



***CEDD Contract No. GE/2012/24***

***Chemical and Biological Testing (Service Contract)***

***Service Order No. GE/2012/24.41***

***Agreement No. CE 21/2012 (WS) Desalination Plant at Tseung  
Kwan O – Feasibility Study***

**Laboratory Chemical Testing Report (Draft Report)**

**Prepared for**

**Civil Engineering and Development Department**

**Prepared By**

**ALS Technichem (HK) Pty Ltd**

**29 September, 2014**



***CEDD Contract No. GE/2012/24***

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***Agreement No. CE 21/2012 (WS) Desalination Plant at Tseung Kwan  
O – Feasibility Study***

**Laboratory Chemical Testing Report**

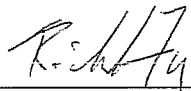
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Date: 29 September, 2014

Contract No. GE/2012/24 Chemical and Biological Testing  
Service Order No. GE/2012/24.41  
Agreement No. CE 21/2012 (WS)  
Desalination Plant at Tseung Kwan O – Feasibility Study



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# Section 1

## Summary Reports

# Summary Report

Date of Issue: 3/6/2014  
 Client: Civil Engineering and Development Department  
 Service Order No.: GE/2012/24.41  
 Project: Agreement No. CE 21/2012(W/S)  
 Desalination Plant at Tseung Kwan O - Feasibility Study

Analyte	Units	LOR	HK1428008001	HK1428008002	HK1428008003	HK1428008004	HK1428008005	HK1428008006	HK1428008007	HK1428008008	HK1428008009
			SD5	SD5	SD5	SD5	SD5	SD5	SD5	SD5	SD5
<b>Inorganic Nonmetallic Parameters</b>											
Ammonia as N	mg/L	0.01	0.47	0.54	0.31	1.82	3.29	2.93	0.01	1	0.04
Reactive Phosphorus as P	µg/L	10	130	100	40	110	110	60	<10	70	<10
Total Kjeldahl Nitrogen as N	mg/L	0.1	0.9	0.9	0.7	1.9	4.2	3.6	0.3	1.4	0.3
Total Phosphorus as P	mg/L	0.1	0.1	0.1	<0.1	0.1	0.1	<0.1	<0.1	0.1	<0.1
Nitrate as N	mg/L	0.01	<0.01	0.06	0.02	0.02	0.02	0.04	<0.01	0.01	0.02
Nitrite as N	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>Metals</b>											
Mercury	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Arsenic	µg/L	10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Cadmium	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	µg/L	10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Copper	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Lead	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Nickel	µg/L	5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Silver	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Zinc	µg/L	25	<25	<25	<25	<25	<25	<25	<25	<25	<25
<b>PCB</b>											
PCB 8	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 18	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 28	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 44	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 52	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 66	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 77	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 101	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 105	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 118	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 126	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 128	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 138	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 153	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 169	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 170	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 180	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 187	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

# Summary Report

**Date of Issue:** 3/6/2014  
**Client:** Civil Engineering and Development Department  
**Service Order No.:** GE/2012/24.41  
**Project:** Agreement No. CE 21/2012(W/S)  
 Desalination Plant at Tseung Kwan O - Feasibility Study

Analyte	Units	LOR	HK1428008001	HK1428008002	HK1428008003	HK1428008004	HK1428008005	HK1428008006	HK1428008007	HK1428008008	HK1428008009
			SD5 0.0M-0.9M 27/08/14	SD5 0.9M-1.9M 27/08/14	SD5 1.9M-2.9M 27/08/14	SD5 4.9M-5.9M 27/08/14	SD5 7.9M-8.9M 27/08/14	SD5 10.9M-11.9M 27/08/14	SD5 WATER SAMPLE (BLANK) 27/08/14	REFERENCE SAMPLE 27/08/14	REFERENCE SAMPLE WATER SAMPLE (BLANK) 27/08/14
<b>Organochlorine Pesticides (OC)</b>											
alpha-BHC	µg/L	0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
beta-BHC	µg/L	0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
gamma-BHC	µg/L	0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
delta-BHC	µg/L	0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Heptachlor	µg/L	0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Aldrin	µg/L	0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Heptachlor epoxide	µg/L	0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan 1	µg/L	0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
4,4'-DDE	µg/L	0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
4,4'-DDD	µg/L	0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan sulfate	µg/L	0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
4,4'-DDT	µg/L	0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
<b>Polycyclic Aromatics Hydrocarbons (PAHs)</b>											
Naphthalene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benz(a)anthracene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenz(a,h)anthracene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<b>Triorganotin</b>											
Tributyltin	µg TBT/L	0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015

# Summary Report

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**Client:** Civil Engineering and Development Department  
**Service Order No.:** GE/2012/24.41  
**Project:** Agreement No. CE 21/2012(W/S)  
 Desalination Plant at Tseung Kwan O - Feasibility Study

Analyte	Units	LOR	HK1428015001	HK1428015002	HK1428015003	HK1428015004	HK1428015005	HK1428015006
			28/08/14	28/08/14	28/08/14	28/08/14	28/08/14	28/08/14
<b>Inorganic Nonmetallic Parameters</b>								
Ammonia as N	mg/L	0.01	0.62	0.83	0.75	<0.01	<0.01	<0.01
Reactive Phosphorus as P	µg/L	10	70	120	70	<10	<10	<10
Total Kjeldahl Nitrogen as N	mg/L	0.1	0.9	1.2	1.1	0.3	0.2	0.3
Total Phosphorus as P	mg/L	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1
Nitrate as N	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nitrite as N	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>Metals</b>								
Mercury	µg/L	1	<1	<1	<1	<1	<1	<1
Arsenic	µg/L	10	<10	<10	<10	<10	<10	<10
Cadmium	µg/L	1	<1	<1	<1	<1	<1	<1
Chromium	µg/L	10	<10	<10	<10	<10	<10	<10
Copper	µg/L	1	<1	<1	<1	<1	<1	<1
Lead	µg/L	1	<1	<1	<1	<1	<1	<1
Nickel	µg/L	5	<5	<5	<5	<5	<5	<5
Silver	µg/L	1	<1	<1	<1	<1	<1	<1
Zinc	µg/L	25	<25	<25	<25	<25	<25	<25
<b>PCB</b>								
PCB 8	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 18	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 28	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 44	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 52	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 66	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 77	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 101	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 105	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 118	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 126	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 128	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 138	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 153	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 169	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 170	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 180	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 187	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

# Summary Report

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**Client:** Civil Engineering and Development Department  
**Service Order No.:** GE/2012/24.41  
**Project:** Agreement No. CE 21/2012(W/S)  
 Desalination Plant at Tseung Kwan O - Feasibility Study

Analyte	Units	LOR	HK1428015001	HK1428015002	HK1428015003	HK1428015004	HK1428015005	HK1428015006
			28/08/14	28/08/14	28/08/14	28/08/14	28/08/14	28/08/14
<b>Organochlorine Pesticides (OC)</b>								
alpha-BHC	µg/L	0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
beta-BHC	µg/L	0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
gamma-BHC	µg/L	0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
delta-BHC	µg/L	0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Heptachlor	µg/L	0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Aldrin	µg/L	0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Heptachlor epoxide	µg/L	0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan 1	µg/L	0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
4,4'-DDE	µg/L	0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
4,4'-DDD	µg/L	0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan sulfate	µg/L	0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
4,4'-DDT	µg/L	0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
<b>Polycyclic Aromatics Hydrocarbons (PAHs)</b>								
Naphthalene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benz(a)anthracene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenz(a,h)anthracene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<b>Triorganotin</b>								
Tributyltin	µg TBT/L	0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015



# Summary Report

**Date of Issue:** 3/6/2014  
**Client:** Civil Engineering and Development Department  
**Service Order No.:** GE/2012/24.41  
**Project:** Agreement No. CE 21/2012(WS)  
 Desalination Plant at Tseung Kwan O - Feasibility Study

Analyte	Units	LOR	HK1428013001	HK1428013002	HK1428013003
<b>Physical and Aggregate Properties</b>					
Moisture Content (dried @ 103°C)	%	0.1	56.7	58.4	57.1
<b>Inorganic Nonmetallic Parameters</b>					
Ammonia as N	mg/kg	0.1	11.2	8.6	9.2
Reactive Phosphorus as P (Sol.)	mg/kg	0.1	1.1	1.1	1.2
Total Kjeldahl Nitrogen as N	mg/kg	50	1330	1410	1480
Total Phosphorus as P	mg/kg	10	573	551	566
Nitrate as N (Sol.)	mg/kg	1	<1.0	<1.0	<1.0
Nitrite as N (Sol.)	mg/kg	1	<1.0	<1.0	<1.0
<b>Organochlorine Pesticides (OC)</b>					
alpha-BHC	mg/kg	0.5	<0.50	<0.50	<0.50
beta-BHC	mg/kg	0.5	<0.50	<0.50	<0.50
gamma-BHC	mg/kg	0.5	<0.50	<0.50	<0.50
delta-BHC	mg/kg	0.5	<0.50	<0.50	<0.50
Heptachlor	mg/kg	0.5	<0.50	<0.50	<0.50
Aldrin	mg/kg	0.5	<0.50	<0.50	<0.50
Heptachlor epoxide	mg/kg	0.5	<0.50	<0.50	<0.50
Endosulfan 1	mg/kg	0.5	<0.50	<0.50	<0.50
4,4'-DDE	mg/kg	0.5	<0.50	<0.50	<0.50
4,4'-DDD	mg/kg	0.5	<0.50	<0.50	<0.50
Endosulfan sulfate	mg/kg	0.5	<0.50	<0.50	<0.50
4,4'-DDT	mg/kg	0.5	<0.50	<0.50	<0.50

# Summary Report

**Date of Issue:** 3/6/2014  
**Client:** Civil Engineering and Development Department  
**Service Order No.:** GE/2012/24.41  
**Project:** Agreement No. CE 21/2012(W/S)  
 Desalination Plant at Tseung Kwan O - Feasibility Study

Analyte	Units	LOR	HK1428006001	HK1428006002	HK1428006003	HK1428006004	HK1428006005	HK1428006006	HK1428006007
			SD5 0.0M-0.9M 27/08/14	SD5 0.9M-1.9M 27/08/14	SD5 1.9M-2.9M 27/08/14	SD5 4.9M-5.9M 27/08/14	SD5 7.9M-8.9M 27/08/14	SD5 10.9M-11.9M 27/08/14	REFERENCE SAMPLE
<b>Physical and Aggregate Properties</b>									
Moisture Content (dried @ 103°C)	%	0.1	41.7	34.6	36.9	37.5	41.8	37.8	54.5
<b>Inorganic Nonmetallic Parameters</b>									
Ammonia as N	mg/kg	0.1	4	3.6	4.6	12.8	25.7	30.3	26.7
Reactive Phosphorus as P	mg/kg	0.1	0.5	0.2	0.2	0.2	0.6	1.3	1.3
Total Kjeldahl Nitrogen as N	mg/kg	50	980	760	870	860	670	740	1520
Total Phosphorus as P	mg/kg	10	492	414	488	544	332	419	611
Nitrate as N (Sol.)	mg/kg	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Nitrite as N (Sol.)	mg/kg	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
<b>Organochlorine Pesticides (OC)</b>									
alpha-BHC	mg/kg	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
beta-BHC	mg/kg	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
gamma-BHC	mg/kg	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
delta-BHC	mg/kg	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Heptachlor	mg/kg	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Aldrin	mg/kg	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Heptachlor epoxide	mg/kg	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Endosulfan 1	mg/kg	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDE	mg/kg	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDD	mg/kg	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Endosulfan sulfate	mg/kg	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDT	mg/kg	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

**CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT**  
**Sediment Quality Report**  
**Project: AGREEMENT NO CE21\_2012 (WS) DESALINATION PLANT AT TSEUNG KWAN O - FEASIBILITY STUDY**  
**Order No.: CONTRACT NO. GE/2012/24.41**  
**Drillhole: SD5**

ALS Lab ID	Sample ID	Sampling Date	Analyte Description										Classification				
			Unit (In dry wt basis)	Silver mg/kg	Arsenic mg/kg	Cadmium mg/kg	Chromium mg/kg	Copper mg/kg	Nickel mg/kg	Lead mg/kg	Zinc mg/kg	Mercury mg/kg		Total Polychlorinated biphenyls µg/kg	Low M.W. PAHs µg/kg	High M.W. PAHs µg/kg	Tributyl Tin µg TBT/L
			Reporting Limits	0.1	1	0.2	1	1	1	1	1	1	0.05	18	550	1700	0.015
			Lower Chemical Exceedance Level (LCEL)	1	1.2	1.5	80	65	40	75	200	0.5	23	550	1700	0.15	
			Upper Chemical Exceedance Level (UCEL)	2	4.2	4	160	110	40	110	270	1	180	3160	9600	0.15	
			10 x (LCEL)	10	120	15	800	650	400	750	2000	5	230	5500	17000	1.5	
<b>Sample Description</b>																	
HK1427994001	SD5 0.0M-0.9M	27/08/2014	<0.1	4	<0.2	6	7	4	6	30	<0.05	<18	<550	<1700	<0.015	L	
HK1427994002	SD5 0.9M-1.9M	27/08/2014	<0.1	3	<0.2	27	8	20	19	61	<0.05	<18	<550	<1700	<0.015	L	
HK1427994003	SD5 1.9M-2.9M	27/08/2014	<0.1	4	<0.2	33	8	26	16	73	<0.05	<18	<550	<1700	<0.015	L	
HK1427994004	SD5 4.9M-5.9M	27/08/2014	<0.1	5	<0.2	29	8	21	17	60	<0.05	<18	<550	<1700	<0.015	L	
HK1427994005	SD5 7.9M-8.9M	27/08/2014	<0.1	8	<0.2	38	12	28	24	72	<0.05	<18	<550	<1700	<0.015	L	
HK1427994006	SD5 10.9M-11.9M	27/08/2014	0.1	8	<0.2	43	15	32	26	79	<0.05	<18	<550	<1700	IS	L	
HK1427994007	REFERENCE SAMPLE	27/08/2014	0.2	9	0.4	14	16	10	14	72	<0.05	<18	<550	<1700	<0.015	L	

**Bold:** Value that exceed LCEL

**Bold Italic and Underlined:** Value that exceed UCEL

**Bold and Underlined:** Value that exceed 10 x LCEL

Total PCB:

IS Denoted:

Category L:

Category M:

Category H:

Category 10xLCEL:

Total PCBs calculated through summation of the 18 PCB congeners, based on raw data above the limit of detection of 1 µg/kg.

For detailed information on the individual congeners please refer to the certificate of analysis for the work order.

Insufficient interstitial water generated for TBT analysis.

Analytical results less than or equal to Lower Chemical Exceedance Level (LCEL)

Analytical results greater than Lower Chemical Exceedance Level (LCEL), but less than or equal to Upper Chemical Exceedance Level (UCEL)

Analytical results greater than Upper Chemical Exceedance Level (UCEL)

Analytical results greater than 10x Lower Chemical Exceedance Level (10xLCEL)

**CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT**  
**Sediment Quality Report**  
**Project: AGREEMENT NO CE21\_2012 (WS) DESALINATION PLANT AT TSEUNG KWAN O - FEASIBILITY STUDY**  
**Order No.: CONTRACT NO. GE/2012/24.41**  
**Drillhole: GS5, GS6, GS7**

ALS Lab ID	Sample ID	Sampling Date	Analyte Description										Classification			
			Unit (In dry Wt basis)	Silver	Arsenic	Cadmium	Chromium	Copper	Nickel	Lead	Zinc	Mercury		Total Polychlorinated biphenyls	Low M.W. PAHs	High M.W. PAHs
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	µg/kg	µg/kg	ug TBT/L
			Reporting Limits	0.1	1	0.2	1	1	1	1	1	0.05	18	550	1700	0.015
			Lower Chemical Exceedance Level (LCEL)	1	12	1.5	80	65	40	75	200	0.5	23	550	1700	0.15
			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>	<u>0.15</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>	<u>1.5</u>
<b>Sample Description</b>																
			Sample ID													
			GS5													
			GS6													
			GS7													

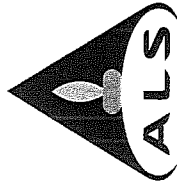
**Bold:** Value that exceed LCEL  
**Bold Italic and Underlined:** Value that exceed UCEL  
**Underlined:** Value that exceed 10 x LCEL  
Total PCB: Total PCBs calculated through summation of the 18 PCB congeners, based on raw data above the limit of detection of 1 ug/kg.  
IS Denoted: For detailed information on the individual congeners please refer to the certificate of analysis for the work order.  
Insufficient interstitial water generated for TBT analysis.

Category L: Analytical results less than or equal to Lower Chemical Exceedance Level (LCEL)  
Category M: Analytical results greater than Lower Chemical Exceedance Level (LCEL), but less than or equal to Upper Chemical Exceedance Level (UCEL)  
Category H: Analytical results greater than Upper Chemical Exceedance Level (UCEL)  
Category 10xLCEL: Analytical results greater than 10x Lower Chemical Exceedance Level (10xLCEL)

Section 2

Certificate of Analysis

# ALS Technichem (HK) Pty Ltd



## ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

### CERTIFICATE OF ANALYSIS

Client : CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT  
Contact : MR SUN NG  
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E-mail : sunng@cedd.gov.hk  
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Facsimile : ----  
Project : AGREEMENT NO CE21\_2012 (WS)  
DESALINATION PLANT AT TSEUNG KWAN O - FEASIBILITY STUDY  
Order number : GE/2012/24.41  
C.O.C number : H017684  
Site : ----

Laboratory : ALS Technichem HK Pty Ltd  
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Facsimile : +852 2610 2021  
Quote number : ----

Page : 1 of 12

Work Order : HK1428008

Date Samples Received : 27-AUG-2014

Issue Date : 19-SEP-2014  
No. of samples received : 9  
No. of samples analysed : 9

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

Signatories

Chan Ka Yu, Karen  
Fung Lim Chee, Richard

Position

Assistant Manager - Organics  
General Manager

Authorised results for

Organics  
Inorganics

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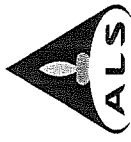
Page Number : 2 of 12  
Client : CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT  
Work Order : HK1428008

**General Comments**

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 11-SEP-2014

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society. Specific comments for Work Order: **HK1428008**

- Sample(s) were received in an ambient condition.
- Elutriate sample(s) analysed and reported on an as received basis.
- Elutriate sample(s) were filtered prior to dissolved metal analysis.
- Total Kjeldahl Nitrogen is the difference of Total Nitrogen and Total Oxidizable Nitrogen.



**Analytical Results**

Sub-Matrix: ELUTRIATE

Compound	CAS Number	LOR	Client sample ID							
			Client sampling date / line	SD5 0.0M-0.9M [27-AUG-2014] HK1428008-001	SD5 0.9M-1.9M [27-AUG-2014] HK1428008-002	SD5 1.9M-2.9M [27-AUG-2014] HK1428008-003	SD5 4.9M-5.9M [27-AUG-2014] HK1428008-004	SD5 7.9M-8.9M [27-AUG-2014] HK1428008-005		
			Unit							
<b>ED/EK: Inorganic Nonmetallic Parameters</b>										
EK058K: Ammonia as N	7664-417	0.01	mg/L	0.54	0.31	1.82	3.29			
EK057A: Nitrite as N	---	0.01	mg/L	<0.01	<0.01	<0.01	<0.01			
EK058A: Nitrate as N	14797-55-8	0.01	mg/L	0.06	0.02	0.02	0.02			
EK061P: Total Kjeldahl Nitrogen as N	---	0.1	mg/L	0.9	0.7	1.9	4.2			
EK067P: Total Phosphorus as P	---	0.1	mg/L	0.1	<0.1	0.1	0.1			
EK071K: Reactive Phosphorus as P	14265-44-2	10	µg/L	130	40	110	110			
<b>EG: Metals and Major Cations - Filtered</b>										
EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	<10	<10			
EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	<1	<1			
EG020: Chromium	7440-47-3	10	µg/L	<10	<10	<10	<10			
EG020: Copper	7440-50-8	1	µg/L	<1	<1	<1	<1			
EG020: Lead	7439-92-1	1	µg/L	<1	<1	<1	1			
EG020: Nickel	7440-02-0	5	µg/L	<5	<5	<5	<5			
EG020: Silver	7440-22-4	1	µg/L	<1	<1	<1	<1			
EG020: Zinc	7440-66-6	25	µg/L	<25	<25	<25	<25			
EG036: Mercury	7439-97-6	1	µg/L	<1	<1	<1	<1			
<b>EP-076: Polycyclic Aromatics Hydrocarbons (PAHs)</b>										
Naphthalene	91-20-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1			
Acenaphthylene	208-96-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1			
Acenaphthene	83-32-9	0.1	µg/L	<0.1	<0.1	<0.1	<0.1			
Fluorene	86-73-7	0.1	µg/L	<0.1	<0.1	<0.1	<0.1			
Phenanthrene	85-01-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1			
Anthracene	120-12-7	0.1	µg/L	<0.1	<0.1	<0.1	<0.1			
Fluoranthene	206-44-0	0.1	µg/L	<0.1	<0.1	<0.1	<0.1			
Pyrene	129-00-0	0.1	µg/L	<0.1	<0.1	<0.1	<0.1			
Benz(a)anthracene	56-55-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1			
Chrysene	218-019	0.1	µg/L	<0.1	<0.1	<0.1	<0.1			
Benzo(b)fluoranthene	205-99-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1			
Benzo(k)fluoranthene	207-08-9	0.1	µg/L	<0.1	<0.1	<0.1	<0.1			
Benzo(a)pyrene	50-32-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1			
Indeno(1,2,3-cd)pyrene	193-39-5	0.1	µg/L	<0.1	<0.1	<0.1	<0.1			
Dibenz(a,h)anthracene	53-70-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1			
Benzo(g,h,i)perylene	19124-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1			
<b>EP-065A: PCB Single Congeners</b>										
PCB 8	34883-43-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01			
PCB 18	37680-65-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01			
PCB 28	7012-37-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01			
PCB 44	41464-39-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01			





Sub-Matrix: ELUTRIATE

Client sample ID

Compound	CAS Number	LOR	Client sampling date / time					Unit	SD5 0.0M-0.9M [27-AUG-2014] HK1428008-001	SD5 0.9M-1.9M [27-AUG-2014] HK1428008-002	SD5 1.9M-2.9M [27-AUG-2014] HK1428008-003	SD5 4.9M-5.9M [27-AUG-2014] HK1428008-004	SD5 7.9M-8.9M [27-AUG-2014] HK1428008-005
			Client sampling date / time	Client sampling date / time	Client sampling date / time	Client sampling date / time	Client sampling date / time						
<b>EP-065A: PCB Single Congeners - Continued</b>													
PCB 52	35693-99-3	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
PCB 66	32598-10-0	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
PCB 77	32598-13-3	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
PCB 101	37680-73-2	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
PCB 105	32598-14-4	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
PCB 118	31508-00-6	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
PCB 126	57465-28-8	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
PCB 128	38380-07-3	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
PCB 138	35065-28-2	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
PCB 153	35065-27-1	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
PCB 169	32774-16-6	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
PCB 170	35065-30-6	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
PCB 180	35065-29-3	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
PCB 187	52663-68-0	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
<b>EP-067_SR-A: Organochlorine Pesticides (OC)</b>													
alpha-BHC	319-84-6	0.1		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
beta-BHC	319-85-7	0.1		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
gamma-BHC	58-89-9	0.1		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
delta-BHC	319-86-8	0.1		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
Heptachlor	76-44-8	0.1		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
Aldrin	308-00-2	0.1		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
Heptachlor epoxide	1024-57-3	0.1		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
Endosulfan 1	959-98-8	0.1		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
4,4'-DDE	72-55-9	0.1		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
4,4'-DDD	72-54-8	0.1		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
Endosulfan sulfate	103107-8	0.1		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
4,4'-DDT	50-29-3	0.1		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
<b>EP-390: Triorganotins</b>													
Tributyltin	56573-85-4	0.015		<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	
<b>EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates</b>													
2-Fluorobiphenyl	32160-8	0.1	%	65.5	53.1	69.9	50.4	71.0	Surrogate control limits listed at end of this report.				
4-Terphenyl-d14	1718-51-0	0.1	%	123	94.8	113	101	111	Surrogate control limits listed at end of this report.				
<b>EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate</b>													
Decachlorobiphenyl	205124-3	0.1	%	72.7	97.6	90.3	78.7	87.4	Surrogate control limits listed at end of this report.				
<b>EP-067_SR-S: Pesticide Surrogate</b>													
Tetrachlorometaxylene	877-09-8	0.1	%	57.8	57.4	63.8	53.8	53.0	Surrogate control limits listed at end of this report.				
Dibutylchlorendate	1770-80-5	0.1	%	66.4	55.8	70.6	56.0	75.6	Surrogate control limits listed at end of this report.				



Sub-Matrix: ELUTRIATE		Client sample ID		SD5	SD5	SD5	REFERENCE SAMPLE	REFERENCE SAMPLE
Compound	CAS Number	LOR	Client sampling date / time	10.9M-119M	WATER SAMPLE (BLANK)	WATER SAMPLE (BLANK)	[27-AUG-2014]	[27-AUG-2014]
			Unit	HK1428008-006	HK1428008-007	HK1428008-008	HK1428008-009	HK1428008-009
<b>ED/EK: Inorganic Nonmetallic Parameters</b>								
EK055K: Ammonia as N	7664-417	0.01	mg/L	2.93	0.01	1.00	0.04	0.04
EK057A: Nitrite as N	---	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EK058A: Nitrate as N	14797-55-8	0.01	mg/L	0.04	<0.01	0.01	0.02	0.02
EK061P: Total Kjeldahl Nitrogen as N	---	0.1	mg/L	3.6	0.3	1.4	0.3	0.3
EK067P: Total Phosphorus as P	---	0.1	mg/L	<0.1	<0.1	0.1	<0.1	<0.1
EK071K: Reactive Phosphorus as P	14265-44-2	10	µg/L	60	<10	70	<10	<10
<b>EG: Metals and Major Cations - Filtered</b>								
EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	10	µg/L	<10	<10	<10	<10	<10
EG020: Copper	7440-50-8	1	µg/L	<1	<1	<1	<1	<1
EG020: Lead	7439-92-1	1	µg/L	<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	5	µg/L	<5	<5	<5	<5	<5
EG020: Silver	7440-22-4	1	µg/L	<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	25	µg/L	<25	<25	<25	<25	<25
EG036: Mercury	7439-97-6	1	µg/L	<1	<1	<1	<1	<1
<b>EP-076: Polycyclic Aromatics Hydrocarbons (PAHs)</b>								
Naphthalene	91-20-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	208-96-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	83-32-9	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	86-73-7	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	85-01-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	120-12-7	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	206-44-0	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	129-00-0	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benz(a)anthracene	56-55-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	218-01-9	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	205-99-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	207-08-9	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	50-32-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	193-39-5	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenz(a,h)anthracene	53-70-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	191-24-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP-065A: PCB Single Congeners</b>								
PCB 8	34883-43-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 18	37680-65-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 28	7012-37-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 44	41464-39-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01



Sub-Matrix: ELUTRIATE

Client sample ID

Compound	CAS Number	LOR	Unit	Client sampling date / time	SD5 10.9M-11.9M [27-AUG-2014] HK1428008-006	SD5 WATER SAMPLE (BLANK) [27-AUG-2014] HK1428008-007	REFERENCE SAMPLER [27-AUG-2014] HK1428008-008	REFERENCE SAMPLE WATER SAMPLE (BLANK) [27-AUG-2014] HK1428008-009
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<b>EP-065A: PCB Single Congeners - Continued</b>								
PCB 52	35693-99-3	0.01	µg/L		<0.01	<0.01	<0.01	<0.01
PCB 66	32598-10-0	0.01	µg/L		<0.01	<0.01	<0.01	<0.01
PCB 77	32598-13-3	0.01	µg/L		<0.01	<0.01	<0.01	<0.01
PCB 101	37680-73-2	0.01	µg/L		<0.01	<0.01	<0.01	<0.01
PCB 105	32598-14-4	0.01	µg/L		<0.01	<0.01	<0.01	<0.01
PCB 118	31508-00-6	0.01	µg/L		<0.01	<0.01	<0.01	<0.01
PCB 126	57465-28-8	0.01	µg/L		<0.01	<0.01	<0.01	<0.01
PCB 128	38380-07-3	0.01	µg/L		<0.01	<0.01	<0.01	<0.01
PCB 138	35065-28-2	0.01	µg/L		<0.01	<0.01	<0.01	<0.01
PCB 153	35065-27-1	0.01	µg/L		<0.01	<0.01	<0.01	<0.01
PCB 169	32774-16-6	0.01	µg/L		<0.01	<0.01	<0.01	<0.01
PCB 170	35065-30-6	0.01	µg/L		<0.01	<0.01	<0.01	<0.01
PCB 180	35065-29-3	0.01	µg/L		<0.01	<0.01	<0.01	<0.01
PCB 187	52663-68-0	0.01	µg/L		<0.01	<0.01	<0.01	<0.01

<b>EP-067_SR-A: Organochlorine Pesticides (OC)</b>								
alpha-BHC	319-84-6	0.1	µg/L		<0.2	<0.2	<0.2	<0.2
beta-BHC	319-85-7	0.1	µg/L		<0.2	<0.2	<0.2	<0.2
gamma-BHC	58-89-9	0.1	µg/L		<0.2	<0.2	<0.2	<0.2
delta-BHC	319-86-8	0.1	µg/L		<0.2	<0.2	<0.2	<0.2
Heptachlor	76-44-8	0.1	µg/L		<0.2	<0.2	<0.2	<0.2
Aldrin	309-00-2	0.1	µg/L		<0.2	<0.2	<0.2	<0.2
Heptachlor epoxide	1024-57-3	0.1	µg/L		<0.2	<0.2	<0.2	<0.2
Endosulfan 1	959-98-8	0.1	µg/L		<0.2	<0.2	<0.2	<0.2
4,4'-DDE	72-55-9	0.1	µg/L		<0.2	<0.2	<0.2	<0.2
4,4'-DDD	72-54-8	0.1	µg/L		<0.2	<0.2	<0.2	<0.2
Endosulfan sulfate	103107-8	0.1	µg/L		<0.2	<0.2	<0.2	<0.2
4,4'-DDT	50-29-3	0.1	µg/L		<0.2	<0.2	<0.2	<0.2

<b>EP-390: Triorganotins</b>								
Tributyltin	56573-85-4	0.015	µg TBT /L		<0.015	<0.015	<0.015	<0.015

<b>EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates</b>								
2-Fluorobiphenyl	32160-8	0.1	%		68.2	51.0	53.2	65.1
4-Terphenyl-d14	1718-510	0.1	%		124	105	79.8	115

<b>EP-066S: PCB Congeners and Organochlorine Pesticides Surrogate</b>								
Decachlorobiphenyl	205124-3	0.1	%		91.6	70.6	64.6	82.3

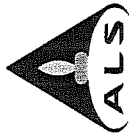
<b>EP-067_SR-S: Pesticide Surrogate</b>								
Tetrachlorometaxylene	877-09-8	0.1	%		52.2	61.6	54.4	50.8
Dibutylchlorendate	1770-80-5	0.1	%		80.6	59.6	54.8	63.6



Page Number : 7 of 12  
 Client : CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT  
 Work Order : HK1428008

**Laboratory Duplicate (DUP) Report**

Matrix: WATER		Method: Compound		Laboratory Duplicate (DUP) Report			
Laboratory sample ID	Client sample ID	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3618721)</b>							
HK1427937-001	Anonymous	7664-41-7	0.01	mg/L	0.27	0.27	0.0
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3618722)</b>							
HK1427937-011	Anonymous	7664-41-7	0.01	mg/L	0.26	0.26	0.0
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3618732)</b>							
HK1428015-004	Anonymous	14265-44-2	0.01	mg/L	<0.01	<0.01	0.0
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3619367)</b>							
HK1427964-001	Anonymous	---	0.01	mg/L	0.04	0.04	0.0
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3623231)</b>							
HK1427904-005	Anonymous	---	0.1	mg/L	<0.1	<0.1	0.0
<b>EG: Metals and Major Cations - Filtered (QC Lot: 3617451)</b>							
HK1427904-005	Anonymous	7439-97-6	1	µg/L	<1	<1	0.0
<b>EG: Metals and Major Cations - Filtered (QC Lot: 3617452)</b>							
HK1427904-005	Anonymous	7440-43-9	1	µg/L	<1	<1	0.0
		7440-50-8	1	µg/L	1	2	0.0
		7439-92-1	1	µg/L	<1	<1	0.0
		7440-22-4	1	µg/L	<1	<1	0.0
		7440-38-2	10	µg/L	<10	<10	0.0
		7440-47-3	10	µg/L	<10	<10	0.0
		7440-66-6	25	µg/L	<25	<25	0.0
		7440-02-0	5	µg/L	<5	<5	0.0
		7440-43-9	1	µg/L	<1	<1	0.0
		7440-50-8	1	µg/L	1	<1	0.0
		7439-92-1	1	µg/L	<1	<1	0.0
		7440-22-4	1	µg/L	<1	<1	0.0
		7440-38-2	10	µg/L	<10	<10	0.0
		7440-47-3	10	µg/L	<10	<10	0.0
		7440-66-6	25	µg/L	<25	<25	0.0
		7440-02-0	5	µg/L	<5	<5	0.0
HK1428015-004	Anonymous	7440-43-9	1	µg/L	<1	<1	0.0
		7440-50-8	1	µg/L	1	<1	0.0
		7439-92-1	1	µg/L	<1	<1	0.0
		7440-22-4	1	µg/L	<1	<1	0.0
		7440-38-2	10	µg/L	<10	<10	0.0
		7440-47-3	10	µg/L	<10	<10	0.0
		7440-66-6	25	µg/L	<25	<25	0.0
		7440-02-0	5	µg/L	<5	<5	0.0
<b>EP-076: Polycyclic Aromatics Hydrocarbons (PAHs) (QC Lot: 3613473)</b>							
HK1427904-005	Anonymous	91-20-3	0.1	µg/L	<0.1	<0.1	0.0
		208-96-8	0.1	µg/L	<0.1	<0.1	0.0
		83-32-9	0.1	µg/L	<0.1	<0.1	0.0
		86-73-7	0.1	µg/L	<0.1	<0.1	0.0
		85-01-8	0.1	µg/L	<0.1	<0.1	0.0
		120-12-7	0.1	µg/L	<0.1	<0.1	0.0
		206-44-0	0.1	µg/L	<0.1	<0.1	0.0
		129-00-0	0.1	µg/L	<0.1	<0.1	0.0
		56-55-3	0.1	µg/L	<0.1	<0.1	0.0
		218-01-9	0.1	µg/L	<0.1	<0.1	0.0
		205-99-2	0.1	µg/L	<0.1	<0.1	0.0
		207-08-9	0.1	µg/L	<0.1	<0.1	0.0



Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	LOR	Unit	Original Result	Duplicate Result	RPD (%)
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**EP-076: Polycyclic Aromatics Hydrocarbons (PAHs) (QC Lot: 3613473) - Continued**

HK1427904-005	Anonymous	Benzo(a)pyrene	0.1	µg/L	<0.1	<0.1	0.0
		Indeno(1,2,3-cd)pyrene	0.1	µg/L	<0.1	<0.1	0.0
		Dibenz(a,h)anthracene	0.1	µg/L	<0.1	<0.1	0.0
		Benzo(g,h,i)perylene	0.1	µg/L	<0.1	<0.1	0.0

**EP-065A: PCB Single Congeners (QC Lot: 3613471)**

HK1427904-005	Anonymous	PCB 8	0.01	µg/L	<0.01	<0.01	0.0
		PCB 18	0.01	µg/L	<0.01	<0.01	0.0
		PCB 28	0.01	µg/L	<0.01	<0.01	0.0
		PCB 44	0.01	µg/L	<0.01	<0.01	0.0
		PCB 52	0.01	µg/L	<0.01	<0.01	0.0
		PCB 66	0.01	µg/L	<0.01	<0.01	0.0
		PCB 77	0.01	µg/L	<0.01	<0.01	0.0
		PCB 101	0.01	µg/L	<0.01	<0.01	0.0
		PCB 105	0.01	µg/L	<0.01	<0.01	0.0
		PCB 118	0.01	µg/L	<0.01	<0.01	0.0
		PCB 126	0.01	µg/L	<0.01	<0.01	0.0
		PCB 128	0.01	µg/L	<0.01	<0.01	0.0
		PCB 138	0.01	µg/L	<0.01	<0.01	0.0
		PCB 153	0.01	µg/L	<0.01	<0.01	0.0
		PCB 169	0.01	µg/L	<0.01	<0.01	0.0
		PCB 170	0.01	µg/L	<0.01	<0.01	0.0
		PCB 180	0.01	µg/L	<0.01	<0.01	0.0
		PCB 187	0.01	µg/L	<0.01	<0.01	0.0

**EP-067\_SR-A: Organochlorine Pesticides (OC) (QC Lot: 3613472)**

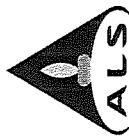
HK1427904-005	Anonymous	alpha-BHC	0.1	µg/L	<0.2	<0.2	0.0
		beta-BHC	0.1	µg/L	<0.2	<0.2	0.0
		gamma-BHC	0.1	µg/L	<0.2	<0.2	0.0
		delta-BHC	0.1	µg/L	<0.2	<0.2	0.0
		Heptachlor	0.1	µg/L	<0.2	<0.2	0.0
		Aldrin	0.1	µg/L	<0.2	<0.2	0.0
		Heptachlor epoxide	0.1	µg/L	<0.2	<0.2	0.0
		Endosulfan 1	0.1	µg/L	<0.2	<0.2	0.0
		4,4'-DDE	0.1	µg/L	<0.2	<0.2	0.0
		4,4'-DDD	0.1	µg/L	<0.2	<0.2	0.0
		Endosulfan sulfate	0.1	µg/L	<0.2	<0.2	0.0
		4,4'-DDT	0.1	µg/L	<0.2	<0.2	0.0

**EP-390: Triorganotin (QC Lot: 3628612)**

HK1428174-001	Anonymous	Tributyltin	5	ngSn/L	<0.015	-	Not Determined
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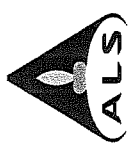
**Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report**

Method: Compound	CAS Number	LOR	Unit	Result	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	RPD (%)
					LCS	High	Value	Control Limit

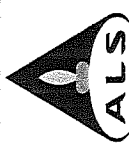


Matrix: WATER

Method Blank (MB) Report				Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
Method/Compound	CAS Number	LOR	Unit	Result	Spike Concentration	LCS	DCS	Recovery Limits (%)	Value	RPD (%)	Control Limit
						Low	High				
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3618721)</b>											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	102	113	87	113	---	---
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3618722)</b>											
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	102	113	87	113	---	---
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3618732)</b>											
EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	97.2	104	94	104	---	---
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3619367)</b>											
EK057A: Nitrite as N	---	0.01	mg/L	<0.01	0.4 mg/L	104	117	95	117	---	---
				<0.01	0.05 mg/L	92.0	115	83	115	---	---
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3623231)</b>											
EK067P: Total Phosphorus as P	---	0.01	mg/L	<0.01	0.5 mg/L	101	105	87	105	---	---
<b>EG: Metals and Major Cations - Filtered (QC Lot: 3617451)</b>											
EG036: Mercury	7439-97-6	0.05	µg/L	<0.05	2 µg/L	103	117	77	117	---	---
<b>EG: Metals and Major Cations - Filtered (QC Lot: 3617452)</b>											
EG020: Arsenic	7440-38-2	10	µg/L	<10	10 µg/L	104	116	76	116	---	---
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	10 µg/L	94.0	107	81	107	---	---
EG020: Chromium	7440-47-3	1	µg/L	<1	10 µg/L	112	113	79	113	---	---
EG020: Copper	7440-50-8	1	µg/L	<1	10 µg/L	102	113	79	113	---	---
EG020: Lead	7439-92-1	1	µg/L	<1	10 µg/L	93.1	108	82	108	---	---
EG020: Nickel	7440-02-0	1	µg/L	<1	10 µg/L	105	113	77	113	---	---
EG020: Silver	7440-22-4	1	µg/L	<1	10 µg/L	88.8	110	76	110	---	---
EG020: Zinc	7440-66-6	10	µg/L	<10	10 µg/L	106	115	77	115	---	---
<b>EP-076: Polycyclic Aromatics Hydrocarbons (PAHs) (QC Lot: 3607165)</b>											
Naphthalene	91-20-3	0.2	µg/L	<0.2	0.5 µg/L	72.7	98	50	98	---	---
Acenaphthylene	208-96-8	0.2	µg/L	<0.2	0.5 µg/L	64.6	97	47	97	---	---
Acenaphthene	83-32-9	0.2	µg/L	<0.2	0.5 µg/L	67.8	93	49	93	---	---
Fluorene	86-73-7	0.2	µg/L	<0.2	0.5 µg/L	69.4	92	52	92	---	---
Phenanthrene	85-01-8	0.2	µg/L	<0.2	0.5 µg/L	68.0	91	51	91	---	---
Anthracene	120-12-7	0.2	µg/L	<0.2	0.5 µg/L	67.0	95	48	95	---	---
Fluoranthene	206-44-0	0.2	µg/L	<0.2	0.5 µg/L	80.1	109	68	109	---	---
Pyrene	129-00-0	0.2	µg/L	<0.2	0.5 µg/L	81.9	111	69	111	---	---
Benzo(a)anthracene	56-55-3	0.2	µg/L	<0.2	0.5 µg/L	89.4	119	64	119	---	---
Chrysene	218-01-9	0.2	µg/L	<0.2	0.5 µg/L	104	124	50	124	---	---
Benzo(b)fluoranthene	205-99-2	0.2	µg/L	<0.2	0.5 µg/L	96.6	124	54	124	---	---
Benzo(k)fluoranthene	207-08-9	0.2	µg/L	<0.2	0.5 µg/L	92.3	130	54	130	---	---
Benzo(a)pyrene	50-32-8	0.2	µg/L	<0.2	0.5 µg/L	91.7	120	60	120	---	---
Indeno(1,2,3-cd)pyrene	193-39-5	0.2	µg/L	<0.2	0.5 µg/L	85.4	119	60	119	---	---
Dibenz(a,h)anthracene	53-70-3	0.2	µg/L	<0.2	0.5 µg/L	99.8	120	48	120	---	---
Benzo(g,h,i)perylene	191-24-2	0.2	µg/L	<0.2	0.5 µg/L	93.5	125	52	125	---	---
<b>EP-076: Polycyclic Aromatics Hydrocarbons (PAHs) (QC Lot: 3613473)</b>											
Naphthalene	91-20-3	0.2	µg/L	<0.2	0.5 µg/L	58.8	98	50	98	---	---
Acenaphthylene	208-96-8	0.2	µg/L	<0.2	0.5 µg/L	54.9	97	47	97	---	---



Matrix: WATER		Method Blank (MB) Report				Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	LCS	Spike Recovery (%)	DCS	Recovery Limits (%)	Value	RPD (%)	Control Limit
<b>EP-076: Polycyclic Aromatics Hydrocarbons (PAHs) (QC Lot: 3613473) - Continued</b>												
Acenaphthene	83-32-9	0.2	µg/L	<0.2	0.5 µg/L	57.6	---	---	49	---	---	93
Fluorene	86-73-7	0.2	µg/L	<0.2	0.5 µg/L	61.2	---	---	52	---	---	92
Phenanthrene	85-01-8	0.2	µg/L	<0.2	0.5 µg/L	62.1	---	---	51	---	---	91
Anthracene	120-12-7	0.2	µg/L	<0.2	0.5 µg/L	59.5	---	---	48	---	---	95
Fluoranthene	206-44-0	0.2	µg/L	<0.2	0.5 µg/L	78.8	---	---	68	---	---	109
Pyrene	129-00-0	0.2	µg/L	<0.2	0.5 µg/L	80.6	---	---	69	---	---	111
Benz(a)anthracene	56-55-3	0.2	µg/L	<0.2	0.5 µg/L	84.0	---	---	64	---	---	119
Chrysene	218-01-9	0.2	µg/L	<0.2	0.5 µg/L	95.5	---	---	50	---	---	124
Benzo(b)fluoranthene	205-99-2	0.2	µg/L	<0.2	0.5 µg/L	94.9	---	---	54	---	---	124
Benzo(k)fluoranthene	207-08-9	0.2	µg/L	<0.2	0.5 µg/L	95.0	---	---	54	---	---	130
Benzo(a)pyrene	50-32-8	0.2	µg/L	<0.2	0.5 µg/L	92.3	---	---	60	---	---	120
Indeno(1,2,3-cd)pyrene	193-39-5	0.2	µg/L	<0.2	0.5 µg/L	103	---	---	60	---	---	119
Dibenz(a,h)anthracene	53-70-3	0.2	µg/L	<0.2	0.5 µg/L	119	---	---	48	---	---	120
Benzo(g,h,i)perylene	191-24-2	0.2	µg/L	<0.2	0.5 µg/L	110	---	---	52	---	---	125
<b>EP-065A: PCB Single Congeners (QC Lot: 3613471)</b>												
PCB 8	34883-43-7	0.01	µg/L	<0.01	0.1 µg/L	58.1	---	---	50	---	---	130
PCB 18	37680-65-2	0.01	µg/L	<0.01	0.1 µg/L	52.8	---	---	50	---	---	130
PCB 28	7012-37-5	0.01	µg/L	<0.01	0.1 µg/L	54.8	---	---	50	---	---	130
PCB 44	41464-39-5	0.01	µg/L	<0.01	0.1 µg/L	50.9	---	---	50	---	---	130
PCB 52	35693-99-3	0.01	µg/L	<0.01	0.1 µg/L	52.0	---	---	50	---	---	130
PCB 66	32598-10-0	0.01	µg/L	<0.01	0.1 µg/L	52.1	---	---	50	---	---	130
PCB 77	32598-13-3	0.01	µg/L	<0.01	0.1 µg/L	56.7	---	---	50	---	---	130
PCB 101	37680-73-2	0.01	µg/L	<0.01	0.1 µg/L	57.1	---	---	50	---	---	130
PCB 105	32598-14-4	0.01	µg/L	<0.01	0.1 µg/L	60.4	---	---	50	---	---	130
PCB 118	31508-00-6	0.01	µg/L	<0.01	0.1 µg/L	60.0	---	---	50	---	---	130
PCB 126	57465-28-8	0.01	µg/L	<0.01	0.1 µg/L	62.3	---	---	50	---	---	130
PCB 128	38380-07-3	0.01	µg/L	<0.01	0.1 µg/L	64.1	---	---	50	---	---	130
PCB 138	35065-28-2	0.01	µg/L	<0.01	0.1 µg/L	62.4	---	---	50	---	---	130
PCB 153	35065-27-1	0.01	µg/L	<0.01	0.1 µg/L	61.8	---	---	50	---	---	130
PCB 169	32774-16-6	0.01	µg/L	<0.01	0.1 µg/L	68.0	---	---	50	---	---	130
PCB 170	35065-30-6	0.01	µg/L	<0.01	0.1 µg/L	70.2	---	---	50	---	---	130
PCB 180	35065-29-3	0.01	µg/L	<0.01	0.1 µg/L	75.8	---	---	50	---	---	130
PCB 187	52663-68-0	0.01	µg/L	<0.01	0.1 µg/L	63.7	---	---	50	---	---	130
<b>EP-067_SR-A: Organochlorine Pesticides (OC) (QC Lot: 3613472)</b>												
alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	75.0	---	---	47	---	---	107
beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	84.8	---	---	65	---	---	104
gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	75.4	---	---	49	---	---	105
delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	81.0	---	---	67	---	---	111
Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	85.4	---	---	44	---	---	98
Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	90.2	---	---	47	---	---	120
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	86.0	---	---	52	---	---	121
Endosulfan 1	959-98-8	0.5	µg/L	<0.5	5 µg/L	96.0	---	---	58	---	---	115
4,4'-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	92.2	---	---	60	---	---	121



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 Client : CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT  
 Work Order : HK1428008

Method Blank (MB) Report				Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)	DCS	Recovery Limits (%)	Value	RPD (%)	Control Limit
<b>EP-067_SR-A: Organichlorine Pesticides (OC) (QC Lot: 3613472) - Continued</b>											
4,4'-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	102	---	58	126	---	---
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	77.4	---	65	117	---	---
4,4'-DDT	50-29-3	0.5	µg/L	<0.5	5 µg/L	99.6	---	57	113	---	---
<b>EP-390: Triorganotins (QC Lot: 3626612)</b>											
Tributyltin	56573-85-4	5	ngSn/L	<5	5 ngSn/L	114	---	70	130	---	---

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

Laboratory sample ID		Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)	MSD	Recovery Limits (%)	Value	RPD (%)	Control Limit
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3618721)</b>											
HK1427937-001	Anonymous	EK055K: Ammonia as N	7664-41-7	0.5 mg/L	118	---	---	75	125	---	---
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3618722)</b>											
HK1427937-011	Anonymous	EK055K: Ammonia as N	7664-41-7	0.5 mg/L	118	---	---	75	125	---	---
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3618732)</b>											
HK1428015-004	Anonymous	EK071K: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	105	---	---	75	125	---	---
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3619367)</b>											
HK1427964-001	Anonymous	EK057A: Nitrite as N	---	0.5 mg/L	118	---	---	75	125	---	---
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3623231)</b>											
HK1427904-005	Anonymous	EK067P: Total Phosphorus as P	---	0.5 mg/L	88.0	---	---	75	125	---	---
<b>EG: Metals and Major Cations - Filtered (QC Lot: 3617451)</b>											
HK1427904-001	Anonymous	EG036: Mercury	7439-97-6	2 µg/L	87.0	---	---	75	125	---	---
<b>EG: Metals and Major Cations - Filtered (QC Lot: 3617452)</b>											
HK1427904-001	Anonymous	EG020: Arsenic	7440-38-2	10 µg/L	102	---	---	75	125	---	---
		EG020: Cadmium	7440-43-9	10 µg/L	96.0	---	---	75	125	---	---
		EG020: Chromium	7440-47-3	10 µg/L	97.0	---	---	75	125	---	---
		EG020: Copper	7440-50-8	10 µg/L	102	---	---	75	125	---	---
		EG020: Lead	7439-92-1	10 µg/L	92.0	---	---	75	125	---	---
		EG020: Nickel	7440-02-0	10 µg/L	95.3	---	---	75	125	---	---
		EG020: Silver	7440-22-4	10 µg/L	88.8	---	---	75	125	---	---
		EG020: Zinc	7440-66-6	10 µg/L	88.9	---	---	75	125	---	---

**Surrogate Control Limits**

Sub-Matrix: ELUTRIATE	CAS Number	Recovery Limits (%)
Compound	Low	High
EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates		
2-Fluorobiphenyl	321-60-8	50
		130





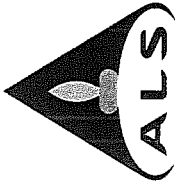
Page Number : 12 of 12  
Client : CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT  
Work Order : HK1428008

Compound	CAS Number	Recovery Limits (%)	
		Low	High
<b>Sub-Matrix: ELUTRIATE</b>			
<b>EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates - Continued</b>			
4-Terphenyl-d14	1718-51-0	50	130
<b>EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate</b>			
Decachlorobiphenyl	2051-24-3	50	130
<b>EP-067_SR-S: Pesticide Surrogate</b>			
Tetrachlorometaxylene	877-09-8	50	130
Dibutylchlorodate	1770-80-5	50	130

# ALS Technichem (HK) Pty Ltd

## ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES



### CERTIFICATE OF ANALYSIS

Client	: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 14
Contact	: MR SUN NG	Contact	: Fung Lim Chee, Richard	Work Order	: HK1428015
Address	: GEOTECHNICAL PROJECTS DIVISION, GEOTECHNICAL ENGINEERING OFFICE, 23/F., KWUN TONG VIEW, 410 KWUN TONG ROAD, KOWLOON, HONG KONG	Address	: 1/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: sunng@cedd.gov.hk	E-mail	: Richard.Fung@alsglobal.com	Date Samples Received	: 28-AUG-2014
Telephone	: ----	Telephone	: +852 2610 1044	Issue Date	: 19-SEP-2014
Facsimile	: ----	Facsimile	: +852 2610 2021	No. of samples received	: 6
Project	: AGREEMENT NO CE21_2012 (WS) DESALINATION PLANT AT TSEUNG KWAN O - FEASIBILITY STUDY	Quote number	: ----	No. of samples analysed	: 6
Order number	: GE/2012/24.41				
C-O-C number	: H017685				
Site	: ----				

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

Signatories

Chan Ka Yu, Karen  
Fung Lim Chee, Richard

Position

Assistant Manager - Organics  
General Manager

Authorised results for

Organics  
Inorganics



Page Number : 2 of 14  
Client : CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT  
Work Order : HK1428015

**General Comments**

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 11-SEP-2014

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society. Specific comments for Work Order: **HK1428015**

Sample(s) were received in an ambient condition.

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

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

Total Kjeldahl Nitrogen is the difference of Total Nitrogen and Total Oxidizable Nitrogen.



**Analytical Results**

Sub-Matrix: ELUTRIATE

Compound	CAS Number	LOR	Client sample ID		GS5	GS6	GS7	GS5 WATER SAMPLE (BLANK) [28-AUG-2014] HK1428015-004	GS6 WATER SAMPLE (BLANK) [28-AUG-2014] HK1428015-005
			Client sampling date / time	Unit					
<b>ED/EK: Inorganic Nonmetallic Parameters</b>									
EK055K: Ammonia as N	7664417	0.01	mg/L	0.62	0.83	0.75	<0.01	<0.01	<0.01
EK057A: Nitrite as N	---	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
EK058A: Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
EK061P: Total Kjeldahl Nitrogen as N	---	0.1	mg/L	0.9	1.2	1.1	0.3	0.2	0.2
EK067P: Total Phosphorus as P	---	0.1	mg/L	<0.1	0.1	<0.1	<0.1	<0.1	<0.1
EK071K: Reactive Phosphorus as P	14265-44-2	10	µg/L	70	120	70	<10	<10	<10
<b>EG: Metals and Major Cations - Filtered</b>									
EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	<10	<10	<10	<10
EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	<1	<1	<1	<1
EG020: Chromium	7440-47-3	10	µg/L	<10	<10	<10	<10	<10	<10
EG020: Copper	7440-50-8	1	µg/L	<1	<1	<1	1	1	<1
EG020: Lead	7439-92-1	1	µg/L	<1	<1	<1	<1	<1	<1
EG020: Nickel	7440-02-0	5	µg/L	<5	<5	<5	<5	<5	<5
EG020: Silver	7440-22-4	1	µg/L	<1	<1	<1	<1	<1	<1
EG020: Zinc	7440-66-6	25	µg/L	<25	<25	<25	<25	<25	<25
EG036: Mercury	7439-97-6	1	µg/L	<1	<1	<1	<1	<1	<1
<b>EP-076: Polycyclic Aromatics Hydrocarbons (PAHs)</b>									
Naphthalene	91-20-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	208-96-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	83-32-9	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	86-73-7	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	85-018	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	120-127	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	206-44-0	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	129-00-0	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benz(a)anthracene	56-55-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	218-019	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	205-99-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	207-08-9	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	50-32-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	193-39-5	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenz(a,h)anthracene	53-70-3	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	191-24-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP-065A: PCB Single Congeners</b>									
PCB 8	34883-43-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 18	37680-65-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 28	7012-37-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

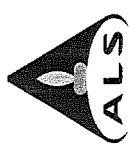


Sub-Matrix: ELUTRIATE

Compound	Client sample ID		LOR	Unit	GS5 [28-AUG-2014] HK1428015-001	GS6 [28-AUG-2014] HK1428015-002	GS7 [28-AUG-2014] HK1428015-003	GS5 [28-AUG-2014] HK1428015-004	GS6 [28-AUG-2014] HK1428015-005
	CAS Number	Client sampling date / time							
<b>EP-065A: PCB Single Congeners - Continued</b>									
PCB 44	41464-39-5		0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 52	35695-99-3		0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 66	32598-10-0		0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 77	32598-13-3		0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 101	37680-73-2		0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 105	32598-14-4		0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 118	31508-00-6		0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 126	57465-28-8		0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 128	38380-07-3		0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 138	35065-28-2		0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 153	35065-27-1		0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 169	32774-16-6		0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 170	35065-30-6		0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 180	35065-29-3		0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
PCB 187	52863-68-0		0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EP-067_SR-A: Organochlorine Pesticides (OC)</b>									
alpha-BHC	319-84-6		0.1	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
beta-BHC	319-85-7		0.1	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
gamma-BHC	58-89-9		0.1	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
delta-BHC	319-86-8		0.1	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Heptachlor	76-44-8		0.1	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Aldrin	309-00-2		0.1	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Heptachlor epoxide	1024-57-3		0.1	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan 1	959-98-8		0.1	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
4,4'-DDE	72-55-9		0.1	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
4,4'-DDD	72-54-8		0.1	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan sulfate	1031-07-8		0.1	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
4,4'-DDT	50-29-3		0.1	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
<b>EP-390: Triorganotins</b>									
Tributyltin	56573-85-4		0.015	µg TBT/L	<0.015	<0.015	<0.015	<0.015	<0.015
<b>EP-076S: Polycyclic Aromatic Hydrocarbons (PAHs) Surrogates</b>									
2-Fluorobiphenyl	32160-8		0.1	%	65.3	61.0	87.4	87.7	82.2
4-Terphenyl-d14	1718-510		0.1	%	116	104	126	129	129
<b>EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate</b>									
Decachlorobiphenyl	205124-3		0.1	%	71.3	75.4	92.7	85.1	87.4
<b>EP-067_SR-S: Pesticide Surrogate</b>									
Tetrachlorometaxylene	877-09-8		0.1	%	50.6	51.2	52.0	56.4	58.8
Dibutylchlorendate	1770-80-5		0.1	%	61.2	64.6	67.6	77.8	65.4



Sub-Matrix: ELUTRIATE	Client sample ID		GS7 WATER SAMPLE (BLANK) [28-AUG-2014] HK1428015-006
	Compound	Client sampling date / time	
	CAS Number	LOR	Unit
<b>EDIEK: Inorganic Nonmetallic Parameters</b>			
EK055K: Ammonia as N	7664-417	0.01	mg/L
EK057A: Nitrite as N	---	0.01	mg/L
EK058A: Nitrate as N	14797-55-8	0.01	mg/L
EK061P: Total Kjeldahl Nitrogen as N	---	0.1	mg/L
EK067P: Total Phosphorus as P	---	0.1	mg/L
EK071K: Reactive Phosphorus as P	14265-44-2	10	µg/L
<b>EG: Metals and Major Cations - Filtered</b>			
EG020: Arsenic	7440-38-2	10	µg/L
EG020: Cadmium	7440-43-9	1	µg/L
EG020: Chromium	7440-47-3	10	µg/L
EG020: Copper	7440-50-8	1	µg/L
EG020: Lead	7439-92-1	1	µg/L
EG020: Nickel	7440-02-0	5	µg/L
EG020: Silver	7440-22-4	1	µg/L
EG020: Zinc	7440-66-6	25	µg/L
EG036: Mercury	7439-97-6	1	µg/L
<b>EP-076: Polycyclic Aromatics Hydrocarbons (PAHs)</b>			
Naphthalene	91-20-3	0.1	µg/L
Acenaphthylene	208-96-8	0.1	µg/L
Acenaphthene	83-32-9	0.1	µg/L
Fluorene	86-73-7	0.1	µg/L
Phenanthrene	85-01-8	0.1	µg/L
Anthracene	120-127	0.1	µg/L
Fluoranthene	206-44-0	0.1	µg/L
Pyrene	129-00-0	0.1	µg/L
Benzo(a)anthracene	56-55-3	0.1	µg/L
Chrysene	216-019	0.1	µg/L
Benzo(b)fluoranthene	205-99-2	0.1	µg/L
Benzo(k)fluoranthene	207-08-9	0.1	µg/L
Benzo(a)pyrene	50-32-8	0.1	µg/L
Indeno(1,2,3-cd)pyrene	193-39-5	0.1	µg/L
Dibenz(a,h)anthracene	53-70-3	0.1	µg/L
Benzo(g,h,i)perylene	191-24-2	0.1	µg/L
<b>EP-065A: PCB Single Congeners</b>			
PCB 8	34883-43-7	0.01	µg/L
PCB 18	37680-65-2	0.01	µg/L
PCB 28	7012-37-5	0.01	µg/L
PCB 44	41464-39-5	0.01	µg/L

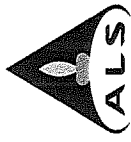


Compound	Client sample ID			GS7
	CAS Number	LOR	Unit	
<b>Sub-Matrix: ELUTRIATE</b>				
<b>EP-065A: PCB Single Congeners - Continued</b>				
PCB 52	35693-99-3	0.01	µg/L	<0.01
PCB 66	32598-10-0	0.01	µg/L	<0.01
PCB 77	32598-13-3	0.01	µg/L	<0.01
PCB 101	37680-73-2	0.01	µg/L	<0.01
PCB 105	32598-14-4	0.01	µg/L	<0.01
PCB 118	31508-00-6	0.01	µg/L	<0.01
PCB 126	57465-28-8	0.01	µg/L	<0.01
PCB 128	38380-07-3	0.01	µg/L	<0.01
PCB 138	35065-28-2	0.01	µg/L	<0.01
PCB 153	35065-27-1	0.01	µg/L	<0.01
PCB 169	32774-16-6	0.01	µg/L	<0.01
PCB 170	35065-30-6	0.01	µg/L	<0.01
PCB 180	35065-29-3	0.01	µg/L	<0.01
PCB 187	52663-68-0	0.01	µg/L	<0.01
<b>EP-067_SR-A: Organochlorine Pesticides (OC)</b>				
alpha-BHC	319-84-6	0.1	µg/L	<0.2
beta-BHC	319-85-7	0.1	µg/L	<0.2
gamma-BHC	58-89-9	0.1	µg/L	<0.2
delta-BHC	319-86-8	0.1	µg/L	<0.2
Heptachlor	76-44-8	0.1	µg/L	<0.2
Aldrin	309-00-2	0.1	µg/L	<0.2
Heptachlor epoxide	1024-57-3	0.1	µg/L	<0.2
Endosulfan 1	959-98-8	0.1	µg/L	<0.2
4,4'-DDE	72-55-9	0.1	µg/L	<0.2
4,4'-DDD	72-54-8	0.1	µg/L	<0.2
Endosulfan sulfate	103107-8	0.1	µg/L	<0.2
4,4'-DDT	50-29-3	0.1	µg/L	<0.2
<b>EP-390: Triorganotins</b>				
Tributyltin	5673-85-4	0.015	µg TBT/L	<0.015
<b>EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates</b>				
2-Fluorobiphenyl	32160-8	0.1	%	78.1
4-Terphenyl-d14	1718-510	0.1	%	118
<b>EP-066S: PCB Congeners and Organochlorine Pesticides Surrogate</b>				
Decachlorobiphenyl	205124-3	0.1	%	83.9
<b>EP-067_SR-S: Pesticide Surrogate</b>				
Tetrachlorometaxylene	877-09-8	0.1	%	51.6
Dibutylchlorendate	1770-80-5	0.1	%	58.2

Surrogate control limits listed at end of this report.

Surrogate control limits listed at end of this report.

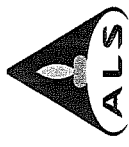
Surrogate control limits listed at end of this report.



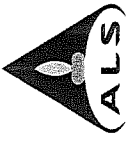
**Laboratory Duplicate (DUP) Report**

Matrix: WATER		Laboratory Duplicate (DUP) Report		RPD (%)				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3618722)</b>								
HK1427937-011	Anonymous	EK055K: Ammonia as N	7664-41-7	0.01	mg/L	0.26	0.26	0.0
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3618732)</b>								
HK1428015-004	GS5 WATER SAMPLE (BLANK)	EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.0
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3618733)</b>								
HK1428257-001	Anonymous	EK071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.0
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3619367)</b>								
HK1427964-001	Anonymous	EK057A: Nitrite as N	----	0.01	mg/L	0.04	0.04	0.0
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3623231)</b>								
HK1427904-005	Anonymous	EK067P: Total Phosphorus as P	----	0.1	mg/L	<0.1	<0.1	0.0
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3623233)</b>								
HK1428239-007	Anonymous	EK067P: Total Phosphorus as P	----	0.01	mg/L	2.05	2.05	0.0
<b>EG: Metals and Major Cations - Filtered (QC Lot: 3617451)</b>								
HK1427904-005	Anonymous	EG036: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
<b>EG: Metals and Major Cations - Filtered (QC Lot: 3617452)</b>								
HK1427904-005	Anonymous	EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	0.0
		EG020: Copper	7440-50-8	1	µg/L	1	2	0.0
		EG020: Lead	7439-92-1	1	µg/L	<1	<1	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Chromium	7440-47-3	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	25	µg/L	<25	<25	0.0
		EG020: Nickel	7440-02-0	5	µg/L	<5	<5	0.0
		EG020: Cadmium	7440-43-9	1	µg/L	<1	<1	0.0
<b>EG: Metals and Major Cations - Filtered (QC Lot: 3617454)</b>								
HK1428015-004	GS5 WATER SAMPLE (BLANK)	EG020: Copper	7440-50-8	1	µg/L	1	<1	0.0
		EG020: Lead	7439-92-1	1	µg/L	<1	<1	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	0.0
		EG020: Chromium	7440-47-3	10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	25	µg/L	<25	<25	0.0
		EG020: Nickel	7440-02-0	5	µg/L	<5	<5	0.0
<b>EG: Metals and Major Cations - Filtered (QC Lot: 3617454)</b>								
HK1428015-004	GS5 WATER SAMPLE (BLANK)	EG036: Mercury	7439-97-6	1	µg/L	<1	<1	0.0
<b>EP-076: Polycyclic Aromatics Hydrocarbons (PAHs) (QC Lot: 3613473)</b>								
HK1427904-005	Anonymous	Naphthalene	91-20-3	0.1	µg/L	<0.1	<0.1	0.0
		Acenaphthylene	208-96-8	0.1	µg/L	<0.1	<0.1	0.0
		Acenaphthene	83-32-9	0.1	µg/L	<0.1	<0.1	0.0
		Fluorene	86-73-7	0.1	µg/L	<0.1	<0.1	0.0
		Phenanthrene	85-01-8	0.1	µg/L	<0.1	<0.1	0.0





Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Laboratory Duplicate (DUP) Report		RPD (%)
						Original Result	Duplicate Result	
<b>Matrix: WATER</b>								
<b>EP-076: Polycyclic Aromatics Hydrocarbons (PAHs) (QC Lot: 3613473) - Continued</b>								
HK1427904-005	Anonymous	Anthracene	120-12-7	0.1	µg/L	<0.1	<0.1	0.0
		Fluoranthene	206-44-0	0.1	µg/L	<0.1	<0.1	0.0
		Pyrene	129-00-0	0.1	µg/L	<0.1	<0.1	0.0
		Benz(a)anthracene	56-55-3	0.1	µg/L	<0.1	<0.1	0.0
		Chrysene	218-01-9	0.1	µg/L	<0.1	<0.1	0.0
		Benzo(b)fluoranthene	205-99-2	0.1	µg/L	<0.1	<0.1	0.0
		Benzo(k)fluoranthene	207-08-9	0.1	µg/L	<0.1	<0.1	0.0
		Benzo(a)pyrene	50-32-8	0.1	µg/L	<0.1	<0.1	0.0
		Indeno(1,2,3-cd)pyrene	193-39-5	0.1	µg/L	<0.1	<0.1	0.0
		Dibenz(a,h)anthracene	53-70-3	0.1	µg/L	<0.1	<0.1	0.0
		Benzo(g,h,i)perylene	191-24-2	0.1	µg/L	<0.1	<0.1	0.0
<b>EP-065A: PCB Single Congeners (QC Lot: 3613471)</b>								
HK1427904-005	Anonymous	PCB 8	34883-43-7	0.01	µg/L	<0.01	<0.01	0.0
		PCB 18	37680-65-2	0.01	µg/L	<0.01	<0.01	0.0
		PCB 28	7012-37-5	0.01	µg/L	<0.01	<0.01	0.0
		PCB 44	41464-39-5	0.01	µg/L	<0.01	<0.01	0.0
		PCB 52	35693-99-3	0.01	µg/L	<0.01	<0.01	0.0
		PCB 66	32598-10-0	0.01	µg/L	<0.01	<0.01	0.0
		PCB 77	32598-13-3	0.01	µg/L	<0.01	<0.01	0.0
		PCB 101	37680-73-2	0.01	µg/L	<0.01	<0.01	0.0
		PCB 105	32598-14-4	0.01	µg/L	<0.01	<0.01	0.0
		PCB 118	31508-00-6	0.01	µg/L	<0.01	<0.01	0.0
		PCB 126	57465-28-8	0.01	µg/L	<0.01	<0.01	0.0
		PCB 128	38380-07-3	0.01	µg/L	<0.01	<0.01	0.0
		PCB 138	35065-28-2	0.01	µg/L	<0.01	<0.01	0.0
		PCB 153	35065-27-1	0.01	µg/L	<0.01	<0.01	0.0
		PCB 169	32774-16-6	0.01	µg/L	<0.01	<0.01	0.0
		PCB 170	35065-30-6	0.01	µg/L	<0.01	<0.01	0.0
		PCB 180	35065-29-3	0.01	µg/L	<0.01	<0.01	0.0
		PCB 187	52663-68-0	0.01	µg/L	<0.01	<0.01	0.0
<b>EP-065A: PCB Single Congeners (QC Lot: 3613474)</b>								
HK1428015-004	GS5 WATER SAMPLE (BLANK)	PCB 8	34883-43-7	0.01	µg/L	<0.01	<0.01	0.0
		PCB 18	37680-65-2	0.01	µg/L	<0.01	<0.01	0.0
		PCB 28	7012-37-5	0.01	µg/L	<0.01	<0.01	0.0
		PCB 44	41464-39-5	0.01	µg/L	<0.01	<0.01	0.0
		PCB 52	35693-99-3	0.01	µg/L	<0.01	<0.01	0.0
		PCB 66	32598-10-0	0.01	µg/L	<0.01	<0.01	0.0
		PCB 77	32598-13-3	0.01	µg/L	<0.01	<0.01	0.0
		PCB 101	37680-73-2	0.01	µg/L	<0.01	<0.01	0.0
		PCB 105	32598-14-4	0.01	µg/L	<0.01	<0.01	0.0
		PCB 118	31508-00-6	0.01	µg/L	<0.01	<0.01	0.0
		PCB 126	57465-28-8	0.01	µg/L	<0.01	<0.01	0.0
		PCB 128	38380-07-3	0.01	µg/L	<0.01	<0.01	0.0



Page Number : 9 of 14  
 Client : CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT  
 Work Order : HK1428015

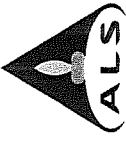
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Laboratory Duplicate (DUP) Report		RPD (%)
						Original Result	Duplicate Result	
<b>EP-065A: PCB Single Congeners (QC Lot: 3613474) - Continued</b>								
HK1428015-004	GSS WATER SAMPLE (BLANK)	PCB 138	35065-28-2	0.01	µg/L	<0.01	<0.01	0.0
		PCB 153	35065-27-1	0.01	µg/L	<0.01	<0.01	0.0
		PCB 169	32774-16-6	0.01	µg/L	<0.01	<0.01	0.0
		PCB 170	35065-30-6	0.01	µg/L	<0.01	<0.01	0.0
		PCB 180	35065-29-3	0.01	µg/L	<0.01	<0.01	0.0
		PCB 187	52663-68-0	0.01	µg/L	<0.01	<0.01	0.0
<b>EP-067_SR-A: Organochlorine Pesticides (OC) (QC Lot: 3613472)</b>								
HK1427904-005	Anonymous	alpha-BHC	319-84-6	0.1	µg/L	<0.2	<0.2	0.0
		beta-BHC	319-85-7	0.1	µg/L	<0.2	<0.2	0.0
		gamma-BHC	58-89-9	0.1	µg/L	<0.2	<0.2	0.0
		delta-BHC	319-86-8	0.1	µg/L	<0.2	<0.2	0.0
		Heptachlor	76-44-8	0.1	µg/L	<0.2	<0.2	0.0
		Aldrin	309-00-2	0.1	µg/L	<0.2	<0.2	0.0
		Heptachlor epoxide	1024-57-3	0.1	µg/L	<0.2	<0.2	0.0
		Endosulfan 1	959-98-8	0.1	µg/L	<0.2	<0.2	0.0
		4,4'-DDE	72-55-9	0.1	µg/L	<0.2	<0.2	0.0
		4,4'-DDD	72-54-8	0.1	µg/L	<0.2	<0.2	0.0
		Endosulfan sulfate	1031-07-8	0.1	µg/L	<0.2	<0.2	0.0
		4,4'-DDT	50-29-3	0.1	µg/L	<0.2	<0.2	0.0
<b>EP-067_SR-A: Organochlorine Pesticides (OC) (QC Lot: 3613475)</b>								
HK1428015-004	GSS WATER SAMPLE (BLANK)	alpha-BHC	319-84-6	0.1	µg/L	<0.2	<0.2	0.0
		beta-BHC	319-85-7	0.1	µg/L	<0.2	<0.2	0.0
		gamma-BHC	58-89-9	0.1	µg/L	<0.2	<0.2	0.0
		delta-BHC	319-86-8	0.1	µg/L	<0.2	<0.2	0.0
		Heptachlor	76-44-8	0.1	µg/L	<0.2	<0.2	0.0
		Aldrin	309-00-2	0.1	µg/L	<0.2	<0.2	0.0
		Heptachlor epoxide	1024-57-3	0.1	µg/L	<0.2	<0.2	0.0
		Endosulfan 1	959-98-8	0.1	µg/L	<0.2	<0.2	0.0
		4,4'-DDE	72-55-9	0.1	µg/L	<0.2	<0.2	0.0
		4,4'-DDD	72-54-8	0.1	µg/L	<0.2	<0.2	0.0
		Endosulfan sulfate	1031-07-8	0.1	µg/L	<0.2	<0.2	0.0
		4,4'-DDT	50-29-3	0.1	µg/L	<0.2	<0.2	0.0
<b>EP-390: Triorganotin (QC Lot: 3626617)</b>								
HK1428175-008	Anonymous	Tributyltin	56573-85-4	5	ngSn/L	<0.015	-	Not Determined

<b>Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report</b>										
Matrix: WATER										
Method: Compound										
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Result	Spike Recovery (%)			RPD (%)
							Spike Concentration	LCS	DCS	
HK1428175-008	Anonymous	Tributyltin	56573-85-4	5	ngSn/L	<0.015	-	-	-	Not Determined
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3618722)</b>										
EK055K: Ammonia as N	7664-41-7			0.01	mg/L	<0.01	0.5 mg/L	102	87	113



Main: WATER  
 Method: Compound  
 Method Blank (MB) Report  
 Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Method	CAS Number	LOR	Unit	Result	Spike Concentration	LCS	Spike Recovery (%)	DCS	Recovery Limits (%)	Value	RPD (%)
							Low	High	Low	High	Control Limit
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3618732)</b>											
EG071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	97.2	94	104	94	104	---
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3618733)</b>											
EG071K: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	99.2	94	104	94	104	---
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3619367)</b>											
EK057A: Nitrite as N	---	0.01	mg/L	<0.01	0.4 mg/L 0.05 mg/L	104 92.0	95 83	117 115	95 83	117 115	---
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3623231)</b>											
EK067P: Total Phosphorus as P	---	0.01	mg/L	<0.01	0.5 mg/L	101	87	105	87	105	---
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3623233)</b>											
EK067P: Total Phosphorus as P	---	0.01	mg/L	<0.01	0.5 mg/L	100	87	105	87	105	---
<b>EG: Metals and Major Cations - Filtered (QC Lot: 3617451)</b>											
EG036: Mercury	7439-97-6	0.05	µg/L	<0.05	2 µg/L	103	77	117	77	117	---
<b>EG: Metals and Major Cations - Filtered (QC Lot: 3617452)</b>											
EG020: Arsenic	7440-38-2	10	µg/L	<10	10 µg/L	104	76	116	76	116	---
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	10 µg/L	94.0	81	107	81	107	---
EG020: Chromium	7440-47-3	1	µg/L	<1	10 µg/L	112	79	113	79	113	---
EG020: Copper	7440-50-8	1	µg/L	<1	10 µg/L	102	79	113	79	113	---
EG020: Lead	7439-92-1	1	µg/L	<1	10 µg/L	93.1	82	108	82	108	---
EG020: Nickel	7440-02-0	1	µg/L	<1	10 µg/L	105	77	113	77	113	---
EG020: Silver	7440-22-4	1	µg/L	<1	10 µg/L	88.8	76	110	76	110	---
EG020: Zinc	7440-66-6	10	µg/L	<10	10 µg/L	106	77	115	77	115	---
<b>EG: Metals and Major Cations - Filtered (QC Lot: 3617454)</b>											
EG036: Mercury	7439-97-6	0.05	µg/L	<0.05	2 µg/L	94.5	77	117	77	117	---
<b>EG: Metals and Major Cations - Filtered (QC Lot: 3617455)</b>											
EG020: Arsenic	7440-38-2	10	µg/L	<10	10 µg/L	101	76	116	76	116	---
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	10 µg/L	93.5	81	107	81	107	---
EG020: Chromium	7440-47-3	1	µg/L	<1	10 µg/L	97.7	79	113	79	113	---
EG020: Copper	7440-50-8	1	µg/L	<1	10 µg/L	112	79	113	79	113	---
EG020: Lead	7439-92-1	1	µg/L	<1	10 µg/L	95.6	82	108	82	108	---
EG020: Nickel	7440-02-0	1	µg/L	<1	10 µg/L	98.8	77	113	77	113	---
EG020: Silver	7440-22-4	1	µg/L	<1	10 µg/L	88.8	76	110	76	110	---
EG020: Zinc	7440-66-6	10	µg/L	<10	10 µg/L	101	77	115	77	115	---
<b>EP-076: Polycyclic Aromatics Hydrocarbons (PAHs) (QC Lot: 3613473)</b>											
Naphthalene	91-20-3	0.2	µg/L	<0.2	0.5 µg/L	58.8	50	98	50	98	---
Acenaphthylene	208-96-8	0.2	µg/L	<0.2	0.5 µg/L	54.9	47	97	47	97	---
Acenaphthene	83-32-9	0.2	µg/L	<0.2	0.5 µg/L	57.6	49	93	49	93	---
Fluorene	86-73-7	0.2	µg/L	<0.2	0.5 µg/L	61.2	52	92	52	92	---
Phenanthrene	85-01-8	0.2	µg/L	<0.2	0.5 µg/L	62.1	51	91	51	91	---
Anthracene	120-12-7	0.2	µg/L	<0.2	0.5 µg/L	59.5	48	95	48	95	---
Fluoranthene	206-44-0	0.2	µg/L	<0.2	0.5 µg/L	78.8	68	109	68	109	---
Pyrene	129-00-0	0.2	µg/L	<0.2	0.5 µg/L	80.6	69	111	69	111	---



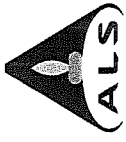
Matrix: WATER

Method: Compound

Method Blank (MB) Report

Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
		LOR	Unit	Result	Spike Concentration	LCS	DCS	Recovery Limits (%)	Value	RPD (%)	Control Limit
<b>EP-076: Polycyclic Aromatics Hydrocarbons (PAHs) (QC Lot: 3613473) - Continued</b>											
Benz(a)anthracene	56-55-3	0.2	µg/L	<0.2	0.5 µg/L	84.0	---	64	119	---	---
Chrysene	218-01-9	0.2	µg/L	<0.2	0.5 µg/L	95.5	---	50	124	---	---
Benzo(b)fluoranthene	205-99-2	0.2	µg/L	<0.2	0.5 µg/L	94.9	---	54	124	---	---
Benzo(k)fluoranthene	207-08-9	0.2	µg/L	<0.2	0.5 µg/L	95.0	---	54	130	---	---
Benzo(a)pyrene	50-32-8	0.2	µg/L	<0.2	0.5 µg/L	92.3	---	60	120	---	---
Indeno(1,2,3-cd)pyrene	193-39-5	0.2	µg/L	<0.2	0.5 µg/L	103	---	60	119	---	---
Dibenz(a,h)anthracene	53-70-3	0.2	µg/L	<0.2	0.5 µg/L	119	---	48	120	---	---
Benzo(g,h,i)perylene	191-24-2	0.2	µg/L	<0.2	0.5 µg/L	110	---	52	125	---	---
<b>EP-065A: PCB Single Congeners (QC Lot: 3613471)</b>											
PCB 8	34883-43-7	0.01	µg/L	<0.01	0.1 µg/L	58.1	---	50	130	---	---
PCB 18	37680-65-2	0.01	µg/L	<0.01	0.1 µg/L	52.8	---	50	130	---	---
PCB 28	7012-37-5	0.01	µg/L	<0.01	0.1 µg/L	54.8	---	50	130	---	---
PCB 44	41464-39-5	0.01	µg/L	<0.01	0.1 µg/L	50.9	---	50	130	---	---
PCB 52	35693-99-3	0.01	µg/L	<0.01	0.1 µg/L	52.0	---	50	130	---	---
PCB 66	32598-10-0	0.01	µg/L	<0.01	0.1 µg/L	52.1	---	50	130	---	---
PCB 77	32598-13-3	0.01	µg/L	<0.01	0.1 µg/L	56.7	---	50	130	---	---
PCB 101	37680-73-2	0.01	µg/L	<0.01	0.1 µg/L	57.1	---	50	130	---	---
PCB 105	32598-14-4	0.01	µg/L	<0.01	0.1 µg/L	60.4	---	50	130	---	---
PCB 118	31508-00-6	0.01	µg/L	<0.01	0.1 µg/L	60.0	---	50	130	---	---
PCB 126	57465-28-8	0.01	µg/L	<0.01	0.1 µg/L	62.3	---	50	130	---	---
PCB 128	38380-07-3	0.01	µg/L	<0.01	0.1 µg/L	64.1	---	50	130	---	---
PCB 138	35065-28-2	0.01	µg/L	<0.01	0.1 µg/L	62.4	---	50	130	---	---
PCB 153	35065-27-1	0.01	µg/L	<0.01	0.1 µg/L	61.8	---	50	130	---	---
PCB 169	32774-16-6	0.01	µg/L	<0.01	0.1 µg/L	68.0	---	50	130	---	---
PCB 170	35065-30-6	0.01	µg/L	<0.01	0.1 µg/L	70.2	---	50	130	---	---
PCB 180	35065-29-3	0.01	µg/L	<0.01	0.1 µg/L	75.8	---	50	130	---	---
PCB 187	52663-68-0	0.01	µg/L	<0.01	0.1 µg/L	63.7	---	50	130	---	---
<b>EP-065A: PCB Single Congeners (QC Lot: 3613474)</b>											
PCB 8	34883-43-7	0.01	µg/L	<0.01	0.1 µg/L	66.4	---	50	130	---	---
PCB 18	37680-65-2	0.01	µg/L	<0.01	0.1 µg/L	55.0	---	50	130	---	---
PCB 28	7012-37-5	0.01	µg/L	<0.01	0.1 µg/L	56.8	---	50	130	---	---
PCB 44	41464-39-5	0.01	µg/L	<0.01	0.1 µg/L	51.4	---	50	130	---	---
PCB 52	35693-99-3	0.01	µg/L	<0.01	0.1 µg/L	50.9	---	50	130	---	---
PCB 66	32598-10-0	0.01	µg/L	<0.01	0.1 µg/L	50.9	---	50	130	---	---
PCB 77	32598-13-3	0.01	µg/L	<0.01	0.1 µg/L	59.3	---	50	130	---	---
PCB 101	37680-73-2	0.01	µg/L	<0.01	0.1 µg/L	57.9	---	50	130	---	---
PCB 105	32598-14-4	0.01	µg/L	<0.01	0.1 µg/L	61.9	---	50	130	---	---
PCB 118	31508-00-6	0.01	µg/L	<0.01	0.1 µg/L	60.9	---	50	130	---	---
PCB 126	57465-28-8	0.01	µg/L	<0.01	0.1 µg/L	64.0	---	50	130	---	---
PCB 128	38380-07-3	0.01	µg/L	<0.01	0.1 µg/L	65.5	---	50	130	---	---
PCB 138	35065-28-2	0.01	µg/L	<0.01	0.1 µg/L	63.2	---	50	130	---	---
PCB 153	35065-27-1	0.01	µg/L	<0.01	0.1 µg/L	63.4	---	50	130	---	---
PCB 169	32774-16-6	0.01	µg/L	<0.01	0.1 µg/L	70.7	---	50	130	---	---



Matrix: WATER		Method Blank (MB) Report				Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	LCS	Spike Recovery (%)	DCS	Recovery Limits (%)	Value	RPD (%)	Control Limit
<b>EP-065A: PCB Single Congeners (QC Lot: 3613474) - Continued</b>												
PCB 170	35065-30-6	0.01	µg/L	<0.01	0.1 µg/L	71.0	---	---	50	130	---	---
PCB 180	35065-29-3	0.01	µg/L	<0.01	0.1 µg/L	76.0	---	---	50	130	---	---
PCB 187	52663-68-0	0.01	µg/L	<0.01	0.1 µg/L	65.1	---	---	50	130	---	---
<b>EP-067_SR-A: Organochlorine Pesticides (OC) (QC Lot: 3613472)</b>												
alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	75.0	---	---	47	107	---	---
beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	84.8	---	---	65	104	---	---
gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	75.4	---	---	49	105	---	---
delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	81.0	---	---	67	111	---	---
Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	85.4	---	---	44	98	---	---
Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	90.2	---	---	47	120	---	---
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	86.0	---	---	52	121	---	---
Endosulfan 1	959-98-8	0.5	µg/L	<0.5	5 µg/L	96.0	---	---	58	115	---	---
4,4'-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	92.2	---	---	60	121	---	---
4,4'-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	102	---	---	58	126	---	---
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	77.4	---	---	65	117	---	---
4,4'-DDT	50-29-3	0.5	µg/L	<0.5	5 µg/L	99.6	---	---	57	113	---	---
<b>EP-067_SR-A: Organochlorine Pesticides (OC) (QC Lot: 3613475)</b>												
alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	103	---	---	47	107	---	---
beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	94.4	---	---	65	104	---	---
gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	103	---	---	49	105	---	---
delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	90.4	---	---	67	111	---	---
Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	89.2	---	---	44	98	---	---
Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	115	---	---	47	120	---	---
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	117	---	---	52	121	---	---
Endosulfan 1	959-98-8	0.5	µg/L	<0.5	5 µg/L	113	---	---	58	115	---	---
4,4'-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	106	---	---	60	121	---	---
4,4'-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	102	---	---	58	126	---	---
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	94.8	---	---	65	117	---	---
4,4'-DDT	50-29-3	0.5	µg/L	<0.5	5 µg/L	99.4	---	---	57	113	---	---
<b>EP-390: Triorganotin (QC Lot: 3626617)</b>												
Tributyltin	56573-85-4	5	ngSn/L	<5	5 ngSn/L	114	---	---	70	130	---	---



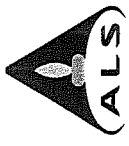
**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report			RPD (%)
					MS	MSD	Recovery Limits (%)	
					Low	High	Value	Control Limit
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3618722)</b>								
HK1427937-011	Anonymous	EK055K: Ammonia as N	7664-41-7	0.5 mg/L	118	75	125	---
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3618732)</b>								
HK1428015-004	GSS WATER SAMPLE (BLANK)	EK071K: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	105	75	125	---
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3618733)</b>								
HK1428257-001	Anonymous	EK071K: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	98.5	75	125	---
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3619367)</b>								
HK1427964-001	Anonymous	EK057A: Nitrite as N	---	0.5 mg/L	118	75	125	---
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3623231)</b>								
HK1427904-005	Anonymous	EK067P: Total Phosphorus as P	---	0.5 mg/L	88.0	75	125	---
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3623233)</b>								
HK1428239-007	Anonymous	EK067P: Total Phosphorus as P	---	5 mg/L	121	75	125	---
<b>EG: Metals and Major Cations - Filtered (QC Lot: 3617451)</b>								
HK1427904-001	Anonymous	EG036: Mercury	7439-97-6	2 µg/L	87.0	75	125	---
<b>EG: Metals and Major Cations - Filtered (QC Lot: 3617452)</b>								
HK1427904-001	Anonymous	EG020: Arsenic	7440-38-2	10 µg/L	102	75	125	---
		EG020: Cadmium	7440-43-9	10 µg/L	96.0	75	125	---
		EG020: Chromium	7440-47-3	10 µg/L	97.0	75	125	---
		EG020: Copper	7440-50-8	10 µg/L	102	75	125	---
		EG020: Lead	7439-92-1	10 µg/L	92.0	75	125	---
		EG020: Nickel	7440-02-0	10 µg/L	95.3	75	125	---
		EG020: Silver	7440-22-4	10 µg/L	88.8	75	125	---
		EG020: Zinc	7440-66-6	10 µg/L	88.9	75	125	---
<b>EG: Metals and Major Cations - Filtered (QC Lot: 3617454)</b>								
HK1428015-003	GST	EG036: Mercury	7439-97-6	2 µg/L	106	75	125	---
<b>EG: Metals and Major Cations - Filtered (QC Lot: 3617455)</b>								
HK1428015-003	GST	EG020: Arsenic	7440-38-2	10 µg/L	101	75	125	---
		EG020: Cadmium	7440-43-9	10 µg/L	94.6	75	125	---
		EG020: Chromium	7440-47-3	10 µg/L	90.5	75	125	---
		EG020: Copper	7440-50-8	10 µg/L	101	75	125	---
		EG020: Lead	7439-92-1	10 µg/L	94.6	75	125	---
		EG020: Nickel	7440-02-0	10 µg/L	94.7	75	125	---
		EG020: Silver	7440-22-4	10 µg/L	89.4	75	125	---
		EG020: Zinc	7440-66-6	10 µg/L	87.2	75	125	---

**Surrogate Control Limits**

Sub-Matrix: ELUTRIATE

Recovery Limits (%)

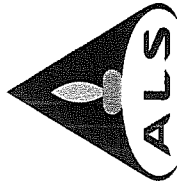


Page Number : 14 of 14  
 Client : CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT  
 Work Order : HK1428015

Compound	CAS Number	Recovery Limits (%)	
		Low	High
<b>Sub-Matrix: ELUTRIATE</b>			
<b>EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates</b>			
2-Fluorobiphenyl	321-60-8	50	130
4-Terphenyl-d14	1718-51-0	50	130
<b>EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate</b>			
Decachlorobiphenyl	2051-24-3	50	130
<b>EP-067_SR-S: Pesticide Surrogate</b>			
Tetrachlorometaxylene	877-09-8	50	130
Dibutylchlorodate	1770-80-5	50	130

# ALS Technichem (HK) Pty Ltd

**ALS Laboratory Group**  
ANALYTICAL CHEMISTRY & TESTING SERVICES



## CERTIFICATE OF ANALYSIS

Client : CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT  
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Project : AGREEMENT NO CE21\_2012 (WS)  
DESALINATION PLANT AT TSEUNG KWAN  
O - FEASIBILITY STUDY  
Order number : GE/2012/24.41  
C-O-C number : H017684  
Site :

Laboratory : ALS Technichem HK Pty Ltd  
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Facsimile : +852 2610 2021  
Quote number : ----

Page : 1 of 5

Work Order : HK1428006

Date Samples Received : 27-AUG-2014

Issue Date : 17-SEP-2014

No. of samples received : 7

No. of samples analysed : 7

### General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 11-SEP-2014

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
Specific comments for Work Order: **HK1428006**

Reactive Phosphorus, nitrate and nitrite determined and reported on a 1:5 soil / water extract.

Sample(s) were received in an ambient condition.

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

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

Signatories

Chan Ka Yu, Karen  
Fung Lim Chee, Richard

Position

Assistant Manager - Organics  
General Manager

Authorised results for

Organics  
Inorganics



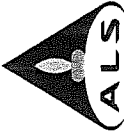


**Analytical Results**

Sub-Matrix: SEDIMENT

Compound	CAS Number	LOR	Client sample ID		SD5 0.0M-0.9M [27-AUG-2014] HK1428006-001	SD5 0.9M-1.9M [27-AUG-2014] HK1428006-002	SD5 1.9M-2.9M [27-AUG-2014] HK1428006-003	SD5 4.9M-5.9M [27-AUG-2014] HK1428006-004	SD5 7.9M-8.9M [27-AUG-2014] HK1428006-005
			Client sampling date / time	Unit					
<b>EAJED: Physical and Aggregate Properties</b>									
EA055: Moisture Content (dried @ 103° C)	---	0.1	%		41.7	34.6	36.9	37.5	41.8
<b>EDIEK: Inorganic Nonmetallic Parameters</b>									
EK055: Ammonia as N	7664417	0.1	mg/kg		4.0	3.6	4.6	12.8	25.7
EK057A: Nitrite as N (Sol.)	---	1.0	mg/kg		<1.0	<1.0	<1.0	<1.0	<1.0
EK058A: Nitrate as N (Sol.)	---	1.0	mg/kg		<1.0	<1.0	<1.0	<1.0	<1.0
EK061A: Total Kjeldahl Nitrogen as N	---	50	mg/kg		980	760	870	860	670
EK067A: Total Phosphorus as P	---	10	mg/kg		492	414	488	544	332
EK071K: Reactive Phosphorus as P (Sol.)	14265442	0.1	mg/kg		0.5	0.2	0.2	0.2	0.6
<b>EP-067_SR-A: Organochlorine Pesticides (OC)</b>									
alpha-BHC	319-84-6	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
beta-BHC	319-85-7	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
gamma-BHC	58-99-9	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
delta-BHC	319-86-8	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Heptachlor	76-44-8	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Aldrin	309-00-2	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Heptachlor epoxide	1024-57-3	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Endosulfan 1	959-98-8	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDE	72-55-9	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDD	72-54-8	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
Endosulfan sulfate	1031-07-8	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
4,4'-DDT	50-29-3	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
<b>EP-067_SR-S: Pesticide Surrogate</b>									
Tetrachlorometaxylene	877-09-8	0.1	%		54.0	52.8	51.2	51.8	50.2
Dibutylchlorendate	1770-80-5	0.1	%		63.8	58.4	76.8	68.2	81.0

Surrogate control limits listed at end of this report.



Sub-Matrix: SEDIMENT		Client sample ID		REFERENCE SAMPLE
Compound	CAS Number	LOR	Unit	Client sampling date / time
EAJED: Physical and Aggregate Properties				10.9M-11.9M [27-AUG-2014]
EA055: Moisture Content (dried @ 103° C)		---	%	54.5 HK1428006-007
ED/EK: Inorganic Nonmetallic Parameters				
EK055: Ammonia as N	7664-417	0.1	mg/kg	30.3
EK057A: Nitrite as N (Sol.)	---	1.0	mg/kg	<1.0
EK058A: Nitrate as N (Sol.)	---	1.0	mg/kg	<1.0
EK061A: Total Kjeldahl Nitrogen as N	---	50	mg/kg	740
EK067A: Total Phosphorus as P	---	10	mg/kg	419
EK071K: Reactive Phosphorus as P (Sol.)	14265-44-2	0.1	mg/kg	1.3
EP-067_SR-A: Organochlorine Pesticides (OC)				
alpha-BHC	319-84-6	0.50	mg/kg	<0.50
beta-BHC	319-85-7	0.50	mg/kg	<0.50
gamma-BHC	58-89-9	0.50	mg/kg	<0.50
delta-BHC	319-86-8	0.50	mg/kg	<0.50
Heptachlor	76-44-8	0.50	mg/kg	<0.50
Aldrin	309-00-2	0.50	mg/kg	<0.50
Heptachlor epoxide	1024-57-3	0.50	mg/kg	<0.50
Endosulfan 1	959-98-8	0.50	mg/kg	<0.50
4,4'-DDE	72-55-9	0.50	mg/kg	<0.50
4,4'-DDD	72-54-8	0.50	mg/kg	<0.50
Endosulfan sulfate	1031-07-8	0.50	mg/kg	<0.50
4,4'-DDT	50-29-3	0.50	mg/kg	<0.50
EP-067_SR-S: Pesticide Surrogate				
Tetrachlorometaxylene	877-09-8	0.1	%	51.2
Dibutylchlorodate	1770-80-5	0.1	%	67.2

Surrogate control limits listed at end of this report.



**Laboratory Duplicate (DUP) Report**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Laboratory Duplicate (DUP) Report		RPD (%)
						Original Result	Duplicate Result	
<b>EA/ED: Physical and Aggregate Properties (QC Lot: 3614160)</b>								
HK1428006-001	SD5 0.0M-0.9M	EA055: Moisture Content (dried @ 103°C)	---	0.1	%	41.7	42.0	0.7
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3618656)</b>								
HK1427885-001	Anonymous	EK055: Ammonia as N	7664-41-7	0.1	mg/kg	2.7	2.7	0.0
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3619287)</b>								
HK1427885-001	Anonymous	EK061A: Total Kjeldahl Nitrogen as N	---	50	mg/kg	700	650	7.1
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3619288)</b>								
HK1427914-001	Anonymous	EK067A: Total Phosphorus as P	---	10	mg/kg	577	581	0.7
<b>EP-067_SR-A: Organichlorine Pesticides (OC) (QC Lot: 3613479)</b>								
HK1428006-001	SD5 0.0M-0.9M	alpha-BHC	319-84-6	0.50	mg/kg	<0.50	<0.50	0.0
		beta-BHC	319-85-7	0.50	mg/kg	<0.50	<0.50	0.0
		gamma-BHC	58-89-9	0.50	mg/kg	<0.50	<0.50	0.0
		delta-BHC	319-86-8	0.50	mg/kg	<0.50	<0.50	0.0
		Heptachlor	76-44-8	0.50	mg/kg	<0.50	<0.50	0.0
		Aldrin	309-00-2	0.50	mg/kg	<0.50	<0.50	0.0
		Heptachlor epoxide	1024-57-3	0.50	mg/kg	<0.50	<0.50	0.0
		Endosulfan 1	959-98-8	0.50	mg/kg	<0.50	<0.50	0.0
		4,4'-DDE	72-55-9	0.50	mg/kg	<0.50	<0.50	0.0
		4,4'-DDD	72-54-8	0.50	mg/kg	<0.50	<0.50	0.0
		Endosulfan sulfate	1031-07-8	0.50	mg/kg	<0.50	<0.50	0.0
		4,4'-DDT	50-29-3	0.50	mg/kg	<0.50	<0.50	0.0

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

Method: Compound	CAS Number	LOR	Unit	Result	Method Blank (MB) Report				Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report			
					Spike Concentration	Spike Recovery (%)	DCS	Recovery Limits (%)	Recovery Limits (%)	Value	RPD (%)	Control Limit
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3614161)</b>												
EK057A: Nitrite as N (Sol.)	---	0.1	mg/kg	<0.1	2 mg/kg	99.9	85	115	---	---	---	---
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3618656)</b>												
EK055: Ammonia as N	7664-41-7	1	mg/kg	<1	5 mg/kg	98.6	87	113	---	---	---	---
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3619287)</b>												
EK061A: Total Kjeldahl Nitrogen as N	---	20	mg/kg	<20	1000 mg/kg	103	85	115	---	---	---	---
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3619288)</b>												
EK067A: Total Phosphorus as P	---	20	mg/kg	<20	695 mg/kg	99.3	85	115	---	---	---	---
<b>EP-067_SR-A: Organichlorine Pesticides (OC) (QC Lot: 3613479)</b>												
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.25 mg/kg	81.2	56	126	---	---	---	---
beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.25 mg/kg	109	43	133	---	---	---	---
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.25 mg/kg	89.6	47	128	---	---	---	---
delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.25 mg/kg	98.8	61	119	---	---	---	---
Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.25 mg/kg	61.2	43	119	---	---	---	---
Aldrin	309-00-2	0.05	mg/kg	<0.05	0.25 mg/kg	70.4	67	113	---	---	---	---



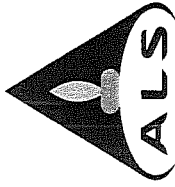
Method: Compound	Method Blank (MB) Report				Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report				RPD (%)				
	CAS Number	LOR	Unit	Result	Spike Concentration	LCS	Spike Recovery (%)	DCS	Recovery Limits (%)	Low	High	Value	Control Limit
<b>EP-067_SR-A: Organichlorine Pesticides (OC) (QC Lot: 3613479) - Continued</b>													
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.25 mg/kg	100	---	---	58	116	---	---	---
Endosulfan 1	959-98-8	0.05	mg/kg	<0.05	0.25 mg/kg	113	---	---	56	117	---	---	---
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	0.25 mg/kg	73.0	---	---	49	129	---	---	---
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	0.25 mg/kg	98.6	---	---	53	119	---	---	---
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.25 mg/kg	104	---	---	39	132	---	---	---
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	0.25 mg/kg	71.0	---	---	32	126	---	---	---

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

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

**Surrogate Control Limits**

Compound	CAS Number	Recovery Limits (%)	
		Low	High
EP-067_SR-S: Pesticide Surrogate			
Tetrachlorometaxylene	877-09-8	50	130
Dibutylchloroendate	1770-80-5	50	130



### CERTIFICATE OF ANALYSIS

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 Project : AGREEMENT NO CE21\_2012 (WS)  
 DESALINATION PLANT AT TSEUNG KWAN O - FEASIBILITY STUDY  
 Order number : GE/2012/24.41  
 C-O-C number : H017685  
 Site : ----

Laboratory : ALS Technichem HK Pty Ltd  
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 E-mail : Richard.Fung@alsglobal.com  
 Telephone : +852 2610 1044  
 Facsimile : +852 2610 2021  
 Quote number : ----  
 Date Samples Received : 28-AUG-2014  
 Issue Date : 17-SEP-2014  
 No. of samples received : 3  
 No. of samples analysed : 3

Page : 1 of 4  
 Work Order : HK1428013

#### General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 11-SEP-2014

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 Specific comments for Work Order: HK1428013

Sample(s) were received in an ambient condition.



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

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

Signatories

Chan Ka Yu, Karen  
 Fung Lim Chee, Richard

Position

Assistant Manager - Organics  
 General Manager  
 Organics  
 Inorganics

Authorised results for



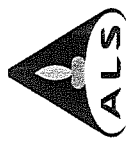


**Analytical Results**

Sub-Matrix: SEDIMENT

Compound	CAS Number	Client sample ID		Unit	GS5 [28-AUG-2014] HK1428013-001	GS6 [28-AUG-2014] HK1428013-002	GS7 [28-AUG-2014] HK1428013-003
		LOR	Client sampling date / time				
<b>EA/ED: Physical and Aggregate Properties</b>							
EA055: Moisture Content (dried @ 103° C)	---	0.1	%		56.7	58.4	57.1
<b>ED/EK: Inorganic Nonmetallic Parameters</b>							
EK055: Ammonia as N	7664-417	0.1	mg/kg		11.2	8.6	9.2
EK057A: Nitrite as N (Sol.)	---	1.0	mg/kg		<1.0	<1.0	<1.0
EK058A: Nitrate as N (Sol.)	---	1.0	mg/kg		<1.0	<1.0	<1.0
EK061A: Total Kjeldahl Nitrogen as N	---	50	mg/kg		1330	1410	1480
EK067A: Total Phosphorus as P	---	10	mg/kg		573	551	566
EK071K: Reactive Phosphorus as P (Sol.)	14265-44-2	0.1	mg/kg		1.1	1.1	1.2
<b>EP-067_SR-A: Organochlorine Pesticides (OC)</b>							
alpha-BHC	319-94-6	0.50	mg/kg		<0.50	<0.50	<0.50
beta-BHC	319-85-7	0.50	mg/kg		<0.50	<0.50	<0.50
gamma-BHC	58-89-9	0.50	mg/kg		<0.50	<0.50	<0.50
delta-BHC	319-86-8	0.50	mg/kg		<0.50	<0.50	<0.50
Heptachlor	76-44-8	0.50	mg/kg		<0.50	<0.50	<0.50
Aldrin	309-00-2	0.50	mg/kg		<0.50	<0.50	<0.50
Heptachlor epoxide	1024-57-3	0.50	mg/kg		<0.50	<0.50	<0.50
Endosulfan 1	959-98-8	0.50	mg/kg		<0.50	<0.50	<0.50
4,4'-DDE	72-55-9	0.50	mg/kg		<0.50	<0.50	<0.50
4,4'-DDD	72-54-8	0.50	mg/kg		<0.50	<0.50	<0.50
Endosulfan sulfate	1031-07-8	0.50	mg/kg		<0.50	<0.50	<0.50
4,4'-DDT	50-29-3	0.50	mg/kg		<0.50	<0.50	<0.50
<b>EP-067_SR-S: Pesticide Surrogate</b>							
Tetrachlorometaxylene	877-09-8	0.1	%		51.2	50.6	51.4
Dibutylchlorendate	1770-80-5	0.1	%		73.4	70.8	64.0

Surrogate control limits listed at end of this report.

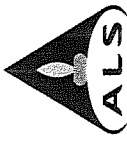


**Laboratory Duplicate (DUP) Report**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Laboratory Duplicate (DUP) Report		RPD (%)
						Original Result	Duplicate Result	
<b>EA/ED: Physical and Aggregate Properties (QC Lot: 3614160)</b>								
HK1428006-001	Anonymous	EA055: Moisture Content (dried @ 103°C)	----	0.1	%	41.7	42.0	0.7
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3618656)</b>								
HK1427885-001	Anonymous	EK055: Ammonia as N	7664-41-7	0.1	mg/kg	2.7	2.7	0.0
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3619287)</b>								
HK1427885-001	Anonymous	EK061A: Total Kjeldahl Nitrogen as N	----	50	mg/kg	700	650	7.1
<b>ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3619288)</b>								
HK1427914-001	Anonymous	EK067A: Total Phosphorus as P	----	10	mg/kg	577	581	0.7
<b>EP-067_SR-A: Organochlorine Pesticides (OC) (QC Lot: 3613479)</b>								
HK1428006-001	Anonymous	alpha-BHC	319-84-6	0.50	mg/kg	<0.50	<0.50	0.0
		beta-BHC	319-85-7	0.50	mg/kg	<0.50	<0.50	0.0
		gamma-BHC	58-89-9	0.50	mg/kg	<0.50	<0.50	0.0
		delta-BHC	319-86-8	0.50	mg/kg	<0.50	<0.50	0.0
		Heptachlor	76-44-8	0.50	mg/kg	<0.50	<0.50	0.0
		Aldrin	309-00-2	0.50	mg/kg	<0.50	<0.50	0.0
		Heptachlor epoxide	1024-57-3	0.50	mg/kg	<0.50	<0.50	0.0
		Endosulfan 1	959-98-8	0.50	mg/kg	<0.50	<0.50	0.0
		4,4'-DDE	72-55-9	0.50	mg/kg	<0.50	<0.50	0.0
		4,4'-DDD	72-54-8	0.50	mg/kg	<0.50	<0.50	0.0
		Endosulfan sulfate	1031-07-8	0.50	mg/kg	<0.50	<0.50	0.0
		4,4'-DDT	50-29-3	0.50	mg/kg	<0.50	<0.50	0.0

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

Method: Compound	CAS Number	LOR	Unit	Result	Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report			Recovery Limits (%)	RPD (%)
					Spike Concentration	Spike Recovery (%)	DCS		
<b>Method Blank (MB) Report</b>									
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3614161)	----	0.1	mg/kg	<0.1	2 mg/kg	99.9	85	115	----
EK057A: Nitrite as N(Sol.)									
<b>Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report</b>									
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3618656)	7664-41-7	1	mg/kg	<1	5 mg/kg	98.6	87	113	----
EK055: Ammonia as N									
<b>Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report</b>									
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3619287)	----	20	mg/kg	<20	1000 mg/kg	103	85	115	----
EK061A: Total Kjeldahl Nitrogen as N									
<b>Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report</b>									
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 3619288)	----	20	mg/kg	<20	695 mg/kg	99.3	85	115	----
EK067A: Total Phosphorus as P									
<b>EP-067_SR-A: Organochlorine Pesticides (OC) (QC Lot: 3613479)</b>									
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.25 mg/kg	81.2	56	126	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.25 mg/kg	109	43	133	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.25 mg/kg	89.6	47	128	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.25 mg/kg	98.8	61	119	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.25 mg/kg	61.2	43	119	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	0.25 mg/kg	70.4	67	113	----



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
<b>EP-067_SR-A: Organichlorine Pesticides (OC) (QC Lot: 3613479) - Continued</b>											
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.25 mg/kg	100	---	58	---	116	---
Endosulfan 1	959-98-8	0.05	mg/kg	<0.05	0.25 mg/kg	113	---	56	---	117	---
4,4'-DDE	72-55-8	0.05	mg/kg	<0.05	0.25 mg/kg	73.0	---	49	---	129	---
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	0.25 mg/kg	98.6	---	53	---	119	---
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.25 mg/kg	104	---	39	---	132	---
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	0.25 mg/kg	71.0	---	32	---	126	---

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

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

**Surrogate Control Limits**

Compound	CAS Number	Recovery Limits (%)	
		Low	High
EP-067_SR-S: Pesticide Surrogate			
Tetrachlorometaxylene	877-09-8	50	130
Dibutylchlorendate	1770-80-5	50	130



# ALS Technichem (HK) Pty Ltd

## ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES



### CERTIFICATE OF ANALYSIS

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Project	: AGREEMENT NO CE21_2012 (WS) DESALINATION PLANT AT TSEUNG KWAN O - FEASIBILITY STUDY	Quote number	: ----	Date Samples Received	: 27-AUG-2014
Order number	: GE/2012/24.41			Issue Date	: 19-SEP-2014
C.O.C number	: H017684			No. of samples received	: 7
Site	: ----			No. of samples analysed	: 7

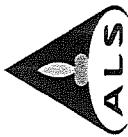
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Hong Kong Accreditation Service (HKAS) has accredited this laboratory (ALS Technichem (HK) Pty Ltd) under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories.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

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

Signatories	Position	Authorised results for
Chan Ka Yu, Karen	Assistant Manager - Organics	Organics
Tai Yuk Lun, Stephen	Senior Chemist - Food	Organics
Wong Wing, Kenneth	Manager - Metals	Inorganics

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Page Number : 2 of 12  
Client : CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT  
Work Order : HK1427994



**General Comments**

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

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
Specific comments for Work Order: **HK1427994**

Sample(s) were received in an ambient condition.

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

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

Analysis of Tributyltin in interstitial water was cancelled due to insufficient volume of interstitial water except Sample #1 SD5 0.0M-0.9M, Sample #2 SD5 0.9M-1.9M, Sample #3 SD5 1.9M-2.9M,

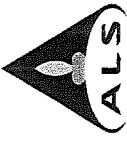
Sample #4 SD5 4.9M-5.9M; Sample #5 SD5 7.9M-8.9M and Sample #7 REFERENCE SAMPLE.

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



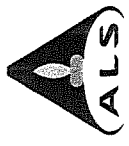
**Analytical Results**  
 Sub-Matrix: SEDIMENT

Compound	CAS Number	LOR	Client sampling date / time		Client sample ID					
			Unit	%	SD5 0.0M-0.9M [27-AUG-2014] HK1427994-001	SD5 0.9M-1.9M [27-AUG-2014] HK1427994-002	SD5 1.9M-2.9M [27-AUG-2014] HK1427994-003	SD5 4.9M-5.9M [27-AUG-2014] HK1427994-004	SD5 7.9M-8.9M [27-AUG-2014] HK1427994-005	
<b>EA/ED: Physical and Aggregate Properties</b>										
EA055: Moisture Content (dried @ 103° C)	----	0.1	%	41.7	34.6	36.9	37.5	41.8		
<b>EG: Metals and Major Cations</b>										
EG020: Arsenic	7440-38-2	1	mg/kg	4	3	4	5	8		
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	6	27	33	29	38		
EG020: Copper	7440-50-8	1	mg/kg	7	8	8	8	12		
EG020: Lead	7439-92-1	1	mg/kg	6	19	16	17	24		
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05		
EG020: Nickel	7440-02-0	1	mg/kg	4	20	26	21	28		
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	30	61	73	60	72		
<b>EP-065: PCB Single Congeners</b>										
PCB 8	34883-43-7	3	µg/kg	<3	<3	<3	<3	<3		
PCB 18	37680-65-2	3	µg/kg	<3	<3	<3	<3	<3		
PCB 28	7012-37-5	3	µg/kg	<3	<3	<3	<3	<3		
PCB 44	41464-39-5	3	µg/kg	<3	<3	<3	<3	<3		
PCB 52	35693-99-3	3	µg/kg	<3	<3	<3	<3	<3		
PCB 66	32598-10-0	3	µg/kg	<3	<3	<3	<3	<3		
PCB 77	32598-13-3	3	µg/kg	<3	<3	<3	<3	<3		
PCB 101	37680-73-2	3	µg/kg	<3	<3	<3	<3	<3		
PCB 105	32598-14-4	3	µg/kg	<3	<3	<3	<3	<3		
PCB 118	31508-00-6	3	µg/kg	<3	<3	<3	<3	<3		
PCB 126	57465-28-8	3	µg/kg	<3	<3	<3	<3	<3		
PCB 128	38380-07-3	3	µg/kg	<3	<3	<3	<3	<3		
PCB 138	35065-28-2	3	µg/kg	<3	<3	<3	<3	<3		
PCB 153	35065-27-1	3	µg/kg	<3	<3	<3	<3	<3		
PCB 169	32774-16-6	3	µg/kg	<3	<3	<3	<3	<3		
PCB 170	35065-30-6	3	µg/kg	<3	<3	<3	<3	<3		
PCB 180	35065-29-3	3	µg/kg	<3	<3	<3	<3	<3		
PCB 187	52663-68-0	3	µg/kg	<3	<3	<3	<3	<3		
Total Polychlorinated biphenyls	----	18	µg/kg	<18	<18	<18	<18	<18		
<b>EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs)</b>										
Naphthalene	9120-3	50	µg/kg	<50	<50	<50	<50	<50		
Acenaphthylene	208-96-8	50	µg/kg	<50	<50	<50	<50	<50		
Acenaphthene	83-32-9	50	µg/kg	<50	<50	<50	<50	<50		
Fluorene	86-73-7	50	µg/kg	<50	<50	<50	<50	<50		
Phenanthrene	85-018	50	µg/kg	<50	<50	<50	<50	<50		



Sub-Matrix: SEDIMENT

Compound	CAS Number	LOR	Client sampling date / time		Client sample ID					
			Unit	Unit	SD5 0.0M-0.9M [27-AUG-2014] HK1427994-001	SD5 0.9M-1.9M [27-AUG-2014] HK1427994-002	SD5 1.9M-2.9M [27-AUG-2014] HK1427994-003	SD5 4.9M-5.9M [27-AUG-2014] HK1427994-004	SD5 7.9M-8.9M [27-AUG-2014] HK1427994-005	
<b>EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs) - Continued</b>										
Anthracene	120-12-7	50	µg/kg		<50	<50	<50	<50	<50	<50
Fluoranthene	206-44-0	150	µg/kg		<150	<150	<150	<150	<150	<150
Pyrene	129-00-0	150	µg/kg		<150	<150	<150	<150	<150	<150
Benz(a)anthracene	56-55-3	150	µg/kg		<150	<150	<150	<150	<150	<150
Chrysene	218-019	150	µg/kg		<150	<150	<150	<150	<150	<150
Benzo(b)fluoranthene	205-99-2	150	µg/kg		<150	<150	<150	<150	<150	<150
Benzo(k)fluoranthene	207-08-9	150	µg/kg		<150	<150	<150	<150	<150	<150
Benzo(a)pyrene	50-32-8	150	µg/kg		<150	<150	<150	<150	<150	<150
Indeno(1,2,3-cd)pyrene	193-39-5	150	µg/kg		<150	<150	<150	<150	<150	<150
Dibenz(a,h)anthracene	53-70-3	150	µg/kg		<150	<150	<150	<150	<150	<150
Benzo(g,h,i)perylene	19124-2	150	µg/kg		<150	<150	<150	<150	<150	<150
Low M.W. PAHs	---	550	µg/kg		<550	<550	<550	<550	<550	<550
High M.W. PAHs	---	1700	µg/kg		<1700	<1700	<1700	<1700	<1700	<1700
<b>EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates</b>										
2-Fluorobiphenyl	32160-8	0.1	%		51.9	57.2	53.6	59.5	58.6	Surrogate control limits listed at end of this report.
4-Terphenyl-d14	1718-510	0.1	%		60.3	65.0	62.0	69.8	66.8	Surrogate control limits listed at end of this report.
<b>EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate</b>										
Decachlorobiphenyl	205124-3	0.1	%		50.1	64.1	64.6	68.6	70.4	Surrogate control limits listed at end of this report.



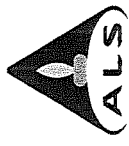
Sub-Matrix: SEDIMENT		Client sample ID		SD5	REFERENCE SAMPLE
Compound	CAS Number	LOR	Unit	10.9M-11.9M [27-AUG-2014]	[27-AUG-2014] HK1427994-007
<b>EAED: Physical and Aggregate Properties</b>					
EA055: Moisture Content (dried @ 103°C)		0.1	%	37.8	54.5
<b>EG: Metals and Major Cations</b>					
EG020: Arsenic	7440-38-2	1	mg/kg	8	9
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	0.4
EG020: Chromium	7440-47-3	1	mg/kg	43	14
EG020: Copper	7440-50-8	1	mg/kg	15	16
EG020: Lead	7439-92-1	1	mg/kg	26	14
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	<0.05
EG020: Nickel	7440-02-0	1	mg/kg	32	10
EG020: Silver	7440-22-4	0.1	mg/kg	0.1	0.2
EG020: Zinc	7440-66-6	1	mg/kg	79	72
<b>EP-065: PCB Single Congeners</b>					
PCB 8	34883-43-7	3	µg/kg	<3	<3
PCB 18	37680-65-2	3	µg/kg	<3	<3
PCB 28	7012-37-5	3	µg/kg	<3	<3
PCB 44	41464-39-5	3	µg/kg	<3	<3
PCB 52	35693-99-3	3	µg/kg	<3	<3
PCB 66	32598-10-0	3	µg/kg	<3	<3
PCB 77	32598-13-3	3	µg/kg	<3	<3
PCB 101	37680-73-2	3	µg/kg	<3	<3
PCB 105	32598-14-4	3	µg/kg	<3	<3
PCB 118	31508-00-6	3	µg/kg	<3	<3
PCB 126	57465-28-8	3	µg/kg	<3	<3
PCB 128	38380-07-3	3	µg/kg	<3	<3
PCB 138	35065-28-2	3	µg/kg	<3	<3
PCB 153	35065-27-1	3	µg/kg	<3	<3
PCB 169	32774-16-6	3	µg/kg	<3	<3
PCB 170	35065-30-6	3	µg/kg	<3	<3
PCB 180	35065-29-3	3	µg/kg	<3	<3
PCB 187	52663-66-0	3	µg/kg	<3	<3
Total Polychlorinated biphenyls		18	µg/kg	<18	<18
<b>EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs)</b>					
Naphthalene	91-20-3	50	µg/kg	<50	<50
Acenaphthylene	208-96-8	50	µg/kg	<50	<50
Acenaphthene	83-32-9	50	µg/kg	<50	<50
Fluorene	86-73-7	50	µg/kg	<50	<50
Phenanthrene	85-018	50	µg/kg	<50	<50
Anthracene	120-12-7	50	µg/kg	<50	<50



Sub-Matrix: SEDIMENT		Client sample ID		REFERENCE SAMPLE	
Compound	CAS Number	Client sampling date / time	Unit	SD5	REFERENCE SAMPLE
		LOR		[27-AUG-2014]	[27-AUG-2014]
<b>EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs) - Continued</b>					
Fluoranthene	206-44-0	150	µg/kg	<150	<150
Pyrene	129-00-0	150	µg/kg	<150	<150
Benz(a)anthracene	56-55-3	150	µg/kg	<150	<150
Chrysene	218-019	150	µg/kg	<150	<150
Benzo(b)fluoranthene	205-99-2	150	µg/kg	<150	<150
Benzo(k)fluoranthene	207-08-9	150	µg/kg	<150	<150
Benzo(a)pyrene	50-32-8	150	µg/kg	<150	<150
Indeno(1,2,3-cd)pyrene	193-39-5	150	µg/kg	<150	<150
Dibenz(a,h)anthracene	53-70-3	150	µg/kg	<150	<150
Benzo(g,h,i)perylene	191-24-2	150	µg/kg	<150	<150
Low M.W. PAHs	---	550	µg/kg	<550	<550
High M.W. PAHs	---	1700	µg/kg	<1700	<1700
<b>EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates</b>					
2-Fluorobiphenyl	321-60-8	0.1	%	52.4	59.9
4-Terphenyl-d14	1718-510	0.1	%	59.6	69.6
<b>EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate</b>					
Decachlorobiphenyl	205124-3	0.1	%	62.4	61.3

Surrogate control limits listed at end of this report.

Surrogate control limits listed at end of this report.



Sub-Matrix: INTERSTITIAL WATER

Compound	CAS Number	Client sampling date / line		Client sample ID				
		LOR	Unit	SD5	SD5			
EP-390: Triorganotins Tributyltin	56573-85-4	0.015	µg TBT /L	0.0M-0.9M [27-AUG-2014] HK1427994-001	0.9M-1.9M [27-AUG-2014] HK1427994-002	1.9M-2.9M [27-AUG-2014] HK1427994-003	4.9M-5.9M [27-AUG-2014] HK1427994-004	7.9M-8.9M [27-AUG-2014] HK1427994-005
				<0.015	<0.015	<0.015	<0.015	<0.015

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 Client : CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT  
 Work Order : HK1427994



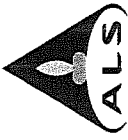
Sub-Matrix: INTERSTITIAL WATER		REFERENCE SAMPLE	
Compound	CAS Number	Client sample ID Client sampling date / time	Unit
EP-390: Triorganotins Tributyltin	56573-85-4	[27-AUG-2014]	HK1427994-007
	0.015	pg TBT / L	<0.015





**Laboratory Duplicate (DUP) Report**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Laboratory Duplicate (DUP) Report		RPD (%)	
						Original Result	Duplicate Result		
<b>EA/ED: Physical and Aggregate Properties (QC Lot: 3614723)</b>									
HK1427917-001	Anonymous	EA055: Moisture Content (dried @ 103°C)	-----	0.1	%		46.9	47.0	0.2
HK1427966-002	Anonymous	EA055: Moisture Content (dried @ 103°C)	-----	0.1	%		14.1	13.8	2.4
<b>EA/ED: Physical and Aggregate Properties (QC Lot: 3614724)</b>									
HK1428020-001	Anonymous	EA055: Moisture Content (dried @ 103°C)	-----	0.1	%		16.4	16.2	1.3
HK1428020-002	Anonymous	EA055: Moisture Content (dried @ 103°C)	-----	0.1	%		23.7	25.6	7.6
<b>EG: Metals and Major Cations (QC Lot: 3613704)</b>									
HK1427814-002	Anonymous	EG020: Mercury	7439-97-6	0.05	mg/kg		<0.05	<0.05	0.0
		EG020: Silver	7440-22-4	0.1	mg/kg		0.1	0.1	0.0
		EG020: Cadmium	7440-43-9	0.2	mg/kg		<0.2	<0.2	0.0
		EG020: Arsenic	7440-38-2	1	mg/kg		9	7	17.9
		EG020: Chromium	7440-47-3	1	mg/kg		44	37	16.7
		EG020: Copper	7440-50-8	1	mg/kg		17	15	17.4
		EG020: Lead	7439-92-1	1	mg/kg		32	27	17.8
		EG020: Nickel	7440-02-0	1	mg/kg		30	25	18.4
		EG020: Zinc	7440-66-6	1	mg/kg		94	78	17.7
HK1427917-008	Anonymous	EG020: Mercury	7439-97-6	0.05	mg/kg		0.08	0.07	0.0
		EG020: Silver	7440-22-4	0.1	mg/kg		<0.1	<0.1	0.0
		EG020: Cadmium	7440-43-9	0.2	mg/kg		<0.2	<0.2	0.0
		EG020: Arsenic	7440-38-2	1	mg/kg		13	16	18.8
		EG020: Chromium	7440-47-3	1	mg/kg		34	31	7.7
		EG020: Copper	7440-50-8	1	mg/kg		14	14	0.0
		EG020: Lead	7439-92-1	1	mg/kg		42	51	19.4
		EG020: Nickel	7440-02-0	1	mg/kg		9	10	11.3
		EG020: Zinc	7440-66-6	1	mg/kg		36	39	9.0
<b>EP-065: PCB Single Congeners (QC Lot: 3612116)</b>									
HK1427876-002	Anonymous	Total Polychlorinated biphenyls	-----	18	µg/kg		<18	<18	0.0
		PCB 8	34883-43-7	3	µg/kg		<3	<3	0.0
		PCB 18	37680-65-2	3	µg/kg		<3	<3	0.0
		PCB 28	7012-37-5	3	µg/kg		<3	<3	0.0
		PCB 44	41464-39-5	3	µg/kg		<3	<3	0.0
		PCB 52	35693-99-3	3	µg/kg		<3	<3	0.0
		PCB 66	32598-10-0	3	µg/kg		<3	<3	0.0
		PCB 77	32598-13-3	3	µg/kg		<3	<3	0.0
		PCB 101	37680-73-2	3	µg/kg		<3	<3	0.0
		PCB 105	32598-14-4	3	µg/kg		<3	<3	0.0
		PCB 118	31508-00-6	3	µg/kg		<3	<3	0.0
		PCB 126	57465-28-8	3	µg/kg		<3	<3	0.0
		PCB 128	38380-07-3	3	µg/kg		<3	<3	0.0
		PCB 138	35065-28-2	3	µg/kg		<3	<3	0.0
		PCB 153	35065-27-1	3	µg/kg		<3	<3	0.0
		PCB 169	32774-16-6	3	µg/kg		<3	<3	0.0
		PCB 170	35065-30-6	3	µg/kg		<3	<3	0.0



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 Client : CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT  
 Work Order : HK1427994

Matrix: SOIL		Laboratory Duplicate (DUP) Report		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 (%)
<b>EP-065: PCB Single Congeners (QC Lot: 3612116) - Continued</b>								
HK1427876-002	Anonymous	PCB 180	35065-29-3	3	µg/kg	<3	<3	0.0
		PCB 187	52663-68-0	3	µg/kg	<3	<3	0.0
<b>EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 3612136)</b>								
HK1427966-002	Anonymous	High M.W. PAHs		1700	µg/kg	<1700	<1700	0.0
		Naphthalene	91-20-3	500	µg/kg	<500	<500	0.0
		Acenaphthylene	208-96-8	500	µg/kg	<500	<500	0.0
		Acenaphthene	83-32-9	500	µg/kg	<500	<500	0.0
		Fluorene	86-73-7	500	µg/kg	<500	<500	0.0
		Phenanthrene	85-01-8	500	µg/kg	<500	<500	0.0
		Anthracene	120-12-7	500	µg/kg	<500	<500	0.0
		Fluoranthene	206-44-0	500	µg/kg	<500	<500	0.0
		Pyrene	129-00-0	500	µg/kg	<500	<500	0.0
		Benz(a)anthracene	56-55-3	500	µg/kg	<500	<500	0.0
		Chrysene	218-01-9	500	µg/kg	<500	<500	0.0
		Benzo(b)fluoranthene	205-99-2	500	µg/kg	<500	<500	0.0
		Benzo(k)fluoranthene	207-08-9	500	µg/kg	<500	<500	0.0
		Benzo(a)pyrene	50-32-8	500	µg/kg	<500	<500	0.0
		Indeno(1,2,3-cd)pyrene	193-39-5	500	µg/kg	<500	<500	0.0
		Dibenz(a,h)anthracene	53-70-3	500	µg/kg	<500	<500	0.0
		Benzo(g,h,i)perylene	191-24-2	500	µg/kg	<500	<500	0.0
		Low M.W. PAHs		550	µg/kg	<550	<550	0.0

Matrix: WATER		Laboratory Duplicate (DUP) Report		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 (%)
EP-390: Triorganotins (QC Lot: 3626609)								
HK1427994-001	SD5 0.0M-0.9M	Tributyltin	56573-85-4	6	ngSn/L	<6	<6	0.0

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

Matrix: SOIL		Method Blank (MB) Report				Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report			
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	LCS	DCS	Recovery Limits (%)	Control Limit
						Low	High	Value	
<b>EG: Metals and Major Cations (QC Lot: 3613704)</b>									
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	75	109	---	---
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	81	109	---	---
EG020: Chromium	7440-47-3	1	mg/kg	<1	5 mg/kg	76	118	---	---
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	79	105	---	---
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	80	104	---	---
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	0.1 mg/kg	76	112	---	---
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	79	105	---	---
EG020: Silver	7440-22-4	0.1	mg/kg	<0.1	5 mg/kg	76	106	---	---
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	76	114	---	---
<b>EP-065: PCB Single Congeners (QC Lot: 3612116)</b>									
PCB 8	34883-43-7	3	µg/kg	<3	5 µg/kg	60	126	---	---
PCB 18	37680-65-2	3	µg/kg	<3	5 µg/kg	62	131	---	---



		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
<b>EP-065: PCB Single Congeners (QC Lot: 3612116) - Continued</b>									
PCB 28	7012-37-5	3	µg/kg	<3	5 µg/kg	68	132	---	---
PCB 44	41464-39-5	3	µg/kg	<3	5 µg/kg	53	137	---	---
PCB 52	35693-99-3	3	µg/kg	<3	5 µg/kg	53	143	---	---
PCB 66	32598-10-0	3	µg/kg	<3	5 µg/kg	47	143	---	---
PCB 77	32598-13-3	3	µg/kg	<3	5 µg/kg	62	130	---	---
PCB 101	37680-73-2	3	µg/kg	<3	5 µg/kg	60	132	---	---
PCB 105	32598-14-4	3	µg/kg	<3	5 µg/kg	63	131	---	---
PCB 118	31508-00-6	3	µg/kg	<3	5 µg/kg	68	128	---	---
PCB 126	57465-28-8	3	µg/kg	<3	5 µg/kg	63	132	---	---
PCB 128	38380-07-3	3	µg/kg	<3	5 µg/kg	65	134	---	---
PCB 138	35065-28-2	3	µg/kg	<3	5 µg/kg	67	135	---	---
PCB 153	35065-27-1	3	µg/kg	<3	5 µg/kg	62	136	---	---
PCB 169	32774-16-6	3	µg/kg	<3	5 µg/kg	66	139	---	---
PCB 170	35065-30-6	3	µg/kg	<3	5 µg/kg	63	137	---	---
PCB 180	35065-29-3	3	µg/kg	<3	5 µg/kg	63	133	---	---
PCB 187	52663-68-0	3	µg/kg	<3	5 µg/kg	63	130	---	---
Total Polychlorinated biphenyls	---	18	µg/kg	<18	---	---	---	---	---
<b>EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 3612136)</b>									
Naphthalene	91-20-3	25	µg/kg	<50	25 µg/kg	63	111	---	---
Acenaphthylene	208-96-8	25	µg/kg	<50	25 µg/kg	63	111	---	---
Acenaphthene	83-32-9	25	µg/kg	<50	25 µg/kg	67	108	---	---
Fluorene	86-73-7	25	µg/kg	<50	25 µg/kg	67	110	---	---
Phenanthrene	85-01-8	25	µg/kg	<50	25 µg/kg	67	108	---	---
Anthracene	120-12-7	25	µg/kg	<50	25 µg/kg	69	113	---	---
Fluoranthene	206-44-0	25	µg/kg	<50	25 µg/kg	71	114	---	---
Pyrene	129-00-0	25	µg/kg	<50	25 µg/kg	71	114	---	---
Benz(a)anthracene	56-55-3	25	µg/kg	<50	25 µg/kg	63	114	---	---
Chrysene	218-01-9	25	µg/kg	<50	25 µg/kg	67	122	---	---
Benzo(b)fluoranthene	205-99-2	25	µg/kg	<50	25 µg/kg	59	114	---	---
Benzo(k)fluoranthene	207-08-9	25	µg/kg	<50	25 µg/kg	64	119	---	---
Benzo(a)pyrene	50-32-8	25	µg/kg	<50	25 µg/kg	89.9	117	---	---
Indeno(1,2,3-cd)pyrene	193-39-5	25	µg/kg	<50	25 µg/kg	51	115	---	---
Dibenz(a,h)anthracene	53-70-3	25	µg/kg	<50	25 µg/kg	59	114	---	---
Benzo(g,h,i)perylene	191-24-2	25	µg/kg	<50	25 µg/kg	58	120	---	---
Low M.W. PAHs	---	550	µg/kg	<550	---	---	---	---	---
High M.W. PAHs	---	1700	µg/kg	<1700	---	---	---	---	---
<b>Matrix: WATER</b>									
<b>Method Blank (MB) Report</b>									
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	LCS	DCS	Recovery Limits (%)	RPD (%)
						Low	High	Value	Control Limit
EP-390: Triorganotins (QC Lot: 3626609)	56573-85-4	5	ngSn/L	<5	2 ngSn/L	70	130	---	---
Tributyltin	---	---	---	---	---	---	---	---	---



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

Matrix: SOIL

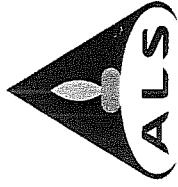
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report			RPD (%)	Control Limit	
				Spike Concentration	MS	MSD			Recovery Limits (%)
<b>EG: Metals and Major Cations (QC Lot: 3613704)</b>									
HK1427814-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	79.5	---	75	125	---
		EG020: Cadmium	7440-43-9	5 mg/kg	88.6	---	75	125	---
		EG020: Chromium	7440-47-3	5 mg/kg	# Not Determined	---	75	125	---
		EG020: Copper	7440-50-8	5 mg/kg	76.0	---	75	125	---
		EG020: Lead	7439-92-1	50 mg/kg	90.8	---	75	125	---
		EG020: Mercury	7439-97-6	0.1 mg/kg	110	---	75	125	---
		EG020: Nickel	7440-02-0	5 mg/kg	119	---	75	125	---
		EG020: Silver	7440-22-4	5 mg/kg	93.6	---	75	125	---
		EG020: Zinc	7440-66-6	5 mg/kg	# Not Determined	---	75	125	---

**Surrogate Control Limits**

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

# ALS Technichem (HK) Pty Ltd

**ALS Laboratory Group**  
ANALYTICAL CHEMISTRY & TESTING SERVICES



## CERTIFICATE OF ANALYSIS

Client	: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 10
Contact	: MR SUN NG	Contact	: Fung Lim Chee, Richard	Work Order	: HK1428012
Address	: GEOTECHNICAL PROJECTS DIVISION, GEOTECHNICAL ENGINEERING OFFICE, 23/F., KWUN TONG VIEW, 410 KWUN TONG ROAD, KOWLOON, HONG KONG	Address	: 1/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: sunng@ceedd.gov.hk	E-mail	: Richard.Fung@alsglobal.com		
Telephone	: ----	Telephone	: +852 2610 1044		
Facsimile	: ----	Facsimile	: +852 2610 2021		
Project	: AGREEMENT NO CE21_2012 (WS) DESALINATION PLANT AT TSEUNG KWAN O - FEASIBILITY STUDY	Quote number	: ----	Date Samples Received	: 28-AUG-2014
Order number	: GE/2012/24.41			Issue Date	: 19-SEP-2014
C.O.C. number	: H017685			No. of samples received	: 3
Site	: ----			No. of samples analysed	: 3

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

Signatories	Position	Authorised results for
Chan Ka Yu, Karen	Assistant Manager - Organics	Organics
Tai Yuk Lun, Stephen	Senior Chemist - Food	Organics
Wong Wing, Kenneth	Manager - Metals	Inorganics

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Page Number : 2 of 10  
Client : CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT  
Work Order : HK1428012

**General Comments**

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

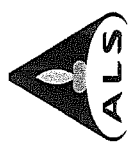
Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society. Specific comments for Work Order: **HK1428012**

Sample(s) were received in an ambient condition.

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

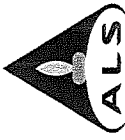
Sediment sample(s) as received, digested by in-house method E-ASTM D3974-09 based on ASTM D3974-09, prior to determination of metals.

Total PCBs results (Method: E:P065) are not HOKLAS accredited. The values are calculated from summation of the 18 PCB congeners, based on Limit of Detection (LOD) of 1 µg/kg.



**Analytical Results**  
 Sub-Matrix: SEDIMENT

Compound	CAS Number	LOR	Client sample ID		GS5	GS6	GS7
			Client sampling date / time	Unit			
<b>EA/ED: Physical and Aggregate Properties</b>							
EA055: Moisture Content (dried @ 103°C)	---	0.1	%	56.7	58.4	57.1	
<b>EG: Metals and Major Cations</b>							
EG020: Arsenic	7440-38-2	1	mg/kg	7	6	7	
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	<0.2	
EG020: Chromium	7440-47-3	1	mg/kg	43	38	40	
EG020: Copper	7440-50-8	1	mg/kg	44	37	38	
EG020: Lead	7439-92-1	1	mg/kg	37	33	36	
EG020: Mercury	7439-97-6	0.05	mg/kg	0.11	0.13	0.16	
EG020: Nickel	7440-02-0	1	mg/kg	25	23	24	
EG020: Silver	7440-22-4	0.1	mg/kg	0.5	0.4	0.5	
EG020: Zinc	7440-66-6	1	mg/kg	106	96	101	
<b>EP-065: PCB Single Congeners</b>							
PCB 8	34883-43-7	3	µg/kg	<3	<3	<3	
PCB 18	37680-65-2	3	µg/kg	<3	<3	<3	
PCB 28	7012-37-5	3	µg/kg	<3	<3	<3	
PCB 44	41464-38-5	3	µg/kg	<3	<3	<3	
PCB 52	35683-99-3	3	µg/kg	<3	<3	<3	
PCB 66	32598-10-0	3	µg/kg	<3	<3	<3	
PCB 77	32598-13-3	3	µg/kg	<3	<3	<3	
PCB 101	37680-73-2	3	µg/kg	<3	<3	<3	
PCB 105	32598-14-4	3	µg/kg	<3	<3	<3	
PCB 118	31508-00-6	3	µg/kg	<3	<3	<3	
PCB 126	57465-28-8	3	µg/kg	<3	<3	<3	
PCB 128	38380-07-3	3	µg/kg	<3	<3	<3	
PCB 138	35065-28-2	3	µg/kg	<3	<3	<3	
PCB 153	35065-27-1	3	µg/kg	<3	<3	<3	
PCB 169	32774-16-6	3	µg/kg	<3	<3	<3	
PCB 170	35065-30-6	3	µg/kg	<3	<3	<3	
PCB 180	35065-29-3	3	µg/kg	<3	<3	<3	
PCB 187	52663-68-0	3	µg/kg	<3	<3	<3	
Total Polychlorinated biphenyls	---	18	µg/kg	<18	<18	<18	
<b>EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs)</b>							
Naphthalene	9120-3	50	µg/kg	<50	<50	<50	
Acenaphthylene	208-96-8	50	µg/kg	<50	<50	<50	
Acenaphthene	83-32-9	50	µg/kg	<50	<50	<50	
Fluorene	86-73-7	50	µg/kg	<50	<50	<50	
Phenanthrene	85-01-8	50	µg/kg	<50	<50	<50	
Anthracene	120-12-7	50	µg/kg	<50	<50	<50	



Sub-Matrix: SEDIMENT		Client sample ID		Client sampling date / time		Client sampling date / time		Client sampling date / time	
Compound	CAS Number	LOI	Unit	GS5	GS6	GS7	GS5	GS6	GS7
<b>EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs) - Continued</b>									
Fluoranthene	206-44-0	150	µg/kg	<150	<150	<150	[28-AUG-2014] HK1428012-001	[28-AUG-2014] HK1428012-002	[28-AUG-2014] HK1428012-003
Pyrene	129-00-0	150	µg/kg	<150	<150	<150			
Benz(a)anthracene	56-55-3	150	µg/kg	<150	<150	<150			
Chrysene	218-019	150	µg/kg	<150	<150	<150			
Benzo(b)fluoranthene	205-99-2	150	µg/kg	<150	<150	<150			
Benzo(k)fluoranthene	207-08-9	150	µg/kg	<150	<150	<150			
Benzo(a)pyrene	50-32-8	150	µg/kg	<150	<150	<150			
Indeno(1,2,3-cd)pyrene	193-39-5	150	µg/kg	<150	<150	<150			
Dibenz(a,h)anthracene	53-70-3	150	µg/kg	<150	<150	<150			
Benzo(g,h,i)perylene	191-24-2	150	µg/kg	<150	<150	<150			
Low M.W. PAHs	---	550	µg/kg	<550	<550	<550			
High M.W. PAHs	---	1700	µg/kg	<1700	<1700	<1700			
<b>EP-076S: Polycyclic Aromatics Hydrocarbons (PAHs) Surrogates</b>									
2-Fluorobiphenyl	32160-8	0.1	%	58.7	62.1	60.1			
4-Terphenyl-d14	1718-510	0.1	%	70.7	73.2	72.1			
<b>EP-065S: PCB Congeners and Organochlorine Pesticides Surrogate</b>									
Decachlorobiphenyl	2051-24-3	0.1	%	68.2	70.6	73.6			

Surrogate control limits listed at end of this report.

Surrogate control limits listed at end of this report.



Sub-Matrix: INTERSTITIAL WATER

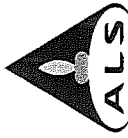
Compound

EP-390: Triorganotins

Tributyltin

CAS Number	Client sampling date / time		LOR	Unit	GS5	GS6	GS7
	Client sample ID	Client sampling date / time					
56573-85-4	0.015	[28-AUG-2014]	0.015	µg TBT /L	[28-AUG-2014] HK1428012-001	[28-AUG-2014] HK1428012-002	[28-AUG-2014] HK1428012-003
					<0.015	<0.015	<0.015





**Laboratory Duplicate (DUP) Report**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Laboratory Duplicate (DUP) Report		RPD (%)
						Original Result	Duplicate Result	
<b>EAIED: Physical and Aggregate Properties (QC Lot: 3614724)</b>								
HK1428020-001	Anonymous	EA055: Moisture Content (dried @ 103°C)	---	0.1	%	16.4	16.2	1.3
HK1428020-002	Anonymous	EA055: Moisture Content (dried @ 103°C)	---	0.1	%	23.7	25.6	7.6
<b>EG: Metals and Major Cations (QC Lot: 3613704)</b>								
HK1427814-002	Anonymous	EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	<0.05	0.0
		EG020: Silver	7440-22-4	0.1	mg/kg	0.1	0.1	0.0
		EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.0
		EG020: Arsenic	7440-38-2	1	mg/kg	9	7	17.9
		EG020: Chromium	7440-47-3	1	mg/kg	44	37	16.7
		EG020: Copper	7440-50-8	1	mg/kg	17	15	17.4
		EG020: Lead	7439-92-1	1	mg/kg	32	27	17.8
		EG020: Nickel	7440-02-0	1	mg/kg	30	25	18.4
		EG020: Zinc	7440-66-6	1	mg/kg	94	78	17.7
HK1427917-008	Anonymous	EG020: Mercury	7439-97-6	0.05	mg/kg	0.08	0.07	0.0
		EG020: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.0
		EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.0
		EG020: Arsenic	7440-38-2	1	mg/kg	13	16	18.8
		EG020: Chromium	7440-47-3	1	mg/kg	34	31	7.7
		EG020: Copper	7440-50-8	1	mg/kg	14	14	0.0
		EG020: Lead	7439-92-1	1	mg/kg	42	51	19.4
		EG020: Nickel	7440-02-0	1	mg/kg	9	10	11.3
		EG020: Zinc	7440-66-6	1	mg/kg	36	39	9.0
<b>EG: Metals and Major Cations (QC Lot: 3613705)</b>								
HK1428020-001	Anonymous	EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	<0.05	0.0
		EG020: Silver	7440-22-4	0.1	mg/kg	<0.1	0.1	0.0
		EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.0
		EG020: Arsenic	7440-38-2	1	mg/kg	1	1	0.0
		EG020: Chromium	7440-47-3	1	mg/kg	3	3	0.0
		EG020: Copper	7440-50-8	1	mg/kg	11	13	18.3
		EG020: Lead	7439-92-1	1	mg/kg	74	77	4.2
		EG020: Nickel	7440-02-0	1	mg/kg	2	2	0.0
		EG020: Zinc	7440-66-6	1	mg/kg	233	206	12.3
<b>EP-065: PCB Single Congeners (QC Lot: 3612116)</b>								
HK1427876-002	Anonymous	Total Polychlorinated biphenyls	---	18	µg/kg	<18	<18	0.0
		PCB 8	34883-43-7	3	µg/kg	<3	<3	0.0
		PCB 18	37680-65-2	3	µg/kg	<3	<3	0.0
		PCB 28	7012-37-5	3	µg/kg	<3	<3	0.0
		PCB 44	41464-39-5	3	µg/kg	<3	<3	0.0
		PCB 52	35693-99-3	3	µg/kg	<3	<3	0.0
		PCB 66	32598-10-0	3	µg/kg	<3	<3	0.0
		PCB 77	32598-13-3	3	µg/kg	<3	<3	0.0
		PCB 101	37680-73-2	3	µg/kg	<3	<3	0.0
		PCB 105	32598-14-4	3	µg/kg	<3	<3	0.0



Matrix: SOIL		Laboratory sample ID		Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
<b>EP-065: PCB Single Congeners (QC Lot: 3612116) - Continued</b>											
Anonymous											
HK1427876-002	PCB 118	31508-00-6	3	µg/kg	<3	<3	<3	0.0			
	PCB 126	57465-28-8	3	µg/kg	<3	<3	<3	0.0			
	PCB 128	38380-07-3	3	µg/kg	<3	<3	<3	0.0			
	PCB 138	35065-28-2	3	µg/kg	<3	<3	<3	0.0			
	PCB 153	35065-27-1	3	µg/kg	<3	<3	<3	0.0			
	PCB 169	32774-16-6	3	µg/kg	<3	<3	<3	0.0			
	PCB 170	35065-30-6	3	µg/kg	<3	<3	<3	0.0			
	PCB 180	35065-29-3	3	µg/kg	<3	<3	<3	0.0			
	PCB 187	52663-68-0	3	µg/kg	<3	<3	<3	0.0			
<b>EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 3612136)</b>											
Anonymous											
HK1427966-002	High M.W. PAHs		1700	µg/kg	<1700	<1700	<1700	0.0			
	Naphthalene	91-20-3	500	µg/kg	<500	<500	<500	0.0			
	Acenaphthylene	208-96-8	500	µg/kg	<500	<500	<500	0.0			
	Acenaphthene	83-32-9	500	µg/kg	<500	<500	<500	0.0			
	Fluorene	86-73-7	500	µg/kg	<500	<500	<500	0.0			
	Phenanthrene	85-01-8	500	µg/kg	<500	<500	<500	0.0			
	Anthracene	120-12-7	500	µg/kg	<500	<500	<500	0.0			
	Fluoranthene	206-44-0	500	µg/kg	<500	<500	<500	0.0			
	Pyrene	129-00-0	500	µg/kg	<500	<500	<500	0.0			
	Benz(a)anthracene	56-55-3	500	µg/kg	<500	<500	<500	0.0			
	Chrysene	218-01-9	500	µg/kg	<500	<500	<500	0.0			
	Benzo(b)fluoranthene	205-99-2	500	µg/kg	<500	<500	<500	0.0			
	Benzo(k)fluoranthene	207-08-9	500	µg/kg	<500	<500	<500	0.0			
	Benzo(a)pyrene	50-32-8	500	µg/kg	<500	<500	<500	0.0			
	Indeno(1,2,3-cd)pyrene	193-39-5	500	µg/kg	<500	<500	<500	0.0			
	Dibenz(a,h)anthracene	53-70-3	500	µg/kg	<500	<500	<500	0.0			
	Benzo(g,h,i)perylene	191-24-2	500	µg/kg	<500	<500	<500	0.0			
	Low M.W. PAHs		550	µg/kg	<550	<550	<550	0.0			

Matrix: WATER		Laboratory sample ID		Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
<b>EP-390: Triorganotins (QC Lot: 3626609)</b>											
Anonymous											
HK1427994-001	Tributyltin	56573-85-4	6	ngSn/L	<6	<6	<6	0.0			

<b>Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report</b>											
Matrix: SOIL											
Method Blank (MB) Report											
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	LCS	DCS	Recovery Limits (%)	Low	High	Value
<b>EG: Metals and Major Cations (QC Lot: 3613704)</b>											
Anonymous											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	94.6	---	75-109	75	109	---
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	94.5	---	81-109	81	109	---
EG020: Chromium	7440-47-3	1	mg/kg	<1	5 mg/kg	103	---	76-118	76	118	---
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	96.6	---	79-105	79	105	---
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	88.4	---	80-104	80	104	---



Matrix: SOIL	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 (%)	Value	RPD (%)	Control Limit
<b>Method: Compound</b>											
<b>EG: Metals and Major Cations (QC Lot: 3613704) - Continued</b>											
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	0.1 mg/kg	105	---	76	112	---	---
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	93.3	---	79	105	---	---
EG020: Silver	7440-22-4	0.1	mg/kg	<0.1	5 mg/kg	103	---	76	106	---	---
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	107	---	76	114	---	---
<b>EG: Metals and Major Cations (QC Lot: 3613705)</b>											
EG020: Arsenic	7440-38-2	1	mg/kg	<1	5 mg/kg	94.5	---	75	109	---	---
EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	5 mg/kg	96.5	---	81	109	---	---
EG020: Chromium	7440-47-3	1	mg/kg	<1	5 mg/kg	102	---	76	118	---	---
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	96.6	---	79	105	---	---
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	90.7	---	80	104	---	---
EG020: Mercury	7439-97-6	0.05	mg/kg	<0.05	0.1 mg/kg	93.6	---	76	112	---	---
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	94.7	---	79	105	---	---
EG020: Silver	7440-22-4	0.1	mg/kg	<0.1	5 mg/kg	102	---	76	106	---	---
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	103	---	76	114	---	---
<b>EP-065: PCB Single Congeners (QC Lot: 3612116)</b>											
PCB 8	34883-43-7	3	µg/kg	<3	5 µg/kg	98.7	---	60	126	---	---
PCB 18	37680-65-2	3	µg/kg	<3	5 µg/kg	92.1	---	62	131	---	---
PCB 28	7012-37-5	3	µg/kg	<3	5 µg/kg	95.4	---	68	132	---	---
PCB 44	41464-39-5	3	µg/kg	<3	5 µg/kg	96.8	---	53	137	---	---
PCB 52	35693-99-3	3	µg/kg	<3	5 µg/kg	97.2	---	53	143	---	---
PCB 66	32598-10-0	3	µg/kg	<3	5 µg/kg	95.2	---	47	143	---	---
PCB 77	32598-13-3	3	µg/kg	<3	5 µg/kg	89.7	---	62	130	---	---
PCB 101	37680-73-2	3	µg/kg	<3	5 µg/kg	92.4	---	60	132	---	---
PCB 105	32598-14-4	3	µg/kg	<3	5 µg/kg	90.1	---	63	131	---	---
PCB 118	31508-00-6	3	µg/kg	<3	5 µg/kg	90.0	---	68	128	---	---
PCB 126	57465-28-8	3	µg/kg	<3	5 µg/kg	90.0	---	63	132	---	---
PCB 128	38380-07-3	3	µg/kg	<3	5 µg/kg	95.7	---	65	134	---	---
PCB 138	35065-28-2	3	µg/kg	<3	5 µg/kg	89.8	---	67	135	---	---
PCB 153	35065-27-1	3	µg/kg	<3	5 µg/kg	92.9	---	62	136	---	---
PCB 169	32774-16-6	3	µg/kg	<3	5 µg/kg	94.1	---	66	139	---	---
PCB 170	35065-30-6	3	µg/kg	<3	5 µg/kg	99.6	---	63	137	---	---
PCB 180	35065-29-3	3	µg/kg	<3	5 µg/kg	101	---	63	133	---	---
PCB 187	52663-68-0	3	µg/kg	<3	5 µg/kg	94.8	---	63	130	---	---
Total Polychlorinated biphenyls	---	18	µg/kg	<18	---	---	---	---	---	---	---
<b>EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 3612136)</b>											
Naphthalene	91-20-3	25	µg/kg	<50	25 µg/kg	82.7	---	63	111	---	---
Acenaphthylene	208-96-8	25	µg/kg	<50	25 µg/kg	76.6	---	63	111	---	---
Acenaphthene	83-32-9	25	µg/kg	<50	25 µg/kg	84.5	---	67	108	---	---
Fluorene	86-73-7	25	µg/kg	<50	25 µg/kg	84.8	---	67	110	---	---
Phenanthrene	85-01-8	25	µg/kg	<50	25 µg/kg	81.3	---	67	108	---	---
Anthracene	120-12-7	25	µg/kg	<50	25 µg/kg	80.0	---	69	113	---	---
Fluoranthene	206-44-0	25	µg/kg	<50	25 µg/kg	87.8	---	71	114	---	---
Pyrene	129-00-0	25	µg/kg	<50	25 µg/kg	87.6	---	71	114	---	---



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 (%)	Low	High	Value	RPD (%)	Control Limit
<b>EP-076A: Polycyclic Aromatic Hydrocarbons (PAHs) (QC Lot: 3612136) - Continued</b>														
Benz(a)anthracene	56-55-3	25	µg/kg	<50	25 µg/kg	93.2	---	---	63	114	---	---	---	---
Chrysene	218-01-9	25	µg/kg	<50	25 µg/kg	107	---	---	67	122	---	---	---	---
Benzo(b)fluoranthene	205-99-2	25	µg/kg	<50	25 µg/kg	100	---	---	59	114	---	---	---	---
Benzo(k)fluoranthene	207-08-9	25	µg/kg	<50	25 µg/kg	86.4	---	---	64	119	---	---	---	---
Benzo(a)pyrene	50-32-8	25	µg/kg	<50	25 µg/kg	89.9	---	---	58	117	---	---	---	---
Indeno(1,2,3-cd)pyrene	193-39-5	25	µg/kg	<50	25 µg/kg	90.0	---	---	51	115	---	---	---	---
Dibenz(a,h)anthracene	53-70-3	25	µg/kg	<50	25 µg/kg	105	---	---	59	114	---	---	---	---
Benzo(g,h,i)perylene	191-24-2	25	µg/kg	<50	25 µg/kg	93.8	---	---	58	120	---	---	---	---
Low M.W. PAHs	---	550	µg/kg	<550	---	---	---	---	---	---	---	---	---	---
High M.W. PAHs	---	1700	µg/kg	<1700	---	---	---	---	---	---	---	---	---	---
<b>Matrix: WATER</b>														
<b>Method Blank (MB) Report</b>														
<b>Method: Compound</b>														
<b>EP-390: Triorganotins (QC Lot: 3626609)</b>														
Tributyltin	56573-85-4	5	ngSn/L	<5	2 ngSn/L	118	---	---	70	130	---	---	---	---



Page Number : 10 of 10  
 Client : CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT  
 Work Order : HK1428012

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

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration		Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report			RPD (%)	Control Limit
				MS	MSD	Recovery Limits (%)	Value	MSD		
<b>EG: Metals and Major Cations (QC Lot: 3613704)</b>										
HK1427814-001	Anonymous	EG020: Arsenic	7440-38-2	5 mg/kg	79.5	---	75	125	---	---
		EG020: Cadmium	7440-43-9	5 mg/kg	88.6	---	75	125	---	---
		EG020: Chromium	7440-47-3	5 mg/kg	# Not Determined	---	75	125	---	---
		EG020: Copper	7440-50-8	5 mg/kg	76.0	---	75	125	---	---
		EG020: Lead	7439-92-1	50 mg/kg	90.8	---	75	125	---	---
		EG020: Mercury	7439-97-6	0.1 mg/kg	110	---	75	125	---	---
		EG020: Nickel	7440-02-0	5 mg/kg	119	---	75	125	---	---
		EG020: Silver	7440-22-4	5 mg/kg	93.6	---	75	125	---	---
		EG020: Zinc	7440-66-6	5 mg/kg	# Not Determined	---	75	125	---	---
<b>EG: Metals and Major Cations (QC Lot: 3613705)</b>										
HK1428012-003	GS7	EG020: Arsenic	7440-38-2	5 mg/kg	85.4	---	75	125	---	---
		EG020: Cadmium	7440-43-9	5 mg/kg	92.5	---	75	125	---	---
		EG020: Chromium	7440-47-3	5 mg/kg	90.4	---	75	125	---	---
		EG020: Copper	7440-50-8	5 mg/kg	81.2	---	75	125	---	---
		EG020: Lead	7439-92-1	50 mg/kg	95.3	---	75	125	---	---
		EG020: Mercury	7439-97-6	0.1 mg/kg	80.2	---	75	125	---	---
		EG020: Nickel	7440-02-0	5 mg/kg	80.5	---	75	125	---	---
		EG020: Silver	7440-22-4	5 mg/kg	95.5	---	75	125	---	---
		EG020: Zinc	7440-66-6	5 mg/kg	# Not Determined	---	75	125	---	---

**Surrogate Control Limits**

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



## Section 3

# Chain of Custody (COC) Form



# CHAIN OF CUSTODY DOCUMENTATION

H 017685



ALS Laboratory Group

CLIENT: CCD

ADDRESS/OFFICE: Ng Kwok Kin

PROJECT MANAGER (PM): Ng Kwok Kin

PROJECT ID: 5002013/37.11

SITE: Tik Cham Chan

EMAIL REPORT TO: grab

EMAIL INVOICE TO: (if different to report) 88647640

PHONE: 88647640

ANALYSIS REQUIRED INCLUDING SUITES (note - suite codes must be listed to attract suite prices)

ALS ID	SAMPLE INFORMATION (note: S = Soil, W = Water)		CONTAINER INFORMATION		RECEIVED BY	METHOD OF SHIPMENT
	SAMPLE ID	MATRIX	DATE	Time		
655	28/8/2014	Grab (10L)	2		Metals	Metals
656	28/8/2014	Grab (10L)	2		Metals	Metals
657	28/8/2014	Grab (10L)	2		Metals	Metals
658		Water Sample	1		Metals	Metals
659		Water Sample	1		Metals	Metals
657		Water Sample	1		Metals	Metals

RESULTS REQUIRED (Date): 28/8/2014

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate): Yes

Intact: Yes

SAMPLE TEMPERATURE: 17.00

CHELLED: Yes

COMMENTS/SPECIAL HANDLING / STORAGE OR DISPOSAL:

Notes: e.g. Highly contaminated samples  
e.g. "High PAHs expected"  
Extra volume for QC or trace LORs etc.

RECEIVED BY: Ketson

RELINQUISHED BY: Ng Kwok Kin

Name: Ketson

Name: Ng Kwok Kin

Of: ALS HK

Date: 28-Aug-2014

Date: 28-Aug-2014

Time: 17:00

Time: 17:00

Transport Co:

Con' Note No:

Telephone: +852 2810 1044

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

# CHAIN OF CUSTODY DOCUMENTATION

H 017684



ALS Laboratory Group

CLIENT: CPD

ADDRESS / OFFICE: AS Krok Kwi

PROJECT ID: 86/2013/37.11

SITE: At Cham Chau

SAMPLER: VC100

MOBILE: 98647640

PHONE: \_\_\_\_\_

EMAIL REPORT TO: \_\_\_\_\_

EMAIL INVOICE TO: (if different to report) \_\_\_\_\_

QUOTE NO.: \_\_\_\_\_

RESULTS REQUIRED (Date): \_\_\_\_\_

ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

ALS ID	SAMPLE INFORMATION (note: S = Soil, W=Water)		CONTAINER INFORMATION		RECEIVED BY	METHODOF SHIPMENT
	SAMPLE ID	MATRIX	DATE	Time		
1	SDS 0.0m to 0.9m		27/8/2014		VC100	
2	0.9m to 1.9m					
3	1.9m to 2.9m					
4	2.9m to 3.9m					
5	3.9m to 4.9m					
6	4.9m to 5.9m					
7	5.9m to 6.9m					
8	6.9m to 7.9m					
9	7.9m to 8.9m					
10	8.9m to 9.9m					
11	9.9m to 10.9m					
12	10.9m to 11.9m					
13	11.9m to 12.9m					
14	12.9m to 13.9m					
15	13.9m to 14.9m					
16	14.9m to 15.9m					
17	15.9m to 16.9m					
18	16.9m to 17.9m					
19	17.9m to 18.9m					
20	18.9m to 19.9m					
21	19.9m to 20.9m					
22	20.9m to 21.9m					
23	21.9m to 22.9m					
24	22.9m to 23.9m					
25	23.9m to 24.9m					
26	24.9m to 25.9m					
27	25.9m to 26.9m					
28	26.9m to 27.9m					
29	27.9m to 28.9m					
30	28.9m to 29.9m					
31	29.9m to 30.9m					
32	30.9m to 31.9m					
33	31.9m to 32.9m					
34	32.9m to 33.9m					
35	33.9m to 34.9m					
36	34.9m to 35.9m					
37	35.9m to 36.9m					
38	36.9m to 37.9m					
39	37.9m to 38.9m					
40	38.9m to 39.9m					
41	39.9m to 40.9m					
42	40.9m to 41.9m					
43	41.9m to 42.9m					
44	42.9m to 43.9m					
45	43.9m to 44.9m					
46	44.9m to 45.9m					
47	45.9m to 46.9m					
48	46.9m to 47.9m					
49	47.9m to 48.9m					
50	48.9m to 49.9m					
51	49.9m to 50.9m					
52	50.9m to 51.9m					
53	51.9m to 52.9m					
54	52.9m to 53.9m					
55	53.9m to 54.9m					
56	54.9m to 55.9m					
57	55.9m to 56.9m					
58	56.9m to 57.9m					
59	57.9m to 58.9m					
60	58.9m to 59.9m					
61	59.9m to 60.9m					
62	60.9m to 61.9m					
63	61.9m to 62.9m					
64	62.9m to 63.9m					
65	63.9m to 64.9m					
66	64.9m to 65.9m					
67	65.9m to 66.9m					
68	66.9m to 67.9m					
69	67.9m to 68.9m					
70	68.9m to 69.9m					
71	69.9m to 70.9m					
72	70.9m to 71.9m					
73	71.9m to 72.9m					
74	72.9m to 73.9m					
75	73.9m to 74.9m					
76	74.9m to 75.9m					
77	75.9m to 76.9m					
78	76.9m to 77.9m					
79	77.9m to 78.9m					
80	78.9m to 79.9m					
81	79.9m to 80.9m					
82	80.9m to 81.9m					
83	81.9m to 82.9m					
84	82.9m to 83.9m					
85	83.9m to 84.9m					
86	84.9m to 85.9m					
87	85.9m to 86.9m					
88	86.9m to 87.9m					
89	87.9m to 88.9m					
90	88.9m to 89.9m					
91	89.9m to 90.9m					
92	90.9m to 91.9m					
93	91.9m to 92.9m					
94	92.9m to 93.9m					
95	93.9m to 94.9m					
96	94.9m to 95.9m					
97	95.9m to 96.9m					
98	96.9m to 97.9m					
99	97.9m to 98.9m					
100	98.9m to 99.9m					

RELINQUISHED BY: Ho Tak KA Date: 27/8/2014 Time: \_\_\_\_\_

RECEIVED BY: Wai Yung Date: 27/8/14 Time: \_\_\_\_\_

NAME: Garron Of: \_\_\_\_\_

NAME: \_\_\_\_\_ Of: \_\_\_\_\_

NAME: \_\_\_\_\_ Of: \_\_\_\_\_

NAME: \_\_\_\_\_ Of: \_\_\_\_\_

CON' NOTE NO: \_\_\_\_\_

TRANSPORT CO: \_\_\_\_\_

Notes: e.g. Highly contaminated samples  
e.g. "High PAHs expected"  
Extra volume for QC or trace LORs etc.

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved;  
V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass;  
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.





# CHAIN OF CUSTODY DOCUMENTATION

H 017685



ALS Laboratory Group

CLIENT: GEDD  
 ADDRESS/OFFICE:  
 PROJECT MANAGER (PM): Ms Kwok Kya  
 PROJECT ID: GG/2013/37.11  
 SITE: Tit Cham Cham P.O. NO.:  
 RESULTS REQUIRED (Date): QUOTE NO.:

SAMPLER: Grab  
 MOBILE: 98647740  
 PHONE:  
 EMAIL REPORT TO:  
 EMAIL INVOICE TO: (if different to report)

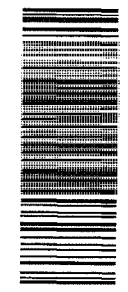
ANALYSIS REQUIRED INCLUDING SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY  
 COOLER SEAL (circle appropriate)  
 Intact: Yes  No   
 SAMPLE TEMPERATURE CHILLED:  No

Notes: e.g. Highly contaminated samples e.g. "High PAHs expected" Extra volume for QC or trace LORs etc.

ALS ID	SAMPLE INFORMATION (note: S = Soil, W=Water)			CONTAINER INFORMATION		Metals	Metalloid	MMW PAHs	HMW PAHs	Total PCBs	TBT	Chlorinated pesticides	Ammonia	Nitrate	Nitrite	Total phosphorus	Reactive phosphorus
	MATRIX	DATE	Time	Type / Code	Total bottles												
1	G55	28/8/2014		Grab (10L)	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2	G56			Grab (10L)	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3	G57			Grab (10L)	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4	G55			Water Sample	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
5	G56			Water Sample	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
6	G57			Water Sample	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

ALS Technichem HK Pty Ltd  
 Work Order  
**HK1428015**



Telephone : + 852 2610 1044

RELINQUISHED BY: HS Lau RA Date: 28/8/2014 Time: 17:00  
 RECEIVED BY: Ketson Name: ALS HK Date: 28-Aug-2014 Time: 17:00  
 Con' Note No:  
 Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved;  
 V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag.

# CHAIN OF CUSTODY DOCUMENTATION

H 017684



ALS Laboratory Group

CLIENT: CPD  
 ADDRESS / OFFICE: Ng Knock Kw  
 PROJECT MANAGER (PM): 8612013/37.11  
 PROJECT ID: At Cham Chau  
 P.O. NO.:  
 SITE: At Cham Chau  
 QUOTE NO.:  
 RESULTS REQUIRED (Date):  
 EMAIL REPORT TO:  
 EMAIL INVOICE TO: (if different to report)

ALS ID	SAMPLE INFORMATION (note: S = Soil, W=Water)			CONTAINER INFORMATION		ANALYSIS REQUIRED INCLUDING SUITES (note - suite codes must be listed to attract suite prices)														
	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	Metals	Metalloid	LMW PAHS	HMW PAHS	Total PCBs	TS	Chlorinated pesticides	Ammonia	TRN	Nitrate	Nitrite	Total Phosphorus	Reactive Phosphorus	
1	SDS 0.0m to 0.9m		27/8/2014		VC100		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2	0.1m to 0.9m						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3	1.1m to 2.1m						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4	4.1m to 5.1m						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
5	5.1m to 8.9m						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
6	7.1m to 11.1m						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
7	SDS Water Sample (BLANK)				Water Sample	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
8	Reference Sample				Grab	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
9	Reference Sample				Water Sample	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: e.g. Highly contaminated samples  
 e.g. "High PAHs expected"  
 Extra volume for QC or trace LORs etc.

ALS Technichem HK Pty Ltd  
 Work Order  
**HK1428008**



Telephone : +852 2610 1044

RELINQUISHED BY: Ho Tak Ka Date: 27/8/2014  
 Name: Ho Tak Ka Of: Gamm-on  
 RECEIVED BY: Wai Yung Date: 28/8/14  
 Name: Wai Yung Of: ALS  
 METHOD OF SHIPMENT:  
 Con' Note No:  
 Transport Co:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved;  
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 YELLOW - CUSTOMER COPY  
 PINK - BOOK COPY

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