

## Contractor's Submission Form (CSF)

Contract No.	DC/2008/03		
Project Title:	Design, Build and Operate Pillar Point	Sewage Treatment	Vorks
CSF No.:	DC200803/CSF/GD/800335	Issue: B D	ate: 22nd June 2016
То:	Drainage Services Department (ST1)	Your Ref: Nil	
Attention:	Supervising Officer's – Michael K.F. Ye	ung	
Cc:	dc200803.aecom@gmail.com;ATAL-N	landy Tsoi ; ADJV –	Norman Cheng
From:	ATAL-Degremont-China State Joint Ver	nture	
Title:	Monthly EM&A Report No.10 (May 2010	6)	
Specification:	: 1 - 1 : 2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 : 2 :		
Purpose:	*Information / Comments / Approval		
Description of	Contents:		
Attachment:	*Yes <del>/No</del> Number of Copies: 7		
Remarks:	Number of Copies: 7		
Issued By:		Printed Name:	Norman Cheng
Designation:	Operation Manager	Date:	22nd June 2016
Received By:		_ Date: _	
	(Signature & Received Chop)		
*Delete if not a	pplicable		(Rev.7



AECOM 8/F Grand Central Plaza, Tower 2 138 Shatin Rural Committee Road Shatin, Hong Kong 香港新界沙田鄉事會路138號 新城市中央廣場第2座8樓 www.aecom.com

+852 3922 9000 tel +852 3922 9797 fax

Your Ref: Our Ref: 60017423/C/oylw16061701

#### By Hand & By Fax (2833 9162)

Drainage Services Department Sewage Services Branch Harbour Area Treatment Scheme Division 5/F., Western Magistracy, 2A Pok Fu Lam Road, Hong Kong.

Attn: Ms. Carol Ho (T: 2159 3405)

17 June 2016

Dear Madam,

Contract No. DC/2008/03 Design, Build and Operate Pillar Point Sewage Treatment Works

## Monthly EM&A Report for May 2016 (10<sup>th</sup> Monthly Operation Phase Monitoring Report for May 2016)

Reference is made to Environmental Team (ET)'s draft of the Monthly EM&A Report for May 2016 provided by email dated 14, 15 and 17 June 2016. We have no further comment.

We hereby verify the said Monthly EM&A Report as having complied with the requirement as set out in the Final EM&A Manual.

Should you have any queries, please feel free to contact the undersigned at 3922 9393.

Yours faithfully,

For and on behalf of AECOM Asia Co. Ltd.

Y T Tang Independent Environmental Checker

C.C.	AECOM – Mr. C Y Hung	
	SMEC – Ms. Vivian Chan	
	ATAL–Degremont–China State JV – Mr. Raymond Chan	

(Fax No. 2441 1755) (Fax No. 3995 8101) (Fax No. 2811 3321)



ATAL – Degrémont – China State Joint Venture



67<sup>th</sup> Monthly EM&A Report (10<sup>th</sup> Monthly Operation Phase Monitoring Report for May 2016)

Contract No. DC/2008/03

# Design, Build and Operate Pillar Point Sewage Treatment Works

June 2016



AUSTRALIA | ASIA | MIDDLE EAST | AFRICA | PACIFIC



ATAL – Degrémont – China State Joint Venture



67<sup>th</sup> Monthly EM&A Report (10<sup>th</sup> Monthly Operation Phase Monitoring Report for May 2016)

Contract No. DC/2008/03

# Design, Build and Operate Pillar Point Sewage Treatment Works

June 2016

**Certified By** 

Vivian CHAN ET Leader

Vision Chan

Project/Deliverable No.	7076134   D18/01
Project Name	Upgrading of Pillar Point Sewage Treatment Works – Design, Build and Operate
Report Name	67 <sup>th</sup> Monthly EM&A Report (10 <sup>th</sup> Monthly Operation Phase Monitoring Report for May 2016)
Report Date	June 2016
Report for	ATAL Engineering - Degrémont SA - China State Construction Engineering Joint Venture

#### PREPARATION, REVIEW AND AUTHORISATION

Revision #	Date	Prepared by	Reviewed by	Approved by
1.0 (Draft)	June 2016	Man CHEUNG	Vivian CHAN	Alexi BHANJA
2.0 (Final)	June 2016	Man CHEUNG	Vivian CHAN	Alexi BHANJA

#### **ISSUE REGISTER**

Distribution List	Date Issued	Number of Copies
ATAL Engineering - Degrémont SA - China State Construction Engineering Joint Venture	June 2016	1 soft copy
SMEC Project File:		1 electronic

#### SMEC COMPANY DETAILS

#### **SMEC Asia Limited**

27/F Ford Glory Plaza, 37-39Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong T +852 3995 8100 | F +852 3995 8101 smecasia@smec.com | www.smec.com

The information within this document is and shall remain the property of SMEC Asia Limited



## **CONTENTS**

EXEC	UTIVE	SUMMARY1
	Breach	of Action and Limit Levels1
	Environ	mental Complaint
Reporting Ch		ng Change2
	Major A	Activities on Site 2
	Future	Key Issues2
1	INTRO	DUCTION2-1
	1.1	Background2-1
	1.2	Major Activities on Site
	1.3	Purpose of the Report2-1
2	ODOU	R MONITORING 2-1
	2.1	Monitoring Methodology and Parameters2-1
	2.2	Monitoring Stations2-1
	2.3	Monitoring Personnel
	2.4	Action and Limit Levels
	2.5	Event and Action Plan2-3
	2.6	Monitoring Results and Observations2-3
	2.7	Odour Complaint Registration System2-3
3	ODOU	R EMISSION MONITORING
	3.1	Monitoring Methodology and Parameters
	3.2	Monitoring Stations
	3.3	Monitoring Equipment
	3.4	Action and Limit Levels
	3.5	Event and Action Plan
	3.6	Monitoring Results
4	PPWQ	M EFFLUENT QUALITY MONITORING
	4.1	Monitoring Methodology and Parameters4-1
	4.2	Monitoring Stations
	4.3	Sampling Equipment
	4.4	Effluent Discharge Assumptions and Limit4-3
	4.5	Monitoring Results



5	PPWQ	M WATER QUALITY MONITORING
	5.1	Monitoring Methodology and Parameters5-1
	5.2	Monitoring Stations5-2
	5.3	Monitoring Equipment5-2
	5.4	Action and Limit Levels5-2
	5.5	Monitoring Results and Observations5-3
6	PPWQ	M BENTHIC SURVEY
	6.1	Monitoring Methodology and Parameters6-1
	6.2	Monitoring Stations6-2
	6.3	Monitoring Equipment6-3
	6.4	Wet Season Baseline Ecological Status of the Benthic Communities
	6.5	Monitoring Results6-4
7	PPWQ	M SEDIMENT QUALITY MONITORING7-1
	7.1	Monitoring Methodology and Parameters7-1
	7.2	Monitoring Stations7-2
	7.3	Monitoring Equipment7-2
	7.4	Action and Limit Levels
	7.5	Monitoring Results and Observations7-2
8	LANDS	CAPE AND VISUAL MONITORING
	8.2	Monitoring Results and Recommendations8-1
9	ECOTO	DXICOLOGICAL ASSESSMENT9-1
	9.1	Assessment Methodology9-1
	9.2	Whole Effluent Toxicity Test (WETT)9-1
	9.3	Monitoring Results9-5
10	CONCLUSION	



## **APPENDICES**

- Appendix A Nose Sensory Test Report
- Appendix B Odour Monitoring Results and Field Record Sheet
- Appendix C Monitoring Equipment Calibration Certificates
- Appendix D Odour Emission Monitoring Results
- Appendix E Locations for Sediment Sampling and Benthic Survey
- Appendix F PPWQM Effluent Quality Monitoring Results
- Appendix G PPWQM Water Quality Monitoring Results
- Appendix H PPWQM Sediment Quality Monitoring Results
- Appendix I Event and Action Plan
- Appendix J Weather Condition
- Appendix K Landscape & Visual Impact Monitoring

## **TABLES**

- Table 2-1 Monitoring Locations for Odour Patrol
- Table 2-2
   Action and Limit Levels for Odour Patrol
- Table 3-1
   Monitoring Locations for Air Sampling
- Table 3-2
   Odour Emission Monitoring Equipment
- Table 3-3
   Design Requirements for Outlet Stacks of Deodourizing Units
- Table 3-4 Action and Limit Levels for Odour Emission Monitoring
- Table 4-1
   Effluent Quality Monitoring Parameters and Frequency
- Table 4-2 Effluent Quality Monitoring Equipment
- Table 4-3 Assumed Effluent Loadings from the Upgraded PPSTW in the EIA Report
- Table 4-4Effluent Loadings from the Upgraded PPSTW in Water Discharge license
- Table 5-1 Water Quality Monitoring Parameters, Frequency and Water Depth
- Table 5-2
   Monitoring Locations for Water Quality Monitoring
- Table 5-3
   Water Quality Monitoring Equipment
- Table 5-4 Action and Limit Levels for Water Quality
- Table 6-1
   Benthic Survey Wet Season Baseline Results Summary
- Table 7-1
   Sediment Quality Monitoring Parameters and Measurement Methods



- Table 7-2Action and Limit Levels for Sediment Quality
- Table 8-1
   Summary of Site Audit Findings and Recommendations
- Table 9-1
   List of Contaminants and Analytical Methods to be Applied
- Table 9-2
   Target Toxicity Levels of PPSTW Effluent
- Table 9-3 Test Acceptability Criteria
- Table 10-1Monitoring Dates During the Reporting Month

## **FIGURES**

- Figure 1-1 Site Location
- Figure 2-1 Monitoring Locations for Odour Patrol
- Figure 3-1 Air sampling locations
- Figure 4-1 Monitoring Locations for Effluent Quality Monitoring
- Figure 5-1 Monitoring Locations for Water Quality Monitoring



## **EXECUTIVE SUMMARY**

- E.1. In accordance with the Environmental Monitoring and Audit Manual (EM&A Manual) and the Environmental Permit (EP-321/2008/B) for the Upgrading of Pillar Point Sewage Treatment Works (PPSTW) (the Project), odour and water quality monitoring is required during the first year after Project commissioning and Water Quality Monitoring is required for each emergency discharge event. The purpose of operation phase monitoring is to confirm the predictions of odour and water quality made in the EIA report.
- E.2. As confirmed by the Contractor, all major construction activities of the upgraded PPSTW has been completed in August 2015. The Operation Phase of the Upgraded PPSTW commenced on 15 August 2015. This Monthly Operation Phase Monitoring Report (Post-commissioning) summarizes monitoring events carried out during postcommissioning period from 1 to 31 May 2016. There were a total of eight monitoring events carried out during the reporting period. The exact dates of monitoring carried out in this month are tabulated below:

Monitoring Events	10 <sup>th</sup> Reporting Month Monitoring Period: 1 – 31 May 2016
Odour Monitoring	16/5/2016
Effluent Quality Monitoring	19/5/2016 - 20/5/2016
Sediment Quality Monitoring	15/5/2016
Benthic Survey	15/5/2016
Water Quality Monitoring	24/5/2016
Ecotoxicological Monitoring Sampling	19/5/2016 - 20/5/2016
H <sub>2</sub> S Monitoring	1/5/2016 - 31/5/2016
	(continuous monitoring)
Landscape and Visual Monitoring	12/5/2016

#### Table E-1 Dates of Monitoring Events

E.3. The monitoring results obtained were certified by the Environmental Team (ET) Leader and verified by the Independent Environmental Checker (IEC) in accordance with the EM&A Manual.

## **Breach of Action and Limit Levels**

- E.4. No exceedance of Action and Limit Level of odour monitoring was recorded at the monitoring location in the reporting month.
- E.5. No exceedance of Action and Limit Level of odour emission monitoring was recorded at the monitoring location in the reporting month.
- E.6. 8 exceedances of Action Level and 10 Limit Level exceedance of water quality monitoring were recorded at the monitoring location in the reporting month. The exceedances are considered to be non-project related.



- E.7. 6 exceedances of Action Level and 46 exceedances of Limit Level for sediment quality monitoring were recorded at the monitoring location in the reporting month. The exceedances are considered to be non-project related.
- E.8. The monitoring results for benthic survey are pending and the results will be reported in the next reporting period.
- E.9. The assessment results for ecotoxicological assessment are pending and the results will be reported in the next reporting period.
- E.10. No non-compliance of the landscape and visual monitoring has been recorded in the reporting month.

## **Environmental Complaint**

E.11. In this reporting period, no environmental complaint in relation to the EM&A Programme was recorded.

### **Reporting Change**

E.12. This is the 10<sup>th</sup> Monthly Operation Phase Monitoring report and no reporting changes were made in the Reporting Period.

## Major Activities on Site

- E.13. The major activities being carried out on site during the reporting period is list as follows:
  - Normal operation of the upgraded PPSTW.

### **Future Key Issues**

- E.14. The Project has entered the Operation Phase since August 2015 and the upgraded PPSTW will continue its normal operation in the following monitoring period. Mitigation measures as proposed in the approved Environmental Impact Assessment report will be provided and maintained at the Project.
- E.15. Potential environmental impacts arising from the Project operation are mainly associated with odour and effluent discharging from the Project.



## **1** INTRODUCTION

## 1.1 Background

- 1.1.1 Before the upgrading, the Pillar Point Sewage Treatment Works (PPSTW) was a preliminary treatment works with 5.79m<sup>3</sup>/s capacity located at the north of Tuen Mun River Trade Terminal and bounded by Lung Mun Road to the north, as shown in *Figure 1-1*. The PPSTW used to provide only preliminary treatment screening followed by grit removal prior to effluent discharge into the sea (within the North Western Water Control Zone) via twin submarine outfalls.
- 1.1.2 The *Review of the Tuen Mun and Tsing Yi Sewerage Master Plan*, commissioned in February 1999, recommended upgrading the capacity of PPSTW to 6.08m<sup>3</sup>/s and upgrading the treatment level to incorporate Chemically Enhanced Primary Treatment (CEPT) with Ultraviolet (UV) disinfection. The aim of the upgrading works (the Project) is to provide sufficient capacity to meet future demand and pollutant loading for ultimate development scenario for Tuen Mun area, and to improve effluent quality.
- 1.1.3 An Environmental Impact Assessment (EIA) (EIA-145/2008) was carried out for the Project and was approved without conditions by the Environmental Protection Department (EPD) on 10 June 2008. An Environmental Permit (EP) (EP 321/2008) issued on 17 November 2008. Two Applications for variation of the EP was submitted and approved, and varied EPs, EP 321/2008/A and EP-321/2008/B were issued on 23 April 2013 and 30 May 2014 respectively. The Environmental Monitoring & Audit Manual (EM&A Manual) and EP provide guidelines for the Operational Phase Monitoring Reports and for preparation of the Operational Phase Monitoring Reports.

## 1.2 Major Activities on Site

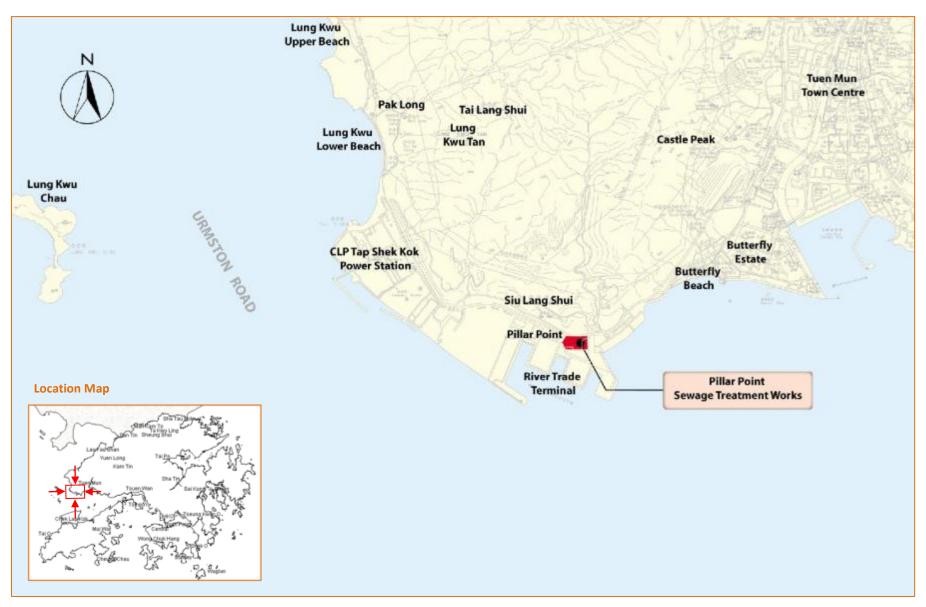
- 1.2.1 The major activities being carried out on site during the reporting period is list as follows:
  - Normal operation of the upgraded PPSTW.

## **1.3** Purpose of the Report

1.3.1 This is the tenth Monthly Operational Phase Monitoring Reports which summarizes the findings of EM&A works during the reporting period from 1 to 31 May 2016.



#### Figure 1-1 Site Location



#### 7076134| D18/02 | Revision No. 2 | June 2016

z:\jobs\7076134 - atal - et for ppstw operation period\08 submission\4. em&a report\2. post-commission\10 monthly report (may 16)\7076134 d18 operation phase monitoring monthly report (may 2016) v2.2.docx



## 2 ODOUR MONITORING

## 2.1 Monitoring Methodology and Parameters

- 2.1.1 In accordance with Section 2.7.1.1 to 2.7.1.9 of the final EM&A Manual, odour patrols are required to be conducted for a period of one year during the operation of the upgraded PPSTW, one patrol for daytime and one patrol for evening every month at the same locations as for the baseline monitoring.
- 2.1.2 The 1-year monthly odour patrol might be extended as stipulated in second and third bullet point in Table 2.4 of Final EM&A Manual.
- 2.1.3 The odour monitoring should not be undertaken on rainy days and hourly meteorological conditions (temperature, wind speed & direction, humidity) as shown in *Appendix J* were recorded in the monitoring period.
- 2.1.4 The odour patrol shall be conducted by two independent trained personnel/ competent persons patrolling and sniffing along the PPSTW boundary and the air sensitive receivers (ASRs) in the vicinity of the PPSTW as identified in Section 2.4.1.4 of the final EM&A Manual. The odour patrol shall be carried from less odorous locations to stronger odorous locations.
- 2.1.5 Subject to the prevailing weather forecast condition, odour patrol shall be conducted by independent trained personnel/competent persons at the downwind locations. During the patrol, the sequence should start from less odourous locations to stronger odourous locations.
- 2.1.6 The trained personnel/competent persons shall record the findings including odour intensity, odour nature and possible sources and local wind speed and direction at each monitoring location. The perceived odour intensity is divided into five levels (0 to 4):
  - 0 Not detected. No odour perceived or an odour so weak that it cannot be easily characterised or described.
  - 1 Slight identifiable odour, and slight chance to have odour nuisance.
  - 2 Moderate identifiable odour, and moderate chance to have odour nuisance.
  - 3 Strong identifiable, likely to have odour nuisance.
  - 4 Extreme severe odour, and unacceptable odour level.

## 2.2 Monitoring Stations

2.2.1 The identified monitoring locations for odour patrol are tabulated in *Table 2-1* and illustrated in *Figure 2-1*.

#### Table 2-1 Monitoring Locations for Odour Patrol

Station ID	Description
A1	River Trade Terminal Office
A2	Chu Kong Warehouse 1



Station ID	Description
A3	Chu Kong Warehouse 2
A4	Wai Sang Sawmill Ltd. <sup>1</sup>
A5	Pillar Point Fire Station
A6	Sunhing Hung Kai Tuen Mun Godown
A7	EMSD Vehicle Servicing Station
S1	Northern Site Boundary
S2	Eastern Site Boundary
S3	Southern Site Boundary
S4	Western Site Boundary

## 2.3 Monitoring Personnel

- 2.3.1 The two independent trained personnel/competent persons (the "panellists") have satisfied the requirements listed in Section 2.3.1.9 and 2.7.1.4 of the approved EM&A Manual during odour patrol, namely:
  - Have their individual odour threshold of n-butanol in nitrogen gas in the range of 20 to 80ppb/v required by the European Standard Method (EN 13725).
  - Be at least 16 years of age and willing and able to follow instructions.
  - Be free from any respiratory illnesses.
  - Be engaged for a sufficient period to build up and monitor/detect at several monitoring location.
  - Not be allowed to smoke, eat, drink (except water) or use chewing gum or sweets 30 min before and during odour intensity analysis.
  - Take great care not to cause any interference with their own perception or that of others by lack of personal hygiene or the use of perfumes, deodorants, body lotions or cosmetics.
  - Not communicate with each other about the results of their choices.
  - Do not normally work at or live in the area in the vicinity of PPSTW.
- 2.3.2 The two qualified panellists are Ms KONG Wing Man, Samantha and Mr CHEUNG Man Kit. The Nose Sensory Test Reports of the two panellists are provided in *Appendix A*.

## 2.4 Action and Limit Levels

2.4.1 The Action and Limit Levels as proposed in Table 2.5 of the final EM&A Manual are summarized in *Table 2-2*.

<sup>1.</sup> Wai Sang Sawmill Ltd. had been demolished, the patrol and the monitoring location was kept as the same location as Pre-commissioning monitoring conducted in Year 2013.



#### Table 2-2 Action and Limit Levels for Odour Patrol

Parameter	Action Level	Limit Level
Odour Nuisance (from odour	Odour intensity of higher than	Odour intensity of 2 or above
intensity analysis or odour	1 is measured from odour	is measured from odour
patrol)	intensity analysis	intensity analysis

**Note:** To avoid ambiguity, a more conservative approach will be adopted: Action Level will be trigger when odour intensity equals to 1 and Limit Level will be triggered when odour intensity is 2 or above due to the operation of the PPSTW.

### 2.5 Event and Action Plan

2.5.1 The Event and Action Plan for Odour Quality Monitoring is provided in *Appendix I*.

### 2.6 Monitoring Results and Observations

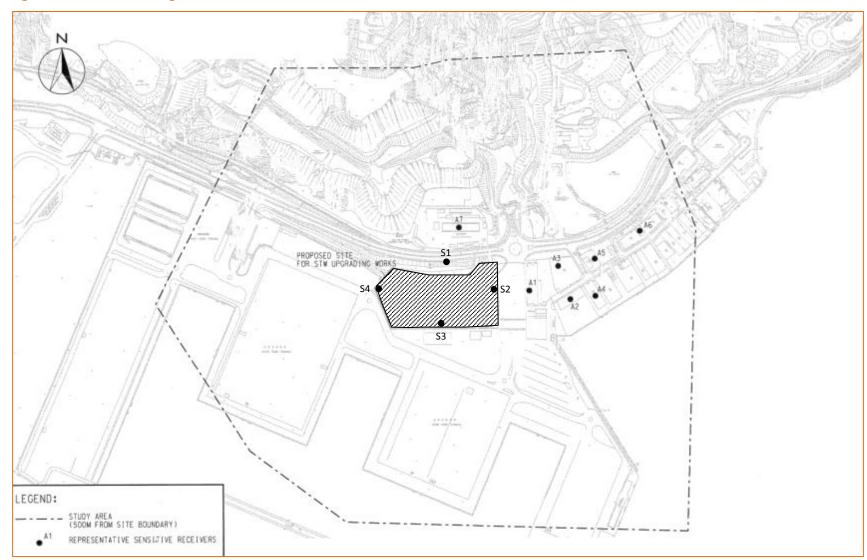
- 2.6.1 The odour patrol was carried out on 16 May 2016 during daytime and evening by two "panellists" (Panellist A and Panellist B) at all monitoring stations, as required by the EM&A Manual.
- 2.6.2 The Hong Kong Observatory's Tuen Mun Weather Station reported that the weather on the day of the patrol was cloudy. The weather condition during the period is provided in *Appendix J*.
- 2.6.3 The results for odour patrol at each monitoring location are provided in *Appendix B*.
- 2.6.4 No exceedance of the action or limit level was identified during the reporting period.
- 2.6.5 During the odour patrol, no noticeable odour due to operation of the PPSTW was observed at the sensitive receivers.
- 2.6.6 As predicted in Section 3.8.2.1 of the Final EIA report, there shall be no exceedances of the odour criteria at ASRs located outside of the project boundary. Since no odour monitoring results exceeded the odour criteria, the monitoring verified that the EIA predictions were correct.

## 2.7 Odour Complaint Registration System

2.7.1 An odour complaint registration system has been set up for the project. No odour complaint was received and registered in the odour complaint registration system in the reporting month.



#### Figure 2-1Monitoring Locations for Odour Patrol





## **3 ODOUR EMISSION MONITORING**

## 3.1 Monitoring Methodology and Parameters

3.1.1 In accordance with Section 3.8 of the Register of Change under Environmental Permit (EP) dated March 2013, two rounds of air sampling and olfactometric analysis are required to be conducted under full-load operation of the upgraded Pillar Point Sewage Treatment Works (PPSTW) to monitor the performance and effectiveness of the deodorization units. The first round of air sampling and olfactometric analysis will be conducted upon commissioning of the upgraded PPSTW and the second round will be carried out 1 year thereafter. The upgraded PPSTW commissioned on 15 August 2015 and the first round of air sampling and olfactometric analysis was carried out on 21 September 2015.

#### Air Sampling & Olfactomectric Analysis

#### Air Sampling Requirements and Methodology

- 3.1.2 As stipulated in 1.3.2 of Annex 3F of the Final EM&A Manual, the source temperature shall be measured at the time of air sampling. Other meteorological conditions including wind speed, wind direction and relative humidity should also be measured at the time of the monitoring. Two samples at each inlet/ outlet should be collected. Air sampling shall not be conducted in rainy days as it would affect the odour strength of the sources.
- 3.1.3 The air sampling procedure followed the European Standard Method EN13725:2003 and the procedures are listed as follow:
  - i. The sampling bags were prepared by filling the sampling bags with odour-free air at the odour laboratory to test any leaking problem.
  - ii. Sampling bags were emptied before sampling.
  - iii. For area sources, air samples were collected by hood sampling method. The odour sampling system includes a battery-operated air pump, a sampling vessel, and nalophane odour bags. Empty sample bag was placed in a rigid plastic container and the container was then evacuated at a controlled rate and the bag was filled. Sufficient volume of gas sample was collected at each sampling location and wind tunnel was employed during the sampling work.
  - iv. For non-area sources or "hood" method cannot be applied due to site constraint, the air samples were collected using a positive displacement pump and nalophane odour bags. The Positive displacement pump would be connected to the odour source and the sample bag was filled at a fixed flowrate.
  - v. The odour bags are Odour-free, which no odours added to the samples. The sampling bags were made of a material which does absorb or react with odorous samples. The odour bags were sufficiently impervious, reasonably robust, leak-free, equipped with leak-free fittings, compatible with olfactometer and other sampling equipment and the bags have sufficient capacity to complete a full test series.
  - vi. The temperature of the sampling bags was kept above dew point and exposure of samples to sunlight was avoided. Exposure of samples to direct sunlight was avoided to minimise photochemical reactions.



vii. The odour samples were delivered to a qualified laboratory for olfactometric analysis analysed within twenty-four hours.

#### **Olfactometric Analysis Requirements and Methodology**

- 3.1.4 The collected air samples were transported to Hong Kong Productivity Council (HKPC), which is a qualified laboratory for olfactometric analysis, within 24 hours.
  - i. The odour concentrations of the samples were determined by a forced-choice dynamic olfactometer with a panel of human assessors.
  - ii. The odour concentration is measured by determining the dilution factor required to reach the detection threshold, which is  $10u/m^3$ .
  - iii. The odour laboratory was ventilated to maintain an odour-free environment and to provide air to the panel members.
  - iv. The panellists were screened beforehand by using a 50-ppm solution/mixture of certified n-butanol standard gas in at least 3 sections on separated days with a pause of at least one day between sections, which the most sensitive and least sensitive individuals were eliminated and each odour testing session should comprise of 6 to 8 qualified panellists in 2 rounds of analysis.
  - v. The panel members were not allowed to eat or smoke one hour prior to the session, or use perfumes, after-shave lotions or any other fragrant essences before the session. They should be in the odour room 15 minutes before measurements. If they had health problems that affect their noses, they were not allowed to attend the testing session. No panel member were involved in the odour testing for more than 4 hours, within this period at least 2 ten minutes breaks for olfactory rest should be taken. The odour panel were housed in a room that constructs of odour-free materials and equipped with ventilation system.
  - vi. Regular calibration of the olfactometer was performed yearly to check the accuracy and repeatability of its dilution settings and to establish its calibration history. The olfactometer was calibrated regularly using propane as a tracer, which is an option recommended in BS 13725:2003 calibration method. The accuracy and repeatability of the olfactometer are calculated from two propane concentrations, one measured at the sniffing port of the olfactometer and once being the certified propane concentration.

#### H<sub>2</sub>S Measurement

#### H<sub>2</sub>S Measurement Methodology

i. H<sub>2</sub>S level sensors were installed at the respective inlet and outlet of the deodorization units to continuously monitor the H<sub>2</sub>S emission level at the stacks and H<sub>2</sub>S removal efficiency of the deodorization units.



## **3.2** Monitoring Stations

3.2.1 The air samples collection locations are tabulated in *Table 3-1* and illustrated in *Figure 3-1*.

#### Table 3-1 Monitoring Locations for Air Sampling

Deodourization Unit Portion	Station ID	Description
А	A1	Inlet for Portion A of the Deodorization Unit
	A2	Outlet from Activated Carbon Filter A1
	A3	Outlet from Activated Carbon Filter A2
В	B1	Inlet for Portion B of the Deodorization Unit
	B2	Outlet from Activated Carbon Filter B1
	B3	Outlet from Activated Carbon Filter B2

### 3.3 Monitoring Equipment

3.3.1 The equipment used for H<sub>2</sub>S Gas Detector was listed in *Table 3-2* and calibration certificates for this equipment were provided in *Appendix C*.

#### Table 3-2 Odour Emission Monitoring Equipment

Equipment	System Model	Detector Model	Unit	Channel Number	Serial Number
H <sub>2</sub> S Gas	"Crowcon"	"Crowcon" Xgard	А	1	410710/08-1
Detector	Gasmonitor Plus	Type 1 H <sub>2</sub> S Gas Detector		4	410710/07-13
	Control Panel			5	410710/07-9
			В	1	410710/08-2
					4
				5	410710/07-12

### 3.4 Action and Limit Levels

3.4.1 The design requirements for stacks (A2, A3 and B2, B3) of deodourizing units A and B stipulated in the Register of Change under Environmental Permit (EP) were summarized in *Table 3-3*.

#### Table 3-3Design Requirements for Outlet Stacks of Deodourizing Units

Stack of Deodorizing unit	Design requirements of deodorizing unit	Odour emission rates
A2	<ul> <li>H=6.81m</li> <li>V=19.58m/s</li> <li>D=0.62m</li> </ul>	1,786 ou/s (total emission from all vent pipes)
А3	<ul> <li>H=6.81m</li> <li>V=19.58m/s</li> <li>D=0.62m</li> </ul>	

z:\obs\7076134 - atal - et for ppstw operation period\08 submission\4. em&a report\2. post-commission\10 monthly report (may 16)\7076134 d18 operation phase monitoring monthly report (may 2016) v2.2.docx



Stack of Deodorizing unit	Design requirements of deodorizing unit	Odour emission rates
B2	<ul> <li>H=6.81m</li> <li>V=20.00m/s</li> <li>D=0.62m</li> </ul>	1,809 ou/s (total emission from all vent pipes)
B3	<ul> <li>H=6.81m</li> <li>V=20.00m/s</li> <li>D=0.62m</li> </ul>	

# 3.4.2 The Action and Limit Levels as proposed in Table F.1 of Annex 3F of the Register of Change under Environmental Permit (EP) are summarized in *Table 3-4*.

#### Table 3-4 Action and Limit Levels for Odour Emission Monitoring

Parameter	Action Level	Limit Level
Odour Emission (from air sampling, olfactometric analysis and H <sub>2</sub> S measurement)	Odour emission rate from the outlet of the deodorizaiton unit exceeds 80% of the permitted value in <i>Table 3-3</i> .	Odour emission rate from outlet of the deodorization unit exceeds the permitted value in <i>Table 3-3</i> .

### **3.5** Event and Action Plan

3.5.1 The Event and Action Plan for Air Quality Monitoring (Operation Phase) is provided on *Appendix I*.

## 3.6 Monitoring Results

#### **Air Samples and Olfactometric Analysis**

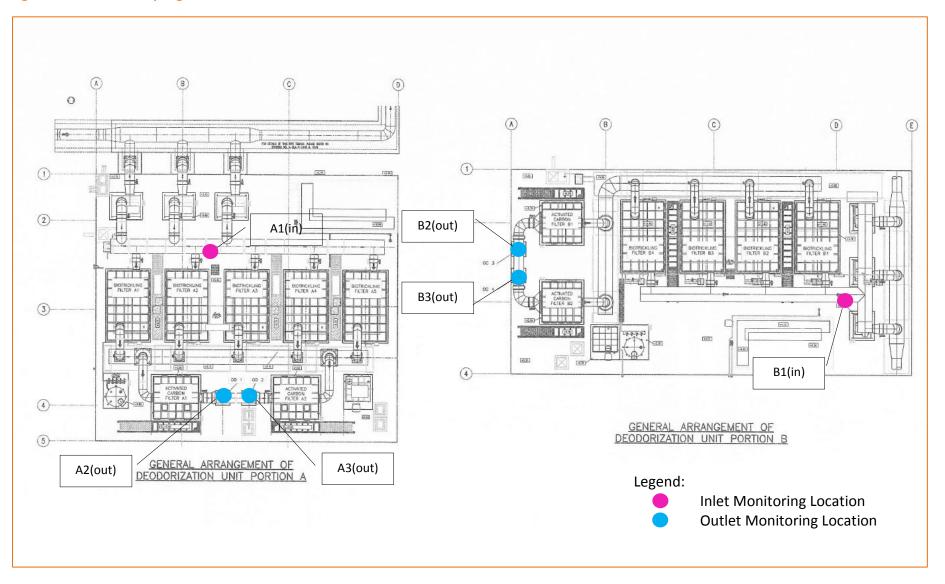
3.6.1 No air sampling for olfactometric analysis was carried out during the reporting month. The next monitoring is scheduled in August 2016, at 1 year after commissioning of the upgraded PPSTW, and the exact date of sampling will be agreed with the Independent Environmental Checker (IEC) in due course.

#### H<sub>2</sub>S Monitoring

- 3.6.2 Continuous H<sub>2</sub>S monitoring was conducted from 1 to 31 May 2016 and the results were provided in *Appendix D*.
- 3.6.3 As shown in the continuous H<sub>2</sub>S monitoring results, the average percentage of H<sub>2</sub>S removal efficiency of the deodorization units were 100%, which is well above the designed control efficiency of at least 90% of the deodorizing units as stipulated in Condition 2.6 of the Environmental Permit No.EP-321/2008/B (EP). To conclude, the effectiveness of the odour control system complied with the design criteria and satisfies the EP requirements.



#### Figure 3-1 Air sampling locations





## 4 **PPWQM Effluent quality Monitoring**

## 4.1 Monitoring Methodology and Parameters

- 4.1.1 In accordance with Para 3.4.1.1 of the approved EM&A Manual, a one year impact monitoring of Post Project Water Quality Monitoring (PPWQM) programme shall be implemented after Project commissioning. Effluent quality monitoring is required as part of the PPWQM programme and shall be carried out during the operation phase of the upgraded PPSTW.
- 4.1.2 Para 1.2.1 of Appendix E of the approved EM&A Manual stated that two cycles of effluent sampling each of a full 24-hour period during both wet and dry seasons over the field work period of one year shall be carried out to characterize the quality of the treated effluent.
- 4.1.3 Operation Phase of the upgraded PPSTW was scheduled to commence on 15 August 2015, hence the one year operation phase monitoring period shall run from 15 August 2015 to 14 August 2016. The first wet season operation phase effluent quality monitoring was completed on 23 August 2015 and 24 August 2015. Two round of dry season operation phase effluent quality monitoring were completed on 9 November 2015 to 10 November 2015 and 3 February to 4 February 2016 respectively. The second wet season effluent quality monitoring was completed on 19 May 2016 and 20 May 2016.
- 4.1.4 Effluent monitoring parameters and frequency for effluent quality monitoring as agreed by the Director of Environmental Protection (DEP) are summarised in *Table 4-1*.

Parameter (unit)	Туре	Frequency
E.coli (CFU/1000mL)		
Biochemical Oxygen Demand (mg/L)		
Suspended Solids (SS) (mg/L)		
Ammonia as N (mg/L)		
Total Nitrogen as N (mg/L)		Two cycles of a full 24-hour period during both wet and dry seasons. <sup>2</sup>
Total Nitrogen as N – Filtered (mg/L)	Laboratory Analysis	
Total Phosphorous as P (mg/L)		
Total Phosphorous as P – Filtered (mg/L)		
Total Organic Carbon (mg/L)		
Aluminum (Al) (μg/L)		
Boron (B) (µg/L)		
Iron (Fe) (µg/L)		
Mercury (Hg) (µg/L)		

<sup>2.</sup> The proposal included the appropriate time intervals over the 24 hour period and analysed for a range of variables were endorsed by IEC on 16 November 2012 and approved by EPD on 5 March 2013.



Parameter (unit)	Туре	Frequency
Arsenic (As) (μg/L)		
Barium (Ba) (µg/L)		
Cadmium (Cd) (µg/L)		
Chromium (Cr) (μg/L)		
Copper (Cu) (µg/L)		
Lead (Pb) (µg/L)		
Manganese (Mn) (µg/L)		
Nickel (Ni) (μg/L)		
Silver (Ag) (µg/L)		
Vanadium (V) (µg/L)		
Zinc (Zn) (μg/L)		

- 4.1.5 All laboratory analyses were carried out by ALS Technichem (HK) Pty Limited and Enviro Labs Limited. Both two laboratories are HOKLAS accredited laboratory.
- 4.1.6 A composite sample of treated effluent was collected by an auto sampler (Hach Sigma AWRS Sampler) on a half-hourly basis over a 24-hour period. The sample was then stored in insulated containers with ice packs to maintain a dark and below 4°C condition without freezing. All collected samples were delivered to the testing laboratory within 24 hours of sampling.

## 4.2 Monitoring Stations

4.2.1 Effluent quality monitoring was carried out at the effluent outlet of the PPSTW as shown in *Figure 4-1*.

## 4.3 Sampling Equipment

4.3.1 An auto effluent sampler, Hach Sigma AWRS Sampler, as shown in *Photo 4-1* was installed at the site for collection of effluent sample for laboratory analysis. Details of the sampler are provided in *Table 4-2*.

#### Photo 4-1 Hach Sigma AWRS Sampler





### Table 4-2 Effluent Quality Monitoring Equipment

Equipment	Brand and Model	Serial Number
Hach Sigma AWRS Sampler	Hach Sigma AWRS Sampler Model 3542SDRH	131000484113

#### Effluent Sampling Procedures

- i. The power supply was checked to ensure the sampler works properly.
- ii. The polyethylene sampling bottles were installed properly in the sampler and were cleaned for up to 3 times with source liquid prior to sample collection.
- iii. The auto sampler automatically collected treated effluent in sampling bottle from the discharge outlet of the PPSTW on an half-hourly basis over 24-hours period.
- iv. Technician gathered 24 hourly treated effluent samples and mixed all samples up in a bucket.
- v. A composite effluent sample was collected from the bucket and stored in appropriate containers with suitable preservative as provided by the laboratory.
- vi. The samples were sent to HOKLAS accredited laboratory immediately for analysis.

## 4.4 Effluent Discharge Assumptions and Limit

4.4.1 As presented in Table 4.13 of the approved EIA report and repeated in *Table 4-3* below, effluent loadings from the upgraded PPSTW were assumed and used to assess the potential impact to the receiving marine water.

#### Table 4-3 Assumed Effluent Loadings from the Upgraded PPSTW in the EIA Report

	TSS (mg/L)	BOD₅ (mg/L)	E. coli (counts/100mL)
Effluent Loadings at 95 Percentile	120	180	300,000

4.4.2 As presented in *Table 4-4* below, effluent loadings from the upgraded PPSTW were assumed and used to assess the potential impact to the receiving marine water.

#### Table 4-4Effluent Loadings from the Upgraded PPSTW in Water Discharge license

	TSS (mg/L)	BOD₅ (mg/L)	E. coli (counts/100mL)
Effluent Loadings at 95 Percentile	120	180	300,000
Upper Limit	240	360	#20,000

#: The upper limit is monthly geometric mean.

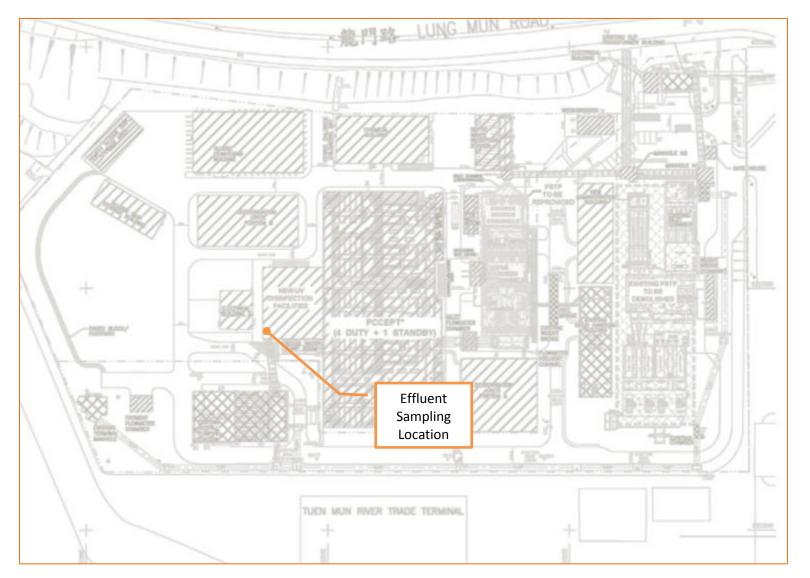


## 4.5 Monitoring Results

- 4.5.1 The monitoring was conducted from 00:00 to 24:00 of 19 May 2016 and the effluent sample was collected on 20 May 2016 for all parameters analysis except that a grab sample for E.Coli analysis was collected onsite on 20 May 2016. Effluent quality monitoring results are shown in *Appendix F*.
- 4.5.2 Effluent quality monitoring demonstrated that the assumed effluent loading from the upgraded PPSTW can be achieved and therefore the water quality predictions made in the EIA are considered valid.



#### Figure 4-1Monitoring Locations for Effluent Quality Monitoring





## 5 **PPWQM WATER QUALITY MONITORING**

## 5.1 Monitoring Methodology and Parameters

- 5.1.1 In accordance with Section 3.4.1.1 of the final EM&A Manual, PPWQM programme shall be implemented during first year of the Operation Phase of the upgraded PPSTW.
- 5.1.2 Section 1.3.1 of Appendix E of the final EM&A Manual stated that water quality monitoring should be performed four times over the field work period of one year to give adequate coverage of different tidal states during both wet and dry seasons. The operation phase of Upgraded PPSTW commenced on 15 August 2015, hence the one year field work shall run from 15 August 2015 to 14 August 2016. The first wet season and dry season operation phase water quality monitoring were completed on 26 August 2015 and on 5 November 2015 respectively. The second dry season water quality monitoring was completed on 18 February 2016, and the second wet season operation phase water monitoring works was completed on 24 May 2016.
- 5.1.3 Water monitoring parameters, frequency and water depths for water quality monitoring as agreed with the Director of Environmental Protection (DEP) <sup>[Ref. #3]</sup> are summarised in *Table* **5-1**.

Parameter (unit)	Туре	Frequency	Water Depth		
Temperature (°C)	In situ				
Turbidity (NTU)					
рН	Measurem				
DO (mg/L and %)	ent		• If water depth		
Salinity (ppt)			>6m, 1m below water surface,		
E.coli (CFU/100mL)			<ul> <li>mid-depth and 1m above seabed</li> <li>If water depth &lt;6m, and &gt;3m, 1m below surface and 1m above seabed</li> <li>If water depth &lt;3m, mid-depth</li> </ul>		
BOD (mg/L)	Laboratory Analysis	Mid-flood tide and Mid-ebb tide			
SS (mg/L)					
Nitrate (mg/L)					
Nitrite (mg/L)					
Total Nitrogen as N (mg/L)					
Total Nitrogen as N – Filtered (mg/L)			only		
Total Phosphorous as P (mg/L)					
Total Phosphorous as P – Filtered (mg/L)					
Ammonia (mg/L)					

#### Table 5-1 Water Quality Monitoring Parameters, Frequency and Water Depth

5.1.4 All laboratory analyses were carried out by ALS Technichem (HK) Pty Limited, which is a HOKLAS accredited laboratory.

7076134 D18/02 Revision No. 2 June 2016 z:\jobs\7076134 - atal - et for ppstw operation period/08 submission\4. em8a report\2. post-commission\10 monthly report (may 15)\7076134 d18 operation phase monitoring monthly report (may 2016) v2.2.doc

<sup>3.</sup> Via Drainage Services Department's letter memo dated 7 Dec 2012 (ref.: DSD SS 8/4329DS/CE200251/17) and Environmental Department's letter dated 5 March 2013 (ref.: (9) in Ax (11) to EP2/N4/F/34 Pt. 9)



5.1.5 Samples were stored in appropriate containers provided in advance by the testing laboratory. The containers were immediately sealed and labelled. Sample ID and sampling date were marked on each sample. The samples were then stored in insulated containers with ice packs to maintain a dark and below 4°C condition without freezing. All collected samples were delivered to the testing laboratory within 24 hours of sampling.

## 5.2 Monitoring Stations

5.2.1 As agreed with DEP, water quality monitoring was carried out at 11 monitoring stations as shown in *Table 5-2*. Locations are shown in *Figure 5-1*.

Station		Co-ordinates	
ID	Description of Location	Easting	Northing
B1	Butterfly Beach	813517.1	825825.6
B2	Castle Peak Beach	815779.2	826530.7
ВЗ	Kadoorie Beach	816098.4	826328.0
B4	Cafeteria Old Beach	816310.1	826240.2
В5	Cafeteria New Beach	816751.8	825888.4
B6	Golden Beach	816813.5	825493.2
WSD1	Flushing Water Intake near Butterfly Beach	813103.0	825511.1
WSD2	Flushing Water Intake near LRT Terminus	815241.3	825860.0
U2	Secondary Contact Recreation Subzone at Lung Kwu Tan	809704.9	827855.5
NM6	Control Station	820121.5	807822.1
NM1	Control Station	823025.4	820503.9

#### Table 5-2 Monitoring Locations for Water Quality Monitoring

## 5.3 Monitoring Equipment

5.3.1 The equipment used for water quality monitoring was listed in *Table 5-3* and calibration certificates for this equipment were provided in *Appendix C*.

#### Table 5-3 Water Quality Monitoring Equipment

Equipment	Model	Serial Number
Multiparameter sonde	YSI Sonde 6920 v2	00019CB2

## 5.4 Action and Limit Levels

5.4.1 The Action and Limit Levels for the water quality monitoring was established by using the baseline water monitoring data which carried out before commissioning of the upgraded PPSTW for each monitoring locations. The Action and Limit Levels are showed in *Table 5-4*.



## 5.5 Monitoring Results and Observations

- 5.5.1 Water quality monitoring was carried out on 24 May 2016 and the water quality monitoring results are presented in *Appendix G*.
- 5.5.2 As indicated in *Appendix G*, 8 exceedances of the Action Level and 10 Limit Level exceedances for water quality monitoring were recorded in various monitoring stations. The baseline water quality monitoring was conducted in September 2012 to August 2013. After completion of the baseline monitoring, a number of major infrastructure construction projects has then commenced in the western water of Hong Kong that involves a lot of reclamation and marine construction works. These projects were suspected to be the major contributor for marine water quality pollution in the area.
- 5.5.3 Moreover, the effluent quality monitoring results also demonstrated that discharges from the upgraded PPSTW can both comply with the discharge licence criteria and assumptions made in the EIA report. As indicated in *Appendix F*, the recorded results for E.coli, BOD and SS were all respectively below the EIA Design Assumption.
- 5.5.4 As revealed above, the exceedances being recorded shall not be project-related.



#### Table 5-4Action and Limit Levels for Water Quality

	Detection Limit	Dry Season (October to March)		Wet Season (April to September)	
Parameters		Action Level *	Limit Level **	Action Level *	Limit Level **
DO in mg/L	0.01	6.39 (Surface & Middle) 6.25 (Bottom)	6.22 (Surface & Middle) 6.15 (Bottom)	5.14 (Surface & Middle) 4.51 (Bottom)	4.84 (Surface & Middle) 4.49 (Bottom)
DO in %age	0.1	90.0 (Surface & Middle) 88.6 (Bottom)	87.7 (Surface & Middle) 87.2 (Bottom)	74.7 (Surface & Middle) 65.9 (Bottom)	70.6 (Surface & Middle) 65.6 (Bottom)
Turbidity in NTU	0.1	6.8	9.4	6.8	8.4
Salinity in ppt	0.01	31.98	32.15	29.66	30.06
E.coli count	1	90	102	333	1002
BOD in mg/L	2	2	3	2	>2
SS in mg/L	2	11	14	9	13
Nitrate in mg/L	0.01	0.52	0.85	0.7	0.72
Nitrite in mg/L	0.01	0.18	0.29	0.11	0.14
Total Nitrogen in mg/L	0.1	1.2	1.6	1.3	1.4
Total Phosphorous in mg/L	0.1	0.1	>0.1	0.1	>0.1
Ammonia in mg/L	0.01	0.18	0.21	0.21	0.24

#### Note:

\* Action Levels were derived based on 95 percentile of baseline data. If baseline monitoring results were found to be below the detection limit, the detection was used as the Action Level or for calculation of the 95th percentile. During impact monitoring, 120% of upstream control station value at the same tide on the same day shall also be used as the Action Level for assessment of the monitoring results.

\*\* Limit Levels were derived based on 99 percentile of baseline data. If baseline monitoring results were found to be below the detection limit, the detection was used as the Limit level or for calculation of the 99th percentile. During impact monitoring, 130% of upstream control station value at the same tide on the same day shall also be used as the Limit Level for assessment of the monitoring results.



#### Figure 5-1Monitoring Locations for Water Quality Monitoring



## 6 **PPWQM BENTHIC SURVEY**

## 6.1 Monitoring Methodology and Parameters

- 6.1.1 In accordance with Para 3.4.1.1 of the approved EM&A Manual, Post Project Water Quality Monitoring programme was implemented during the first year of Operation Phase. Benthic Survey shall be carried out as part of PPWQM programme during the first year of operation phase of the upgraded PPSTW.
- 6.1.2 Para 1.5.1 of Appendix E of the approved EM&A Manual stated that benthic survey should be performed four times over the field work period of one year, in parallel with the sediment sampling, covering both wet and dry season.
- 6.1.3 The operation of Upgraded PPSTW is scheduled to commence on 15 August 2015, hence the one year operation phase monitoring period shall run from 15 August 2015 to 14 August 2016. The first wet season operation phase benthic survey was carried out on 15 August 2015 and the first dry season operation phase benthic survey was carried out on 14 November 2015 together with sediment quality sampling. The second dry season benthic survey was carried out on 21 February 2016, and the second wet season operation phase benthic survey was carried out on 15 May 2016.
- 6.1.4 The collected benthos samples were analysed for the below parameters through Field Sampling and Laboratory Work:
  - Species composition to the lowest taxonomic level.
  - Benthic community structure.

### Field Sampling

6.1.5 At each monitoring station, five replicates of sediment samples were collected using a  $0.1m^2$  van Veen grab. Collected samples were accepted when at least two-third of grab volume was filled. A photographic record of the sediment texture and colour was taken. The samples were washed with gentle seawater through a plastic box with sieve of 0.5mm mesh size. Large animals that were visible from the residues were hand-picked into a small plastic vial. All remains were transferred into a plastic container for temporary storage.

#### **Laboratory Work**

- 6.1.6 The samples were delivered to laboratory within two hours of completion of field works. The samples were preserved with 70% ethanol solution followed by staining with 1% Rose Bengal solution. The samples were stored for one day to ensure sufficient preservation and staining. The fauna collected were sorted out from the sediment residues. For quality assurance, the sediment residues of one-third sorted samples were randomly rechecked. No missed fauna was found in the recheck.
- 6.1.7 The collected specimens were identified to the lowest taxonomic resolution. Examination of the morphological features of the specimens was undertaken with the aid of both stereoscopic and compound microscopes.

6.1.8 The taxonomic classification was conducted according with the following references: Polychaetes: Day (1967)<sup>[Ref.#4]</sup>, Gallardo (1967)<sup>[Ref.#5]</sup>, Fauchald (1977)<sup>[Ref.#6]</sup>, Yang and Sun (1988)<sup>[Ref.#7]</sup>, Wu et al. (1997)<sup>[Ref.#8]</sup>, Sun and Yang (2004)<sup>[Ref.#9]</sup>; Arthropods: Dai and Yang (1991)<sup>[Ref.#10]</sup>, Dong (1991)<sup>[Ref.#11]</sup>; and Molluscs: Qi (2004)<sup>[Ref.#12]</sup>. The number of individuals of each species was recorded by counting the anterior portions of the fauna only. Total biomass of each species was determined as preserved wet weight, after blotting the animals on filter paper for 3 minutes before weighing to the nearest 0.0001g.

### **Data Analysis**

6.1.9 Data collected from five replicate samples at every monitoring station were pooled together for data analysis. Shannon-Weaver Diversity Index (*H'*) and Pielou's Species Evenness (J) were calculated using the formulae below,

 $H' = -\Sigma (Ni / N) ln (Ni / N)$  (Shannon and Weaver, 1963) J = H' / ln S (Pielou, 1966)

where S is the total number of species in the sample, N is the total number of individuals, and Ni is the number of individuals of the  $i^{th}$  species

## 6.2 Monitoring Stations

- 6.2.1 In accordance with Para 1.5.1 of Appendix E of the approved EM&A Manual, benthic survey was undertaken in parallel with sediment sampling using the same monitoring stations. Nine of the stations represented the sensitive receivers which could potentially be affected by the untreated or partially treated effluent from the PPSTW (B1 to B6: gazetted beaches; WSD1 to WSD2: flushing water intake points and U2: secondary contact recreation subzone).
- 6.2.2 Stations NM1 and NM6 were control stations locating outside the influence zone of the emergency discharge as predicted by the water quality modelling and would unlikely be affected by the PPSTW.
- 6.2.3 During the benthic survey, slight adjustments to the location of seven of the monitoring stations were necessary due to shallow water near the shore that made the original locations inaccessible by the sampling vessel. The revised co-ordinates are provided in *Appendix E* for reference.

<sup>4.</sup> Day, J.H., 1967. A monograph on the polychaeta of South Africa. Trustees of the British Museum, London.

<sup>5.</sup> Gallardo, V., 1967. Polychaeta from the Bay of Nha Trang, South Viet Nam. In: Scientific Results of Marine Investigations of the South China Sea and the Gulf of Thailand 1959-1961, Naga Report 4(3). Scripps Institution of Oceanography, University of California Press. La Jolla, California, 35-279.

<sup>6.</sup> Fauchald, K., 1977. The polychaete worms. Definitions and keys to the orders, families and genera. Natural History Museum of Los Angeles County, Science Series 28. Los Angeles, U.S.A.

<sup>7.</sup> Yang, D.J, Sun, R.P., 1988. Polychaetous annelids commonly seen from the Chinese waters (Chinese version). China Agriculture Press, China.

<sup>8.</sup> Wu, B.L., Wu, Q.Q., Qiu, J.W., Lu, H., 1997. Fauna Sinica, Phylum Annelida, Class Polychaeta, Order Phyllodocimorpha. Science Press. Beijing.

<sup>9.</sup> Sun, R.P., Yang, D.J., 2004. Fauna Sinica. Phylum Annelida. Class Polychaeta II, Order Nereidida. Science Press. Beijing.

<sup>10.</sup> Dai, A.Y., Yang, S.L., 1991. Crabs of the China Seas. China Ocean Press. Beijing.

<sup>11.</sup> Dong, Y.M., 1991. Fauna of ZheJiang Crustacea. Zhejiang Science and Technology Publishing House. ZheJiang.

<sup>12.</sup> Qi, Z.Y., 2004. Seashells of China. China Ocean Press. Beijing, China.

## 6.3 Monitoring Equipment

- 6.3.1 A 0.1m<sup>2</sup> van Veen grab, as shown in *Photo 6-1*, was used to collect sediment samples for laboratory analysis.
  - Photo 6-1 Van Veen Grab Sampler



## 6.4 Wet Season Baseline Ecological Status of the Benthic Communities

6.4.1 The results will be comparing to the wet season mean benthic baseline survey results which were conducted in wet season before commissioning of the upgraded PPSTW at each monitoring locations. The mean of the benthic survey conduct during baseline were showed in *Table 6-1*.

#### Table 6-1 Benthic Survey Wet Season Baseline Results Summary

	Mean					
Station ID	Number of Species (spp. 0.5m²)	Density (ind. m <sup>-2</sup> )	Biomass (g m <sup>-2</sup> )	Shannon weaver Diversity index H'	Pielou's Species Evenness J	
B1	16	110	46.8	2.06	0.74	
B2	13	43	6.2	2.13	0.84	
B3	5	11	2.18	1.59	0.98	
B4	6	17	0.55	1.34	0.95	
B5	14	60	3.02	2.22	0.89	
B6	19	216	36.14	1.88	0.7	
WSD1	31	126	20.61	3.21	0.94	
WSD2	11	70	4.59	1.89	0.86	
U2	18	75	20.01	2.52	0.88	
NM1	30	269	27.52	2.61	0.77	
NM6	23	189	43.64	2.15	0.68	

## 6.5 Monitoring Results

6.5.1 Benthic survey was carried out on 15 May 2016 and analysis of the benthos samples will take 4 to 6 weeks and therefore not available during the time of report preparation. Benthic survey results for this monitoring period will be reported in next monthly operation phase monitoring report.



# 7 PPWQM SEDIMENT QUALITY MONITORING

# 7.1 Monitoring Methodology and Parameters

- 7.1.1 In accordance with Section 3.4.1.1 of the final EM&A Manual, PPWQM programme shall be implemented during first year of the Operation Phase of the upgraded PPSTW.
- 7.1.2 Para 1.4.1 of Appendix E of the approved EM&A Manual stated that sediment quality monitoring should be performed four times over the field work period of one year to give adequate coverage of different tidal states during both wet and dry seasons.
- 7.1.3 The operation of Upgraded PPSTW is scheduled to commence in 15 August 2015, hence the one year operation phase monitoring period shall run from 15 August 2015 to 14 August 2016. The first wet season and dry season operation phase sediment quality monitoring were completed on 15 August 2015 and 15 November 2015 respectively. The second dry season sediment quality monitoring was completed on 21 February 2016, and the second wet season operation phase sediment quality monitoring was carried out on 15 May 2016.
- 7.1.4 *Table 7-1* summarizes the monitoring parameters agreed with the DEP and reference measurement methods.

Parameter	Method Reference / Technique <sup>13</sup>
Percentage of Silt/ Clay	BS 1377
pH Value	АРНА 4500Н: В
Acid Volatile Sulphide (AVS)	Allen H.E. et al , 1991
Total Volatile Solids (TVS)	APHA 2540 G
Total Organic Carbon (TOC)	АРНА 5310 В
Ammonia (NH4-N)	APHA 4500NH3: B&C
Total Nitrogen	APHA 4500Norg: D
	APHA 4500NO3: I
Total Phosphorus	APHA 4500P: B&H
Aluminium, Arsenic, Barium, Boron, Cadmium, Copper, Chromium, Lead, Manganese, Nickel, Silver, Vanadium, Zinc	USEPA 6020A
Iron	USEPA 6010A
Mercury	APHA 3112B

## Table 7-1 Sediment Quality Monitoring Parameters and Measurement Methods

7.1.5 All laboratory analysis was carried out by ALS Technichem (HK) Pty Limited, which is a HOKLAS accredited laboratory.

<sup>13 .</sup>The proposal included the sampling locations and analysis of sediment samples to be conducted were endorsed by IEC on 16 November 2012 and approved by EPD on 5 March 2013.



7.1.6 Samples were stored in appropriate containers provided in advance by the testing laboratory. The containers were immediately sealed and labelled. Sample ID and sampling date were marked on each sample. The samples were then stored in insulated containers with ice packs to maintain a dark and below 4°C condition without freezing. All collected samples were collected by the testing laboratory within 24 hours of sampling.

# 7.2 Monitoring Stations

- 7.2.1 As agreed with the DEP, the sediment quality monitoring were carried out at the same 11 monitoring stations as for water quality monitoring, as shown in *Table 5-2* and in *Figure 5-1*.
- 7.2.2 During the sediment sampling, slight adjustments to the location of seven of the monitoring stations were necessary due to shallow water near the shore that made the original locations inaccessible by the sampling vessel. The revised co-ordinates of the seven monitoring stations (B1, B3 to B6, WSD1 and U2) are provided in *Appendix E* for reference. As far as reasonably practicable, the relocated sampling points were chosen at the closest possible locations from the original locations. The relocated stations were 73 to 341m from the original co-ordinates with similar water depth (difference <1.0m). Hence the sediment quality monitoring data can be aligned with the water quality data.

# 7.3 Monitoring Equipment

7.3.1 A 0.1m<sup>2</sup> van Veen grab, same as the equipment used for benthic survey in *Section 6.3* was used for sample collection.

# 7.4 Action and Limit Levels

7.4.1 The Action and Limit Levels for the sediment quality monitoring was established by using the baseline sediment monitoring data which were gathered before commissioning of the upgraded PPSTW for each monitoring locations. The Action and Limit Levels are shown in *Table 7-2*.

# 7.5 Monitoring Results and Observations

- 7.5.1 Sediment sampling was carried out on 15 May 2016 and the sediment quality monitoring results are summarised in *Appendix H*.
- 7.5.2 As indicated in *Appendix H*, 6 exceedances of Action Level and 46 exceedances of Limit Level for sediment quality monitoring were recorded in various monitoring stations. Similar to the water quality monitoring, baseline sediment quality monitoring was conducted in September 2012 to August 2013. After completion of the baseline monitoring, a number of major infrastructure construction projects has then commenced in the western water of Hong Kong that involves a lot of reclamation and marine construction works. These projects were suspected to be the major contributor for marine water quality pollution in the area.



- 7.5.3 The effluent quality monitoring results also demonstrated that discharges from the upgraded PPSTW can both comply with the discharge licence criteria and assumptions made in the EIA report. As indicated in *Appendix F*, the recorded results for E.coli, BOD and SS were all respectively below the EIA Design Assumption.
- 7.5.4 Thus, the exceedances being recorded shall not be project-related.

### Table 7-2Action and Limit Levels for Sediment Quality

Station ID	B	1	В	2	В	3	В	4	В	5	В	5	WS	5D1	WS	D2	U	2	N	M1	NN	И6
Monitoring Parameters	Action Level	Limit Level																				
рН	7.8	7.8	7.8	7.8	7.8	7.8	8.0	8.0	7.9	7.9	8.1	8.1	8.1	8.1	8.0	8.0	8.1	8.1	8.1	8.1	8.1	8.1
Volatile Solids (%)	6.5	6.7	7.4	7.6	35.3	36.7	5.2	5.2	6.0	6.2	4.3	4.4	4.1	4.2	5.3	5.5	3.6	3.6	2.4	2.4	1.5	1.5
Acid Volatile Sulphides (mg/kg)	46	47	227	233	94	95	40	41	38	39	36	37	37	10	10	23	23	10	10	14	14	10
Ammonia (mg/kg)	10	10	20	20	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Nitrite + Nitrate (mg/kg)	0.5	0.5	0.4	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.5	0.5	0.2	0.2	0.2	0.2	0.4	0.4	1.0	1.0	0.2	0.2
Total Nitrogen																						
(mg/kg) Total Phosphorus	1,090	1,098	1,237	1,239	1,236	1,239	999	1,000	968	970	843	849	590	590	680	688	657	667	631	638	435	439
(mg/kg)	551	554	603	605	631	633	526	528	533	537	439	442	324	324	373	374	459	459	362	364	448	458
Aluminium(mg/kg)	39,800	40,280	45,175	45,595	47,140	47,588	39,655	40,011	38,985	39,317	30,135	30,347	24,135	24,667	32,945	33,789	23,355	23,391	19,582	19,996	17,750	17,950
Boron(mg/kg)	31	31	35	35	33	33	26	26	26	26	21	21	20	20	25	26	23	23	24	24	13	13
Iron(mg/kg)	34,005	34,241	39,295	39,619	38,395	38,639	35,655	35,851	34,280	34,456	26,610	26,762	21,530	21,906	30,385	31,037	52,980	53,796	19,200	19,520	22,220	22,364
Mercury(mg/kg)	0.4	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Arsenic(mg/kg)	12	12	13	13	14	14	13	13	13	13	10	10	7	7	10	10	13	13	8	8	10	10
Barium(mg/kg)	49	49	56	57	56	56	46	46	45	45	36	36	30	30	65	66	30	31	35	36	23	24
Cadmium(mg/kg)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Chromium(mg/kg)	42	42	52	52	52	52	44	44	42	42	31	31	26	27	32	33	31	31	25	26	22	22
Copper(mg/kg)	40	40	81	81	65	65	49	49	45	45	32	32	25	26	54	56	26	26	24	25	13	13
Lead(mg/kg)	40	40	54	54	51	51	42	42	41	41	33	33	26	26	29	30	41	41	63	65	22	22
Manganese(mg/kg)	664	672	543	546	580	583	531	533	537	539	529	535	385	386	480	481	695	701	562	565	356	362
Nickel(mg/kg)	25	25	30	30	30	30	25	25	25	25	18	18	15	15	18	19	19	19	14	14	13	13
Silver(mg/kg)	0.5	0.5	0.7	0.7	0.7	0.7	0.5	0.5	0.6	0.6	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.1	0.1
Vanadium(mg/kg) Zinc(mg/kg)	49	49	60	60	58	58	51	52	50	51	40	40	28	28	31	31	38	39	33	34	33	34
Total Organic	133	134	187	188	172	173	140	141	139	140	105	105	87	89	99	101	111	112	105	108	51	52
Carbon(%)	1.08	1.09	1.44	1.44	1.26	1.27	0.97	0.97	1.09	1.10	0.82	0.83	0.81	0.83	1.19	1.22	0.94	0.96	1.01	1.02	0.44	0.45
Gravel (%)	10	10	0	0	0	0	1	1	1	1	9	9	22	22	16	17	3	3	33	34	10	10
Sand (%)	31	31	2	2	4	4	18	18	15	15	33	33	48	49	39	40	69	70	51	51	65	66
Silt (%)	37	37	63	63	61	61	57	58	57	57	39	39	24	24	43	44	34	35	18	19	26	27
Clay (%)	33	33	44	44	44	44	36	36	37	38	26	26	29	30	34	35	19	20	18	18	19	19

#### Note:

\* Action Levels were derived based on 95 percentile of baseline data and 120% of upstream control station value on the same day shall also be used as the Action Level for assessment of the monitoring results.

\*\* Limit Levels were derived based on 99 percentile of baseline data and 130% of upstream control station value on the same day shall also be used as the Limit Level for assessment of the monitoring results.





# 8 LANDSCAPE AND VISUAL MONITORING

- 8.1.1 In accordance with Section 5.4 of the final EM&A Manual, landscape and visual mitigation measures shall be monitored monthly during the first year of the Operational Phase to ensure the effectiveness of the mitigation measures. All measures undertaken by both the Contractor and their Landscape Contractor during the first year of the operational phase shall be audited by the registered landscape architect (RLA).
- 8.1.2 ERM Hong Kong Limited (ERM) has been commissioned to carry out the landscape and visual mitigation measures monitoring including the 12 months establishment period in the Operation Phase.

# 8.2 Monitoring Results and Recommendations

- 8.2.1 The landscape and visual monitoring was carried out on 12 May 2016. The Hong Kong Observatory's Tuen Mun Weather Station reported that the weather on the day of the patrol was sunny. The weather condition during the period is provided in *Appendix J*.
- 8.2.2 The site inspection findings and recommendations made by the RLA are contained in the monthly Operational Phase Landscape & Visual Monitoring Report prepared by ERM is provided in *Appendix K*. The findings and recommendations also summarised in *Table* 8-1.
- 8.2.3 No non-compliance of the landscape and visual mitigation measures has been recorded in ERM's landscape and visual mitigation measures monitoring report.



### Table 8-1 Summary of Site Audit Findings and Recommendations

Area of Works	Establishment Works Stage	
	Observation	Recommendation/Action
Outstanding issues		·
Issues Observed in this Audit		
Within Pillar Point Sewage Treatment Works	Trees nos. 131, 133, 134, 129, R156, R157, N84 and R185 in ground floor garden were observed in poor condition.	It is recommended to carry out additional maintenance works for the trees no. N84, 128, 134 and R185. The Contractor had prepared the tree felling proposal for the tree nos 131, 133, 129, R156 and R157. Trees will be replaced after it is approved.
Within Pillar Point Sewage Treatment Works	The non-abrasive nylon rope were observed released and tree tags had been provided.	-
Within Pillar Point Sewage Treatment Works	Collapsed tree was observed to be replanted during this site inspection.	It is recommended to provide sufficient watering and carry out maintenance works for the collapsed tree.
Within Pillar Point Sewage Treatment Works	Groundcover and lawn were observed in poor condition during this site inspection	It is strongly recommended to provide sufficient watering and carry out necessary maintenance works for the groundcover and lawn.



# 9 ECOTOXICOLOGICAL ASSESSMENT

# 9.1 Assessment Methodology

- 9.1.1 In accordance with Section 3.4.1.1 of the final EM&A Manual, PPWQM programme shall be implemented during first year of the Operation Phase of the upgraded PPSTW.
   Ecotoxicological Assessment shall be carried out as part of PPWQM programme during the first year of operation phase of the upgraded PPSTW.
- 9.1.2 Para 1.6.1 of Appendix E of the approved EM&A Manual stated that Ecotoxicological Assessment shall be carried out to determine the toxicity of the treated effluent and the toxicity of the receiving marine water.
- 9.1.3 An Ecotoxicological Assessment Programme with detailed requirements for conducting Whole Effluent Toxicity Test (WETT) was submitted and approved by the Director of Environmental Protection.
- 9.1.4 As the hydrodynamic conditions change between wet and dry seasons, each WETT is proposed to be conducted once during wet season and once during dry season in the first year after project commencement. Furthermore, the three (3) WETTs may be conducted separately as test species may not be available at the same time. Effluent sample collection for the dry season WETT and wet season WETT were carried out on 3 to 4 February 2016 and 19 to 20 May 2016 respectively.

# 9.2 Whole Effluent Toxicity Test (WETT)

- 9.2.1 WETT was conducted to determine the whole effluent toxicity of UV disinfected CEPT effluent from Pillar Point Sewage Treatment Works for the following three (3) species:
  - Dinoflagellate (Prorocentrum dentatum), with 7-days growth inhibition test
  - Barnacle Larvae (*Balanus amphitrite*), with 4-days settlement test
  - Fish (Oryzias melastigma), with 14-days survival and growth test
- 9.2.2 The toxicity tests for barnacle larvae, fish and algae are to determine the chronic toxicity of the effluents to the species via percentage of successful metamorphosis, growth measurements and cell density measurements respectively.
- 9.2.3 The WETT followed the protocol agreed and adopted in previous study that aimed to establish fisheries and marine ecological criteria appropriate to local marine biota and fisheries resources (Centre for Coastal Pollution and Conservation (CCP&C), 2001). The species proposed in this WETT are based on their availability according to the PPWQM timeline, of which are considered as the "representative local species" of great ecological and fisheries significance.

# Effluent Sample Collection

9.2.4 Effluent sample collection for dry season WETT and wet season WETT were conducted on 3 to 4 February 2016 and 19 to 20 May 2016 respectively, in conjunction with the



effluent sampling. Sampling location and procedures shall follow the effluent monitoring programme as specified in the PPWQM Programme. The effluent sampling was planned to ensure adequate volume was collected in order to prepare sufficient amount of flow-weighted composite sample for WETT. The effluent samples was kept in sterilized containers and transported to the laboratory using a chilled vehicle. WETT commenced within 36 hours from sample collection.

## **Dilution Seawater Collection**

- 9.2.5 Dilution seawater used for WETT was collected from Clear Water Bay, Sai Kung. The site is away from any effluent discharge and is free from toxicity and other contamination. It is also far from areas of agricultural runoff, storm sewers or other potential point source contaminations.
- 9.2.6 The collected seawater was filtered and stored in a fibre tank and circulated through a UV sterilization system for more than 24 hours. Autoclave sterilization was completed at 120°C at least fifteen (15) minutes before use.
- 9.2.7 The salinity was adjusted to 30% with artificial sea salt or distilled water if necessary.

### **Test Methodology and Procedures**

- 9.2.8 The WETT methodology and procedures followed the *Standard Operating Procedures for Whole Effluent Toxicity Test (SOP for WETT)* developed by the Environmental Protection Department (EPD) for the proposed species issued in February 2009. The test consisted of five effluent concentrations and the WETT results will be used to derive the inhibition concentration (IC), No Observed Effect Concentration (NOEC) and Lowest Observed Effect Concentration (LOEC) to determine whether toxicity of the effluent has exceeded the target toxicity level.
- 9.2.9 At least three (3) replicates of each control and effluent concentration were tested such that parametric and non-parametric statistical tests can be performed for each set of data.

### **Reference Toxicant Testing**

- 9.2.10 Cadmium (Cd<sup>2+</sup>) was used as the reference toxicant. Five (5) concentrations spanning over the effective concentration range were selected for testing. The concentration range covered at least one IC below and one IC above the intended IC. In addition, to facilitate regression analysis, at least two levels of inhibition between 10% and 90% were included.
- 9.2.11 Five (5) replicates for each reference toxicant concentration was made and doseresponse curves will be constructed based on the findings to calculate LOEC, NOEC and IC.
- 9.2.12 An additional effluent sample was retained. Should the effluent toxicity level exceed the target, the sample will be further analyzed for contaminants as listed in *Table 9.1*.



## Table 9-1 List of Contaminants and Analytical Methods to be Applied

Determinant	Suggested Method	Suggested Detection Limit (ug/L)
Aluminium	USEPA 200.7	1
Antimony		1
Arsenic		1
Barium		1
Chromium III		1
Copper		1
Lead		1
Mercury		0.1
Nickel		1
Selenium		1
Silver		1
Tin		1
Vanadium		1
Zinc		1
Ammonia	APHA 4500NH: G	10
Sulphide	APHA 20e 4500-S <sup>2-</sup>	10
TCDD	USEPA 1613	1 TEQ pg/L
Toluene	USEPA 1624	10
Diazinon	USEPA 1657	0.01
Malathion	USEPA 1657	0.01
Sulphide	APHA 17ed 4500-S <sup>2-</sup>	0.01
Suspended Solids	APHA 17ed 2540D	2

# 9.2.13 The suggested detection limit is based on local/international authority approved standard.

## **Data Collection and Analysis**

9.2.14 All raw data including water quality measurements, cell counts, fish sizes and mortality was recorded on data sheets. Formal statistical analysis of raw data will be performed in accordance with the flowchart in Figure 5.1 in the SOP for each respective species.

## **Target Toxicity Level**

9.2.15 The target toxicity level is derived from the dilution potential of the receiving water body. The effluent from PPSTW is considered not inducing unacceptable toxicity to aquatic life if chronic toxicity at edge of mixing zone (EMZ) is < 1.0 chronic toxicity unit (TU<sub>c</sub>). Based on these two conditions, the target chronic toxicity level shall be determined in a supplemental far-field modeling study to derive the average dilution factor (DF) at the edge of the mixing zone. The target chronic toxicity level can be determined as follows:



 $NOEC_{TARGET} = \frac{100}{DF_{EMZ} \times TU_c}$ 

9.2.16 A water quality and plume dispersion modelling study is being carried out as part of the Post-Project Water Quality Monitoring Programme and chronic toxicity levels will be established based on the far-field dilution factor to be established by the model prior to the WETT. The target toxicity levels are summarized in *Table 9.2*.

### Table 9-2 Target Toxicity Levels of PPSTW Effluent

Effluent Characteristics	Dilution	n Factor	Target Level		
Chronic Toxicity	Wet Season	Dry Season	Wet Season	Dry Season	
NOEC in 7-day algae growth inhibition test					
NOEC in 4-day barnacle larvae settlement test	451 <sup>[Note 1]</sup>	504 <sup>[Note 1]</sup>	≥22.2%	≥19.8%	
NOEC in 14-day fish survival and growth test					

Note:

1. Dilution factor was generated from the plume dispersion modelling.

- 9.2.17 In the event that the results exceed the target toxicity levels, further investigation shall be carried out to identify specific pollutants that contributed to the toxicity, including:
  - Sample analysis collected from testing chambers at the beginning and the end of WETT for contaminants as shown in Table 1.1;
  - Review the data collected in the effluent quality testing and identify the pollutants that may contribute to the observed toxicity;
  - Re-test the species that exceeded the target level toxicity; and
  - Should the re-test results indicate persistent pollution, advise operators to implement measures to reduce contaminant concentrations in the effluent

# **Quality Assurance / Quality Control (QA/QC)**

9.2.18 The QA/QC measures shall refer to the QA/QC section from the SOP for each respective species such that the acceptability criteria is met, as shown in *Table 1.3*:

### Table 9-3 Test Acceptability Criteria

Fish	Barnacle Larvae	Algae
<ul> <li>The average survival of fish in the control &gt; 85%, AND</li> <li>Significant change in body weight and/or body length is observable.</li> </ul>	<ul> <li>Mean % settlement in the seawater control is greater than 50%</li> </ul>	<ul> <li>The control cell density shall have increased by a factor &gt;16 in 7 days, AND</li> <li>The level of variability between control replicates (i.e. coefficient of variation) is &lt;20%</li> </ul>



9.2.19 Should the test results in the controls do not meet the acceptability criteria, the validity of WETT data should be evaluated and test to be re-performed if required.

# 9.3 Monitoring Results

9.3.1 Sampling of Ecotoxicological assessment was carried out on 19 to 20 May 2016 and WETT were carried out in the laboratory on 21 May to 5 June 2016. Analysis of the results will take 4 to 6 weeks and therefore not available during the time of report preparation. The results of assessment will be reported in next monthly operation phase monitoring report.



# 10 CONCLUSION

- 10.1.1 In accordance with the EM&A Manual for the Upgrading of PPSTW, operation phase monitoring report is required on a monthly basis after the Project commissioning. The purpose of the operation phase monitoring report is to confirm the predictions of odour and water quality made in the EIA report and also ensure the effectiveness of the landscape and visual mitigation measure.
- 10.1.2 This is the 10<sup>th</sup> Monthly Operation Phase Monitoring Report which summarizes all environmental monitoring events carried out during post-commissioning period from 1 to 31 May 2016. A total of eight monitoring events were carried out during the reporting period.
- 10.1.3 The exact dates of monitoring carried out are shown in *Table 10-1*, below:

### **Table 10-1 Monitoring Dates During the Reporting Month**

Monitoring Events	10 <sup>th</sup> Reporting Month Monitoring Period: 1 – 31 May 2016
Odour Monitoring	16/5/2016
Effluent Quality Monitoring	19/5/2016 - 20/5/2016
Sediment Quality Monitoring	15/5/2016
Benthic Survey	15/5/2016
Water Quality Monitoring	24/5/2016
Ecotoxicological Monitoring Sampling	19/5/2016 - 20/5/2016
H <sub>2</sub> S Monitoring	1/5/2016 - 31/5/2016
	(continuous monitoring)
Landscape and Visual Monitoring	12/5/2016

- 10.1.4 The monitoring results carried out in reporting period were certified by the Environmental Team (ET) Leader and verified by the Independent Environmental Checker (IEC) in accordance with the EM&A Manual.
- 10.1.5 All laboratory results satisfied the QA/QC requirements and all monitoring equipment was properly calibrated and has valid calibration certificates.
- 10.1.6 No exceedance of Action and Limit Level of odour monitoring was recorded at the monitoring location in the reporting month.
- 10.1.7 No exceedance of Action and Limit Level of odour emission monitoring was recorded at the monitoring location in the reporting month.
- 10.1.8 No exceedance of Action and Limit Level of effluent monitoring was recorded at the monitoring location in the reporting month.
- 10.1.9 8 exceedances of Action Level and 10 Limit Level exceedance of water quality monitoring were recorded at the monitoring location in the reporting month. The exceedances are considered to be non-project related.



- 10.1.10 6 exceedances of Action Level and 46 exceedances of Limit Level for sediment quality monitoring were recorded at the monitoring location in the reporting month. The exceedances are considered to be non-project related.
- 10.1.11 The monitoring results for benthic survey are pending and the results will be reported in the next reporting period. No non-compliance of the landscape and visual mitigation measures has been recorded.
- 10.1.12 The assessment results for ecotoxicological assessment are pending and the results will be reported in the next reporting period.
- 10.1.13 No non-compliance of the landscape and visual monitoring has been recorded in the reporting month.
- 10.1.14 No environmental complaint was reported during the reporting month.
- 10.1.15 The ET will keep track on the EM&A programme to ensure the compliance of environmental requirements and the proper implementation of all necessary mitigation measures.



# **APPENDIX A**

Nose Sensory Test Report

Г



SMEC ASIA LIMITED	
REPORT ON NOSE SENSORY TEST	
(Project No. : 4101-10002276 #039)	
HKPC <sup>©</sup> Hong Kong Productivity Council 香港生産力促進局	
香港生産力促進局	
Environmental Management Division	
Hong Kong Productivity Council	
Quality Index	
Date Reference No. Prepared by Endorsed by	
16 May 2016 10002276#039v1 KW Poon CHAU Kam Man, Grant	
A Clust.	



Nos	e Sensory Test		SMEC Asia Limite				
1.	COMPANY NAME A	AND NAME OF PANEL	LISTS				
	Company name : Name of panelists :	SMEC Asia Limited (1) Cheung Man Kit (2) Kong Wing Man, S	Samantha				
2.	OBJECTIVE						
	Cheung Man Kit and K	ong Wing Man (Samantha	ry test for SMEC Asia limited staff, ), and report them if they are to be rd Method BS EN13725:2003.				
3.	TESTING DATES A	ND LOCATION					
	The dates of testing and	testing location are summa	rized in Table 1:				
		Name of panelist, testing d					
	Name of panelist         Cheung Man Kit         (Re-certified)         Kong Wing Man,         Samantha	Testing Dates           26 April 2016           (1) 18 April 2016           (2) 21 April 2016           (3) 26 April 2016	Testing location         Image: Constraint of the second				
4.	METHODOLOGY C	OF MEASUREMENT					
	The methodology of the	nose sensory test was listed	l in Table 2:				
	ironmental Management Divisio.		HKPC/4101/10002276/039/1603				



Nose Sensory Test SMEC Asia Limited. Table 2: Methodology of the nose sensory test Photo Description Methodology Nose sensory BS EN13725:2003:test (1) Odour concentration measurement (60 ppm n-butanol): Dynamic olfactometer (Model TO9, Ecoma) (2) Force choice method Olfactometer (Model TO9, Ecoma)

### 5. RESULTS OF THE TEST

Certified 60ppm/v standard n-butanol gas was applied as reference material and the n-butanol thresholds in the range of 20 to 80 ppb/v (accordance with BS EN13725:2003) was determined as follows (Table 3):-

#### Table 3: Nose sensory test results

Odour panelist	Repeatability (Requirement: Repeatability ≤ 2.3)	Accuracy (Requirement: 20 ≤ Accuracy ≤ 80)	Pass/ Fail
Cheung Man Kit	2.25	75.08	Pass
Kong Wing Man, Samantha	1.40	51.01	Pass

\*The requirements followed BS EN13725:2003.

#### 6. **DISCUSSION**

Referring to the nose sensory test results, the following findings could be summarized:

- a. Both Cheung Man Kit and Kong Wing Man, Samantha of SMEC Asia Limited passed the repeatability and accuracy requirement of nose sensory test according to British standard method BS EN13725:2003.
- Both Cheung Man Kit and Kong Wing Man, Samantha of SMEC Asia Limited are certified panelists with effective from 26 April 2016 to 25 April 2017.

eport (may 16)\7076134 d18 operation phase monitoring monthly report (may 2016) v2.2.docx

Environmental Management Division Hong Kong Productivity Council HKPC/4101/10002276/039/160516kw Page2



Nose Sensory Test

SMEC Asia Limited.

#### 7. LIMITATION OF MEASUREMENT

The results obtained in this test are only representative of the nose sensory system at the specific time. The result should not be extrapolated to other conditions without caution. Please refer to code of behavior of BS EN13725:2003 for the details.

Environmental Management Division Hong Kong Productivity Council

16 May 2016

Environmental Management Division Hong Kong Productivity Council HKPC/4101/10002276/039/160516kw Page3



# **APPENDIX B**

# Odour Monitoring Results and Field Record Sheet



### Summary of Odour Intensity (OI) at Each Monitoring Location

Date	Period	10	Loution	Time			Odour I	ntensity	Odaur Charactaristics
Date	Period	ID	Location	Time	Wind Direction	Wind Speed (m/s)	Panellist 1	Panellist 2	Odour Characteristics
		A1	River Trade Terminal Office	15:15	NE	0.4	0	0	-
		A2	Chu Kong Warehouse 1	15:04	SW	0.2	0	0	-
		A3	Chu Kong Warehouse 2	15:02	SW	0.9	0	0	-
		A4	Wai Sang Sawmill Ltd.	15:04	SW	0.1	0	0	-
	Daytime	A5	Pillar Point Fire Station	15:00	S	1.7	0	0	-
16-May-16	(14:54-15:54)	A6	Sunhing Hung Kai Tuen Mun Godown	14:54	NE	0.1	0	0	-
		A7	EMSD Servicing Vehicle Station	15:28	E	3.9	0	0	-
		S1	Northern Site Boundary	15:40	w	0.1	0	0	-
		S2	Eastern Site Boundary	15:43	S	0.1	0	0	-
		S3	Southern Site Boundary	15:50	w	0.5	0	0	-
		S4	Western Site Boundary	15:54	NW	0.1	0	0	-
		A1	River Trade Terminal Office	17:23	E	0.7	0	0	-
		A2	Chu Kong Warehouse 1	17:10	SW	1.8	0	0	-
		A3	Chu Kong Warehouse 2	17:08	SW	1.5	0	0	-
		A4	Wai Sang Sawmill Ltd.	17:12	SW	0.7	0	0	-
	Evening	A5	Pillar Point Fire Station	17:06	SW	0.1	0	0	-
16-May-16	(17:00-17:56)	A6	Sunhing Hung Kai Tuen Mun Godown	17:00	W	2.6	0	0	-
		A7	EMSD Servicing Vehicle Station	17:36	E	0.3	0	0	-
		S1	Northern Site Boundary	17:42	N	1.6	0	0	-
		S2	Eastern Site Boundary	17:45	E	0.3	0	0	-
		S3	Southern Site Boundary	17:52	NW	0.1	0	0	-
		S4	Western Site Boundary	17:56	NW	0.1	0	0	-



Date		16/05/	2016					Odour Intens 0- Not de		odour so weak 1	that it ca	nnot be easily o	characterized
_	Monitoring Location	luen	Man		_			and de	scribed.	our and slight ch			
Weat		Sunn	4					2- Moder	ate identifiab	e and moderate	chance	to have odour r	
	berature	26.1			-					kely to have odd ar and unaccepta			
Humi	aity	67/	0										
		Daytime Po	eriod:	-				Evening Pe	riod:	*			
ID	Location	Time	Wind Direction	Wind Speed (m/s)	01	Odour Characteristics		Time	Wind Direction	Wind Speed (m/s)	ы	Odour Chara	cteristics
A1	River Trade Terminal Office	15:15	NE	0.1	0	/		17:23	E	0.7	0	/	
A2	Chu Kong Warehouse 1	15:04	SW	3.4	0	1		17:10	SW	1.8	0	/	
A3	Chu Kong Warehouse 2	15:02	SW	1-2	0	1		17:08	54	1.5	0	~ /	
A4	Wai Sang Sawmill Ltd.	15:04	SW	3.7	0			17:12	SW	0.7	0	/	
A5	Pillar Point Fire Station	15:00	S	1.6	U	1		17:06	SW	0.1	0	1	
A6	Sunhing Hung Kai Tuen Mun Godown	14:54	NE	0-7	0	/		17:00	W	2.6	0	/	
A7	EMSD Servicing Vehicle Station	15:28	E	0.7	0	~		17:36	E	0.3	0	/	
<b>S1</b>	Northern Site Boundar	v 15:40	W	0.1	0			17:42	$\sim$	1.6	0	/	
<b>\$2</b>	Eastern Site Boundary	15:43	5	1.5	0	/		17:23	Ē	0.3	0	/	
S3	Southern Site Boundar	v 5:50	W	0.6	0		17:52	B	IVW	0-1	0	/	
<b>S</b> 4	Western Site Boundary	15:54	NW	0.1	0			17:56	NW	0.1	$ \mathcal{O} $	1	
<ul> <li>pass</li> </ul>	re that the below requirementing the nose sensory test;		Clauses 2.3.1	9 and 2.7 of the	final EM	&A Manual are complied v	with:		Na	ame	Sig	nature	Date
<ul> <li>no s</li> <li>inte</li> </ul>	g free from any respiratory il moking, eating, drinking (exc nsity analysis; ng great care not to cause an	ept water) or u					Record	ded By:	Man	Cheung	N	lin	16/05/201
hygi ● no c	ene or the use of perfumes, ommunication with each oth normally working at or live i	deodorants, bo ner about the re	dy lotions or sults of our	cosmetics; choices; and			Check	ed By:	Vivia	<u>heung</u> Chan	1.		17/05/16



Upgrading of Pillar Point STW - Investigation, Design and Construction Operation Period EM&A - Odour Patrol Record Sheet

HKO Monitoring Location       Tuen Mun       0-       Not detected and an odour so weak that it cannot be easily characterized and described.         Weather       Signing       1-       Slight identifiable odour and slight chance to have odour nuisance.         Temperature       26.1       3-       Strong identifiable, likely to have odour nuisance.         Humidity       63 %       4-       Extreme severe odour and unacceptable odur level.	Date	16/05/2016	]	Odour Intensity (OI)
Weather     Sight nn y       Temperature     26.       3-     Strong identifiable odour and slight chance to have odour nuisance.	HKO Monitoring Location	Tuen Mun		
Temperature     2 b.       3-     Strong identifiable, likely to have odour nuisance.	Weather	Sunny		1- Slight identifiable odour and slight chance to have odour nuisance.
Humidity 63 % 4- Extreme severe odour and unacceptable odur level.	Temperature	26.1		
	Humidity	6370		

		Daytime Po	eriod:	Daytime Period: - F						Evening Period: -				
ID	Location	Time	Wind Direction	Wind Speed (m/s)	01	Odour Characteristics	Time	Wind Direction	Wind Speed (m/s)	01	Odour Characteristics			
A1	River Trade Terminal Office	15=15	NE	D - 1	0		17=23	Ē	0.7	0	/			
A2	Chu Kong Warehouse 1	15:04	SW	3.4	0	1	17:10	SW	1.8	0	1			
A3	Chu Kong Warehouse 2	15:02	SW	1.2	0		17:08	SW	1.5	0				
A4	Wai Sang Sawmill Ltd.	15:04	SW	3.7	0	1	17:12	Siv	0.7	0	/			
A5	Pillar Point Fire Station	15:00	S	1.6	0	1	17=06	SW	0.1	0	1			
A6	Sunhing Hung Kai Tuen Mun Godown	14:54	NE	0.7	0	/	17:00	W	2.6	0				
A7	EMSD Servicing Vehicle Station	15:28	E	0.7	0	/	17=36	E	0.3	0				
<b>S1</b>	Northern Site Boundary	15=40	W	0.1	0	1	17:42	N	ø1.6	0				
S2	Eastern Site Boundary	15:43	S	1.5	0	/	17=45	E	0.3	0	1			
53	Southern Site Boundary	15:50	$\checkmark$	0.6	0	1	17:52	NW	0.1	0				
<b>S</b> 4	Western Site Boundary	15:54	NW	6.1	Ð	1	17:56	NW	0.(	0	1			

I declare that the below requirements as listed in Clauses 2.3.1.9 and 2.7 of the final EM&A Manual are complied with:

passing the nose sensory test;

being free from any respiratory illnesses;

- no smoking, eating, drinking (except water) or using chewing gum or sweets 30 min before and during odour nitensity analysis;
  Recorded By: Samantha
- taking great care not to cause any interference with their own perception or that of others by lack of personal hygiene or the use of perfumes, deodorants, body lotions or cosmetics;
- no communication with each other about the results of our choices; and

not normally working at or live in the areas in the vicinity of PPSTW.

Vivian Chan V. K 17/5/16 Checked By:

Name

Signature

707134 | Odour Patrol Record Sheet | Revision No. 1 z\jobs\7076134 - atal - et for ppstw operation period\06 engineeringlodour patrol record sheet r2.docx

Page 1 of 1

16/J/2/16

Date

SMEC



# **APPENDIX C**

# Monitoring Equipment Calibration Certificates





# **Calibration Certificate**

ATAL-Degremont Joint Venture

Number: CCS/65694

Customer: Contact Person: System Model: Detector Model: Plant Address:

Mr. Gary Chan "Crowcon" Gasmonitor Plus Control Panel "Crowcon" Xgard Type 1 H2S Gas Detector DOUA at DSD Pillar Point Sewage Treatment Works

Channel Number	Sensor Type	Measuring Range	Serial Number	Alarm 1	Alarm 2	Calibration Gas	Result
1	H2S	0 to 100ppm	AE8124	100	100	100ppm	Passed
2	H2S	0 to 50ppm	AE8134A	50	50	50ppm	Passed
4	H2S	0 to 10ppm	AE8141A	10	10	10ppm	Passed
5	H2S	0 to 10ppm	AE8141B	10	10	10ppm	Passed
7	H2S	0 to 10ppm	AE8107B	10	10	10ppm	Passed
9	H2S	0 to 10ppm	AE8107D	10	10	10ppm	Passed
10	H2S	0 to 10ppm	AE8107E	10	10	10ppm	Passed

Remarks: Instrument PASSED - fit for service.

Next calibration: 12th Jan 2017

Authorized Signature

Technical Department 13<sup>th</sup> Jan 2016

FireMark Hong Kong Limited Flat A, 11/F., Hop Hing Industrial Building, 704 Castle Peak Road, Lai Chi Kok, Kowloon, Hong Kong. Tel : (852) 2751 8871 Fax : (852) 2751 880





# **Calibration Certificate**

Number: CCS/65695

Customer:	ATAL-Degremont Joint Venture
Contact Person:	Mr. Gary Chan
System Model:	"Crowcon" Gasmonitor Plus Control Panel
Detector Model:	"Crowcon" Xgard Type 1 H2S Gas Detector
Plant Address:	DOB at DSD Pillar Point Sewage Treatment Works

Channel Number	Sensor Type	Measuring Range	Serial Number	Alarm 1	Alarm 2	Calibration Gas	Result
1	H2S	0 to 100ppm	AE8224	100	100	100ppm	Passed
2	H2S	0 to 50ppm	AE8234A	50	50	50ppm	Passed
3	H2S	0 to 50ppm	AE8234B	50	50	50ppm	Passed
4	H2S	0 to 10ppm	AE8241A	10	10	10ppm	Passed
5	H2S	0 to 10ppm	AE8241B	10	10	10ppm	Passed
6	H2S	0 to 10ppm	AE8207A	10	10	10ppm	Passed

Remarks: Instrument PASSED - fit for service.

Next calibration: 12th Jan 2017

Authorized Signature

IT FB Technical Department 13<sup>th</sup> Jan 2016

FireMark Hong Kong Limited Flat A, 11/F., Hop Hing Industrial Building, 704 Castle Peak Road, Lai Chi Kok, Kowloon, Hong Kong. Tel : (852) 2751 8871 Fax : (852) 2751 880

Remarks:

- 1. The sensor of channel number 1 is used for monitoring the H<sub>2</sub>S emission level at inlet.
- 2. The sensor of channel number 4 and 5 are used for monitoring the  $H_2S$  emission level at outlet





ALS Technichem (HK) Ptv Ltd 11/F, Chung Shun Knitting Centre 1-3 Wing Yip Street Kwai Chung, N.T., Hong Kong T: +852 2610 1044 F: +852 2610 2021 www.alsglobal.com

# **REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION**

CONTACT: MR THOMAS WONG CLIENT: ENOVATIVE ENVIRONMENTAL SERVICE LTD ADDRESS: RM811, HIN PUI HOUSE, HIN KENG ESTATE, TAI WAI, N.T., HONG KONG

WORK ORDER: HK1612309 SUB-BATCH: 0 HONG KONG LABORATORY: DATE RECEIVED: 31/03/2016 DATE OF ISSUE: 06/04/2016

#### COMMENTS

The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.

The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the ALS Hong Kong laboratory or quoted from relevant international standards.

The "Next Calibration Date" is recommended according to best practice principals as practised by the ALS Hong Kong laboratory or quoted from relevant international standards.

Scope of Test: Conductivity, Dissolved Oxygen, pH, Salinity, Temperature and Turbidity Equipment Type: Multifunctional Meter Brand Name: YSI Model No.: 6920 V2 Serial No .: 00019CB2 Equipment No.: Date of Calibration: 31 March, 2016

NOTES

This is the Final Report and supersedes any preliminary report with this batch number. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

Mr. Fung Lim Chee, Richard General Manager Greater China & Hong Kong

This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.

Page 1 of 3



Work Order: Sub-Batch: Date of Issue: Client:	HK1612309 0 06/04/2016 ENOVATIVE ENVIRONMENTA	L SERVICE LTD	ALS					
Description: Brand Name: Model No.: Serial No.: Equipment No.: Date of Calibration:	Multifunctional Meter YSI 6920 V2 00019CB2  31 March, 2016	YSI 6920 V2 00019CB2						
Parameters:								
Conductivity	Method Ref: APHA (21st editi	on), 2510B						
	Expected Reading (uS/cm)	Displayed Reading (uS/cm )	Tolerance (% )					
	146.9 6667 12890 58670	149.2 6689 12920 58062 Tolerance Limit (%)	+1.6 +0.3 +0.2 -1.0 ±10.0					
Dissolved Oxygen	Method Ref: APHA (21st editi	on), 45000: G						
	Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)					
	1.50         1.54           5.02         5.09           9.04         8.96		+0.04 +0.07 -0.08					
	Tolerance Limit (mg/L) ±0.20							
pH Value	Method Ref: APHA 21st Ed. 4 Expected Reading (pH Unit)		Tolerance (pH unit)					
	4.0 7.0 10.0	4.06 7.06 9.94 Tolerance Limit (pH unit)	+0.06 +0.06 -0.06 ±0.20					
Salinity	Method Ref: APHA (21st editi							
	Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)					
	10 20 30	9.92 19.82 29.88 Tolerance Limit (%)	-0.8 -0.9 -0.4 ±10.0					
Remarl	"Displayed Reading" presents the figures shown on item under calibration / checking regardless     of equipment precision or significant figures.							
		General Ma	KMJ im Cheel Richard anager J ina & Hong Kong					

HK1612309

31 March, 2016



# **REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION**

0 06/04/2016 ENOVATIVE ENVIRONMENTAL SERVICE LTD

Description: Brand Name: Model No.: Serial No.: Equipment No.: Date of Calibration: 06/04/2016 ENOVATIVE ENVIRONMENTAL SERVIO Multifunctional Meter YSI 6920 V2 00019CB2

Date of next Calibration:

30 June, 2016

### Parameters:

Temperature

#### Method Ref: Section 6 of International Accreditation New Zealand Technical Guide No. 3 Second edition March 2008: Working Thermometer Calibration Proce

Guide No. 3 Second edition Ma	arch 2008: Working Thermometer	Calibration Procedure.
Expected Reading (°C )	Displayed Reading (°C )	Tolerance (°C )
13	13.2	+0.2
21	21.1	+0.1
31	30.6	-0.4
	Tolerance Limit (°C)	±2.0

#### Turbidity

#### Method Ref: APHA (21st edition), 2130B Expected Reading (NTU) Displayed Reading (NTU) Tolerance (%) 4 +5.0 4.2 40 40.5 +1.3 80 78.9 -1.4 400 384.1 -4.0 800 786.7 -1.7 Tolerance Limit (%) ±10.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr. Fung Lim Chee Richard General Manager Greater China & Hong Kong

ALS Technichem (HK) Pty Ltd

Page 3 of 3



# **Appendix D**

**Odour Emission Monitoring Result** 

		HST8124_H2S	HST8141A_H2S	HST8141B H2S	HST8224_H2S	HST8241A H2S	HST8241B H2S	DOUA OUTLET H2	<u>2</u> S	DOUB OUTLET H2	S
Date	Time	INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB				
		ppm	ppm	ppm	ppm	ppm	ppm	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
	00:00:00-00:59:59	14.4	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	14.4	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	10.1	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	13.2	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	10.7	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	9.3	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	11.2	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	16.6	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	17.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	20.4	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	16.0	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
F /1 /2010	11:00:00-11:59:59	11.2	0.0	0.0	2.2	0.0	0.0	100%	100%	100%	100%
5/1/2016	12:00:00-12:59:59	10.7	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	19.0	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	23.5	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	31.3	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	36.0	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	34.4	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	59.5	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	59.5	0.0	0.0	13.9	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	63.3	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	44.7	0.0	0.0	9.1	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	36.0	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	39.1	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	00:00:00-00:59:59	24.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	25.0	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	10.7	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	8.8	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	10.7	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	6.9	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	8.8	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
5/2/2016	07:00:00-07:59:59	8.8	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
5/2/2010	08:00:00-08:59:59	10.1	0.0	0.0	2.2	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	13.8	0.0	0.0	2.2	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	13.2	0.0	0.0	2.2	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	25.7	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	36.0	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	41.0	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	59.5	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
l	15:00:00-15:59:59	69.9	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%

y 16)\7076134 d18 operation phase monitoring monthly report (may 2016) v2.2.docx

SMEC

		HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2	25	DOUB OUTLET H2	S
Date	Time	INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB				
		ppm	ppm	ppm	ppm	ppm	ppm	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
	16:00:00-16:59:59	82.0	0.0	0.0	9.7	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	100.0	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	100.0	0.0	0.0	13.9	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	71.1	0.0	0.0	9.7	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	47.0	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	41.8	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	53.8	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	41.6	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	00:00:00-00:59:59	42.4	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	33.3	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	18.5	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	27.8	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	12.9	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	11.9	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	16.1	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	16.0	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	22.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	22.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	31.3	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
E /2 /2 04 C	11:00:00-11:59:59	23.5	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
5/3/2016	12:00:00-12:59:59	31.9	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	42.9	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	47.5	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	29.3	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	21.6	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	30.1	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	47.5	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	52.6	0.0	0.0	11.1	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	21.6	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	13.2	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	10.7	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	10.7	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	00:00:00-00:59:59	10.7	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	11.2	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	15.4	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	21.0	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
5/4/2016	04:00:00-04:59:59	10.7	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	16.0	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	8.8	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	8.8	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	12.6	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%



		HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2	S.	DOUB OUTLET H2	S
Date	Time	INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB				HST8241B H2S
		ppm	ppm	ppm	ppm	ppm	ppm	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	N3102410_N23
	09:00:00-09:59:59	12.6	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	21.0	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	13.2	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	19.6	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	26.3	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	30.1	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	19.6	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	17.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	15.4	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	17.2	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	26.3	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	25.0	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	19.6	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	21.0	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	24.1	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	00:00:00-00:59:59	13.2	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	11.9	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	9.3	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	9.3	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	9.3	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	11.2	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	12.6	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	15.4	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	24.7	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	22.2	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	18.5	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	19.6	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
5/5/2016	12:00:00-12:59:59	15.4	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	25.0	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	30.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	100.0	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	30.3	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	30.9	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	30.3	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	58.4	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	55.3	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	41.2	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	34.6	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	42.4	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	00:00:00-00:59:59	46.9						100%	100%	100%	
5/6/2016			0.0	0.0	1.6	0.0	0.0				100%
	01:00:00-01:59:59	29.4	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%



		HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2	2S	DOUB OUTLET H2	S
Date	Time	INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB				
		ppm	ppm	ppm	ppm	ppm	ppm	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
	02:00:00-02:59:59	28.2	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	30.7	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	28.8	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	30.3	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	35.6	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	28.2	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	45.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	44.3	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	45.3	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	39.3	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	31.9	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	39.7	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	39.1	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	57.7	0.0	0.0	15.1	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	45.1	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	55.8	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	62.8	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	98.8	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	43.7	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	26.8	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	19.7	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	22.9	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	00:00:00-00:59:59	21.6	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	16.8	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	21.6	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	19.3	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	16.0	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	17.3	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	14.1	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	16.2	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	19.1	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
5/7/2016	09:00:00-09:59:59	18.7	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	16.2	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	14.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	18.1	0.0	0.0	1.7	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	24.3	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	20.6	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	21.8	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	17.4	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	23.7	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	22.9	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%



Date	Time	INLET DOUA						DOUA OUTLET H2S		DOUB OUTLET H2S	
			OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB				
		ppm	ppm	ppm	ppm	ppm	ppm	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
	19:00:00-19:59:59	28.4	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
(	20:00:00-20:59:59	66.7	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	52.1	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	36.7	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	53.9	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	00:00:00-00:59:59	51.3	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	45.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	33.8	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	36.6	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	44.9	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	100.0	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	50.2	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	31.9	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	34.4	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	29.6	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	20.4	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	21.8	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
5/8/2016	12:00:00-12:59:59	41.6	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	43.1	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	54.4	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	52.1	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	65.5	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	76.4	0.0	0.0	9.1	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	100.0	0.0	0.0	11.7	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	58.4	0.0	0.0	12.3	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	57.8	0.0	0.0	13.0	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	75.8	0.0	0.0	15.8	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	53.4	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	53.9	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	00:00:00-00:59:59	29.0	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	21.7	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	18.5	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	14.4	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	14.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	13.8	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
5/9/2016 —	06:00:00-06:59:59	14.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	15.6	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	19.7	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	18.5	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	15.6	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	14.0	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%



Date	Time	HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2	2S	DOUB OUTLET H2S	
		INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB				
		ppm	ppm	ppm	ppm	ppm	ppm	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
	12:00:00-12:59:59	13.5	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	18.1	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	18.7	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	21.8	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	20.6	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	19.7	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	24.7	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	33.8	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	37.9	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	48.8	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	41.8	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	39.3	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	00:00:00-00:59:59	50.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	39.3	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	30.3	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	32.1	0.0	0.0	1.7	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	22.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	24.3	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	22.2	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	30.7	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	43.6	0.0	0.0	4.6	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	38.1	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	18.7	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
- / /	11:00:00-11:59:59	24.3	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
5/10/2016	12:00:00-12:59:59	25.1	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	23.1	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	16.0	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	16.7	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	18.7	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	18.0	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	19.3	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	20.4	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	27.7	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	22.3	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	25.9	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	22.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	00:00:00-00:59:59	25.7	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	16.0	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
5/11/2016	02:00:00-02:59:59	13.8	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
-,, _010	03:00:00-03:59:59	10.8	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	10.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%



	Time	HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2S		DOUB OUTLET H2S	
Date		INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB				
		ppm	ppm	ppm	ppm	ppm	ppm	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
	05:00:00-05:59:59	9.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	8.8	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	9.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	10.8	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	11.6	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	9.4	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	16.6	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	34.4	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	26.9	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	34.0	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	43.8	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	34.5	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	46.4	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	58.9	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	39.3	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	34.6	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	30.7	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	25.3	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	28.3	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	00:00:00-00:59:59	24.7	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	13.8	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	11.0	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	8.8	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	8.8	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	9.6	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	9.7	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	12.6	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	14.4	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	16.8	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	15.5	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
5/12/2016	11:00:00-11:59:59	17.2	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	19.7	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	20.4	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	17.2	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	32.8	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	35.4	0.0	0.0	14.5	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	25.7	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	21.2	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	22.2	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	24.1	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	19.9	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%



		HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2	S	DOUB OUTLET H2	2S
Date	Time	INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB				
		ppm	ppm	ppm	ppm	ppm	ppm	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
	22:00:00-22:59:59	26.9	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	19.1	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	00:00:00-00:59:59	18.5	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	11.9	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	10.8	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	11.0	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	9.1	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	12.9	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	7.8	0.0	0.0	0.3	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	24.7	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	26.1	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	22.4	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	19.7	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	20.6	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
5/13/2016	12:00:00-12:59:59	19.9	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	19.7	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	41.1	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	42.3	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	42.9	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	77.0	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	36.6	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	36.7	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	44.7	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	44.7	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	45.1	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	30.3	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	00:00:00-00:59:59	35.4	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	37.9	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	23.7	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	28.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	22.4	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	21.2	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	21.2	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
5/14/2016	07:00:00-07:59:59	29.4	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
-,,	08:00:00-08:59:59	30.9	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	24.9	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	30.7	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	25.3	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	38.5	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	32.8	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	30.3	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	14.00.00-14.33.33	50.5	0.0	0.0	2.3	0.0	0.0	100/0	10070	100%	10070



		HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2	25	DOUB OUTLET H2	'S
Date	Time	INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB				
		ppm	ppm	ppm	ppm	ppm	ppm	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
	15:00:00-15:59:59	29.4	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	29.0	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	28.3	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	37.4	0.0	0.0	9.7	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	31.3	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	30.1	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	22.9	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	17.2	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	16.0	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	00:00:00-00:59:59	16.7	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	18.1	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	16.2	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	15.6	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	16.0	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	16.2	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	18.1	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	21.0	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	23.0	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	22.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	22.2	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
_ / /	11:00:00-11:59:59	17.4	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
5/15/2016	12:00:00-12:59:59	16.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	18.1	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	21.8	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	43.1	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	47.6	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	43.1	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	43.8	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	52.0	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	45.7	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	64.5	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	55.8	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	66.7	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	00:00:00-00:59:59	64.5	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	40.6	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	24.7	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	29.4	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
5/16/2016	04:00:00-04:59:59	25.3	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	19.9	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	13.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	15.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	07.00.00-07.33.33	13.4	0.0	0.0	2.5	0.0	0.0	100/0	100%	100%	100%



		HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2	!S	DOUB OUTLET H2	S.
Date	Time	INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB				
		ppm	ppm	ppm	ppm	ppm	ppm	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
	08:00:00-08:59:59	32.6	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	38.1	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	34.6	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	28.9	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	33.9	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	32.1	0.0	0.0	10.3	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	25.9	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	39.7	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	43.1	0.0	0.0	11.7	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	50.8	0.0	0.0	11.1	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	65.5	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	71.1	0.0	0.0	11.1	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	71.1	0.0	0.0	10.3	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	75.2	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	53.3	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	59.0	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	00:00:00-00:59:59	43.6	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	52.1	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	39.3	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	41.1	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	44.7	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	53.8	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	39.7	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	41.8	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	53.8	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	52.8	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	43.1	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
_ / /	11:00:00-11:59:59	38.0	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
5/17/2016	12:00:00-12:59:59	42.9	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	43.6	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	43.6	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	31.9	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	43.6	0.0	0.0	11.1	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	42.9	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	37.2	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	48.8	0.0	0.0	10.3	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	53.9	0.0	0.0	11.1	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	40.5	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	33.8	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	32.6	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
5/18/2016	00:00:00-00:59:59	20.6	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
5/ 10/ 2010	30.00.00 00.33.33	20.0	0.0	0.0	т.5	0.0	0.0	10070	10070	10070	10070



		HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2	25	DOUB OUTLET H2	S
Date	Time	INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB				HST8241B H2S
		ppm	ppm	ppm	ppm	ppm	ppm	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	N3102410_N23
	01:00:00-01:59:59	19.9	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	15.4	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	16.0	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	18.1	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	19.7	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	19.3	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	22.4	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	25.9	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	24.2	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	37.4	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	21.6	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	21.6	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	30.1	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	55.2	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	58.9	0.0	0.0	9.7	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	53.8	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	79.5	0.0	0.0	12.9	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	87.9	0.0	0.0	11.1	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	83.8	0.0	0.0	12.3	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	67.4	0.0	0.0	9.7	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	62.0	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	51.3	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	47.5	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	00:00:00-00:59:59	36.5	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	48.7	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	30.1	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	24.1	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	24.7	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	24.7	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	24.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	28.2	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
E /40/2046	08:00:00-08:59:59	39.7	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
5/19/2016	09:00:00-09:59:59	36.5	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	31.3	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	30.7	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	30.1	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	45.1	0.0	0.0	9.1	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	28.2	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	44.7	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	44.7	0.0	0.0	9.1	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	30.1	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%



		HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2	25	DOUB OUTLET H2	S
Date	Time	INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB				
		ppm	ppm	ppm	ppm	ppm	ppm	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
	18:00:00-18:59:59	41.0	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	48.7	0.0	0.0	9.1	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	37.2	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	33.2	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	30.7	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	28.2	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	00:00:00-00:59:59	29.3	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	30.7	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	41.6	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	45.1	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	58.3	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	62.0	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	51.9	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	43.5	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	58.9	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	41.6	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	32.0	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
_ / /	11:00:00-11:59:59	41.0	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
5/20/2016	12:00:00-12:59:59	44.2	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	100.0	0.0	0.0	11.1	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	96.3	0.0	0.0	11.1	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	73.0	0.0	0.0	10.3	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	41.8	0.0	0.0	11.1	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	53.3	0.0	0.0	9.1	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	43.7	0.0	0.0	11.1	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	43.6	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	39.7	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	43.6	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	27.1	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	29.0	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	00:00:00-00:59:59	19.1	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	15.4	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	10.8	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	11.9	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	10.4	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
5/21/2016	05:00:00-05:59:59	12.6	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	10.1	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	9.4	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	9.4	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	8.8	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	12.2	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	10.00.00-10.22.22	12.2	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%



		HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2	!S	DOUB OUTLET H2	S.
Date	Time	INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB				
		ppm	ppm	ppm	ppm	ppm	ppm	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
	11:00:00-11:59:59	13.2	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	18.1	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	18.5	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	20.4	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	19.1	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	28.3	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	32.1	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	32.8	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	30.2	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	32.6	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	23.1	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	21.8	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	28.8	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	00:00:00-00:59:59	27.8	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	24.3	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	17.2	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	18.1	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	15.6	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	15.6	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	13.4	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	17.4	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	30.1	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	21.6	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	19.9	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
- / / /	11:00:00-11:59:59	17.2	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
5/22/2016	12:00:00-12:59:59	17.2	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	32.6	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	45.9	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	44.3	0.0	0.0	12.3	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	55.8	0.0	0.0	12.9	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	35.4	0.0	0.0	9.1	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	59.5	0.0	0.0	16.5	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	58.9	0.0	0.0	11.7	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	81.4	0.0	0.0	16.5	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	80.9	0.0	0.0	17.7	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	77.7	0.0	0.0	12.3	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	71.1	0.0	0.0	10.3	0.0	0.0	100%	100%	100%	100%
	00:00:00-00:59:59	64.5	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	43.6	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
5/23/2016	02:00:00-02:59:59	30.3	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	20.6	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%



		HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2	2S	DOUB OUTLET H2	S.
Date	Time	INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB				HST8241B H2S
		ppm	ppm	ppm	ppm	ppm	ppm	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	П318241В_П23
	04:00:00-04:59:59	17.4	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	16.0	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	14.7	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	14.0	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	19.7	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	73.0	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	29.5	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	22.4	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	21.8	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	28.8	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	34.4	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	34.6	0.0	0.0	9.1	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	100.0	0.0	0.0	28.4	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	78.3	0.0	0.0	17.1	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	57.1	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	72.5	0.0	0.0	11.1	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	71.1	0.0	0.0	9.1	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	62.8	0.0	0.0	7.2	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	46.3	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	38.5	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	00:00:00-00:59:59	27.1	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	28.3	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	17.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	30.9	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	19.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	21.0	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	19.9	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	18.7	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	25.3	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	25.3	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
5/24/2016	10:00:00-10:59:59	23.5	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
372172010	11:00:00-11:59:59	39.1	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	43.6	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	70.5	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	66.1	0.0	0.0	10.4	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	59.5	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	43.7	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	66.7	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	61.5	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59		0.0	0.0		0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	73.6			7.2						
	20.00:00-20:59:59	62.8	0.0	0.0	7.8	0.0	0.0	100%	100%	100%	100%



		HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2	25	DOUB OUTLET H2	S
Date	Time	INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB				
		ppm	ppm	ppm	ppm	ppm	ppm	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
	21:00:00-21:59:59	57.8	0.0	0.0	7.2	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	100.0	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	94.2	0.0	0.0	17.1	0.0	0.0	100%	100%	100%	100%
	00:00:00-00:59:59	57.7	0.0	0.0	11.1	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	56.4	0.0	0.0	11.1	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	37.3	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	38.7	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	43.6	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	62.8	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	36.8	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	32.6	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	41.1	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	34.4	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	53.9	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	47.8	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
5/25/2016	12:00:00-12:59:59	49.5	0.0	0.0	7.2	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	43.6	0.0	0.0	7.2	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	39.7	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	36.6	0.0	0.0	7.2	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	39.7	0.0	0.0	9.1	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	33.2	0.0	0.0	9.7	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	78.9	0.0	0.0	9.7	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	66.7	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	64.5	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	65.5	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	68.6	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	59.5	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	00:00:00-00:59:59	50.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	57.0	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	46.9	0.0	0.0	1.7	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	62.8	0.0	0.0	1.7	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	45.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	53.8	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	34.4	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
5/26/2016	07:00:00-07:59:59	30.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	38.5	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	32.6	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	50.7	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	44.7	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	34.4	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	42.2	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%



		HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2	25	DOUB OUTLET H2	S
Date	Time	INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB				
		ppm	ppm	ppm	ppm	ppm	ppm	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
	14:00:00-14:59:59	37.2	0.0	0.0	9.1	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	26.8	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	39.7	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	30.1	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	64.9	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	79.5	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	63.3	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	48.8	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	52.6	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	51.3	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	00:00:00-00:59:59	36.5	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	35.4	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	46.9	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	48.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	56.4	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	50.7	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	48.2	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	50.1	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	62.8	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	55.2	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	25.7	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
- / / /	11:00:00-11:59:59	29.3	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
5/27/2016	12:00:00-12:59:59	24.7	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	66.7	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	66.7	0.0	0.0	9.7	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	62.0	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	60.8	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	100.0	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	57.1	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	57.7	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	65.5	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	52.1	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	62.1	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	66.7	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	00:00:00-00:59:59	55.8	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	59.5	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	51.9	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
5/28/2016	03:00:00-03:59:59	39.9	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	46.4	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	45.9	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	27.6	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%



		HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2	S	DOUB OUTLET H2	S
Date	Time	INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB				
		ppm	ppm	ppm	ppm	ppm	ppm	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
	07:00:00-07:59:59	36.8	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	41.1	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	44.9	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	39.3	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	32.8	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	47.8	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	62.8	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	68.6	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	66.7	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	69.9	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	66.7	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	78.9	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	71.2	0.0	0.0	7.7	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	53.9	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	39.7	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	50.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	98.3	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	00:00:00-00:59:59	34.4	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
-	01:00:00-01:59:59	33.9	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
-	02:00:00-02:59:59	23.1	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
-	03:00:00-03:59:59	20.6	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
-	04:00:00-04:59:59	22.2	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
-	05:00:00-05:59:59	19.1	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
-	06:00:00-06:59:59	21.6	0.0	0.0	2.2	0.0	0.0	100%	100%	100%	100%
-	07:00:00-07:59:59	22.9	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
-	08:00:00-08:59:59	26.5	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
-	09:00:00-09:59:59	24.3	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
-	10:00:00-10:59:59	21.8	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	15.6	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
5/29/2016	12:00:00-12:59:59	28.4	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
-	13:00:00-13:59:59	61.5	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
-	14:00:00-14:59:59	74.2	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
-	15:00:00-15:59:59	89.2	0.0	0.0	11.1	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	100.0	0.0	0.0	9.1	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	100.0	0.0	0.0	12.9	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	95.2	0.0	0.0	11.7	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	100.0	0.0	0.0	13.9	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	100.0	0.0	0.0	12.9	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	86.1	0.0	0.0	8.5	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	66.7	0.0	0.0	5.1	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	39.7	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%



		HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2	2S	DOUB OUTLET H2	S
Date	Time	INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB				
		ppm	ppm	ppm	ppm	ppm	ppm	HST8141A_H2S	HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
	00:00:00-00:59:59	27.6	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	27.1	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	18.7	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	18.0	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	18.0	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	16.8	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	14.1	0.0	0.0	1.0	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	16.2	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	08:00:00-08:59:59	18.0	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	49.4	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	30.3	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
E /20 /2016	11:00:00-11:59:59	66.7	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
5/30/2016	12:00:00-12:59:59	34.4	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	70.5	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	43.8	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	55.9	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	61.5	0.0	0.0	7.1	0.0	0.0	100%	100%	100%	100%
	17:00:00-17:59:59	71.7	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	89.9	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	77.8	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	68.6	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	52.7	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	57.8	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	59.0	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	00:00:00-00:59:59	62.0	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	01:00:00-01:59:59	48.8	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	02:00:00-02:59:59	28.4	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	03:00:00-03:59:59	30.9	0.0	0.0	1.6	0.0	0.0	100%	100%	100%	100%
	04:00:00-04:59:59	21.0	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	05:00:00-05:59:59	26.5	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	06:00:00-06:59:59	19.9	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	07:00:00-07:59:59	28.8	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
5/31/2016	08:00:00-08:59:59	24.3	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	09:00:00-09:59:59	25.3	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	10:00:00-10:59:59	26.3	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	11:00:00-11:59:59	30.3	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	12:00:00-12:59:59	30.9	0.0	0.0	3.3	0.0	0.0	100%	100%	100%	100%
	13:00:00-13:59:59	41.8	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%
	14:00:00-14:59:59	43.8	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	15:00:00-15:59:59	30.3	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	16:00:00-16:59:59	21.8	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%



		HST8124_H2S	HST8141A_H2S	HST8141B_H2S	HST8224_H2S	HST8241A_H2S	HST8241B_H2S	DOUA OUTLET H2	2S	DOUB OUTLET H2	2S
Date	Time	INLET DOUA	OUTLET1 DOUA	OUTLET2 DOUA	INLET DOUB	OUTLET1 DOUB	OUTLET2 DOUB	HST8141A H2S			
		ppm	ppm	ppm	ppm	ppm	ppm		HST8141B_H2S	HST8241A_H2S	HST8241B_H2S
	17:00:00-17:59:59	23.7	0.0	0.0	2.3	0.0	0.0	100%	100%	100%	100%
	18:00:00-18:59:59	34.0	0.0	0.0	3.9	0.0	0.0	100%	100%	100%	100%
	19:00:00-19:59:59	45.1	0.0	0.0	6.5	0.0	0.0	100%	100%	100%	100%
	20:00:00-20:59:59	49.4	0.0	0.0	5.9	0.0	0.0	100%	100%	100%	100%
	21:00:00-21:59:59	32.1	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	22:00:00-22:59:59	57.1	0.0	0.0	2.9	0.0	0.0	100%	100%	100%	100%
	23:00:00-23:59:59	34.6	0.0	0.0	4.5	0.0	0.0	100%	100%	100%	100%





# **APPENDIX E**

## Locations for Sediment Sampling and Benthic Survey



### The GPS Co-ordinates (in WGS84 Datum (ITRF96 Reference Frame)), Collection Time, Measured Water Depth and Tidal State of Monitoring Station

		Original L	ocation	Revised	Location	R	emarks
Station ID	Description	Northing	Easting	Northing	Easting	Reason for Location Change	Distance from Original Location (m)
B1	Butterfly Beach	825825.6	813517.1	825702	813719	Inaccessible*	237
B2	Castle Peak Beach	826530.7	815779.2	-	-	-	-
B3	Kadoorie Beach	826328.0	816098.4	826188	815954	Inaccessible*	201
B4	Cafeteria Old Beach	826240.2	816310.1	826031	816143	Inaccessible*	268
B5	Cafeteria New Beach	825888.4	816751.8	825697	816470	Inaccessible*	341
B6	Golden Beach	825493.2	816813.5	825431	816748	Inaccessible*	90
WSD1	Flushing Water Intake near Butterfly Beach	825511.1	813103.0	825447	813138	Inaccessible*	73
WSD2	Flushing Water Intake near LRT Terminus	825860.0	815241.3	-	-	-	-
U2	Secondary Contact RecreationSubzone at Lung Kwu Tan	827855.5	809704.9	827761	809488	Inaccessible*	237
NM6	Control Station	820121.5	807822.1	-	-	-	-
NM1	Control Station	823025.4	820503.9	-	-	-	-

Note: \* Proposed location inaccessible by sampling vessel due to shallow water.

# **APPENDIX F**

## **PPWQM Effluent Quality Monitoring Results**



### **Summary of Effluent Quality Monitoring Results**

		Water Discl	narge License		19/05/2016
Parameter (unit)	EIA Design Assumption	95%ile	Upper Limit Level	Detection Limit	(00:00-24:00) Result
E.coli (CFU/100mL)*	300,000	300,000	#20,000	1	#12,000
Biochemical Oxygen Demand (mg/L)	180	180	360	2	88
Suspended Solids (SS) (mg/L)	120	120	240	2	71
Ammonia as N (mg/L)	-	-	-	0.01	25.1
Total Nitrogen as N (mg/L)	-	-	-	0.1	27.3
Total Nitrogen as N – Filtered (mg/L)	-	-	-	0.1	25.7
Total Phosphorous as P (mg/L)	-	-	-	0.1	2.6
Total Phosphorous as P – Filtered (mg/L)	-	-	-	0.1	1.8
Total Organic Carbon (mg/L)	-	-	-	1	49
Aluminum (Al) (μg/L)	-	-	-	10	64
Boron (B) (µg/L)	-	-	-	100	1,110
Iron (Fe) (µg/L)	-	-	-	0.5	3.5
Mercury (Hg) (µg/L)	-	-	-	0.5	<0.5
Arsenic (As) (μg/L)	-	-	-	1	<1
Barium (Ba) (μg/L)	-	-	-	1	18
Cadmium (Cd) (µg/L)	-	-	-	0.2	<0.2
Chromium (Cr) (µg/L)	-	-	-	1	4
Copper (Cu) (µg/L)	-	-	-	1	6
Lead (Pb) (µg/L)	-	-	-	1	1
Manganese (Mn) (µg/L)	-	-	-	1	93
Nickel (Ni) (µg/L)	-	-	-	1	10
Silver (Ag) (µg/L)	-	-	-	1	<1
Vanadium (V) (µg/L)	-	-	-	1	<1
Zinc (Zn) (μg/L)	-	-	-	10	20

#: The upper limit is in monthly geometric mean.

\*: E.Coli sampling was conducted on 20 May 2016 and the result of E.Coil is a geometric mean of 3 samples



#### ALS Technichem (HK) Pty Ltd

### 



	ATAL-DEGREMONT JOINT VE	NTURE	Laboratory	: ALS	S Technichem (HK) Pty Ltd	Page	: 1 of 6
t :	MR TECK SUAN LOY		Contact		g Lim Chee, Richard	Work Order	HK1619930
	2801 ISLAND PLACE TOWER, 510 KING`S ROAD, NORTH PO	INT HONG KONG	Address		F., Chung Shun Knitting Centre, 1 - 3 Wing Street, Kwai Chung, N.T., Hong Kong		
	teck.suan.loy@degremont.con		E-mail		hard.Fung@alsglobal.com		
	+852 2404 1538		Telephone		2 2610 1044		
			Facsimile		2 2610 2021		
	DC_2008_03 DESIGN BUILD A	ND OPERATE	Quote numb			Date Samples Received	: 20-MAY-2016
	PILLAR POINT SEWAGE TREA 430	TMENT WORKS				Issue Date	: 30-MAY-2016
						No. of samples received	: 1
						No. of samples analysed	1
vided by the client, \Y-2016 OR = Limit of reportin fic Comments for W Sample(s) were c Water sample(s) a Water sample(s) a	sampling dates are shown without a g; CAS Number = CAS registry num ork Order: HK1619930 ollected by ALS Technichem (HK) s analysed and reported on an as recu- ligested by In-house method E-300 produced except with prior written	time component. I nber from database taff. sived basis. 5 prior to the determ	maintained by Ch ination of total m This doc Signatorik Fung L	, the time component emical Abstracts Service etails. The In-house m summert has been signed to m The Richard ALS Technic Part of the ALS I	of this report have been checked and approved for re has been assumed by the laboratory for processing p vices. The Chemical Abstracts Service is a division of ethod is developed based on USEPA method 3005. by those names that appear on this report and are the authorin Postion General Manager	urposes. The completion date	of analysis is:
			104-1	Chung shun khiting cantre. Tel: +852 2610 1044 Fi	1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong ac. +852 2519 2021 www.alsenvino.com		
nt : k Order	2 of 6 A TAL-DEGREMONT JOINT VE HK1619930 75	NTURE	1 1/17-, 1	Tel: +802 2610 1044 Fi	1-3 Wing Yip Street, Kwa Chung, NT, Heng Kong ar. +502 2810 2021 www.illisennin.com		(ALS
nt :	ATAL-DEGREMONT JOINT VE HK1619930 ts		Client sample ID ampling date / lime	Tel: +852 2610 1044 Fi	ex +852 2810 2021 www.alisenvino.com		(ALS
nt k Order Analytical Resul Sub-Matrix: EFFLUER	ATAL-DEGREMONT JOINT VE HK1619930 IS IT	Cilient s	Client sample ID ampling date / time	Tel: +852 2610 1044 Pr SAMPLE 1 20-MAY-2016 09	xc +852 2810 2021 www.atternviro.com		ALS
nt : < Order Analytical Resul Sub-Matrix: EFFLUER Compound	ATAL-DEGREMONT JOINT VE HK1619930 its iT		Client sample ID	Tel: +852 2610 1044 Fi	xc +852 2810 2021 www.atternviro.com		ALS
nt : k Order Analytical Resul Sub-Matrix: EFFLUER Compound ED/EK: Inorganic No	ATAL-DEGREMONT JOINT VE HK1619930 fs IT nmetallic Parameters	Cilient s	Client sample ID ampling date / time	Tel: +852 2810 1044 Pr SAMPLE 1 20-MAY-2016 09 HK1619930-00	xc +852 2810 2021 www.atternviro.com		(ALS
tt : c Order : Analytical Result Sub-Matrix: EFFLUE! Compound ED/EK: Inorganic No EK055K: Ammonia	ATAL-DEGREMONT JOINT VE HK16 19930 Is IT metallic Parameters as N	Client s	Client sample ID ampling date / time Unit mg/L	Tel: +852 2810 1044 Pr SAMPLE 1 20-MAY-2016 09 HK1619930-00 25.1	xc +852 2810 2021 www.atternviro.com		ALS
nt k Order Analytical Resul Sub-Matrix: EFFLUER Compound ED/EK: Inorganic No EK055K: Ammonia EK052P: Total Nitr	ATAL-DEGREMONT JOINT VE HK1619930 IS IT ormetallic Parameters as N ogen as N	Client 4 15 Number LOR 7664-41-7 0.01	Client sample ID ampling date / Sme Unit mg/L mg/L	Tel: +852 2610 1044 Fr SAMPLE 1 20-MAY-2016 09 HK1619930-00 26.1 27.3	xc +852 2810 2021 www.atternviro.com		ALS
t Compound ED/EK: EFFLUEN Compound ED/EK: Inorganic No EK055K: Ammonia EK052P: Total Nitr EK052P: Total Nitr	ATAL-DEGREMONT JOINT VE HK1619930 IS IT commetallic Parameters as N ogen as N – Filtered	Client a IS Number LOR 7664-41-7 0.01 0.1 0.1	Client sample/D ampling date / time Unit mg/L mg/L	Tel: +852.2510 1044 Pr SAMPLE 1 20-MAY-2016 09 HK1619330-00 25.1 27.3 25.7	xc +852 2810 2021 www.atternviro.com		
nt k Order Analytical Resul Sub-Matrix: EFFLUER Compound ED/EK: Inorganic No EK065K: Ammonia EK062P: Total Nitr EK062P: Total Nitr EK067P: Total Pho	ATAL-DEGREMONT JOINT VE HK1619930 IS IT nmetallic Parameters as N ogen as N - Filtered sphorus as P	Citent a IS Number LOR 7664-41-7 0.01 0.1 0.1 0.1	Client aanple ID angling dale / Ane Unit mg/L mg/L mg/L	Tel: +852 2810 1044 Pr SAMPLE 1 20-MAY-2016 09 HK1619830-00 25.1 27.3 25.7 2.6	xc +852 2810 2021 www.atternviro.com		ALS
nt K Order Analytical Result Sub-Matrix: EFFLUEN Compound EDVEK: Inorganic No EK055K: Ammonia EK052P: Total Nitr EK062P: Total Nitr EK067P: Total Pho EK067P: Total Pho	ATAL-DEGREMONT JOINT VE HK1619930 fs IT metallic Parameters as N ogen as N ogen as N ogen as N sphorus as P sphorus as P	Client a IS Number LOR 7664-41-7 0.01 0.1 0.1	Client sample/D ampling date / time Unit mg/L mg/L	Tel: +852.2510 1044 Pr SAMPLE 1 20-MAY-2016 09 HK1619330-00 25.1 27.3 25.7	xc +852 2810 2021 www.atternviro.com		
nt K Order Analytical Resul Sub-Matrix: EFFLUER Compound EDERS: Inorganic No EX052P: Total Nitr EK062P: Total Nitr EK062P: Total Nitr EK062P: Total Nitr EK062P: Total Nitr EK062P: Total Pinc EK062P: Total Pinc	ATAL-DEGREMONT JOINT VE HK1619930 IS IT Interallic Parameters as N Ogen as N Sogen as N - Filtered sphorus as P sphorus - Filtered icis	Client # AS Number LOR 786441-7 0.01 0.1 0.1 0.1	Client samples ID ampling date / time Unit mg/L mg/L mg/L mg/L mg/L	SAMPLE 1 20-MAY-2016 09 HK1619930-00 25.1 27.3 25.7 2.5 1.8	xc +852 2810 2021 www.atternviro.com		
nt K Order Analytical Resul Sub-Matrix: EFFLUEH Compound EDV5K: Incomposition EX055K: Ammonia EX052F: Total Nitr EX052F: Total Nitr EX052F: Total Nitr EX052F: Total Nitr EX052F: Total Nitr EX052F: Total Nitr EX052F: Total Organ EP005: Total Organ EP005: Total Organ	ATAL-DEGREMONT JOINT VE HK1619930 IS IT metallic Parameters as N ogen as N - Filtered ogen as N - Filtered sphorus as P sphorus - Filtered lics ic Carbon	Citent a IS Number LOR 7664-41-7 0.01 0.1 0.1 0.1	Client aanple ID angling dale / Ane Unit mg/L mg/L mg/L	Tel: +852 2810 1044 Pr SAMPLE 1 20-MAY-2016 09 HK1619830-00 25.1 27.3 25.7 2.6	xc +852 2810 2021 www.atternviro.com		
f Order Analytical Result Sub-Matrix: EFFLUEN Compound EXC052P: Total Nitr EXC052P: Total Nitr EXC052P: Total Nitr EXC052P: Total Nitr EXC052P: Total Nitr EXC052P: Total Nitr EXC052P: Total Pho EPC057: Total Pho EPC057: Total Pho EPC057: Total Pho EPC057: Total Ana EPC057: Total Ana EPC057: Total Ana EPC057: Total Ana EPC057: Total Ana EPC057: Total Ana	ATAL-DEGREMONT JOINT VE HK1619930 IS IT metallic Parameters as N ogen as N - Filtered ogen as N - Filtered sphorus as P sphorus - Filtered lics ic Carbon	Client 1 IS Number LOR 7864-41-7 0.01 0.1 0.1 0.1 1	Client samples (2) ampling date / fore Unit mg/L mg/L mg/L mg/L mg/L	Tel: +852.2510 1044 Pr SAMPLE 1 20-MAY-2016 09 HK1619930-00 25.1 27.3 26.7 2.6 1.8 49	xc +852 2810 2021 www.atternviro.com		
t Corder Analytical Result Sub-Matrix: EFFLUEN Compound DEMEX: Inorganic No EK055K: Ammonia EK055K: Anamonia EK055P: Total Nitr EK055P: Total Nitr EK057P: Total Nitr	ATAL-DEGREMONT JOINT VE HK1619930 IS IT metallic Parameters as N ogen as N - Filtered ogen as N - Filtered sphorus as P sphorus - Filtered lics ic Carbon	Citent 4 AS Number LOR 7884-41-7 0.01 0.1 0.1 0.1 0.1 1 7440-38-2 1	Client sample ID angeling date / time Unit mg/L mg/L mg/L mg/L mg/L	Tel: +852 2810 1044 Pr SAMPLE 1 20-MAY-2016 09 HK1619930-00 25.1 25.7 2.5 1.8 49 <1	xc +852 2810 2021 www.atternviro.com		
f Order Analytical Result Sub-Matrix: EFFLUER ED/EK: Inorganic No EK0529: Total Nitr EK0529: Total Nitr EK0529: Total Nitr EK0529: Total Pho EK0529: Total Pho EK0529: Total Pho EK0529: Total Pho EP005: Total Orga EG002: Barium EG022: Arsenic	ATAL-DEGREMONT JOINT VE HK1619930 IS IT metallic Parameters as N ogen as N - Filtered ogen as N - Filtered sphorus as P sphorus - Filtered lics ic Carbon	Client 1 IS Number LOR 7664-11-7 0.01 0.1 0.1 0.1 1 7440-38-2 1 7440-38-3 1	Client aample /0 ampling dale / time Unit mg/L mg/L mg/L mg/L mg/L jug/L	SAMPLE 1 20-MAY-2016 09 HK1619930-00 25.1 27.3 25.7 2.6 1.8 49 <1 18	xc +852 2810 2021 www.atternviro.com		
K Order Analytical Result Analytical Result Sub-Natrix: EFFLUEN EX052P: Total Nitr EK052P: Total Nitr EK052P: Total Nitr EK052P: Total Nitr EK052P: Total Nitr EK052P: Total Nitr EK052P: Total Pho EK052P: Total Pho ES052P: Anamo	ATAL-DEGREMONT JOINT VE HK1619930 IS IT metallic Parameters as N ogen as N - Filtered ogen as N - Filtered sphorus as P sphorus - Filtered lics ic Carbon	Client 4 SNumber LOR 788441-7 001 0.1 0.1 0.1 1 740-39-2 1 7440-39-3 1	Client aanpie /D ampiling date / time Unit mg/L mg/L mg/L mg/L 194/L 194/L 194/L	Tel: +892 2810 1044 Pr SAMPLE 1 20-MAY-2016 09 HK1619930-00 25.1 27.3 25.7 2.6 1.8 49 49 <1 18 <0.2	xc +852 2810 2021 www.atternviro.com		
d Order Analytical Result Sub-Matrix: EFFLUEN Compound DEPK: Inorganic No EK055K: Ammonia EK055F: Total Nitr EK055F: Total Nitr EK055F: Total Nitr EK057F: Total Pho EK057F: Total Nitr EK057F: Total Nitr EG020: Arsenic EG020: Barlum EG020: Cadmium EG020: Cadmium	ATAL-DEGREMONT JOINT VE HK1619930 IS IT metallic Parameters as N ogen as N - Filtered ogen as N - Filtered sphorus as P sphorus - Filtered lics ic Carbon	Client 4 S Number LOR 786441-7 001 0.1 0.1 0.1 0.1 1 7440-38-2 1 7440-38-3 1 7440-43.9 022 1 7440-43.9 1 7440-43.9 1 7440-43.9 1 7440-43.9 1 7440-43.9 1 7440-73.3 1	Client aanpie ID ampling date / time Unit mg/L mg/L mg/L mg/L mg/L ug/L ug/L ug/L ug/L	SAMPLE 1 20-MAY-2016 09 HK1619930-00 25.1 27.3 26.7 2.6 1.8 49 <1 1.8 49 <1 1.8 49 <1 4 3 4 4 4 4	xc +852 2810 2021 www.atternviro.com		
d Order Analytical Resul Jub-Matrix: EFFLUEN Compound DDEK: Inorganic No EKOSEP: Total Nitt EKOSEP: Total Nitt EKOSEP: Total Nitt EKOSEP: Total Nitt EKOSEP: Total Nitt EKOSEP: Total Nitt EKOSEP: Total Orga ESO20: Arsenic ESO20: Cadmium ESO20: Cadmium ESO20: Cadmium	ATAL-DEGREMONT JOINT VE HK1619930 IS IT metallic Parameters as N ogen as N - Filtered ogen as N - Filtered sphorus as P sphorus - Filtered lics ic Carbon	Client J           AS Number         LOR           768441-7         0.01           —         0.1           —         0.1           —         0.1           —         0.1           —         0.1           —         0.1           —         0.1           —         0.1           —         1           7440-38-2         1           7440-47-3         0.2           7440-47-3         1           7440-47-3         1           7440-47-3         1           7440-47-3         1           7440-47-3         1           7440-47-3         1	Client sample /0 ampling date / fore date / fore mg/L mg/L mg/L mg/L gy/L yg/L yg/L yg/L	Tel: +892 2810 1044 Pr SAMPLE 1 20-MAY-2016 09 HK1619930-00 25.1 27.3 26.7 2.6 1.8 49 <1 18 <1 18 <0.2 4 6	xc +852 2810 2021 www.atternviro.com		
d Order Analytical Result Sub-Matrix: EFFLUEN Compound DEPK: Inorganic No EK0629: Total Nitr EK0629: Cotal Nitr EG020: Chromium EG020: Chromium EG020: Chromium EG020: Chromium EG020: Chromium	ATAL-DEGREMONT JOINT VE HK1619930 IS IS IS IS IS IS IS IS IS IS IS IS IS	Client 4 S Number LOR 786441-7 0.01 0.1 0.1 0.1 0.1 1	Client samples ID ampling date / Inne Unit mg/L mg/L mg/L mg/L mg/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L u	SAMPLE 1           20-MAY-2016 09           HK1619930-00           25.1           27.3           25.7           2.6           1.8           49           <1	xc +852 2810 2021 www.atternviro.com		
d Order Analytical Resul Jub-Matrix: EFFLUEN Compound DDEK: Inorganic No EKOSEP: Total Nitt EKOSEP: Total Nitt EKOSEP: Total Nitt EKOSEP: Total Nitt EKOSEP: Total Nitt EKOSEP: Total Nitt EKOSEP: Total Orga ESO20: Arsenic ESO20: Cadmium ESO20: Cadmium ESO20: Cadmium	ATAL-DEGREMONT JOINT VE HK1619930 IS IS IS IS IS IS IS IS IS IS IS IS IS	Client J IS Number LOR 786441-7 0.01 0.1 0.1 0.1 0.1 1 7440-38-2 1 7440-38-3 1 7440-47-3 1 7440-47-3 1 7440-47-3 1 7439-06-6 1	Client aanple ID ampling date / Ame Unit mg/L mg/L mg/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	Tel: +892 2810 1044 Pr SAMPLE 1 20-MAY-2016 09 HK1619930-00 25.1 27.3 26.7 2.6 1.8 49 <1 18 <1 18 <0.2 4 6	xc +852 2810 2021 www.atternviro.com		
d Order Analytical Result Sub-Matrix: EFFLUEN Compound DEPK: Inorganic No EK0629: Total Nitr EK0629: Cotal Nitr EG020: Chromium EG020: Chromium EG020: Chromium EG020: Chromium EG020: Chromium	ATAL-DEGREMONT JOINT VE HK1619930 IS IS IS IS IS IS IS IS IS IS IS IS IS	Client 4           ISNumber         LOR           7884417         0.01            0.1            0.1            0.1            0.1            0.1            0.1            0.1            0.1            1           7440-30-2         1           7440-43-9         0.2           7440-43-9         1           7439-86         1           7439-86         1           7439-86         1	Colect aanple (D anpoleg date / time Unit mg/L mg/L mg/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L u	Tel: +852.2610 1044 Pr SAMPLE 1 20-MAY-2016 09 HK1619930-00 26.1 27.3 26.7 26.5 1.8 49 <1 18 <0.2 4 5 18 <0.2 4 5 10 10	xc +852 2810 2021 www.atternviro.com		
Analytical Result Analytical Result Sub-Matric: EFFLUEN DEPK: Inorganic No EK055K: Ammonia EK052P: Total Nite EK052P: Total Nite EG020: Arsenic EG020: Copper EG020: Copper EG020: Copper EG020: Copper EG020: Manganess EG020: Mickel EG020: Miner	ATAL-DEGREMONT JOINT VE HK1619930 IS IS IS IS IS IS IS IS IS IS IS IS IS	Client J S Number LOR 786441-7 001 0.1 0.1 0.1 0.1 1 7440-38-2 1 7440-38-3 1 7440-38-9 0.2 7440-47-3 1 7440-45-9 0.2 7440-47-3 1 7440-58-6 1 7439-02-1 1 7440-224 1	Client aunpie iD ungting daie / the Unit mg/L mg/L mg/L mg/L yg/L yg/L yg/L yg/L yg/L yg/L yg/L y	SAMPLE 1 20-MAY-2016 09 HK1619930-00 25.1 27.3 26.7 2.6 1.8 49 <1 18 <0.2 4 4 6 1 8 49 9 3	xc +852 2810 2021 www.atternviro.com		
Analytical Result Analytical Result Sub-Matrix: EFFLUEN Compound DEVKS: Inorganic No EK052P: Total Nitr EK052P: Total Nitr EK052P: Total Nitr EK052P: Total Nitr EK052P: Total Pho EK052P: Total Pho EK052P: Total Pho ES020: Total Pho EG020: Carlonium EG020: Chromium EG020: Chorper EG020: Lead EG020: Lead EG020: Lead EG020: Lead EG020: Lead EG020: Lead	ATAL-DEGREMONT JOINT VE HK1619930 IS IS IS IS IS IS IS IS IS IS IS IS IS	Client J           IS Number         LOR           768441-7         0.01	Colect aanple (D anpoleg date / time Unit mg/L mg/L mg/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L u	Tel: +852.2610 1044 Pr SAMPLE 1 20-MAY-2016 09 HK1619930-00 26.1 27.3 26.7 26.5 1.8 49 <1 18 <0.2 4 5 18 <0.2 4 5 10 10	xc +852 2810 2021 www.atternviro.com		
Analytical Result Analytical Result Sub-Matrix: EFFLUEN ED/EK: Inorganic No EX0585: Ammonia EX0587: Total Nitr EK0577: Total Nitr EK0577: Total Nitr EK0577: Total Nitr EK0577: Total Nitr EK0577: Total Nitr EG057: Total Anal EG052: Arsenic EG052: Barlum EG020: Carlonium EG020: Carlonium EG020: Carlonium EG020: Carlonium EG020: Carlonium EG020: Nickel EG020: Nickel EG020: Nickel EG020: Nickel EG020: Nickel EG020: Nickel	ATAL-DEGREMONT JOINT VE HK1619930 IS IS IS IS IS IS IS IS IS IS IS IS IS	Client J S Number LOR 786441-7 001 0.1 0.1 0.1 0.1 1 7440-38-2 1 7440-38-3 1 7440-38-9 0.2 7440-47-3 1 7440-45-9 0.2 7440-47-3 1 7440-58-6 1 7439-02-1 1 7440-224 1	Client aunpie iD ungting daie / the Unit mg/L mg/L mg/L mg/L yg/L yg/L yg/L yg/L yg/L yg/L yg/L y	Tel: +892 2810 1044 Pr SAMPLE 1 20-MAY-2016 09 HK1619930-00 26.1 27.3 26.7 2.6 1.8 49 <1 18 <0.2 4 6 1 18 <0.2 4 5 10 10 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	xc +852 2810 2021 www.atternviro.com		
K Order Analytical Resul XeoAntic EFFLUEN Compound DEMX: Inorganic No EK062P: Total Nitr EK062P: Total Nitr EK062P: Total Nitr EK062P: Total Nitr EK062P: Total Nitr EK062P: Total Nitr EK062P: Total Netr EG020: Cardinum EG020: Cardinum EG020: Chornium EG020: Chornium EG020: Copper EG020: Chard EG020: Chornium EG020: Copper EG020: Silver EG020: Silver	ATAL-DEGREMONT JOINT VE HK1619930 fs it in metallic Parameters as N ogen as N - Filtered ogen as N - Filtered ogen as N - Filtered ics ic Carbon r Cations - Total	Client J           IS Number         LOR           786441-7         0.01            0.1            0.1            0.1            0.1            0.1            0.1            0.1            1           7440-38-2         1           7440-47-3         0.2           7440-50-6         1           7440-50-6         1           7440-22-0         1           7440-62-2         1	Client aampile /0 gampiling date / date date mglt. mglt. mglt. mglt. mglt. gagt. juglt. juglt. juglt. juglt. juglt. juglt. juglt.	Tel: +892 2810 1044 Pr SAMPLE 1 20-MAY-2016 09 HK1619930-00 25.1 27.3 25.7 2.5 1.8 49 <1 18 49 <1 18 49 <1 10 <1 20	xc +852 2810 2021 www.atternviro.com		
A Order Analytical Result Sonder Analytical Result Compound EDVEK: Inorganic No EX0527: Total Nitr EX0527: Total Nitr EX0527: Total Nitr EX0527: Total Nitr EX0527: Total Pho EX0527: Total Pho ES0527: Total Pho ES0202: Arisenic ES0202: Captur ES0202: Captur ES0202: Captur ES0202: Captur ES0202: Captur ES0202: Captur ES0202: Captur ES0202: Nickel ES0202: Nickel ES0202: Nickel ES0202: Nickel ES0202: Zinc ES0202: Zinc ES0202: Zinc ES0202: Zinc ES0202: Zinc ES0202: Zinc	ATAL-DEGREMONT JOINT VE HK1619930 fs it in metallic Parameters as N ogen as N - Filtered ogen as N - Filtered ogen as N - Filtered ics ic Carbon r Cations - Total	Client 4 S Number Con St Number 0	Client aunylei ID angelny date / time Unit mgl. mgl. mgl. mgl. mgl. mgl. mgl. jug. jug. jug. jug. jug. jug. jug. jug	Tel: +852 2810 1044 Pr SAMPLE 1 20-MAY-2016 09 HK1619930-00 25.1 27.3 25.7 2.5 1.8 49 <1 1.8 49 <1 1 8 <0.2 4 9 <1 1 1 93 10 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	xc +852 2810 2021 www.atternviro.com		
nt k Order Analytical Result Analytical Result Compound EX058F: Inorganic No EX058F: Ammonia EX052P: Total Nitr EX052P: Comparison EX052P: Comparison EX052P	ATAL-DEGREMONT JOINT VE HK1619930 fs it in metallic Parameters as N ogen as N - Filtered ogen as N - Filtered ogen as N - Filtered ics ic Carbon r Cations - Total	Client 4 S Number LOR T05641-7 001 01 01 01 01 1 7440-38-2 1 7440-38-3 1 7440-38-3 1 7440-47-3 1 7420-47-3 1 740-47-4 1 74	Colect aanplei (2) anpeling date / time Unit mg/L mg/L mg/L mg/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L u	Tel: +892 2810 1044 Pr SAMPLE 1 20-MAY-2016 09 HK1619930-00 25.1 27.3 25.7 2.5 1.8 49 49 49 49 49 49 49 49 49 49	xc +852 2810 2021 www.atternviro.com		
A Order Analytical Result Sonder Analytical Result Compound EDVEK: Inorganic No EX0527: Total Nitr EX0527: Total Nitr EX0527: Total Nitr EX0527: Total Nitr EX0527: Total Pho EX0527: Total Pho ES0527: Total Pho ES0202: Arisenic ES0202: Captur ES0202: Captur ES0202: Captur ES0202: Captur ES0202: Captur ES0202: Captur ES0202: Captur ES0202: Nickel ES0202: Nickel ES0202: Nickel ES0202: Nickel ES0202: Zinc ES0202: Zinc ES0202: Zinc ES0202: Zinc ES0202: Zinc ES0202: Zinc	ATAL-DEGREMONT JOINT VE HK1619930 fs it in metallic Parameters as N ogen as N - Filtered ogen as N - Filtered ogen as N - Filtered ics ic Carbon r Cations - Total	Client 4           SNumber         LCR           7884417         0.01            0.1            0.1            0.1            0.1            0.1            1            1           7440-38-2         1           7440-38-2         1           7440-38-2         1           7440-43-9         0.2           7440-43-1         1           7439-86         1           7440-42         1           7440-42         1           7440-42         1           7440-42         1           7440-42         1           7440-42         1           7440-42         1           7440-42         1           7440-42         1           7440-42         1           7440-42         1           7440-42         1           7440-42         1	Client aanpie ID mpring date / tame unt unt mpit. mpit. mpit. mpit. mpit. mpit. mpit. spit	Tel: +852 2810 1044 Pr SAMPLE 1 20-MAY-2016 09 HK1619930-00 25.1 27.3 25.7 2.5 1.8 49 <1 1.8 49 <1 1 8 <0.2 4 9 <1 1 1 93 10 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	xc +852 2810 2021 www.atternviro.com		



t : i	3 of 6 ATAL-DEGREMONT JO HK1619930	INT VENTURE						AL
aboratory Dupl	cate (DUP) Report							
atrix: WATER						Laboratory Duplicate (DUP) Re	port	
aboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
D/EK: Inorganic N	Ionmetallic Parameters	(OC   ot: 4212243)						
-K1619898-011	Anonymous	EK055K: Ammonia as N	7664-41-7	0.01	mg/L	0.46	0.46	0.0
	Ionmetallic Parameters							
K1619647-001	Anonymous	EK067P: Total Phosphorus as P		0.1	mg/L	<0.1	<0.1	0.0
				0.1	ingre	-0.1	-0.1	0.0
U/EK: Inorganic N K1619647-001	Ionmetallic Parameters Anonymous			0.1	mg/L	1.1	1.2	0.0
		EK062P: Total Nitrogen as N		0.1	mg/L	1.1	1.2	0.0
D/EK: Inorganic N K1619930-001	SAMPLE 1			0.1		10	10	
		EK067P: Total Phosphorus - Filtered		0.1	mg/L	1.8	1.8	0.0
	Ionmetallic Parameters							
HK1619647-001	Anonymous	EK062P: Total Nitrogen as N - Filtered		0.1	mg/L	1.1	1.1	0.0
	or Cations (QC Lot: 42	213389)						
K1619930-001	SAMPLE 1	EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	<0.2	0.0
		EG020: Arsenic	7440-38-2	1	µg/L	<1	<1	0.0
		EG020: Barium	7440-39-3	1	µg/L	18	19	0.0
		EG020: Chromium	7440-47-3	1	µg/L	4	3	0.0
		EG020: Copper	7440-50-8	1	µg/L	6	6	0.0
		EG020: Lead	7439-92-1	1	µg/L	1	<1	0.0
		EG020: Manganese	7439-96-5	1	µg/L	93	93	0.0
		EG020: Nickel	7440-02-0	1	µg/L	10	9	0.0
		EG020: Silver	7440-22-4	1	µg/L	<1	<1	0.0
		EG020: Vanadium	7440-62-2	1	µg/L	<1	<1	0.0
		EG020: Zinc	7440-66-6	10	µg/L	20	20	0.0
K1619936-001	Anonymous	EG020: Cadmium	7440-43-9 7440-39-3	0.2	µg/L	<0.2	<0.2	0.0
		EG020: Barium		1	µg/L	7	7	0.0
		EG020: Chromium	7440-47-3 7440-50-8	1	µg/L	4	4	0.0
		EG020: Copper	7440-50-8	1	µg/L	<1	1	0.0
		EG020: Lead			µg/L	271	267	0.0
		EG020: Manganese	7439-96-5 7440-02-0	1	µg/L	15		1.5
		EG020: Nickel	7440-02-0	1	µg/L	15	16	0.0
		EG020: Silver	7440-22-4	10	µg/L	<10	<10	0.0
		EG020: Arsenic	7440-38-2	10	µg/L	<10	<10	
		EG020: Vanadium		10	µg/L	<10	<10	0.0
		EG020: Zinc	7440-66-6	10	µg/L	<10	<10	0.0
	jor Cations (QC Lot: 42		T (00 07 7	10			50	10.7
IK1619930-001	SAMPLE 1	EG020: Aluminium	7429-90-5	10	µg/L	64	56	12.2
K1620089-002	Anonymous	EG020: Aluminium	7429-90-5	10	µg/L	60	59	0.0
G: Metals and Ma	or Cations (QC Lot: 42	213391)						

								/ ebo	atory Duplicate (DUP)	Report		
Aatrix: WATER Laboratory sample ID Client sample ID	Method: Compos				CAS Number	LOR		Unit	Original Result	Duplicat	e Result	RPD (%)
		ind										RPD 1%
EG: Metals and Major Cations (QC Lot: 421 HK1619930-001 SAMPLE 1	EG020: Boror				7440-42-8	100		ıg/L	1110	11	30	1.2
HK1620089-002 Anonymous	EG020: Boron				7440-42-8	10		ig/L	<10	<1		0.0
EP: Aggregate Organics (QC Lot: 4214272								<i>a</i> –				
HK1619975-008 Anonymous	EP005: Total	Organic Car	bon			1	n	ng/L	<1	<	1	0.0
Method Blank (MB), Laboratory Contro	ol Spike (I CS) and	l l aborat	ory Control Si	nike Duplicate	(DCS) Repo	rt						
Matrix: WATER		Laborat	Method Blank (MB)		(200) (1000		Laboratory Con	trol Spike (LCS) and	Laboratory Control Sp	ike Duplicate (DC	S) Report	
					Spike	,		covery (%)	Recovery			PD (%)
Method; Compound	CAS Number	LOR	Unit	Result	Concentr		LCS	DCS	Low	High	Value	Control Lim
ED/EK: Inorganic Nonmetallic Parameters												
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg	L	99.3		92	108		
ED/EK: Inorganic Nonmetallic Parameters						-						
EK067P: Total Phosphorus as P	(QC LOL 42 14800)	0.01	mg/L	<0.01	0.5 mg	L	96.2		93	103		
ED/EK: Inorganic Nonmetallic Parameters	(OC   at: 4214907)				0.0 1.19							
EK062P: Total Nitrogen as N	(QC LOL: 42 14807)	0.1	mg/L	<0.1	0.5 ma	L	95.2		92	114		
ED/EK: Inorganic Nonmetallic Parameters	(OC   at: 4214909)					-						
EK067P: Total Phosphorus - Filtered	(QC LUL 42 14808)	0.01	mg/L	< 0.01	0.5 mg	1	97.3		85	115		
ED/EK: Inorganic Nonmetallic Parameters	(OC   at: 4214900)					-						
EK/62P: Total Nitrogen as N - Filtered	(QC LOI: 42 14809)	0.1	mg/L	<0.1	0.5 mg	L.	99.7		85	115		
EG: Metals and Major Cations (QC Lot: 421	12200\	0.1	ing c	-0.1	e.e mg	-			00	110		
EG036: Mercury	7439-97-6	0.05	µg/L	<0.05	2 µg/l		102		77	113		
EG: Metals and Major Cations (QC Lot: 421					- 10							
EG2020; Arsenic	7440-38-2	10	µg/L	<10	100 µg	1	96.6		79	109		
EG020: Barium	7440-39-3	1	µg/L	<1	100 µg		93.7		79	109		
EG020: Cadmium	7440-43-9	0.2	µg/L	<0.2	100 µg		98.9		80	106		
EG020: Chromium	7440-47-3	1	µg/L	<1	100 µg	L	90.8		77	115		
EG020: Copper	7440-50-8	1	µg/L	<1	100 µg	L	90.0		77	113		
EG020: Lead	7439-92-1	1	µg/L	<1	100 µg		89.7		80	110		
EG020: Manganese	7439-96-5	1	µg/L	<1	100 µg		90.7		76	116		
EG020: Nickel	7440-02-0	1	µg/L	<1	100 µg		90.5		78	112		
EG020: Silver	7440-22-4 7440-62-2	1 10	µg/L µg/L	<1 <10	100 µg		89.1 91.4		78	104 113		
EG020: Vanadium EG020: Zinc	7440-62-2	10	μg/L μg/L	<10	100 µg		91.4		76	113		
EG20: 2inc EG: Metals and Major Cations (QC Lot: 421			P.9/ C	410	100 µg	-			10	1.14		
EG: Metals and Major Cations (QC Lot: 421 EG020: Aluminium	7429-90-5	10	µg/L	<10	100 µg	1	95.8		85	117		
EG20: Aluminium EG: Metals and Major Cations (QC Lot: 421		10	P3.c		100 µg	-	00.0					
EG: Metals and Major Cations (QC Lot: 421 EG025: Iron	7439-89-6	0.05	mg/L	<0.05	2 ma/		96.6		92	112		
		0.00		-0100								
EG: Metals and Major Cations (QC Lot: 421 EG020: Boron	7440-42-8	10	µg/L	<10	100 µg	4	94.8		72	118		
EG020. D0100	/ ++0-42-0	10	P9/L	510	100 µg	-	34.0		12	110		

7076134| D18/02 | Revision No. 2 | June 2016



Matrix: WATER		Method Blank (MB) Re		Spike	Laboratory Control S Spike Recove		Recovery Li		Report RPD	(%)
Method: Compound EP: Aggregate Organics (QC Lot: 421427)	CAS Number LOR 2)	Unit	Result Con	centration	LCS	DCS	Low	High	Value	Control Limit
EP005: Total Organic Carbon	1	mg/L		5 mg/L 10 mg/L	99.9 98.2		94 84	118 118		
t : ATAL-DEGREMONT JC : Order HK1619930 flatrix Spike (MS) and Matrix Spike D					Matrix Sp.	ike (MS) and M	trix Spike Dupli	icate (MSD) F	(	ALS
ATAL-DEGREMONT JC Corder HK1619930 Matrix Spike (MS) and Matrix Spike D Natrix WATER	uplicate (MSD) Report			Spike Concentration	Spike Re	ecovery (%)	Recover	y Limits (%)	RF	
It ATAL-DEGREMONT JC (Order HK1619930 Matrix Spike (MS) and Matrix Spike D atro: WATER aboratory Client sample ID ample ID	uplicate (MSD) Report		CAS Number	Concentration						2D (%) Control Limit
t ATAL-DEGREMONT JC Order HK1619930 Matrix Spike (MS) and Matrix Spike D ann: WATER aboratory Client sample ID ample ID DDFKK: Inorganic Nonmetallic Parameters	Method: Compound			Concentration	Spike Re	ecovery (%)	Recover	y Limits (%)	RF	Control
t : ATAL-DEGREMONT JC : Order HK1619930 Atatrix Spike (MS) and Matrix Spike D atma: WATER aboratory Client sample ID ample ID ED/EK: Inorganic Nommetallic Parameters K1619989-011 Anonymous ED/EK: Inorganic Nommetallic Parameters	Method: Compound (Method: Compound (QC Lot: 4212243) (EK055K: Ammonia as N 5 (QC Lot: 4214806)		Number 7664-41-7	0.5 mg/L	Spike Re MS 96.0	ecovery (%) MSD	Recover Low 75	y Limits (%) High 125	RF Value	Control Limit
It Conder HK1619930 Aatrix Spike (MS) and Matrix Spike D Matrix Spike (MS) and Matrix Spike D Matrix WATER aboratory Client sample ID ample ID EDIEK: Inorganic Nonmetallic Parameters K1619647-001 Anonymous	Method: Compound (QC Lot: 4212243) EK055K: Ammonia as N G(QC Lot: 4214806) EK057P: Total Phospho		Number	Concentration	Spike Re MS	ecovery (%) MSD	Recover	y Limits (%) High	RF Value	Control Limit
ti Croder HK1619930 Atatrix Spike (MS) and Matrix Spike D attrix Spike (MS) and Matrix Spike D attrix VMTE aboratory Client sample ID aboratory Client sample ID ED/EK: Inorganic Nonmetallic Parameters IK161968-001   Anonymous ED/EK: Inorganic Nonmetallic Parameters IK1619647-001   Anonymous	uplicate (MSD) Report Method: Comeound (QC Lot: 4212243) EK055K: Ammonia as N (QC Lot: 4214806) EK067P: Total Phospho (QC Lot: 4214807) EK062P: Total Nitrogen	orus as P	Number 7664-41-7	Concentration 0.5 mg/L 0.5 mg/L	Spike Re MS 96.0	ecovery (%) MSD	Recover Low 75	y Limits (%) High 125	RF Value	Control Limit
It Conder HK1619930 Matrix Spike (MS) and Matrix Spike D Matrix Spike (MS) and Matrix Spike D Matrix WATER aboratory Client sample ID ample ID EDIEK: Inorganic Nonmetallic Parameters K1619647-001 Anonymous EDIEK: Inorganic Nonmetallic Parameters K1619647-001 Anonymous	Method: Compound           (QC Lot: 4212243)           EK055K: Ammonia as N           (QC Lot: 4214806)           EK057P: Total Phospho           (QC Lot: 4214807)           EK052P: Total Nitrogen           (QC Lot: 4214808)	orus as P aas N	Number 7664-41-7	Concentration 0.5 mg/L 0.5 mg/L 0.5 mg/L	Spike Re MS 96.0 108		Recover Low 75 75	y Limits (%) High 125 125	RF Value	Control Limit
It Croter HK1619930 Attrix Spike (MS) and Matrix Spike D Matrix Spike D Mat	Iuplicate (MSD) Report  Method: Comeound  (CC Lot: 4212243)  (EK055K: Ammonia as N  (CC Lot: 4214806)  (CC Lot: 4214807)  (CC Lot: 4214807)  (CC Lot: 4214808)  (CC Lot: 4214808)  (CC Lot: 4214809)	orus as P a as N orus - Filtered	Number 7664-41-7 	Concentration 0.5 mg/L 0.5 mg/L 5 mg/L	Spike Re MS 96.0 98.0 93.2	scovery (%) MSD	Recover           Low           75           75           75           75           75	y Limits (%) High 125 125 125 125	RF Value	Control Limit
It Croter HK1619930 Matrix Spike (MS) and Matrix Spike D Matrix Spike (MS) and Matrix Spike D astro: WATER aboratory Client sample ID ample ID ED/EK: Inorganic Nonmetallic Parameters IK1619698-011 Anonymous ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 SAMPLE 1 ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous	uplicate (MSD) Report  Method: Comeound  (QC Lot: 4212243)  EK057K: Anmonia as N  (QC Lot: 4214807)  EK067P: Total Pitospho  (QC Lot: 4214807)  EK067P: Total Pitospho  (QC Lot: 4214809)  EK067P: Total Pitospho  EK067P: Total Pitospho  EK067P: Total Pitospho  (QC Lot: 4214809)  EK062P: Total Nitrogen	orus as P a as N orus - Filtered	Number 7664-41-7	Concentration 0.5 mg/L 0.5 mg/L 5 mg/L	Spike Re MS 96.0 108 98.0	ecovery (%) MSD	Recover           Low           75           75           75	y Limits (%) High 125 125 125	RF Value	Control Limit
ti CATAL-DEGREMONT JC (Order HK1619930 Matrix Spike (MS) and Matrix Spike D matrix WATER aboratory Client sample ID ample ID ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous ES/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous ES: Metals and Major Cations (QC Lot: 4:	uplicate (MSD) Report  Method: Comeound  (QC Lot: 4212243)  EK057K: Anmonia as N  (QC Lot: 4214807)  EK067P: Total Pitospho  (QC Lot: 4214807)  EK067P: Total Pitospho  (QC Lot: 4214809)  EK067P: Total Pitospho  EK067P: Total Pitospho  EK067P: Total Pitospho  (QC Lot: 4214809)  EK062P: Total Nitrogen	orus as P a as N orus - Filtered	Number 7664-41-7 	Concentration 0.5 mg/L 0.5 mg/L 5 mg/L 0.5 mg/L	Spike Re MS 96.0 98.0 93.2	scovery (%) MSD	Recover           Low           75           75           75           75           75	y Limits (%) High 125 125 125 125	RF Value	Control Limit
It Croter HK1619930 Attrix Spike (MS) and Matrix Spike D Attrix Spike (MS) and Matrix Spike D attrix Spike (MS) and Matrix Spike D attrix Spike (MS) and Matrix Spike D aboratory Client sample ID aboratory Client sample ID aboratory Client sample ID ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous EG: Metals and Major Cations (QC Lot: 4: IK1619630-001 SAMPLE 1	Index (MSD) Report     Index (MSD) Report     Index (MSD) Report     Index (MSD) Report     Index (MSD)	orus as P a as N orus - Filtered	Number 7664-41-7    7439-97-6	Concentration 0.5 mg/L 0.5 mg/L 0.5 mg/L 5 mg/L 0.5 mg/L 2 µg/L	Spike Ro MS 96.0 108 98.0 93.2 86.0 98.0	scovery (%) MSD    	Recover           Low           75           75           75           75           75           75           75           75	y Limits (%) High 125 125 125 125 125 125	RF           Value	Control Limit
It Croter HK1619930 Attrix Spike (MS) and Matrix Spike D Attrix Spike (MS) and Matrix Spike D attrix Spike (MS) and Matrix Spike D attrix Spike (MS) and Matrix Spike D aboratory Client sample ID aboratory Client sample ID aboratory Client sample ID ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous EG: Metals and Major Cations (QC Lot: 4: IK1619630-001 SAMPLE 1	Luplicate (MSD) Report Method: Comeound  Guessian Commonstance  Guessian Commonstance  Guessian Commonstance  Guessiance  Gues	orus as P a as N orus - Filtered	Number 7664-41-7    7439-97-6 7440-38-2 7440-38-2	Concentration 0.5 mg/L 0.5 mg/L 5 mg/L 5 mg/L 2 µg/L 100 µg/L 100 µg/L	Spike Ro MS 96.0 98.0 93.2 98.0 98.0 98.0 98.0 98.0	ecovery (%) MSD	Recover           Low           75           75           75           75           75           75           75           75           75           75           75           75           75           75           75           75           75	y Limits (%) High 125 125 125 125 125 125 125	RF           Value	Control Limit
It Croter HK1619930 Attrix Spike (MS) and Matrix Spike D Attrix Spike (MS) and Matrix Spike D attrix Spike (MS) and Matrix Spike D attrix Spike (MS) and Matrix Spike D aboratory Client sample ID aboratory Client sample ID aboratory Client sample ID ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous EG: Metals and Major Cations (QC Lot: 4: IK1619630-001 SAMPLE 1	Implicate (MSD) Report           Method: Compound           EK055K: Anmonia as N           EK055F: Total Phospho           EK057P: Total Phospho           EK057P: Total Nitrogen           EK057P: Total Nitrogen           EK057P: Total Phospho           EK057P: Total Nitrogen           EK057P: Total Nitrogen           EK057P: Total Nitrogen           EK058P: Total Nitrogen           213388)           EG036: Mercury           213389           EG020: Casming           EG020: Casming           EG020: Casming	orus as P a as N orus - Filtered	Number 7664-41-7   7664-41-7   7768-41-7  7664-41-7  740-39-3 7440-39-3 7440-39-3 7440-39-3	Concentration 0.5 mg/L 0.5 mg/L 5 mg/L 0.5 mg/L 2 µg/L 100 µg/L 100 µg/L	Spike Ra MS 96.0 98.0 93.2 98.0 98.0 98.0 101 94.2 87.2	Covery (%) MSD 	Recover Low 75 75 75 75 75 75 75 75 75 75	y Limits (%) High 125 125 125 125 125 125 125 125	RF           Value	Control Limit      
t : ATAL-DEGREMONT JC i Crder HK1619930 Matrix Spike (MS) and Matrix Spike D atrix: WATER aboratory Client sample ID ample ID ED/EK: Inorganic Nonmetallic Parameters K1619698-011 Anonymous ED/EK: Inorganic Nonmetallic Parameters K1619647-001 Anonymous EG: Metals and Major Cations (QC Lot: 4: K1619930-001 SAMPLE 1	Implicate (MSD) Report           Implicate (MSD) R	orus as P a as N orus - Filtered	Number 7664-41-7   740-39-3 7440-39-3 7440-39-3 7440-47-3	Concentration 0.5 mg/L 0.5 mg/L 5 mg/L 5 mg/L 2 µg/L 100 µg/L 100 µg/L 100 µg/L	Spike Ro MS 96.0 98.0 93.2 98.0 98.0 98.0 98.0 98.0 98.0 98.0 98.0	Covery (%) MSD 	Recover           Low           75           75           75           75           75           75           75           75           75           75           75           75           75           75           75           75           75	y Limits (%) High 125 125 125 125 125 125 125 125 125 125	RF           Value	Control Limit 
t : ATAL-DEGREMONT JC i Crder HK1619930 Matrix Spike (MS) and Matrix Spike D atrix: WATER aboratory Client sample ID ample ID ED/EK: Inorganic Nonmetallic Parameters K1619698-011 Anonymous ED/EK: Inorganic Nonmetallic Parameters K1619647-001 Anonymous EG: Metals and Major Cations (QC Lot: 4: K1619930-001 SAMPLE 1	Implicate (MSD) Report           Method: Compound           EK055K: Anmonia as N           EK055F: Total Phospho           EK057P: Total Phospho           EK057P: Total Nitrogen           EK057P: Total Nitrogen           EK057P: Total Phospho           EK057P: Total Nitrogen           EK057P: Total Nitrogen           EK057P: Total Nitrogen           EK058P: Total Nitrogen           213388)           EG036: Mercury           213389           EG020: Castnim	orus as P a as N orus - Filtered	Number 7664-41-7   7664-41-7   7664-41-7   7664-41-7   7664-41-7  7664-41-7  740-39-97-6  7440-38-2 7440-43-9 7440-50-8 7440-50-9 7440-50-9 7440-50-9 7440-50-9 7440-50-9 7440-50-9 7440-50-9 7440-50-9 7440-50-9 7440-50-9 7440-50-9 7440-50-9 7440-50-9 7440-50-9 7440-50-9 7440-50-9 7440-50-9 740-50-	Concentration 0.5 mg/L 0.5 mg/L 5 mg/L 5 mg/L 2 µg/L 100 µg/L	Spike Ra MS 96.0 98.0 93.2 93.2 86.0 93.2 86.0 93.2 87.2 99.4 87.2 99.4 88.8 91.0	Covery (%) MSD 	Recover           Low           75	y Limits (%) High 125 125 125 125 125 125 125 125 125 125	RF           Value	Control Limit 
It Croter HK1619930 Attrix Spike (MS) and Matrix Spike D Attrix Spike (MS) and Matrix Spike D attrix Spike (MS) and Matrix Spike D attrix Spike (MS) and Matrix Spike D aboratory Client sample ID aboratory Client sample ID aboratory Client sample ID ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous EG: Metals and Major Cations (QC Lot: 4: IK1619630-001 SAMPLE 1	uplicate (MSD) Report  Method: Comeound  (QC Lot: 4212243)  (QC Lot: 4214806)  (QC Lot: 4214807)  EK062P: Total Nitrogen  (QC Lot: 4214809)  EK062P: Total Nitrogen  213389)  EG036: Mercury  213389)  EG036: Mercury 213389)  EG030: Canhium EG030: Canhium EG030: Canhium EG030: Copper EG030: Canhium EG030: Copper EG030: Mananese	orus as P a as N orus - Filtered	Number 7664-41-7    7439-97-6  7440-38-2 7440-38-2 7440-33-3 7440-47-3 7440-47-3 7440-47-3 74405-98-5	Concentration 0.5 mg/L 0.5 mg/L 0.5 mg/L 5 mg/L 5 mg/L 2 µg/L 100 µg/L	Spike Ro MS 96.0 98.0 98.0 98.0 98.0 98.0 98.0 98.0 98	Ecovery (%) MSD 	Recover           Low           75	y Limits (%) High 125 125 125 125 125 125 125 125 125 125	RF           Value	Control Limit 
It Croter HK1619930 Attrix Spike (MS) and Matrix Spike D Attrix Spike (MS) and Matrix Spike D attrix Spike (MS) and Matrix Spike D attrix Spike (MS) and Matrix Spike D aboratory Client sample ID aboratory Client sample ID aboratory Client sample ID ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous EG: Metals and Major Cations (QC Lot: 4: IK1619630-001 SAMPLE 1	Luplicate (MSD) Report  Method: Comeound  (QC Lot: 4212243) EK055K: Ammonia as N (QC Lot: 4214806) EK062P: Total Phospho (QC Lot: 4214807) EK062P: Total Nitrogen (QC Lot: 4214808) EK067P: Total Nitrogen 213389) EG030: Arsenic EG030: Arsenic EG020: Carlium EG020: Chomium	orus as P a as N orus - Filtered	Number 7664-41-7   7664-41-7   7664-41-7   7664-41-7   7664-41-7  7664-41-7  740-39-97-6  7440-38-2 7440-43-9 7440-50-8 7440-50-9 7440-50-9 7440-50-9 7440-50-9 7440-50-9 7440-50-9 7440-50-9 7440-50-9 7440-50-9 7440-50-9 7440-50-9 7440-50-9 7440-50-9 7440-50-9 7440-50-9 7440-50-9 7440-50-9 740-50-	Concentration           0.5 mg/L           0.5 mg/L           0.5 mg/L           5 mg/L           5 mg/L           100 µg/L	Spike Ra MS 96.0 98.0 93.2 93.2 86.0 93.2 86.0 93.2 87.2 99.4 87.2 99.4 88.8 91.0	Covery (%) MSD 	Recover           Low           75	y Limits (%) High 125 125 125 125 125 125 125 125 125 125	RF           Value	Control Limit 
It Croter HK1619930 Attrix Spike (MS) and Matrix Spike D Attrix Spike (MS) and Matrix Spike D attrix Spike (MS) and Matrix Spike D attrix Spike (MS) and Matrix Spike D aboratory Client sample ID aboratory Client sample ID aboratory Client sample ID ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters IK1619647-001 Anonymous EG: Metals and Major Cations (QC Lot: 4: IK1619630-001 SAMPLE 1	uplicate (MSD) Report  Method: Comeound  (QC Lot: 4212243)  (EK055K: Ammonia as N (CL ct: 4214806)  (QC Lot: 4214807)  (QC Lot: 4214807)  (QC Lot: 4214807)  (QC Lot: 4214809)  EK062P: Total Nitrogen  213389)  EG030: Marcury  213389)  EG030: Arsenic  EG030: Carpeni  EG030: Carpeni  EG030: Carpeni  EG030: Carpeni  EG030: Corpeni  EG030: Corpeni  EG030: Nickel  EG030	orus as P a as N orus - Filtered	Number 7664-41-7     740-38-2 740-38-2 740-38-2 740-38-3 740-38-3 740-38-3 740-38-3 740-38-3 740-38-2 740-30-2 740-30-30-30-30-30-30-30-30-30-30-30-30-30	Concentration 0.5 mg/L 0.5 mg/L 0.5 mg/L 5 mg/L 5 mg/L 2 µg/L 100	Spike Ra MS 96.0 98.0 98.0 98.0 98.0 98.0 98.0 98.0 98	Keovery (%) MSD **** **** **** **** **** **** ****	Recover           Low           75	y Limits (%) High 125 125 125 125 125 125 125 125 125 125	RF           Value	Control Limit 
ti Corder HK1619930 Matrix Spike (MS) and Matrix Spike D Matrix Spike (MS) and Matrix Spike D astro: WATER aboratory Client sample ID ample ID ED/EK: Inorganic Nonmetallic Parameters K1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters K1619630-001 SAMPLE 1 ES: Metals and Major Cations (QC Lot: 4) K1619930-001 SAMPLE 1	Luplicate (MSD) Report  Method: Comeound  (QC Lot: 4212243)  EK055K: Anmonia as N (QC Lot: 421480)  EK062P: Total Nitrogen  (QC Lot: 4214808)  EK062P: Total Nitrogen  EK062P: Total Nitrogen  EK062P: Total Nitrogen  EK062P: Total Nitrogen  EG030: Arsenic EG030: Carbenic EG030: Nickel EG030: Nickel EG030: Vanadium EG030: Vanadium	orus as P a as N orus - Filtered	Number 7664-41-7    740-39-3 7440-39-3 7440-39-3 7440-39-3 7440-37-3 740-37-3 740-37-3 740-37-3 740-37-3 740-37-3 740-37-3 740-37-3 740-37-3 740-37-3 740-37-3 740-37-3 740-37-4 740-	Concentration 0.5 mg/L 0.5 mg/L 0.5 mg/L 5 mg/L 5 mg/L 2 µg/L 100	Spike Ro MS 96.0 96.0 93.2 96.0 93.2 98.0 98.0 98.0 98.0 98.0 98.0 98.0 98.4 88.8 91.0 97.6 99.0 97.6 90.0 91.7	Ecovery (%) MSD 	Recover           Low           75	y Limits (%) High 125 125 125 125 125 125 125 125 125 125	RF           Value </td <td>Control Limit                                   </td>	Control Limit                                   
ti Carder HK1619930 Matrix Spike (MS) and Matrix Spike D Matrix Spike (MS) and Matrix Spike D Matrix Spike (MS) and Matrix Spike D Matrix WATER Aboratory Client sample ID ample ID ED/EK: Inorganic Nonmetallic Parameters KK161998-011 Anonymous ED/EK: Inorganic Nonmetallic Parameters KK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters KK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters KK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters KK1619647-001 Anonymous ED/EK: Inorganic Nonmetallic Parameters KK1619630-001 SAMPLE 1 EG: Metals and Major Cations (QC Lot: 4 KK1619930-001 SAMPLE 1	uplicate (MSD) Report  Method: Comecound  (QC Lot: 4212243)  (CC Lot: 4214806)  (QC Lot: 4214807)  (QC Lot: 4214807)  (QC Lot: 4214808)  (CC Lot: 4214808)  (CC Lot: 4214808)  (EX667P: Total Nitrogen  (QC Lot: 4214809)  (EX667P: Total Nitrogen  (QC Lot: 4214809)  (EC020: Arsenic  (CC Coo: Arsenic  (CC Coo: Camium  (CC Coo: Camiu	orus as P a as N orus - Filtered	Number 7664-41-7   7640-45-2 7440-39-3 7440-39-3 7440-39-3 7440-39-3 7440-39-3 7440-39-3 7440-39-3 7440-39-3 7440-39-3 7440-39-3 7440-39-3 7440-39-3 7440-39-3 7440-39-3 7440-22-4 7440-22-2 7440-66-6	Concentration 0.5 mg/L 0.5 mg/L 5 mg/L 5 mg/L 2 µg/L 100 µg/L 100 µg/L 100 µg/L 100 µg/L 100 µg/L 100 µg/L 100 µg/L 100 µg/L	Spike Ro MS 96.0 96.0 93.2 96.0 93.2 98.0 98.0 98.0 98.0 98.0 98.0 98.0 98.0	Keovery (%) MSD **** **** **** **** **** **** ****	Recover           Low           75	y Limits (%) High 125 125 125 125 125 125 125 125 125 125	RF           Value	Control Limit 
It     : ATAL-DEGREMONT JC       & Order     HK1619830       Matrix Spike (MS) and Matrix Spike D       Matrix Spike (MS) and Matrix Spike D       aboratory     Client sample ID       ample ID     Client sample ID       ED/EK: Inorganic Nonmetallic Parameters       K1619980-001     Anonymous       ED/EK: Inorganic Nonmetallic Parameters       K1619647-001     Anonymous       ED/EK: Inorganic Nonmetallic Parameters       K1619630-001     SAMPLE 1       EG: Metals and Major Cations (QC Lot: 4)       K1619830-001     SAMPLE 1       EG: Metals and Major Cations (QC Lot: 4)       K1619830-001     SAMPLE 1       EG: Metals and Major Cations (QC Lot: 4)       K1619830-001     SAMPLE 1	uplicate (MSD) Report  Method: Comeound  Method: Comeound  (CC Lot: 4212243)  EK055K: Ammonia as N  (CC Lot: 4214806)  EK057P: Total Phospho  (CC Lot: 4214807)  EK052P: Total Nitrogen  213389)  EG020: Arsenic EG020: Barium EG020: Charmium EG020: Silver EG020: Silver EG020: Silver EG020: Silver EG020: Charmium EG020:	orus as P a as N orus - Filtered	Number 7664-41-7     740-38-2 740-38-2 740-38-2 740-38-3 740-38-3 740-38-3 740-38-3 740-38-3 740-38-2 740-30-2 740-30-30-30-30-30-30-30-30-30-30-30-30-30	Concentration 0.5 mg/L 0.5 mg/L 5 mg/L 5 mg/L 2 µg/L 100 µg/L 100 µg/L 100 µg/L 100 µg/L 100 µg/L 100 µg/L 100 µg/L 100 µg/L	Spike Ra MS 96.0 98.0 98.0 98.0 98.0 98.0 98.0 98.0 98		Recover           Low           75	y Limits (%) High 125 125 125 125 125 125 125 125 125 125	RF           Value	Control Limit 
It     : ATAL-DEGREMONT JC       K Order     HK16198300       Matrix Spike (MS) and Matrix Spike D       Matrix Spike (MS) and Matrix Spike D       aboratory     Client sample ID       ample ID     Client sample ID       ED/EK: Inorganic Nonmetallic Parameters       K1619687-001     Anonymous       ED/EK: Inorganic Nonmetallic Parameters       K1619647-001     Anonymous       ED/EK: Inorganic Nonmetallic Parameters       K1619647-001     Anonymous       ED/EK: Inorganic Nonmetallic Parameters       K1619647-001     SAMPLE 1       ED/EK: Inorganic Nonmetallic Parameters       K1619647-001     SAMPLE 1       ED/EK: Inorganic Nonmetallic Parameters       K1619630-001     SAMPLE 1       EG: Metals and Major Cations (QC Lot: 4'       K1619930-001     SAMPLE 1       EG: Metals and Major Cations (QC Lot: 4'       K1619930-001     SAMPLE 1       EG: Metals and Major Cations (QC Lot: 4'       K1619930-001     SAMPLE 1       EG: Metals and Major Cations (QC Lot: 4'       K1619930-001     SAMPLE 1       EG: Metals and Major Cations (QC Lot: 4'	uplicate (MSD) Report  Method: Comeound  Method: Comeound  (CC Lot: 4212243)  EK055K: Ammonia as N  (CC Lot: 4214806)  EK057P: Total Phospho  (CC Lot: 4214807)  EK052P: Total Nitrogen  213389)  EG020: Arsenic EG020: Barium EG020: Charmium EG020: Silver EG020: Silver EG020: Silver EG020: Silver EG020: Charmium EG020:	orus as P a as N orus - Filtered	Number 7664-41-7    7440-39-3 7440-39-3 7440-39-3 7440-39-3 7440-37-3 7440-37-3 7440-37-3 7440-37-3 7440-39-2 7440-22-4 7440-22-2 7440-22-2 7440-22-2	Concentration 0.5 mg/L 0.5 mg/L 0.5 mg/L 5 mg/L 5 mg/L 2 µg/L 100	Spike Ra MS 96.0 98.0 93.2 93.2 98.0 93.2 98.0 98.0 98.0 98.0 98.0 98.0 98.0 98.0		Recover           Low           75	y Limits (%) High 125 125 125 125 125 125 125 125 125 125	RF           Value	Control Limit 
ATAL-DEGREMONT JC Corder HK1619930 Matrix Spike (MS) and Matrix Spike D Instra: WATER	uplicate (MSD) Report  Method: Comeound  (CL cb: 4212243)  EK055K: Ammonia as N (CL cb: 4214806) EK057P: Total Phospho (CL cb: 4214807) EK052P: Total Nitrogen (CL cb: 4214809) EK057P: Total Nitrogen 213389) EG020: Arsenic EG020: Barium EG020: Chargenic EG020: Barium EG020: Chargenic EG020: Cha	orus as P a as N orus - Filtered	Number 7664-41-7    7439-97-6  7440-38-2 7440-39-3 7440-39-3 7440-43-9 7440-43-9 7440-43-9 7440-43-9 7440-43-9 7440-45-2 7440-66-6 7429-90-5	Concentration 0.5 mg/L 0.5 mg/L 0.5 mg/L 5 mg/L 5 mg/L 2 µg/L 100	Spike Ra MS 96.0 98.0 93.2 98.0 93.2 86.0 93.2 88.0 93.2 99.4 88.8 91.0 97.6 90.0 91.7 103 103		Recover           Low           75	y Limits (%) High 125 125 125 125 125 125 125 125 125 125	RF           Value	Control Limit Limit



e 1 of 2 ment Plant'
ment Plant'
of Reporting
A
DomL
۱L





## **ENVIRO LABS LIMITED**

Rm. 510 & 611-612, Hong Leong Plaza, 33 Lok Yip Rd., Fanling, N.T., H.K. Tel: (852) 2676 2983 Fax: (852) 2676 2860 e-mail: <u>ell@envirolabs.com.hk</u> website: <u>http://www.envirolabs.com.hk</u>

## **TEST REPORT**

JOB NO.	:	16050396-1			
DATE OF ISSUE	:	02 June 2016	PAGE	:	Page 2 of 2

4. Test Results<sup>d</sup>

4.	lest Results-								
	Sample ID	Sample		Biochemical Oxygen	Total Suspended Solids (mg/L)				
	•	No.	Value	Average	Value	Average			
	Final Effluent	007	87		62				
	(24hr Composite)	to	85	88	76	71			
	19 May 2016	008	91		74				

0	Sample	E.coli	(cfu/100mL)
Sample ID	No.	Value	Geometric Mean
	009	9,000	
Final Effluent (Grab)	to	14,000	12,000
20 May 2016	012	13,000	

--- END OF REPORT ---

<sup>d</sup> Test results relate only to the items received



# **APPENDIX G**

PPWQM Water Quality Monitoring Results



### Water Quality Monitoring Results (In-situ Measurement)

					24/5/2016						
Monitoring Location	Tide	Time	Water Depth (m)	Level	Sampling Depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	DOS (%)	Turbidity (NTU)	рН
B1	Flood	7:15	4.1	Surface	1	25.43	22.3	6.43	89	7.3	7.81
B1	Flood	7:15	4.1	Bottom	3.1	25.15	24.44	6.06	84.4	6.3	7.82
B2	Flood	6:40	12	Surface	1	25.55	21.09	6.69	99.2	2.6	7.82
B2	Flood	6:40	4.2	Bottom	3.2	25.33	22.7	6.34	87.8	4.9	7.79
B3	Flood	6:35	4	Surface	1	25.49	21.39	6.65	97.7	2.7	7.81
B3	Flood	6:35	4	Bottom	3	25.15	24.18	6.07	84.6	5.3	7.82
B4	Flood	6:30	4.1	Surface	1	25.5	20.98	6.68	91.9	3	7.8
B4	Flood	6:30	4.1	Bottom	3.1	25.27	23.24	6.13	85.1	7.7	7.79
B5	Flood	6:25	12	Surface	1	25.42	21.84	6.61	91.2	3.9	7.81
B5	Flood	6:25	4.2	Bottom	3.2	25.45	21.74	6.39	88.2	4	7.81
B6	Flood	6:20	4.2	Surface	1	25.49	21.93	6.25	86.4	4.9	7.8
B6	Flood	6:20	4.2	Bottom	3.2	25.51	22.6	6.27	87	6.2	7.79
WSD1	Flood	7:25	12	Surface	1	25.69	21.24	6.6	91.2	5.9	7.84
WSD1	Flood	7:25	4.2	Bottom	3.2	25.41	22.58	6.25	86.6	4.9	7.84
WSD2	Flood	6:55		Surface	1	25.57	21.61	6.57	90.8	4.6	7.83
WSD2	Flood	6:55	8.2	Middle	3.9	24.88	26.48	6.01	84.3	4.8	7.86
WSD2	Flood	6:55		Bottom	7.2	24.72	27.66	5.79	81.6	7.9	7.87
U2	Flood	8:05	2.1	Surface	1	26.67	12.68	6.26	83.9	3.3	7.64
U2	Flood	8:05	3.1	Bottom	3.2	25.69	16.78	6.02	81.2	3.5	7.66
NM1	Flood	6:00		Surface	1	25.23	22.68	6.3	87	2.2	7.9
NM1	Flood	6:00	36.1	Middle	18.05	24.72	27.09	5.93	83.4	4	7.97
NM1	Flood	6:00		Bottom	35.1	24.6	27.98	5.71	80.4	10.8	7.9
NM6	Flood	9:00		Surface	1	25.56	14.13	6.31	83.6	3.5	7.68
NM6	Flood	9:00	6.2	Middle	3.1	25.36	21.55	5.82	80.1	3.9	7.74
NM6	Flood	9:00		Bottom	5.2	25.25	22.44	5.76	79.6	5.2	7.79
B1	Ebb	14:15	4	Surface	1	25.44	22.06	6.49	89.7	5.3	7.75
B1	Ebb	14:15	4	Bottom	3	25.05	24.4	6.14	85.4	7	7.82



					24/5/2016						
Monitoring Location	Tide	Time	Water Depth (m)	Level	Sampling Depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	DOS (%)	Turbidity (NTU)	рН
B2	Ebb	14:50	4.3	Surface	1	25.72	22.88	6.84	95.4	5.5	7.92
B2	Ebb	14:50	4.3	Bottom	3.3	24.86	27.37	5.98	84.3	8.2	7.89
B3	Ebb	14:55	4.3	Surface	1	25.71	23.11	6.81	95.1	5.4	7.92
B3	Ebb	14:55	4.3	Bottom	3.3	24.87	27.33	6.02	84.9	7.8	7.9
B4	Ebb	15:00	4.2	Surface	1	25.51	23.99	6.75	94.4	6.6	7.91
B4	Ebb	15:00	4.2	Bottom	3.2	24.89	27.14	6.09	85.8	<u>10.4</u>	7.91
B5	Ebb	15:05	4	Surface	1	26.01	23.65	6.7	94.3	5.3	7.91
B5	Ebb	15:05	4	Bottom	3	24.87	27.3	5.97	84.2	6.9	7.91
B6	Ebb	15:10	4.2	Surface	1	26.04	23.01	6.96	97.8	<u>8.7</u>	7.95
B6	Ebb	15:10	4.2	Bottom	3.2	24.92	26.96	5.96	83.9	8.3	7.92
WSD1	Ebb	14:05	4.1	Surface	1	25.51	21.3	6.84	94.3	5.2	7.76
WSD1	Ebb	14:05	4.1	Bottom	3.1	25.29	22.65	6.27	86.7	6.1	7.85
WSD2	Ebb	14:40		Surface	1	25.76	23.49	6.63	93	5.6	7.91
WSD2	Ebb	14:40	7.2	Middle	3.6	25.44	24.43	6.47	90.6	3.7	7.87
WSD2	Ebb	14:40		Bottom	6.2	24.85	27.6	6.04	85.3	6.7	7.86
U2	Ebb	13:30	2.2	Surface	1	26.8	12.98	6.54	87.9	3.1	7.69
U2	Ebb	13:30	3.3	Bottom	2.3	25.87	16.29	6.07	81.9	3.3	7.74
NM1	Ebb	15:45		Surface	1	26.03	22.87	6.75	97.8	7.7	7.93
NM1	Ebb	15:45	35.9	Middle	17.95	25.44	24.09	6.5	90.9	2.8	7.9
NM1	Ebb	15:45		Bottom	34.9	25.3	25.43	6.31	88.7	2.2	7.91
NM6	Ebb	12:50		Surface	1	25.75	14.24	6.38	84.9	4	7.71
NM6	Ebb	12:50	6.4	Middle	3.2	25.2	21.71	5.75	79	4.4	7.74
NM6	Ebb	12:50		Bottom	5.4	25.28	22.23	5.71	78.8	5	7.8

Notes: Bold numbers indicate action level exceedances. Bold and underline numbers indicate limit level exceedances.



### Water Quality Monitoring Results (Laboratory Analysis)

					24/5/	/2016				
Monitoring Location	Tide	Level	Suspended Solids (SS) (mg/L)	Ammonia as N (mg/L)	Total Phosphorus as P (mg/L)	Nitrate as N (mg/L)	Nitrite as N (mg/L)	Total Nitrogen as N (mg/L)	E. coli (CFU/100ml)	Biochemical Oxygen Demand (BOD) (mg/L)
B1	Flood	Surface	6	0.17	<0.1	0.65	0.05	1.1	58	<2
B1	Flood	Bottom	6	0.14	<0.1	0.46	0.05	0.9	19	<2
B2	Flood	Surface	5	0.18	<0.1	0.70	0.06	1.3	27	<2
B2	Flood	Bottom	6	0.15	<0.1	0.63	0.05	1.1	84	<2
В3	Flood	Surface	5	0.18	<0.1	0.71	0.06	1.3	31	<2
B3	Flood	Bottom	5	0.17	<0.1	0.63	0.05	1.1	57	<2
B4	Flood	Surface	3	0.16	<0.1	0.62	0.05	1.2	34	<2
B4	Flood	Bottom	10	0.16	<0.1	0.53	0.05	1.0	21	<2
B5	Flood	Surface	7	0.16	<0.1	0.62	0.05	1.2	37	<2
B5	Flood	Bottom	6	0.16	<0.1	0.54	0.04	1.0	27	<2
B6	Flood	Surface	6	0.16	<0.1	0.62	0.05	1.2	22	<2
B6	Flood	Bottom	11	0.16	<0.1	0.54	0.04	1.0	26	<2
WSD1	Flood	Surface	6	0.17	<0.1	0.62	0.05	1.2	54	<2
WSD1	Flood	Bottom	10	0.15	<0.1	0.47	0.05	1.1	26	<2
WSD2	Flood	Surface	7	0.17	<0.1	0.54	0.05	1.1	24	<2
WSD2	Flood	Middle	10	0.13	<0.1	0.33	0.03	0.7	19	<2
WSD2	Flood	Bottom	9	0.13	<0.1	0.34	0.02	0.8	30	<2
U2	Flood	Surface	3	0.21	<0.1	<u>1.20</u>	0.10	<u>1.9</u>	170	<2
U2	Flood	Bottom	5	0.22	<0.1	<u>1.00</u>	0.09	<u>1.7</u>	120	<2
NM1	Flood	Surface	3	0.18	<0.1	0.56	0.05	1.1	33	<2
NM1	Flood	Middle	5	0.14	<0.1	0.36	0.02	0.9	9	<2
NM1	Flood	Bottom	22	0.13	<0.1	0.26	0.02	0.6	15	<2
NM6	Flood	Surface	2	0.20	<0.1	0.87	0.08	1.6	150	<2
NM6	Flood	Middle	5	0.18	<0.1	0.64	0.05	1.2	34	<2
NM6	Flood	Bottom	8	0.17	<0.1	0.63	0.05	1.2	42	<2

#### 7076134| D18/02 | Revision No. 2 | June 2016

z/jobs/7076134 - atal - et for ppstw operation period/08 submission/4. em&a report/2. post-commission/10 monthly report (may 16)/7076134 d18 operation phase monitoring monthly report (may 2016) v2.2.docx



					24/5,	/2016				
Monitoring Location	Tide	Level	Suspended Solids (SS) (mg/L)	Ammonia as N (mg/L)	Total Phosphorus as P (mg/L)	Nitrate as N (mg/L)	Nitrite as N (mg/L)	Total Nitrogen as N (mg/L)	E. coli (CFU/100ml)	Biochemical Oxygen Demand (BOD) (mg/L)
B1	Ebb	Surface	10	0.16	<0.1	0.62	0.05	1.1	89	<2
B1	Ebb	Bottom	11	0.15	<0.1	0.48	0.04	0.9	46	<2
B2	Ebb	Surface	10	0.12	<0.1	0.60	0.06	1.0	31	<2
B2	Ebb	Bottom	10	0.14	<0.1	0.42	0.04	0.8	11	<2
B3	Ebb	Surface	8	0.13	<0.1	0.62	0.04	1.1	24	<2
B3	Ebb	Bottom	13	0.10	<0.1	0.42	0.03	0.8	34	<2
B4	Ebb	Surface	8	0.10	<0.1	0.54	0.04	0.9	46	<2
B4	Ebb	Bottom	15	0.12	<0.1	0.36	0.02	0.7	57	<2
B5	Ebb	Surface	11	0.10	<0.1	0.55	0.04	0.04         0.8         11         <2           0.04         1.1         24         <2	<2	
B5	Ebb	Bottom	15	0.12	<0.1	0.34	0.04	0.8	64	<2
B6	Ebb	Surface	6	0.10	<0.1	0.55	0.04	1.0	130	<2
B6	Ebb	Bottom	12	0.13	<0.1	0.36	0.03	0.7	51	<2
WSD1	Ebb	Surface	5	0.17	<0.1	0.62	0.05	1.2	60	<2
WSD1	Ebb	Bottom	7	0.15	<0.1	0.47	0.05	1.0	25	<2
WSD2	Ebb	Surface	4	0.11	<0.1	0.54	0.05	0.9	130	<2
WSD2	Ebb	Middle	5	0.13	<0.1	0.51	0.04	1.1	1.0         84         <2           0.8         64         <2	<2
WSD2	Ebb	Bottom	8	0.13	<0.1	0.44	0.04         1.1         24         <           0.03         0.8         34         <	<2		
U2	Ebb	Surface	3	0.21	<0.1	0.62         0.05         1.1         89           0.48         0.04         0.9         46           0.60         0.06         1.0         31           0.42         0.04         0.8         11           0.62         0.04         1.1         24           0.62         0.04         1.1         24           0.62         0.04         1.1         24           0.62         0.03         0.8         34           0.54         0.04         0.9         46           0.55         0.04         0.9         46           0.36         0.02         0.7         57           0.55         0.04         1.0         84           0.34         0.04         0.8         64           0.35         0.04         1.0         130           0.36         0.03         0.7         51           0.47         0.05         1.0         25           0.47         0.05         1.0         25           0.51         0.04         1.1         170           0.51         0.04         1.1         89           1.24         0.10         1	<2			
U2	Ebb	Bottom	3	0.21	<0.1		<2			
NM1	Ebb	Surface	5	0.14	P (mg/L)         (mg/L)         N (mg/L)         CFU/100ml)           <0.1	<2				
NM1	Ebb	Middle	4	0.13	<0.1	0.42         0.04         0.8         11           0.62         0.04         1.1         24           0.42         0.03         0.8         34           0.54         0.04         0.9         46           0.36         0.02         0.7         57           0.55         0.04         1.0         84           0.36         0.02         0.7         57           0.55         0.04         1.0         84           0.34         0.04         0.8         64           0.55         0.04         1.0         130           0.55         0.04         1.0         130           0.36         0.03         0.7         51           0.62         0.05         1.2         60           0.62         0.05         1.0         25           0.47         0.05         1.0         25           0.51         0.04         1.1         170           0.54         0.05         0.9         130           1.24         0.10         1.8         67           0.57         0.04         1.0         16           0.45         0.04 <td< td=""><td>&lt;2</td></td<>	<2			
NM1	Ebb	Bottom	5	0.13	<0.1	0.45	0.04	0.9	17	<2
NM6	Ebb	Surface	4	0.19	<0.1	0.83	0.07	1.4	79	<2
NM6	Ebb	Middle	6	0.17	<0.1	0.64	0.05	1.0	18	<2
NM6	Ebb	Bottom	9	0.16	<0.1	0.63	0.05	1.2	33	<2

Notes: Bold numbers indicate action level exceedances. Bold and underline numbers indicate limit level exceedances.



### **Laboratory Results**

	S Laboratory Group				
ANAL	YTICAL CHEMISTRY & TESTING SERVICES	CERTI	FICATE OF ANALYSIS		(ALS)
	: ATAL-DEGREMONT JOINT VENTURE	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 17
		Contact Address	: Fung Lim Chee, Richard	Work Order	HK1619647
	2801 ISLAND PLACE TOWER, 510 KING'S ROAD, NORTH POINT HONG KONG		: 11/F., Chung Shun Knitting Centre, 1 - 3 V Yip Street, Kwai Chung, N.T., Hong Kong		
	: teck.suan.loy@degremont.com : +852 2404 1538	E-mail Telephone	: Richard.Fung@alsglobal.com : +852 2610 1044		
	: : DC_2008_03 DESIGN BUILD AND OPERATE	Facsimile Quote number	: +852 2610 2021 :	Date Samples Received	: 24-MAY-2016
r	PILLAR POINT SEWAGE TREATMENT WORKS			Issue Date	
er	: 430 :			No. of samples received No. of samples analysed	: 07-JUN-2016 : 50
rt mav no	:	This document has been	signed by those names that appear on this report and are		: 50
	esting laboratory.	Signatories Fung Lim Chee, Rich	/	Position	Authorised results for Inorganics
		Ng Sin Kou, May		Laboratory Manager	Microbiology
			cholobom (JV) Btu 1 kd		
		Part of the 11/F., Chung Shun Knittin	chnichem (HK) Pty Ltd ALS Laboratory Group g Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
		Tel: +852 2610	1044 Fax: +852 2610 2021 www.alsenviro.com		
mber der I <b>Comm</b>					AL
der Comm t superse ed by the 016	ATAL-DEGREMONT JOINT VENTURE	ese instances, the time comp	onent has been assumed by the laboratory for pro-	cessing purposes. The completion date	e of analysis is:
der t superse ed by the 016 = Limit of r Comments Sample(s) Vater sam Sample(s)	ATAL-DEGREMONT JOINT VENTURE HK1619647  ents esta any previous report(s) with this reference. Results apply to the client, sampling dates are shown without a time component. In the eporting: CAS Number = CAS registry number from database mail for Work Order: HK1619647 were received in a chilled condition. ple(s) analysed and reported on an as received basis. arrived in the laboratory at 15:30. Microbiological sample(s), In 25	ese instances, the time comp	onent has been assumed by the laboratory for pro	cessing purposes. The completion date	a of analysis is: aty.
der t superse ed by the 1016 = Limit of r Comments Sample(s) Vater sam Sample(s) 16/05/2016	ATAL-DEGREMONT JOINT VENTURE HK1619647  ents esta any previous report(s) with this reference. Results apply to the client, sampling dates are shown without a time component. In the eporting: CAS Number = CAS registry number from database mail for Work Order: HK1619647 were received in a chilled condition. ple(s) analysed and reported on an as received basis. arrived in the laboratory at 15:30. Microbiological sample(s), In 25	ese instances, the time comp ntained by Chemical Abstrac Q/125mL glass/plastic bottle	onent has been assumed by the laboratory for pro	cessing purposes. The completion date	a of analysis is: aty.
der t superse ed by the 1016 = Limit of r Comments Sample(s) Vater sam Sample(s) 16/05/2016	ATAL-DEGREMONT JOINT VENTURE HK1619647 ents das any previous report(s) with this reference. Results apply to the client, sampling dates are shown without a time component. In the eporting: CAS Number = CAS registry number from database mail if or Work Order: HK1619647 were received in a childe condition. ple(s) analysed and reported on an as received basis. arrived in the laboratory at 15.30. Microbiological sample(s), in 25.	ese instances, the time comp ntained by Chemical Abstrac Q/125mL glass/plastic bottle	onent has been assumed by the laboratory for pro	cessing purposes. The completion date	a of analysis is: aty.
der t superse ed by the 1016 = Limit of r Comments Sample(s) Vater sam Sample(s) 16/05/2016	ATAL-DEGREMONT JOINT VENTURE HK1619647 ents das any previous report(s) with this reference. Results apply to the client, sampling dates are shown without a time component. In the eporting: CAS Number = CAS registry number from database mail if or Work Order: HK1619647 were received in a childe condition. ple(s) analysed and reported on an as received basis. arrived in the laboratory at 15.30. Microbiological sample(s), in 25.	ese instances, the time comp ntained by Chemical Abstrac Q/125mL glass/plastic bottle	onent has been assumed by the laboratory for pro	cessing purposes. The completion date	a of analysis is: aty.
der t superse ed by the 1016 = Limit of r Comments Sample(s) Vater sam Sample(s) 16/05/2016	ATAL-DEGREMONT JOINT VENTURE HK1619647 ents das any previous report(s) with this reference. Results apply to the client, sampling dates are shown without a time component. In the eporting: CAS Number = CAS registry number from database mail if or Work Order: HK1619647 were received in a childe condition. ple(s) analysed and reported on an as received basis. arrived in the laboratory at 15.30. Microbiological sample(s), in 25.	ese instances, the time comp ntained by Chemical Abstrac Q/125mL glass/plastic bottle	onent has been assumed by the laboratory for pro	cessing purposes. The completion date	a of analysis is: aty.
der t superse ed by the 1016 = Limit of r Comments Sample(s) Vater sam Sample(s) 16/05/2016	ATAL-DEGREMONT JOINT VENTURE HK1619647 ents das any previous report(s) with this reference. Results apply to the client, sampling dates are shown without a time component. In the eporting: CAS Number = CAS registry number from database mail if or Work Order: HK1619647 were received in a childe condition. ple(s) analysed and reported on an as received basis. arrived in the laboratory at 15.30. Microbiological sample(s), in 25.	ese instances, the time comp ntained by Chemical Abstrac Q/125mL glass/plastic bottle	onent has been assumed by the laboratory for pro	cessing purposes. The completion date	a of analysis is: aty.
der t superse ed by the 1016 = Limit of r Comments Sample(s) Vater sam Sample(s) 16/05/2016	ATAL-DEGREMONT JOINT VENTURE HK1619647 ents das any previous report(s) with this reference. Results apply to the client, sampling dates are shown without a time component. In the eporting: CAS Number = CAS registry number from database mail if or Work Order: HK1619647 were received in a childe condition. ple(s) analysed and reported on an as received basis. arrived in the laboratory at 15.30. Microbiological sample(s), in 25.	ese instances, the time comp ntained by Chemical Abstrac Q/125mL glass/plastic bottle	onent has been assumed by the laboratory for pro	cessing purposes. The completion date	a of analysis is: aty.
der t superse ed by the 1016 = Limit of r Comments Sample(s) Vater sam Sample(s) 16/05/2016	ATAL-DEGREMONT JOINT VENTURE HK1619647 ents das any previous report(s) with this reference. Results apply to the client, sampling dates are shown without a time component. In the eporting: CAS Number = CAS registry number from database mail if or Work Order: HK1619647 were received in a childe condition. ple(s) analysed and reported on an as received basis. arrived in the laboratory at 15.30. Microbiological sample(s), in 25.	ese instances, the time comp ntained by Chemical Abstrac Q/125mL glass/plastic bottle	onent has been assumed by the laboratory for pro	cessing purposes. The completion date	a of analysis is: aty.
der t superse ed by the 1016 = Limit of r Comments Sample(s) Vater sam Sample(s) 16/05/2016	ATAL-DEGREMONT JOINT VENTURE HK1619647 ents das any previous report(s) with this reference. Results apply to the client, sampling dates are shown without a time component. In the eporting: CAS Number = CAS registry number from database mail if or Work Order: HK1619647 were received in a childe condition. ple(s) analysed and reported on an as received basis. arrived in the laboratory at 15.30. Microbiological sample(s), in 25.	ese instances, the time comp ntained by Chemical Abstrac Q/125mL glass/plastic bottle	onent has been assumed by the laboratory for pro	cessing purposes. The completion date	a of analysis is: aty.
der t superse ed by the 1016 = Limit of r Comments Sample(s) Vater sam Sample(s) 16/05/2016	ATAL-DEGREMONT JOINT VENTURE HK1619647 ents das any previous report(s) with this reference. Results apply to the client, sampling dates are shown without a time component. In the eporting: CAS Number = CAS registry number from database mail if or Work Order: HK1619647 were received in a childe condition. ple(s) analysed and reported on an as received basis. arrived in the laboratory at 15.30. Microbiological sample(s), in 25.	ese instances, the time comp ntained by Chemical Abstrac Q/125mL glass/plastic bottle	onent has been assumed by the laboratory for pro	cessing purposes. The completion date	a of analysis is: aty.
der t superse ed by the 1016 = Limit of r Comments Sample(s) Vater sam Sample(s) 16/05/2016	ATAL-DEGREMONT JOINT VENTURE HK1619647 ents das any previous report(s) with this reference. Results apply to the client, sampling dates are shown without a time component. In the eporting: CAS Number = CAS registry number from database mail if or Work Order: HK1619647 were received in a childe condition. ple(s) analysed and reported on an as received basis. arrived in the laboratory at 15.30. Microbiological sample(s), in 25.	ese instances, the time comp ntained by Chemical Abstrac Q/125mL glass/plastic bottle	onent has been assumed by the laboratory for pro	cessing purposes. The completion date	a of analysis is: aty.
der t superse ed by the 1016 = Limit of r Comments Sample(s) Vater sam Sample(s) 16/05/2016	ATAL-DEGREMONT JOINT VENTURE HK1619647 ents das any previous report(s) with this reference. Results apply to the client, sampling dates are shown without a time component. In the eporting: CAS Number = CAS registry number from database mail if or Work Order: HK1619647 were received in a childe condition. ple(s) analysed and reported on an as received basis. arrived in the laboratory at 15.30. Microbiological sample(s), in 25.	ese instances, the time comp ntained by Chemical Abstrac Q/125mL glass/plastic bottle	onent has been assumed by the laboratory for pro	cessing purposes. The completion date	a of analysis is: aty.
der t superse ed by the 016 = Limit of r comments cample(s) Vater sam cample(s) 6/05/2016	ATAL-DEGREMONT JOINT VENTURE HK1619647 ents das any previous report(s) with this reference. Results apply to the client, sampling dates are shown without a time component. In the eporting: CAS Number = CAS registry number from database mail if or Work Order: HK1619647 were received in a childe condition. ple(s) analysed and reported on an as received basis. arrived in the laboratory at 15.30. Microbiological sample(s), in 25.	ese instances, the time comp ntained by Chemical Abstrac Q/125mL glass/plastic bottle	onent has been assumed by the laboratory for pro	cessing purposes. The completion date	a of analysis is: aty.
der t superse ed by the 1016 = Limit of r Comments Sample(s) Vater sam Sample(s) 16/05/2016	ATAL-DEGREMONT JOINT VENTURE HK1619647 ents das any previous report(s) with this reference. Results apply to the client, sampling dates are shown without a time component. In the eporting: CAS Number = CAS registry number from database mail if or Work Order: HK1619647 were received in a childe condition. ple(s) analysed and reported on an as received basis. arrived in the laboratory at 15.30. Microbiological sample(s), in 25.	ese instances, the time comp ntained by Chemical Abstrac Q/125mL glass/plastic bottle	onent has been assumed by the laboratory for pro	cessing purposes. The completion date	a of analysis is: aty.
der t superse ed by the 1016 = Limit of r Comments Sample(s) Vater sam Sample(s) 16/05/2016	ATAL-DEGREMONT JOINT VENTURE HK1619647 ents das any previous report(s) with this reference. Results apply to the client, sampling dates are shown without a time component. In the eporting: CAS Number = CAS registry number from database mail if or Work Order: HK1619647 were received in a childe condition. ple(s) analysed and reported on an as received basis. arrived in the laboratory at 15.30. Microbiological sample(s), in 25.	ese instances, the time comp ntained by Chemical Abstrac Q/125mL glass/plastic bottle	onent has been assumed by the laboratory for pro	cessing purposes. The completion date	a of analysis is: aty.
der t superse ed by the 1016 = Limit of r Comments Sample(s) Vater sam Sample(s) 16/05/2016	ATAL-DEGREMONT JOINT VENTURE HK1619647 ents das any previous report(s) with this reference. Results apply to the client, sampling dates are shown without a time component. In the eporting: CAS Number = CAS registry number from database mail if or Work Order: HK1619647 were received in a childe condition. ple(s) analysed and reported on an as received basis. arrived in the laboratory at 15.30. Microbiological sample(s), in 25.	ese instances, the time comp ntained by Chemical Abstrac Q/125mL glass/plastic bottle	onent has been assumed by the laboratory for pro	cessing purposes. The completion date	a of analysis is: aty.

..... 2

mg/L

1 CFU/100mL

<2

89



<2

24

64

Page Number	3 of 17
Client	ATAL-DEGREMONT JOINT VENTURE
Work Order	HK1619647



EP: Aggregate Organics EP: 30 Biochemical Oxygen Demand EM: Microbiological Testing EM002: Escherichia coli

ork Order HK1619647	JINT VENTURE							ALS
Analytical Results								
Sub-Matrix: MARINE WATER			Client sample ID	B1/S/EBB	B1/B/EBB	B2/S/EBB	B2/B/EBB	B3/S/EBB
		Client s	ampling date / time	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]
Compound	CAS Number	LOR	Unit	HK1619647-001	HK1619647-003	HK1619647-004	HK1619647-006	HK1619647-007
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	-	2	mg/L	10	11	10	10	8
ED/EK: Inorganic Nonmetallic Parameters								
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	0.16	0.15	0.12	0.14	0.13
EK057A: Nitrite as N	14797-65-0	0.01	mg/L	0.05	0.04	0.06	0.04	0.04
EK058A: Nitrate as N	14797-55-8	0.01	mg/L	0.62	0.48	0.60	0.42	0.62
EK062P: Total Nitrogen as N		0.1	mg/L	1.1	0.9	1.0	0.8	1.1
EK062P: Total Nitrogen as N - Filtered		0.1	mg/L	1.1	0.9	1.0	0.8	1.1
EK067P: Total Phosphorus as P		0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
EK067P: Total Phosphorus - Filtered		0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
EP: Aggregate Organics								

<2

46

<2

31

<2

11

84

Page Number	
01. 1	

EM: Microbiological Testing

EM002: Escherichia coli

e Number : 4 of 17 nt : ATAL-DEGREMONT JC rk Order HK1619647	DINT VENTURE							A
Sub-Matrix: MARINE WATER			Client sample ID	B3/B/EBB	B4/S/EBB	B4/B/EBB	B5/S/EBB	B5/B/EBB
		Client s	ampling date / time	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-201
Compound	CAS Number	LOR	Unit	HK1619647-009	HK1619647-010	HK1619647-012	HK1619647-013	HK1619647-0
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)		2	mg/L	13	8	15	11	15
ED/EK: Inorganic Nonmetallic Parameters								
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	0.10	0.10	0.12	0.10	0.12
EK057A: Nitrite as N	14797-65-0	0.01	mg/L	0.03	0.04	0.02	0.04	0.04
EK058A: Nitrate as N	14797-55-8	0.01	mg/L	0.42	0.54	0.36	0.55	0.34
EK062P: Total Nitrogen as N		0.1	mg/L	0.8	1.0	0.7	1.0	0.8
EK062P: Total Nitrogen as N - Filtered		0.1	mg/L	0.8	0.9	0.7	1.0	0.8
EK067P: Total Phosphorus as P		0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
EK067P: Total Phosphorus - Filtered		0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
EP: Aggregate Organics								
EP030: Biochemical Oxygen Demand		2	mg/L	<2	<2	<2	<2	<2

34

CFU/100mL



.

Page Number Client Work Order 5 of 17 ATAL-DEGREMONT JOINT VENTURE HK1619647 ALS Sub-Matrix: MARINE WATER Client sample ID B6/S/EBB [24-MAY-2016] B6/B/EBB [24-MAY-2016] WSD1/S/EBB [24-MAY-2016] WSD1/B/EBB [24-MAY-2016] WSD2/S/EBB Client sampling date / time [24-MAY-2016] LOR Unit HK1619647-016 HK1619647-018 HK1619647-019 HK1619647-021 HK1619647-022 Compound CAS Number EA/ED: Physical and Aggregate Properties EA025: Suspended Solids (SS) 2 mg/L 6 12 5 7 4 EA025: Suspended Solids (SS) ED/EK: Inorganic Nonmetallic Parameters EK056K: Ammonia as N EK057A: Nitrite as N EK0528: Total Nitrogen as N EK0629: Total Nitrogen as N EK0629: Total Nitrogen as N - Filtered EK0629: Total Nitroden as P. 7664-41-7 0.01 4797-65-0 0.01 4797-65-8 0.01 --- 0.1 --- 0.1 --- 0.1 7664-41-7 14797-65-0 14797-55-8 mg/L mg/L mg/L mg/L mg/L 0.10 0.13 0.03 0.17 0.15 0.11 0.04 0.05 0.05 0.05 0.54 1.0 0.9 <0.1 <0.1 0.05 0.47 1.0 1.0 <0.1 <0.1 0.04 0.55 1.0 1.0 <0.1 0.03 0.36 0.7 0.7 <0.1 <0.1 0.62 1.2 1.2 EK067P: Total Phosphorus as P EK067P: Total Phosphorus - Filtered <0.1 <0.1 <0.1 EP: Aggregate Organics EP030: Biochemical Oxygen Demand 2 mg/L <2 <2 <2 <2 <2 EM: Microbiological Testing ---- 1 CFU/100mL 130 51 60 25 130 EM002: Escherichia coli

Crder HK1619647	II VENTURE							AL
ub-Matrix: MARINE WATER			Client sample ID	WSD2/M/EBB	WSD2/B/EBB	U2/S/EBB	U2/B/EBB	NM6/S/EBB
		Client st	impling date / time	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]
ompound	CAS Number	LOR	Unit	HK1619647-023	HK1619647-024	HK1619647-025	HK1619647-027	HK1619647-028
A/ED: Physical and Aggregate Properties								4
EA025: Suspended Solids (SS)		2	mg/L	5	8	3	3	4
D/EK: Inorganic Nonmetallic Parameters								
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	0.13	0.13	0.21	0.21	0.19
EK057A: Nitrite as N	14797-65-0	0.01	mg/L	0.04	0.03	0.10	0.09	0.07
EK058A: Nitrate as N	14797-55-8	0.01	mg/L	0.51	0.44	1.24	0.98	0.86
EK062P: Total Nitrogen as N		0.1	mg/L	1.1	1.0	1.8	1.6	1.4
EK062P: Total Nitrogen as N - Filtered		0.1	mg/L	1.1	1.0	1.8	1.6	1.4
EK067P: Total Phosphorus as P		0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
EK067P: Total Phosphorus - Filtered		0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
P: Aggregate Organics								
EP030: Biochemical Oxygen Demand		2	mg/L	<2	<2	<2	<2	<2



Page Number Client Work Order 7 of 17 ATAL-DEGREMONT JOINT VENTURE HK1619647 ALS Sub-Matrix: MARINE WATER Client sample ID NM6/M/EBB [24-MAY-2016] NM6/B/EBB [24-MAY-2016] NM1/S/EBB [24-MAY-2016] NM1/M/EBB [24-MAY-2016] NM1/B/EBB [24-MAY-2016] Client sampling date / time LOR Unit HK1619647-02 HK1619647-030 HK1619647-031 HK1619647-032 HK1619647-033 Compound CAS Number EA/ED: Physical and Aggregate Properties EA025: Suspended Solids (SS) 2 тgЛ 6 9 5 4 5 EA025: Suspended Solids (SS) ED/EK: Inorganic Nonmetallic Parameters EK056K: Ammonia as N EK057A: Nitrite as N EK0528: Total Nitrogen as N EK0629: Total Nitrogen as N EK0629: Total Nitrogen as N - Filtered EK0629: Total Nitroden as P. 7664-41-7 0.01 4797-65-0 0.01 4797-65-8 0.01 --- 0.1 --- 0.1 --- 0.1 7664-41-7 14797-65-0 14797-55-8 0.13 mg/L mg/L mg/L mg/L mg/L 0.17 0.16 0.05 0.63 1.3 1.2 <0.1 <0.1 0.14 0.13 0.05 0.64 1.1 1.0 <0.1 0.04 0.57 1.0 1.0 <0.1 <0.1 0.04 0.04 0.45 0.9 <0.9 <0.1 0.04 0.45 0.9 0.9 <0.1 <0.1 EK067P: Total Phosphorus as P EK067P: Total Phosphorus - Filtered <0.1 EP: Aggregate Organics EP030: Biochemical Oxygen Demand 2 mg/L <2 <2 <2 <2 <2 EM: Microbiological Testing ---- 1 CFU/100mL 18 33 16 12 17 EM002: Escherichia coli

Number : 8 of 17 : ATAL-DEGREMONT JOINT V Order HK1619647	ENTURE							ALS
ub-Matrix: MARINE WATER			Client sample ID	B1/S/FLOOD	B1/B/FLOOD	B2/S/FLOOD	B2/B/FLOOD	B3/S/FLOOD
		Client s	ampling date / time	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]
Compound	CAS Number	LOR	Unit	HK1619647-034	HK1619647-036	HK1619647-037	HK1619647-039	HK1619647-040
EA/ED: Physical and Aggregate Properties								E
EA025: Suspended Solids (SS)		2	mg/L	6	6	5	6	5
ED/EK: Inorganic Nonmetallic Parameters								
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	0.17	0.14	0.18	0.15	0.18
EK057A: Nitrite as N	14797-65-0	0.01	mg/L	0.05	0.05	0.06	0.05	0.06
EK058A: Nitrate as N	14797-55-8	0.01	mg/L	0.65	0.46	0.70	0.63	0.71
EK062P: Total Nitrogen as N		0.1	mg/L	1.1	0.9	1.3	1.2	1.3
EK062P: Total Nitrogen as N - Filtered		0.1	mg/L	1.1	0.9	1.3	1.1	1.3
EK067P: Total Phosphorus as P		0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
EK067P: Total Phosphorus - Filtered		0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
EP: Aggregate Organics								
EP030: Biochemical Oxygen Demand		2	mg/L	<2	<2	<2	<2	<2
EM: Microbiological Testing					-			
EM002: Escherichia coli		1	CFU/100mL	58	19	27	84	31



Page Number Client Work Order 9 of 17 ATAL-DEGREMONT JOINT VENTURE HK1619647 ALS Sub-Matrix: MARINE WATER Client sample ID B3/B/FLOOD [24-MAY-2016] B4/S/FLOOD [24-MAY-2016] B4/B/FLOOD [24-MAY-2016] B5/S/FLOOD [24-MAY-2016] B5/B/FLOOD [24-MAY-2016] Client sampling date / time LOR Unit HK1619647-042 HK1619647-043 HK1619647-045 HK1619647-046 HK1619647-048 Compound CAS Number EA/ED: Physical and Aggregate Properties EA025: Suspended Solids (SS) 2 mg/L 5 3 10 7 6 EA025: Suspended Solids (SS) ED/EK: Inorganic Nonmetallic Parameters EK056K: Ammonia as N EK057A: Nitrite as N EK0528: Total Nitrogen as N EK0629: Total Nitrogen as N EK0629: Total Nitrogen as N - Filtered EK0629: Total Nitrogen as N 7664-41-7 0.01 4797-65-0 0.01 4797-65-8 0.01 --- 0.1 --- 0.1 --- 0.1 7664-41-7 14797-65-0 14797-55-8 mg/L mg/L mg/L mg/L mg/L 0.17 0.16 0.05 0.62 1.2 1.2 <0.1 <0.1 0.16 0.16 0.16 0.05 0.05 0.53 1.0 1.0 <0.1 <0.1 0.05 0.04 0.54 1.0 (0.1 <0.1 0.05 0.63 1.1 1.1 <0.1 0.05 0.62 1.2 1.2 <0.1 <0.1 EK067P: Total Phosphorus as P EK067P: Total Phosphorus - Filtered <0.1 EP: Aggregate Organics EP030: Biochemical Oxygen Demand 2 mg/L <2 <2 <2 <2 <2 EM: Microbiological Testing ---- 1 CFU/100mL 57 34 21 37 27 EM002: Escherichia coli

e Number : 10 of 17 nt : ATAL-DEGREMONT JOINT V k Order HK1619647	ENTURE							ALS	
Sub-Matrix: MARINE WATER			Client sample ID	B6/S/FLOOD	B6/B/FLOOD	WSD1/S/FLOOD	WSD1/B/FLOOD	WSD2/S/FLOOD	
		Client sa	mpling date / time	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]	
Compound	CAS Number	LOR	Unit	HK1619647-049	HK1619647-051	HK1619647-052	HK1619647-054	HK1619647-055	
A/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)		2	mg/L	6	11	6	10	7	
ED/EK: Inorganic Nonmetallic Parameters									
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	0.16	0.16	0.17	0.15	0.17	
EK057A: Nitrite as N	14797-65-0	0.01	mg/L	0.05	0.04	0.05	0.05	0.05	
EK058A: Nitrate as N	14797-55-8	0.01	mg/L	0.62	0.54	0.62	0.47	0.54	
EK062P: Total Nitrogen as N		0.1	mg/L	1.4	1.0	1.3	1.2	1.1	
EK062P: Total Nitrogen as N - Filtered		0.1	mg/L	1.2	1.0	1.2	1.1	1.1	
EK067P: Total Phosphorus as P		0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
EK067P: Total Phosphorus - Filtered		0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
EP: Aggregate Organics									
EP030: Biochemical Oxygen Demand		2	mg/L	<2	<2	<2	<2	<2	
EM: Microbiological Testing									
EM002: Escherichia coli		1	CFU/100mL	22	26	54	26	24	



Page Number Client Work Order 11 of 17 ATAL-DEGREMONT JOINT VENTURE HK1619647 ALS Sub-Matrix: MARINE WATER Client sample ID WSD2/M/FLOOD [24-MAY-2016] WSD2/B/FLOOD [24-MAY-2016] U2/S/FLOOD [24-MAY-2016] U2/B/FLOOD [24-MAY-2016] NM6/S/FLOOD [24-MAY-2016] Client sampling date / time CAS Number LOR Unit HK1619647-05 HK1619647-057 HK1619647-058 HK1619647-060 HK1619647-061 Compound EA/ED: Physical and Aggregate Properties EA025: Suspended Solids (SS) 2 mg/L 10 9 3 5 2 EA025: Suspended Solids (SS) ED/EK: Inorganic Nonmetallic Parameters EK056K: Ammonia as N EK057A: Nitrite as N EK0528: Total Nitrogen as N EK0629: Total Nitrogen as N EK0629: Total Nitrogen as N - Filtered EK0629: Total Nitrogen as N 7664-41-7 0.01 4797-65-0 0.01 4797-65-8 0.01 --- 0.1 --- 0.1 --- 0.1 7664-41-7 14797-65-0 14797-55-8 0.21 0.10 1.20 1.9 1.9 mg/L mg/L mg/L mg/L mg/L 0.13 0.13 0.02 0.22 0.20 0.03 0.09 1.00 1.7 1.7 <0.1 <0.1 0.08 0.87 1.6 1.6 <0.1 0.03 0.33 0.8 0.7 <0.1 <0.1 0.02 0.34 0.8 <0.8 <0.1 <0.1 EK067P: Total Phosphorus as P EK067P: Total Phosphorus - Filtered <0.1 <0.1 <0.1 EP: Aggregate Organics EP030: Biochemical Oxygen Demand 2 mg/L <2 <2 <2 <2 <2 EM: Microbiological Testing ---- 1 CFU/100mL 19 30 170 120 150 EM002: Escherichia coli

ub-Matrix: MARINE WATER			Client sample ID	NM6/M/FLOOD	NM6/B/FLOOD	NM1/S/FLOOD	NM1/M/FLOOD	NM1/B/FLOOD
		Client sa	mpling date / time	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]	[24-MAY-2016]
Compound	CAS Number	LOR	Unit	HK1619647-062	HK1619647-063	HK1619647-064	HK1619647-065	HK1619647-066
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)		2	mg/L	5	8	3	5	22
ED/EK: Inorganic Nonmetallic Parameters								
EK055K: Ammonia as N	7664-41-7	0.01	mg/L	0.18	0.17	0.18	0.14	0.13
EK057A: Nitrite as N	14797-65-0	0.01	mg/L	0.05	0.05	0.05	0.02	0.02
EK058A: Nitrate as N	14797-55-8	0.01	mg/L	0.64	0.63	0.56	0.36	0.26
EK062P: Total Nitrogen as N		0.1	mg/L	1.4	1.3	1.1	1.0	0.7
EK062P: Total Nitrogen as N - Filtered	-	0.1	mg/L	1.2	1.2	1.1	0.9	0.6
EK067P: Total Phosphorus as P		0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
EK067P: Total Phosphorus - Filtered		0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
EP: Aggregate Organics								
EP030: Biochemical Oxygen Demand		2	mg/L	<2	<2	<2	<2	<2



CALED: Physical and Aggregate Properties (GC Lot: 421229)         Image: Control of Contro Of Cont of Control of Control of Control of Control of Control o								iente (DLID) Depart	abaratan Duni
Name         Outline Control         Author:         Control         Description         Description <thdescription< th=""> <thdescription< th="">         Descri</thdescription<></thdescription<>		aart	aboratory Duplicate (DUP) Res					icate (DUP) Report	
EA/ED: Physical and Aggregate Properties (QC Lot: 4212219)  H116169647-001 B10.EBB EA/25: Suspended Solids (SS) 2 mg/L 6 6 EA/25: Physical and Aggregate Properties (QC Lot: 4212220)  H116169647-02 B10.B10.EBB EA/25: Suspended Solids (SS) 2 mg/L 6 6 6 EA/25: Physical and Aggregate Properties (QC Lot: 4212220)  H116169647-02 B10.B10.EDB EA/25: Suspended Solids (SS) 2 mg/L 6 6 6 EA/25: Physical and Aggregate Properties (QC Lot: 421224)  H116169647-02 B10.EDE/EN/S014 EA/25: Suspended Solids (SS) 2 mg/L 6 6 6 EA/25: Physical and Aggregate Properties (QC Lot: 421224)  H116169647-02 EA/25: Suspended Solids (SS) 2 mg/L 10 10 H116169647-02 H116169647-02 EA/25: Suspended Solids (SS) 2 mg/L 10 10 ED/EX: Inorganic Normetallic Parameters (QC Lot: 421224) EX0655: Ammonia as N 7664-41-7 0.01 mg/L 0.12 0.12 0.12 ED/EX: Inorganic Normetallic Parameters (QC Lot: 421224) H116169647-02 EX0655: Ammonia as N 7664-41-7 0.01 mg/L 0.12 0.12 0.12 ED/EX: Inorganic Normetallic Parameters (QC Lot: 421224) EX0655: Ammonia as N 7664-41-7 0.01 mg/L 0.07 0.16 ED/EX: Inorganic Normetallic Parameters (QC Lot: 421224) EX0655: Ammonia as N 7664-41-7 0.01 mg/L 0.05 0.05 ED/EX: Inorganic Normetallic Parameters (QC Lot: 421224) EX0655: Ammonia as N 7664-41-7 0.01 mg/L 0.05 0.05 ED/EX: Inorganic Normetallic Parameters (QC Lot: 421224) EX0655: Ammonia as N 7664-41-7 0.01 mg/L 0.05 0.05 ED/EX: Inorganic Normetallic Parameters (QC Lot: 421225) H11616947-02 B30/ELOOD EX0655: EX077: Ninthe as N 14797-65-0 0.01 mg/L 0.05 0.05 ED/EX: Inorganic Normetallic Parameters (QC Lot: 421226) H11616947-02 B30/ELOOD EX0657: Ninthe as N 14797-65-0 0.01 mg/L 0.05 0.05 ED/EX: Inorganic Normetallic Parameters (QC Lot: 421226) H11616947-02 B30/ELOOD EX077: Into H1160phorus = Filtered 0.1 mg/L 1.0 1.0 ED/EX: Inorganic Normetallic Parameters (QC Lot: 421480) H11616947-004 B30/ELDB EX0677: Into H1100phorus = Filtered 0.1 mg/L 1.0 1.0 ED/EX: Inorganic Normetallic Parameters (QC Lot: 421480) H11616947-004 B30/ELDB EX0677: Into H1100phorus	Duplicate Result RPD (%)	-			LOR	CAS Number	Harbard Commented	Client sample ID	
HK1619647-001         BT3CEBB         EA025: Suspended Solids (SS)          2         mg1.         10         10           HK1619647-020         RMMAVEBB         EA025: Suspended Solids (SS)          2         mg1.         6         6           EA/ED: Physical and Aggregate Properties (OC Lot: 421220)          2         mg1.         6         6           EA/ED: Physical and Aggregate Properties (OC Lot: 421222)          2         mg1.         6         6           EA/ED: Physical and Aggregate Properties (OC Lot: 421222)          2         mg1.         10         10           HK1619647-020         RA025: Suspended Solids (SS)          2         mg1.         10         10           HK1619647-020         RA025: Suspended Solids (SS)          2         mg1.         10         10           HK1619647-020         RA025: Suspended Solids (SS)          2         mg1.         0.12         0.12           HK1619647-020         RA025: Suspended Solids (SS)          2         mg1.         0.12         0.12           HK1619647-020         RA025: Suspended Solids (SS)          2         mg1.         0.12         0.12	RPD (76)							ad Ammonate Despection	EA/ED: Dhusiasi a
H41619947-016         B63S-EB8         EAX25: Suppended Solids (S5)          2         mg/L         6         6           EAXED: Physical and Aggregate Properties (OC Lot: 4212220)          2         mg/L         6         6           HK1619947-02         B3BFLCOOD         EAX25: Suppended Solids (S5)          2         mg/L         6         5           EAKED: Physical and Aggregate Properties (OC Lot: 4212221)          2         mg/L         10         10           HK1619947-060         M202/MFLCOD         EAX25: Suppended Solids (S5)          2         mg/L         10         10           HK1619947-012         MABCEDE Physical and Aggregate Properties (OC Lot: 421224)          2         mg/L         0.01         0.01         0.01           EDFEK: inorganic Morreatellic Parameters (OC Lot: 421224)                0.01         mg/L         0.01         0.05         0.05           EDFEK: inorganic Morreatellic Parameters (OC Lot: 421224)	10 0.0	10	10	ma/l	2				
EAVED: Physical and Aggregate Properties (OC Loi: 421220)         Instrume         Instrume <thinstrume< th=""> <thinstrume< th=""> <thi< td=""><td></td><td></td><td></td><td>-</td><td></td><td></td><td></td><td></td><td></td></thi<></thinstrume<></thinstrume<>				-					
HK1619947-029         IMM6M/EBB         EA025: Suspended Solids (SS)          2         mg/L         6         6           HK16199647-042         B3B/FLOOD         EA025: Suspended Solids (SS)          2         mg/L         5         5           AEDE: Physical and Aggregate Properties (GC Lot: 421221)          2         mg/L         10         10           HK16199647-063         MS02/MFLOOD         EA025: Suspended Solids (SS)          2         mg/L         0.01         0.01           EDDEX: Inorganic Normeallic Parameters (GC Lot: 4212240)          2         mg/L         0.12         0.12           EDEK: Inorganic Normeallic Parameters (GC Lot: 421240)           0.01         mg/L         0.15         0.15           EDEK: Inorganic Normeallic Parameters (GC Lot: 421240)           0.01         mg/L         0.01         0.05         0.05           EDEK: Inorganic Normeallic Parameters (GC Lot: 42125)             0.1         mg/L         0.02         0.02         0.02           EDEK: Inorganic Normeallic Parameters (GC Lot: 42125)           0.1         mg/L         0.01         0.05	0.0	U	v	ngre	2				
Hk16119847-042         B3/BFLOOD         EA025: Suspended Solids (SS)          2         mg/L         5         5           EA/ED: Physical and Aggregate Properties (OC Lot: 421222.1)            10         10           Hk16199047-00         MVS52/MRLCOOD         EA025: Suspended Solids (SS)          2         mg/L         30         30           ED/EK: Inorganic Normetallic Parameters (OC Lot: 4212240)          mg/L         0.12         0.12           ED/EK: Inorganic Normetallic Parameters (OC Lot: 4212240)          mg/L         0.15         0.15           ED/EK: Inorganic Normetallic Parameters (OC Lot: 4212242)          mg/L         0.15         0.15           ED/EK: Inorganic Normetallic Parameters (OC Lot: 4212242)         EX058FK: Ammonia as N         7684-41-7         0.01         mg/L         0.15         0.15           ED/EK: Inorganic Normetallic Parameters (OC Lot: 4212240)          MK161947-04         BJ SIFLOOD         EX058FK: Immonia as N         14797-85-0         0.01         mg/L         0.05         0.05           ED/EK: Inorganic Normetallic Parameters (OC Lot: 4212259)            4/16447-02         BJ SIFLOOD         EX057FK: Intitte as N         14797-85-0         0.01 <td< td=""><td>6 0.0</td><td>e</td><td>e</td><td>m all</td><td>2</td><td></td><td></td><td></td><td></td></td<>	6 0.0	e	e	m all	2				
EA/ED: Physical and Aggregate Properties (QC Loi: 421227.)         Constrained and aggregate Properties (QC Loi: 421227.)           HK(16)9697-056         WSD2/MFLCOO         EA025: Suspended Solids (SS)          2         mg/L         10         10           HK(16)9697-056         MSD2/MFLCOO         EA025: Suspended Solids (SS)          2         mg/L         10         10           HK(16)967-056         MSD2/MFLCOO         EA025: Suspended Solids (SS)          2         mg/L         0.1         10         10           HK(16)967-056         MSD1/B/EB8         EK06856: Anmonia as N         7664-41-7         0.01         mg/L         0.15         0.15           ED/EK: Inorganic Nonmetallic Parameters (QC Loi: 4212242)					-				
HK:1619647-056         MSD2/MFL.OOD         EAO25: Suspended Solids (SS)          2         mg/L         10         10           HK:1619600-001         Anonymous         EAO25: Suspended Solids (SS)          2         mg/L         30         30           DE/EX: Inorganic Normetallic Parameters (OL CL:: 4212240)         HK:1619647-021         Bd/BEBB         EKO65K: Ammonia as N         7684-41-7         0.01         mg/L         0.15         0.15           DE/EK: Inorganic Normetallic Parameters (OL CL:: 4212247)         HK:1619647-021         BJ/BEBB         EKO65K: Ammonia as N         7684-41-7         0.01         mg/L         0.15         0.15           ED/EK: Inorganic Normetallic Parameters (OL CL:: 4212247)         HK:1619647-021         BJ/BEBB         EKO67A: Ntrife as N         14797-65-0         0.01         mg/L         0.05         0.05           ED/EK: Inorganic Normetallic Parameters (OL CL:: 4212257)         HK:1619647-02         BJ/BEBB         EKO57A: Ntrife as N         14797-65-0         0.01         mg/L         0.02         0.02           ED/EK: Inorganic Normetallic Parameters (OL CL:: 4212261)         HK:1619647-02         BJ/BEBB         EKO57A: Ntrife as N         14797-65-0         0.01         mg/L         .0.02         0.02           ED/EK: Inorganic Normetallic P	5 0.0	5	5	ngre	2				
HK1619900-001         Anonymous         EA025: Suspended Solids (SS)          2         mg/L         30         30           ED/EK: Inorganic Normetallic Parameters (OC Lot: 421224)           0.01         mg/L         0.12         0.12           ED/EK: Inorganic Normetallic Parameters (OC Lot: 421224)          0.01         mg/L         0.15         0.15           ED/EK: Inorganic Normetallic Parameters (OC Lot: 421224)           0.01         mg/L         0.17         0.16           ED/EK: Inorganic Normetallic Parameters (OC Lot: 421224)           0.01         mg/L         0.05         0.05           ED/EK: Inorganic Normetallic Parameters (OC Lot: 421225)         EK057A: Nitrite as N         14797-65-0         0.01         mg/L         0.02         0.02           ED/EK: Inorganic Normetallic Parameters (OC Lot: 421225)           0.01         mg/L         0.05         0.05           ED/EK: Inorganic Normetallic Parameters (OC Lot: 4212250)           0.01         mg/L         0.01            EN/EK: Inorganic Normetallic Parameters (OC Lot: 4212250)           0.01         mg/L         0.01            ED/EK	10 0.0	10	10	mall	2				
ED/EK: Inorganic Normetallic Parameters         QC Lot: 4212240)         Mail State S				-					
Hk1619847-012         B4/BEB8         EK055K: Ammonia as N         7684-41-7         0.01         mg/L         0.12         0.12           ED/EK: Inorganic Normetallic Parameters         GCL Cot: 421224)         mg/L         0.15         0.15           ED/EK: Inorganic Normetallic Parameters         GCL Cot: 421224)         mg/L         0.01         mg/L         0.15         0.15           ED/EK: Inorganic Normetallic Parameters         GCL Cot: 421224)         mg/L         0.01         0.02         0.02         0.02         0.02         0.02         0.02         0.02         0.02         0.02         0.02         0.02         0.02         0.02         0.02         0.02         0.02         0.02         0.05         0.05         0.05         0.05         0.05         0.05         0.05         0.05         0.05         0.05         0.05         0.05	50 0.0	50	30	mg/L	4				
ED/EK: Inorganic Normetallic Parameters         (QC Lot: 4212241)           HK1619647-021         WSD1/BEBB         EK065K: Ammonia as N         7684-41-7         0.01         mg/L         0.15         0.15           ED/EK: Inorganic Normetallic Parameters         (QC Lot: 4212242)            0.01         mg/L         0.17         0.16           ED/EK: Inorganic Normetallic Parameters         (QC Lot: 4212257)              0.01         mg/L         0.05         0.05          0.05          0.05          0.05          0.05          0.05          0.05          0.05          0.05          0.05          0.05           0.02          0.02          0.02          0.02          0.02          0.05           0.05          0.05           0.05           0.05 <td< td=""><td>0.12 0.0</td><td>0.12</td><td>0.12</td><td>mall</td><td>0.01</td><td>7664 44 7</td><td>**</td><td></td><td></td></td<>	0.12 0.0	0.12	0.12	mall	0.01	7664 44 7	**		
HK:161947-021         WSD1/BEBB         EK055K: Ammonia as N         7684-41-7         0.01         mg/L         0.15         0.15           ED/EK: Inorganic Normetallic Parameters         GC Lot: 4212247          mg/L         0.17         0.16           ED/EK: Inorganic Normetallic Parameters         GC Lot: 4212257         mg/L         0.01         mg/L         0.05         0.05           ED/EK: Inorganic Normetallic Parameters         GC Lot: 4212257         mg/L         0.01         mg/L         0.02         0.02           ED/EK: Inorganic Normetallic Parameters         GC Lot: 4212259         mg/L         0.05         0.01           ED/EK: Inorganic Normetallic Parameters         GC Lot: 4212259         mg/L         0.05         0.05           ED/EK: Inorganic Normetallic Parameters         GC Lot: 4212421         14797-65-0         0.01         mg/L         0.05         0.05           ED/EK: Inorganic Normetallic Parameters         GC Lot: 4212431         14797-65-0         0.01         mg/L         0.05         0.05           ED/EK: Inorganic Normetallic Parameters         GC Lot: 4214739         1         0.01         10.0         1.0           ED/EK: Inorganic Normetallic Parameters         GC Lot: 421479         1         0.1         1.0         1.0	0.12 0.0	0.12	0.12	mg/L	0.01	/004-41-/			
ED/EK: Inorganic Normetallic Parameters         QC Lot: 4212242)           HK(16)947-042         B3/B/FLCOD         EK056K: Ammonia as N         7684-17         0.01         mg/L         0.17         0.16           ED/EK: Inorganic Normetallic Parameters         (QC Lot: 4212267)         mg/L         0.05         0.05           ED/EK: Inorganic Normetallic Parameters         (QC Lot: 4212257)         mg/L         0.02         0.02           ED/EK: Inorganic Normetallic Parameters         (QC Lot: 4212257)         mg/L         0.02         0.02           ED/EK: Inorganic Normetallic Parameters         (QC Lot: 4212267)         mg/L         0.02         0.02           ED/EK: Inorganic Normetallic Parameters         (QC Lot: 4212261)         mg/L         0.05         0.05           ED/EK: Inorganic Normetallic Parameters         (QC Lot: 421728)         mg/L         0.01         mg/L         0.01         0.02           ED/EK: Inorganic Normetallic Parameters         (QC Lot: 4214798)         mg/L         0.01         0									
Hird18947-042         B3/B/FLOOD         EK055K: Anmonia as N         7684-41-7         0.01         mg/L         0.17         0.16           ED/EK: Inorganic Normetallic Parameters         GC Lot: 4212257         mg/L         0.05         0.05           ED/EK: Inorganic Normetallic Parameters         GC Lot: 4212257         mg/L         0.01         mg/L         0.05         0.02           ED/EK: Inorganic Normetallic Parameters         GC Lot: 4212259         mg/L         0.02         0.02         0.02         0.02         0.02         0.02         0.02         0.02         0.02         0.02         0.02         0.05	0.15 0.0	0.15	0.15	mg/L	0.01	/664-41-/			
ED/EK: Inorganic Normetallic Parameters         (QC Lot: 4212257)           HK(16)947-001         B1/SEBB         EKO67A: Nitrile as N         14797-65-0         0.01         mg/L         0.05         0.05           ED/EK: Inorganic Normetallic Parameters         (QC Lot: 4212259)         HK(16)947-012         B4/BEBB         EKO67A: Nitrile as N         14797-65-0         0.01         mg/L         0.02         0.02           ED/EK: Inorganic Normetallic Parameters         (QC Lot: 4212258)         HK(16)947-042         B3/BFLOOD         EKO67A: Nitrile as N         14797-65-0         0.01         mg/L         0.02         0.02           ED/EK: Inorganic Normetallic Parameters         (QC Lot: 421728)         HK(16)947-004         B2/SEBB         EKO67P: Total Phosphorus as P          0.1         mg/L         <0.1									
Hk1619647-001         B1/SEBB         EK657A: Nitrite as N         14787-65-0         0.01         mg/L         0.05         0.05           ED/EK: Inorganic Normetallic Parameters         GC L Cit. 2412250	0.16 0.0	0.16	0.17	mg/L	0.01	7664-41-7	EK055K: Ammonia as N	B3/B/FLOOD	HK1619647-042
EDVEK: Inorganic Normetallic Parameters (QC Lot: 421259)         Control Markan Ma									
HK1619947-012         B4/BEEB8         EK057A: Number as N         14787-65-0         0.01         mg/L         0.02         0.02           ED/EK: Inorganic Normetallic Parameters         GC Lot: 4212261)           Mg/L         0.05         0.05           ED/EK: Inorganic Normetallic Parameters         GC Lot: 4214789          mg/L         0.05         0.05           ED/EK: Inorganic Normetallic Parameters (GC Lot: 4214789)           mg/L         <0.01	0.05 0.0	0.05	0.05	mg/L	0.01	14797-65-0	EK057A: Nitrite as N	B1/S/EBB	HK1619647-001
PED/EK: Inorganic Normetallic Parameters (QC Lot: 4212261)           HK1619647-042         B3/B/FLOOD         EKOS/TA: Nitrite as N         14797-65-0         0.01         mg/L         0.05         0.05           DE/EK: Inorganic Normetallic Parameters (QC Lot: 4214798)							(QC Lot: 4212259)		
Hk/1619847-042         B3/B/FLOOD         EK057A: Nitrite as N         14787-05-0         0.01         mg/L         0.05         0.05           ED/EK: Inorganic Normetallic Parameters         GCL Cot: 4214789          0.1         mg/L         0.05         0.05           ED/EK: Inorganic Normetallic Parameters         GCC Lot: 4214789          0.1         mg/L         <0.01	0.02 0.0	0.02	0.02	mg/L	0.01	14797-65-0	EK057A: Nitrite as N	B4/B/EBB	HK1619647-012
BD/EK: Inorganic Normetallic Parameters (QC Lot: 42/4789)           HK(16)9647-004         B2/SKEB8         EK062PF: Total Phosphorus as P          0.1         mg/L         <-0.1         0.1         Mg/L         <-0.1         <-0.1         Mg/L         <-0.1         <-0.1         <-0.1         <-0.1         <-0.1         <-0.1         <-0.1         <-0.1         <-0.1         <-0.1							(QC Lot: 4212261)	Ionmetallic Parameters	ED/EK: Inorganic I
HK1619647-004         B2/SFEB8         EK067P: Total Phosphorus as P          0.1         mg/L         <0.1         <0.1           ED/EK: Inorganic Normetallic Parameters         GC L Cit : 4214799          mg/L         1.0         1.0         1.0           ED/EK: Inorganic Normetallic Parameters         GC L Cit : 42147890          mg/L         1.0         1.0         1.0           ED/EK: Inorganic Normetallic Parameters         GC L Cit : 4214800          0.1         mg/L         <0.1	0.05 0.0	0.05	0.05	mg/L	0.01	14797-65-0	EK057A: Nitrite as N	B3/B/FLOOD	HK1619647-042
ED/EK: Inorganic Normetallic Parameters (QC Lot: 4214799)         n         0.1         mg/L         1.0           HK1619647-004         B2/S/EBB         EK062P: Total Nitrogen as N          0.1         mg/L         1.0         1.0           DE/EK: Inorganic Normetallic Parameters (QC Lot: 4214800)          0.1         mg/L         <0.1							(QC Lot: 4214798)	Ionmetallic Parameters	ED/EK: Inorganic I
HK1619647-004         B2/SEBB         EK662P: Total Nitrogen as N          0.1         mg/L         1.0         1.0           ED/EK: Inorganic Normetallic Parameters (OC Lot: 4214800)          0.1         mg/L         <0.1	<0.1 0.0	<0.1	<0.1	mg/L	0.1		EK067P: Total Phosphorus as P	B2/S/EBB	HK1619647-004
ED/EK: Inorganic Normetallic Parameters (QC Lot: 42/4800)							(QC Lot: 4214799)	Ionmetallic Parameters	ED/EK: Inorganic I
HK(1619647-001         B1/S/E.B8         EXOSTP: Total Phosphorus - Filtered          0.1         mg/L         <0.1         <0.1           ED/EK: Inorganic Normetallic Parameters (RK(1619647-045)         B2/S/EB8         EXOSTP: Total Nitrogen as N - Filtered          0.1         mg/L         1.0         1.0         1.0           ED/EK: Inorganic Normetallic Parameters (RK(1619647-045)         B4/B/FLOOD         EXOSTP: Total Nitrogen as N          0.1         mg/L         <0.1	1.0 0.0	1.0	1.0	mg/L	0.1		EK062P: Total Nitrogen as N	B2/S/EBB	HK1619647-004
HK(1619647-001         B1/S/E.B8         EXOSTP: Total Phosphorus - Filtered          0.1         mg/L         <0.1         <0.1           ED/EK: Inorganic Normetallic Parameters (RK(1619647-045)         B2/S/EB8         EXOSTP: Total Nitrogen as N - Filtered          0.1         mg/L         1.0         1.0         1.0           ED/EK: Inorganic Normetallic Parameters (RK(1619647-045)         B4/B/FLOOD         EXOSTP: Total Nitrogen as N          0.1         mg/L         <0.1							(QC Lot: 4214800)	onmetallic Parameters	ED/EK: Inorganic I
HK1619947-004         B2/S/EBB         EK062P: Total Nitrogen as N - Filtered          0.1         mg/L         1.0         1.0           ED/EK: Inorganic Normetallic Parameters         QC Lot: 4214902          0.1         mg/L         <0.1	<0.1 0.0	<0.1	<0.1	mg/L	0.1				
HK1619947-004         B2/S/EBB         EK062P: Total Nitrogen as N - Filtered          0.1         mg/L         1.0         1.0           ED/EK: Inorganic Normetallic Parameters         QCL Cut: 4214802          0.1         mg/L         <0.1							(QC Lot: 4214801)	Ionmetallic Parameters	ED/EK: Inorganic I
HK1619647-045         B4/BFLOOD         EK067P: Total Phosphorus as P          0.1         mg/L         <0.1         <0.1           ED/EK: Inorganic Normetallic Parameters (QC Lot: 42/14803         EK062P: Total Nitrogen as N          0.1         mg/L         1.0         1.0           DE/EK: Inorganic Normetallic Parameters (QC Lot: 42/14803         EK062P: Total Nitrogen as N          0.1         mg/L         1.0         1.0           DE/EK: Inorganic Normetallic Parameters (QC Lot: 42/14803         EK067P: Total Phosphorus - Filtered          0.1         mg/L         <0.1	1.0 0.0	1.0	1.0	mg/L	0.1				
HK1619647-045         B4/BFLOOD         EK067P: Total Phosphorus as P          0.1         mg/L         <0.1         <0.1           ED/EK: Inorganic Normetallic Parameters (NC108470-05         B4/BFLOOD         EK062P: Total Nitrogen as N          0.1         mg/L         1.0         1.0           DF/EK: Inorganic Normetallic Parameters (NC164547-012         B4/BEB8         EK067P: Total Phosphorus - Filtered          0.1         mg/L         <0.1								onmetallic Parameters	ED/EK: Inorganic I
ED/EK: Inorganic Normetallic Parameters (QC Lot: 4214803)           ED/EK: Inorganic Normetallic Parameters (QC Lot: 4214803)         mg/L         ng/L         1.0           HK(1619647-045)         B4/BFLOOD         EK062P: Total Nitrogen as N          0.1         mg/L         1.0         1.0           DE/EK: Inorganic Normetallic Parameters (QC Lot: 4214804)         EK067P: Total Phosphorus - Filtered          0.1         mg/L         <0.1	<0.1 0.0	<0.1	<0.1	ma/L	0.1				
HK1619647-045         B4/B/FLOOD         EK062P: Total Nitrogen as N          0.1         mg/L         1.0         1.0           ED/EK: Inorganic Nonmetallic Parameters         (QC Lot: 4214804)         EK067P: Total Phosphorus - Filtered          0.1         mg/L         1.0         1.0           ED/EK: Inorganic Nonmetallic Parameters         (EK067P: Total Phosphorus - Filtered          0.1         mg/L         <0.1         <0.1								Ionmetallic Parameters	ED/EK: Inorganic I
ED/EK: Inorganic Normetallic Parameters (QC Lot: 4214804)           HK1619647-012         B4/B/EBB         EK067P: Total Phosphorus - Filtered          0.1         mg/L         <0.1	1.0 0.0	1.0	1.0	ma/L	0.1				
HK1619647-012 B4/B/EBB EK067P: Total Phosphorus - Filtered 0.1 mg/L <0.1 <0.1									
	<0.1 0.0	<0.1	<0.1	ma/l	01				
	0.0	-9.1	-9.1	ing.c	9.1				
ED/EK: Inorganic Nonmetallic Parameters (OZ Lot: 4214905)           HK1619647-021         WSD1/M2EBB         EK0627: rotal Nitrogen as N - Filtered          0.1         mg/L         1.0         1.1	1.1 9.5	4.4	10	mail.	0.1		· · · · ·		

k Order HK1619647											(763
latrix: WATER								ratory Duplicate (DUP)			
Laboratory sample ID Client sample ID Method: Com				CAS Number	LOR		Unit	Original Result	Duplicat	ite Result	RPD (%)
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 421480) HK1619647-001 B1/S/EBB FK067P: T								-0.4			0.0
	otal Phosphor	us as P			0.1		mg/L	<0.1	<0	D.1	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 421480) HK1619647-001 B1/S/EBB EK062P: T	') otal Nitrogen a	n N			0.1		mg/L	1.1	1.	2	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 421480		15 N			0.1		ing/c			-	0.0
	otal Phosphor	us - Filtered			0.1		mg/L	1.8	1.	.8	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 421480)		uo - r intereu									
	otal Nitrogen a	is N - Filtered			0.1		mg/L	1.1	1.	.1	0.0
Method Blank (MB), Laboratory Control Spike (LCS) a	nd Laborat	ory Control S	niko Dunlicato	(DCS) Band							
		Method Blank (MB		DC3) Repu	<i></i>	Laboratory C	ontrol Snike (LCS) and	Laboratory Control Sp	ike Duplicate (Di	CSI Report	
tatrix: WATER		Leave Land (MD)		Spike			Recovery (%)	Recovery			PD (%)
Method; Compound CAS Numbe	LOR	Unit	Result	Concentr		LCS	DCS	Low	Limits (%) High	Value	Control Lim
alenda. Compound		Unit	Nesun			LOO	200	Low	ringii	Value	Control Enn
EA/ED: Physical and Aggregate Properties (QC Lot: 421221 EA025: Suspended Solids (SS)	. 2	mg/L	<2	10 mg	1	106		87	113		
EA/ED: Physical and Aggregate Properties (QC Lot: 421222		ingre		To hig	-	100		0,	110		
EA025: Suspended Solids (SS)	. 2	mg/L	<2	10 mg	L	108		87	113		
EA/ED: Physical and Aggregate Properties (QC Lot: 421222											
EA025: Suspended Solids (SS)	2	mg/L	<2	10 mg	L	97.0		87	113		
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4212240	1										
EK055K: Ammonia as N 7664-41-		mg/L	<0.01	0.5 mg	L	105		92	108		
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 421224	)										
EK055K: Ammonia as N 7664-41-		mg/L	<0.01	0.5 mg	L	102		92	108		
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4212242	:)										
EK055K: Ammonia as N 7664-41-	0.01	mg/L	<0.01	0.5 mg	L	102		92	108		
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 421225)	)										
EK057A: Nitrite as N 14797-65-0	0.01	mg/L	<0.01	0.05 mg		98.6		87	115		
				0.4 mg	1.	105		98	112		
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4212259		-									
EK057A: Nitrite as N 14797-65-0	0.01	mg/L	<0.01	0.05 mg 0.4 mg		97.0 104		87 98	115 112		
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 421226				0.4 mg	-	104		30	112		
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 421226 EK057A: Nitrite as N 14797-65-(		mg/L	<0.01	0.05 mg	vL	112		87	115		
				0.4 mg		104		98	112		
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214798	9										
EK067P: Total Phosphorus as P	0.01	mg/L	<0.01	0.5 mg	L	97.1		93	103		
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 421479	)										
EK062P: Total Nitrogen as N	0.1	mg/L	<0.1	0.5 mg	L	104		92	114		
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4214800	)										
EK067P: Total Phosphorus - Filtered	0.01	mg/L	< 0.01	0.5 mg	L	97.2		85	115		



Matrix: WATER		Method Blank (MB)	) Report		Laboratory Con	trol Spike (LCS) and L	aboratory Control S	pike Duplicate (DC	S) Report	
				Spike	Spike Red	covery (%)	Recovery	Limits (%)	R	PD (%)
Method: Compound CAS Numb	er LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Lim
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 42148)	00) - Continue	ed								
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 42148	01)									
EK062P: Total Nitrogen as N - Filtered	0.1	mg/L	<0.1	0.5 mg/L	104		85	115		
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 42148	02)									
EK067P: Total Phosphorus as P	0.01	mg/L	<0.01	0.5 mg/L	97.0		93	103		
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 42148	03)									
EK062P: Total Nitrogen as N -	0.1	mg/L	<0.1	0.5 mg/L	105		92	114		
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 42148	04)									
EK067P: Total Phosphorus - Filtered	0.01	mg/L	<0.01	0.5 mg/L	97.5		85	115		
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 42148	05)									
EK062P: Total Nitrogen as N - Filtered	0.1	mg/L	<0.1	0.5 mg/L	101		85	115		
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 42148	06)									
EK067P: Total Phosphorus as P	0.01	mg/L	<0.01	0.5 mg/L	96.2		93	103		
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 42148	07)									
EK062P: Total Nitrogen as N	0.1	mg/L	<0.1	0.5 mg/L	95.2		92	114		
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 42148	18)									
EK067P: Total Phosphorus - Filtered -	0.01	mg/L	<0.01	0.5 mg/L	97.3		85	115		
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 42148	9)									
EK062P: Total Nitrogen as N - Filtered -	0.1	mg/L	<0.1	0.5 mg/L	99.7		85	115		
EP: Aggregate Organics (QC Lot: 4212391)										
EP030: Biochemical Oxygen Demand	2	mg/L		198 mg/L	110		87	117		
EP: Aggregate Organics (QC Lot: 4212392)										
EP030: Biochemical Oxygen Demand -	2	mg/L		198 mg/L	113		87	117		
EP: Aggregate Organics (QC Lot: 4212393)										
EP030: Biochemical Oxygen Demand	2	mg/L		198 mg/L	110		87	117		

k Order	HK1619647								(	ALS
	(MS) and Matrix Spike D	Duplicate (MSD) Report								
Matrix: WATER						ike (MS) and Matr				
				Spike	Spike Re	covery (%)	Recovery	Limits (%)	RPI	(%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Contro Limit
	nic Nonmetallic Parameter	rs (QC Lot: 4212240)								
HK1619647-012	B4/B/EBB	EK055K: Ammonia as N	7664-41-7	0.5 mg/L	80.0		75	125		
ED/EK: Inorga	nic Nonmetallic Parameter	rs (QC Lot: 4212241)								
K1619647-021	WSD1/B/EBB	EK055K: Ammonia as N	7664-41-7	0.5 mg/L	90.0		75	125		
ED/EK: Inorga	nic Nonmetallic Parameter	rs (QC Lot: 4212242)								
HK1619647-042		EK055K: Ammonia as N	7664-41-7	0.5 mg/L	110		75	125		
ED/EK: Increa	nic Nonmetallic Parameter									
HK1619647-001		EK057A: Nitrite as N	14797-65-0	0.5 mg/L	106		75	125		
				5.0 mg t	100			120		
ED/EK: Inorga HK1619647-012	nic Nonmetallic Parameter		14797-65-0	0.5 mg/L	104		75	125		
		EK057A: Nitrite as N	14/9/-05-0	0.5 mg/L	104		/5	125		
	nic Nonmetallic Parameter									
HK1619647-042	B3/B/FLOOD	EK057A: Nitrite as N	14797-65-0	0.5 mg/L	106		75	125		
ED/EK: Inorga	nic Nonmetallic Parameter	rs (QC Lot: 4214798)								
HK1619647-004	B2/S/EBB	EK067P: Total Phosphorus as P		0.5 mg/L	100		75	125		
ED/EK: Inorga	nic Nonmetallic Parameter	rs (QC Lot: 4214799)								
HK1619647-004		EK062P: Total Nitrogen as N		0.5 mg/L	94.0		75	125		
ED/EK: Inorga	nic Nonmetallic Parameter	re (OC L at: 4214800)								
-K1619647-001		EK067P: Total Phosphorus - Filtered		0.5 mg/L	100		75	125		
		·····		<b>g</b> -						
ED/EK: Inorga HK1619647-004	nic Nonmetallic Parameter			0.5 mg/L	86.0		75	125		
		EK062P: Total Nitrogen as N - Filtered		0.5 mg/L	88.0		75	125		
	nic Nonmetallic Parameter									
HK1619647-045	B4/B/FLOOD	EK067P: Total Phosphorus as P		0.5 mg/L	106		75	125		
	nic Nonmetallic Parameter	rs (QC Lot: 4214803)								
IK1619647-045	B4/B/FLOOD	EK062P: Total Nitrogen as N		0.5 mg/L	88.0		75	125		
ED/EK: Inorga	nic Nonmetallic Parameter	rs (QC Lot: 4214804)								
K1619647-012	B4/B/EBB	EK067P: Total Phosphorus - Filtered		0.5 mg/L	102		75	125		
ED/EK: Inorga	nic Nonmetallic Parameter	rs (QC Lot: 4214805)								
	WSD1/B/EBB	EK062P: Total Nitrogen as N - Filtered		0.5 mg/L	104		75	125		
ED/EK: Increa	nic Nonmetallic Parameter									
-K1619647-001		EK067P: Total Phosphorus as P		0.5 mg/L	108		75	125		
				o.o mgrt			15	.25		
ED/EK: Inorga HK1619647-001	nic Nonmetallic Parameter			0.5	98.0		76	125		
		EK062P: Total Nitrogen as N		0.5 mg/L	98.0		75	125		
	nic Nonmetallic Parameter									
HK1619930-001	Anonymous	EK067P: Total Phosphorus - Filtered		5 mg/L	93.2		75	125		



Matrix: WATER					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike		ecovery (%)		Limits (%)		D (%)	
aboratory ample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit	
	ic Nonmetallic Parameters							105			
HK1619647-001	B1/S/EBB	EK062P: Total Nitrogen as N	N - Filtered	0.5 mg/L	86.0		75	125			



# **APPENDIX H**

PPWQM Sediment Quality Monitoring Results



### **Summary of Sediment Quality Monitoring Results**

			15/5/2	016								
Station ID	Detection Limit	B1	B2	B3	B4	B5	B6	WSD 1	WSD 2	U2	NM6	NM1
рН	0.1	8	8.1	8.1	8.3	8.3	8.2	8.1	8.2	9.4	8.6	8
Volatile Solids (%)	1	<u>8.7</u>	<u>8.6</u>	7.6	6.7	<u>7.3</u>	6	<u>6.9</u>	6.7	3.8	3.6	7
Acid Volatile Sulphides (mg/kg)												
	10	52	19	45	10	46	12	14	10	10	10	222
Ammonia (mg/kg)	10	18	13	11	<10	<10	<10	12	11	10	10	11
Nitrite + Nitrate (mg/kg)	0.1	<u>1.8</u>	<u>0.9</u>	<u>0.8</u>	0.5	0.4	<u>0.8</u>	<u>2.3</u>	<u>1.5</u>	0.1	0.1	0.8
Total Nitrogen (mg/kg)	20	<u>1470</u>	<u>1510</u>	<u>1460</u>	<u>1160</u>	<u>1260</u>	1140	1150	990	340	420	1350
Total Phosphorus (mg/kg)	20	<u>596</u>	<u>644</u>	603	527	519	<u>455</u>	<u>465</u>	<u>456</u>	326	201	491
Aluminium(mg/kg)	1	39500	36000	30600	29200	35100	27100	22800	22700	13900	11500	27800
Boron(mg/kg)	1	28	24	25	19	22	16	17	21	19	8	23
Iron(mg/kg)	10	<u>38300</u>	32400	31300	29600	33500	24700	21300	27800	51800	18400	27500
Mercury(mg/kg)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Arsenic(mg/kg)	1	11	13	11	10	12	9	8	10	9	7	10
Barium(mg/kg)	0.5	<u>59.1</u>	<u>59.8</u>	52.6	43	<u>46.8</u>	<u>43.8</u>	34.2	33.4	15.8	17	40.2
Cadmium(mg/kg)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Chromium(mg/kg)	1	<u>53</u>	51	46	40	<u>45</u>	35	29	31	25	18	38
Copper(mg/kg)	1	<u>53</u>	<u>91</u>	57	46	<u>47</u>	<u>38</u>	29	29	11	10	36
Lead(mg/kg)	1	<u>56</u>	<u>60</u>	50	<u>44</u>	<u>49</u>	<u>41</u>	<u>36</u>	33	38	17	38
Manganese(mg/kg)	0.5	<u>773</u>	518	486	429	478	385	<u>572</u>	<u>557</u>	645	194	638
Nickel(mg/kg)	1	<u>31</u>	27	25	22	25	<u>20</u>	16	16	15	8	22
Silver(mg/kg)	0.1	0.4	0.6	0.5	0.4	0.4	0.3	0.3	0.2	0.1	0.1	0.3
Vanadium(mg/kg)	10	<u>55</u>	47	43	38	45	35	28	29	18	21	36
Zinc(mg/kg)	1	<u>155</u>	166	142	123	134	<u>111</u>	<u>94</u>	96	88	33	107
Total Organic Carbon(%)	0.05	0.86	1.25	0.98	0.81	0.95	0.66	0.76	0.88	0.23	0.21	0.88
Gravel (%)	N/A	5	0	0	0	0	0	12	3	2	9	6

#### Contract No. DC/2008/03 Design, Build and Operate Pillar Point Sewage Treatment Works Monthly Operation Phase Monitoring Report (Post-commissioning)



			15/5/2	2016								
Sand (%)	N/A	14	1	2	8	10	28	23	28	87	45	23
Silt (%)	N/A	46	58	55	54	52	43	33	38	6	25	40
Clay (%)	N/A	35	41	43	38	38	29	32	31	5	21	31

Notes: Bold numbers indicate action level exceedances. Bold and underline numbers indicate limit level exceedances.



#### **Laboratory Results**

	S Technichem (HK	)Pty Ltc	1		
	S Laboratory Group				ALS
ANALI		CERT	IFICATE OF ANALYSIS		(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	: ATAL-DEGREMONT JOINT VENTURE	Laboratory	: ALS Technichem (HK) Pty Ltd	Page	: 1 of 9
act	: MR TECK SUAN LOY : 2801 ISLAND PLACE TOWER,	Contact Address	: Fung Lim Chee, Richard : 11/F., Chung Shun Knitting Centre, 1 - 3 Wing	Work Order	HK1619151
1	510 KING'S ROAD, NORTH POINT HONG KONG teck.suan.loy@degremont.com	E-mail	Yip Street, Kwai Chung, N.T., Hong Kong		
none	: +852 2404 1538	Telephone Facsimile	: Richard.Fung@alsglobal.com : +852 2610 1044		
ile ile	: DC_2008_03 DESIGN BUILD AND OPERATE	Quote number	: +852 2610 2021 :	Date Samples Received	: 16-MAY-2016
umber	PILLAR POINT SEWAGE TREATMENT WORKS : 430			Issue Date	: 01-JUN-2016
umber	:			No. of samples received No. of samples analysed	: 11 : 11
	e reproduced except with prior written		n signed by those names that appear on this report and are the author	ised signatories.	
val from the tes	ting laboratory.	Signatories Fung Lim Chee, Rich	Position hard General Manager		Authorised results for Inorganics
		Part of the	echnichem (HK) Pty Ltd ALS Laboratory Group		
• Number	: 2 of 9	1€: +452251	ng Cante, 1-3 Wing Yo Bhaet, Kwa Chung, N.T., Hang Kong 1044 Fac: -852 2810 3021 www.alsenviro.com		
t Corder eral Comment report supersede rovided by the cli AY-2016 LOR = Limit of rep filic Comments f Sample(s) we Sediment san Sediment san	: ATAL-DEGREMONT JOINT VENTURE HK1619161 hts any previous report(s) with this reference. Results apply to the ent, sampling dates are shown without a time component. In the ording: CAS Number = CAS registry number from database main or Work Order: HK1619161 her received in a chilled condition. mple(s) as neceviced, digested by In-house method E-ASTM D397	sample(s) as submitted. Al ase instances, the time com ntained by Chemical Abstra a dry weight basis.	1944 Fac +852 2810 2021 www.atsenviro.com	purposes. The completion date	of analysis is:
t : Order eral Comment eport supersede ovided by the cli vV-2016 .cR = Limit of rep fic Comments fr Sample(s) w Sediment sar pH determine Total Nitroge	: ATAL-DEGREMONT JOINT VENTURE HK1619151 //s s any previous report(s) with this reference. Results apply to the ent, sampling dates are shown without a time component. In the orting: CAS Number = CAS registry number from database main for Work Order: HK1619151 ire received in a chilled condition. hpl(c)) analysed on an as received basis. Result(s) reported on:	sample(s) as submitted. Al see instances, the time com rtained by Chemical Abstra a dry weight basis. 74-09 prior to determination	1944 Fac +852 2810 2021 www.atsenviro.com	purposes. The completion date	of analysis is:
t Order eral Comment sport supersede ovided by the cli V/2-2016 OR = Limit of rep fic Comments fr Sample(s) w Sediment sar pH determine Total Nitroge	ATAL-DEGREMONT JOINT VENTURE HK1619151      Its     any previous report(s) with this reference. Results apply to the ent, sampling dates are shown without a time component. In the orting: CAS Number = CAS registry number from database main or Work Order: HK1619151     re received in a chilled condition. nple(s) analysed on an as received basis. Result(s) reported on nple(s) are seceived, digested by in-house method E-ASTM D397 d and reported on a 1.5 soil / water extract.	sample(s) as submitted. Al see instances, the time com rtained by Chemical Abstra a dry weight basis. 74-09 prior to determination	1944 Fac +852 2810 2021 www.atsenviro.com	purposes. The completion date	of analysis is:
t Order eral Comment sport supersede ovided by the cli V/2-2016 OR = Limit of rep fic Comments fr Sample(s) w Sediment sar pH determine Total Nitroge	ATAL-DEGREMONT JOINT VENTURE HK1619151      Its     any previous report(s) with this reference. Results apply to the ent, sampling dates are shown without a time component. In the orting: CAS Number = CAS registry number from database main or Work Order: HK1619151     re received in a chilled condition. nple(s) analysed on an as received basis. Result(s) reported on nple(s) are seceived, digested by in-house method E-ASTM D397 d and reported on a 1.5 soil / water extract.	sample(s) as submitted. Al see instances, the time com rtained by Chemical Abstra a dry weight basis. 74-09 prior to determination	1944 Fac +852 2810 2021 www.atsenviro.com	purposes. The completion date	of analysis is:
Order eral Comment sport supersede svided by the cli V/2-2016 OR = Limit of rep fic Comments fr Sample(s) w Sediment sar pH determine Total Nitroge	ATAL-DEGREMONT JOINT VENTURE HK1619151      Its     any previous report(s) with this reference. Results apply to the ent, sampling dates are shown without a time component. In the orting: CAS Number = CAS registry number from database main or Work Order: HK1619151     re received in a chilled condition. nple(s) analysed on an as received basis. Result(s) reported on nple(s) are seceived, digested by in-house method E-ASTM D397 d and reported on a 1.5 soil / water extract.	sample(s) as submitted. Al see instances, the time com rtained by Chemical Abstra a dry weight basis. 74-09 prior to determination	1944 Fac +852 2810 2021 www.atsenviro.com	purposes. The completion date	of analysis is:
Order eral Comment sport supersede svided by the cli V/2-2016 OR = Limit of rep fic Comments fr Sample(s) w Sediment sar pH determine Total Nitroge	ATAL-DEGREMONT JOINT VENTURE HK1619151      Its     any previous report(s) with this reference. Results apply to the ent, sampling dates are shown without a time component. In the orting: CAS Number = CAS registry number from database main or Work Order: HK1619151     re received in a chilled condition. nple(s) analysed on an as received basis. Result(s) reported on nple(s) are seceived, digested by in-house method E-ASTM D397 d and reported on a 1.5 soil / water extract.	sample(s) as submitted. Al see instances, the time com rtained by Chemical Abstra a dry weight basis. 74-09 prior to determination	1944 Fac +852 2810 2021 www.atsenviro.com	purposes. The completion date	of analysis is:
Order eral Comment sport supersede svided by the cli V/2-2016 OR = Limit of rep fic Comments fr Sample(s) w Sediment sar pH determine Total Nitroge	ATAL-DEGREMONT JOINT VENTURE HK1619151      Its     any previous report(s) with this reference. Results apply to the ent, sampling dates are shown without a time component. In the orting: CAS Number = CAS registry number from database main or Work Order: HK1619151     re received in a chilled condition. nple(s) analysed on an as received basis. Result(s) reported on nple(s) are seceived, digested by in-house method E-ASTM D397 d and reported on a 1.5 soil / water extract.	sample(s) as submitted. Al see instances, the time com rtained by Chemical Abstra a dry weight basis. 74-09 prior to determination	1944 Fac +852 2810 2021 www.atsenviro.com	purposes. The completion date	of analysis is:
Order eral Comment sport supersede svided by the cli V/2-2016 OR = Limit of rep fic Comments fr Sample(s) w Sediment sar pH determine Total Nitroge	ATAL-DEGREMONT JOINT VENTURE HK1619151      Its     any previous report(s) with this reference. Results apply to the ent, sampling dates are shown without a time component. In the orting: CAS Number = CAS registry number from database main or Work Order: HK1619151     re received in a chilled condition. nple(s) analysed on an as received basis. Result(s) reported on nple(s) are seceived, digested by in-house method E-ASTM D397 d and reported on a 1.5 soil / water extract.	sample(s) as submitted. Al see instances, the time com rtained by Chemical Abstra a dry weight basis. 74-09 prior to determination	1944 Fac +852 2810 2021 www.atsenviro.com	purposes. The completion date	of analysis is:
t Order eral Comment sport supersede ovided by the cli V/2-2016 OR = Limit of rep fic Comments fr Sample(s) w Sediment sar pH determine Total Nitroge	ATAL-DEGREMONT JOINT VENTURE HK1619151      Its     any previous report(s) with this reference. Results apply to the ent, sampling dates are shown without a time component. In the orting: CAS Number = CAS registry number from database main or Work Order: HK1619151     re received in a chilled condition. nple(s) analysed on an as received basis. Result(s) reported on nple(s) are seceived, digested by in-house method E-ASTM D397 d and reported on a 1.5 soil / water extract.	sample(s) as submitted. Al see instances, the time com rtained by Chemical Abstra a dry weight basis. 74-09 prior to determination	1944 Fac +852 2810 2021 www.atsenviro.com	purposes. The completion date	of analysis is:
t Order eral Comment sport supersede ovided by the cli V/2-2016 OR = Limit of rep fic Comments fr Sample(s) w Sediment sar pH determine Total Nitroge	ATAL-DEGREMONT JOINT VENTURE HK1619151      Its     any previous report(s) with this reference. Results apply to the ent, sampling dates are shown without a time component. In the orting: CAS Number = CAS registry number from database main or Work Order: HK1619151     re received in a chilled condition. nple(s) analysed on an as received basis. Result(s) reported on nple(s) are seceived, digested by in-house method E-ASTM D397 d and reported on a 1.5 soil / water extract.	sample(s) as submitted. Al see instances, the time com rtained by Chemical Abstra a dry weight basis. 74-09 prior to determination	1944 Fac +852 2810 2021 www.atsenviro.com	purposes. The completion date	of analysis is:
Order eral Comment sport supersede svided by the cli V/2-2016 OR = Limit of rep fic Comments fr Sample(s) w Sediment sar pH determine Total Nitroge	ATAL-DEGREMONT JOINT VENTURE HK1619151      Its     any previous report(s) with this reference. Results apply to the ent, sampling dates are shown without a time component. In the orting: CAS Number = CAS registry number from database main or Work Order: HK1619151     re received in a chilled condition. nple(s) analysed on an as received basis. Result(s) reported on nple(s) are seceived, digested by in-house method E-ASTM D397 d and reported on a 1.5 soil / water extract.	sample(s) as submitted. Al see instances, the time com rtained by Chemical Abstra a dry weight basis. 74-09 prior to determination	1944 Fac +852 2810 2021 www.atsenviro.com	purposes. The completion date	of analysis is:
t Order eral Comment sport supersede ovided by the cli V/2-2016 OR = Limit of rep fic Comments fr Sample(s) w Sediment sar pH determine Total Nitroge	ATAL-DEGREMONT JOINT VENTURE HK1619151      Its     any previous report(s) with this reference. Results apply to the ent, sampling dates are shown without a time component. In the orting: CAS Number = CAS registry number from database main or Work Order: HK1619151     re received in a chilled condition. nple(s) analysed on an as received basis. Result(s) reported on nple(s) are seceived, digested by in-house method E-ASTM D397 d and reported on a 1.5 soil / water extract.	sample(s) as submitted. Al see instances, the time com rtained by Chemical Abstra a dry weight basis. 74-09 prior to determination	1944 Fac +852 2810 2021 www.atsenviro.com	purposes. The completion date	of analysis is:
t Order eral Comment sport supersede ovided by the cli V/2-2016 OR = Limit of rep fic Comments fr Sample(s) w Sediment sar pH determine Total Nitroge	ATAL-DEGREMONT JOINT VENTURE HK1619151      Its     any previous report(s) with this reference. Results apply to the ent, sampling dates are shown without a time component. In the orting: CAS Number = CAS registry number from database main or Work Order: HK1619151     re received in a chilled condition. nple(s) analysed on an as received basis. Result(s) reported on nple(s) are seceived, digested by in-house method E-ASTM D397 d and reported on a 1.5 soil / water extract.	sample(s) as submitted. Al see instances, the time com rtained by Chemical Abstra a dry weight basis. 74-09 prior to determination	1944 Fac +852 2810 2021 www.atsenviro.com	purposes. The completion date	of analysis is:



: 3 of 9 ATAL-DEGREMONT JOINT VENTURE

Analytical Results Sub-Matrix: SEDIMENT			Client sample ID	B1	B2	B3	54	B5
Sub-Matrix: SEDIMENT		Client ra	moling date / time	[15-MAY-2016]	[15-MAY-2016]	[15-MAY-2016]	B4 [15-MAY-2016]	[15-MAY-2016
Compound	CAS Number	LOR	Unit	HK1619151-001	HK1619151-002	HK1619151-003	HK1619151-004	HK1619151-00
EA/ED: Physical and Aggregate Properties								
EA002: pH Value		0.1	pH Unit	8.0	8.1	8.1	8.3	8.3
EA035B: Volatile Solids @ 550°C		1.0	%	8.7	8.6	7.6	6.7	7.3
EA055: Moisture Content (dried @ 103°C)		0.1	%	66.0	67.7	63.5	57.7	60.1
ED/EK: Inorganic Nonmetallic Parameters								
EK055: Ammonia as N	7664-41-7	10	mg/kg	18	13	11	<10	<10
EK059A: Nitrite + Nitrate as N (Sol.)		0.1	mg/kg	1.8	0.9	0.8	0.5	0.4
EK061A: Total Kjeldahl Nitrogen as N		20	mg/kg	1470	1510	1460	1160	1260
EK062A: Total Nitrogen as N		20	mg/kg	1470	1510	1460	1160	1260
EK067A: Total Phosphorus as P		20	mg/kg	596	644	603	527	519
EK082: Acid Volatile Sulphides (as S)		10	mg/kg	52	19	45	<10	46
EG: Metals and Major Cations								
EG020: Arsenic	7440-38-2	1	mg/kg	11	13	11	10	12
EG020: Barium	7440-39-3	0.5	mg/kg	59.1	59.8	52.6	43.0	46.8
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	53	51	46	40	45
EG020: Copper	7440-50-8	1	mg/kg	53	91	57	46	47
EG020: Lead	7439-92-1	1	mg/kg	56	60	50	44	49
EG020: Manganese	7439-96-5	0.5	mg/kg	773	518	486	429	478
EG020: Nickel	7440-02-0	1	mg/kg	31	27	25	22	25
EG020: Silver	7440-22-4	0.1	mg/kg	0.4	0.6	0.5	0.4	0.4
EG020: Vanadium	7440-62-2	10	mg/kg	55	47	43	38	45
EG020: Zinc	7440-66-6	1	mg/kg	155	166	142	123	134
EG020: Aluminium	7429-90-5	1	mg/kg	39500	36000	30600	29200	35100
EG020: Boron	7440-42-8	1	mg/kg	28	24	25	19	22
EG025: Iron	7439-89-6	10	mg/kg	38300	32400	31300	29600	33500
EG036: Mercury	7439-97-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2

Sub-Matrix: SEDIMENT			Client sample ID	B6	WSD1	WSD2	U2	NM6
		Client sa	mpling date / time	[15-MAY-2016]	[15-MAY-2016]	[15-MAY-2016]	[15-MAY-2016]	[15-MAY-2016
Compound	CAS Number	LOR	Unit	HK1619151-006	HK1619151-007	HK1619151-008	HK1619151-009	HK1619151-01
EA/ED: Physical and Aggregate Properties								
EA002: pH Value		0.1	pH Unit	8.2	8.1	8.2	9.4	8.6
EA035B: Volatile Solids @ 550°C		1.0	%	6.0	6.9	6.7	3.8	3.6
EA055: Moisture Content (dried @ 103°C)	-	0.1	%	55.9	55.9	54.4	28.0	30.4
ED/EK: Inorganic Nonmetallic Parameters								
EK055: Ammonia as N	7664-41-7	10	mg/kg	<10	12	11	<10	<10
EK059A: Nitrite + Nitrate as N (Sol.)		0.1	mg/kg	0.8	2.3	1.5	0.1	<0.1
EK061A: Total Kjeldahl Nitrogen as N		20	mg/kg	1140	1150	990	340	420
EK062A: Total Nitrogen as N		20	mg/kg	1140	1150	990	340	420
EK067A: Total Phosphorus as P		20	mg/kg	455	465	456	326	201
EK082: Acid Volatile Sulphides (as S)		10	mg/kg	12	14	<10	<10	<10
EG: Metals and Major Cations								
EG020: Arsenic	7440-38-2	1	mg/kg	9	8	10	9	7
EG020: Barium	7440-39-3	0.5	mg/kg	43.8	34.2	33.4	15.8	17.0
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	35	29	31	25	18
EG020: Copper	7440-50-8	1	mg/kg	38	29	29	11	10
EG020: Lead	7439-92-1	1	mg/kg	41	36	33	38	17
EG020: Manganese	7439-96-5	0.5	mg/kg	385	572	557	645	194
EG020: Nickel	7440-02-0	1	mg/kg	20	16	16	15	8
EG020: Silver	7440-22-4	0.1	mg/kg	0.3	0.3	0.2	<0.1	<0.1
EG020: Vanadium	7440-62-2	10	mg/kg	35	28	29	18	21
EG020: Zinc	7440-66-6	1	mg/kg	111	94	96	88	33
EG020: Aluminium	7429-90-5	1	mg/kg	27100	22800	22700	13900	11500
EG020: Boron	7440-42-8	1	mg/kg	16	17	21	19	8
EG025: Iron	7439-89-6	10	mg/kg	24700	21300	27800	51800	18400
EG036: Mercury	7439-97-6	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2



Page Number Client Work Order 5 of 9 ATAL-DEGREMONT JOINT VENTURE HK1619151 ALS Sub-Matrix: SEDIMENT Client sample ID NM1 [15-MAY-2016] Client sampling date / time LOR Unit HK1619151-011 CAS Number EA/ED: Physical and Aggregate Properties 0.1 pH Unit % EA002: pH Value EA035B: Volatile Solids @ 550°C 8.0 7.0 EA0358: Volatile Solids @ 550°C EA055: Moisture Content (dried @ 103°C) ED/EK: Inorganic Nonmetallic Parameters EK055: Amonia as N EK059A: Nitrite + Nitrate as N (Sol.) EK067A: Total Kjeldah Nitrogen as N EK062A: Total Nitrogen as N EK062A: Total Phosphorus as P 60.5 7664-41-7 mg/kg mg/kg mg/kg mg/kg mg/kg 11 0.8 10 20 20 20 20 0.8 1350 1350 491 EK082: Acid Volatile Sulphides (as S) 222 EK082: Acid Volatile Sulphides EG: Metals and Major Cations EG020: Arsenic EG020: Catomium EG020: Catomium EG020: Copper EG020: Lead EC020: Lead 7440-38-2 1 7440-39-3 0.5 ····-43-9 0.2 mg/kg 10 40.2 <0.2 38 36 7440-47-3 7440-50-8 1 7439-92-1 38 EG020: Manganese EG020: Nickel EG020: Silver EG020: Vanadium 0.5 7439-96-5 638 7440-02-0 22 0.3 1 0.1 10 1 1 1 7440-02-0 7440-02-2 7440-62-2 7440-66-6 36 107 EG020: Zinc EG020: Aluminium 27800 23 27500 7429-90-5 7429-90-5 7440-42-8 7439-89-6 7439-97-6 EG020: Administra EG020: Boron EG025: Iron 10 0.2 EG036: Mercury <0.2 EP: Aggregate Organics EP005: Total Organic Carbon 0.05 % 0.88

HitföllöllollNM1EAM55: Noisiture Content (dried @ 103°C)0.1%.00.559.6EA/ED: Physical and Agregate Properties (QC Lot: 4208154)8.08.0EA/ED: Physical and Agregate Properties (QC Lot: 4208153)%.08.78.3ED/EK: Inorganic Normetallic Parameters (QC Lot: 4208154)0.1mg/kg1.88.3ED/EK: Inorganic Normetallic Parameters (QC Lot: 4208154)0.1mg/kg1.88.3ED/EK: Inorganic Normetallic Parameters (QC Lot: 4201710)1.88.3ED/EK: Inorganic Normetallic Parameters (QC Lot: 4201713)1.0mg/kg4.81.8ED/EK: Inorganic Normetallic Parameters (QC Lot: 4215247)1.0mg/kg4.81.8ED/EK: Inorganic Normetallic Parameters (QC Lot: 421527)1.0mg/kg4.81.00ED/EK: Inorganic Normetallic Parameters (QC Lot: 421527)1.001.001.001.00ED/EK: Inorganic Normetallic Parameters (QC Lot: 421527)2.0mg/kg5.66.32ED/EK: Inorganic Normetallic Parameters (QC Lot: 421527)2.0mg/kg6.05.2ED/EK: Inorganic Normetallic Parameters (QC Lot: 421527)2.0mg/kg6.05.2ED/EK: Inorganic Normetallic Parameters (QC Lot: 421527)2.0mg/kg6.05.2EC: Metals and Major Cations (QC Lot: 4208154)EG035.									
Instrume         Other         Amende C. Concessional         Order Stand         Order Stand         Operational Stand <th></th> <th>cate (DUP) Report</th> <th></th> <th></th> <th></th> <th>4</th> <th>aboratory Duplicate (DUP) Re</th> <th>oort</th> <th></th>		cate (DUP) Report				4	aboratory Duplicate (DUP) Re	oort	
EA/ED: Physical and Aggregate Properties (QC Lot: 4208149)         0.1         %         66.0         65.7           H4/169151-001         B1         EA/856: Molture Content (dried @ 103°C)          0.1         %         66.0         66.7           EA/ED: Physical and Aggregate Properties (QC Lot: 4208154)          0.1         %         66.0         66.7           EA/ED: Physical and Aggregate Properties (QC Lot: 4208154)          0.1         pH Unit         6.0         6.0           EA/ED: Physical and Aggregate Properties (QC Lot: 4208155)          0.1         pH Unit         6.0         6.0           ED/EK: Inorganic Normetallic Parameters (QC Lot: 4208155)          0.1         mg/kg         1.8         1.8           ED/EK: Inorganic Normetallic Parameters (QC Lot: 4208155)          0.1         mg/kg         1.1         1.2           ED/EK: Inorganic Normetallic Parameters (QC Lot: 4208155)          1.0         mg/kg         4.6         4.1           ED/EK: Inorganic Normetallic Parameters (QC Lot: 4217342)          1.0         mg/kg         4.6         4.1           ED/EK: Inorganic Normetallic Parameters (QC Lot: 4217342)          1.0         mg/kg         4.6         4.1 <td< th=""><th></th><th>Client sample ID</th><th>Method: Compound</th><th>CAS Number</th><th>LOR</th><th></th><th></th><th>-</th><th>RPD (%)</th></td<>		Client sample ID	Method: Compound	CAS Number	LOR			-	RPD (%)
HettellerstondB1Ansets Musicure Content (ained @ 103°C)0.1%0.60.00.67.0HettellerstondNM1EA665: Musicure Content (ained @ 103°C)0.1PH Unit0.60.0EA/ED: Physical and Aggregate Properties (CC L cit: 24098154)0.1PH Unit0.60.0EA/ED: Physical and Aggregate Properties (CC L cit: 24098154)0.10%0.67.00.67.0EA/ED: Physical and Aggregate Properties (CC L cit: 24098155)0.10%0.67.00.67.0EMEI: Integrate Properties (CC L cit: 24098155)0.10mg/lsg1.8.01.8.0ED/EK: Integrate Properties (CC L cit: 24098155)0.10mg/lsg1.8.01.8.0ED/EK: Integrate Properties (CC L cit: 24098155)0.10mg/lsg1.8.01.8.0ED/EK: Integrate Properties (CC L cit: 2409874)0.10mg/lsg1.8.01.8.0ED/EK: Integrate Comporties (CC L cit: 24197674)EX062: Actil Votalis Bulphides (as S)0.10mg/lsg1.8.01.8.00ED/EK: Integrate Coll Cit: 24192451.8.01.8.001	A/FD: Physical and	1 Aggregate Properties							10 2 170
Heifing IS-011NM1EA062: Number Content (divid @ 103°C)0.1%.0.0559.6EA/ED: Physical and Agregate Properties (QC Lot: 420815)8.08.0EA/ED: Physical and Agregate Properties (QC Lot: 420813)%.01%.078.08.0EA/ED: Physical and Agregate Properties (QC Lot: 420815)%.01%.078.08.0ED/EV: Ioroganic Normetallic Parameters (QC Lot: 420815)0.1mg/kg1.88.0ED/EV: Ioroganic Normetallic Parameters (QC Lot: 420170)0.1mg/kg1.88.0ED/EV: Ioroganic Normetallic Parameters (QC Lot: 420171)0.1mg/kg4.61.0ED/EV: Ioroganic Normetallic Parameters (QC Lot: 421243)1.0mg/kg4.61.0ED/EV: Ioroganic Normetallic Parameters (QC Lot: 421243)1.0mg/kg4.61.00ED/EV: Ioroganic Normetallic Parameters (QC Lot: 421357)1.001.001.001.00ED/EV: Ioroganic Normetallic Parameters (QC Lot: 421357)1.001.001.001.00ED/EV: Ioroganic Normetallic Parameters (QC Lot: 421357)2.0mg/kg6.020.021.00ED/EV: Ioroganic Normetallic Parameters (QC Lot: 421357)2.0mg/kg0.020.020.02ED/EV: Ioroganic Normetallic Parameters (QC Lot: 421357)2.0mg/kg0.020.020.02ED/EV: Iorog					0.1	%	66.0	65.7	0.4
EA/ED: Physical and Aggregate Properties (QC Loi: 4208154)		NM1							1.4
Heritalistical Heritalistical Callestical Aggregate Properties (QC Lot: 420933)EA0258: Volatile Solids @ 550°C0.10M8.08.0EDIE: Itorganic Heritalistic Parameters (QC Lot: 4208150)1.0%8.08.08.0EDIE: Itorganic Normalia EDIE: Itorganic Normalia Heritalistic Parameters (QC Lot: 420170)00.1mg/kg8.08.08.0EDIE: Itorganic Normalia EDIE: Itorganic Normalia Heritalistic Parameters (QC Lot: 421240710)0mg/kg8.08.01.0EDIE: Itorganic Normalers (QC Lot: 4212840)EX0632. Xindiolas (as 5)10.0mg/kg8.04.0EDIE: Itorganic Normalia EDIE: Itorganic Normalers (QC Lot: 4212840)EX0614. Total Kindion (as 5)10.0mg/kg14.0010.00EDIE: Itorganic Normalic Parameters (QC Lot: 4212840)EX0614. Total Kindion (as 5)20.0mg/kg9.020.0210.00EDIE: Itorganic Normalic Parameters (QC Lot: 4212840)20.0mg/kg9.020.020.020.020.02EDIE: Itorganic Normalic Parameters (QC Lot: 4212840)20.0mg/kg9.020.02 </td <td>A/ED: Physical and</td> <td>Aggregate Properties</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	A/ED: Physical and	Aggregate Properties							
EA/ED: Physical and Agreegate Properties (QC Lot: 42033)         Image: Content of Conten					0.1	pH Unit	8.0	80	0.0
Hk:169915-001         B1         EADSBE: Volumite Solids @ 550°C          1.0         %         8.7         8.3           ED/EK: Inorganic Normetallic Parameters (QC Lot: 420710)         EX089A. Nutrite + Nutrate as N(Sol.)          0.1         mg/kg         1.8         1.8           ED/EK: Inorganic Normetallic Parameters (QC Lot: 4212246)         EX085A. Numonia as N         769441-7         0         mg/kg         4.8         1.2           ED/EK: Inorganic Normetallic Parameters (QC Lot: 4212246)         EX085A. Numonia as N          30.0         mg/kg         4.6         4.1           ED/EK: Inorganic Normetallic Parameters (QC Lot: 4212246)         EX085A. Total Kjeldahl Nitrogen as N          30.0         mg/kg         4.67         1600           ED/EK: Inorganic Normetallic Parameters (QC Lot: 4215827)         EX085A. Total Kjeldahl Nitrogen as N          20         mg/kg         4.67         4.000           ED/EK: Inorganic Normetallic Parameters (QC Lot: 420782)         EX087A. Total Kjeldahl Nitrogen as N          20         mg/kg         4.020         4.020         4.020         4.020         4.020         4.020         4.020         4.020         4.02         4.02         4.02         4.02         4.02         4.02         4.02         4.02						P			
ED/EK: Inorganic Normetallic Parameters (QC Lot: 4208165)         International Content of Content o					10	94	8.7	83	4.7
HK:169191-001         B1         (Modesa - Nitrite + Nitrate as N (sol.)          0.1         mg/kg         1.8         1.8           ED/EK: Inorganic Normetallic Parameters (OC Lot: 4212240         EK065: Annonia as N         7664-417         0.1         mg/kg         11         12           ED/EK: Inorganic Normetallic Parameters (OC Lot: 4212240         EK082: Acid Volatile Sulphides (as S)          10         mg/kg         46         41           ED/EK: Inorganic Normetallic Parameters (OC Lot: 4212240         EK082: Acid Volatile Sulphides (as S)          10         mg/kg         460         410           ED/EK: Inorganic Normetallic Parameters (OC Lot: 421282)         EK0874: Total Kjedahi Nitrogen as N          20         mg/kg         596         632           ED/EK: Inorganic Normetallic Parameters (OC Lot: 42078)         EK0874: Total Kjedahi Nitrogen as N          20         mg/kg         602         632           ED/EK: Inorganic Normetallic Parameters (OC Lot: 420780)         EK0874: Total Kjedahi Nitrogen as N          20         mg/kg         602         602         602         602         602         602         602         602         602         602         602         602         602         602         602         602         602					1.0	70	5.7	0.0	4.7
ED/EK: Inorganic Normetallic Parameters (QC Lot: 4210710)         NM1         EX065: Ammonia as N         7664-417         10         mg/kg         11         12           HK1619151-001         NM1         EX065: Ammonia as N         7664-417         10         mg/kg         11         12           HK1619151-005         B5         EX082: Acid Volatile Sulphides (as S)          10         mg/kg         46         41           ED/EK: Inorganic Normetallic Parameters (QC Lot: 421362)         EX061: Acid Kjeldah Nitrogen as N          20         mg/kg         566         62           ED/EK: Inorganic Normetallic Parameters (QC Lot: 4213627)         EX061: Acid Kjeldah Nitrogen as N          20         mg/kg         506         62         602					0.1	malka	18	1.8	0.0
HK1619151-011         NM1         EK056: Ammonia as N         7684-41-7         10         mg/kg         11         12           ED/EK: Inorganic Normetallic Parameters (QC Lot: 421224)         EK002: Acid Volatile Sulphides (as S)          10         mg/kg         46         41           ED/EK: Inorganic Normetallic Parameters (QC Lot: 421362)         EK062: Acid Volatile Sulphides (as S)          20         mg/kg         460         41000           ED/EK: Inorganic Normetallic Parameters (QC Lot: 4213628)         EK067A: Total Kjeldah Nitrogen as N          20         mg/kg         560         562           EG: Metals and Major Cations (QC Lot: 4207892         EG038: Mercury         7439-67         0.2         mg/kg         40.2         40.2           HK1619151-001         B1         EG038: Mercury         7439-67         0.2         mg/kg         32400         34700           EG: Metals and Major Cattors (QC Lot: 4207893         EG22: Iron         7439-69-6         10         mg/kg         32400         34700           EG: Metals and Major Cattors (QC Lot: 4207894         EG202: Silver         740-22-4         0.1         mg/kg         69.8         56.8           EG: Metals and Major Cattors (QC Lot: 4207894         EG202: Silver         740-47.3         1         mg/kg <td></td> <td></td> <td></td> <td></td> <td>0.1</td> <td>mg/kg</td> <td>1.0</td> <td>1.0</td> <td>0.0</td>					0.1	mg/kg	1.0	1.0	0.0
ED/EK: Inorganic Nonmetallic Parameters (QC Lot: 4212246)         Volume and the second s				7664 44 7	10	malka	11	12	9.3
HK:1619151-002         B5         EK082: Acid Volatile Sulphides (as S)				/004-41-/	10	mg/kg		12	9.3
Bit         Exception         Section					40		40		
Hk1(16)151-001         B1         EK0651A: Todal Kjeldahi Nitrogen as N					10	mg/kg	46	41	11.1
ED/EK: Inorganic Normetallic Parameters (QC Lot: 4213627)         Constraint Normetallic Parameters (QC Lot: 4213627)           HK1691951-001         B1         EK067A: Total Phosphorus as P          20         mg/kg         596         632           ES: Metals and Major Cattors (QC Lot: 4207892)         EG038: Mercury         7439-07-6         0.2         mg/kg         <0.2									
Hit1819151-001         B1         EK087A: Total Phosphorus as P					20	mg/kg	1470	1600	8.6
EG: Metals and Major         Cations         QCL Lot: 4207892           HK1619151-002         B2         E0393: Mercury         7439-97-6         0.2         mg/kg         <0.2									
HK1619151-002         B2         E0393: Mercury         7439-97-6         0.2         mg/kg         4-0.2         4-0.2           HK1619151-011         NM1         E0303: Mercury         7439-97-6         0.2         mg/kg         4-0.2         4-0.2           ES: Metals and Major Cattors (OC Lot: 4207893)         E022: Iron         7439-97-6         10         mg/kg         32400         34700           EG: Metals and Major Cattors (OC Lot: 4207893)         E020: Silver         7440-82-4         0.1         mg/kg         6.0         9.0         34700           EG: Metals and Major Cattors (OC Lot: 4207893)         E020: Silver         7440-224         0.1         mg/kg         6.0         9.0         9.0         0.5         9.0         9.0         0.5         9.0         9.0         9.0         0.5         9.0         9.0         0.5         9.0         9.0         0.5         9.0         9.0         9.0         0.5         9.0         9.0         0.5         9.0         9.0         0.5         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0 <td< td=""><td>HK1619151-001</td><td>B1</td><td>EK067A: Total Phosphorus as P</td><td></td><td>20</td><td>mg/kg</td><td>596</td><td>632</td><td>5.7</td></td<>	HK1619151-001	B1	EK067A: Total Phosphorus as P		20	mg/kg	596	632	5.7
HK1819151-011         NM1         EG38: Mercury         7439-87         0.2         mg/kg         <0.2         <0.2           EG3: Mercury         7439-89-6         0.2         0.2         mg/kg         0.2         <0.2			07892)						
EG: Metals and Major Cations (QC Lot: 4207893)         Edex minimum set (QC Lot: 4207893)         Edex (PA	HK1619151-002	B2	EG036: Mercury	7439-97-6	0.2	mg/kg	<0.2	<0.2	0.0
HK1619151-002         B2         EG025: Iron         7439-89-6         10         mg/kg         32400         34700           EG1: Metals and Major         EG020: Silver         7440-82-4         0.1         mg/kg         0.6         0.5           HK1619151-002         B2         EG020: Silver         7440-82-4         0.1         mg/kg         0.6         0.5           EG020: Cadmium         7440-39-3         0.5         mg/kg         6.98.8         58.8           EG020: Strenic         7440-39-3         0.5         mg/kg         518         512           EG020: Arsenic         7440-38-5         0.5         mg/kg         518         512           EG020: Contonium         7440-47-3         1         mg/kg         516         48           EG020: Contonium         7440-47-3         1         mg/kg         516         48           EG020: Contonium         7440-47-3         1         mg/kg         616         59           EG020: Contonium         7440-47-3         1         mg/kg         616         59           EG020: Contonium         7440-62-0         1         mg/kg         27         25           EG020: Vanadium         7440-62-2         10         mg	HK1619151-011	NM1	EG036: Mercury	7439-97-6	0.2	mg/kg	<0.2	<0.2	0.0
EG: Metals and Major Cations (QC Lot: 4207894)         Educo: Silver         7440-224         0.1         mg/kg         0.6         0.5           HK1619151-002         B2         EG020: Silver         7440-39.3         0.5         mg/kg         <0.2	EG: Metals and Maje	or Cations (QC Lot: 42	07893)						
HK1619151-002         B2         EG020: Silver         7440-224         0.1         mg/kg         0.6         0.5           EG020: Cadmium         7440-349         0.2         mg/kg         <0.2	HK1619151-002	B2	EG025: Iron	7439-89-6	10	mg/kg	32400	34700	6.8
EG20: Cadmium         7440-43-9         0.2         mg/kg         <0.2         <0.2           EG20: Cadmium         740-93-3         0.5         mg/kg         59.8         55.8           EG20: Cadmium         740-93-3         0.5         mg/kg         51.8         512           EG20: Arsenic         740-93-5         0.5         mg/kg         51.8         512           EG20: Arsenic         740-94-3         1         mg/kg         51.8         512           EG20: Arsenic         740-47-3         1         mg/kg         51.8         512           EG20: Chromium         740-47-3         1         mg/kg         51.8         48.4           EG20: Chromium         740-67-3         1         mg/kg         60.0         59.4           EG20: Chromium         740-02-0         1         mg/kg         60.0         59.4           EG20: Vanadium         740-02-0         1         mg/kg         60.0         59.4           EG20: Vanadium         740-02-0         1         mg/kg         60.156.1         50.5           EG20: Vanadium         740-02-2         10         mg/kg         0.3         0.3           EG20: Cardinium         740-02-24         0.1 </td <td>EG: Metals and Maje</td> <td>or Cations (QC Lot: 42</td> <td>07894)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	EG: Metals and Maje	or Cations (QC Lot: 42	07894)						
EG020: Bartum         7440-39-3         0.5         mg/kg         59.8         58.8           EG020: Manganese         7439-66-5         0.5         mg/kg         518         512           EG020: Strenic         7409-65-5         0.5         mg/kg         518         512           EG020: Strenic         7409-65-5         1         mg/kg         518         512           EG020: Chromium         7440-47-3         1         mg/kg         51         48           EG020: Chromium         740-47-3         1         mg/kg         600         59           EG020: Chromium         740-94-7         1         mg/kg         600         59           EG020: Clash         7499-92-1         1         mg/kg         600         59           EG020: Nickel         740-02-0         1         mg/kg         600         59           EG020: Vanadium         7440-62-2         10         mg/kg         156         156           EG020: Vanadium         7440-62-2         10         mg/kg         0.3         0.3           EG020: Vanadium         7440-43-9         0.4         142.2         -02         -02           EG020: Clandium         7440-24-9         0.5	HK1619151-002	B2	EG020: Silver	7440-22-4	0.1	mg/kg	0.6	0.5	0.0
HK1619151-011         NM1         EG020: Manganese         7439-96-5         0.5         mg/kg         518         512           EG020: Arsenic         7440-36-2         1         mg/kg         1.3         1.2           EG020: Chromium         7440-36-2         1         mg/kg         518         48           EG020: Chromium         7440-36-3         1         mg/kg         91         480           EG020: Chromium         7440-36-3         1         mg/kg         600         59           EG020: Chromium         7440-46-3         1         mg/kg         600         59           EG020: Nicket         7440-40-0         1         mg/kg         27         25           EG020: Vanadium         7440-62-2         10         mg/kg         47         43           HK1619151-011         MM1         EG020: Silver         7440-62-2         0.1         mg/kg         0.3         0.3           EG020: Candium         7440-34-9         0.5         mg/kg         40.2         40.2			EG020: Cadmium	7440-43-9	0.2	mg/kg	<0.2	<0.2	0.0
HK1619151-011         NM1         EG202: Rarum         7440-38-2         1         mg/kg         13         12           HK1619151-011         NM1         EG202: Chromium         7440-38-2         1         mg/kg         51         48           HK1619151-011         R         GG202: River         7440-68-2         1         mg/kg         600         59           HK1619151-011         R         Mg/kg         600         59         50         616         166         16			EG020: Barium		0.5	mg/kg	59.8	58.8	1.6
EG020: Chromitum         7440-47-3         1         mg/kg         51         48           EG020: Copper         7440-60-8         1         mg/kg         91         80           EG020: Copper         7440-60-8         1         mg/kg         600         59           EG020: Nickel         7409-02-0         1         mg/kg         600         59           EG020: Nickel         740-02-0         1         mg/kg         27         25           EG020: Nickel         740-06-2         10         mg/kg         160         156           EG020: Vinadium         740-06-2         10         mg/kg         0.3         0.3           EG020: Candium         7440-34-9         0.1         mg/kg         0.0.3         0.3           EG020: Candium         7440-34-9         0.5         mg/kg         40.2         42.2			EG020: Manganese			mg/kg	518		1.3
HK1819151-011         NM1         EG202: Comper EG202: Sinckel         7440-50-8 (740)-62-1         1         mg/kg         91         80           HK1819151-011         Mg/kg         600         59         59         50         59         50         59         50         59         50         59         50			EG020: Arsenic			mg/kg			0.0
EG02: Lead         7439-82.1         1         mg/kg         60         59           EG020: Nickel         740-02.0         1         mg/kg         27         25           EG020: Nickel         740-06.6         1         mg/kg         16         16           EG020: Vanadium         7440-06.2         10         mg/kg         47         43           EG020: Vanadium         7440-06.2         10         mg/kg         0.3         3           EG020: Candmium         7440-04.3         0.2         mg/kg         -0.2         -0.2           EG020: Silver         740-02.4         0.1         mg/kg         0.3         -0.2           EG020: Cadmium         740-03.4         0.5         mg/kg         -0.2         -0.2						mg/kg			5.3
EG020: Nickel         7440-020         1         mg/kg         27         25           EG020: Zinc         740-066         1         mg/kg         166         156           EG020: Vanadium         740-062         0         mg/kg         47         43           HK1619151-011         NM1         EG020: Silver         740-024         0.1         mg/kg         0.3         0.3           EG020: Candium         740-03-9         Q2         mg/kg         -0.2         -0.2         -0.2           EG020: Barlum         740-03-3         0.5         mg/kg         40.2         42.2			EG020: Copper						13.3
HK1619151-011         NM1         EG020: Since         7440-66-2         1         mg/kg         166         156           EG020: Vanadium         7440-66-2         10         mg/kg         47         43           HK1619151-011         MM1         EG020: Silver         7440-42-4         0.1         mg/kg         0.3         0.3           EG020: Cadmium         7440-43-9         0.2         mg/kg         <0.2			EG020: Lead						0.0
HK1619151-011 NM1 EG020: 'anadium 7440-62-2 10 mg/kg 47 43 HK1619151-011 NM1 EG020: Silver 7440-22-4 0.1 mg/kg 0.3 0.3 EG020: Cadmium 7440-39 0.2 mg/kg <0.2 <0.2 EG020: Barlum 7440-39-3 0.5 mg/kg 40.2 42.2									5.5
HK1619151-011 NM1 EG020: Silver 7440-224 0.1 mg/kg 0.3 0.3 EG020: Cadmium 7440-439 0.2 mg/kg <0.2 <0.2 EG020: Barlum 7440-393 0.5 mg/kg 40.2 42.2			EG020: Zinc						6.0
EG20: Cadmium         7440-43-9         0.2         mg/kg         <0.2         <0.2           EG020: Barium         7440-39-3         0.5         mg/kg         40.2         42.2									7.2
EG020: Barlum 7440-39-3 0.5 mg/kg 40.2 42.2	HK1619151-011	NM1							0.0
									0.0
					0.0				4.6
EG020: Manganese /439-96-5 0.5 mg/kg 638 632 EG020: Arsenic 7440-38-2 1 mg/kg 10 10			EG020: Manganese	7439-96-5	0.5	mg/kg	638	632	0.8



.

k Order	HK1619151												ALS
latrix: SOIL										atory Duplicate (DUP)			
Laboratory sample ID	Client sample ID	Method: Compos	und			CAS Number	LOR		Unit	Original Result	Duplicat	e Result	RPD (%)
EG: Metals and Ma	jor Cations (QC Lot: 4	207894) - Continued											
HK1619151-011	NM1	EG020: Chro	mium			7440-47-3	1		ng/kg	38	3		3.7
		EG020: Copp				7440-50-8	1		ng/kg	36	3		2.8
		EG020: Lead				7439-92-1	1		ng/kg	38	4	-	5.8
		EG020: Nicke	el			7440-02-0	1		ng/kg	22	2	-	0.0
		EG020: Zinc				7440-66-6	1		ng/kg	107	11		3.1
		EG020: Vana	dium			7440-62-2	10	r	ng/kg	36	3	7	3.6
	ijor Cations (QC Lot: 42												
HK1619151-002	B2	EG020: Alum	inium			7429-90-5	1		ng/kg	36000	370	00	2.6
	jor Cations (QC Lot: 42												
HK1619151-002	B2	EG020: Boro	n			7440-42-8	1	r	ng/kg	24	2	5	0.0
	anics (QC Lot: 421136	3)											
HK1618137-113	Anonymous	EP005: Total					0.05		%	0.86	8.0		0.0
HK1619530-004	Anonymous	EP005: Total	Organic Ca	rbon			0.05		%	2.00	2.3	32	14.9
	anics (QC Lot: 421136	4)											
HK1619516-002	Anonymous												
lethod Blank (M	B), Laboratory Contr	EP005: Total			, ,	DCS) Rep	0.05	Laboratory Co	% ntrol Spike (LCS) and I	0.90	0.9		2.0
Method Blank (M				ory Control S	, ,		ort				ike Duplicate (DC	S) Report	2.0
Method Blank (M Natix: SOIL				ory Control S	, ,	DCS) Rep	ort e		ntrol Spike (LCS) and I	aboratory Control Sp	ike Duplicate (DC	S) Report	
Method Blank (M latix: SOIL Method: Compound		rol Spike (LCS) and CAS Number	d Laborat	ory Control Sp Method Blank (MB)	Report	DCS) Rep	ort e	Spike Re	ntrol Spike (LCS) and I	aboratory Control Sp Recovery	ike Duplicate (DC Limits (%)	S) Report	PD (%)
Method Blank (M latrix: SOIL Method: Compound ED/EK: Inorganic M	B), Laboratory Contr	rol Spike (LCS) and CAS Number	d Laborat	ory Control Sp Method Blank (MB)	Report	DCS) Rep	e ration	Spike Re	ntrol Spike (LCS) and I	aboratory Control Sp Recovery	ike Duplicate (DC Limits (%)	S) Report	PD (%)
Method Blank (M latix: SOIL Method: Compound ED/EK: Inorganic M EK059A: Nitrite + Nit	B), Laboratory Contr	CAS Number (QC Lot: 4208155)	d Laborat	ory Control Sp Method Blank (MB) Unit	Report Result	DCS) Rep Spik	e ration	Spike Re LCS	ntrol Spike (LCS) and I covery (%) DCS	aboratory Control Sp Recovery Low	ike Duplicate (DO Limits (%) High	:S) Report R Value	PD (%) Control Lin
Method Blank (M Inthi: SOIL Method: Compound ED/EK: Inorganic N EK059A: Nitrite + Nit ED/EK: Inorganic N	B), Laboratory Contr Jonmetallic Parameters rate as N (Sol.) Jonmetallic Parameters	CAS Number (QC Lot: 4208155)	d Laborat	ory Control Sp Method Blank (MB) Unit	Report Result	DCS) Rep Spik	e	Spike Re LCS	ntrol Spike (LCS) and I covery (%) DCS	aboratory Control Sp Recovery Low	ike Duplicate (DO Limits (%) High	:S) Report R Value	PD (%) Control Lim
Method Blank (M letits: SOIL Method: Compound ED/EK: Inorganic N EK059A: Nitrite + Nit ED/EK: Inorganic N EK056: Ammonia as	B), Laboratory Contr Jonmetallic Parameters rate as N (Sol.) Jonmetallic Parameters N	CAS Number GQC Lot: 4208155) (QC Lot: 4210710) 7664-41-7	LOR 0.1	ory Control Sp Method Blank (MB) Unit mg/kg	Report Result <0.1	(DCS) Rep Spik Concent 2 mg/	e	Spike Re LCS	ntrol Spike (LCS) and I covery (%) DCS	aboratory Control Sp Recovery Low 85	like Duplicate (DC Limits (%) High 115	:S) Report R Value	PD (%) Control Lim
Method Blank (M latix: SOIL Method: Comoound ED/EK: Inorganic N EK059A: Nitrite + Nit ED/EK: Inorganic N EK055: Ammonia as ED/EK: Inorganic N	B), Laboratory Contr Jonmetallic Parameters rate as N (Sol.) Jonmetallic Parameters N	CAS Number GQC Lot: 4208155) (QC Lot: 4210710) 7664-41-7	LOR 0.1	ory Control Sp Method Blank (MB) Unit mg/kg	Report Result <0.1	(DCS) Rep Spik Concent 2 mg/	bort e ration kg	Spike Re LCS	ntrol Spike (LCS) and I covery (%) DCS	aboratory Control Sp Recovery Low 85	like Duplicate (DC Limits (%) High 115	:S) Report R Value	PD (%) Control Lim
Method Blank (M latis: SOIL ED/EK: Inorganic N EK059A: Nitrite + Nit ED/EK: Inorganic N EK065: Ammonia as EK065: Ammonia as EK065: Anid Volatile	B), Laboratory Contr Nonmetallic Parameters rate as N (Sol.) Nonmetallic Parameters N Sulphides (as S)	CAS Number GAS Number 6 (QC Lot: 4208155)  6 (QC Lot: 4210710) 7664-41-7 7664-41-7 (QC Lot: 4212248) 	0.1	ory Control Sg Method Blank (MB) Unit mg/kg mg/kg	Report Rosult <0.1 <1	(DCS) Rep Spik Concent 2 mg/	bort e ration kg	Spike Re LCS 101 106	ntrol Spike (LCS) and I covery (%) DCS	Recovery Low 85 89	like Duplicate (DC Limits (%) High 115 113	S) Report R Value	PD (%) Control Lin
Method Blank (M Iattis: SOIL Method: Compound ED/EK: Inorganic N EK055A: Nitrite + Nit ED/EK: Inorganic N EK055: Ammonia as ED/EK: Inorganic N	B), Laboratory Contr Jonmetallic Parameters Trate as N (Sol.) Jonmetallic Parameters N Jonmetallic Parameters Sulphides (as S)	CAS Number GAS Number 6 (QC Lot: 4208155)  6 (QC Lot: 4210710) 7664-41-7 7664-41-7 (QC Lot: 4212248) 	0.1	ory Control Sj Method Blank (MB) Unit mg/kg mg/kg mg/kg	Report Rosult <0.1 <1	(DCS) Rep Spik Concent 2 mg/	e ration kg	Spike Re LCS 101 106	ntrol Spike (LCS) and I covery (%) DCS	Recovery Low 85 89	like Duplicate (DC Limits (%) High 115 113	S) Report R Value	PD (%) Control Lin
Method Blank (M Method: Comound EDDEK: Inorganic D EK059A: Nitrite + Nit DDEK: Inorganic N EK065: Ammonia as ED/EK: Inorganic N EK082: Acid Volatile DEK08: Inorganic N EK061A: Total Kjeld	B), Laboratory Contr Jonmetallic Parameters rate as N (Sol.) Jonmetallic Parameters N Nonmetallic Parameters Sulphides (as S) Jonmetallic Parameters ahi Nitrogen as N	rol Spike (LCS) and CAS Number 6 (QC Lot: 4208155) 7664-41.7 7664-41.7 6 (QC Lot: 4212246)  6 (QC Lot: 4213246) 	0.1	ory Control Sg Method Blank (MB) Unit mg/kg mg/kg	Report	(DCS) Rep Spik Concent 2 mg/ 5 mg/ 9.32 m	e ration kg	Spike Re LCS 101 106 86.0	ntrol Splike (LCS) and Id CCOVORY (%) DCS	aboratory Control Spa Recovery Low 85 89 74	ike Duplicate (DC Limits (%) High 115 113 112	S) Report R Value	PD (%) Control Lin
Method Blank (M Method: Comound DEVEK: Inorganic N EK059A: Nithte + Nit EDVEK: Inorganic N EK050: Ammonia as DEVEK: Inorganic N EK082: Acid Volatile DEVEK: Inorganic N EK082: Acid Volatile DEVEK: Inorganic N	B), Laboratory Contr Nonmetallic Parameters rate as N (Sol.) Jonmetallic Parameters Sulphides (as S) Jonmetallic Parameters Sulphides (as S) Jonmetallic Parameters	rol Spike (LCS) and CAS Number 6 (QC Lot: 4208155) 7664-41.7 7664-41.7 6 (QC Lot: 4212246)  6 (QC Lot: 4213246) 	LOR 0.1 1 20	ory Control Si Method Blank (MB) Unit mg/kg mg/kg mg/kg	Report         Rosult           <0.1	(DCS) Rep Spik Concent 2 mg/ 5 mg/ 9.32 mg	e e ration kg grkg grkg	Spike Re LCS 101 106 86.0 104	ntrol Splike (LCS) and Id CCOVORY (%) DCS	aboratory Control Sp Recovery Low 85 89 74 85	like Duplicate (DC Limits (%) High 115 113 112 115	S) Report R Value	PD (%) Control Lin
Aethod Blank (M Method: Compound ED/EK: Inorganic N EX058A: Nitrite + Ni ED/EK: Inorganic N EX058: Ammonia as ED/EK: Inorganic N EX082: Acid Volatile ED/EK: Inorganic N EX061A: Total Kjeld ED/EK: Inorganic N	B), Laboratory Contr Jonmetallic Parameters Trate as N (Sol.) Jonmetallic Parameters N Jonmetallic Parameters Jonmetallic Parameters Jonmetallic Parameters Jonus as P	CAS Number CAS Number (QC Lot: 4208155) (QC Lot: 4208157) (QC Lot: 4217010) 7664-41-7 (QC Lot: 4213626) (QC Lot: 4213626) (QC Lot: 4213627) (QC Lot: 421367) (QC Lot: 421367) (QC Lot: 421367) (QC Lot: 42167) (Q	0.1	ory Control Sj Method Blank (MB) Unit mg/kg mg/kg mg/kg	Report	(DCS) Rep Spik Concent 2 mg/ 5 mg/ 9.32 m	e e ration kg grkg grkg	Spike Re LCS 101 106 86.0	ntrol Splike (LCS) and I covery (%) DCS	aboratory Control Spa Recovery Low 85 89 74	ike Duplicate (DC Limits (%) High 115 113 112	S) Report R Value	PD (%) Control Lin 
Method Blank (M Method: Comosund ED/EK: Inorganic N EX059A: Nitrite + Ni ED/EK: Inorganic N EX059A: Nitrite + Ni EX059A: Nitrite + Ni EX059A: Anorganic N EX059A: Anorganic N EX057A: Total Yeld EX067A: Total Phos EG: Metals and Ma	B), Laboratory Contr Nonmetallic Parameters rate as N (Sol.) Jonmetallic Parameters Sulphides (as S) Jonmetallic Parameters Sulphides (as S) Jonmetallic Parameters	rol Spike (LCS) and CAS Number 4 (QC Lot: 4208155) 7664-41.7 5 (QC Lot: 4212246) 6 (QC Lot: 4213626) 6 (QC Lot: 4213626) 6 (QC Lot: 4213627) 707892)	LOR 0.1 1 20 20	ory Control SJ Method Blank (MB) Unit mg/kg mg/kg mg/kg mg/kg	Report           <0.1	DCS) Rep Spik Concent 2 mg/ 9.32 mg/ 1000 m 695 mg	e entrinon entrinon entrinon entrinon entrinon entrinon entrinon entrinon entrino entr	Spike Re LCS 101 106 86.0 104 87.8	ntrol Splike (LCS) and I covery (%) DCS	Laboratory Control Sp Recovery Low 85 89 74 85 85	ike Duplicate (DC Limits (%) High 115 113 112 115 115	S) Report R Value	PD (%) Control Lim
Method Blank (M Method: Comound DDFK: Inorganic N EK059A: Nitrite + Nil DDFK: Inorganic N EK059: Ammonia as DDFK: Inorganic N EK082: Acid Volatile DDFK: Inorganic N EK061A: Total Kjeld ED/EK: Inorganic N EK061A: Total Kjeld ED/EK: Inorganic N EK061A: Total Kjeld ED/EK: Inorganic N	B), Laboratory Contr Ionmetallic Parameters rate as N (Sol.) Ionmetallic Parameters N Ionmetallic Parameters Sulphides (as S) Ionmetallic Parameters Ionmetallic Parameters horus as N Ionmetallic Parameters phorus as P Jor Cations (QC Lot: 42)	rol Spike (LCS) and CAS Number 6 (QC Lot: 4208155) 7664-41-7 6 (QC Lot: 4217246) 6 (QC Lot: 4212246) 6 (QC Lot: 4213627) 6 (QC Lot: 4213627) 7439-97-6	0.1 1 20	ory Control Si Method Blank (MB) Unit mg/kg mg/kg mg/kg	Report         Rosult           <0.1	(DCS) Rep Spik Concent 2 mg/ 5 mg/ 9.32 mg	e entrinon entrinon entrinon entrinon entrinon entrinon entrinon entrinon entrino entr	Spike Re LCS 101 106 86.0 104	strol Spike (LCS) and L covery (%) DCS	aboratory Control Sp Recovery Low 85 89 74 85	like Duplicate (DC Limits (%) High 115 113 112 115	is) Report R Value	PD (%6) Control Lim 
Method Blank (M Method: Compound ED/EK: Inorganic N EX059A: Niitrite + Nii ED/EK: Inorganic N EX055: Ammonia as ED/EK: Inorganic N EX062: Acid Volatile ED/EK: Inorganic N EX0621A: Total Phose ED/EK: Inorganic N EX067A: Total Phose EG/EK: Inorganic N EX067A: Total Phose EG: Metals and Ma EG039: Mercury EG: Metals and Ma	B), Laboratory Contr Jonmetallic Parameters Trate as N (Sol.) Jonmetallic Parameters N Jonmetallic Parameters Jonmetallic Parameters Jonmetallic Parameters Jonus as P	CAS Number CAS Number (QC Lot: 4208155) (QC Lot: 4210710) 7664-41-7 (QC Lot: 4212246) (QC Lot: 4213626) (QC Lot: 4213626) (QC Lot: 4213627) (QC Lot: 421367) (QC Lot: 421367)	0.1 1 20 20 0.02	ory Control SJ Method Blank (MB) Unit mg/kg mg/kg mg/kg mg/kg mg/kg	Report           <0.1	DCS) Rep Spik Concent 2 mg/ 9.32 mg/ 1000 m 695 mg	e entrinon entrinon entrinon entrinon entrinon entrinon entrinon entrinon entrino entr	Spike Rec LCS 101 106 86.0 104 87.8 98.2	Introl Spike (LCS) and L COVERY (%) DCS	aboratory Control Sp Recovery Low 855 89 74 85 85 85	ike Duplicate (DC Limits (%) High 115 113 112 115 115 115	S) Report R Value	PD (%) Control Lin
Method Blank (M Method: Comosund ED/EK: Inorganic N EX689A: Nitrite + Ni EX689A: Nitrite + Ni EX689: Ammonia as ED/EK: Inorganic N EX682: Acid Vlattle EX687A: Total Kjeld ED/EK: Inorganic N EX687A: Total Phos EG: Metals and Ma EG036: Mercury EG: Metals and Ma EG036: Mercury	B), Laboratory Contr Jonmetallic Parameters rate as N (Sol.) Jonmetallic Parameters N Jonmetallic Parameters Johnte as N Jonmetallic Parameters ahi Nitrogen as N Jonmetallic Parameters phorus as P jor Cations (QC Lot: 42	col Spike (LCS) and CAS Number G (QC Lot: 4208155) G (QC Lot: 4210710) 7664-41-7 G (QC Lot: 4213626) G (QC Lot: 4213626) G (QC Lot: 4213627) G (QC Lot: 4213627) G (QC Lot: 4213627) G (QC Lot: 4213628) G (QC	LOR 0.1 1 20 20	ory Control SJ Method Blank (MB) Unit mg/kg mg/kg mg/kg mg/kg	Report           <0.1	DCS) Rep Spik Concent 2 mg/ 9.32 mg/ 9.32 mg/ 1000 m 695 mg 0.1 mg	e entrinon entrinon entrinon entrinon entrinon entrinon entrinon entrinon entrino entr	Spike Re LCS 101 106 86.0 104 87.8	strol Spike (LCS) and L covery (%) DCS	Laboratory Control Sp Recovery Low 85 89 74 85 85	ike Duplicate (DC Limits (%) High 115 113 112 115 115	is) Report R Value	PD (%) Control Lin
Method Blank (M Method: Comound ED/FK: Inorganic N EK059A: Nitrite + Nil ED/FK: Inorganic N EK059: Anmonia as ED/FK: Inorganic N EK059: Acid Volatile ED/FK: Inorganic N EK061A: Total Kjeld ED/FK: Inorganic N EK061A: Total Kjeld EC/FK: Inorganic N EK050A: Total Kjeld EC/FK: Inorganic N EC/FK:	B), Laboratory Contr Ionmetallic Parameters rate as N (Sol.) Ionmetallic Parameters N Ionmetallic Parameters Sulphides (as S) Ionmetallic Parameters Ionmetallic Parameters horus as N Ionmetallic Parameters phorus as P Jor Cations (QC Lot: 42)	CAS Number CAS Number (QC Lot: 4208155) (QC Lot: 4208155) (QC Lot: 4210710) 7664-41-7 (QC Lot: 4213626) (QC Lot: 4213626) (QC Lot: 4213627) (QC Lot: 4213627) 7439-87-6 207893) 7439-89-6 207894)	LOR 0.1 1 20 20 0.02 10	ory Control SJ Method Blank (MB) Unit mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	Report           <0.1	DCS) Rep Spik Concent 2 mg/ 9.32 mg/ 1000 m 695 mg 0.1 mg	kg skg skg skg skg skg skg skg skg skg s	Spike Re LCS 101 106 86.0 104 87.8 98.2		Aboratory Control Sp      Recovery     Low      85      89      74      85      85      76	ike Duplicate (DC Limits (%) High 115 113 112 115 115 115 110	S) Report       R     Value	PD (%) Control Lin 
Method Blank (M Method: Compound ED/EK: Inorganic N EX059A: Nitrite + Nit ED/EK: Inorganic N EX058: Ammonia as ED/EK: Inorganic N EX051: And National EX051A: Total Kjedd ED/EK: Inorganic N EX051A: Total Phos EG: Metals and Ma EG036: Mercury EG: Metals and Ma EG036: Iron EG: Metals and Ma EG036: Iron	B), Laboratory Contr Jonmetallic Parameters rate as N (Sol.) Jonmetallic Parameters N Jonmetallic Parameters Johnte as N Jonmetallic Parameters ahi Nitrogen as N Jonmetallic Parameters phorus as P jor Cations (QC Lot: 42	CAS Number CAS Number (QC Lot: 4208155) (QC Lot: 4208155) (QC Lot: 421070) 7684-41-7 (QC Lot: 4212246) (QC Lot: 4213626) (QC Lot: 4213626) (QC Lot: 4213627) (QC Lot: 4213697-6 (QC Lot: 4213697-6 (QC Lot: 42136997-6 (QC Lot: 42136997-6 (QC Lot: 42136997-6 (QC Lot: 42136997-6 (QC Lot: 42136997-6 (QC Lot: 421369-7 (QC L	LOR 0.1 1 20 20 0.02 10	ory Control SJ Method Blank (MB) Unit mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	Report         Result           <0.1	DCS) Rep Spik Concent 2 mg/ 9.32 mg/ 9.32 mg/ 1000 m 0.1 mg 0.1 mg	kg jakg jakg kg k	Spike Re LCS 101 106 86.0 104 87.8 98.2  89.8	100 Spile (LCS) and Ji covery (Ks) DCS        	Recovery           Low           85           89           74           85           85           85           76	ike Duplicate (DC Limits (%) High 115 113 112 115 115 115 110 	(3) Report       R     R       Value     R	PD (%) Control Lin  
Method Blank (M Method: Comound ED/FK: Inorganic N EK059A: Nitrite + Nil ED/FK: Inorganic N EK059: Anmonia as ED/FK: Inorganic N EK059: Acid Volatile ED/FK: Inorganic N EK061A: Total Kjeld ED/FK: Inorganic N EK051A: Total Kjeld EC/FK: Inorganic N EK051A: Total Kjeld EC/FK: Inorganic N EC/FK: Inorganic N EC/FK	B), Laboratory Contr Jonmetallic Parameters rate as N (Sol.) Jonmetallic Parameters N Jonmetallic Parameters Johnte as N Jonmetallic Parameters ahi Nitrogen as N Jonmetallic Parameters phorus as P jor Cations (QC Lot: 42	CAS Number CAS Number (QC Lot: 4208155) (QC Lot: 4208155) (QC Lot: 4210710) 7664-41-7 (QC Lot: 4213626) (QC Lot: 4213626) (QC Lot: 4213627) (QC Lot: 4213627) 7439-87-6 207893) 7439-89-6 207894)	LOR 0.1 1 20 20 0.02 10	ory Control SJ Method Blank (MB) Unit mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	Report           <0.1	DCS) Rep Spik Concent 2 mg/ 9.32 mg/ 1000 m 695 mg 0.1 mg	kg k	Spike Re LCS 101 106 86.0 104 87.8 98.2		Aboratory Control Sp      Recovery     Low      85      89      74      85      85      76	ike Duplicate (DC Limits (%) High 115 113 112 115 115 115 110	S) Report       R     Value	PD (%) Control Lin 

Matrix: SOIL	[		Method Blank (MB)	Report		Laboratory Cor	trol Spike (LCS) and La	boratory Control S	pike Duplicate (DC	S) Report	
					Spike	Spike Re	covery (%)	Recovery	Limits (%)	R	PD (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	DCS	Low	High	Value	Control Limi
EG: Metals and Major Cations (QC Lot: 4207894	) - Continued										
EG020: Copper	7440-50-8	1	mg/kg	<1	5 mg/kg	99.1		79	109		
EG020: Lead	7439-92-1	1	mg/kg	<1	5 mg/kg	93.9		81	109		
EG020: Manganese	7439-96-5	1	mg/kg	<1	5 mg/kg	94.7		78	122		
EG020: Nickel	7440-02-0	1	mg/kg	<1	5 mg/kg	89.7		77	111		
EG020: Silver	7440-22-4	0.1	mg/kg	<0.1	5 mg/kg	88.9		75	113		
EG020: Vanadium	7440-62-2	1	mg/kg	<1	5 mg/kg	100		72	112		
EG020: Zinc	7440-66-6	1	mg/kg	<1	5 mg/kg	89.2		80	122		
EG: Metals and Major Cations (QC Lot: 4207895	5)										
EG020: Aluminium	7429-90-5	1	mg/kg	<1							
EG: Metals and Major Cations (QC Lot: 4207896	5)										
EG020: Boron	7440-42-8	1	mg/kg	<1							
EP: Aggregate Organics (QC Lot: 4211363)											
EP005: Total Organic Carbon		0.05	%	<0.05	40 %	95.4		90	110		



Matrix Spike	MS) and Matrix Spike Du	uplicate (MSD) Report								
Matrix: SOIL	,				Matrix Spik	e (MS) and Mati	rix Spike Duplic	ate (MSD) Re	port	
				Spike	Spike Red	overy (%)	Recovery	Limits (%)	RP	D (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EG: Metals and	Major Cations (QC Lot: 42	207892)								
HK1619151-001		EG036: Mercury	7439-97-6	0.1 mg/kg	92.5		75	125		
EG: Metals and	Major Cations (QC Lot: 42	207894)			hanna ann an ann an h-					
HK1619151-001		EG020: Arsenic	7440-38-2	5 mg/kg	94.8		75	125		
		EG020: Barium	7440-39-3	5 mg/kg	# Not Determined		75	125		
		EG020: Cadmium	7440-43-9	5 mg/kg	95.1		75	125		
		EG020: Chromium	7440-47-3	5 mg/kg	93.7		75	125		
		EG020: Copper	7440-50-8	5 mg/kg	88.0		75	125		
		EG020: Lead	7439-92-1	5 mg/kg	98.7		75	125		
		EG020: Manganese	7439-96-5	5 mg/kg	# Not Determined		75	125		
		EG020: Nickel	7440-02-0	5 mg/kg	84.6		75	125		
		EG020: Silver	7440-22-4	5 mg/kg	82.8		75	125		
		EG020: Vanadium	7440-62-2	5 mg/kg	87.9		75	125		
		EG020: Zinc	7440-66-6	5 mg/kg	# Not Determined		75	125		
EP: Aggregate	Organics (QC Lot: 421136	3)								
HK1617958-001	Anonymous	EP005: Total Organic Carbon		40 %	103		75	125		
EP: Aggregate	Organics (QC Lot: 4211364	4)								
HK1619516-002		EP005: Total Organic Carbon		40 %	93.5		75	125		



# **APPENDIX I**

**Event and Action Plan** 



### Event and Action Plan for Odour Monitoring

EVENT		ACTION		
EVENT	ET	IEC	SOR	CONTRACTOR
ACTION LEV	VEL		-	
Exceedance of action level or receipt of any odour complaint	<ol> <li>Identify source/reason of exceedance or odour complaints;</li> <li>Notify the Contractor, IEC and SOR of exceedance</li> <li>Carry out investigation to identify the source/reason of exceedance or complaints. Investigation shall be completed within 1 week;</li> <li>Repeat odour patrol to confirm finding; and</li> <li>If exceedance continues, notify the Contractor, IEC and SOR.</li> </ol>	<ol> <li>Check odour patrol results submitted by ET;</li> <li>Check Contractor's mitigation measures.</li> <li>Supervise the implementation of remedial measures.</li> </ol>	<ol> <li>Confirm receipt of notification of exceedance in writing.</li> <li>Notify DSD; and</li> <li>Ensure remedial measures properly implemented.</li> </ol>	<ol> <li>Notify the SOR, ET, IEC and DSD when receipt of odour complaint;</li> <li>Rectify any unacceptable practice; and formulate remedial actions; and</li> <li>Correspond to the complainant within 10 days to inform the cause of the nuisance and action taken.</li> </ol>
LIMIT LEVE	EL			
Exceedance of Limit level or receipt of two or more complaints in 3 months	<ol> <li>Identify source / reason of exceedance or odour complaints;</li> <li>Notify the Contractor, IEC and SOR of exceedance</li> <li>Carry out investigation to identify the source/reason of exceedance or complaints. Investigation shall be completed within 1 week;</li> <li>Repeat odour patrols to confirm findings;</li> <li>Increase odour patrol frequency to bi-weekly until no exceedance is detected at the ASR in the conservative 2 months and</li> <li>If exceedance continues, notify the Contractor, IEC and SOR.</li> </ol>	<ol> <li>Check patrol results submitted by ET;</li> <li>Discuss amongst SOR and Contractor on the potential remedial actions;</li> <li>Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the SOR accordingly;</li> <li>Supervise the implementation of remedial measures.</li> </ol>	<ol> <li>Confirm receipt of notification of exceedance in writing;</li> <li>Notify DSD;</li> <li>In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; and</li> <li>Ensure remedial measures properly implemented.</li> </ol>	<ol> <li>Notify the SOR, ET, IEC and DSD when receipt of odour complaints;</li> <li>Modify or improve design as appropriate;</li> <li>Submit proposals for remedial actions to IEC within three working days of notification of odour exceedance / complaint;</li> <li>Implement the agreed proposals</li> <li>Resubmit proposals if problem still not under control; and</li> <li>Correspond to the complainant within 10 days to inform the cause of the nuisance and action taken.</li> </ol>



### Event and Action Plan for Odour Emission Monitoring

EVENT		ACTION		
	ET	IEC	SOR	CONTRACTOR
ACTION LEVE	L			_
Exceedance of action level	<ol> <li>Identify source/reason of exceedance;</li> <li>Notify the Contractor, IEC and SOR of exceedance</li> <li>Carry out investigation to identify the source/reason of exceedance. Investigation shall be completed within 1 week;</li> <li>Monitor H<sub>2</sub>S level sensors readings to confirm finding; and</li> <li>If exceedance continues, notify the Contractor, IEC and SOR</li> </ol>	<ol> <li>Check H<sub>2</sub>S level sensors readings submitted by ET;</li> <li>Discuss with ET and Contractor on the possible remedial actions as appropriate</li> <li>Advise SOR on the effectiveness of the proposed remedial measures if any</li> <li>Supervise implementation of remedial measures if any</li> </ol>	<ol> <li>Confirm receipt of notification of exceedance in writing; and</li> <li>Notify DSD.</li> <li>Ensure remedial actions (if any) properly implemented.</li> </ol>	<ol> <li>Rectify any unacceptable practice if any.</li> </ol>
LIMIT LEVEL				
Exceedance of Limit level	<ol> <li>Identify source / reason of exceedance or odour complaints;</li> <li>Notify the Contractor, IEC and SOR of exceedance</li> <li>Carry out investigation to identify the source/reason of exceedance. Investigation shall be completed within 1 week;</li> <li>Monitor H<sub>2</sub>S level sensors readings to confirm findings;</li> <li>If exceedance continues, notify the Contractor, IEC and SOR; and</li> <li>If the exceedance is identified by olfactometric analysis, carry out further air sampling and olfactometry analysis to demonstrate the effectiveness of the remedial measures taken</li> </ol>	<ol> <li>Check H<sub>2</sub>S level sensors readings and/or olfactometry analysis results submitted by ET;</li> <li>Discuss amongst SOR and Contractor on the potential remedial actions;</li> <li>Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the SOR accordingly;</li> <li>Supervise the implementation of remedial measures.</li> </ol>	<ol> <li>Confirm receipt of notification of exceedance in writing;</li> <li>Notify DSD;</li> <li>In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>Ensure remedial measures properly implemented; and</li> <li>If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.</li> </ol>	<ol> <li>Modify or improve system setting as appropriate;</li> <li>Submit proposals for remedial actions to IEC within three working days of notification of odour exceedance;</li> <li>Implement the agreed proposals;</li> <li>Amend proposals if appropriate; and</li> <li>If exceedance continues, consider what portion of the work is responsible and stop that portion of work until the exceedance is abated.</li> </ol>



# **APPENDIX J**

Weather Conditions



### Daily Extract of Meteorological Observations, May 2016 – Tuen Mun Children and Juvenile Home

Day	Mean	Air	Temperatı	ıre	Mean Dew Point	Mean Relative Humidity	Total Rainfall	Prevailing Wind Direction	Mean Wind Speed
	Pressure (hPa)	Absolute Daily Max (deg. C)	Mean (deg.C)	Absolute Daily Min (deg. C)	(deg. C)	(%)	(mm)	(degrees)	(km/h)
1	***	24.9#	23.2	20.7#	21.3	89.0	0.0	***	***
2	* * *	27.7	25.5	23.7	23.9	91.0	0.0	* * *	***
3	* * *	31.3	25.9	22.4	24.0	90.0	66.5	* * *	***
4	***	29.0	25.7	22.7	23.6	88.0	1.0	***	***
5	***	30.5	27.7	25.5	25.1	87.0	0.0	* * *	***
6	* * *	31.0#	27.8	25.8#	25.4	87.0	0.0	* * *	***
7	* * *	31.9	28.4	26.0	25.6	85.0	0.0	* * *	***
8	* * *	30.8#	28.0	26.4#	25.8	88.0	0.0	* * *	***
9	***	31.1	28.1	26.5	25.5	86.0	0.0	***	***
10	***	27.7	25.6	22.8	24.2	92.0	54.5	***	***
11	***	30.3#	25.7	22.9#	19.7	70.0	0.0	***	***
12	***	28.9#	25.5	22.9#	21.2	77.0	0.0	***	***
13	***	28.5#	26.0	24.1#	21.8	78.0	0.0	***	***
14	***	30.1	26.9	25.3	22.9	79.0	0.0	***	***
15	***	31.5#	27.2	23.6#	23.6	81.0	3.5	***	***
16	***	28.1	24.7	21.9	18.8	71.0	0.0	***	***
17	***	26.5#	24.3	23.4#	19.7	76.0	0.0	***	***
18	***	27.4#	25.0	23.3#	19.8	73.0	0.0	***	***
19	***	28.1#	25.9	23.8#	22.2	80.0	0.0	***	***
20	***	26.8	25.6	24.2	24.4	93.0	128.5	***	***
21	***	29.3#	26.1	24.1#	24.3	90.0	88.0	***	***
22	***	31.8	27.2	24.8	22.2	75.0	0.0	***	***
23	***	31.8	27.3	24.2	22.5	76.0	0.0	***	***
24	***	32.6	27.9	24.5	24.2	81.0	0.0	***	***
25	***	31.5	28.2	25.2	24.0	79.0	0.0	***	***
26	***	31.9	29.0	26.1	24.4	77.0	0.0	***	***
27	***	30.4	27.7	25.7	25.2	86.0	8.5	***	***
28	***	31.1	27.3	24.3	25.4	90.0	26.5	***	***
29	***	32.0	28.8	25.7	26.5	88.0	0.0	***	***
30	***	33.4	30.0	27.5	26.5	82.0	0.0	***	***
31	***	33.1	30.1	27.9	26	79	0	***	***

Note:

\*\*\* - information unavailable

# data incomplete

Rainfall measured in increment of 0.5 mm. Amount of < 0.5 mm cannot be detected.

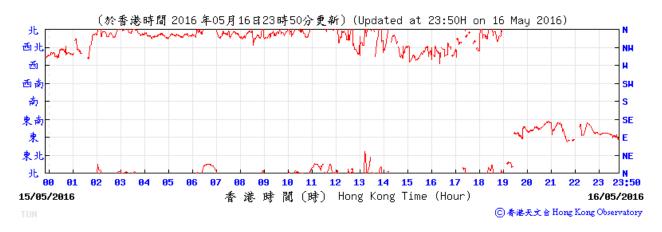


#### Hourly Meteorological Conditions on 16 May 2016 at Tuen Mun Station

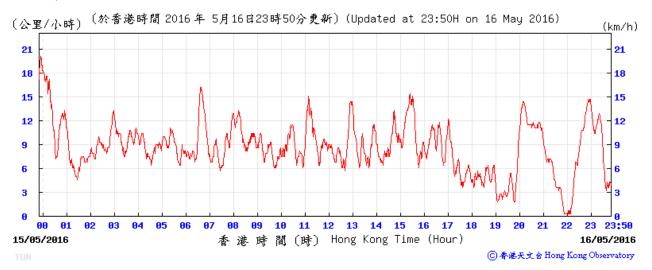


Temperature/ Humidity:

#### Wind Direction:



#### Wind Speed:





# **APPENDIX K**

# Landscape & Visual Impact Monitoring

### Contract No. DC/2008/03 Design, Build and Operate Pillar Point Sewage Treatment Works Establishment Period – 9<sup>th</sup> monthly L&V site audit

Site Inspection Date : 1

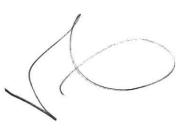
12 May 2016

Audited and Certified by:

Kenneth Ng (RLA No. 034 (99))

Area of Works	Items to be Monitored	Previous Observation	Establishment Works Stage				
			Observation	Recommendation/Action			
Issues Observed in this Audit							
Within Pillar Point Sewage Treatment Works	Location at Ground Floor Planting Area (Trees, Shrubs & Groundcover) Photo no. G-01 to G- 07	Item #1	Tree nos. 131, 133, 134, 128, 129, R156, R157, N84 and R185 in ground floor garden were observed in poor condition. (Please see photo reference below)	It is recommended to carry out additional maintenance works for the tree no. N84, 128, 134 and R185. The Contractor had prepared the tree felling proposal for tree nos 131, 133, 129, R156 and R157. Trees will be replaced after it is approved.			
Within Pillar Point Sewage Treatment Works	Location at Ground Floor Planting Trees Area Photo no. G-08	Item #2	The non-abrasive nylon ropes were observed released and tree tags had been provided. (Please see photo reference below)	-			

1



Area of Works	Items to be Monitored	Previous Observation	Establishment Works Stage	
			Observation	Recommendation/Action
Within	Location at Ground	Item #3	Collapsed tree was observed to be	It is recommended to provide sufficient watering and
Pillar	Floor		replanted during this site inspection.	carry out maintenance works for the collapsed tree.
Point	Planting Trees Area			
Sewage	Photo no. G-09			
Treatment				
Works				
Within	Location at Ground	Item #4	Groundcover and lawn were observed in	It is strongly recommended to provide sufficient
Pillar	Floor		poor condition during this site inspection.	watering and carry out necessary maintenance works
Point	Planting Trees Area			for the groundcover and lawn.
Sewage	Photo no. G-10			
Treatment				
Works				



Photo no. **G-01**: Tree tag no. **131** was observed in poor condition.



Dieback and dead branch was observed

## Tree tag was found damaged.



Photo no. **G-02**: Tree tag no. **133** was observed in poor condition.

Dieback and dead branch was observed





Photo no. **G-02**: Tree tag no. **134** was observed in poor condition.



Photo no. **G-03**: Tree tag no. **128** was observed in poor condition.



Dieback and dead branch was observed

Photo no. **G-03**: Tree tag no. **129** was observed in poor condition.



Photo no. **G-04**: Tree tag no. **N84** was observed in poor condition.



Photo no. **G-05**: Tree tag no. **R157** was observed in poor condition.



Photo no. **G-06**: Tree tag no. **R156** was observed in poor condition.

Dieback and dead branch was observed



Photo no. **G-07**: Tree tag no. **R185** was observed in poor condition.



Photo no. **G-08**: Tree tags had been provided during this site inspection.



Photo no. **G-09**: Collapsed tree was observed to be replanted during this site inspection.



Photo no. **G-10**: Groundcover and Lawn were observed missing during the site inspection.