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

Provision of Effluent Quality Monitoring (EQM) Services

Report for the Month of Apr 2021

Contract No.	:	DE/2020/02
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	:	LA005705(6)
Report Number	:	AA0016655(1)
Report Issued Date	:	06 May 2021

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____

Lau Yan Kin
Senior Manager
Environmental Division

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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/2020/02 "Term Contract for Provision of Sampling and analyzing of Samples for Various Sewage Treatment Facilities in Urban Area, Lantau and Outlying Islands to the Drainage Services Department (2020-2023)''. This report documented the results and findings of Operation Phase Environmental Monitoring works conducted for Effluent Quality Monitoring (EQM) of Project in Apr 2021.

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 1**.

Table 1. Summary Table for Environmental Monitoring Works Conducted in the Reporting Month

Monitoring Parameters	Monitoring Period	Laboratory Testing Parameters
Effluent Quality	16 Apr 2021 (10 a.m.) to 17 Apr 2021 (10 a.m.)	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 monitoring period.

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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 Testing according to the following procedures:

- Collect effluent sub-sample by direct grab sampling method at bi-hourly interval over a 24 hour sampling 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 preparing the bi-hourly of 24 hour flow-weighted composite samples; and
- Transfer the appropriate 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 in the monitoring period shown in **Table 1**. 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 23ed 4500 Cl G	10
Bromoform	Tri-halomethanes (THMs)	USEPA 8260B	0.1
Bromodichloromethane			0.1
Chloroform			0.1
Dibromochloromethane			5
Bromoacetic acid	Haloacetic Acids (HAAs)	In house method TG-ENV-WW-79 (by GC-ECD)	2
Chloroacetic acid			2
Dibromoacetic acid			2
Dichloroacetic acid			2
Trichloroacetic acid			2
Contaminants of Concern (COCs)			
Methylene chloride	Halogenated Aliphatics	ISO 17943:2016 & USEPA 8206B	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			0.5
1,1,2-trichloroethane			0.5
Trichloroethylene			0.5
2-chlorophenol	Phenols & Haloethers	In house method TG-ENV-WW-80, 84 & 86 (by GC-MSD)	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	In house method TG-ENV-WW-78 (by Headspace GC-MSD) & In house method TG-ENV-WW-86 (by GC-MSD)	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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3. RESULTS AND OBSERVATIONS

Effluent Quality

3.1. The results of effluent quality monitoring conducted during the monitoring period shown in **Table 1**, whereas the laboratory testing and QC report are shown in **Appendix I.**

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Appendix I - Report for Laboratory Test(s)

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TEST REPORT

Report No.	:	AA0017071(5)	Date: 06 May 2021
Application No.	:	LA005705(6)	
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/2020/02
Project Name	:	Term Contract for Provision of Sampling and Analyzing of Samples for Various Sewage Treatment Facilities 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	:	16 Apr 2021 to 17 Apr 2021.
Date Received	:	17 Apr 2021.
Test Period	:	17 Apr 2021 to 05 May 2021.

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. : AA0017071(5) Date: 06 May 2021

Application No. : LA005705(6)

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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TEST REPORT

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Application No. : LA005705(6)

Test Method : 1. APHA 23ed 4500 Cl G
2-5. USEPA 8260B
6-10. TG-ENV-WW-79 (by GC-ECD)
11-20. ISO 17943:2016 & USEPA 8260B
21-26. In house method TG-ENV-WW-80, 84 & 86 (by GC-MSD)
27-35. In house method TG-ENV-WW-78 (by Headspace GC-MSD)
& In house method TG-ENV-WW-86 (by GC-MSD)

Test Result : Refer to results on page 4.

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TEST REPORT

Report No. : AA0017071(5) Date: 06 May 2021

Application No. : LA005705(6)

Effluent Water Quality

Application No:.	LA005705(6)	
Sampling Date	16-Apr-21 to 17-Apr-21	
Monitoring Location	Chamber 15A	
Parameter	Results (mg/L)	
Total Residual Chlorine	<0.01	
Parameter	Results (µg/L)	
Bromoform	0.2	
Bromodichloromethane	<0.1	
Chloroform	2.6	
Dibromochloromethane	<5	
Bromoacetic acid	<2	
Chloroacetic acid	<2	
Dibromoacetic acid	2.0	
Dichloroacetic acid	3.1	
Trichloroacetic acid	2.5	

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TEST REPORT

Report No. : AA0017071(5) Date: 06 May 2021

Application No. : LA005705(6)

Application No:.	LA005705(6)	
Sampling Date	16-Apr-21 to 17-Apr-21	
Monitoring Location	Chamber 15A	

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	<0.5
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. : AA0017071(5) Date: 06 May 2021

Application No. : LA005705(6)

QC Report

Parameter	Method Blank	Acceptance Criteria	QC Recovery	Acceptance Criteria	Spike Recovery	Acceptance Criteria	Duplicate (RPD)	Acceptance Criteria
	(mg/L)	(mg/L)	(%)	(%)	(%)	(%)	(%)	(%)
Total Residual Chlorine	<0.01	<0.01	103	85-115	96	85-115	<1	≤20

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	116	80-120	107	70-130	8	≤20
Bromodichloromethane	<0.02	<0.02	105	80-120	112	70-130	6	≤20
Chloroform	<0.02	<0.02	118	80-120	86	70-130	8	≤20
Dibromochloromethane	<1	<1	97	80-120	108	70-130	4	≤20
Bromoacetic acid	<0.4	<0.4	105	80-120	97	70-130	5	≤20
Chloroacetic acid	<0.4	<0.4	112	80-120	104	70-130	5	≤20
Dibromoacetic acid	<0.4	<0.4	85	80-120	87	70-130	7	≤20
Dichloroacetic acid	<0.4	<0.4	93	80-120	84	70-130	2	≤20
Trichloroacetic acid	<0.4	<0.4	85	80-120	91	70-130	9	≤20

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TEST REPORT

Report No. : AA0017071(5) Date: 06 May 2021

Application No. : LA005705(6)

QC Report

Parameter	Method Blank	Acceptance Criteria	QC Recovery	Acceptance Criteria	Spike Recovery	Acceptance Criteria	Duplicate (RPD)	Acceptance Criteria
	(mg/L)	(mg/L)	(%)	(%)	(%)	(%)	(%)	(%)
Methylene chloride	<4	<4	87	80-120	85	70-130	7	≤20
Carbon tetrachloride	<0.1	<0.1	94	80-120	92	70-130	5	≤20
1,1-dichloroethane	<0.1	<0.1	106	80-120	95	70-130	9	≤20
1,2-dichloroethane	<0.1	<0.1	88	80-120	88	70-130	11	≤20
1,1-dichloroethylene	<0.1	<0.1	94	80-120	112	70-130	4	≤20
1,2-dichloropropane	<0.1	<0.1	113	80-120	117	70-130	3	≤20
Tetrachloroethylene	<0.1	<0.1	102	80-120	91	70-130	9	≤20
1,1,1-trichloroethane	<0.1	<0.1	106	80-120	82	70-130	9	≤20
1,1,2-trichloroethane	<0.1	<0.1	110	80-120	102	70-130	8	≤20
Trichloroethylene	<0.1	<0.1	94	80-120	87	70-130	2	≤20
2-chlorophenol	<0.1	<0.1	102	80-120	87	70-130	6	≤20
2,4-dichlorophenol	<0.1	<0.1	93	80-120	103	70-130	7	≤20
p-chloro-m-cresol	<0.1	<0.1	97	80-120	110	70-130	3	≤20
Pentachlorophenol	<0.1	<0.1	113	80-120	94	70-130	9	≤20
2,4,6-trichlorophenol	<0.1	<0.1	105	80-120	86	70-130	10	≤20
Bis(2-chloroethoxy) methane	<0.1	<0.1	105	80-120	95	70-130	11	≤20
Chlorobenzene	<0.1	<0.1	82	80-120	106	70-130	6	≤20
1,4-dichlorobenzene	<0.1	<0.1	97	80-120	84	70-130	2	≤20
Hexachlorobenzene	<0.005	<0.005	108	80-120	111	70-130	4	≤20
Hexachlorocyclopentadiene	<0.5	<0.5	112	80-120	93	70-130	9	≤20
Hexachloroethane	<0.1	<0.1	115	80-120	116	70-130	12	≤20
1,2,4-trichlorobenzene	<0.1	<0.1	90	80-120	94	70-130	8	≤20
Alpha-BHC	<0.005	<0.005	101	80-120	87	70-130	8	≤20
Beta-BHC	<0.005	<0.005	109	80-120	89	70-130	6	≤20
Gamma-BHC	<0.005	<0.005	87	80-120	90	70-130	9	≤20

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TEST REPORT

Report No. : AA0017071(5) Date: 06 May 2021

Application No. : LA005705(6)

TEST REPORT

Report No.	:	AA0019402(5)	Date : 06 Apr 2021
Application No.	:	LZ003543(4)	
Applicant	:	CMA INDUSTRIAL DEVELOPMENT FOUNDATION LIMITED ROOM 1302, YAN HING CENTRE, 9-13 WONG CHUK YEUNG STREET, FO TAN, SHATIN, N.T., HONG KONG.	
Instrument	:	HACH Portable Colorimeter (DR300)	
Serial No.	:	19030A000878	
Date Received	:	02 Apr 2021.	
Test Period	:	02 Apr 2021 to 05 Apr 2021.	
Date of next checking	:	01 Jul 2021	
Test Method	:	APHA 23e 4500Cl-G	
Test Result	:	Refer to the results on page 2.	

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____ Page 1 of 2

Tang Tsz Wang
Manager

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TEST REPORT

Report No. : AA0017071(5) Date: 06 May 2021

Application No. : LA005705(6)

TEST REPORT

Report No. : AA0019402(5) Date : 06 Apr 2021

Application No. : LZ003543(4)

Test Result :

Test Item	Reference reading (mg/L)	Display Reading (mg/L)	Error of indication (%)
Chlorine	1.00	1.02	2

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

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

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