CMA Testing and Certification Laboratories
廠商會檢定中心

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

Provision of Effluent Quality Monitoring (EQM) Services

Report for the Month of Oct 2018

Contract No. : DE/2018/02

Applicant : SEWAGE TREATMENT DIVISION 2
ELECTRICAL AND MECHANICAL BRANCH
DRAINAGE SERVICES DEPARTMENT

Address : STONECUTTERS ISLAND SEWAGE TREATMENT WORKS.,
NGONG SHUNG ROAD, NGONG SHUEN CHAU,
KOWLOON, HONG KONG

Application Number : LW026851(0)

Report Number : AW0070934(1)

Report Issued Date : 17 Jan 2019

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____

Lau Yan Kin
Senior Manager
Environmental Division

CMA Industrial Development Foundation Limited
Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.
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EXECUTIVE SUMMARY

1. This is the water quality monitoring report prepared by CMA Testing and Certification Laboratory (CMA Testing) for Contract No. DE/2018/02 "Term Contract for Provision of Sampling and analysing of Wastewater and Sludge Samples for Various Sewage Treatment Facilities and Marine Water Samples in Urban Area, Lantau and Outlying Islands to the Drainage Services Department (2018-2020)''. This report documented the results and findings of Operation Phase Environmental Monitoring works conducted for Effluent Quality Monitoring (EQM) of Project in Oct 2018.

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
Effluent Quality	29 Oct 2018 to 30 Oct 2018	Total Residual Chlorine (TRC) Chlorination by-products (CBPs) and Contaminants of Concern (COCs)

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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 Effluent Quality Monitoring (EQM) of Project on 29 Oct 2018 to 30 Oct 2018.

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2. EFFLUENT QUALITY MONITORING

Monitoring Requirements

2.1. Effluent samples were collected at Disinfection Facilities in a full 24-hour period. 24-hour flow weighted composite effluent samples for subsequent chemical analysis and testing were prepared by CMA according to the following procedures:

- Collect effluent sub-sample by direct grab sampling method at bi-hourly interval over a 24 hour period;
- Obtain flow record of Stonecutters Island Sewage Treatment Works (SCISTW) for the 24-hour sampling period;
- Calculate the volume of each sub-sample for preparation the bi-hourly of 24 hour flow-weighted composite samples; and
- Transfer the appropriate the volume of sub-samples to a clean container and mix thoroughly.

2.2. Bi-hourly of 24-hour composite sample for Total Residual Chloride (TRC), Chlorination By-Products (CBPs) and Contaminants of Concern (COCs) tests shall be performed quarterly throughout the contract period.

Monitoring Location

2.3. The sampling locations for effluent from SCISTW were collected at the Disinfection Facilities

Monitoring Schedule

2.4. The effluent quality monitoring was conducted between the time periods of 10:00am 29 Oct 2018 to 10:00am of 30 Oct 2018 in the reporting month. Collection of marine water samples were within the time period of effluent quality monitoring was to be collected.

Laboratory Measurement / Analysis

2.5. In the reporting month, the bi-hourly of 24-hour flow-weighted composite effluent sample was collected for subsequent laboratory analysis and testing on TRC, CBPs and COCs as shown in **Table 2.1.**

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Table 2.1 Analytical Methods for Laboratory Analysis for Effluent 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
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
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

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3. RESULTS AND OBSERVATIONS

Effluent Quality

3.1. The results of effluent quality monitoring conducted on the time period of 10:00am 29 Oct 2018 to 10:00am of 30 Oct 2018, whereas the laboratory testing and QC report are shown in **Appendix I-Report no. AW0070933(0).**

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Appendix I - Report for Laboratory Test(s)

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CMA Testing and Certification Laboratories
廠商會檢定中心

TEST REPORT

Report No. : AW0070933(0) Date: 17 Dec 2018

Application No. : LW026851(0)

Applicant : SEWAGE TREATMENT DIVISION 2
ELECTRICAL AND MECHANICAL BRANCH
DRAINAGE SERVICES DEPARTMENT
STONECUTTERS ISLAND SEWAGE TREATMENT WORKS.,
NGONG SHUNG ROAD, NGONG SHUEN CHAU,
KOWLOON, HONG KONG

Contract No. : DE/2018/02

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

Sample Description : One (1) wastewater sample sampled by the staff of CMA Industrial Development Foundation Limited.
Sample was refrigerated during delivery.

Sample ID : Refer to Sample ID on page 4.

Sampling Location : SCISTW- Disinfection Facilities

Sampling Date : 29 Oct 2018 to 30 Oct 2018.

Date Received : 30 Oct 2018.

Test Period : 30 Oct 2018 to 23 Nov 2018.

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____

Lau Yan Kin
Senior Manager
Environmental Division

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TEST REPORT

Report No. : AW0070933(0) Date: 17 Dec 2018

Application No. : LW026851(0)

Test Requested :

1. Total Residual Chlorine
2. Bromoform
3. Bromodichloromethane
4. Chloroform
5. Dibromochloromethane
6. Bromoacetic acid
7. Chloroacetic acid
8. Dibromoacetic acid
9. Dichloroacetic acid
10. Trichloroacetic acid
11. Methylene chloride
12. Carbon tetrachloride
13. 1,1-dichloroethane
14. 1,2-dichloroethane
15. 1,1-dichloroethylene
16. 1,2-dichloropropane
17. Tetrachloroethlyene
18. 1,1,1-trichloroethane
19. 1,1,2-trichloroethane
20. Trichloroethylene
21. 2-chlorophenol
22. 2,4-dichlorophenol
23. p-chloro-m-cresol
24. Pentachlorophenol
25. 2,4,6-trichlorophenol
26. Bis(2-chloroethoxy) methane
27. Chlorobenzene
28. 1,4-dichlorobenzene
29. Hexachlorobenzene
30. Hexachlorocyclopentadiene
31. Hexachloroethane
32. 1,2,4-trichlorobenzene
33. Alpha-BHC
34. Beta-BHC
35. Gamma-BHC

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CMA Testing and Certification Laboratories
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TEST REPORT

Report No. : AW0070933(0) Date: 17 Dec 2018

Application No. : LW026851(0)

Test Method :
1. APHA 21ed Cl G
2. TG-ENV-WW-78 (Headspace GC-MS)
3. TG-ENV-WW-78 (Headspace GC-MS)
4. TG-ENV-WW-78 (Headspace GC-MS)
5. TG-ENV-WW-78 (Headspace GC-MS)
6. TG-ENV-WW-79 (GC-ECD)
7. TG-ENV-WW-79 (GC-ECD)
8. TG-ENV-WW-79 (GC-ECD)
9. TG-ENV-WW-79 (GC-ECD)
10. TG-ENV-WW-79 (GC-ECD)
11. TG-ENV-WW-78 (Headspace GC-MS)
12. TG-ENV-WW-78 (Headspace GC-MS)
13. TG-ENV-WW-78 (Headspace GC-MS)
14. TG-ENV-WW-78 (Headspace GC-MS)
15. TG-ENV-WW-78 (Headspace GC-MS)
16. TG-ENV-WW-78 (Headspace GC-MS)
17. TG-ENV-WW-78 (Headspace GC-MS)
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-80 (GC-MS)
22. TG-ENV-WW-80 (GC-MS)
23. TG-ENV-WW-80 (GC-MS)
24. TG-ENV-WW-80 (GC-MS)
25. TG-ENV-WW-80 (GC-MS)
26. TG-ENV-WW-80 (GC-MS)
27. TG-ENV-WW-78 (Headspace GC-MS)
28. TG-ENV-WW-78 (Headspace GC-MS)
29. USEPA 625
30. USEPA 625
31. USEPA 625
32. USEPA 625
33. USEPA 625
34. USEPA 625
35. USEPA 625

Test Result : Refer to results on page 4.

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TEST REPORT

Report No. : AW0070933(0) Date: 17 Dec 2018

Application No. : LW026851(0)

Effluent Water Quality

Application No:.	LW026851
Sampling Date	29-Oct-18 to 30-Oct-18
Monitoring Location	Chamber 15A

Parameter	Results (mg/L)
Total Residual Chlorine	<0.01

Parameter	Results (µg/L)
Bromoform	1.2
Bromodichloromethane	0.9
Chloroform	6.0
Dibromochloromethane	<5
Bromoacetic acid	<2
Chloroacetic acid	<2
Dibromoacetic acid	5.2
Dichloroacetic acid	15.8
Trichloroacetic acid	9.2

Parameter	Results (µg/L)
Methylene chloride	<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	3.5
1,1,1-trichloroethane	<0.5
1,1,2-trichloroethane	<0.5
Trichloroethylene	<0.5
2-chlorophenol	<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	<0.5
1,4-dichlorobenzene	<0.5
Hexachlorobenzene	<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

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TEST REPORT

Report No. : AW0070933(0) Date: 17 Dec 2018

Application No. : LW026851(0)

QC Report

Sampling Date 29-Oct-18 to 30-Oct-18

Parameter	Method Blank	Acceptance Criteria	QC Recoery	Acceptance Criteria	Spike Recovery	Acceptance Criteria	Duplicate (RPD)	Acceptance Criteria
	(µg/L)	(µg/L)	(%)	(%)	(%)	(%)	(%)	(%)
Bromoform	<0.02	<0.02	88	80-120	91	70-130	3	≤20
Bromodichloromethane	<0.02	<0.02	94	80-120	94	70-130	6	≤20
Chloroform	<0.02	<0.02	87	80-120	102	70-130	4	≤20
Dibromochloromethane	<1	<1	105	80-120	105	70-130	4	≤20
Bromoacetic acid	<0.4	<0.4	103	80-120	92	70-130	3	≤20
Chloroacetic acid	<0.4	<0.4	96	80-120	98	70-130	8	≤20
Dibromoacetic acid	<0.4	<0.4	87	80-120	108	70-130	6	≤20
Dichloroacetic acid	<0.4	<0.4	98	80-120	82	70-130	5	≤20
Trichloroacetic acid	<0.4	<0.4	111	80-120	90	70-130	7	≤20
Parameter	(µg/L)	(µg/L)	(%)	(%)	(%)	(%)	(%)	(%)
Methylene chloride	<4	<4	88	80-120	85	70-130	9	≤20
Carbon tetrachloride	<0.1	<0.1	96	80-120	106	70-130	8	≤20
1,1-dichloroethane	<0.1	<0.1	106	80-120	102	70-130	6	≤20
1,2-dichloroethane	<0.1	<0.1	94	80-120	97	70-130	7	≤20
1,1-dichloroethylene	<0.1	<0.1	104	80-120	96	70-130	7	≤20
1,2-dichloropropane	<0.1	<0.1	87	80-120	104	70-130	6	≤20
Tetrachloroethylene	<0.1	<0.1	85	80-120	108	70-130	5	≤20
1,1,1-trichloroethane	<0.1	<0.1	94	80-120	89	70-130	7	≤20
1,1,2-trichloroethane	<0.1	<0.1	86	80-120	92	70-130	8	≤20
Trichloroethylene	<0.1	<0.1	105	80-120	87	70-130	6	≤20
2-chlorophenol	<0.1	<0.1	97	80-120	106	70-130	4	≤20
2,4-dichlorophenol	<0.1	<0.1	95	80-120	103	70-130	3	≤20
p-chloro-m-cresol	<0.1	<0.1	103	80-120	88	70-130	9	≤20
Pentachlorophenol	<0.1	<0.1	109	80-120	102	70-130	9	≤20
2,4,6-trichlorophenol	<0.1	<0.1	92	80-120	94	70-130	9	≤20
Bis(2-chloroethoxy) methane	<0.1	<0.1	95	80-120	106	70-130	5	≤20
Chlorobenzene	<0.1	<0.1	92	80-120	85	70-130	7	≤20
1,4-dichlorobenzene	<0.1	<0.1	96	80-120	94	70-130	8	≤20
Hexachlorobenzene	<0.005	<0.005	90	80-120	93	70-130	8	≤20
Hexachlorocyclopentadiene	<0.5	<0.5	90	80-120	87	70-130	6	≤20
Hexachloroethane	<0.1	<0.1	88	80-120	102	70-130	9	≤20
1,2,4-trichlorobenzene	<0.1	<0.1	91	80-120	97	70-130	8	≤20
Alpha-BHC	<0.005	<0.005	87	80-120	96	70-130	5	≤20
Beta-BHC	<0.005	<0.005	102	80-120	105	70-130	4	≤20
Gamma-BHC	<0.005	<0.005	93	80-120	95	70-130	7	≤20

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

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