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 Jan 2019

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	:	AY0012745(8)
Report Issued Date	:	12 Mar 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.
Tel : (852) 2698 8198 Fax : (852) 2695 4177 E-mail : info@cmatesting.org Web Site : http://www.cmatesting.org

TABLE OF CONTENT

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 Jan 2019.

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	24 Jan 2019 to 25 Jan 2019	Total Residual Chlorine (TRC) Chlorination by-products (CBPs) and Contaminants of Concern (COCs)

CMA Industrial Development Foundation Limited
Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.
Tel : (852) 2698 8198 Fax : (852) 2695 4177 E-mail : info@cmatesting.org Web Site : http://www.cmatesting.org

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 24 Jan 2019 to 25 Jan 2019.

CMA Industrial Development Foundation Limited
Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.
Tel : (852) 2698 8198 Fax : (852) 2695 4177 E-mail : info@cmatesting.org Web Site : http://www.cmatesting.org

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 24 Jan 2019 to 10:00am of 25 Jan 2019 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.**

CMA Industrial Development Foundation Limited
Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.
Tel : (852) 2698 8198 Fax : (852) 2695 4177 E-mail : info@cmatesting.org Web Site : http://www.cmatesting.org

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

CMA Industrial Development Foundation Limited
Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.
Tel : (852) 2698 8198 Fax : (852) 2695 4177 E-mail : info@cmatesting.org Web Site : http://www.cmatesting.org

3. RESULTS AND OBSERVATIONS

Effluent Quality

3.1. The results of effluent quality monitoring conducted on the time period of 10:00am 24 Jan 2019 to 10:00am of 25 Jan 2019, whereas the laboratory testing and QC report are shown in **Appendix I-Report no. AY0012744(7).**

CMA Industrial Development Foundation Limited
Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.
Tel : (852) 2698 8198 Fax : (852) 2695 4177 E-mail : info@cmatesting.org Web Site : http://www.cmatesting.org

Appendix I - Report for Laboratory Test(s)

CMA Industrial Development Foundation Limited
Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.
Tel : (852) 2698 8198 Fax : (852) 2695 4177 E-mail : info@cmatesting.org Web Site : http://www.cmatesting.org

CMA Testing and Certification Laboratories
廠商會檢定中心

TEST REPORT

Report No. : AY0012744(7) Date: 12 Mar 2019

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 : 24 Jan 2019 to 25 Jan 2019.

Date Received : 25 Jan 2019.

Test Period : 25 Jan 2019 to 1 Mar 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.
Tel : (852) 2698 8198 Fax : (852) 2695 4177 E-mail : info@cmatesting.org Web Site : http://www.cmatesting.org

CMA Testing and Certification Laboratories
廠商會檢定中心

TEST REPORT

Report No. : AY0012744(7) Date: 12 Mar 2019

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

CMA Industrial Development Foundation Limited
Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.
Tel : (852) 2698 8198 Fax : (852) 2695 4177 E-mail : info@cmatesting.org Web Site : http://www.cmatesting.org

CMA Testing and Certification Laboratories
廠商會檢定中心

TEST REPORT

Report No. : AY0012744(7) Date: 12 Mar 2019

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.

CMA Industrial Development Foundation Limited
Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.
Tel : (852) 2698 8198 Fax : (852) 2695 4177 E-mail : info@cmatesting.org Web Site : http://www.cmatesting.org

TEST REPORT

Report No. : AY0012744(7) Date: 12 Mar 2019

Application No. : LW026851(0)

Effluent Water Quality

Application No:.	LW026851
Sampling Date	24-Jan-19 to 25-Jan-19
Monitoring Location	Chamber 15A

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

Parameter	Results (µg/L)
Bromoform	0.8
Bromodichloromethane	0.6
Chloroform	5.1
Dibromochloromethane	<5
Bromoacetic acid	<2
Chloroacetic acid	<2
Dibromoacetic acid	<2
Dichloroacetic acid	<2
Trichloroacetic acid	<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	1.8
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

CMA Industrial Development Foundation Limited
Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.
Tel : (852) 2698 8198 Fax : (852) 2695 4177 E-mail : info@cmatesting.org Web Site : http://www.cmatesting.org

TEST REPORT

Report No. : AY0012744(7) Date: 12 Mar 2019

Application No. : LW026851(0)

QC Report

Sampling Date 24-Jan-19 to 25-Jan-19

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	92	80-120	84	70-130	7	≤20
Bromodichloromethane	<0.02	<0.02	85	80-120	87	70-130	6	≤20
Chloroform	<0.02	<0.02	83	80-120	105	70-130	6	≤20
Dibromochloromethane	<1	<1	88	80-120	89	70-130	8	≤20
Bromoacetic acid	<0.4	<0.4	96	80-120	96	70-130	5	≤20
Chloroacetic acid	<0.4	<0.4	104	80-120	107	70-130	4	≤20
Dibromoacetic acid	<0.4	<0.4	85	80-120	106	70-130	9	≤20
Dichloroacetic acid	<0.4	<0.4	92	80-120	93	70-130	6	≤20
Trichloroacetic acid	<0.4	<0.4	91	80-120	85	70-130	7	≤20
Parameter	(µg/L)	(µg/L)	(%)	(%)	(%)	(%)	(%)	(%)
Methylene chloride	<4	<4	103	80-120	82	70-130	3	≤20
Carbon tetrachloride	<0.1	<0.1	85	80-120	97	70-130	7	≤20
1,1-dichloroethane	<0.1	<0.1	106	80-120	85	70-130	9	≤20
1,2-dichloroethane	<0.1	<0.1	93	80-120	89	70-130	6	≤20
1,1-dichloroethylene	<0.1	<0.1	95	80-120	91	70-130	10	≤20
1,2-dichloropropane	<0.1	<0.1	87	80-120	104	70-130	7	≤20
Tetrachloroethylene	<0.1	<0.1	87	80-120	102	70-130	7	≤20
1,1,1-trichloroethane	<0.1	<0.1	83	80-120	98	70-130	4	≤20
1,1,2-trichloroethane	<0.1	<0.1	86	80-120	106	70-130	9	≤20
Trichloroethylene	<0.1	<0.1	103	80-120	87	70-130	6	≤20
2-chlorophenol	<0.1	<0.1	84	80-120	109	70-130	5	≤20
2,4-dichlorophenol	<0.1	<0.1	93	80-120	85	70-130	5	≤20
p-chloro-m-cresol	<0.1	<0.1	98	80-120	76	70-130	2	≤20
Pentachlorophenol	<0.1	<0.1	105	80-120	89	70-130	9	≤20
2,4,6-trichlorophenol	<0.1	<0.1	92	80-120	74	70-130	6	≤20
Bis(2-chloroethoxy) methane	<0.1	<0.1	95	80-120	95	70-130	8	≤20
Chlorobenzene	<0.1	<0.1	95	80-120	97	70-130	7	≤20
1,4-dichlorobenzene	<0.1	<0.1	86	80-120	83	70-130	11	≤20
Hexachlorobenzene	<0.005	<0.005	83	80-120	101	70-130	3	≤20
Hexachlorocyclopentadiene	<0.5	<0.5	84	80-120	94	70-130	6	≤20
Hexachloroethane	<0.1	<0.1	104	80-120	90	70-130	8	≤20
1,2,4-trichlorobenzene	<0.1	<0.1	102	80-120	109	70-130	7	≤20
Alpha-BHC	<0.005	<0.005	93	80-120	103	70-130	2	≤20
Beta-BHC	<0.005	<0.005	87	80-120	86	70-130	4	≤20
Gamma-BHC	<0.005	<0.005	89	80-120	92	70-130	9	≤20

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

CMA Industrial Development Foundation Limited
Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.
Tel : (852) 2698 8198 Fax : (852) 2695 4177 E-mail : info@cmatesting.org Web Site : http://www.cmatesting.org