



**CMA Testing
and Certification
Laboratories**

廠商會檢定中心

**Term Contract for Provision of Sampling and Analyzing of
Wastewater and Sludge for Various Sewage Treatment Facilities in
Urban Area, Lantau and Outlying Islands to the
Drainage Services Department**

Contract No. : DE/2016/12

Applicant : DRAINAGE SERVICES DEPARTMENT
SEWAGE SERVICES BRANCH
HARBOUR AREA TREATMENT SCHEME DIVISION

Address : 5/F., WESTERN MAGISTRACY,
2A, POK FU LAM ROAD, HONG KONG


Application Number : LV023396(1)

Report Number : AV0051581(9)

Report Issued Date : 05 Sep 2017

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____


Lau Yan Kin
Senior Manager
Environmental Division

CMA Industrial Development Foundation Limited

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Report No.: AV0051581(9)

Term Contract for Provision of Sampling and Analyzing of Wastewater and Sludge Samples for Various and Sludge Samples for Various Sewage Treatment Facilities in Urban Area, Lantau and Outlying Islands to the Drainage Services Department

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Report No.: AV0051581(9)

Term Contract for Provision of Sampling and Analyzing of Wastewater
and Sludge Samples for Various Sewage Treatment Facilities in Urban Area, Lantau and Outlying Islands to
the Drainage Services Department

EXECUTIVE SUMMARY

1. This is the water quality monitoring report prepared by CMA Testing and Certification Laboratory (CMA Testing) for Contract No. DE/2016/12 “Term Contract for Provision of Sampling and analysing of Wastewater and Sludge Samples for Various Sewage Treatment Facilities in Urban Area, Lantau and Outlying Islands to the Drainage Services Department (2017-2019)”. This report documented the results and findings of Operation Phase Environmental Monitoring works conducted for Marine Water Quality Monitoring (MWQM) of Project in July 2017.
2. In accordance with the Final EM&A Manual, environmental monitoring has been conducted in the reporting month with a Quarterly Basis for various parameters as summarized in **Table I**.

Table I Summary Table for Environmental Monitoring Works Conducted in the Reporting Month

Monitoring Parameters	Monitoring Date	Laboratory Testing Parameters
Marine Water Quality	24 July 2017	E.coli, Total Residual Chlorine (TRC), Chlorination by-products (CBPs) and Contaminants of Concern (COCs)



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and Sludge Samples for Various Sewage Treatment Facilities in Urban Area, Lantau and Outlying Islands to
the Drainage Services Department

1. INTRODUCTION

- 1.1. CMA Testing was commissioned by Drainage Services Department (DSD) to undertake the operation phase environmental monitoring for Advance Disinfection Facilities (ADF) at Stonecutters Island Sewage Treatment Works (SCISTW) (thereafter called the “the Services”).
- 1.2. The operation phase monitoring, which include effluent quality monitoring, marine water quality monitoring and emergency discharge monitoring, is to monitor the effluent and marine water quality impact of ADF during its operation phase.
- 1.3. This is the water quality monitoring report prepared by CMA Testing that documented the results and findings of Operation Phase Water Quality Monitoring works conducted for Marine Water Quality Monitoring (MWQM) of Project on 24 Jul 2017.



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2. MARINE WATER QUALITY MONITORING

Monitoring Requirements

- 2.1. Monitoring was taken at three water depths, namely, 1m below water surface, mid-depth and 1m above sea bed, except where the water depth is less than 6m, in which case the mid-depth station may be omitted. If the water depth be less than 3m, only the mid-depth station will be monitored.
- 2.2. Six samples (replicates) at each monitoring stations were collected by collecting the same amount of water sample at each depth.
- 2.3. One grab sample was collected at each water depth for E.coli analysis.

Monitoring Locations

- 2.4. Six monitoring stations were designated for the marine water quality monitoring programme. The locations are summarized in Table 3.1 and shown on **Figure 2**.

Table 3.1 Proposed Marine Water Quality Monitoring Stations

Station	Description	Coordinates	
		Easting	Northing
1	Edge of Mixing Zone (northwest of effluent diffuser)	829762.00	819604.47
2	Edge of ZID (northwest of effluent diffuser)	830117.99	819251.93
3	Edge of ZID (southeast of effluent diffuser)	830186.21	819184.37
4	Edge of Mixing Zone (southeast of effluent diffuser)	830525.00	818848.87
SM6	Control Station	826179.81	805902.89
SM12	Control Station	819524.19	808420.40

Monitoring Schedule

- 2.5. The marine water quality monitoring was conducted coincide with effluent quality monitoring on 24 Jul 2017.

Monitoring Equipment

- 2.6. The equipment used in the marine water quality monitoring in the reporting month is summarized in Table 3.2. Copies of calibration certificates are shown in **Appendix II-Report no. AV0051582(0)**.

Table 3.2 Marine Water Quality Monitoring Equipment

Equipment	Model and Make	Qty
Water Sampler	Kahlsico Water Sampler	1
Water Depth Detector	Seafarer 700	1
Positioning System	Global Positioning System (GPS)	1
Multi-parameter Water Quality System	Model YSI 6920 V2	1



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Monitoring Parameters and Frequency

- 2.7. Marine Water sampling on E.coli, Total Residual Chlorine (TRC), Chlorination By-Products (CBPs) shall and the Contaminants of Concern (COCs) shall be performed quarterly throughout the contract period.
- 2.8. The list of parameters to be analysed as well as the corresponding analytical methods and detection limit are listed in Table 3.3

Table 3.3 Analytical Methods for Laboratory Analysis for Marine Water Samples

Parameters		Analytical Method	Limit of Reporting (µg/L)
TRC and Potential CBPs			
Total residual Chlorine		APHA 21ed 4500 Cl G	10
Bromoform	Tri-halomethanes (THMs)	TG-ENV-WW-78 (Headspace GC-MS)	0.1
Bromodichloromethane			0.1
Chloroform			0.1
Dibromochloromethane			5
Bromoacetic acid	Haloacetic Acids (HAAs)	TG-ENV-WW-79 (GC-ECD)	2
Chloroacetic acid			2
Dibromoacetic acid			2
Dichloroacetic acid			2
Trichloroacetic acid			2
Bacteria			
E.coli		Environmental Monitoring Laboratory Test Method Manual TM09/EC/10/097 Issue 3, Environmental Protection Department, HK.	1 cfu/100ml
Contaminants of Concern (COCs)			
Methylene chloride	Halogenated Aliphatics	TG-ENV-WW-78 (Headspace GC-MS)	20
Carbon tetrachloride			0.5
1,1-dichloroethane			0.5
1,2-dichloroethane			0.5
1,1-dichloroethylene			0.5
1,2-dichloropropane			0.5
Tetrachloroethylene			0.5
1,1,1-trichloroethane	Halogenated Aliphatics		0.5
1,1,2-trichloroethane			0.5
Trichloroethylene			0.5



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Contaminants of Concern (COCs)			
2-chlorophenol	Phenols & Haloethers	TG-ENV-WW-80 (GC-MS)	0.5
2,4-dichlorophenol			0.5
p-chloro-m-cresol			0.5
Pentachlorophenol			0.5
2,4,6-trichlorophenol			0.5
Bis(2-chloroethoxy) methane			0.5
Chlorobenzene	Chlorinated Hydrocarbons & Organochlorine Pesticides	TG-ENV-WW-78 (Headspace GC-MS)	0.5
1,4-dichlorobenzene			0.5
Hexachlorobenzene		USEPA 625	0.01
Hexachlorocyclopentadiene			2.5
Hexachloroethane			0.5
1,2,4-trichlorobenzene			0.5
Alpha-BHC			0.01
Beta-BHC			0.01
Gamma-BHC			0.01

3. RESULTS AND OBSERVATIONS

Weather and Sea Condition

- 3.1. The weather condition was sunny while the sea condition was moderate during the sampling period 24 Jul 2017 in the reporting month.

Marine Water Quality

- 3.2. The in-situ measurement results including dissolved oxygen, turbidity, salinity, pH and temperature of the marine water monitoring. Also, the results of marine water quality monitoring conducted on 24 Jul and QC report are shown in **Appendix II – Report no. AV0051582(0)**.



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Report No.: AV0051581(9)

Term Contract for Provision of Sampling and Analyzing of Wastewater
and Sludge Samples for Various Sewage Treatment Facilities in Urban Area, Lantau and Outlying Islands to
the Drainage Services Department

Appendix I - Location of Monitoring Stations

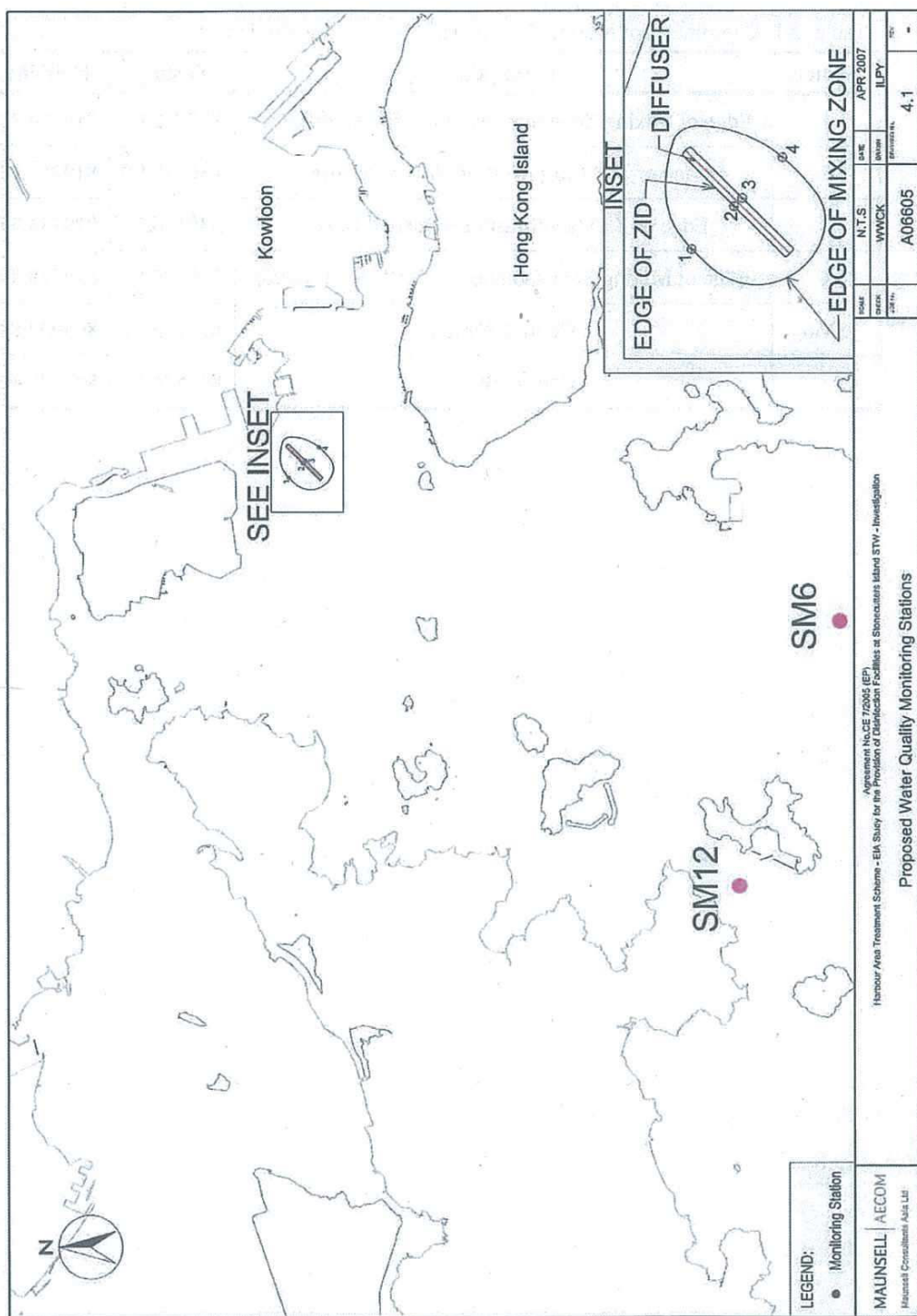


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Appendix II - Report for Laboratory Test(s)



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TEST REPORT

Report No. : AV0051582(0) Date: 05 Sep 2017

Application No. : LV023396(1)

Applicant : DRAINAGE SERVICES DEPARTMENT
SEWAGE SERVICES BRANCH
HARBOUR AREA TREATMENT SCHEME DIVISION
5/F., WESTERN MAGISTRACY,
2A, POK FU LAM ROAD, HONG KONG

Contract No. : DE/2016/12

Project Name : Term Contract for Provision of Sampling and Analyzing of Wastewater and Sludge for Various Sewage Treatment Facilities in Urban Area, Lantau and Outlying Islands to the Drainage Services Department

Sample Description : Eighteen (18) marine water samples sampled by the staff of CMA Industrial Development Foundation Limited.
Samples were refrigerated during delivery.

Sample ID : Refer to Sample ID on page 4 to 6.

Station	Description	Coordinates	
		Easting	Northing
1	Edge of Mixing Zone (northwest of effluent diffuser)	829762.00	819604.47
2	Edge of ZID (northwest of effluent diffuser)	830117.99	819251.93
3	Edge of ZID (southeast of effluent diffuser)	830186.21	819184.37
4	Edge of Mixing Zone (southeast of effluent diffuser)	830525.00	818848.87
SM6	Control Station	826179.81	805902.89
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Lau Yan Kin
Senior Manager
Environmental Division

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TEST REPORT

Report No. : AV0051582(0) Date: 05 Sep 2017

Application No. : LV023396(1)

Sampling Date : 24 Jul 2017

Date Received : 24 Jul 2017

Test Period : 24 Jul 2017 to 16 Aug 2017.

Test Requested :

1. Temperature (on-site measurement)
2. pH (on-site measurement)
3. Salinity (on-site measurement)
4. Dissolved Oxygen (DO) (mg/L) (on-site measurement)
5. Dissolved Oxygen (DOS) (% saturation) (on-site measurement)
6. Turbidity (on-site measurement)
7. Total Residual Chlorine (on-site measurement)
8. E. coli count
9. Bromoform
10. Bromodichloromethane
11. Chloroform
12. Dibromochloromethane
13. Bromoacetic acid
14. Chloroacetic acid
15. Dibromoacetic acid
16. Dichloroacetic acid
17. Trichloroacetic acid
18. Methylene chloride
19. Carbon tetrachloride
20. 1,1-dichloroethane
21. 1,2-dichloroethane
22. 1,1-dichloroethylene
23. 1,2-dichloropropane
24. Tetrachloroethylene
25. 1,1,1-trichloroethane
26. 1,1,2-trichloroethane
27. Trichloroethylene
28. 2-chlorophenol
29. 2,4-dichlorophenol
30. p-chloro-m-cresol
31. Pentachlorophenol
32. 2,4,6-trichlorophenol
33. Bis(2-chloroethoxy) methane
34. Chlorobenzene
35. 1,4-dichlorobenzene
36. Hexachlorobenzene
37. Hexachlorocyclopentadiene
38. Hexachloroethane
39. 1,2,4-trichlorobenzene
40. Alpha-BHC
41. Beta-BHC
42. Gamma-BHC

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TEST REPORT

Report No. : AV0051582(0) Date: 05 Sep 2017

Application No. : LV023396(1)

Test Method : 1-5. In house method (By multimeter)
6. APHA 2130B
7. APHA 21ed 4500 Cl G
8. Environmental Monitoring Laboratory Test Method Manual
TM09/EC/10/097 Issue 3, Environmental Protection Department,
HK.
9. TG-ENV-WW-78 (Headspace GC-MS)
10. TG-ENV-WW-78 (Headspace GC-MS)
11. TG-ENV-WW-78 (Headspace GC-MS)
12. TG-ENV-WW-78 (Headspace GC-MS)
13. TG-ENV-WW-79 (GC-ECD)
14. TG-ENV-WW-79 (GC-ECD)
15. TG-ENV-WW-79 (GC-ECD)
16. TG-ENV-WW-79 (GC-ECD)
17. TG-ENV-WW-79 (GC-ECD)
18. TG-ENV-WW-78 (Headspace GC-MS)
19. TG-ENV-WW-78 (Headspace GC-MS)
20. TG-ENV-WW-78 (Headspace GC-MS)
21. TG-ENV-WW-78 (Headspace GC-MS)
22. TG-ENV-WW-78 (Headspace GC-MS)
23. TG-ENV-WW-78 (Headspace GC-MS)
24. TG-ENV-WW-78 (Headspace GC-MS)
25. TG-ENV-WW-78 (Headspace GC-MS)
26. TG-ENV-WW-78 (Headspace GC-MS)
27. TG-ENV-WW-78 (Headspace GC-MS)
28. TG-ENV-WW-80 (GC-MS)
29. TG-ENV-WW-80 (GC-MS)
30. TG-ENV-WW-80 (GC-MS)
31. TG-ENV-WW-80 (GC-MS)
32. TG-ENV-WW-80 (GC-MS)
33. TG-ENV-WW-80 (GC-MS)
34. TG-ENV-WW-78 (Headspace GC-MS)
35. TG-ENV-WW-78 (Headspace GC-MS)
36. USEPA 625
37. USEPA 625
38. USEPA 625
39. USEPA 625
40. USEPA 625
41. USEPA 625
42. USEPA 625

Test Result : Refer to results on page 4 to 6.

Remark : All data are copied from test report no. AV0050738(1) issued on
05 Sep 2017.



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TEST REPORT

Report No. : AV0051582(0)

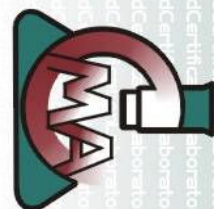
Date: 05 Sep 2017

Application No. : LV023396(1)

Marine Water Quality

Sampling Date 24-Jul-17

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	E.coli (CFU/100mL)	Temperature (°C)		Salinity (ppt)		pH		DO (mg/L)		DOS (%)		Turbidity (NTU)		TRC (mg/L)	
1	11:34	11.6	1.0	12	27.3	27.3	25.4	25.4	7.8	7.8	5.3	5.3	78.1	78.1	2.4	2.4	0.01	0.01
			5.8	14	27.4	27.4	25.6	25.6	7.9	7.9	5.3	5.3	77.7	77.7	0.9	0.9	<0.01	<0.01
			10.6	19	27.6	27.6	25.8	25.8	7.9	7.9	5.4	5.4	80.5	80.5	1.3	1.3	0.02	0.02
2	11:51	11.8	1.0	12	27.3	27.3	25.3	25.3	8.0	8.0	5.5	5.5	80.2	80.2	2.1	2.1	<0.01	<0.01
			5.9	7	27.2	27.2	25.6	25.6	8.0	8.0	5.2	5.2	76.0	76.0	1.0	1.0	0.01	0.01
			10.8	8	27.4	27.4	25.6	25.6	8.0	8.0	5.2	5.2	75.8	75.8	1.4	1.4	0.01	0.01
3	12:08	11.8	1.0	12	27.5	27.5	24.7	24.7	8.0	8.0	5.4	5.4	79.8	79.8	2.0	2.0	0.04	0.04
			5.9	13	27.2	27.2	26.5	26.5	8.0	8.0	4.9	4.9	72.4	72.4	1.9	1.9	0.03	0.03
			10.8	7	26.9	26.9	27.4	27.4	8.0	8.0	4.1	4.1	60.1	60.1	1.6	1.6	0.01	0.01
4	12:26	11.5	1.0	18	27.6	27.6	25.2	25.2	8.0	8.0	5.8	5.8	85.0	85.0	2.0	2.0	0.01	0.01
			5.8	1	27.4	27.4	25.7	25.7	8.0	8.0	5.5	5.5	81.2	81.2	2.2	2.2	0.01	0.01
			10.5	21	26.9	26.9	27.4	27.4	8.0	8.0	4.5	4.5	66.8	66.8	1.7	1.7	0.02	0.02
SM6	13:08	12.0	1.0	8	28.7	28.7	26.8	26.8	7.9	7.9	6.3	6.3	95.7	95.7	1.1	1.1	<0.01	<0.01
			6.0	1	28.4	28.4	26.9	26.9	7.9	7.9	6.5	6.5	97.2	97.2	1.4	1.4	<0.01	<0.01
			11.0	ND	28.8	28.8	27.4	27.4	8.0	8.0	6.2	6.2	93.8	93.8	1.2	1.2	<0.01	<0.01
SM12	13:43	11.9	1.0	ND	28.5	28.5	24.9	24.9	7.9	7.9	6.0	6.0	90.3	90.3	1.2	1.2	<0.01	<0.01
			6.0	1	28.1	28.1	25.8	25.8	7.9	7.9	6.0	6.0	88.9	88.9	1.4	1.4	<0.01	<0.01
			10.9	1	28.4	28.4	27.0	27.0	7.9	7.9	5.2	5.2	78.4	78.4	1.4	1.4	<0.01	<0.01



**CMA Testing
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TEST REPORT

Report No. : AV0051582(0)

Date: 05 Sep 2017

Application No. : LV023396(1)

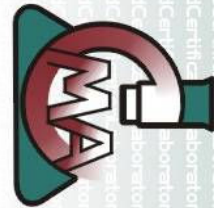
Marine Water Quality

Sampling Date 24-Jul-17

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Bromoform (µg/L)		Bromodichloromethane (µg/L)		Chloroform (µg/L)		Dibromochloromethane (µg/L)		Bromoacetic acid (µg/L)		Chloroacetic acid (µg/L)		Dibromoacetic acid (µg/L)		Dichloroacetic acid (µg/L)		Trichloroacetic acid (µg/L)	
1	1134	11.6	1.0	0.6	0.6	<0.1	<0.1	<0.1	<0.1	<5	>5	<2	>2	<2	>2	<2	>2	<2	>2	<2	>2
			5.8	0.6	0.6	<0.1	<0.1	<0.1	<0.1	<5	>5	<2	>2	<2	>2	<2	>2	<2	>2	<2	>2
			10.6	0.6	0.6	<0.1	<0.1	<0.1	<0.1	<5	>5	<2	>2	<2	>2	<2	>2	<2	>2	<2	>2
2	1151	11.8	1.0	0.5	0.5	<0.1	<0.1	<0.1	<0.1	<5	>5	<2	>2	<2	>2	<2	>2	<2	>2	<2	>2
			5.9	0.7	0.7	<0.1	<0.1	0.1	0.1	<5	>5	<2	>2	<2	>2	<2	>2	<2	>2	<2	>2
			10.8	0.6	0.6	<0.1	<0.1	<0.1	<0.1	<5	>5	<2	>2	<2	>2	<2	>2	<2	>2	<2	>2
3	1208	11.8	1.0	1.8	1.8	<0.1	<0.1	0.1	0.1	<5	>5	<2	>2	<2	>2	<2	>2	<2	>2	<2	>2
			5.9	1.0	1.0	<0.1	<0.1	0.4	0.4	<5	>5	<2	>2	<2	>2	<2	>2	<2	>2	<2	>2
			10.8	0.7	0.7	<0.1	<0.1	0.1	0.1	<5	>5	<2	>2	<2	>2	<2	>2	<2	>2	<2	>2
4	1226	11.5	1.0	0.9	0.9	<0.1	<0.1	0.4	0.4	<5	>5	<2	>2	<2	>2	<2	>2	<2	>2	<2	>2
			5.8	0.9	0.9	<0.1	<0.1	0.2	0.2	<5	>5	<2	>2	<2	>2	<2	>2	<2	>2	<2	>2
			10.5	0.7	0.7	<0.1	<0.1	0.1	0.1	<5	>5	<2	>2	<2	>2	<2	>2	<2	>2	<2	>2
SM6	1308	12.0	1.0	0.5	0.5	<0.1	<0.1	<0.1	<0.1	<5	>5	<2	>2	<2	>2	<2	>2	<2	>2	<2	>2
			6.0	0.4	0.4	<0.1	<0.1	<0.1	<0.1	<5	>5	<2	>2	<2	>2	<2	>2	<2	>2	<2	>2
			11.0	0.4	0.4	<0.1	<0.1	<0.1	<0.1	<5	>5	<2	>2	<2	>2	<2	>2	<2	>2	<2	>2
SM12	1343	11.9	1.0	0.4	0.4	<0.1	<0.1	<0.1	<0.1	<5	>5	<2	>2	<2	>2	<2	>2	<2	>2	<2	>2
			6.0	0.6	0.6	<0.1	<0.1	<0.1	<0.1	<5	>5	<2	>2	<2	>2	<2	>2	<2	>2	<2	>2
			10.9	0.5	0.5	<0.1	<0.1	<0.1	<0.1	<5	>5	<2	>2	<2	>2	<2	>2	<2	>2	<2	>2
			LRV			>0.1	<0.1	<0.1	<0.1	<5	>5	<2	>2	<2	>2	<2	>2	<2	>2	<2	>2

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CMA Testing and Certification Laboratories
廠商會檢定中心

TEST REPORT

Report No. : AV0051582(0)

Date: 05 Sep 2017

Application No. : LV023396(1)

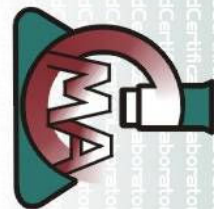
Marine Water Quality

Sampling Date 24-Jul-17

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Methylene chloride (µg/L)	Carbon tetrachloride (µg/L)	1,1-dichloroethane (µg/L)	1,2-dichloroethane (µg/L)	1,1-dichloroethylene (µg/L)	1,2-dichloropropane (µg/L)	Tetrachloroethylene (µg/L)	1,1,1-trichloroethane (µg/L)	1,1,2-trichloroethane (µg/L)	Trichloroethylene (µg/L)	2-chlorophenol (µg/L)	2,4-dichlorophenol (µg/L)	p-chloro-m-cresol (µg/L)	
1	11:34	11.6	1.0	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			5.8	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			10.6	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2	11:51	11.8	1.0	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			5.9	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			10.8	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
3	12:08	11.8	1.0	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			5.9	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			10.8	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
4	12:26	11.5	1.0	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			5.8	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			10.5	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
SM6	13:08	12.0	1.0	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			6.0	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			11.0	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
SM12	13:43	11.9	1.0	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			6.0	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			10.9	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
LRV		<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Pentachlorophenol (µg/L)	2,4,6-trichlorophenol (µg/L)	Bis(2-chloroethoxy) methane (µg/L)	Chlorobenzene (µg/L)	1,4-dichlorobenzene (µg/L)	Hexachlorobenzene (µg/L)	Hexachlorocyclopentadiene (µg/L)	Hexachloroethane (µg/L)	1,2,4-trichlorobenzene (µg/L)	Alpha-BHC (µg/L)	Beta-BHC (µg/L)	Gamma-BHC (µg/L)	
1	11:34	11.6	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<2.5	<0.5	<0.01	<0.01	<0.01	
			5.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.01	<0.01	<0.01
			10.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.01	<0.01	<0.01
2	11:51	11.8	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.01	<0.01	<0.01	
			5.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.01	<0.01	
			10.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.01	<0.01	
3	12:08	11.8	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.01	<0.01	<0.01	
			5.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.01	<0.01	
			10.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.01	<0.01	
4	12:26	11.5	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.01	<0.01	<0.01	
			5.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.01	<0.01	
			10.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.01	<0.01	
SM6	13:08	12.0	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.01	<0.01	<0.01	
			6.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.01	<0.01	
			11.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.01	<0.01	
SM12	13:43	11.9	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.01	<0.01	<0.01	
			6.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.01	<0.01	
			10.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.01	<0.01	
LRV		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.01	<0.01		

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**CMA Testing
and Certification
Laboratories**
廠商會檢定中心

TEST REPORT

Report No. : AV0051582(0)

Date: 05 Sep 2017

Application No. : LV023396(1)

QC Report

Sampling Date 24-Jul-17

Parameter	Method Blank (µg/L)	Acceptance Criteria (µg/L)	QC Recovery (%)	Acceptance Criteria (%)	Spike Recovery (%)	Acceptance Criteria (%)	Duplicate (RPD) (%)	Acceptance Criteria (%)
Bromoform	<0.02	<0.02	96	80-120	89	70-130	2	≤20
Bromodichloromethane	<0.02	<0.02	103	80-120	94	70-130	8	≤20
Chloroform	<0.02	<0.02	108	80-120	92	70-130	6	≤20
Dibromochloromethane	<1	<1	102	80-120	87	70-130	3	≤20
Bromoacetic acid	<0.4	<0.4	94	80-120	106	70-130	4	≤20
Chloroacetic acid	<0.4	<0.4	95	80-120	94	70-130	3	≤20
Dibromoacetic acid	<0.4	<0.4	94	80-120	92	70-130	5	≤20
Dichloroacetic acid	<0.4	<0.4	106	80-120	108	70-130	3	≤20
Trichloroacetic acid	<0.4	<0.4	96	80-120	104	70-130	4	≤20

Parameter	(µg/L)	(µg/L)	(%)	(%)	(%)	(%)	(%)	(%)
Methylene chloride	<4	<4	105	80-120	105	70-130	7	≤20
Carbon tetrachloride	<0.1	<0.1	107	80-120	108	70-130	2	≤20
1,1-dichloroethane	<0.1	<0.1	102	80-120	103	70-130	6	≤20
1,2-dichloroethane	<0.1	<0.1	97	80-120	107	70-130	7	≤20
1,1-dichloroethylene	<0.1	<0.1	93	80-120	106	70-130	4	≤20
1,2-dichloropropane	<0.1	<0.1	104	80-120	95	70-130	5	≤20
Tetrachloroethylene	<0.1	<0.1	98	80-120	87	70-130	3	≤20
1,1,1-trichloroethane	<0.1	<0.1	106	80-120	89	70-130	5	≤20
1,1,2-trichloroethane	<0.1	<0.1	108	80-120	103	70-130	6	≤20
Trichloroethylene	<0.1	<0.1	105	80-120	89	70-130	7	≤20
2-chlorophenol	<0.1	<0.1	109	80-120	92	70-130	7	≤20
2,4-dichlorophenol	<0.1	<0.1	92	80-120	98	70-130	4	≤20
p-chloro-m-cresol	<0.1	<0.1	95	80-120	103	70-130	2	≤20
Pentachlorophenol	<0.1	<0.1	97	80-120	97	70-130	8	≤20
2,4,6-trichlorophenol	<0.1	<0.1	104	80-120	97	70-130	3	≤20
Bis(2-chloroethoxy) methane	<0.1	<0.1	92	80-120	106	70-130	6	≤20
Chlorobenzene	<0.1	<0.1	101	80-120	102	70-130	4	≤20
1,4-dichlorobenzene	<0.1	<0.1	106	80-120	89	70-130	7	≤20
Hexachlorobenzene	<0.005	<0.005	91	80-120	103	70-130	5	≤20
Hexachlorocyclopentadiene	<0.5	<0.5	98	80-120	86	70-130	5	≤20
Hexachloroethane	<0.1	<0.1	97	80-120	87	70-130	3	≤20
1,2,4-trichlorobenzene	<0.1	<0.1	103	80-120	93	70-130	4	≤20
Alpha-BHC	<0.005	<0.005	92	80-120	104	70-130	2	≤20
Beta-BHC	<0.005	<0.005	96	80-120	92	70-130	6	≤20
Gamma-BHC	<0.005	<0.005	109	80-120	106	70-130	4	≤20



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0051582(0)

Date: 05 Sep 2017

Application No. : LV023396(1)

Calibration Certificate



專業化驗有限公司
QUALITY PRO TEST-CONSULT LIMITED
Unit 10, 14/F, Wah Wai Centre, 38-40 Au Pui Wan St., Potan, Hong Kong
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Report of Equipment Performance Check/Calibration

Report No. : AG060182
Date of Issue : 22 June 2017
Page No. : 1 of 2

PART A – CUSTOMER INFORMATION

Enovative Environmental Service Ltd.
Rm 811, Hin Pui House,
Hin Keng Estate, Tai Wai
New Territories, Hong Kong
Attn: Mr. Thomas WONG

PART B – DESCRIPTION

Name of Equipment : YSI 6920 V2 Sonde (Multi-Parameters)
Manufacturer : YSI (a xylem brand)
Serial Number : 000109DF
Date of Received : 16 Jun, 2017
Date of Calibration : 16 Jun, 2017
Date of Next Calibration^(a) : 16 Sep, 2017

PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Parameter	Reference Method
pH at 25°C	APHA 21c 4500-H ⁺ B
Dissolved Oxygen	APHA 21c 4500-O G
Conductivity at 25°C	APHA 21c 2510 B
Salinity	APHA 21c 2520 B
Turbidity	APHA 21c 2130 B
Temperature	Section 6 of international Accreditation New Zealand Technical Guide no. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

PART D – CALIBRATION RESULTS^(b,c)

(1) pH at 25°C

Target (pH unit)	Displayed Reading ^(d) (pH Unit)	Tolerance ^(e) (pH Unit)	Results
4.00	4.03	+0.03	Satisfactory
7.42	7.43	+0.01	Satisfactory
10.01	10.05	+0.04	Satisfactory

Tolerance of pH should be less than ±0.10 (pH unit)

(2) Temperature

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)	Results
16.1	16.0	-0.1	Satisfactory
23.0	23.3	+0.3	Satisfactory
37.0	36.8	-0.2	Satisfactory

Tolerance limit of temperature should be less than ±2.0 (°C)

– CONTINUED ON NEXT PAGE –

Remark(s) :-

- ^(a) The "Date of Next Calibration" is recommended according to best practice principals as practiced by OPT or quoted form relevant international standards.
- ^(b) The results relate only to the calibrated equipment as received
- ^(c) The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
- ^(d) "Displayed Reading" denotes the figure shown on item under calibration/ checking regardless of equipment precision or significant figures.
- ^(e) The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by OPT or quoted form relevant international standards.

APPROVED SIGNATORY :

FUNG Yuen-ching Aries
Laboratory Manager



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0051582(0)

Date: 05 Sep 2017

Application No. : LV023396(1)



專業化驗有限公司

QUALITY PRO TEST-CONSULT LIMITED

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Tel: (852) 3956 8717; Fax: (852) 3956 3928

Report of Equipment Performance Check/Calibration

Report No. : AG060182
Date of Issue : 22 June 2017
Page No. : 2 of 2

PART D – CALIBRATION RESULTS (Cont'd)

(3) Dissolved Oxygen

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)	Results
0.45	0.42	-0.03	Satisfactory
3.54	3.51	-0.03	Satisfactory
8.16	8.11	-0.05	Satisfactory

Tolerance limit of dissolved oxygen should be less than ± 0.20 (mg/L)

(4) Conductivity at 25°C

Expected Reading (μ S/cm)	Displayed Reading (μ S/cm)	Tolerance (%)	Results
146.9	144.0	-2.0	Satisfactory
1412	1338	-5.2	Satisfactory
12890	12462	-3.3	Satisfactory
58670	57332	-2.3	Satisfactory
111900	108004	-3.5	Satisfactory

Tolerance limit of conductivity should be less than ± 10.0 (%)

(5) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	9.94	-0.6	Satisfactory
20	20.02	+0.1	Satisfactory
30	30.09	+0.3	Satisfactory

Tolerance limit of salinity should be less than ± 10.0 (%)

(6) Turbidity

Expected Reading (NTU)	Displayed Reading ^(a) (NTU)	Tolerance ^(a) (%)	Results
0	0	--	Satisfactory
4	3.8	+5.0	Satisfactory
20	21.2	+6.0	Satisfactory
100	95.4	+4.6	Satisfactory
800	821	+2.6	Satisfactory

Tolerance limit of turbidity should be less than ± 10.0 (%)

- END OF REPORT -

Remark(s):-

^(a) "Displayed Reading" presents the figures shown on item under calibration/ checking regardless of equipment precision or significant figures.

^(b) The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by Quality Pro Test-Consult Ltd. or quoted from relevant international standards.

***** End of Report *****

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