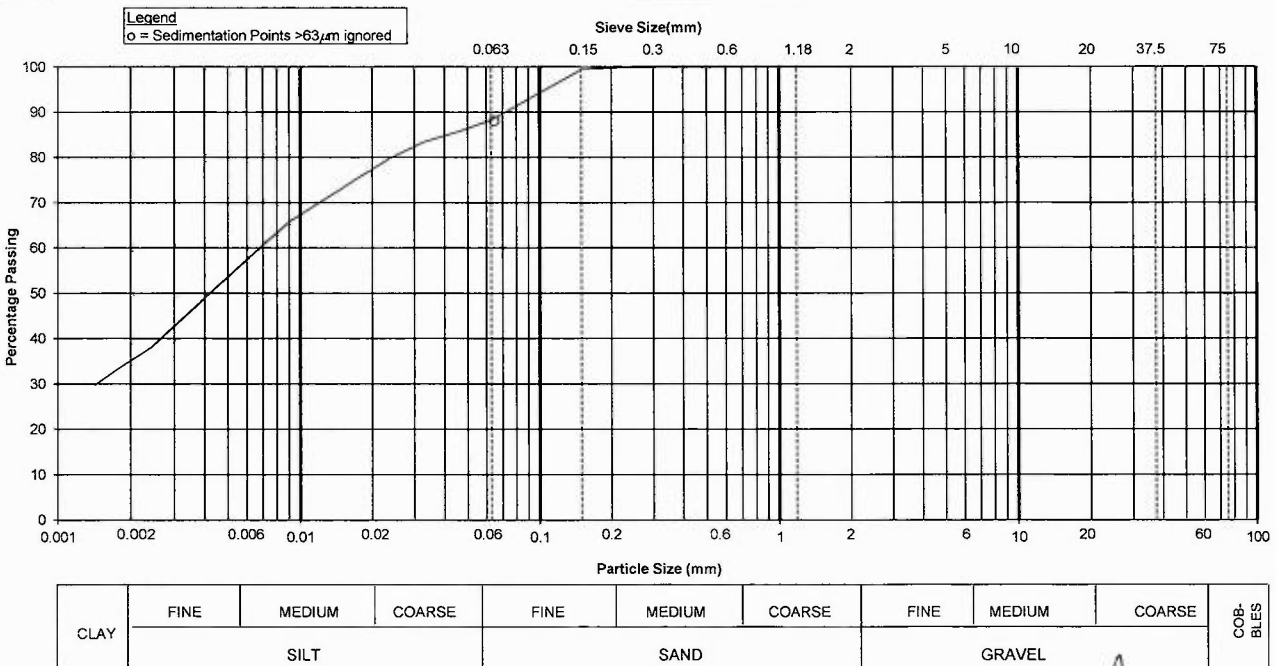
Sieve Method : Method A

^ Upon request

* Delete as appropriate

† Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed) :			
100.0 mm	100	-	-	2.65 #			
75.0 mm	100	-	-	Dispersant Details :	Sodium hexametaphosphate, Sodium carbonate		
63.0 mm	100	-	-	Sampling History :	As received		
50.0 mm	100	-	-	The presence of any visible organic matter in the soil : None			
37.5 mm	100	-	-	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
28.0 mm	100	-	-	0.0647	-	88	-
20.0 mm	100	-	-	0.0461	-	86	-
14.0 mm	100	-	-	0.0329	-	83	-
10.0 mm	100	-	-	0.0235	-	80	-
6.30 mm	100	-	-	0.0169	-	75	-
5.00 mm	100	-	-	0.0090	-	66	-
3.35 mm	100	-	-	0.0047	-	52	-
2.00 mm	100	-	-	0.0024	-	38	-
1.18 mm	100	-	-	0.0014	-	30	-
600 µm	100	-	-	SUMMARY :			
425 µm	100	-	-	Gravel (%) :	0		
300 µm	100	-	-	Sand (%) :	12		
212 µm	100	-	-	Silt (%) :	53		
150 µm	99	-	-	Clay (%) :	35		
63 µm	88	-	-				
0 µm	0	-	-				



Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun
 Date : 15/03/2018

Checked By : TKL
 Name : T K Lam
 Date : 20/03/2018

Approved By : LWC
 Signatory : Lau Wai Cheong
 Date : 20/03/2018

Hong Kong Accreditation Service (HKAS) has accredited this laboratory (Reg. No. 055 - TEST) under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories. This report shall not be reproduced unless with prior written approval from this laboratory.

TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Report No. : J2999-272.26

Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Works Order No. : 272
 Sample ID No. : HK1819072-013
 Sample No. : S20
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : †

Date Received : 05/03/2018
 Tested Date : 16/03/2018

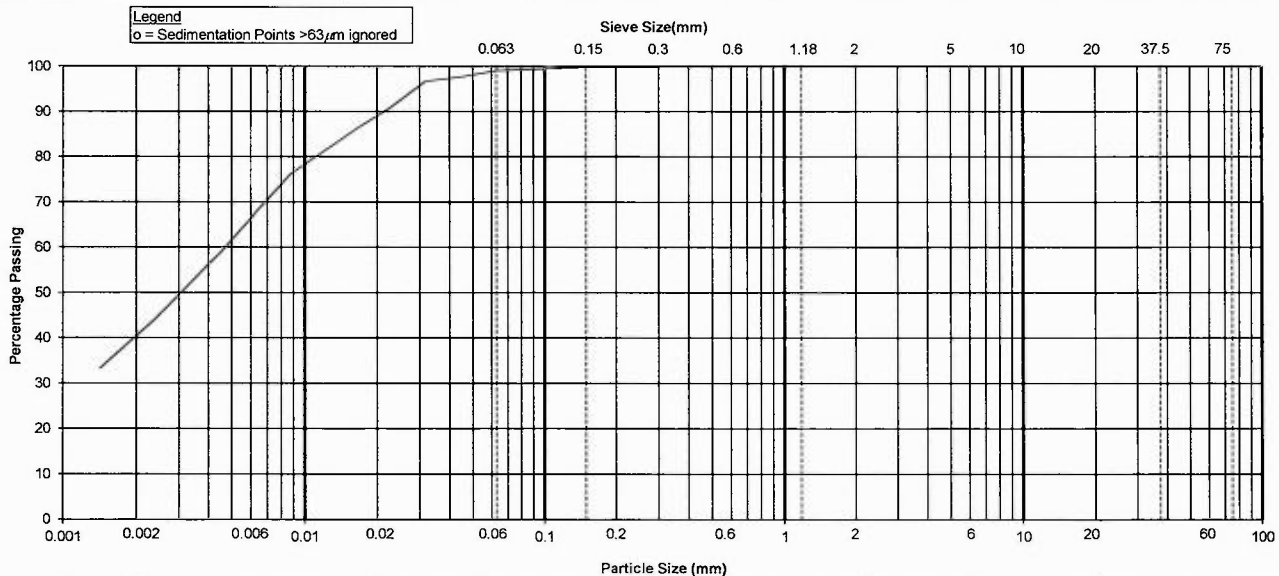
Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A † Upon request * Delete as appropriate † Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0625	-	100	-
14.0 mm	100	-	-	0.0446	-	98	-
10.0 mm	100	-	-	0.0316	-	97	-
6.30 mm	100	-	-	0.0228	-	91	-
5.00 mm	100	-	-	0.0164	-	86	-
3.35 mm	100	-	-	0.0087	-	76	-
2.00 mm	100	-	-	0.0046	-	60	-
1.18 mm	100	-	-	0.0024	-	44	-
600 µm	100	-	-	0.0014	-	33	-
425 µm	100	-	-				
300 µm	100	-	-				
212 µm	100	-	-				
150 µm	100	-	-				
63 µm	99	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
 Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
 Sampling History : As received
 The presence of any visible organic matter in the soil : None

SUMMARY :
 Gravel (%) : 0
 Sand (%) : 1
 Silt (%) : 59
 Clay (%) : 40



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COBBLES
	SILT			SAND			GRAVEL			

Technician : K Y Sun
 Date : 16/03/2018

Checked By : TK Lam
 Name : TK Lam
 Date : 22/03/2018

Approved By : Lau Wai Cheong
 Signatory : Lau Wai Cheong
 Date : 22/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.26

Date Received : 05/03/2018
 Tested Date : 16/03/2018

Works Order No. : 272
 Sample ID No. : HK1819072-014
 Sample No. : S21
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : †

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

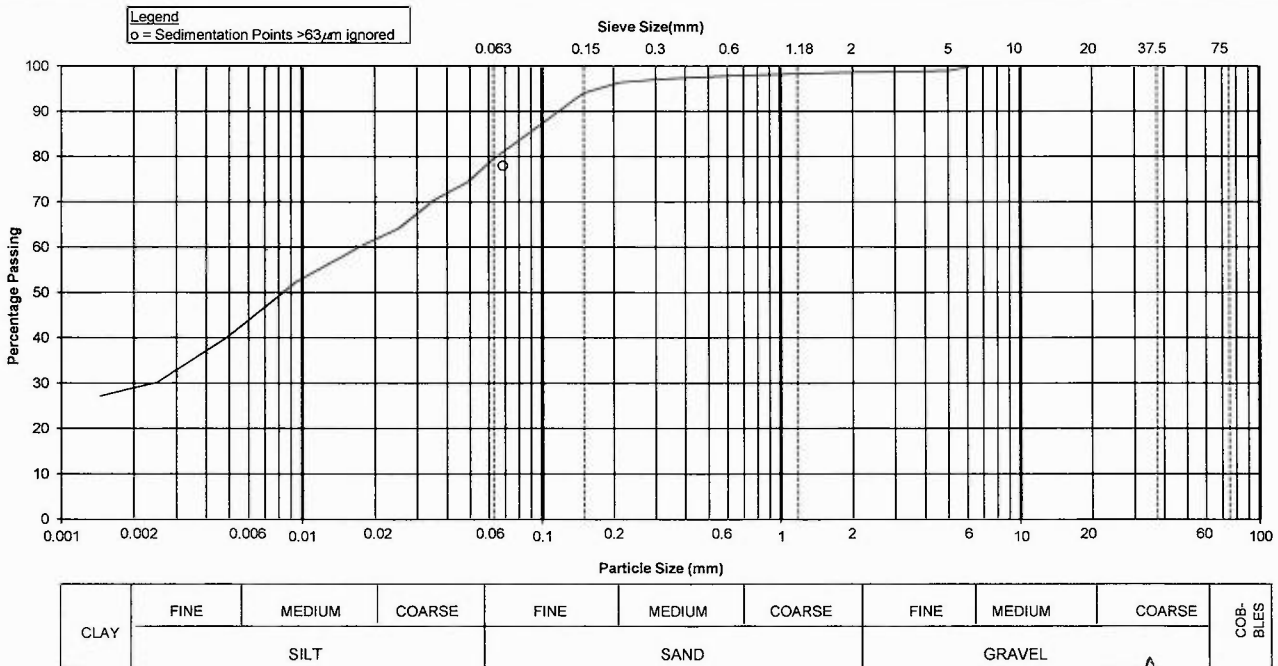
Sieve Method : Method A

^ Upon request

* Delete as appropriate

† Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed) :			
100.0 mm	100	-	-	2.65 #			
75.0 mm	100	-	-	Dispersant Details :	Sodium hexametaphosphate, Sodium carbonate		
63.0 mm	100	-	-	Sampling History :	As received		
50.0 mm	100	-	-	The presence of any visible organic matter in the soil : None			
37.5 mm	100	-	-	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
28.0 mm	100	-	-	0.0684	-	78	-
20.0 mm	100	-	-	0.0488	-	74	-
14.0 mm	100	-	-	0.0349	-	70	-
10.0 mm	100	-	-	0.0251	-	64	-
6.30 mm	100	-	-	0.0179	-	61	-
5.00 mm	99	-	-	0.0094	-	52	-
3.35 mm	99	-	-	0.0049	-	40	-
2.00 mm	99	-	-	0.0025	-	30	-
1.18 mm	98	-	-	0.0014	-	27	-
600 µm	98	-	-	SUMMARY :			
425 µm	97	-	-	Gravel (%) :	1		
300 µm	97	-	-	Sand (%) :	19		
212 µm	96	-	-	Silt (%) :	51		
150 µm	94	-	-	Clay (%) :	29		
63 µm	80	-	-				
0 µm	0	-	-				



Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun

Checked By :

Approved By :

Date : 16/03/2018

Name : T K Lam
 Date : 22/03/2018

Signatory : Lau Wai Cheong
 Date : 22/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.26

Date Received : 05/03/2018
 Tested Date : 16/03/2018

Works Order No. : 272
 Sample ID No. : HK1819072-015
 Sample No. : S17
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : - ‡

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A

^ Upon request

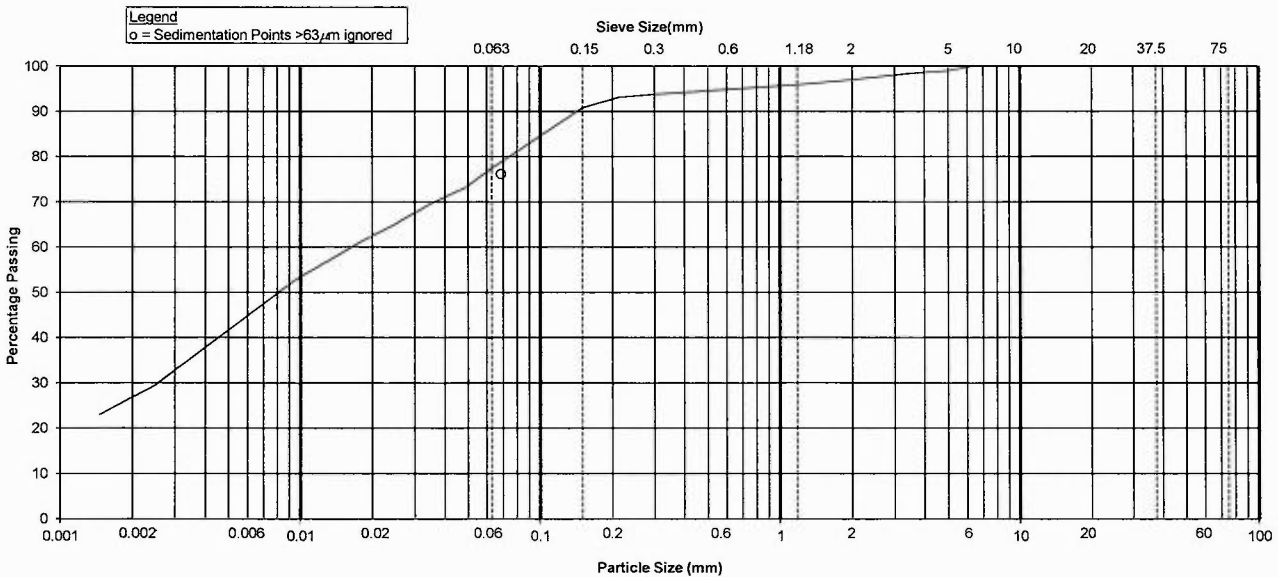
* Delete as appropriate

‡ Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^Expanded Uncertainty of the Percent Passing (%)	^Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	^Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0684	-	76	-
14.0 mm	100	-	-	0.0488	-	73	-
10.0 mm	100	-	-	0.0348	-	70	-
6.30 mm	100	-	-	0.0249	-	65	-
5.00 mm	99	-	-	0.0178	-	61	-
3.35 mm	98	-	-	0.0094	-	53	-
2.00 mm	97	-	-	0.0048	-	41	-
1.18 mm	96	-	-	0.0025	-	30	-
600 µm	95	-	-	0.0015	-	23	-
425 µm	94	-	-				
300 µm	94	-	-				
212 µm	93	-	-				
150 µm	91	-	-				
63 µm	78	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
 Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
 Sampling History : As received
 The presence of any visible organic matter in the soil : None

SUMMARY :
 Gravel (%) : 3
 Sand (%) : 19
 Silt (%) : 51
 Clay (%) : 27



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COBBLES
	SILT			SAND			GRAVEL			

Technician : K Y Sun

Checked By :

Approved By :

Date : 16/03/2018

Name : T K Lam
 Date : 22/03/2018

Signatory : Lau Wai Cheong
 Date : 22/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.26

Date Received : 05/03/2018
 Tested Date : 12/03/2018

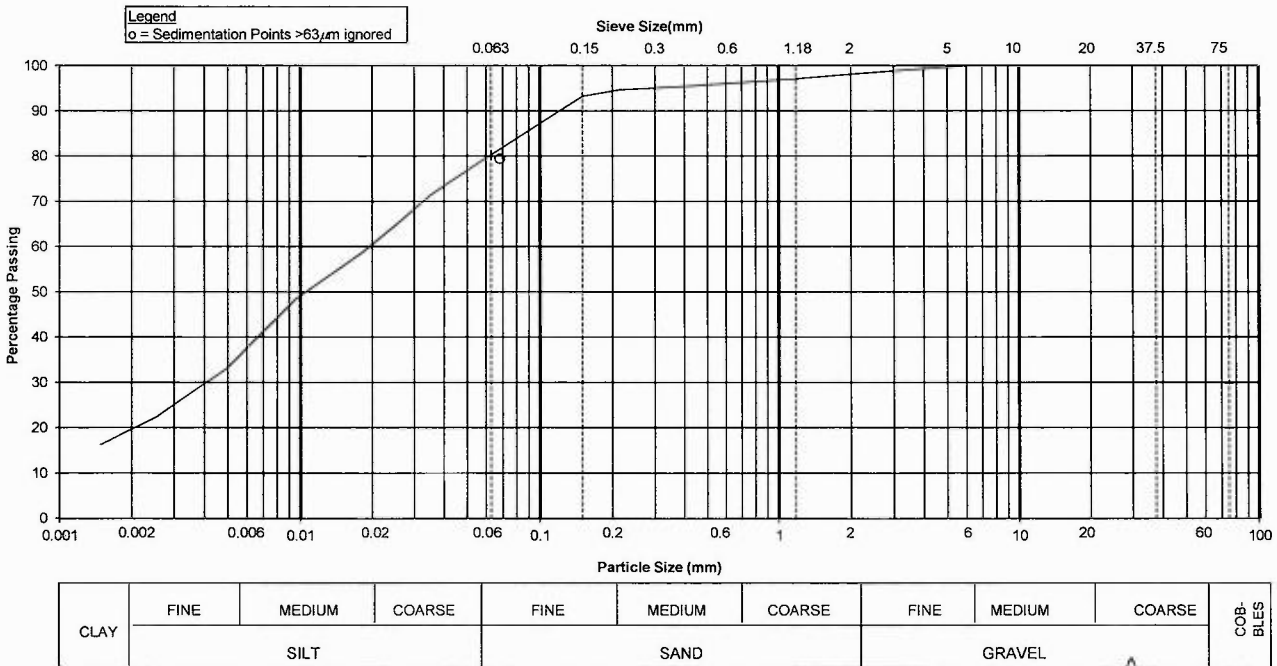
Works Order No. : 272
 Sample ID No. : HK1819072-016
 Sample No. : S16
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : ‡

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate ‡ Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^Expanded Uncertainty of the Percent Passing (%)	^Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	^Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0679	-	80	-
14.0 mm	100	-	-	0.0484	-	76	-
10.0 mm	100	-	-	0.0347	-	71	-
6.30 mm	100	-	-	0.0250	-	65	-
5.00 mm	100	-	-	0.0180	-	59	-
3.35 mm	99	-	-	0.0095	-	48	-
2.00 mm	98	-	-	0.0049	-	33	-
1.18 mm	97	-	-	0.0025	-	22	-
600 µm	96	-	-	0.0015	-	16	-
425 µm	96	-	-				
300 µm	95	-	-				
212 µm	95	-	-				
150 µm	93	-	-				
63 µm	80	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #			
Dispersant Details : Sodium hexametaphosphate, Sodium carbonate			
Sampling History : As received			
The presence of any visible organic matter in the soil : None			
SUMMARY :			
Gravel (%)	:	2	
Sand (%)	:	18	
Silt (%)	:	61	
Clay (%)	:	19	



Form : CESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun

Checked By :

Approved By :

Date : 12/03/2018

Name : T K Lam
 Date : 15/03/2018

Signatory : Lau Wai Cheong
 Date : 15/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.26

Date Received : 05/03/2018
 Tested Date : 12/03/2018

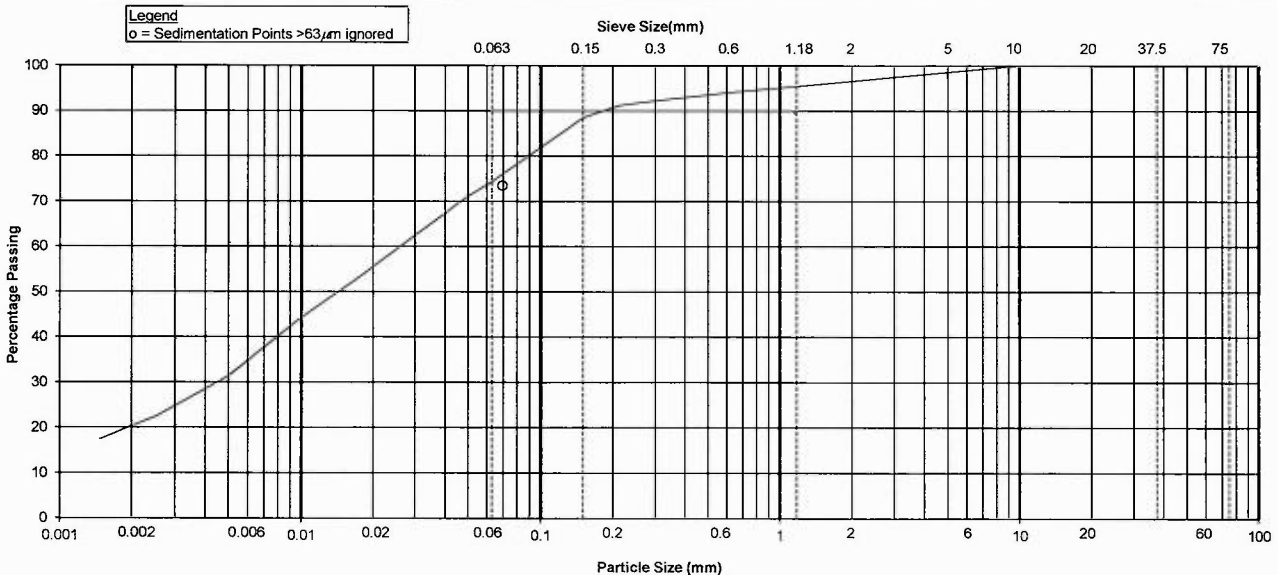
Works Order No. : 272
 Sample ID No. : HK1819072-017
 Sample No. : S13
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : ‡

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^Upon request * Delete as appropriate

‡ information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^Expanded Uncertainty of the Percent Passing (%)	^Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed) :			
100.0 mm	100	-	-	2.65 #			
75.0 mm	100	-	-	Dispersant Details :	Sodium hexametaphosphate, Sodium carbonate		
63.0 mm	100	-	-	Sampling History :	As received		
50.0 mm	100	-	-	The presence of any visible organic matter in the soil : None			
37.5 mm	100	-	-	Particle Diameter	^Expanded Uncertainty of the Particle Diameter	% Finer than D K	^Expanded Uncertainty of % finer than D
28.0 mm	100	-	-	(mm)	(mm)	(%)	(%)
20.0 mm	100	-	-	0.0692	-	74	-
14.0 mm	100	-	-	0.0493	-	71	-
10.0 mm	100	-	-	0.0354	-	65	-
6.30 mm	99	-	-	0.0254	-	60	-
5.00 mm	99	-	-	0.0182	-	54	-
3.35 mm	98	-	-	0.0096	-	44	-
2.00 mm	97	-	-	0.0050	-	31	-
1.18 mm	95	-	-	0.0025	-	23	-
600 µm	94	-	-	0.0015	-	17	-
425 µm	93	-	-	SUMMARY :			
300 µm	92	-	-	Gravel (%) :	3		
212 µm	91	-	-	Sand (%) :	23		
150 µm	89	-	-	Silt (%) :	54		
63 µm	74	-	-	Clay (%) :	20		
0 µm	0	-	-				



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COB- BLES
	SILT			SAND			GRAVEL			

Technician : K Y Sun

Checked By : T K Lam

Approved By : Lau Wai Cheong

Date : 12/03/2018

Name : T K Lam
 Date : 15/03/2018

Signatory : Lau Wai Cheong
 Date : 15/03/2018

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Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Report No. : J2999-272.26

Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Works Order No. : 272
 Sample ID No. : HK1819072-018
 Sample No. : S14
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : -

Date Received : 05/03/2018
 Tested Date : 16/03/2018

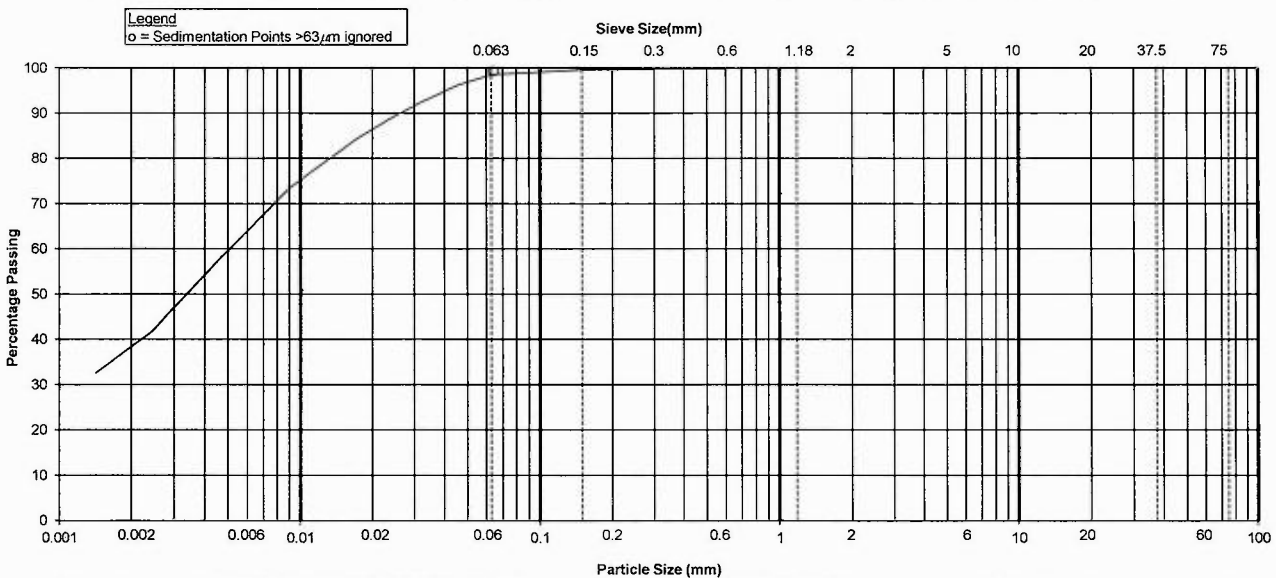
Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate ‡ Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0641	-	99	-
14.0 mm	100	-	-	0.0458	-	96	-
10.0 mm	100	-	-	0.0327	-	93	-
6.30 mm	100	-	-	0.0234	-	89	-
5.00 mm	100	-	-	0.0168	-	84	-
3.35 mm	100	-	-	0.0089	-	73	-
2.00 mm	100	-	-	0.0046	-	58	-
1.18 mm	100	-	-	0.0024	-	42	-
600 µm	100	-	-	0.0014	-	33	-
425 µm	100	-	-				
300 µm	100	-	-				
212 µm	100	-	-				
150 µm	100	-	-				
63 µm	99	*	*				
0 µm	0						

Specific Gravity (# if assumed) : 2.65 #
 Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
 Sampling History : As received
 The presence of any visible organic matter in the soil : None

SUMMARY :			
Gravel (%)	:		0
Sand (%)	:		1
Silt (%)	:		61
Clay (%)	:		38



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COBBLES
	SILT			SAND			GRAVEL			

Technician : K Y Sun

Checked By : TK Lam

Approved By : Lau Wai Cheong

Date : 16/03/2018

Date : 22/03/2018

Date : 22/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.26

Works Order No. : 272
 Sample ID No. : HK1819072-019
 Sample No. : S15
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : - ‡

Date Received : 05/03/2018
 Tested Date : 15/03/2018

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

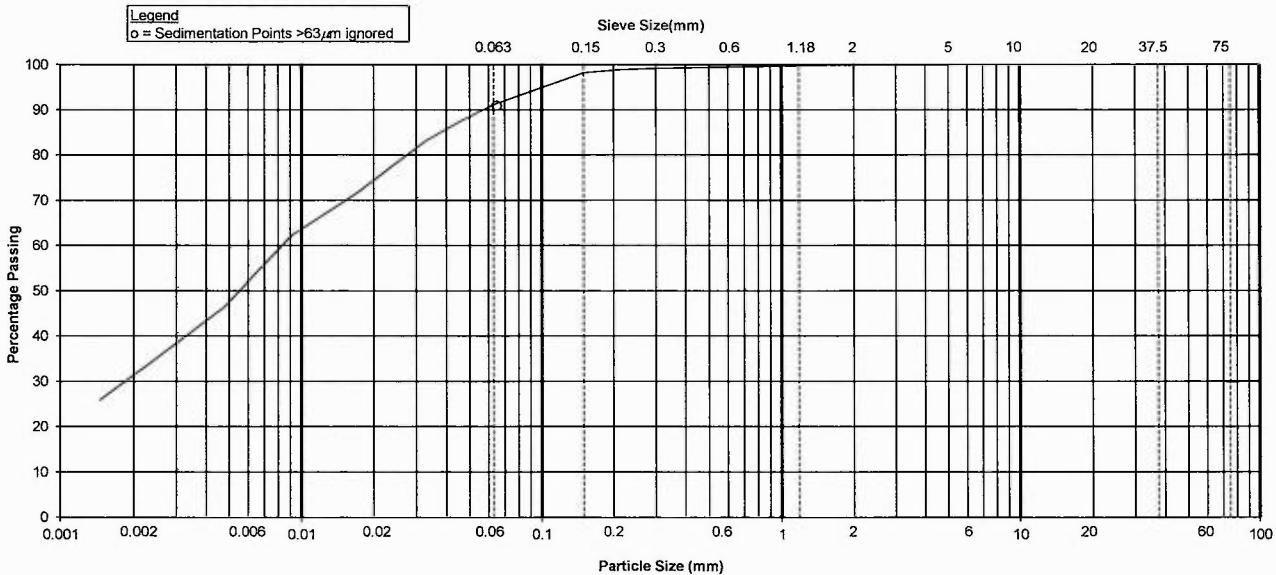
Sieve Method : Method A

^ Upon request

* Delete as appropriate

‡ Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^Expanded Uncertainty of the Percent Passing (%)	^Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed) :			
100.0 mm	100	-	-	2.65 #			
75.0 mm	100	-	-	Dispersant Details :	Sodium hexametaphosphate, Sodium carbonate		
63.0 mm	100	-	-	Sampling History :	As received		
50.0 mm	100	-	-	The presence of any visible organic matter in the soil : None			
37.5 mm	100	-	-	Particle Diameter (mm)	^Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^Expanded Uncertainty of % finer than D (%)
28.0 mm	100	-	-	0.0646	-	91	-
20.0 mm	100	-	-	0.0462	-	88	-
14.0 mm	100	-	-	0.0331	-	83	-
10.0 mm	100	-	-	0.0238	-	78	-
6.30 mm	100	-	-	0.0171	-	72	-
5.00 mm	100	-	-	0.0091	-	62	-
3.35 mm	100	-	-	0.0047	-	46	-
2.00 mm	100	-	-	0.0024	-	35	-
1.18 mm	100	-	-	0.0014	-	26	-
600 µm	99	-	-	SUMMARY :			
425 µm	99	-	-	Gravel (%) :	0		
300 µm	99	-	-	Sand (%) :	9		
212 µm	99	-	-	Silt (%) :	60		
150 µm	98	-	-	Clay (%) :	31		
63 µm	91	-	-				
0 µm	0	-	-				



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COBBLES
	SILT			SAND			GRAVEL			

Technician : K Y Sun

Checked By : T K Lam

Approved By : Lau Wai Cheong

Date : 15/03/2018

Date : 20/03/2018

Date : 20/03/2018

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Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.26

Date Received : 05/03/2018
 Tested Date : 14/03/2018

Works Order No. : 272
 Sample ID No. : HK1819072-020
 Sample No. : S12
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : ‡

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

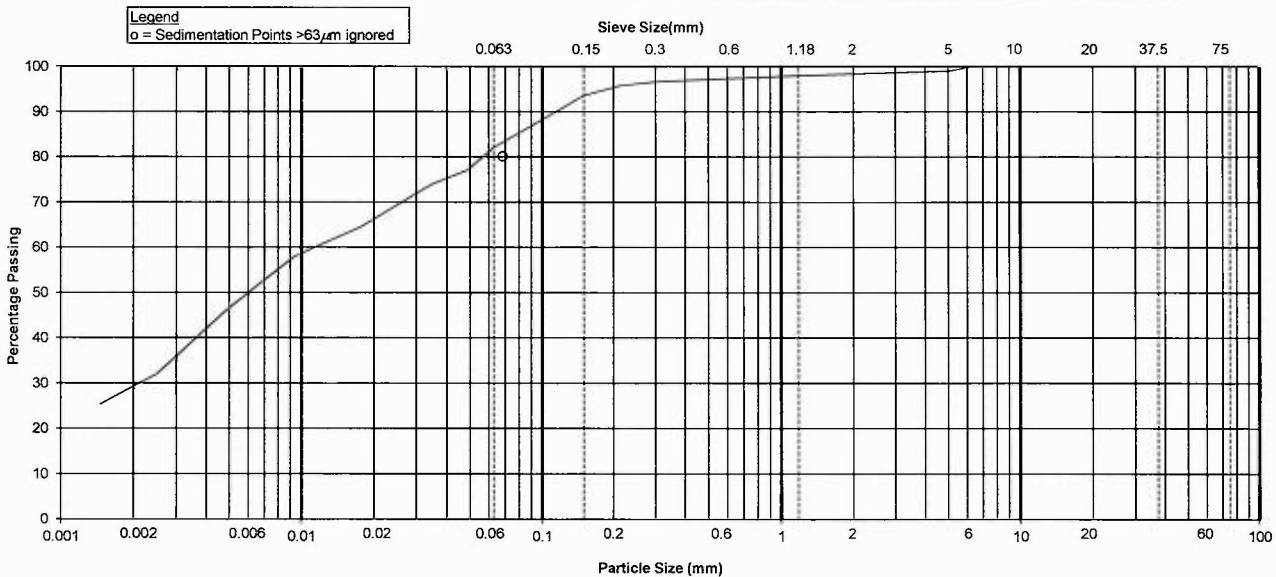
Sieve Method : Method A ^ Upon request * Delete as appropriate

‡ Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^Expanded Uncertainty of the Percent Passing (%)	^Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	^Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0681	-	80	-
14.0 mm	100	-	-	0.0486	-	77	-
10.0 mm	100	-	-	0.0346	-	74	-
6.30 mm	100	-	-	0.0248	-	69	-
5.00 mm	99	-	-	0.0177	-	65	-
3.35 mm	99	-	-	0.0093	-	58	-
2.00 mm	98	-	-	0.0048	-	46	-
1.18 mm	98	-	-	0.0025	-	32	-
600 µm	97	-	-	0.0015	-	25	-
425 µm	97	-	-				
300 µm	97	-	-				
212 µm	96	-	-				
150 µm	94	-	-				
63 µm	82	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
 Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
 Sampling History : As received
 The presence of any visible organic matter in the soil : None

SUMMARY :
 Gravel (%) : 2
 Sand (%) : 16
 Silt (%) : 53
 Clay (%) : 29



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COB- BLES
	SILT			SAND			GRAVEL			

Technician : K Y Sun

Checked By :

Approved By :

Date : 14/03/2018

Name : T K Lam
 Date : 20/03/2018

Signatory : Lau Wai Cheong
 Date : 20/03/2018

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Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

**TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)**



Job No. : J2999 Contract No. :
Customer : ALS Technichem (HK) Pty Ltd
Project : -

Report No. : J2999-272.26

Works Order No. : 272
Sample ID No. : HK1819072-021
Sample No. : S11
Sample Depth (m) :
Specimen Depth (m) :
Sample Type : Small Disturbed
Sample Origin : - ‡

Date Received : 05/03/2018
Tested Date : 16/03/2018

Description : Dark grey, SILT/CLAY with shell fragments

Sieve Method : Method A

^ Upon request

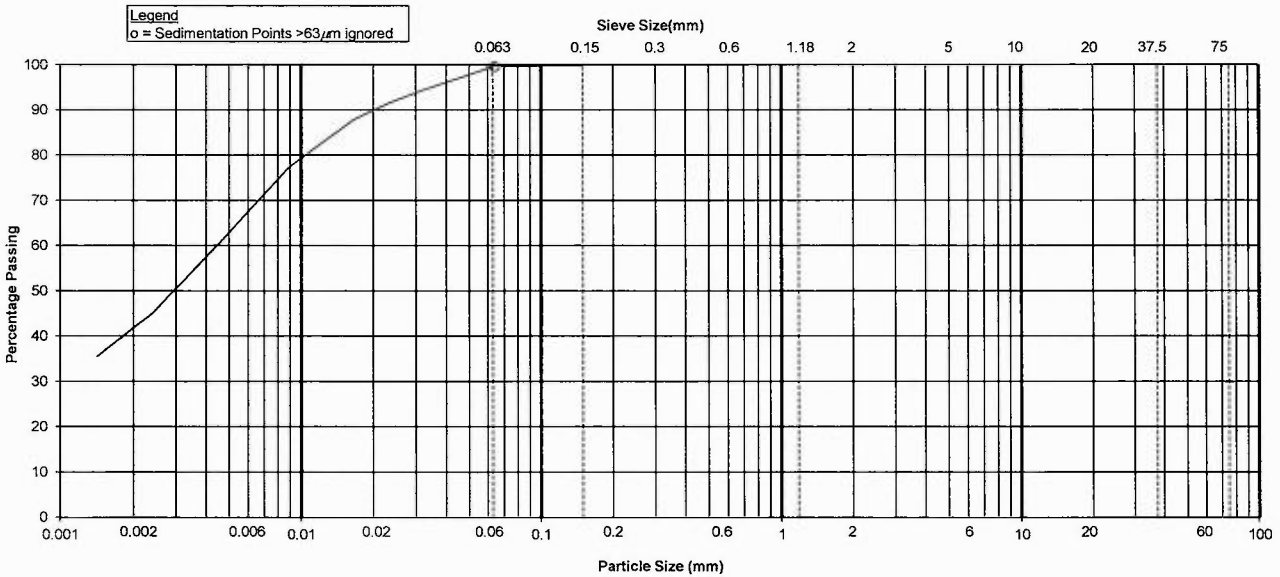
* Delete as appropriate

‡ Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS				
Sieve Size	Percent Passing (%)	^Expanded Uncertainty of the Percent Passing (%)	^Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed) :	Particle Diameter (mm)	^Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-	2.65 #	0.0640	-	100	-
75.0 mm	100	-	-	Dispersant Details : Sodium hexametaphosphate, Sodium carbonate	0.0456	-	97	-
63.0 mm	100	-	-	Sampling History : As received	0.0325	-	95	-
50.0 mm	100	-	-	The presence of any visible organic matter in the soil : None	0.0232	-	92	-
37.5 mm	100	-	-		0.0166	-	88	-
28.0 mm	100	-	-		0.0088	-	77	-
20.0 mm	100	-	-		0.0046	-	61	-
14.0 mm	100	-	-		0.0024	-	45	-
10.0 mm	100	-	-		0.0014	-	36	-
6.30 mm	100	-	-					
5.00 mm	100	-	-					
3.35 mm	100	-	-					
2.00 mm	100	-	-					
1.18 mm	100	-	-					
600 µm	100	-	-					
425 µm	100	-	-					
300 µm	100	-	-					
212 µm	100	-	-					
150 µm	100	-	-					
63 µm	100	-	-					
0 µm	0	-	-					

SUMMARY :

Gravel (%)	:	0
Sand (%)	:	0
Silt (%)	:	59
Clay (%)	:	41



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COB- BLES
	SILT			SAND			GRAVEL			

Technician : K Y Sun

Checked By : T K Lam

Approved By : Lau Wai Cheong

Date : 16/03/2018

Date : 22/03/2018

Date : 22/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.26

Date Received : 05/03/2018
 Tested Date : 15/03/2018

Works Order No. : 272
 Sample ID No. : HK1819072-022
 Sample No. : S7
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : ‡

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

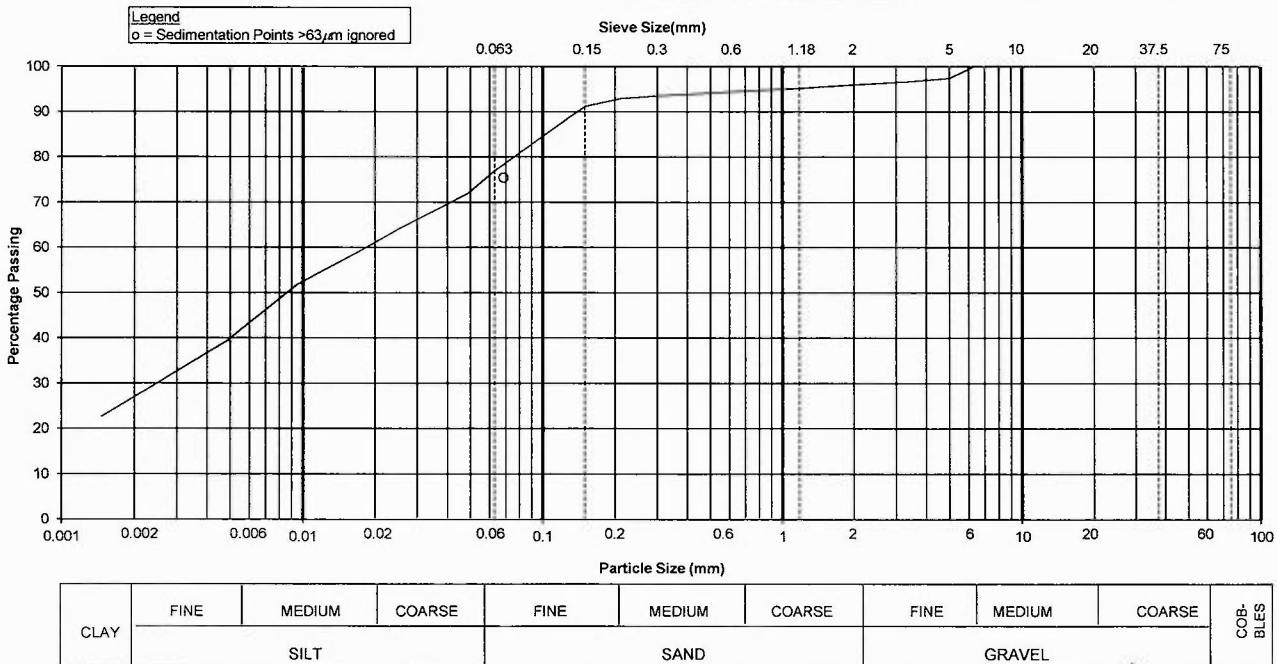
Sieve Method : Method A ^Upon request * Delete as appropriate

‡ Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^Expanded Uncertainty of the Percent Passing (%)	^Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	^Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0683	-	75	-
14.0 mm	100	-	-	0.0488	-	72	-
10.0 mm	100	-	-	0.0349	-	68	-
6.30 mm	100	-	-	0.0249	-	64	-
5.00 mm	97	-	-	0.0178	-	60	-
3.35 mm	97	-	-	0.0094	-	52	-
2.00 mm	96	-	-	0.0048	-	39	-
1.18 mm	95	-	-	0.0025	-	30	-
600 µm	94	-	-	0.0015	-	23	-
425 µm	94	-	-				
300 µm	94	-	-				
212 µm	93	-	-				
150 µm	91	-	-				
63 µm	77	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
 Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
 Sampling History : As received
 The presence of any visible organic matter in the soil : None

SUMMARY :
 Gravel (%) : 4
 Sand (%) : 19
 Silt (%) : 50
 Clay (%) : 27



Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun

Checked By :

Approved By :

Date : 15/03/2018

Name : TK Lam
 Date : 20/03/2018

Signatory : Lau Wai Cheong
 Date : 20/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.26

Date Received : 05/03/2018
 Tested Date : 14/03/2018

Works Order No. : 272
 Sample ID No. : HK1819072-023
 Sample No. : S8
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : †

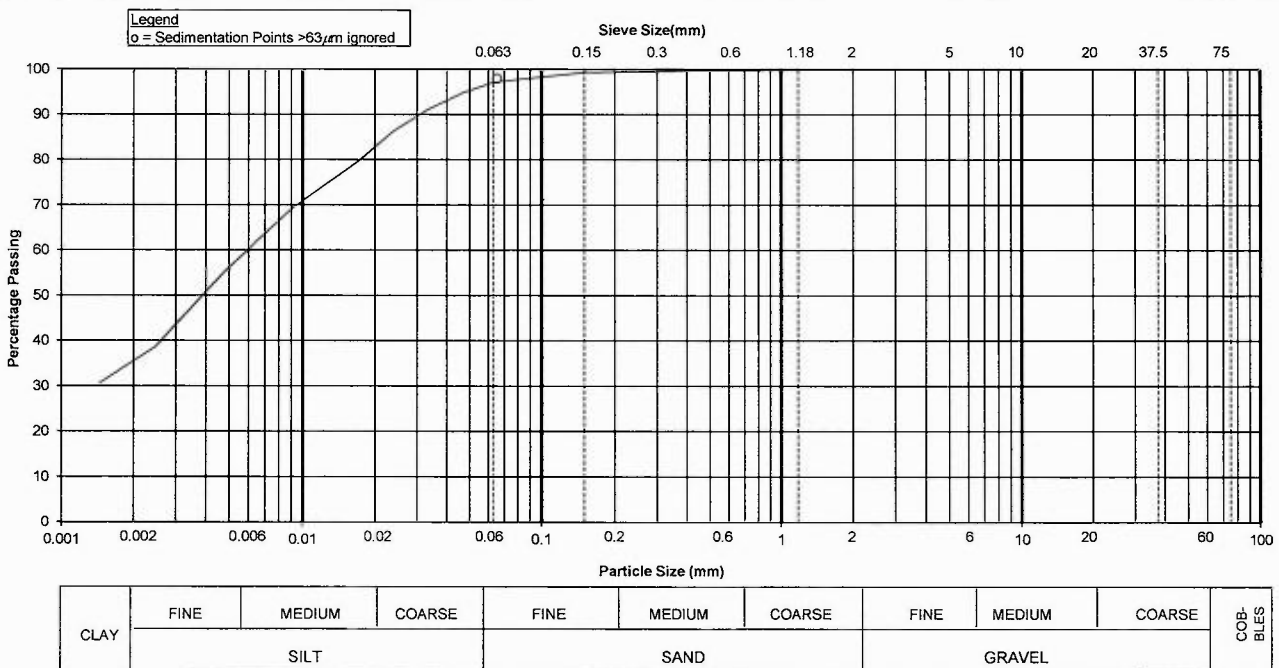
Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A † Upon request * Delete as appropriate ‡ Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^Expanded Uncertainty of the Percent Passing (%)	^Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	^Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-	0.0650	-	98	-
75.0 mm	100	-	-	0.0464	-	95	-
63.0 mm	100	-	-	0.0332	-	91	-
50.0 mm	100	-	-	0.0238	-	86	-
37.5 mm	100	-	-	0.0171	-	80	-
28.0 mm	100	-	-	0.0091	-	69	-
20.0 mm	100	-	-	0.0047	-	55	-
14.0 mm	100	-	-	0.0024	-	39	-
10.0 mm	100	-	-	0.0014	-	31	-
6.30 mm	100	-	-				
5.00 mm	100	-	-				
3.35 mm	100	-	-				
2.00 mm	100	-	-				
1.18 mm	100	-	-				
600 µm	100	-	-				
425 µm	100	-	-				
300 µm	100	-	-				
212 µm	99	-	-				
150 µm	99	-	-				
63 µm	97	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
 Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
 Sampling History : As received
 The presence of any visible organic matter in the soil : None

SUMMARY :
 Gravel (%) : 0
 Sand (%) : 3
 Silt (%) : 62
 Clay (%) : 35



Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun

Checked By : TK Lam

Approved By : Lau Wan Cheong

Date : 14/03/2018

Date : 20/03/2018

Date : 20/03/2018

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 21 Chun Wang Street, Tseung Kwan O Industrial Estate,
 Tseung Kwan O, N.T. Tel : 26991980, Fax : 26917547

TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Report No. : J2999-272.26

Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Works Order No. : 272
 Sample ID No. : HK1819072-024
 Sample No. : S6
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : †

Date Received : 05/03/2018
 Tested Date : 14/03/2018

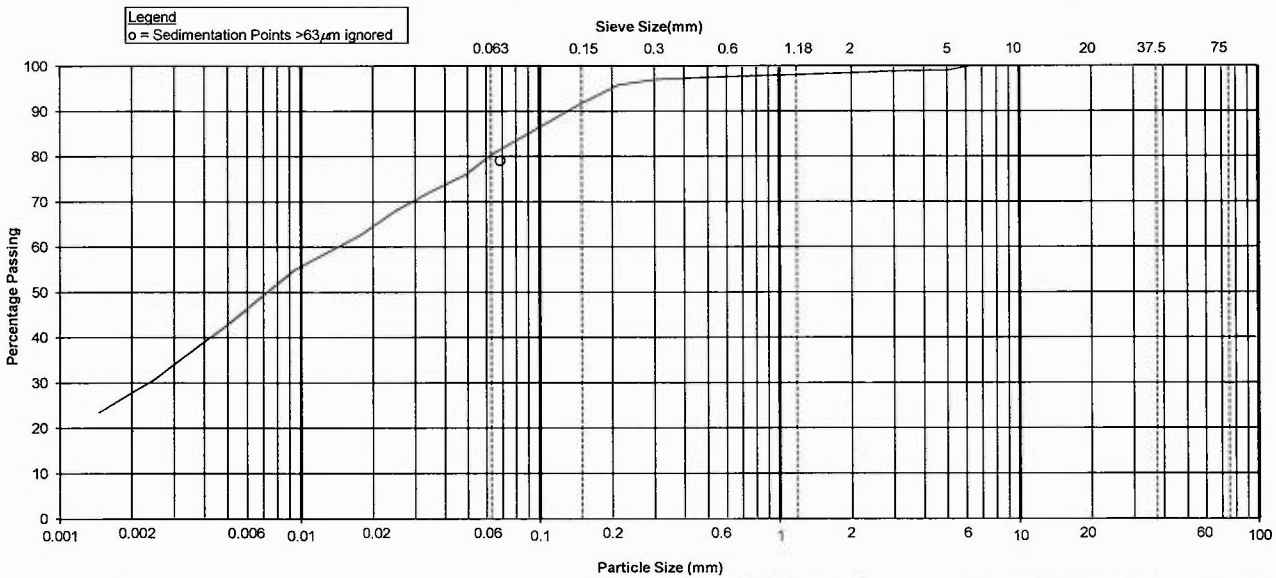
Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate † Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-				
14.0 mm	100	-	-				
10.0 mm	100	-	-				
6.30 mm	100	-	-				
5.00 mm	99	-	-	0.0685	-	79	-
3.35 mm	99	-	-	0.0488	-	76	-
2.00 mm	98	-	-	0.0349	-	72	-
1.18 mm	98	-	-	0.0249	-	68	-
600 µm	98	-	-	0.0179	-	63	-
425 µm	97	-	-	0.0094	-	55	-
300 µm	97	-	-	0.0048	-	42	-
212 µm	96	-	-	0.0025	-	31	-
150 µm	92	-	-	0.0015	-	24	-
63 µm	80	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
 Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
 Sampling History : As received
 The presence of any visible organic matter in the soil : None

SUMMARY :
 Gravel (%) : 2
 Sand (%) : 18
 Silt (%) : 53
 Clay (%) : 27



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COBBLES
	SILT			SAND			GRAVEL			

Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun Checked By : T K Lam Approved By : Lau Wai Cheong
 Date : 14/03/2018 Date : 20/03/2018 Date : 20/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.26

Works Order No. : 272
 Sample ID No. : HK1819072-025
 Sample No. : S5
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : ‡

Date Received : 05/03/2018
 Tested Date : 16/03/2018

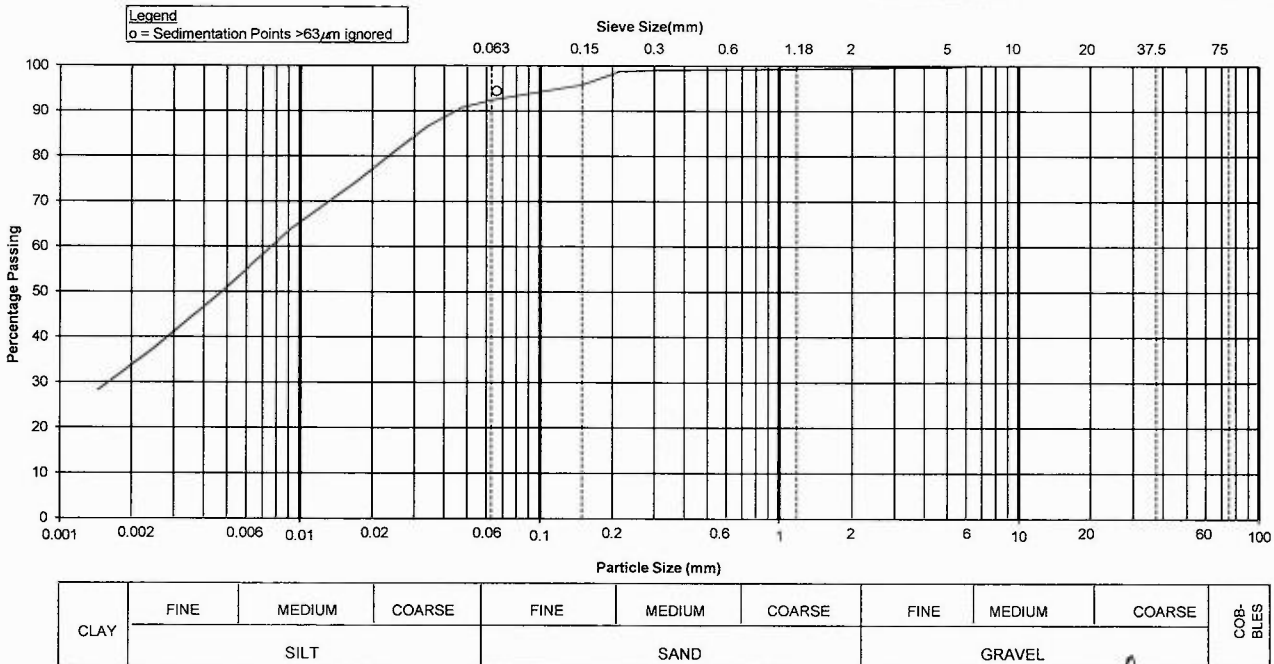
Description : Dark grey, slightly sandy SILT/CLAY with shell fragments
 Sieve Method : Method A ^Upon request * Delete as appropriate

‡ Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^Expanded Uncertainty of the Percent Passing (%)	^Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	^Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-				
14.0 mm	100	-	-	0.0659	-	95	-
10.0 mm	100	-	-	0.0471	-	91	-
6.30 mm	100	-	-	0.0337	-	87	-
5.00 mm	100	-	-	0.0242	-	81	-
3.35 mm	100	-	-	0.0174	-	75	-
2.00 mm	99	-	-	0.0092	-	64	-
1.18 mm	99	-	-	0.0048	-	50	-
600 µm	99	-	-	0.0025	-	37	-
425 µm	99	-	-	0.0014	-	28	-
300 µm	99	-	-				
212 µm	99	-	-				
150 µm	96	-	-				
63 µm	92	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
 Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
 Sampling History : As received
 The presence of any visible organic matter in the soil : None

SUMMARY :
 Gravel (%) : 1
 Sand (%) : 7
 Silt (%) : 59
 Clay (%) : 33



Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun Checked By : TK Lam Approved By : Lau Wan Cheong
 Date : 16/03/2018 Name : TK Lam Signatory : Lau Wan Cheong
 Date : 22/03/2018 Date : 22/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

Report No. : J2999-272.26

Works Order No. : 272
 Sample ID No. : HK1819072-026
 Sample No. : S4
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : ‡

Date Received : 05/03/2018
 Tested Date : 12/03/2018

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A

^ Upon request

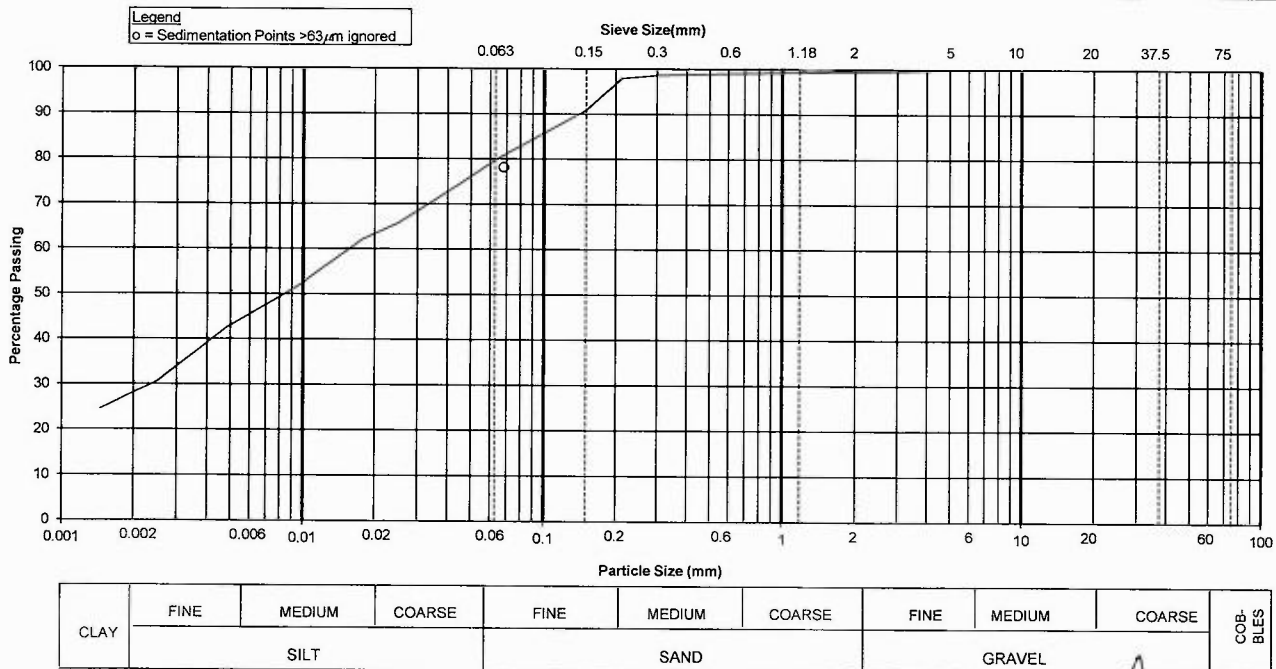
* Delete as appropriate

‡ Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0680	-	78	-
14.0 mm	100	-	-	0.0484	-	76	-
10.0 mm	100	-	-	0.0347	-	71	-
6.30 mm	100	-	-	0.0249	-	66	-
5.00 mm	100	-	-	0.0178	-	62	-
3.35 mm	100	-	-	0.0094	-	52	-
2.00 mm	99	-	-	0.0048	-	43	-
1.18 mm	99	-	-	0.0025	-	31	-
600 µm	99	-	-	0.0015	-	25	-
425 µm	99	-	-				
300 µm	99	-	-				
212 µm	98	-	-				
150 µm	91	-	-				
63 µm	80	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
 Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
 Sampling History : As received
 The presence of any visible organic matter in the soil : None

SUMMARY :
 Gravel (%) : 1
 Sand (%) : 19
 Silt (%) : 52
 Clay (%) : 28



Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun

Checked By :
 Name : T K Lam
 Date : 17/03/2018

Approved By :
 Signatory : Lau Wai Cheong
 Date : 17/03/2018

Date : 12/03/2018

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Technology Centre
 21 Chun Wang Street, Tseung Kwan O Industrial Estate,
 Tseung Kwan O, N.T. Tel : 26991980, Fax : 26917547

TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project :

Report No. : J2999-272.26

Works Order No. : 272
 Sample ID No. : HK1819072-027
 Sample No. : S1
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : ‡

Date Received : 05/03/2018
 Tested Date : 14/03/2018

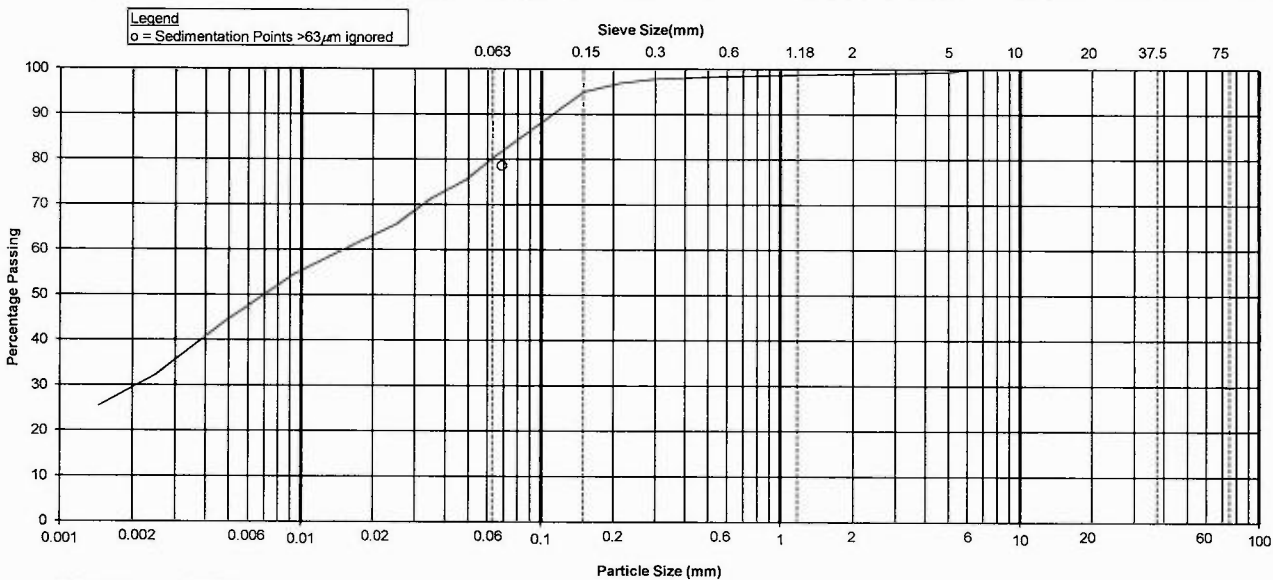
Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^Upon request * Delete as appropriate ‡ Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^Expanded Uncertainty of the Percent Passing (%)	^Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	^Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-				
14.0 mm	100	-	-	0.0685	-	79	-
10.0 mm	100	-	-	0.0488	-	76	-
6.30 mm	100	-	-	0.0349	-	71	-
5.00 mm	99	-	-	0.0251	-	66	-
3.35 mm	99	-	-	0.0179	-	62	-
2.00 mm	99	-	-	0.0094	-	55	-
1.18 mm	99	-	-	0.0048	-	44	-
600 µm	98	-	-	0.0025	-	32	-
425 µm	98	-	-	0.0015	-	26	-
300 µm	98	-	-				
212 µm	97	-	-				
150 µm	95	-	-				
63 µm	80	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
 Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
 Sampling History : As received
 The presence of any visible organic matter in the soil : None

SUMMARY :
 Gravel (%) : 1
 Sand (%) : 19
 Silt (%) : 51
 Clay (%) : 29



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COB- BLES
	SILT			SAND			GRAVEL			

Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun

Checked By :

Approved By :

Date : 14/03/2018

Name : T K Lam
 Date : 20/03/2018

Signatory : Lau Wai Cheong
 Date : 20/03/2018

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TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)



Report No. : J2999-272.26

Job No. : J2999 Contract No. :
 Customer : ALS Technichem (HK) Pty Ltd
 Project : -

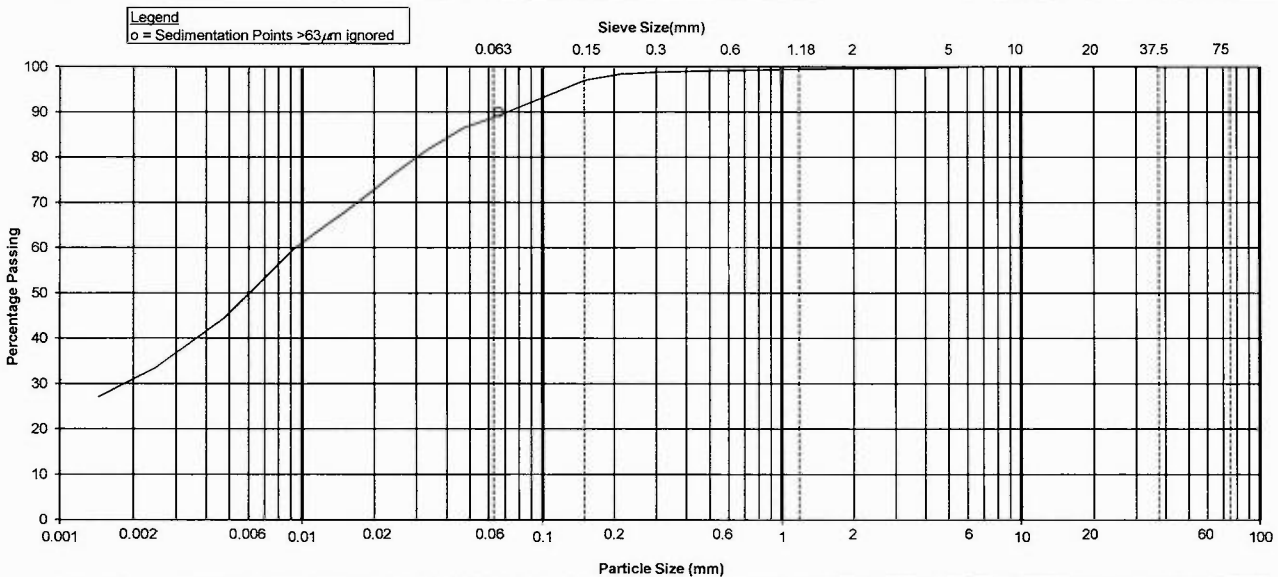
Works Order No. : 272
 Sample ID No. : HK1819072-028
 Sample No. : S2
 Sample Depth (m) :
 Specimen Depth (m) :
 Sample Type : Small Disturbed
 Sample Origin : *

Date Received : 05/03/2018
 Tested Date : 15/03/2018

Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate † Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^Expanded Uncertainty of the Percent Passing (%)	^Cumulative Percent Passing with Expanded Uncertainty (%)	Specific Gravity (# if assumed) :			
100.0 mm	100	-	-	2.65 #			
75.0 mm	100	-	-	Dispersant Details : Sodium hexametaphosphate, Sodium carbonate			
63.0 mm	100	-	-	Sampling History : As received			
50.0 mm	100	-	-	The presence of any visible organic matter in the soil : None			
37.5 mm	100	-	-	Particle Diameter (mm)	^Expanded Uncertainty of Particle Diameter (mm)	% Finer than D K (%)	^Expanded Uncertainty of % finer than D (%)
28.0 mm	100	-	-	0.0657	-	90	-
20.0 mm	100	-	-	0.0470	-	86	-
14.0 mm	100	-	-	0.0337	-	82	-
10.0 mm	100	-	-	0.0242	-	76	-
6.30 mm	100	-	-	0.0174	-	70	-
5.00 mm	100	-	-	0.0092	-	60	-
3.35 mm	100	-	-	0.0048	-	45	-
2.00 mm	100	-	-	0.0025	-	34	-
1.18 mm	99	-	-	0.0014	-	27	-
600 µm	99	-	-	SUMMARY :			
425 µm	99	-	-	Gravel (%) :	0		
300 µm	99	-	-	Sand (%) :	11		
212 µm	98	-	-	Silt (%) :	58		
150 µm	97	-	-	Clay (%) :	31		
63 µm	89	-	-				
0 µm	0	-	-				



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COBBLES
	SILT			SAND			GRAVEL			

Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun Checked By : T K Lam Approved By : Lau Wai Cheong
 Date : 15/03/2018 Date : 20/03/2018 Date : 20/03/2018

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**TEST REPORT
DETERMINATION OF
PARTICLE SIZE DISTRIBUTION
GEOSPEC 3 : 2001 Test Method 8.1 / 8.2*, 8.5 / 8.6* and 8.7
(Wet Sieve and Hydrometer Method)**



Job No. : J2999 Contract No. :
Customer : ALS Technichem (HK) Pty Ltd
Project : -

Report No. : J2999-272.26

Works Order No. : 272
Sample ID No. : HK1819072-029
Sample No. : S3
Sample Depth (m) :
Specimen Depth (m) :
Sample Type : Small Disturbed
Sample Origin : -

Date Received : 05/03/2018
Tested Date : 12/03/2018

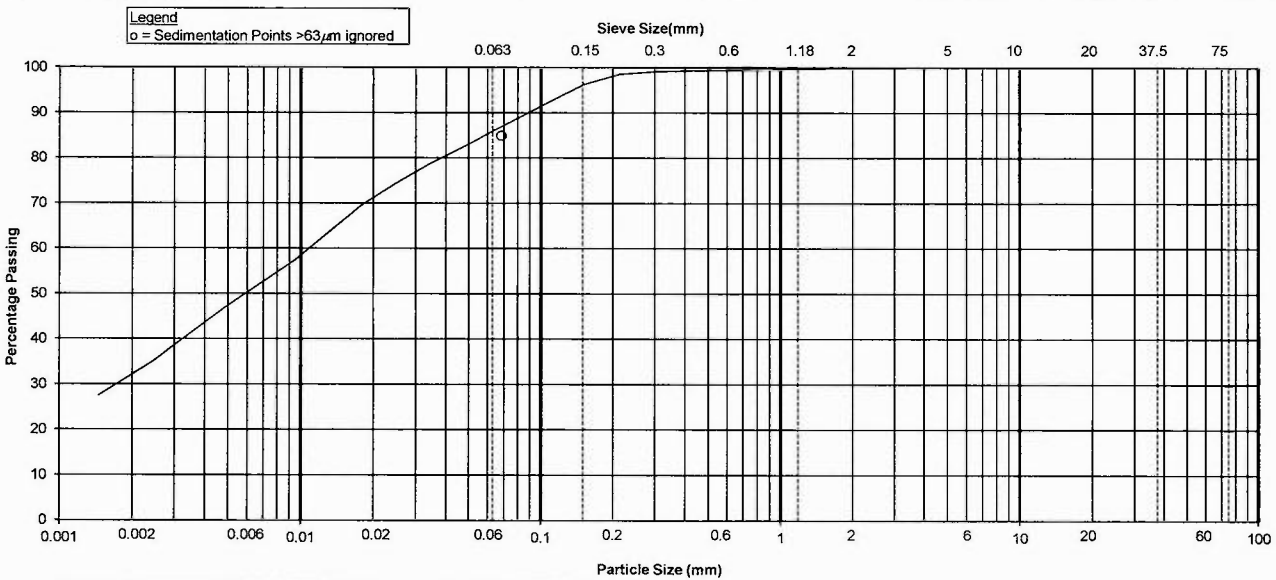
Description : Dark grey, slightly sandy SILT/CLAY with shell fragments

Sieve Method : Method A ^ Upon request * Delete as appropriate ‡ Information provided by customer

SIEVE ANALYSIS				SEDIMENTATION ANALYSIS			
Sieve Size	Percent Passing (%)	^ Expanded Uncertainty of the Percent Passing (%)	^ Cumulative Percent Passing with Expanded Uncertainty (%)	Particle Diameter (mm)	^ Expanded Uncertainty of the Particle Diameter (mm)	% Finer than D K (%)	^ Expanded Uncertainty of % finer than D (%)
100.0 mm	100	-	-				
75.0 mm	100	-	-				
63.0 mm	100	-	-				
50.0 mm	100	-	-				
37.5 mm	100	-	-				
28.0 mm	100	-	-				
20.0 mm	100	-	-	0.0682	-	85	-
14.0 mm	100	-	-	0.0485	-	83	-
10.0 mm	100	-	-	0.0346	-	79	-
6.30 mm	100	-	-	0.0248	-	75	-
5.00 mm	100	-	-	0.0177	-	70	-
3.35 mm	100	-	-	0.0094	-	57	-
2.00 mm	100	-	-	0.0048	-	47	-
1.18 mm	100	-	-	0.0025	-	35	-
600 µm	99	-	-	0.0014	-	28	-
425 µm	99	-	-				
300 µm	99	-	-				
212 µm	99	-	-				
150 µm	96	-	-				
63 µm	86	-	-				
0 µm	0	-	-				

Specific Gravity (# if assumed) : 2.65 #
Dispersant Details : Sodium hexametaphosphate, Sodium carbonate
Sampling History : As received
The presence of any visible organic matter in the soil : None

SUMMARY :
Gravel (%) : 0
Sand (%) : 14
Silt (%) : 54
Clay (%) : 32



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	COBBLES
	SILT			SAND			GRAVEL			

Form : GESR003.5 / Jun.30.13 / Issue 1 / Rev 2

Technician : K Y Sun

Checked By : TK Lam
Date : 17/03/2018

Approved By : Lau Wai Cheong
Date : 17/03/2018

Date : 12/03/2018

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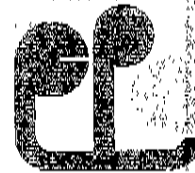
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Tseung Kwan O, N.T. Tel : 26991980, Fax : 26917547

C. EPD's Letter of No Objection to PSQR

本署檔案
OUR REF: EP60/G1/12-293
來函檔案
YOUR REF: EC/dc/T392653/L006
電話
TEL NO.: 2835 1273
傳真
FAX NO.: 2305 0453
電郵
E-MAIL: eddiewnyang@epd.gov.hk
網址
HOMEPAGE: <http://www.epd.gov.hk>

Environmental Protection Department
Environmental Compliance Division
Territorial Control Office
28/F, Southorn Centre
130 Hennessy Road
Wan Chai, Hong Kong



環境保護署
環保法規管理科
總區辦事處
香港灣仔
軒尼詩道一百三十號
修頓中心廿八樓

By Fax (2827-1823) and Post

16 May 2018

Mott MacDonald (Hong Kong) Limited
20/F, AIA Kowloon Tower Landmark East,
100 How Ming Street,
Kwun Tong, Kowloon.
(Attn: Mr. Eric Ching)

Dear Sir,

Dumping at Sea Ordinance Ca. 466 ("DASO")
Improvement Dredging for Lamma Power Station Navigation Channel
Classification of Seabed Sediment under PNAP ADV-21

Reference is made to your letter (Ref: EC/dc/T392653/L006) dated 10 May 2018, enclosing the revised Preliminary Sediment Quality Report (PSQR) for the captioned Project. We have no objection to the sediment classification mentioned in the PSQR for DASO permitting purpose. As biological screening is not required based on the sediment classification, the PSQR is deemed to be the formal SQR for the Project in accordance with PNAP ADV-21. The validity of the SQR will expire on 28 February 2021.

- Please note that we will consider issuing the dumping permit under DASO for the classified sediment only if MFC/CEDD has under Paragraph 3 of PNAP ADV-21 determined the most appropriate marine disposal site on the basis of the laboratory test results and formally allocated the disposal space for the concerned dredged seabed sediment.
- Besides, as the estimated quantities of seabed sediment to be dredged and disposed of are not yet approved for the DASO permitting purpose, you are reminded to submit to MFC/CEDD the detailed calculations of the estimated quantities, as well as other information as required by the MFC/CEDD, when seeking agreement of the rationale for the seabed sediment removal and allocation of sediment disposal space.
- Should you have any queries to the above, please do not hesitate to call the undersigned at 2835 1273.

Yours faithfully,

(Eddie YANG)

Environmental Protection Officer
for Director of Environmental Protection

c.c. Secretary of MFC, CEDD

By Fax (No. 2714 0113) only