

# Asia Submarine-cable Express (ASE) – Tseung Kwan O

## Impact Water Quality Monitoring Report (Zone A)

12 February 2014

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## Impact Water Quality Monitoring Report (Zone A)

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Client:  NTT Com Asia Ltd		GMS No:  0223932			
Summary:  This report presents the monitoring requirements, methodologies and results of the impact marine water quality measurements at the monitoring locations near Tseung Kwan O in accordance with the EM&A Manual.		Date: 12 February 2014			
		Approved by:    Terence Fong Project Director			
v0	Impact Water Quality Monitoring Report (Zone A)	YL	FZino	TFONG	12 Feb 14
Revision	Description	By	Checked	Approved	Date
<p>This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.</p> <p>This report has been prepared by Environmental Resources Management the trading name of 'ERM Hong-Kong, Limited', with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client.</p> <p>We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.</p> <p>This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.</p>		Distribution		 	
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**Asia Submarine-cable Express (ASE) – Tseung Kwan O  
Environmental Certification Sheet  
EP-433/2011**

**Reference Document/Plan**

Document/ <del>Plan to be Certified</del> / Verified:	2014 Fourth Weekly Impact Water Quality Monitoring Report (Zone A)
Date of Report:	10 February, 2014
Date prepared by ET:	ERM-Hong Kong Ltd
Date received by IEC:	Ecosystem Ltd

**Reference EM&A Manual/ EP Requirement**

EM&A Manual Requirement:	Section 2
Content:	<i>Water Quality Monitoring</i>
2.5	<p>"An Impact Monitoring Report will be provided weekly within three days after the relevant monitoring data are collected or become available during Project marine installation work....."</p> <p>"A Weekly Impact Monitoring shall include, but not limited to, the following details: basic Project Information – Project marine installation works programme with fine tuning of activities showing the inter-relationship with environmental protection/mitigation measures for the week and works undertaken during the week; operating practices of any Project marine installation works machinery (e.g. cable burial machine) during sampling (including: position, speed, cable burial depth) and an interpretation of monitoring results; and the monitoring data should be provided graphically to show the relationship between the Control and the Impact monitoring stations and compliance or non-compliance with respect to the Action/Limit Levels."</p>
EP Condition:	Condition No. 2.4
Content:	<i>Impact Monitoring Report on Water Quality</i>
2.4	<p>To monitor the environmental impacts and timely implementation of the recommended mitigation measures, the Permit Holder shall</p> <p>(ii) submit to the Director four hard copies and one electronic copy of the following, as defined in the approved EM&amp;A Manual:</p> <p>(b) weekly impact monitoring (and site audit report*) within three days after the relevant monitoring data are collected or become available.</p> <p>*site audit not currently necessary as no land works.</p>

**ET Certification**

I hereby certify that the above referenced document/ <del>plan</del> complies with the above referenced condition of EP-433/2011.	
Terence Fong, Environmental Team Leader:	Date: 10 February 2014

**IEC Verification**

I hereby verify that the above referenced document/ <del>plan</del> complies with the above referenced condition of EP-433/2011.	
Vincent Lai, Independent Environmental Checker:	Date: 11 Feb 2014

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## **EXECUTIVE SUMMARY**

The submarine cable installation works for the Asia Submarine-cable Express (ASE) cable system commenced on 12 January 2014. This is the **2014 Fourth Weekly Impact Water Quality Monitoring Report** presenting results and findings of the impact water quality monitoring conducted during the period from 2 to 8 February 2014 in accordance with the *Updated Environmental Monitoring and Audit Manual (Updated EM&A Manual)*.

### Summary of Construction Works Undertaken during the Reporting Period

During the reporting period, submarine cable installation works were conducted in Zone A (See *Figure 2.2*), which included diver inspections, equipment stowage (neither of which involved water jetting) and cable burial works (using water jetting).

*Note* no works were conducted on 2 February 2014, due to the Chinese New Year Holiday; nor from 6 to 8 February 2014, due to the completion of initial cable installation works on 5 February 2014.

### Water Quality Monitoring

Three monitoring events were scheduled in the reporting period from 2 to 8 February 2014. Monitoring events at designated monitoring stations in Zone A were performed on schedule on 3-5 February inclusive.

*Note* no monitoring works were conducted on 2 February 2014 inclusive due to the Chinese New Year Holiday; nor from 6 to 8 February 2014, due to the completion of initial cable installation works on 5 February 2014.

### Environmental Non-conformance

Exceedances of Action Levels were recorded on 5 February 2014. These exceedances are not considered to be caused by the cable installation works but are a reflection of natural background condition for the day as explained further in *Section 4.2*.

No exceedances of Limit Levels were recorded during the impact water quality monitoring period.

No complaints or summons/prosecutions were received either during the reporting period.

### Future Key Issues

The initial cable installation works were completed on 5 February 2014 and the vessel is on standby in HK while testing and monitoring of the repaired cable is conducted. Should there be a need for further work, the vessel will be mobilised again, subject to MDN issuance, and monitoring work will resume at that time.

ERM-Hong Kong, Limited (ERM) was appointed by NTT Com Asia (NTTCA) as the Environmental Team (ET) to implement the Environmental Monitoring and Audit (EM&A) programme for the re-installation of a damaged section of the telecommunication cable Asia-Submarine-cable Express (ASE). The ASE cable is approximately 7,200 km in length, connecting Japan and Singapore with branches to the Philippines, Hong Kong SAR (HKSAR) and Malaysia (thereinafter called the Project).

### **1.1 PURPOSE OF THE REPORT**

This **2014 Fourth Weekly Impact Water Quality Monitoring Report**, summarises the results of impact water quality monitoring as part of the EM&A programme during the reporting period from 2 to 8 February 2014.

### **1.2 STRUCTURE OF THE REPORT**

The structure of the Report is as follows:

*Section 1 : Introduction*

Provides details of the background, purpose and report structure.

*Section 2 : Project Information*

Summarises background and scope of the project, the construction works undertaken and the status of Environmental Permits/Licenses during the reporting period.

*Section 3 : Water Quality Monitoring Requirements*

Summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, Action and Limit Levels, and Event Action Plan.

*Section 4 : Monitoring Results*

Summarises the water quality monitoring results obtained in the reporting period.

*Section 5 : Environmental Non-conformance*

Summarises any monitoring exceedance, environmental complaints and environmental summons within the reporting period.

*Section 6 : Future Key Issues*

Summarises the monitoring schedule for the next reporting period.

*Section 7 : Conclusions*

Presents the key findings of the impact monitoring results.

## 2.1

## BACKGROUND

NTT Com Asia (NTTCA) installed a telecommunication cable (Asia Submarine-cable Express (ASE) cable) of approximately 7,200 km in length, connecting Japan and Singapore with branches to the Philippines, Hong Kong SAR (HKSAR) and Malaysia and was responsible for securing the approval to land the ASE cable in Tseung Kwan O, Hong Kong SAR (HKSAR). The landing site is at a Beach Manhole (BMH) and ultimately the cable connects with a Data Centre in Tseung Kwan O (TKO) Industrial Estate which was completed in 2012. It should be noted that Tseung Kwan O is currently the landing site for a number of submarine cables. From Tseung Kwan O, the cable extends westward approaching the Tathong Channel. Near to Cape Collinson, the cable is approximately parallel to the Tathong Channel until north of Waglan Island where the cable travels eastward to the boundary of HKSAR waters and enters the South China Sea. The total length of cable in Hong Kong SAR waters is approximately 33.5 km. A map of the cable route is presented in *Figure 2.1*.

A Project Profile (PP-452/2011) which includes an assessment of the potential environmental impacts associated with the installation of the submarine telecommunications cable system was prepared and submitted to the Environmental Protection Department (EPD) under section 5.(1) (b) and 5.(11) of the *Environmental Impact Assessment Ordinance (EIAO)* for the application for Permission to apply directly for Environmental Permit (EP). EPD subsequently issued an Environmental Permit (*EP- 433/2011*).

Pursuant to *Condition 2.4* of *EP- 433/2011*, an environmental monitoring and audit (EM&A) programme, as set out in the *Environmental Monitoring and Audit Manual (EM&A Manual)* is required for this Project. Baseline data were collected prior to the start of cable installation works in 2012 and EM&A was conducted throughout the cable installation and after its completion in early 2013 as required in the *EM&A Manual*.

Upon inspection in October 2013 the ASE cable was found to be damaged and a section within Zone A (see *Figure 2.2*) required re-installation. The EM&A programme are therefore required to resume for the cable installation works in Hong Kong Waters (the "Project") in accordance with *Updated EM&A Manual*.

Baseline water quality update monitoring was conducted prior to the re-installation works and results summarise in the '*Baseline Water Quality Monitoring Update Report (Zone A)*' of December 2013.

Impact monitoring started on 12 January 2014, when the cable installation works commenced in Zone A. Impact monitoring is being conducted on a daily basis as the cable installation works proceed in Zone A, including three



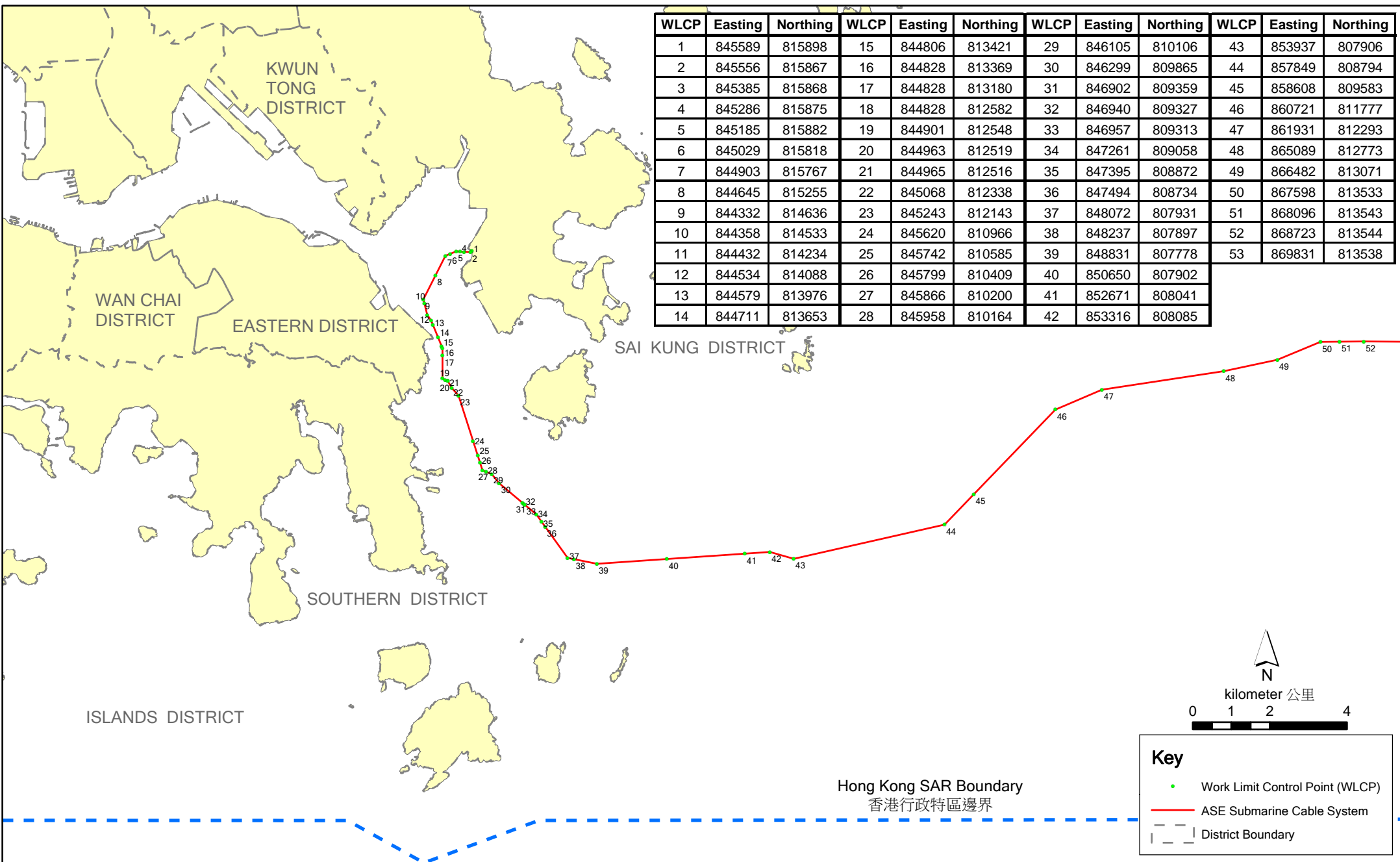


Figure 2.1

ASE Submarine Cable System (Layout Plan)

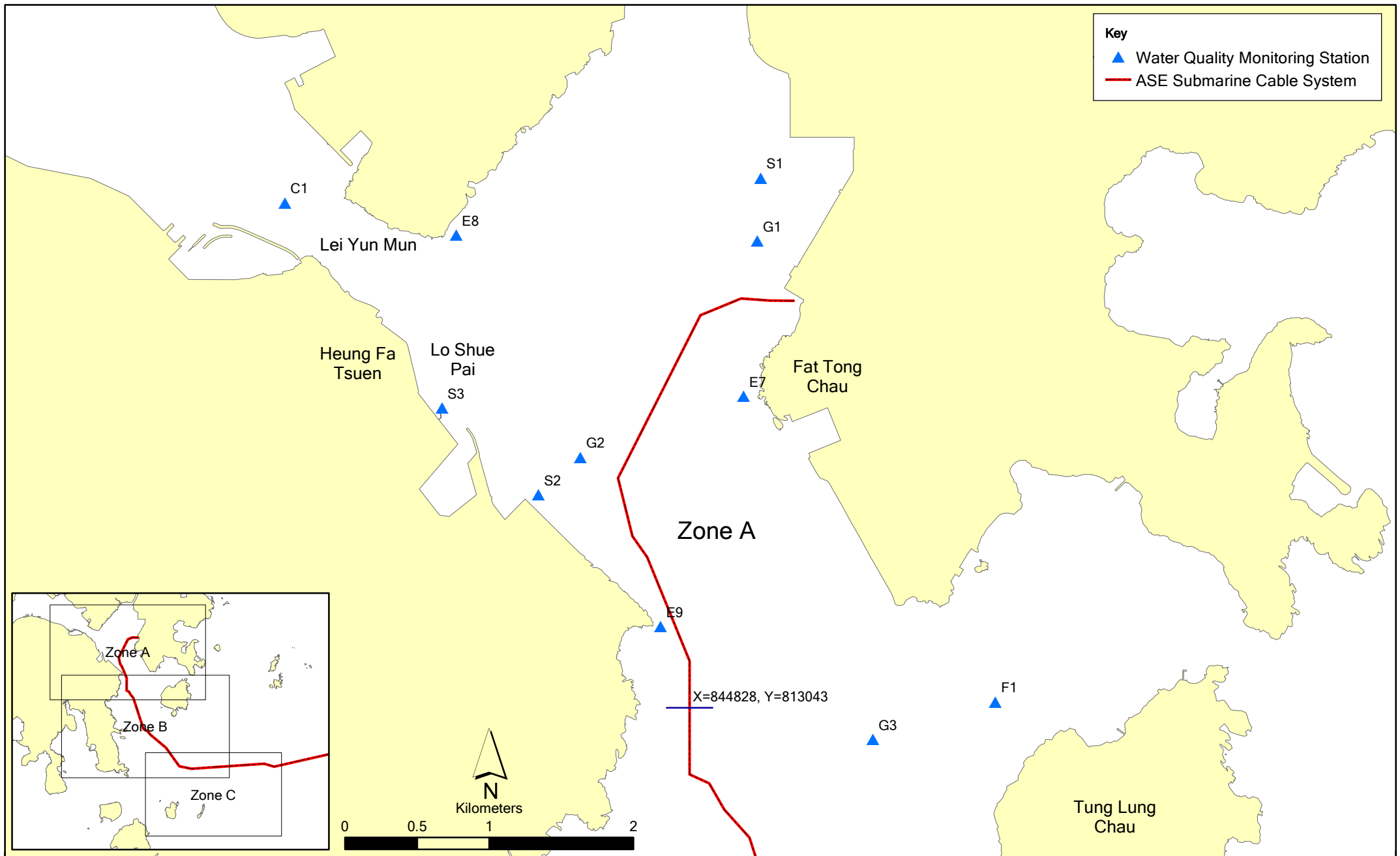


Figure 2.2

Water Quality Monitoring Station (Zone A)

days within the reporting period. The first week of impact monitoring was reported in the **2014 First Weekly Impact Water Quality Monitoring Report** issued for the reporting period 12-18 January 2014 inclusive. The second week of impact monitoring was reported in the **2014 Second Weekly Impact Water Quality Monitoring Report** issued for the reporting period 19-25 January 2014 inclusive. The third week of impact monitoring was reported in the **2014 Third Weekly Impact Water Quality Monitoring Report** issued for the reporting period 26 January-1 February 2014 inclusive. This Report presents the results and findings from the fourth week of impact monitoring, conducted for the reporting period 2-8 February 2014, at the monitoring stations in Zone A. No impact monitoring or cable installation works were conducted on 2 February 2014 due to the Chinese New Year Holiday; nor from 6 to 8 February 2014 due to the completion of initial cable installation works on 5 February 2014.

## 2.2 *MARINE CONSTRUCTION WORKS UNDERTAKEN DURING REPORTING WEEK*

During the reporting period, submarine cable installation works were conducted in Zone A (See *Figure 2.2*), which included diver inspections, equipment stowage (neither of which involved water jetting work); and cable burial works using water jetting.

*Note* no works were carried out on 2 February 2014 due to the Chinese New Year Holiday and initial cable installation works were completed on 5 February 2014.

## 2.3 *STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS*

A summary of the relevant permits, licences and reports on marine water quality for this Project is presented in *Table 2.1*.

**Table 2.1** *Summary of Environmental Licensing, Notification, Permit and Reporting Status*

<b>Permit / Licence / Notification / Report</b>	<b>Reference</b>	<b>Validity Period</b>	<b>Remarks</b>
Environmental Permit	EP 433/2011	Throughout the construction and operation stages	Granted on 20 December 2011
EM&A Manual	-	Throughout the construction stage	Submitted on 18 September 2012
Updated EM&A Manual	-	Throughout the construction stage	Submitted December 2013
Baseline Water Quality Monitoring Update Report (Zone A)	-	Throughout the construction period for Zone A	Submitted on 5 December 2013

### 3.1 MONITORING LOCATIONS

In accordance with the *Updated EM&A Manual*, water quality monitoring samples were collected at the eleven (11) stations situated around the cable installation works in Zone A, as soon as the Project marine installation works started. The locations of the sampling stations within Zone A are shown in *Figure 2.2*.

- E7 is the Impact Station located at Fat Tong Chau to monitor the impacts of cable installation works on the coral communities in the proximity;
- E8 is an Impact Station to monitor the impacts of cable installation works on the coral communities along Junk Bay – South West;
- E9 is an Impact Station to monitor the impacts of cable installation works on the coral communities at Cape Collison (the Gradient Station is not set due to the short distance of this Impact Station to nearby proposed cable works which may affect the Project marine installation works);
- F1 is an Impact Station to monitor the impacts of cable installation works on the Tung Lung Chau Fish Culture Zone;
- S1 is an Impact Station situated at the WSD Seawater Intake Point in Junk Bay. It is located within 500 m north of the cable alignment at Junk Bay and set up to monitor the effect of Project marine installation works in the area;
- S2 is an Impact Station to monitor the impacts of cable installation works on the WSD Seawater Intake at Siu Sai Wan;
- S3 is an Impact Station to monitor the impacts of cable installation works on the Pamela Youde Nethersole Eastern Hospital Cooling Water Intake at Heng Fa Chuen;
- G1 is a Gradient Station between S1 and the cable alignment;
- G2 is a Gradient Station between S2 and the cable alignment;
- G3 is a Gradient Station between F1 and the cable alignment; and
- C1 is a Control Station (approximately 3 km from the proposed cable alignment) for Zone A. It is not supposed to be influenced by the Project marine installation works due to its remoteness from the works.

The co-ordinates of the above monitoring stations in Zone A are listed in *Table 3.1*.

**Table 3.1 Water Quality Monitoring Stations**

Monitoring Station	Nature	Easting	Northing
E7	Impact Station (Coral Community)	843779	814520
E8	Impact Station (Coral Community)	843111	815126
E9	Impact Station (Coral Community)	843557	811853
F1	Impact Station (Fish Culture Zone)	847196	811056
S1	Impact Station (Seawater Intakes)	847639	805900
S2	Impact Station (Seawater Intakes)	849587	805696
S3	Impact Station (Seawater Intakes)	845474	810605
G1	Gradient Station	845297	816282
G2	Gradient Station	844071	814784
G3	Gradient Station	846099	812826
C1	Control Station	842022	816547

### 3.2 MONITORING PARAMETERS

The impact water quality monitoring was conducted in accordance with the requirements stated in the *Updated EM&A Manual*. Monitoring parameters are presented below.

Parameters measured *in situ* were:

- Dissolved Oxygen (DO) (% saturation and mg L<sup>-1</sup>);
- Temperature (°C);
- Turbidity (NTU); and
- Salinity (‰).

The only parameter measured in the laboratory was:

- Suspended Solids (SS) (mgL<sup>-1</sup>).

In addition to the water quality parameters, other relevant data were measured and recorded in field logs, including the location of the sampling stations, water depth, time, weather conditions, sea conditions, special phenomena and work activities undertaken around the monitoring and works area that may influence the monitoring results.

### 3.3 MONITORING EQUIPMENT AND METHODOLOGY

#### 3.3.1 Monitoring Equipment

Table 3.2 summaries the equipment used for the impact water quality monitoring.

**Table 3.2** *Equipment Used during Impact Water Quality Monitoring*

<b>Equipment</b>	<b>Model</b>
Global Positioning Device	Garmin eTrex 10
Water Depth Gauge	Speedtech Instrument SM-5
Water Sampling Equipment	1520 Kemmerer Water Sampler
Salinity, DO, Temperature Measuring Meter	YSI Pro 2030
Current Velocity and Direction	Flow Probe FP111
Turbidity Meter	HACH Model 2100Q Turbid Meter

### 3.3.2 *Monitoring Methodology*

#### *Timing & Frequency*

*In-situ* data and SS data were collected during Project marine installation works from 7:00 to 23:00 on a daily basis. The impact monitoring schedule for the reporting period is presented in *Annex A*.

Impact monitoring commenced when Project marine installation works started in Zone A. (The daily sampling works will cease once no Project marine installation works are being undertaken within Zone A)

Due to the weather conditions and travelling time between stations, *in-situ* measurement and SS sampling were taken at the impact monitoring stations with approximately four-hour intervals in Zone A. The monitoring frequency and parameters for impact monitoring are summarised in *Table 3.3*.

**Table 3.3** *Monitoring Frequency and Parameters for Impact Monitoring in Zone A*

<b>Zone</b>	<b>Station Type</b>	<b>Monitoring Station</b>	<b>Monitoring Frequency</b>	<b>Monitoring Parameter</b>
A	Control	C1	Daily at a 4-hour interval while cable installation works are being undertaken in Zone A	Temperature, Turbidity, Salinity, DO and SS
	Gradient	G1, G2, G3		
	Impact	E7, E8, E9, F1, S1, S2, S3,		

For *in-situ* measurements, duplicate readings were made at each water depth at each station. Duplicate water samples were also collected at each water depth at each station for the laboratory analysis.

#### *Depths*

Measurements/ water samples were taken at each sampling station, at three depths, namely, 1 m below water surface, mid-depth and 1 m above sea bed, except where the water depth was less than 6 m, when the mid-depth sample may have been omitted. For stations that are less than 3 m in depth, only the mid-depth sample was taken.

## Sampling/ Testing Protocols

All *in-situ* monitoring instruments were checked, calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme before use, and subsequently re-calibrated at monthly intervals throughout all stages of the water quality monitoring (*Annex B*). Responses of sensors and electrodes were checked with certified standard solutions before each use.

For the on-site calibration of field equipment, the *BS 1427: 1993, Guide to Field and On-Site Test Methods for the Analysis of Waters* was observed. Sufficient stocks of spare parts were maintained for replacements when necessary. Backup monitoring equipment was made available.

Water samples for SS measurements were collected in high density polythene bottles, packed in ice (cooled to 4 °C without being frozen), and delivered to a HOKLAS laboratory as soon as possible after collection.

Two replicate samples were collected from each of the monitoring events for *in situ* measurement and lab analysis.

### Laboratory Analysis

All laboratory work was carried out in a HOKLAS accredited laboratory. Water samples of about 1,000 mL were collected at the monitoring and control stations for carrying out the laboratory determinations. The determination work started within the next working day after collection of the water samples. The SS laboratory measurements were provided within 2 days of the sampling event (48 hours). The analyses followed the standard methods as described in APHA Standard Methods for the *Examination of Water and Wastewater, 19th Edition*, unless otherwise specified (APHA 2540D for SS).

The QA/QC details were in accordance with requirements of HOKLAS or another internationally accredited scheme (*Annex C*)

### 3.3.3 Action and Limit Levels

The Action and Limit levels for Zones A, which were established based on the results of *Baseline Update Monitoring (Zone A)*, are presented in *Table 3.4*.

**Table 3.4** Action and Limit Levels of Water Quality for Zone A

Parameter	Action Level	Limit Level
SS in mgL <sup>-1</sup> (Depth-averaged) <sup>(a)</sup> <sup>(c)</sup>	95%-ile of baseline data (7.01 mg L <sup>-1</sup> ), or	99%-ile of baseline data (7.15 mg L <sup>-1</sup> ), and
	20% exceedance of value at any impact station compared with corresponding data from control station	30% exceedance of value at any impact station compared with corresponding data from control station

Parameter	Action Level	Limit Level
DO in mgL <sup>-1</sup> (b)	<u>Surface and Middle</u> <sup>(d)</sup> 5%-ile of baseline data for surface and middle layer (5.91 mg L <sup>-1</sup> )	<u>Surface and Middle</u> <sup>(d)</sup> 5mg/L or 1%-ile of baseline for surface and middle layer (5.85 mg L <sup>-1</sup> )
	<u>Bottom</u> 5%-ile of baseline data for bottom layers (5.72 mg L <sup>-1</sup> )	<u>Bottom</u> 2mg/L or 1%-ile of baseline data for bottom layer (5.62 mg L <sup>-1</sup> )
Turbidity in NTU (Depth-averaged) (a) (c)	95%-ile of baseline data (5.09 NTU), or	99%-ile of baseline data (5.25 NTU), and
	20% exceedance of value at any impact station compared with corresponding data from control station	30% exceedance of value at any impact station compared with corresponding data from control station
<b>Notes:</b>		
a.	"Depth-averaged" is calculated by taking the arithmetic means of reading of all sampled depths.	
b.	For DO, non-compliance of the water quality limits occurs when the monitoring result is lower than the limits.	
c.	For SS and turbidity, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.	
d.	The Action and Limit Level for DO for surface and middle layer were calculated from the combined pool of baseline surface layer data and baseline middle layer data.	

### 3.3.4 Event and Action Plan

The Event and Action Plan for water quality monitoring which was stipulated in *Updated EM&A Manual* is presented in *Table 3.5*.

**Table 3.5** *Event Action Plan for Water Quality*

Event	Contractor
Action Level	<b>Step 1</b> - repeat sampling event.
Exceedance	<b>Step 2</b> - Inform EPD and AFCD and confirm notification of the non-compliance in writing;
	<b>Step 3</b> - discuss with cable installation contractor the most appropriate method of reducing suspended solids during cable installation (e.g. reduce cable laying speed/ volume of water used during installation.
	<b>Step 4</b> - repeat measurements after implementation of mitigation for confirmation of compliance.
	<b>Step 5</b> - if non-compliance continues, increase measures in Step 3 and repeat measurements in Step 3. If non-compliance occurs a third time, suspend cable laying operations.
	Limit Level
Exceedance	



A total of three monitoring events were scheduled in the reporting period from 2 to 8 February 2014 (*Annex A*). Impact monitoring works and cable installation works were not conducted on 2 February 2014 due to the Chinese New Year Holiday; nor from 6 to 8 February 2014 due to the completion of initial cable installation works on 5 February 2014. Continuous water sampling was taken at the impact monitoring stations in Zone A at approximately 4-hour intervals (subject to the weather conditions and travelling time between stations) on a daily basis, so collections were made at least four (4) times per day. Monitoring events at all designated monitoring stations within Zone A were performed on schedule. No major activities influencing the water quality were identified during the reporting period.

#### 4.1

##### *DATA COLLECTED DURING REPORTING PERIOD*

The results of the impact monitoring and their graphical presentations are included in *Annex D*. The monitoring results of Turbidity, SS and DO are discussed together as follows.

The levels of depth-averaged Turbidity showed variation throughout the fourth week impact monitoring (*Figure D1 of Annex D*). Observable differences of Turbidity levels among the stations (within the same monitoring round on the same monitoring day) were recorded on 5 February 2014.

Levels of depth-averaged SS measured during the fourth week impact monitoring showed fluctuation with time (*Figure D1 of Annex D*). SS levels were recorded to be relative stable on 3 and 4 February 2014. Differences of SS levels among the stations were detected on 5 February 2014.

The overall levels of DO at all the water depths (surface, mid-depth and bottom) during the fourth week impact monitoring were of similar magnitude at all the stations (*Figure D2-D3 of Annex D*). Minor fluctuations of DO levels at all water depths were detected during the reporting period. Minor differences of DO levels among the stations were also recorded at all water depths on 5 February 2014.

Despite relatively stable water quality, exceedances of the Action Levels in Turbidity and SS were recorded on 5 February 2014. A summary of stations where exceedances were recorded is presented in *Table 4.1*.

**Table 4.1 Summary of Exceedances Occurring during the Reporting Week**

Date	Monitoring Time	Depth-averaged Turbidity	Depth-averaged SS
		Exceedance	
		Action Level <sup>(1)</sup>	Action Level <sup>(2)</sup>
5 February	7:00- 11:00 (First Round)	S1, S3	S1
	11:00-15:00 (Second Round)	E7, F1, S2	F1, S2
	15:00 -19:00 (Third Round)	E7, F1, E9, S3	N.A.

Note:

- 1 Action Level for Turbidity: 5.25 NTU, and 30% exceedance of value at any impact station compared with corresponding data from control station; and
- 2 Action Level for Turbidity: 7.01 mg/L, or 20% exceedance of value at any impact station compared with corresponding data from control station

**4.2 EXCEEDANCES DURING REPORTING PERIOD**

Exceedances of the depth-averaged Turbidity Action Levels were recorded at Impact Stations E7, E9, F1, S1, S2 and S3 in the 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> sampling rounds on 5 February 2014 (Tables 4.1 and 4.2). Exceedances of depth-averaged SS Action Levels were also detected at Impact Stations F1, S1 and S2 in the 1<sup>st</sup>, and 2<sup>nd</sup> sampling rounds on 5 February 2014 (Table 4.1 and 4.3). Looking at Figure 2.2 the monitoring stations where exceedances were recorded are widely spread out within Zone A.

According to the daily site work report, all water jetting works were completed on 3 February 2014. On 5 February 2014 only equipment stowage works were conducted which would not disturb seabed sediments nor cause any elevation of Turbidity and SS levels. Detailed site works carried out on 5 February are reported in Table 4.4.

**Table 4.2 Exceedances of Action Level in Turbidity on 5 February 2014**

<b>Date</b>	5 February 2014 (Measured) 6 February 2014 ( <i>In situ</i> results received by ERM) 7 February 2014 (Laboratory results received by ERM)	
<b>Monitoring Stations with Exceedance(s)</b>	S1, S2, S3, E7, F1, and E9	
<b>Parameter(s) with Exceedance(s)</b>	Depth-averaged Turbidity (NTU)	
<b>Action Level</b>	5.09 NTU, or 20% exceedance of value at any impact station compared with corresponding data from control station	
<b>Limit Level</b>	5.25 NTU, and 30% exceedance of value at any impact station compared with corresponding data from control station	
<b>Measured Levels at Control Station and Impact Stations Where Exceedances</b>	1 <sup>st</sup> Round	C1=3.08 NTU (Control Station); S1= 4.17 NTU (35.4% exceedance of C1, but smaller than 5.25 NTU); S3= 3.78 NTU (22.6% exceedance of C1).

<b>Were Recorded</b>	2 <sup>nd</sup> Round	C1=2.87 NTU (Control Station); E7=3.45 NTU (20.3% exceedance of C1); F1=3.92 NTU (36.8% exceedance of C1, but smaller than 5.25 NTU); S2=3.85 NTU (34.2% exceedance of C1, but smaller than 5.25 NTU).
	3 <sup>rd</sup> Round	C1=2.92 NTU (Control Station); E7=3.65 NTU (25.0% exceedance of C1); F1=3.61 NTU (23.4% exceedance of C1); E9=3.52 NTU (20.4% exceedance of C1); S3=3.51 NTU (20.0% exceedance of C1).
<b>Exceedances</b>	1 <sup>st</sup> Round	Exceedance of Action Level: S1 and S3.
	2 <sup>nd</sup> Round	Exceedance of Action Level: E7, F1, and S2.
	3 <sup>rd</sup> Round	Exceedance of Action Level: E7, F1, E9 and S3.

**Table 4.3** *Exceedances of Action Level in SS on 5 February 2014*

<b>Date</b>	5 February 2014 (Measured) 6 February 2014 ( <i>In situ</i> results received by ERM) 7 February 2014 (Laboratory results received by ERM)	
<b>Monitoring Stations with Exceedance(s)</b>	S1, S2, and F1	
<b>Parameter(s) with Exceedance(s)</b>	Depth-averaged SS (mg/L)	
<b>Action Level</b>	7.01 mg/L, or 20% exceedance of value at any impact station compared with corresponding data from control station	
<b>Limit Level</b>	7.15 mg/L, and 30% exceedance of value at any impact station compared with corresponding data from control station	
<b>Measured Levels at Control Station and Impact Stations Where Exceedances Were Recorded</b>	1 <sup>st</sup> Round	C1=4.00 mg/L (Control Station); S1= 5.02 mg/L (25.4% exceedance of C1).
	2 <sup>nd</sup> Round	C1=3.75 mg/L (Control Station); F1=4.75 mg/L (26.7% exceedance of C1); S2=4.70 mg/L (25.3% exceedance of C1).
<b>Exceedances</b>	1 <sup>st</sup> Round	Exceedance of Action Level: S1
	2 <sup>nd</sup> Round	Exceedance of Action Level: F1, and S2.

**Table 4.4** *Site Works Undertaken on 5 February 2014*

<b>Time</b>	<b>Site Works</b>
00:01	Vessel continues standby to resume operations at 07:00
07:00	Toolbox talks completed
09:12	Commenced recovery of anchor 2.
09:40	Anchor 2 secured.
10:00	Hong Kong United 20 tug (HK20) connected tow. Barge on transit to China Merchant Wharf.
12:10	Thrusters online.
12:29	Tow line released.
12:36	First line ashore.
12:41	HK Captain reported barge alongside to HK Marine Department.
12:50	HK20 alongside to return tow bridle. HK Captain departs barge on HK20.
12:55	HK20 away.
13:00	Barge all fast alongside. Commenced in port de-mobilisation.
23:59	Vessel continued in port de-mobilisation.

Recorded depth-averaged SS and Turbidity levels at Gradient Stations G2 and G3 were lower than those at many of the Impact Stations with exceedances of Action Levels (S1, S2, S3 and F1) during the same monitoring round on the same day, despite being located closer to the cable installation work site (*Table 4.5* and *Figure 2.2*). Given this information, the exceedances of the Action Levels at these Impact Stations (S1, S2, S3 and F1) are not considered to be caused by the Project.

**Table 4.5** *Comparison of SS and Turbidity Levels at Gradient Stations and Impact Stations with Exceedances*

Date	Monitoring Time	Depth-averaged Turbidity (NTU)	Depth-averaged SS (mg/L)
5 February	7:00- 11:00 (First Round)	S1 (4.17 NTU) vs G2 (3.63 NTU) S3 (3.78 NTU) vs. G2 (3.63 NTU)	S1 (5.02 mg/L) vs. G2 (4.53 mg/L)
	11:00-15:00 (Second Round)	F1 (3.92 NTU) vs. G3 (3.18 NTU) S2 (3.85 NTU) vs. G2 (3.50 NTU)	F1 (4.75 mg/L) vs. G3 (4.07 mg/L) S2 (4.70 mg/L) vs. G2 (4.28 mg/L)
	15:00 -19:00 (Third Round)	S3 (3.51 NTU) vs. G2 (3.59 NTU)	N.A.

After consideration of all the information above in *Section 4.2*, the exceedances of the Action Levels at the Impact Stations are unlikely to be caused by the Project. Rather the exceedances are considered to reflect natural background conditions for the day.

## 5 ENVIRONMENTAL NON-CONFORMANCES

### 5.1 SUMMARY OF ENVIRONMENTAL EXCEEDANCE

Exceedances of depth-averaged Turbidity and SS Action Levels were recorded on 5 February 2014. After consideration of all the facts, the exceedances were not considered to be caused by the cable installation works but rather reflect the natural background condition for the day.

No exceedances of the Limit Levels were recorded during the reporting period.

### 5.2 SUMMARY OF ENVIRONMENTAL NON-COMPLIANCE

No non-compliance events were recorded during the reporting period.

### 5.3 SUMMARY OF ENVIRONMENTAL COMPLAINT

No complaints were received during the reporting period.

### 5.4 SUMMARY OF ENVIRONMENTAL SUMMONS AND PROSECUTION

No summons or prosecution on environmental matters were received during the reporting period.

## 6 *FUTURE KEY ISSUES*

### 6.1 *KEY ISSUES FOR THE COMING REPORTING PERIOD*

The initial cable installation works were completed on 5 February 2014 and the vessel is on standby in HK while testing and monitoring of the repaired cable is conducted. Should there be a need for further work, the vessel will be mobilised again, subject to MDN issuance, and monitoring work will resume at that time.

### 6.2 *IMPACT MONITORING SCHEDULE FOR THE COMING REPORTING PERIOD*

No further impact monitoring works will be conducted in accordance with current working plans assuming the cable testing and monitoring indicate that no further repair works (cable installation works) are required.

This **2014 Fourth Weekly Impact Monitoring Report** presents the results and findings of impact water quality monitoring undertaken in Zone A during the reporting period from 2 to 8 February 2014 in accordance with the *Updated EM&A Manual* and the requirements under Environmental Permit (EP - 433/2011) for the Project.

Water quality in Zone A was generally stable throughout the reporting period. Levels of Turbidity, SS and DO levels showed fluctuation over time during the reporting period.

Exceedances of the depth-averaged Turbidity and SS Action Levels were recorded on 5 February 2014, however, these exceedances were not considered to be caused by the cable installation works but rather are a reflection of the natural background condition for the day.

No exceedances of Limit Levels were recorded during the monitoring period. No complaints or summons/prosecutions were received either during the reporting period.

It is concluded the effect of the Project cable installation works on water quality around the Project site is negligible.

Annex A

## Impact Water Quality Monitoring Schedule



**Asia Submarine-cable Express (ASE) – Tseung Kwan O**  
**Time Schedule for Impact Water Quality Monitoring (WQM)**  
**12 January to 05 February 2014**

Sun	Mon	Tue	Wed	Thu	Fri	Sat
12 / 1 <b><u>WQM</u></b> (07:00-11:00) (11:00-15:00) (15:00-19:00) (19:00-23:00)	13 <b><u>WQM</u></b> (07:00-11:00) (11:00-15:00) (15:00-19:00) (19:00-23:00)	14 <b><u>WQM</u></b> (07:00-11:00) (11:00-15:00) (15:00-19:00) (19:00-23:00)	15 <b><u>WQM</u></b> (07:00-11:00) (11:00-15:00) (15:00-19:00) (19:00-23:00)	16 <b><u>WQM</u></b> (07:00-11:00) (11:00-15:00) (15:00-19:00) (19:00-23:00)	17 <b><u>WQM</u></b> (07:00-11:00) (11:00-15:00) (15:00-19:00) (19:00-23:00)	18 <b><u>WQM</u></b> (07:00-11:00) (11:00-15:00) (15:00-19:00) (19:00-23:00)
19 <b><u>WQM</u></b> (07:00-11:00) (11:00-15:00) (15:00-19:00) (19:00-23:00)	20 <b><u>WQM</u></b> (07:00-11:00) (11:00-15:00) (15:00-19:00) (19:00-23:00)	21 <b><u>WQM</u></b> (07:00-11:00) (11:00-15:00) (15:00-19:00) (19:00-23:00)	22 <b><u>WQM</u></b> (07:00-11:00) (11:00-15:00) (15:00-19:00) (19:00-23:00)	23 <b><u>WQM</u></b> (07:00-11:00) (11:00-15:00) (15:00-19:00) (19:00-23:00)	24 <b><u>WQM</u></b> (07:00-11:00) (11:00-15:00) (15:00-19:00) (19:00-23:00)	25 <b><u>WQM</u></b> (07:00-11:00) (11:00-15:00) (15:00-19:00) (19:00-23:00)
26 <b><u>WQM</u></b> (07:00-11:00) (11:00-15:00) (15:00-19:00) (19:00-23:00)	27 <b><u>WQM</u></b> (07:00-11:00) (11:00-15:00) (15:00-19:00) (19:00-23:00)	28 <b><u>WQM</u></b> (07:00-11:00) (11:00-15:00) (15:00-19:00) (19:00-23:00)	29 <b><u>WQM</u></b> (07:00-11:00) (11:00-15:00) (15:00-19:00) (19:00-23:00)	30 <b><u>WQM</u></b> (07:00-11:00) (11:00-15:00) (15:00-19:00) (19:00-23:00)	31	1 / 2
2	3 <b><u>WQM</u></b> (07:00-11:00) (11:00-15:00) (15:00-19:00) (19:00-23:00)	4 <b><u>WQM</u></b> (07:00-11:00) (11:00-15:00) (15:00-19:00) (19:00-23:00)	5 <b><u>WQM</u></b> (07:00-11:00) (11:00-15:00) (15:00-19:00) (19:00-23:00)			

Annex B

## Calibration Reports of Multi-parameter Sensor



## Performance Check of Turbidity Meter

Equipment Ref. No. : ET/0505/010 Manufacturer : HACH

Model No. : 2100Q Serial No. : 11110 C 014260

Date of Calibration : 07/01/2014 Due Date : 06/04/2014

Gelex Vial Std	Theoretical Value (NTU)	Measured Value (NTU)	Difference %
0-10 NTU	5	5.11	2.18
10-100 NTU	50	51.1	2.18
100-1000 NTU	550	568	3.22

Acceptance Criteria

Difference : -5 % to 5%

The turbidity meter complies \* / ~~does not comply~~ \* with the specified requirements and is deemed acceptable \* / ~~unacceptable~~ \* for use. Measurements are traceable to national standards.

Checked by :

Approved by :



### Internal Calibration Report of Dissolved Oxygen Meter

Equipment Ref. No. : <u>ET/EW/008/006</u>	Manufacturer : <u>YSI</u>
Model No. : <u>Pro 2030</u>	Serial No. : <u>12A 100554</u>
Date of Calibration : <u>19/12/2013</u>	Calibration Due Date : <del>18/03/2013</del> <u>18/03/2014</u> <i>As 19/12/2013</i>

**Temperature Verification**

Ref. No. of Reference Thermometer : ET/0521/008

Ref. No. of Water Bath : ---

		Temperature (°C)		
Reference Thermometer reading	Measured	19.9	Corrected	19.6
DO Meter reading	Measured	19.4	Difference	0.2

**Standardization of sodium thiosulphate (Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>) solution**

Reagent No. of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> titrant	CPE/012/4.5/001/8	Reagent No. of 0.025N K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub>	CPE/012/4.4/001/23
		Trial 1	Trial 2
Initial Vol. of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (ml)		1.00	12.00
Final Vol. of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (ml)		11.55	22.50
Vol. of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> used (ml)		10.55	10.50
Normality of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> solution (N)		0.02370	0.02381
Average Normality (N) of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> solution (N)		0.02376	
Acceptance criteria, Deviation		Less than ± 0.001N	

Calculation: Normality of Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>, N = 0.25 / ml Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> used

**Lineality Checking**

**Determination of dissolved oxygen content by Winkler Titration \***

Purging Time (min)	2		5		10	
	1	2	1	2	1	2
Initial Vol. of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (ml)	0.00	11.30	22.70	0.00	8.40	13.20
Final Vol. of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (ml)	11.30	22.70	30.80	8.40	13.20	18.10
Vol. (V) of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> used (ml)	11.30	11.40	8.10	8.40	4.80	4.90
Dissolved Oxygen (DO), mg/L	7.21	7.27	5.17	5.36	3.06	3.13
Acceptance criteria, Deviation	Less than + 0.3mg/L		Less than + 0.3mg/L		Less than + 0.3mg/L	

Calculation: DO (mg/L) = V x N x 8000/298

Purging time, min	DO meter reading, mg/L			Winkler Titration result *, mg/L			Difference (%) of DO Content
	1	2	Average	1	2	Average	
2	7.10	7.30	7.20	7.21	7.27	7.24	0.55
5	5.14	5.50	5.32	5.17	5.36	5.27	0.94
10	3.09	3.31	3.29	3.06	3.13	3.10	5.95
Linear regression coefficient				0.9999			



## Internal Calibration Report of Dissolved Oxygen Meter

### Zero Point Checking

DO meter reading, mg/L	0.00
------------------------	------

### Salinity Checking

Reagent No. of NaCl (10ppt)	CPE/012/4.7/002/13	Reagent No. of NaCl (30ppt)	CPE/012/4.8/002/13
-----------------------------	--------------------	-----------------------------	--------------------

### Determination of dissolved oxygen content by Winkler Titration \*\*

Salinity (ppt)	10		30	
Trial	1	2	1	2
Initial Vol. of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (ml)	0.00	11.80	24.10	35.20
Final Vol. of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (ml)	11.80	24.10	35.20	46.50
Vol. (V) of Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> used (ml)	11.80	12.30	11.10	11.30
Dissolved Oxygen (DO), mg/L	7.53	7.85	7.08	7.21
Acceptance criteria, Deviation	Less than + 0.3mg/L		Less than + 0.3mg/L	

Calculation:  $DO (mg/L) = V \times N \times 8000/298$

Salinity (ppt)	DO meter reading, mg/L			Winkler Titration result**, mg/L			Difference (%) of DO Content
	1	2	Average	1	2	Average	
10	7.55	7.89	7.72	7.53	7.85	7.69	0.39
30	7.04	7.16	7.1	7.08	7.21	7.15	0.70

### Acceptance Criteria

- (1) Difference between temperature readings from temperature sensor of DO probe and reference thermometer : < 0.5 °C
- (2) Linear regression coefficient : >0.99
- (3) Zero checking: 0.0mg/L
- (4) Difference (%) of DO content from the meter reading and by winkler titration : within ± 5%

The equipment complies # / ~~does not comply~~ # with the specified requirements and is deemed acceptable # / unacceptable # for use.

# Delete as appropriate

Calibrated by

:

Approved by :



## Performance Check of Salinity Meter

Equipment Ref. No. : ET/EW/008/006                      Manufacturer : YSI  
Model No. : Pro 2030                                      Serial No. : 12A 100554  
Date of Calibration : 19/12/2013                      Due Date : 18/03/2014

Ref. No. of Salinity Standard used (30ppt)

S/001/5

Salinity Standard (ppt)	Measured Salinity (ppt)	Difference %
30.0	30.8	2.63

Acceptance Criteria

Difference : <10 %

The salinity meter complies \* / ~~does not comply~~ \* with the specified requirements and is deemed acceptable \* / ~~unacceptable~~ \* for use. Measurements are traceable to national standards.

Checked by : 

Approved by : 

Annex C

## QA/QC Results for Suspended Solids Testing

## QA/QC Results of Laboratory Analysis of Total Suspended Solids

Sampling Date	QC Sample	Sample Duplicate		Sample Spike	
	% Recovery *	Sample ID	% Error #	Sample ID	% Recovery @
2/3/2014	102	C1-S1(0700)	4.88	G1-S2 (0700)	104.0
	96.4	G1-M1(0700)	0.00	G3-M2 (0700)	100
	107.1	G3-B1 (0700)	5.41	G2-B2(0700)	95.8
	102.6	S3-S1 (0700)	4.65	S3-B2 (0700)	104.2
	99.4	S1-M1 (1100)	0.00	F1-M2 (1100)	102.0
	104.7	F1-B1 (11:00)	4.44	S2-B1 (1100)	106.2
	107.6	G2-S1 (1100)	4.65	S3-B2 (1100)	92.2
	106.6	C1-S1(0700)	4.88	G1-S2 (0700)	93.9
	100.4	G1-M1(0700)	5.13	G3-M2 (0700)	96.2
	102.7	G3-B1 (0700)	0.00	G2-B2(0700)	105.9
	97.1	S3-S1 (0700)	4.65	S3-B2 (0700)	106.2
	104.6	S1-M1 (1100)	4.88	F1-M2 (1100)	98.0
	98.2	F1-B1 (11:00)	0.00	S2-B1 (1100)	98.0
	103.9	G2-S1 (1100)	4.44	S3-B2 (1100)	98.0

Note: (\*) % Recovery of QC sample should be between 80% to 120%.  
 (#) % Error of Sample Duplicate should be between 0% to 10%.  
 (@) % Recovery of Sample Spike should be between 80% to 120%.  
 (\*\*) % Error of Sample Duplicate >10% but invalid due to sample results less than MDL.

Sampling Date	QC Sample	Sample Duplicate		Sample Spike	
	% Recovery *	Sample ID	% Error #	Sample ID	% Recovery @
2/4/2014	94.7	C1-S1(0700)	4.26	G1-S2 (0700)	97.9
	101.7	G1-M1(0700)	3.92	G3-M2 (0700)	106.1
	107.9	G3-B1 (0700)	3.92	G2-B2(0700)	100
	94.3	S3-S1 (0700)	4.26	S3-B2 (0700)	100.0
	92.3	S1-M1 (1100)	3.92	F1-M2 (1100)	98.0
	103.0	F1-B1 (11:00)	0.00	S2-B1 (1100)	93.7
	98.8	G2-S1 (1100)	0.00	S3-B2 (1100)	95.8
	96.7	C1-S1(0700)	4.44	G1-S2 (0700)	92.5
	93.8	G1-M1(0700)	3.92	G3-M2 (0700)	96.2
	102.8	G3-B1 (0700)	0.00	G2-B2(0700)	100.0
	96.0	S3-S1 (0700)	0.00	S3-B2 (0700)	105.8
	102.0	S1-M1 (1100)	3.92	F1-M2 (1100)	95.9
	97.1	F1-B1 (11:00)	0.00	S2-B1 (1100)	103.9
	98.1	G2-S1 (1100)	0.00	S3-B2 (1100)	96.2

Note: (\*) % Recovery of QC sample should be between 80% to 120%.  
 (#) % Error of Sample Duplicate should be between 0% to 10%.  
 (@) % Recovery of Sample Spike should be between 80% to 120%.  
 (\*\*) % Error of Sample Duplicate >10% but invalid due to sample results less than MDL.



Sampling Date	QC Sample	Sample Duplicate		Sample Spike	
	% Recovery *	Sample ID	% Error #	Sample ID	% Recovery @
2/5/2014	104.6	C1-S1(0700)	0.00	G1-S2 (0700)	104.1
	99.2	G1-M1(0700)	4.26	G3-M2 (0700)	107.8
	104.9	G3-B1 (0700)	4.65	G2-B2(0700)	91.8
	105.6	S3-S1 (0700)	4.44	S3-B2 (0700)	98.0
	95.1	S1-M1 (1100)	0.00	F1-M2 (1100)	105.8
	97.3	F1-B1 (11:00)	3.92	S2-B1 (1100)	100.0
	101.0	G2-S1 (1100)	5.13	S3-B2 (1100)	106.0
	107.9	C1-S1(0700)	0.00	G1-S2 (0700)	94.0
	95.0	G1-M1(0700)	4.26	G3-M2 (0700)	96.1
	93.6	G3-B1 (0700)	0.00	G2-B2(0700)	103.8
	96.7	S3-S1 (0700)	4.88	S3-B2 (0700)	101.9
	101.0	S1-M1 (1100)	4.44	F1-M2 (1100)	95.9
	100.0	F1-B1 (11:00)	4.44	S2-B1 (1100)	106.1
	99.6	G2-S1 (1100)	4.88	S3-B2 (1100)	94.1

Note: (\*) % Recovery of QC sample should be between 80% to 120%.  
 (#) % Error of Sample Duplicate should be between 0% to 10%.  
 (@) % Recovery of Sample Spike should be between 80% to 120%.  
 (\*\*) % Error of Sample Duplicate >10% but invalid due to sample results less than MDL.

Annex D

## Impact Water Quality Monitoring Results

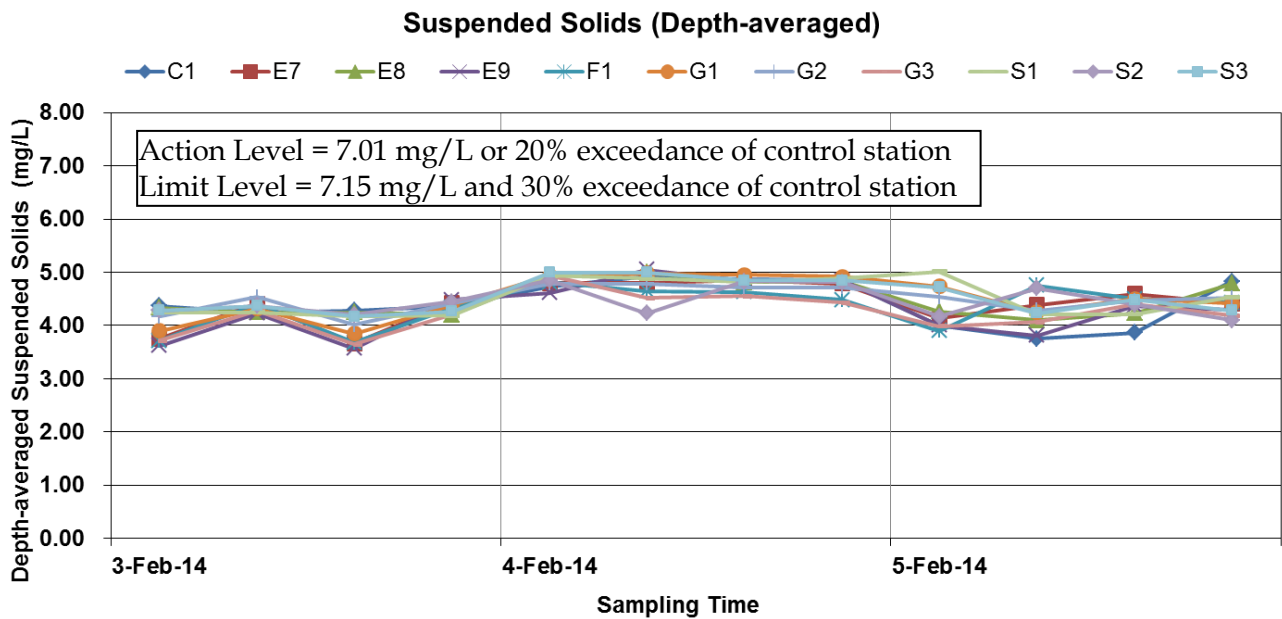
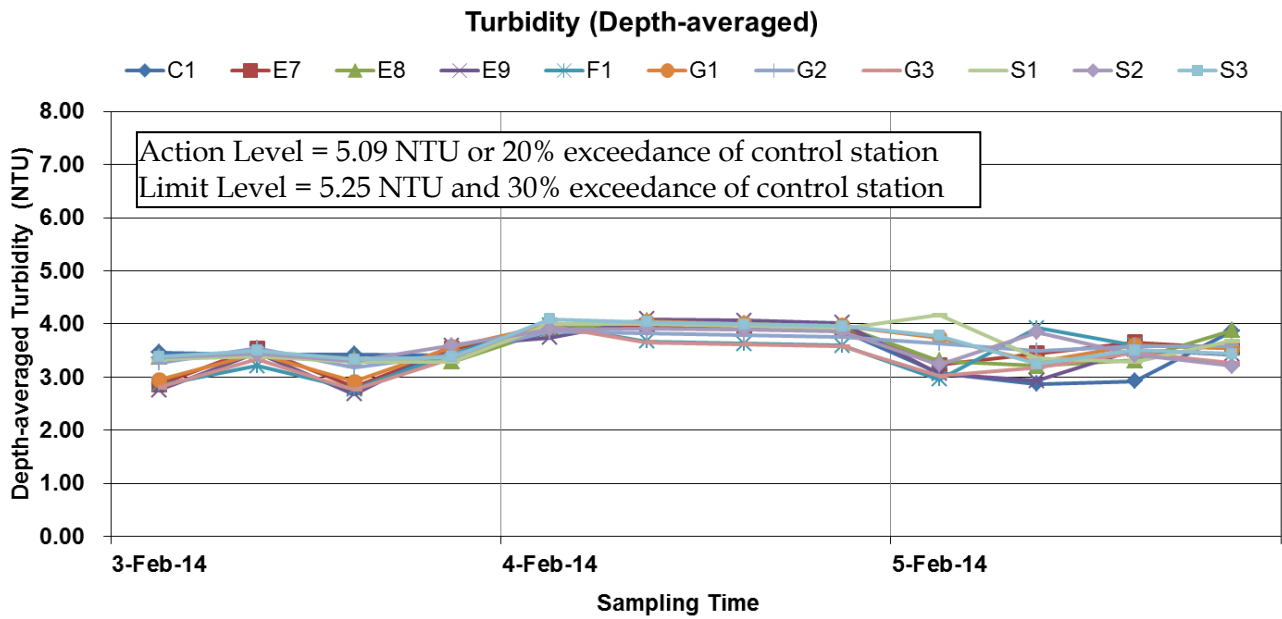


Figure D1 Depth-averaged Turbidity (NTU) and Suspended Solids (mg/L) of water column measured during the impact monitoring from 3 to 5 February 2014 (4<sup>th</sup> Week) for Zone A



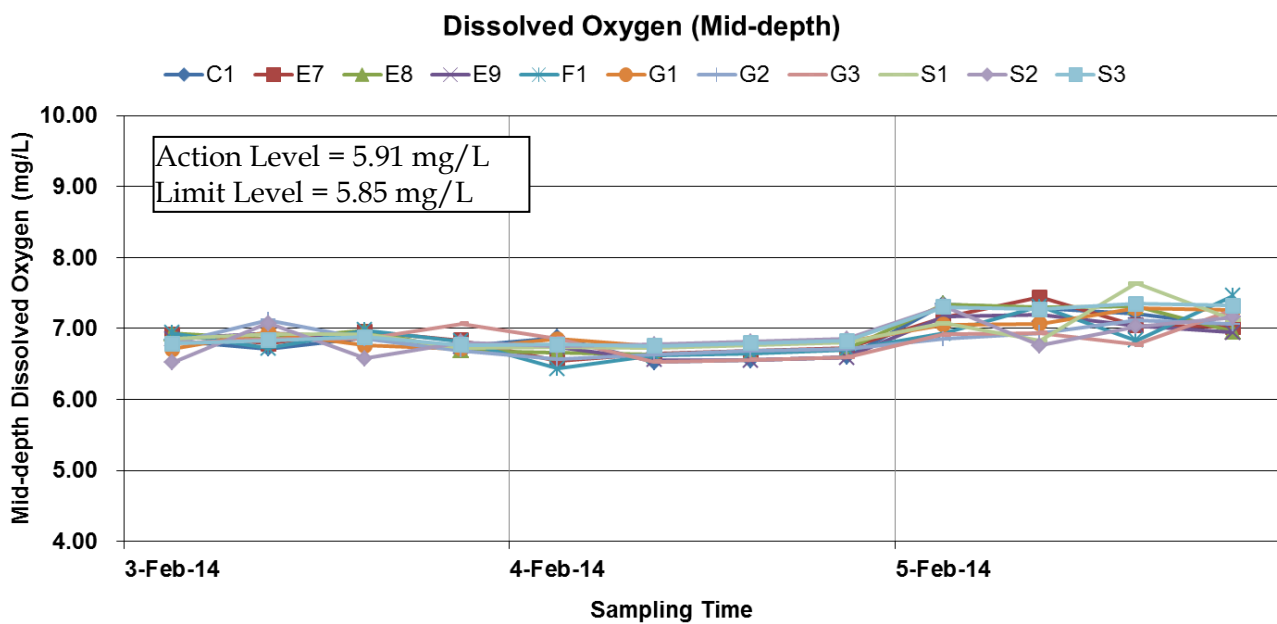
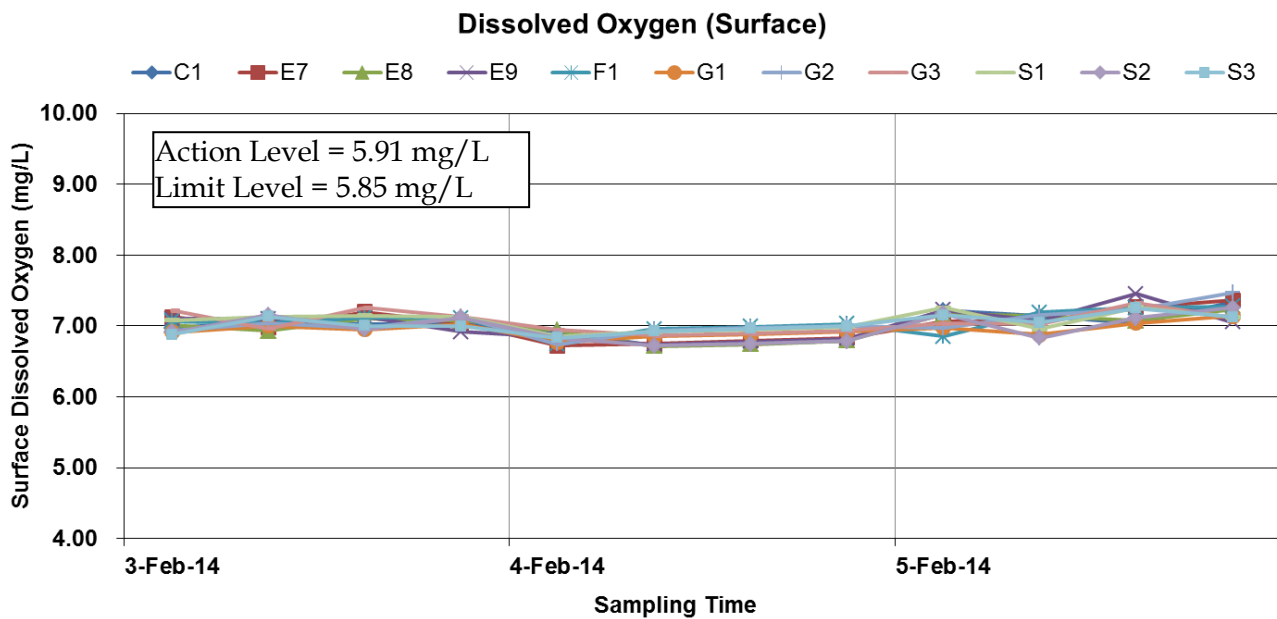


Figure D2 Dissolved Oxygen (mg/L) at surface and mid-depth of water column measured during the impact monitoring 3 to 5 February 2014 (4<sup>th</sup> Week) for Zone A



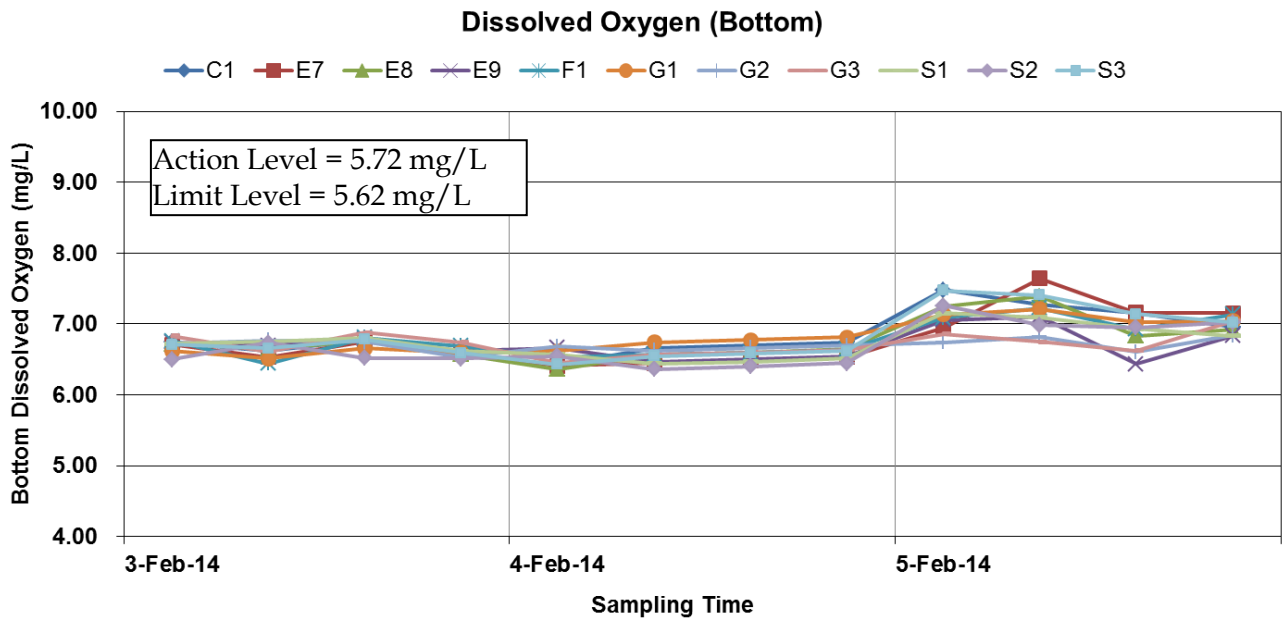


Figure D3 Dissolved Oxygen (mg/L) at bottom of water column measured during the impact monitoring from 3 to 5 February 2014 (4<sup>th</sup> Week) for Zone A



Date: 3-Feb-14  
 Weather: Fine  
 Sea Conditions: Small Wave  
 Zone A

Location	Sampling Time	Water Depth (m)	Current direction	Current speed (ms <sup>-1</sup> )	Monitoring Depth	Temperature (°C)			Salinity (ppt)			DO (mg/l)			DO Saturation (%)			Turbidity (NTU)				Suspended Solids (mg/l)			
						1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	D.A.**	1	2	Ave.*	D.A.**
C1	0710-0725	36.7	W	0.3	Surface	17.0	17.1	17.1	30.0	30.0	30.0	7.0	7.0	7.0	86.6	86.4	86.5	3.3	3.4	3.4		4.2	4.4	4.3	
					Middle	17.2	17.3	17.3	30.1	30.2	30.2	6.8	6.8	6.8	85.1	84.9	85.0	3.7	3.7	3.7	3.5	4.5	4.6	4.6	4.4
					Bottom	17.4	17.4	17.4	30.3	30.3	30.3	6.8	6.7	6.7	84.2	84.0	84.1	3.4	3.4	3.4		4.2	4.3	4.3	
E8	0730-0746	19.6	W	0.4	Surface	17.0	17.0	17.0	30.0	30.1	30.1	7.0	7.0	7.0	87.0	86.8	86.9	3.2	3.2	3.2		4.1	4.2	4.2	
					Middle	17.1	17.2	17.2	30.2	30.2	30.2	6.9	6.9	6.9	86.3	86.1	86.2	3.6	3.6	3.6	3.4	4.5	4.6	4.6	4.3
					Bottom	17.3	17.4	17.4	30.3	30.4	30.4	6.7	6.7	6.7	84.0	83.8	83.9	3.3	3.4	3.4		4.2	4.4	4.3	
S1	0751-0807	10.3	W	0.3	Surface	17.0	17.1	17.1	30.0	30.0	30.0	7.1	7.1	7.1	87.7	87.9	87.8	3.1	3.1	3.1		4.0	4.1	4.1	
					Middle	17.2	17.2	17.2	30.1	30.2	30.2	6.9	6.9	6.9	85.5	85.3	85.4	3.5	3.5	3.5	3.3	4.3	4.2	4.3	4.3
					Bottom	17.3	17.4	17.4	30.3	30.4	30.4	6.7	6.7	6.7	84.1	83.8	84.0	3.4	3.5	3.4		4.5	4.4	4.5	
G1	0812-0828	11.5	W	0.4	Surface	17.0	17.0	17.0	30.0	30.1	30.1	6.9	6.9	6.9	85.8	85.6	85.7	3.0	3.0	3.0		3.8	4.0	3.9	
					Middle	17.1	17.2	17.2	30.2	30.3	30.3	6.7	6.7	6.7	83.3	83.5	83.4	2.9	2.8	2.9	3.0	3.8	3.7	3.8	3.9
					Bottom	17.3	17.3	17.3	30.4	30.4	30.4	6.6	6.6	6.6	82.5	82.7	82.6	3.0	3.0	3.0		4.1	4.0	4.1	
E7	0833-0850	13.0	W	0.3	Surface	17.0	17.1	17.1	30.0	30.1	30.1	7.1	7.1	7.1	88.5	88.3	88.4	2.6	2.7	2.7		3.5	3.6	3.6	
					Middle	17.1	17.1	17.1	30.2	30.3	30.3	6.9	6.9	6.9	86.2	86.0	86.1	2.9	2.9	2.9	2.9	3.7	3.8	3.8	3.8
					Bottom	17.2	17.3	17.3	30.4	30.4	30.4	6.7	6.7	6.7	83.6	83.8	83.7	3.0	3.0	3.0		4.0	3.9	4.0	
F1	0855-0911	11.9	W	0.3	Surface	17.0	17.0	17.0	30.0	30.0	30.0	7.1	7.1	7.1	87.5	87.7	87.6	2.7	2.7	2.7		3.5	3.6	3.6	
					Middle	17.1	17.2	17.2	30.1	30.2	30.2	6.9	7.0	6.9	86.2	86.4	86.3	2.8	2.9	2.9	2.9	3.7	3.5	3.6	3.7
					Bottom	17.3	17.4	17.4	30.3	30.4	30.4	6.8	6.8	6.8	84.5	84.3	84.4	3.0	3.0	3.0		4.0	4.0	4.0	
G3	0915-0933	15.5	W	0.4	Surface	17.1	17.1	17.1	30.0	30.1	30.1	7.2	7.2	7.2	89.4	89.6	89.5	2.7	2.7	2.7		3.6	3.7	3.7	
					Middle	17.2	17.3	17.3	30.2	30.3	30.3	6.8	6.8	6.8	84.6	84.2	84.4	2.9	2.9	2.9	2.8	3.9	3.8	3.9	3.7
					Bottom	17.4	17.4	17.4	30.4	30.4	30.4	6.8	6.8	6.8	85.1	85.3	85.2	2.8	2.9	2.9		3.6	3.7	3.7	
E9	0938-0954	19.8	W	0.4	Surface	17.0	17.0	17.0	30.0	30.1	30.1	7.1	7.1	7.1	88.2	88.0	88.1	2.8	2.8	2.8		3.5	3.6	3.6	
					Middle	17.1	17.2	17.2	30.2	30.2	30.2	6.8	6.9	6.9	85.1	85.3	85.2	2.9	2.9	2.9	2.8	3.8	4.0	3.9	3.6
					Bottom	17.3	17.3	17.3	30.3	30.4	30.4	6.7	6.8	6.7	84.0	84.2	84.1	2.6	2.6	2.6		3.3	3.5	3.4	
S2	1000-1017	10.5	W	0.3	Surface	17.0	17.1	17.1	30.0	30.1	30.1	6.9	6.9	6.9	85.8	85.6	85.7	3.1	3.1	3.1		4.1	4.0	4.1	
					Middle	17.2	17.2	17.2	30.2	30.3	30.3	6.5	6.5	6.5	81.2	81.0	81.1	3.5	3.5	3.5	3.4	4.4	4.3	4.4	4.3
					Bottom	17.3	17.4	17.4	30.4	30.4	30.4	6.5	6.5	6.5	81.0	81.3	81.2	3.4	3.5	3.5		4.5	4.4	4.5	
G2	1022-1039	13.3	W	0.3	Surface	17.0	17.0	17.0	30.0	30.0	30.0	6.9	6.9	6.9	86.1	85.9	86.0	3.1	3.1	3.1		4.0	4.0	4.0	
					Middle	17.1	17.2	17.2	30.1	30.2	30.2	6.8	6.8	6.8	84.0	84.2	84.1	3.3	3.3	3.3	3.3	4.1	4.2	4.2	4.2
					Bottom	17.3	17.4	17.4	30.3	30.4	30.4	6.7	6.7	6.7	83.9	84.1	84.0	3.4	3.5	3.4		4.3	4.4	4.4	
S3	1045-1100	12.7	W	0.3	Surface	17.1	17.1	17.1	30.0	30.1	30.1	6.9	6.9	6.9	85.2	85.4	85.3	3.3	3.4	3.4		4.2	4.1	4.2	
					Middle	17.2	17.3	17.3	30.2	30.2	30.2	6.8	6.8	6.8	84.6	84.2	84.4	3.3	3.3	3.3	3.4	4.3	4.2	4.3	4.3
					Bottom	17.4	17.5	17.5	30.3	30.4	30.4	6.7	6.7	6.7	83.8	83.6	83.7	3.5	3.5	3.5		4.4	4.5	4.5	

Remark or Observation:

Note: \* Average

\*\* Depth Average

Date: 3-Feb-14  
 Weather: Fine  
 Sea Conditions: Small Wave  
 Zone A

Location	Sampling Time	Water Depth (m)	Current direction	Current speed (ms <sup>-1</sup> )	Monitoring Depth	Temperature (°C)			Salinity (ppt)			DO (mg/l)			DO Saturation (%)			Turbidity (NTU)				Suspended Solids (mg/l)			
						1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	D.A.**	1	2	Ave.*	D.A.**
C1	1445-1500	36.3	W	0.4	Surface	17.2	17.1	17.2	30.0	30.0	30.0	7.1	7.1	7.1	87.7	87.5	87.6	3.3	3.3	3.3		4.1	4.0	4.1	
					Middle	17.2	17.3	17.3	30.2	30.3	30.3	6.7	6.7	6.7	83.4	83.7	83.6	3.4	3.4	3.4	3.4	4.2	4.3	4.3	4.3
					Bottom	17.4	17.4	17.4	30.4	30.4	30.4	6.7	6.6	6.6	83.0	82.4	82.7	3.6	3.6	3.6		4.5	4.4	4.5	
E8	1423-1438	19.1	W	0.4	Surface	17.1	17.2	17.2	30.0	30.1	30.1	7.0	6.9	6.9	86.2	85.6	85.9	3.4	3.4	3.4		4.2	4.1	4.2	
					Middle	17.3	17.2	17.3	30.3	30.3	30.3	6.8	6.9	6.9	85.1	85.4	85.3	3.5	3.5	3.5	3.5	4.4	4.3	4.4	4.3
					Bottom	17.4	17.5	17.5	30.4	30.5	30.5	6.6	6.7	6.7	82.9	83.2	83.1	3.4	3.5	3.5		4.3	4.2	4.3	
S1	1403-1417	10.5	W	0.5	Surface	17.2	17.1	17.2	30.0	30.1	30.1	7.1	7.1	7.1	88.2	88.6	88.4	3.2	3.2	3.2		4.1	4.0	4.1	
					Middle	17.3	17.3	17.3	30.2	30.3	30.3	6.9	6.9	6.9	85.9	86.3	86.1	3.4	3.4	3.4	3.4	4.2	4.3	4.3	4.3
					Bottom	17.4	17.4	17.4	30.4	30.5	30.5	6.8	6.7	6.8	84.4	84.2	84.3	3.6	3.6	3.6		4.5	4.4	4.5	
G1	1338-1355	11.9	W	0.4	Surface	17.1	17.1	17.1	30.1	30.1	30.1	7.0	7.0	7.0	86.5	87.0	86.8	3.2	3.3	3.2		4.1	4.2	4.2	
					Middle	17.2	17.3	17.3	30.2	30.3	30.3	6.9	7.0	7.0	86.4	86.6	86.5	3.4	3.5	3.4	3.4	4.4	4.3	4.4	4.3
					Bottom	17.4	17.3	17.4	30.4	30.3	30.4	6.5	6.5	6.5	81.3	81.4	81.4	3.6	3.7	3.6		4.5	4.4	4.5	
E7	1315-1332	13.2	W	0.5	Surface	17.2	17.2	17.2	30.1	30.0	30.1	7.0	7.0	7.0	86.7	86.4	86.6	3.4	3.4	3.4		4.1	4.2	4.2	
					Middle	17.3	17.4	17.4	30.3	30.3	30.3	6.8	6.8	6.8	84.4	84.6	84.5	3.5	3.6	3.6	3.5	4.4	4.6	4.5	4.4
					Bottom	17.3	17.4	17.4	30.3	30.4	30.4	6.5	6.5	6.5	81.5	81.6	81.6	3.7	3.7	3.7		4.5	4.7	4.6	
F1	1252-1308	12.5	W	0.5	Surface	17.1	17.2	17.2	30.0	30.1	30.1	7.0	7.1	7.0	87.3	87.5	87.4	3.4	3.5	3.4		4.2	4.3	4.3	
					Middle	17.2	17.3	17.3	30.2	30.3	30.3	6.7	6.7	6.7	83.9	82.4	83.2	3.6	3.6	3.6	3.2	4.5	4.4	4.5	4.4
					Bottom	17.4	17.4	17.4	30.4	30.4	30.4	6.4	6.5	6.4	80.2	80.7	80.5	2.6	2.6	2.6		4.6	4.4	4.5	
G3	1227-1245	15.5	W	0.4	Surface	17.2	17.1	17.2	30.1	30.0	30.1	7.0	7.0	7.0	86.2	86.6	86.4	3.3	3.3	3.3		4.1	4.3	4.2	
					Middle	17.3	17.3	17.3	30.3	30.2	30.3	6.9	6.8	6.9	85.6	85.1	85.4	3.3	3.3	3.3	3.3	4.2	4.2	4.2	4.3
					Bottom	17.4	17.5	17.5	30.3	30.4	30.4	6.6	6.6	6.6	82.7	82.4	82.6	3.4	3.5	3.4		4.5	4.4	4.5	
E9	1206-1221	18.7	W	0.4	Surface	17.1	17.2	17.2	30.0	30.0	30.0	7.1	7.1	7.1	87.9	88.2	88.1	3.4	3.4	3.4		4.2	4.1	4.2	
					Middle	17.3	17.4	17.4	30.1	30.2	30.2	6.9	6.9	6.9	86.4	86.3	86.4	3.4	3.5	3.5	3.5	4.0	4.2	4.1	4.2
					Bottom	17.4	17.4	17.4	30.3	30.4	30.4	6.7	6.7	6.7	83.4	83.8	83.6	3.5	3.6	3.5		4.5	4.4	4.5	
S2	1145-1200	11.4	W	0.4	Surface	17.2	17.2	17.2	30.0	30.1	30.1	7.1	7.2	7.2	88.6	88.8	88.7	3.3	3.3	3.3		4.2	4.1	4.2	
					Middle	17.2	17.3	17.3	30.2	30.3	30.3	7.1	7.1	7.1	87.8	87.9	87.9	3.5	3.6	3.5	3.4	4.6	4.4	4.5	4.4
					Bottom	17.4	17.4	17.4	30.4	30.3	30.4	6.7	6.7	6.7	84.0	84.2	84.1	3.4	3.5	3.5		4.5	4.4	4.5	
G2	1122-1138	13.6	W	0.3	Surface	17.2	17.1	17.2	30.1	30.0	30.1	7.0	7.1	7.0	87.1	87.4	87.3	3.5	3.4	3.4		4.4	4.2	4.3	
					Middle	17.3	17.3	17.3	30.2	30.3	30.3	7.1	7.1	7.1	88.3	88.4	88.4	3.6	3.6	3.6	3.6	4.5	4.7	4.6	4.5
					Bottom	17.4	17.3	17.4	30.4	30.4	30.4	6.8	6.7	6.8	84.9	84.2	84.6	3.6	3.6	3.6		4.8	4.6	4.7	
S3	1100-1115	10.4	W	0.4	Surface	17.2	17.2	17.2	30.0	30.1	30.1	7.1	7.2	7.1	88.3	88.7	88.5	3.5	3.5	3.5		4.3	4.4	4.4	
					Middle	17.3	17.2	17.3	30.2	30.3	30.3	6.8	6.8	6.8	85.1	84.9	85.0	3.6	3.6	3.6	3.5	4.7	4.5	4.6	4.4
					Bottom	17.4	17.3	17.4	30.4	30.4	30.4	6.7	6.6	6.7	83.3	82.9	83.1	3.3	3.4	3.3		4.1	4.2	4.2	

Remark or Observation:

Note: \* Average

\*\* Depth Average

Date: 3-Feb-14  
 Weather: Fine  
 Sea Conditions: Small Wave  
 Zone A

Location	Sampling Time	Water Depth (m)	Current direction	Current speed (ms <sup>-1</sup> )	Monitoring Depth	Temperature (°C)			Salinity (ppt)			DO (mg/l)			DO Saturation (%)			Turbidity (NTU)				Suspended Solids (mg/l)			
						1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	D.A.**	1	2	Ave.*	D.A.**
C1	1500-1517	36.9	W	0.4	Surface	17.0	17.1	17.1	30.0	30.1	30.1	7.0	7.0	7.0	87.3	87.5	87.4	3.3	3.4	3.3		4.2	4.1	4.2	
					Middle	17.2	17.3	17.3	30.1	30.2	30.2	6.9	6.9	6.9	85.5	85.3	85.4	3.6	3.6	3.6	3.4	4.4	4.5	4.5	4.3
					Bottom	17.4	17.3	17.4	30.3	30.4	30.4	6.8	6.8	6.8	84.7	84.5	84.6	3.3	3.3	3.3		4.2	4.3	4.3	
E8	1522-1539	19.9	W	0.3	Surface	17.0	17.0	17.0	30.0	30.1	30.1	7.1	7.1	7.1	87.9	88.1	88.0	3.2	3.2	3.2		4.1	4.0	4.1	
					Middle	17.1	17.2	17.2	30.2	30.3	30.3	7.0	7.0	7.0	86.6	86.8	86.7	3.5	3.5	3.5	3.4	4.4	4.5	4.5	4.3
					Bottom	17.3	17.3	17.3	30.4	30.4	30.4	6.8	6.8	6.8	84.5	84.3	84.4	3.3	3.4	3.3		4.2	4.3	4.3	
S1	1544-1600	10.6	W	0.4	Surface	17.1	17.1	17.1	30.1	30.1	30.1	7.1	7.2	7.1	88.5	88.7	88.6	3.0	3.0	3.0		4.0	3.9	4.0	
					Middle	17.2	17.3	17.3	30.2	30.3	30.3	6.9	6.9	6.9	86.0	86.3	86.2	3.4	3.4	3.4	3.3	4.2	4.1	4.2	4.2
					Bottom	17.4	17.3	17.4	30.4	30.3	30.4	6.8	6.8	6.8	84.7	84.9	84.8	3.4	3.4	3.4		4.3	4.5	4.4	
G1	1605-1622	11.7	W	0.3	Surface	17.0	17.1	17.1	30.0	30.1	30.1	6.9	7.0	7.0	86.1	86.3	86.2	2.9	2.9	2.9		3.9	3.8	3.9	
					Middle	17.1	17.2	17.2	30.2	30.3	30.3	6.8	6.8	6.8	84.0	84.2	84.1	2.8	2.8	2.8	2.9	3.8	3.7	3.8	3.9
					Bottom	17.3	17.4	17.4	30.4	30.4	30.4	6.7	6.7	6.7	83.0	83.1	83.1	3.0	3.0	3.0		4.0	3.9	4.0	
E7	1627-1643	13.2	W	0.3	Surface	17.0	17.1	17.1	30.0	30.0	30.0	7.2	7.2	7.2	89.2	89.4	89.3	2.6	2.6	2.6		3.4	3.5	3.5	
					Middle	17.1	17.2	17.2	30.1	30.2	30.2	7.0	7.0	7.0	86.5	86.7	86.6	2.9	2.9	2.9	2.8	3.8	3.6	3.7	3.7
					Bottom	17.3	17.3	17.3	30.3	30.4	30.4	6.7	6.8	6.8	84.1	84.4	84.3	2.9	3.0	2.9		3.9	3.8	3.9	
F1	1648-1705	12.2	W	0.3	Surface	17.1	17.1	17.1	30.0	30.1	30.1	7.1	7.1	7.1	88.4	88.2	88.3	2.6	2.6	2.6		3.5	3.6	3.6	
					Middle	17.2	17.3	17.3	30.2	30.2	30.2	7.0	7.0	7.0	86.7	86.9	86.8	2.8	2.8	2.8	2.8	3.7	3.8	3.8	3.7
					Bottom	17.4	17.4	17.4	30.3	30.4	30.4	6.8	6.8	6.8	85.1	84.9	85.0	2.9	2.9	2.9		3.7	3.8	3.8	
G3	1710-1728	15.8	W	0.4	Surface	17.0	17.1	17.1	30.0	30.1	30.1	7.3	7.3	7.3	90.1	89.9	90.0	2.6	2.6	2.6		3.6	3.5	3.6	
					Middle	17.2	17.1	17.2	30.1	30.2	30.2	6.8	6.9	6.9	85.1	85.3	85.2	2.9	2.9	2.9	2.8	3.7	3.8	3.8	3.7
					Bottom	17.3	17.3	17.3	30.3	30.4	30.4	6.9	6.9	6.9	85.7	85.9	85.8	2.8	2.8	2.8		3.6	3.7	3.7	
E9	1733-1750	20.0	W	0.3	Surface	17.0	17.0	17.0	30.0	30.0	30.0	7.2	7.1	7.1	88.7	88.3	88.5	2.7	2.7	2.7		3.7	3.6	3.7	
					Middle	17.1	17.2	17.2	30.1	30.2	30.2	6.9	6.9	6.9	85.5	85.7	85.6	2.9	2.9	2.9	2.7	3.5	3.7	3.6	3.6
					Bottom	17.3	17.4	17.4	30.2	30.3	30.3	6.8	6.8	6.8	84.5	84.7	84.6	2.5	2.4	2.4		3.4	3.5	3.5	
S2	1755-1813	10.7	W	0.4	Surface	17.0	17.1	17.1	30.0	30.1	30.1	6.9	7.0	7.0	86.1	86.3	86.2	3.1	3.1	3.1		4.0	3.9	4.0	
					Middle	17.1	17.2	17.2	30.2	30.2	30.2	6.6	6.6	6.6	81.7	81.9	81.8	3.4	3.5	3.4	3.3	4.3	4.2	4.3	4.2
					Bottom	17.3	17.3	17.3	30.3	30.4	30.4	6.5	6.5	6.5	81.5	81.2	81.4	3.4	3.4	3.4		4.5	4.3	4.4	
G2	1818-1835	13.5	W	0.4	Surface	17.0	17.0	17.0	30.0	30.0	30.0	7.0	7.0	7.0	86.4	86.6	86.5	3.0	3.0	3.0		4.0	3.8	3.9	
					Middle	17.1	17.1	17.1	30.1	30.2	30.2	6.8	6.9	6.9	85.1	85.3	85.2	3.2	3.2	3.2	3.2	4.1	4.0	4.1	4.0
					Bottom	17.2	17.3	17.3	30.3	30.3	30.3	6.8	6.7	6.8	84.4	84.2	84.3	3.3	3.3	3.3		4.2	4.0	4.1	
S3	1843-1900	12.9	W	0.3	Surface	17.1	17.2	17.2	30.0	30.1	30.1	7.0	7.0	7.0	86.7	86.9	86.8	3.3	3.3	3.3		4.2	4.1	4.2	
					Middle	17.3	17.3	17.3	30.2	30.2	30.2	6.9	6.9	6.9	85.4	85.6	85.5	3.3	3.3	3.3	3.3	4.2	4.1	4.2	4.2
					Bottom	17.4	17.4	17.4	30.3	30.4	30.4	6.8	6.8	6.8	84.5	84.7	84.6	3.4	3.4	3.4		4.3	4.2	4.2	

Remark or Observation:

Note: \* Average

\*\* Depth Average



Date: 3-Feb-14  
 Weather: Fine  
 Sea Conditions: Small Wave  
 Zone A

Location	Sampling Time	Water Depth (m)	Current direction	Current speed (ms <sup>-1</sup> )	Monitoring Depth	Temperature (°C)			Salinity (ppt)			DO (mg/l)			DO Saturation (%)			Turbidity (NTU)				Suspended Solids (mg/l)			
						1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	D.A.**	1	2	Ave.*	D.A.**
C1	2245-2300	35.1	W	0.4	Surface	17.0	17.0	17.0	30.1	30.1	30.1	7.1	7.0	7.0	87.4	87.2	87.3	3.3	3.3	3.3		4.3	4.1	4.2	
					Middle	17.2	17.2	17.2	30.1	30.2	30.2	6.7	6.8	6.8	83.8	84.4	84.1	3.5	3.5	3.5	3.4	4.3	4.4	4.4	4.4
					Bottom	17.3	17.3	17.3	30.3	30.3	30.3	6.5	6.6	6.6	81.7	81.9	81.8	3.4	3.4	3.4		4.6	4.5	4.6	
E8	2222-2238	19.4	W	0.5	Surface	17.1	17.0	17.1	30.0	30.1	30.1	7.1	7.1	7.1	87.8	87.7	87.8	3.2	3.3	3.2		4.0	4.2	4.1	
					Middle	17.2	17.1	17.2	30.2	30.1	30.2	6.7	6.7	6.7	83.1	83.4	83.3	3.4	3.4	3.4	3.3	4.3	4.4	4.4	4.2
					Bottom	17.3	17.4	17.4	30.4	30.3	30.4	6.6	6.6	6.6	82.2	81.9	82.1	3.2	3.2	3.2		4.1	4.2	4.2	
S1	2158-2215	10.8	W	0.4	Surface	17.0	17.1	17.1	30.0	30.1	30.1	7.2	7.1	7.1	88.7	88.1	88.4	3.2	3.2	3.2		4.0	4.2	4.1	
					Middle	17.2	17.1	17.2	30.1	30.1	30.1	6.7	6.7	6.7	83.4	83.9	83.7	3.3	3.4	3.4	3.3	4.2	4.3	4.3	4.2
					Bottom	17.4	17.3	17.4	30.3	30.4	30.4	6.6	6.6	6.6	82.7	82.5	82.6	3.3	3.4	3.3		4.1	4.3	4.2	
G1	2135-2153	11.5	W	0.4	Surface	17.1	17.1	17.1	30.1	30.0	30.1	7.0	7.0	7.0	87.1	87.3	87.2	3.4	3.5	3.5		4.2	4.3	4.3	
					Middle	17.2	17.3	17.3	30.2	30.3	30.3	6.7	6.7	6.7	83.8	83.4	83.6	3.6	3.6	3.6	3.6	4.4	4.5	4.5	4.4
					Bottom	17.3	17.4	17.4	30.3	30.4	30.4	6.6	6.6	6.6	82.2	82.5	82.4	3.7	3.6	3.6		4.4	4.5	4.5	
E7	2113-2127	12.1	W	0.4	Surface	17.0	17.1	17.1	30.0	30.1	30.1	7.1	7.0	7.0	87.5	87.1	87.3	3.4	3.4	3.4		4.3	4.2	4.3	
					Middle	17.3	17.2	17.3	30.3	30.2	30.3	6.8	6.9	6.8	84.8	85.3	85.1	3.6	3.6	3.6	3.5	4.6	4.5	4.6	4.4
					Bottom	17.3	17.3	17.3	30.4	30.4	30.4	6.6	6.6	6.6	82.4	82.3	82.4	3.6	3.6	3.6		4.4	4.6	4.5	
F1	2049-2105	11.4	W	0.5	Surface	17.1	17.1	17.1	30.1	30.0	30.1	7.1	7.1	7.1	88.0	88.4	88.2	3.4	3.4	3.4		4.4	4.2	4.3	
					Middle	17.2	17.2	17.2	30.2	30.3	30.3	6.8	6.8	6.8	85.1	84.6	84.9	3.5	3.5	3.5	3.4	4.5	4.4	4.5	4.3
					Bottom	17.4	17.4	17.4	30.3	30.4	30.4	6.7	6.7	6.7	83.7	83.4	83.6	3.4	3.5	3.4		4.2	4.3	4.3	
G3	2025-2042	13.2	W	0.5	Surface	17.0	17.1	17.1	30.0	30.1	30.1	7.2	7.1	7.1	88.7	88.3	88.5	3.3	3.4	3.3		4.2	4.1	4.2	
					Middle	17.2	17.3	17.3	30.2	30.3	30.3	7.1	7.1	7.1	88.2	87.8	88.0	3.4	3.4	3.4	3.4	4.2	4.3	4.3	4.2
					Bottom	17.4	17.3	17.4	30.4	30.4	30.4	6.7	6.8	6.7	84.2	84.3	84.3	3.3	3.3	3.3		4.1	4.3	4.2	
E9	2002-2017	18.8	W	0.4	Surface	17.1	17.0	17.1	30.0	30.1	30.1	6.9	6.9	6.9	86.1	85.6	85.9	3.4	3.4	3.4		4.3	4.2	4.3	
					Middle	17.3	17.3	17.3	30.2	30.2	30.2	6.7	6.8	6.8	83.8	84.1	84.0	3.6	3.7	3.6	3.6	4.5	4.4	4.5	4.5
					Bottom	17.4	17.4	17.4	30.4	30.3	30.4	6.6	6.6	6.6	82.4	82.8	82.6	3.8	3.8	3.8		4.8	4.6	4.7	
S2	1941-1957	11.3	W	0.4	Surface	17.0	17.1	17.1	30.0	30.1	30.1	7.1	7.1	7.1	88.5	88.2	88.4	3.4	3.4	3.4		4.2	4.1	4.2	
					Middle	17.2	17.2	17.2	30.2	30.3	30.3	6.8	6.8	6.8	84.9	84.5	84.7	3.6	3.6	3.6	3.6	4.4	4.5	4.5	4.5
					Bottom	17.3	17.4	17.4	30.4	30.4	30.4	6.5	6.5	6.5	81.5	81.2	81.4	3.7	3.7	3.7		4.8	4.7	4.8	
G2	1922-1938	13.5	W	0.5	Surface	17.0	17.1	17.1	30.1	30.0	30.1	7.1	7.2	7.1	88.3	88.7	88.5	3.4	3.4	3.4		4.4	4.3	4.4	
					Middle	17.2	17.3	17.3	30.3	30.2	30.3	6.7	6.7	6.7	83.4	83.1	83.3	3.5	3.6	3.6	3.4	4.5	4.3	4.4	4.4
					Bottom	17.3	17.4	17.4	30.3	30.4	30.4	6.5	6.5	6.5	81.7	81.3	81.5	3.4	3.4	3.4		4.6	4.4	4.5	
S3	1900-1915	11.1	W	0.3	Surface	17.1	17.0	17.1	30.0	30.0	30.0	7.0	7.0	7.0	86.6	87.0	86.8	3.2	3.3	3.2		4.1	4.2	4.2	
					Middle	17.2	17.2	17.2	30.2	30.3	30.3	6.8	6.8	6.8	84.1	84.4	84.3	3.5	3.5	3.5	3.4	4.4	4.6	4.5	4.3
					Bottom	17.4	17.4	17.4	30.4	30.4	30.4	6.6	6.6	6.6	82.4	82.2	82.3	3.3	3.4	3.4		4.1	4.2	4.2	

Remark or Observation:

Note: \* Average

\*\* Depth Average

Date: 4-Feb-14  
 Weather: Cloudy  
 Sea Conditions: Small Wave  
 Zone A

Location	Sampling Time	Water Depth (m)	Current direction	Current speed (ms <sup>-1</sup> )	Monitoring Depth	Temperature (°C)			Salinity (ppt)			DO (mg/l)			DO Saturation (%)			Turbidity (NTU)				Suspended Solids (mg/l)			
						1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	D.A.**	1	2	Ave.*	D.A.**
C1	0700-0717	34.8	W	0.3	Surface	17.3	17.3	17.3	30.0	30.1	30.1	6.9	6.9	6.9	85.8	86.3	86.1	3.6	3.7	3.6		4.6	4.4	4.5	
					Middle	17.2	17.2	17.2	30.1	30.1	30.1	6.9	6.9	6.9	85.3	85.7	85.5	3.9	3.8	3.8	3.8	4.8	4.7	4.8	4.7
					Bottom	17.1	17.1	17.1	30.2	30.3	30.3	6.4	6.4	6.4	79.7	79.9	79.8	4.0	4.1	4.1		4.9	5.0	5.0	
E8	0724-0740	17.6	W	0.3	Surface	17.2	17.3	17.3	30.2	30.1	30.2	7.0	6.9	6.9	86.4	86.0	86.2	3.8	3.7	3.8		4.8	4.7	4.8	
					Middle	17.2	17.2	17.2	30.1	30.1	30.1	6.7	6.6	6.7	83.1	82.6	82.9	3.8	3.8	3.8	3.9	4.9	4.8	4.9	4.9
					Bottom	17.1	17.1	17.1	30.2	30.3	30.3	6.3	6.4	6.4	78.8	79.5	79.2	4.1	4.1	4.1		5.2	5.1	5.2	
S1	0745-0805	8.4	W	0.3	Surface	17.3	17.2	17.3	30.1	30.0	30.1	6.9	6.8	6.9	85.4	85.1	85.3	3.8	3.8	3.8		4.9	4.8	4.9	
					Middle	17.2	17.2	17.2	30.1	30.2	30.2	6.7	6.8	6.7	83.3	84.2	83.8	3.8	3.8	3.8	4.0	4.7	4.7	4.7	4.9
					Bottom	17.2	17.1	17.2	30.2	30.2	30.2	6.6	6.6	6.6	81.8	81.6	81.7	4.4	4.3	4.4		5.2	5.3	5.3	
G1	0810-0825	10.4	W	0.4	Surface	17.2	17.3	17.3	30.0	30.0	30.0	6.8	6.8	6.8	84.4	84.1	84.3	3.5	3.6	3.6		4.4	4.6	4.5	
					Middle	17.2	17.2	17.2	30.1	30.1	30.1	6.9	6.8	6.9	85.7	84.7	85.2	4.2	4.1	4.2	4.0	5.0	5.2	5.1	4.9
					Bottom	17.1	17.1	17.1	30.2	30.2	30.2	6.6	6.6	6.6	82.4	82.1	82.3	4.2	4.3	4.3		5.1	5.3	5.2	
E7	0830-0845	12.4	W	0.4	Surface	17.3	17.2	17.3	30.0	30.0	30.0	6.7	6.7	6.7	83.6	83.7	83.7	3.8	3.7	3.7		4.6	4.7	4.7	
					Middle	17.2	17.2	17.2	30.1	30.1	30.1	6.6	6.5	6.5	81.9	80.8	81.4	4.0	3.9	3.9	3.9	4.8	4.8	4.8	4.8
					Bottom	17.1	17.1	17.1	30.2	30.3	30.3	6.4	6.4	6.4	79.8	79.6	79.7	4.1	4.0	4.1		4.9	5.0	5.0	
F1	0850-0910	11.0	W	0.4	Surface	17.2	17.2	17.2	30.0	30.1	30.1	6.7	6.8	6.7	83.7	84.1	83.9	3.6	3.6	3.6		4.3	4.5	4.4	
					Middle	17.2	17.2	17.2	30.1	30.2	30.2	6.4	6.4	6.4	80.1	79.9	80.0	4.1	4.1	4.1	4.0	5.0	4.9	5.0	4.8
					Bottom	17.1	17.0	17.1	30.3	30.3	30.3	6.5	6.5	6.5	81.3	80.9	81.1	4.1	4.3	4.2		5.1	5.1	5.1	
G3	0915-0936	14.6	W	0.4	Surface	17.3	17.3	17.3	30.1	30.0	30.1	6.9	7.0	6.9	86.0	86.7	86.4	3.6	3.6	3.6		4.5	4.6	4.6	
					Middle	17.2	17.2	17.2	30.1	30.1	30.1	6.9	6.9	6.9	85.2	85.4	85.3	4.0	4.1	4.1	4.0	5.2	5.0	5.1	4.9
					Bottom	17.1	17.1	17.1	30.2	30.2	30.2	6.5	6.4	6.4	80.3	79.9	80.1	4.3	4.3	4.3		5.2	5.1	5.2	
E9	0943-1000	16.8	W	0.5	Surface	17.3	17.2	17.3	30.1	30.1	30.1	6.9	6.8	6.8	85.7	84.6	85.2	3.3	3.4	3.3		4.3	4.2	4.3	
					Middle	17.2	17.2	17.2	30.2	30.2	30.2	6.7	6.8	6.7	83.4	84.2	83.8	3.7	3.8	3.8	3.7	4.6	4.7	4.7	4.6
					Bottom	17.1	17.1	17.1	30.3	30.2	30.3	6.7	6.7	6.7	83.1	82.7	82.9	4.2	4.1	4.1		4.9	5.0	5.0	
S2	1004-1020	11.4	W	0.5	Surface	17.3	17.3	17.3	30.0	30.0	30.0	6.8	6.8	6.8	85.1	84.9	85.0	3.5	3.4	3.5		4.3	4.4	4.4	
					Middle	17.2	17.2	17.2	30.1	30.1	30.1	6.8	6.7	6.8	84.4	83.8	84.1	4.1	4.1	4.1	3.9	5.1	5.0	5.1	4.9
					Bottom	17.1	17.1	17.1	30.1	30.2	30.2	6.5	6.6	6.5	81.2	81.6	81.4	4.1	4.1	4.1		5.1	5.2	5.2	
G2	1025-1042	13.2	W	0.4	Surface	17.3	17.3	17.3	30.0	30.0	30.0	6.7	6.8	6.7	83.4	84.2	83.8	3.3	3.3	3.3		4.2	4.3	4.3	
					Middle	17.2	17.2	17.2	30.1	30.1	30.1	6.5	6.6	6.6	81.3	81.3	81.3	4.1	4.0	4.1	3.9	5.0	5.0	5.0	4.8
					Bottom	17.1	17.1	17.1	30.2	30.2	30.2	6.7	6.7	6.7	83.2	83.1	83.2	4.2	4.2	4.2		5.2	5.0	5.1	
S3	1045-1100	11.2	W	0.4	Surface	17.2	17.3	17.3	30.0	30.0	30.0	6.8	6.9	6.8	84.6	85.4	85.0	3.6	3.6	3.6		4.6	4.4	4.5	
					Middle	17.2	17.2	17.2	30.1	30.0	30.1	6.8	6.8	6.8	84.2	84.3	84.3	4.3	4.4	4.4	4.1	5.4	5.2	5.3	5.0
					Bottom	17.1	17.0	17.1	30.2	30.2	30.2	6.4	6.4	6.4	79.8	80.1	80.0	4.4	4.3	4.4		5.3	5.1	5.2	

Remark or Observation:

Note: \* Average  
 \*\* Depth Average

Date: 4-Feb-14  
 Weather: Cloudy  
 Sea Conditions: Small Wave  
 Zone A

Location	Sampling Time	Water Depth (m)	Current direction	Current speed (ms <sup>-1</sup> )	Monitoring Depth	Temperature (°C)			Salinity (ppt)			DO (mg/l)			DO Saturation (%)			Turbidity (NTU)				Suspended Solids (mg/l)			
						1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	D.A.**	1	2	Ave.*	D.A.**
C1	1444-1500	10.8	E	0.3	Surface	17.4	17.3	17.4	30.0	30.0	30.0	6.7	6.7	6.7	83.3	83.8	83.6	3.7	3.8	3.7		4.8	4.7	4.8	
					Middle	17.3	17.2	17.3	30.1	30.2	30.2	6.5	6.5	6.5	81.1	81.2	81.2	4.0	4.0	4.0	4.0	5.0	4.9	5.0	4.9
					Bottom	17.1	17.1	17.1	30.2	30.2	30.2	6.7	6.6	6.7	83.2	82.6	82.9	4.2	4.1	4.2		5.1	5.0	5.1	
E8	1429-1440	13.0	E	0.3	Surface	17.3	17.3	17.3	30.0	30.0	30.0	6.7	6.7	6.7	83.6	83.4	83.5	3.8	3.7	3.8		4.6	4.7	4.7	
					Middle	17.3	17.2	17.3	30.1	30.1	30.1	6.6	6.7	6.6	82.2	82.7	82.5	4.4	4.3	4.3	4.1	5.4	5.2	5.3	5.0
					Bottom	17.1	17.1	17.1	30.1	30.2	30.2	6.6	6.6	6.6	81.8	81.6	81.7	4.0	4.1	4.1		5.1	5.0	5.1	
S1	1406-1423	11.0	E	0.4	Surface	17.3	17.4	17.4	30.0	30.0	30.0	6.9	6.9	6.9	86.3	85.8	86.1	3.7	3.6	3.6		4.4	4.6	4.5	
					Middle	17.2	17.2	17.2	30.1	30.1	30.1	6.7	6.7	6.7	83.8	83.6	83.7	4.1	4.1	4.1	4.0	5.0	5.0	5.0	4.9
					Bottom	17.1	17.1	17.1	30.1	30.1	30.1	6.5	6.4	6.4	80.3	79.8	80.1	4.3	4.2	4.3		5.2	5.1	5.2	
G1	1345-1400	10.0	E	0.4	Surface	17.3	17.3	17.3	30.0	30.0	30.0	6.8	6.9	6.9	84.7	85.7	85.2	3.7	3.8	3.8		4.8	4.7	4.8	
					Middle	17.2	17.2	17.2	30.1	30.1	30.1	6.7	6.8	6.8	83.4	84.4	83.9	4.2	4.3	4.2	4.0	5.1	5.2	5.2	5.0
					Bottom	17.1	17.1	17.1	30.2	30.2	30.2	6.7	6.8	6.7	83.4	84.3	83.9	4.2	4.1	4.1		5.0	5.1	5.1	
E7	1315-1335	12.8	E	0.4	Surface	17.3	17.3	17.3	30.0	30.0	30.0	6.8	6.7	6.8	84.2	83.7	84.0	3.5	3.5	3.5		4.2	4.3	4.3	
					Middle	17.2	17.2	17.2	30.2	30.1	30.2	6.6	6.7	6.7	82.6	82.8	82.7	4.2	4.2	4.2	4.0	5.1	5.0	5.1	4.8
					Bottom	17.1	17.1	17.1	30.2	30.2	30.2	6.5	6.4	6.5	80.5	79.9	80.2	4.2	4.2	4.2		5.2	5.0	5.1	
F1	1252-1310	11.2	E	0.4	Surface	17.3	17.2	17.3	30.0	30.0	30.0	6.9	7.0	7.0	86.3	86.8	86.6	3.1	3.2	3.2		4.2	4.1	4.2	
					Middle	17.2	17.2	17.2	30.1	30.1	30.1	6.6	6.6	6.6	82.1	82.6	82.4	3.8	3.7	3.7	3.7	4.8	4.6	4.7	4.7
					Bottom	17.1	17.1	17.1	30.2	30.2	30.2	6.5	6.6	6.6	81.3	81.9	81.6	4.1	4.1	4.1		5.2	5.0	5.1	
G3	1230-1246	14.4	E	0.4	Surface	17.3	17.3	17.3	30.0	30.0	30.0	6.9	6.8	6.9	85.7	85.1	85.4	3.5	3.4	3.5		4.3	4.2	4.3	
					Middle	17.2	17.2	17.2	30.1	30.1	30.1	6.6	6.5	6.5	81.6	80.8	81.2	3.5	3.4	3.4	3.7	4.5	4.3	4.4	4.5
					Bottom	17.1	17.1	17.1	30.2	30.2	30.2	6.6	6.5	6.6	81.9	81.3	81.6	4.0	4.1	4.1		4.8	5.0	4.9	
E9	1209-1223	16.0	E	0.4	Surface	17.3	17.2	17.3	30.0	30.1	30.1	6.8	6.7	6.7	84.2	83.4	83.8	3.4	3.5	3.5		4.3	4.5	4.4	
					Middle	17.2	17.2	17.2	30.2	30.2	30.2	6.5	6.6	6.6	81.3	81.8	81.6	4.3	4.4	4.4	4.1	5.4	5.3	5.4	5.1
					Bottom	17.1	17.1	17.1	30.2	30.3	30.3	6.4	6.5	6.5	79.9	80.7	80.3	4.4	4.5	4.5		5.5	5.3	5.4	
S2	1143-1206	11.2	E	0.3	Surface	17.3	17.3	17.3	30.1	30.1	30.1	6.7	6.7	6.7	83.3	83.8	83.6	3.3	3.4	3.4		4.2	4.1	4.2	
					Middle	17.3	17.2	17.3	30.2	30.2	30.2	6.8	6.8	6.8	84.1	84.4	84.3	4.2	4.1	4.2	3.9	4.3	4.2	4.3	4.2
					Bottom	17.1	17.1	17.1	30.3	30.3	30.3	6.4	6.3	6.4	79.5	78.8	79.2	4.3	4.2	4.2		4.4	4.2	4.3	
G2	1123-1140	13.0	E	0.4	Surface	17.3	17.3	17.3	30.2	30.2	30.2	7.0	6.9	6.9	86.7	85.8	86.3	3.4	3.4	3.4		4.4	4.6	4.5	
					Middle	17.2	17.2	17.2	30.2	30.2	30.2	6.7	6.6	6.6	82.8	82.1	82.5	4.0	4.1	4.0	3.8	5.0	4.9	5.0	4.8
					Bottom	17.1	17.1	17.1	30.3	30.2	30.3	6.6	6.6	6.6	82.6	82.2	82.4	4.1	4.0	4.0		4.8	5.0	4.9	
S3	1100-1116	11.2	E	0.4	Surface	17.3	17.3	17.3	30.0	30.1	30.1	6.9	6.9	6.9	86.0	86.2	86.1	3.6	3.5	3.5		4.7	4.5	4.6	
					Middle	17.2	17.2	17.2	30.2	30.2	30.2	6.7	6.8	6.8	83.6	84.4	84.0	4.2	4.2	4.2	4.0	5.2	5.1	5.2	5.0
					Bottom	17.1	17.1	17.1	30.3	30.3	30.3	6.5	6.6	6.5	81.2	81.6	81.4	4.3	4.4	4.4		5.3	5.2	5.3	

Remark or Observation:

Note: \* Average

\*\* Depth Average

Date: 4-Feb-14  
 Weather: Cloudy  
 Sea Conditions: Small Wave  
 Zone A

Location	Sampling Time	Water Depth (m)	Current direction	Current speed (ms <sup>-1</sup> )	Monitoring Depth	Temperature (°C)			Salinity (ppt)			DO (mg/l)			DO Saturation (%)			Turbidity (NTU)				Suspended Solids (mg/l)			
						1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	D.A.**	1	2	Ave.*	D.A.**
C1	1500-1518	11.2	W	0.3	Surface	17.4	17.4	17.4	30.1	30.0	30.1	6.7	6.8	6.8	83.6	84.1	83.9	3.7	3.7	3.7		4.6	4.7	4.7	
					Middle	17.4	17.3	17.4	30.2	30.3	30.3	6.6	6.6	6.6	81.4	81.5	81.5	4.0	4.0	4.0	3.9	5.0	4.8	4.9	4.9
					Bottom	17.3	17.2	17.3	30.3	30.2	30.3	6.7	6.7	6.7	83.5	83.0	83.3	4.1	4.1	4.1		5.1	5.0	5.1	
E8	1523-1541	13.4	W	0.2	Surface	17.4	17.3	17.4	30.0	30.1	30.1	6.8	6.7	6.7	83.5	83.7	83.6	3.8	3.7	3.7		4.5	4.4	4.5	
					Middle	17.3	17.3	17.3	30.2	30.2	30.2	6.6	6.7	6.7	82.5	83.0	82.8	4.3	4.3	4.3	4.0	5.2	5.1	5.2	4.8
					Bottom	17.2	17.3	17.3	30.3	30.2	30.3	6.6	6.6	6.6	82.2	82.0	82.1	4.0	4.0	4.0		4.8	4.9	4.9	
S1	1546-1603	11.0	W	0.3	Surface	17.4	17.5	17.5	30.1	30.1	30.1	7.0	6.9	7.0	86.6	86.1	86.4	3.6	3.6	3.6		4.3	4.4	4.4	
					Middle	17.4	17.3	17.4	30.2	30.1	30.2	6.8	6.8	6.8	84.2	83.8	84.0	4.1	4.1	4.1	4.0	5.1	4.9	5.0	4.8
					Bottom	17.2	17.3	17.3	30.2	30.3	30.3	6.5	6.5	6.5	80.7	80.2	80.5	4.3	4.2	4.2		5.0	5.2	5.1	
G1	1608-1625	10.4	W	0.3	Surface	17.4	17.3	17.4	30.0	29.9	30.0	6.8	6.9	6.9	85.0	85.9	85.5	3.7	3.8	3.7		4.6	4.8	4.7	
					Middle	17.2	17.3	17.3	30.1	30.0	30.1	6.7	6.8	6.8	83.8	84.8	84.3	4.2	4.2	4.2	4.0	5.2	5.1	5.2	5.0
					Bottom	17.2	17.2	17.2	30.1	30.2	30.2	6.7	6.8	6.8	83.8	84.7	84.3	4.1	4.1	4.1		5.0	5.0	5.0	
E7	1630-1648	13.4	W	0.3	Surface	17.4	17.3	17.4	29.9	30.0	30.0	6.8	6.8	6.8	84.6	84.3	84.5	3.5	3.5	3.5		4.3	4.5	4.4	
					Middle	17.3	17.4	17.4	30.1	30.2	30.2	6.7	6.7	6.7	83.0	83.2	83.1	4.1	4.2	4.1	3.9	5.0	5.1	5.1	4.9
					Bottom	17.2	17.3	17.3	30.2	30.3	30.3	6.5	6.5	6.5	80.9	80.5	80.7	4.2	4.2	4.2		5.2	5.0	5.1	
F1	1653-1710	11.6	W	0.3	Surface	17.3	17.4	17.4	30.0	29.9	30.0	7.0	7.0	7.0	86.6	87.1	86.9	3.1	3.1	3.1		4.0	4.1	4.1	
					Middle	17.3	17.2	17.3	30.0	30.1	30.1	6.6	6.7	6.7	82.4	82.9	82.7	3.7	3.7	3.7	3.6	4.8	4.7	4.8	4.6
					Bottom	17.1	17.2	17.2	30.2	30.1	30.2	6.6	6.6	6.6	81.7	82.2	82.0	4.1	4.1	4.1		5.1	5.1	5.1	
G3	1715-1732	14.8	W	0.4	Surface	17.4	17.3	17.4	30.1	30.1	30.1	6.9	6.9	6.9	86.0	85.4	85.7	3.5	3.4	3.4		4.3	4.2	4.3	
					Middle	17.3	17.4	17.4	30.1	30.0	30.1	6.6	6.5	6.6	81.8	81.2	81.5	3.4	3.4	3.4	3.6	4.5	4.4	4.5	4.6
					Bottom	17.3	17.2	17.3	30.2	30.3	30.3	6.6	6.6	6.6	82.3	81.7	82.0	4.0	4.1	4.0		5.0	4.9	5.0	
E9	1737-1755	16.2	W	0.3	Surface	17.3	17.2	17.3	30.1	30.0	30.1	6.8	6.8	6.8	84.6	83.9	84.3	3.4	3.5	3.4		4.2	4.1	4.2	
					Middle	17.2	17.3	17.3	30.1	30.2	30.2	6.6	6.5	6.6	81.9	81.1	81.5	4.3	4.4	4.4	4.1	5.0	5.2	5.1	4.8
					Bottom	17.2	17.2	17.2	30.3	30.3	30.3	6.5	6.5	6.5	80.6	81.2	80.9	4.4	4.5	4.4		5.3	5.2	5.3	
S2	1800-1818	11.4	W	0.3	Surface	17.4	17.3	17.4	30.0	30.1	30.1	6.7	6.8	6.8	83.7	84.2	84.0	3.3	3.3	3.3		4.3	4.4	4.4	
					Middle	17.2	17.3	17.3	30.2	30.1	30.2	6.8	6.8	6.8	84.5	85.0	84.8	4.2	4.1	4.1	3.9	5.0	5.2	5.1	4.8
					Bottom	17.3	17.2	17.3	30.2	30.3	30.3	6.4	6.4	6.4	80.0	79.4	79.7	4.2	4.2	4.2		5.0	5.1	5.1	
G2	1823-1840	12.2	W	0.3	Surface	17.4	17.4	17.4	30.1	30.2	30.2	7.0	6.9	7.0	87.1	86.3	86.7	3.4	3.4	3.4		4.3	4.3	4.3	
					Middle	17.3	17.2	17.3	30.2	30.2	30.2	6.7	6.7	6.7	83.3	82.9	83.1	4.0	4.0	4.0	3.8	5.0	4.9	5.0	4.7
					Bottom	17.1	17.2	17.2	30.3	30.2	30.3	6.7	6.7	6.7	83.1	82.8	83.0	4.0	4.0	4.0		4.8	5.0	4.9	
S3	1845-1900	11.6	W	0.4	Surface	17.4	17.3	17.4	30.1	30.1	30.1	7.0	7.0	7.0	86.6	86.7	86.7	3.5	3.5	3.5		4.4	4.5	4.5	
					Middle	17.2	17.3	17.3	30.3	30.2	30.3	6.8	6.8	6.8	84.1	84.9	84.5	4.2	4.2	4.2	4.0	4.9	5.1	5.0	4.9
					Bottom	17.3	17.3	17.3	30.3	30.4	30.4	6.6	6.6	6.6	81.8	82.1	82.0	4.3	4.4	4.3		5.0	5.2	5.1	

Remark or Observation:

Note: \* Average

\*\* Depth Average

Date: 4-Feb-14  
 Weather: Cloudy  
 Sea Conditions: Small Wave  
 Zone A

Location	Sampling Time	Water Depth (m)	Current direction	Current speed (ms <sup>-1</sup> )	Monitoring Depth	Temperature (°C)			Salinity (ppt)			DO (mg/l)			DO Saturation (%)			Turbidity (NTU)				Suspended Solids (mg/l)			
						1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	D.A.**	1	2	Ave.*	D.A.**
C1	2245-2300	11.6	W	0.4	Surface	17.3	17.2	17.3	30.0	30.0	30.0	6.8	6.8	6.8	84.2	84.7	84.5	3.6	3.7	3.7		4.5	4.6	4.6	
					Middle	17.2	17.2	17.2	30.1	30.0	30.1	6.6	6.6	6.6	82.0	82.2	82.1	3.9	3.9	3.9	3.9	4.8	4.9	4.9	4.9
					Bottom	17.1	17.2	17.2	30.2	30.3	30.3	6.8	6.7	6.7	84.1	83.7	83.9	4.1	4.1	4.1		5.1	5.2	5.2	
E8	2223-2240	13.6	W	0.3	Surface	17.3	17.3	17.3	30.0	29.9	30.0	6.8	6.8	6.8	84.6	84.5	84.6	3.7	3.6	3.7		4.8	4.6	4.7	
					Middle	17.2	17.3	17.3	30.1	30.2	30.2	6.7	6.7	6.7	83.2	83.7	83.5	4.3	4.2	4.3	4.0	5.1	5.0	5.1	4.8
					Bottom	17.2	17.1	17.2	30.2	30.3	30.3	6.7	6.6	6.7	82.9	82.6	82.8	4.0	4.0	4.0		4.8	4.7	4.8	
S1	2200-2218	11.2	W	0.3	Surface	17.4	17.3	17.4	30.1	30.1	30.1	7.0	7.0	7.0	87.2	86.7	87.0	3.6	3.5	3.6		4.5	4.4	4.5	
					Middle	17.3	17.2	17.3	30.3	30.2	30.3	6.8	6.8	6.8	84.7	84.5	84.6	4.0	4.1	4.0	3.9	5.0	5.1	5.1	4.9
					Bottom	17.1	17.2	17.2	30.3	30.2	30.3	6.5	6.5	6.5	81.2	80.8	81.0	4.2	4.1	4.2		5.1	5.2	5.2	
G1	2137-2155	10.8	W	0.3	Surface	17.3	17.4	17.4	30.0	30.0	30.0	6.9	7.0	6.9	85.6	86.5	86.1	3.6	3.7	3.7		4.7	4.5	4.6	
					Middle	17.3	17.2	17.3	30.1	30.2	30.2	6.8	6.9	6.8	84.3	85.2	84.8	4.2	4.2	4.2	4.0	5.2	5.1	5.2	4.9
					Bottom	17.2	17.1	17.2	30.3	30.4	30.4	6.8	6.9	6.8	84.3	85.2	84.8	4.1	4.0	4.1		5.0	5.0	5.0	
E7	2115-2132	13.6	W	0.4	Surface	17.3	17.2	17.3	30.0	30.1	30.1	6.9	6.8	6.8	85.1	84.8	85.0	3.4	3.5	3.4		4.5	4.4	4.5	
					Middle	17.2	17.3	17.3	30.1	30.0	30.1	6.7	6.7	6.7	83.5	83.8	83.7	4.1	4.1	4.1	3.9	5.0	4.8	4.9	4.8
					Bottom	17.2	17.2	17.2	30.3	30.3	30.3	6.6	6.5	6.5	81.5	81.0	81.3	4.1	4.2	4.1		5.1	4.9	5.0	
F1	2053-2110	11.8	W	0.3	Surface	17.3	17.3	17.3	30.1	30.1	30.1	7.0	7.0	7.0	87.3	87.6	87.5	3.1	3.1	3.1		4.1	4.0	4.1	
					Middle	17.3	17.4	17.4	30.1	30.0	30.1	6.7	6.7	6.7	83.2	83.7	83.5	3.7	3.6	3.7	3.6	4.7	4.4	4.6	4.5
					Bottom	17.3	17.2	17.3	30.2	30.3	30.3	6.6	6.7	6.6	82.3	82.7	82.5	4.1	4.0	4.0		4.8	4.9	4.9	
G3	2030-2048	15.2	W	0.3	Surface	17.4	17.3	17.4	30.1	30.0	30.1	7.0	6.9	6.9	86.4	86.0	86.2	3.4	3.4	3.4		4.2	4.1	4.2	
					Middle	17.3	17.2	17.3	30.1	30.1	30.1	6.6	6.6	6.6	83.8	83.0	83.4	3.4	3.3	3.4	3.6	4.4	4.2	4.3	4.4
					Bottom	17.1	17.2	17.2	30.3	30.2	30.3	6.7	6.6	6.6	82.9	82.2	82.6	4.0	4.0	4.0		4.8	4.9	4.9	
E9	2008-2025	16.4	W	0.3	Surface	17.4	17.3	17.4	30.1	30.0	30.1	6.9	6.8	6.8	85.2	84.2	84.7	3.3	3.4	3.4		4.2	4.3	4.3	
					Middle	17.3	17.4	17.4	30.1	30.2	30.2	6.6	6.6	6.6	84.4	81.6	83.0	4.3	4.4	4.3	4.0	5.1	5.2	5.2	4.9
					Bottom	17.3	17.2	17.3	30.4	30.3	30.4	6.5	6.6	6.5	81.0	81.7	81.4	4.4	4.4	4.4		5.1	5.2	5.2	
S2	1946-2003	12.0	W	0.3	Surface	17.3	17.4	17.4	30.1	30.2	30.2	6.8	6.8	6.8	84.2	84.6	84.4	3.3	3.3	3.3		4.2	4.3	4.3	
					Middle	17.3	17.2	17.3	30.2	30.2	30.2	6.8	6.9	6.9	85.1	85.4	85.3	4.1	4.1	4.1	3.9	5.1	5.1	5.1	4.8
					Bottom	17.3	17.3	17.3	30.3	30.4	30.4	6.5	6.4	6.4	80.5	79.9	80.2	4.2	4.2	4.2		5.2	5.0	5.1	
G2	1923-1941	12.6	W	0.4	Surface	17.4	17.3	17.4	30.1	30.1	30.1	7.0	7.0	7.0	87.6	86.6	87.1	3.3	3.4	3.3		4.2	4.4	4.3	
					Middle	17.3	17.3	17.3	30.2	30.1	30.2	6.7	6.7	6.7	83.7	83.2	83.5	4.0	4.0	4.0	3.8	5.0	4.9	5.0	4.7
					Bottom	17.2	17.3	17.3	30.2	30.3	30.3	6.7	6.7	6.7	83.5	83.1	83.3	4.0	3.9	4.0		4.8	5.0	4.9	
S3	1900-1918	11.8	W	0.3	Surface	17.4	17.4	17.4	30.0	30.1	30.1	7.0	7.0	7.0	86.9	87.0	87.0	3.5	3.4	3.5		4.5	4.3	4.4	
					Middle	17.3	17.2	17.3	30.1	30.2	30.2	6.8	6.9	6.8	84.4	85.3	84.9	4.1	4.2	4.1	4.0	5.0	5.0	5.0	4.9
					Bottom	17.3	17.3	17.3	30.4	30.4	30.4	6.6	6.6	6.6	82.0	82.5	82.3	4.2	4.3	4.3		5.1	5.2	5.2	

Remark or Observation:

Note: \* Average

\*\* Depth Average

Date: 5-Feb-14  
 Weather: Cloudy  
 Sea Conditions: Small Wave  
 Zone A

Location	Sampling Time	Water Depth (m)	Current direction	Current speed (ms <sup>-1</sup> )	Monitoring Depth	Temperature (°C)			Salinity (ppt)			DO (mg/l)			DO Saturation (%)			Turbidity (NTU)				Suspended Solids (mg/l)			
						1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	D.A.**	1	2	Ave.*	D.A.**
C1	0700-0717	36.4	W	0.4	Surface	16.9	17.0	17.0	30.0	30.1	30.1	7.2	7.2	7.2	88.9	89.5	89.2	2.9	3.0	2.9		3.8	3.7	3.8	
					Middle	17.2	17.3	17.3	30.2	30.3	30.3	7.3	7.4	7.3	90.5	90.9	90.7	3.0	3.1	3.1	3.1	4.1	4.0	4.1	4.0
					Bottom	17.4	17.5	17.5	30.4	30.5	30.5	7.5	7.5	7.5	92.5	92.7	92.6	3.2	3.3	3.2		4.1	4.3	4.2	
E8	0722-0739	19.5	W	0.3	Surface	17.0	17.1	17.1	30.1	30.2	30.2	7.2	7.2	7.2	88.4	88.6	88.5	3.1	3.2	3.1		4.1	4.0	4.1	
					Middle	17.3	17.4	17.4	30.3	30.3	30.3	7.3	7.4	7.3	90.2	91.3	90.8	3.4	3.4	3.4	3.3	4.3	4.3	4.3	4.3
					Bottom	17.5	17.6	17.6	30.5	30.4	30.5	7.2	7.3	7.3	89.5	89.8	89.7	3.4	3.4	3.4		4.5	4.4	4.5	
S1	0745-0801	10.7	W	0.4	Surface	17.0	16.9	17.0	30.2	30.1	30.2	7.2	7.3	7.3	89.4	89.9	89.7	4.1	4.1	4.1		5.0	4.9	5.0	
					Middle	17.2	17.3	17.3	30.3	30.4	30.4	7.1	7.1	7.1	87.4	87.5	87.5	4.2	4.3	4.3	4.2	4.9	5.1	5.0	5.0
					Bottom	17.5	17.5	17.5	30.5	30.6	30.6	7.1	7.2	7.2	88.3	88.6	88.5	4.2	4.2	4.2		5.0	5.2	5.1	
G1	0803-0823	11.9	W	11.9	Surface	17.0	17.1	17.1	30.1	30.2	30.2	7.0	7.0	7.0	86.1	86.2	86.2	3.7	3.7	3.7		4.7	4.5	4.6	
					Middle	17.3	17.4	17.4	30.4	30.4	30.4	7.1	7.1	7.1	87.1	87.0	87.1	3.8	3.8	3.8	3.7	4.8	4.9	4.9	4.7
					Bottom	17.5	17.5	17.5	30.5	30.6	30.6	7.1	7.1	7.1	88.1	88.3	88.2	3.7	3.8	3.8		4.7	4.8	4.8	
E7	0828-0844	13.4	W	0.4	Surface	16.9	16.9	16.9	30.0	29.9	30.0	7.1	7.1	7.1	87.1	87.4	87.3	3.0	3.1	3.1		4.0	4.1	4.1	
					Middle	17.0	17.1	17.1	30.1	30.2	30.2	7.1	7.2	7.2	88.3	88.5	88.4	3.2	3.3	3.3	3.2	4.1	4.3	4.2	4.1
					Bottom	17.2	17.3	17.3	30.3	30.4	30.4	6.9	7.0	7.0	85.8	86.1	86.0	3.3	3.4	3.4		4.1	4.2	4.2	
F1	0849-0905	12.3	W	0.5	Surface	17.0	17.1	17.1	30.1	30.2	30.2	6.8	6.9	6.9	84.5	84.9	84.7	2.8	2.9	2.9		3.9	3.7	3.8	
					Middle	17.2	17.2	17.2	30.3	30.3	30.3	6.9	6.9	6.9	85.8	85.5	85.7	3.1	3.1	3.1	3.0	4.0	4.1	4.1	3.9
					Bottom	17.3	17.4	17.4	30.4	30.5	30.5	7.1	7.1	7.1	87.4	87.8	87.6	2.9	3.0	3.0		3.8	3.9	3.9	
G3	0910-0927	15.5	W	0.5	Surface	17.0	17.1	17.1	30.1	30.0	30.1	7.0	7.1	7.0	86.6	87.3	87.0	2.8	2.8	2.8		3.8	3.7	3.8	
					Middle	17.2	17.3	17.3	30.2	30.3	30.3	6.9	6.9	6.9	85.3	85.7	85.5	3.0	3.1	3.0	3.0	4.0	4.0	4.0	4.0
					Bottom	17.4	17.4	17.4	30.4	30.4	30.4	6.8	6.9	6.9	84.5	85.1	84.8	3.2	3.3	3.3		4.2	4.2	4.2	
E9	0934-0952	18.5	W	0.6	Surface	17.1	17.2	17.2	30.1	30.2	30.2	7.2	7.2	7.2	89.1	89.4	89.3	3.1	3.1	3.1		4.0	4.1	4.1	
					Middle	17.3	17.4	17.4	30.2	30.2	30.2	7.2	7.2	7.2	88.8	88.6	88.7	3.0	3.0	3.0	3.1	3.9	3.9	3.9	4.0
					Bottom	17.5	17.5	17.5	30.4	30.3	30.4	7.0	7.1	7.1	87.1	87.4	87.3	3.1	3.2	3.2		4.1	4.0	4.1	
S2	1000-1017	11.0	W	0.6	Surface	17.0	17.2	17.1	30.0	30.1	30.1	7.1	7.2	7.2	88.2	88.9	88.6	3.2	3.3	3.3		4.1	4.3	4.2	
					Middle	17.3	17.3	17.3	30.2	30.3	30.3	7.3	7.3	7.3	90.6	90.2	90.4	3.0	3.1	3.1	3.2	4.0	4.1	4.1	4.2
					Bottom	17.4	17.5	17.5	30.4	30.4	30.4	7.2	7.3	7.3	89.5	89.8	89.7	3.4	3.4	3.4		4.2	4.3	4.3	
G2	1025-1040	13.9	W	0.5	Surface	17.0	16.9	17.0	30.1	30.1	30.1	7.0	7.0	7.0	86.3	86.0	86.2	3.5	3.5	3.5		4.3	4.5	4.4	
					Middle	17.2	17.3	17.3	30.2	30.2	30.2	6.9	6.8	6.9	85.0	84.6	84.8	3.6	3.7	3.6	3.6	4.4	4.5	4.5	4.5
					Bottom	17.4	17.5	17.5	30.3	30.4	30.4	6.7	6.8	6.7	83.3	83.5	83.4	3.8	3.8	3.8		4.7	4.8	4.8	
S3	1045-1100	11.4	W	0.6	Surface	17.1	17.2	17.2	30.1	30.2	30.2	7.2	7.2	7.2	88.4	88.5	88.5	3.7	3.7	3.7		4.6	4.5	4.6	
					Middle	17.3	17.4	17.4	30.3	30.4	30.4	7.3	7.3	7.3	89.9	90.8	90.4	3.9	3.9	3.9	3.8	4.8	4.9	4.9	4.7
					Bottom	17.4	17.5	17.5	30.5	30.6	30.6	7.5	7.5	7.5	92.1	92.7	92.4	3.7	3.8	3.7		4.8	4.7	4.8	

Remark or Observation:

Note: \* Average

\*\* Depth Average

Date: 5-Feb-14  
 Weather: Cloudy  
 Sea Conditions: Small Wave  
 Zone A

Location	Sampling Time	Water Depth (m)	Current direction	Current speed (ms <sup>-1</sup> )	Monitoring Depth	Temperature (°C)			Salinity (ppt)			DO (mg/l)			DO Saturation (%)			Turbidity (NTU)				Suspended Solids (mg/l)			
						1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	D.A.**	1	2	Ave.*	D.A.**
C1	1450-1500	36.6	W	0.5	Surface	17.5	17.6	17.6	30.2	30.3	30.3	7.1	7.2	7.1	88.1	88.0	88.1	2.7	2.7	2.7		3.4	3.5	3.5	
					Middle	17.3	17.4	17.4	30.4	30.5	30.5	7.3	7.3	7.3	90.2	90.0	90.1	2.9	2.9	2.9	2.9	3.7	3.8	3.8	3.8
					Bottom	17.5	17.4	17.5	30.6	30.7	30.7	7.3	7.3	7.3	90.1	89.9	90.0	3.0	3.1	3.1		4.0	4.1	4.1	
E8	1430-1445	19.7	W	0.6	Surface	17.5	17.4	17.5	30.1	30.2	30.2	7.1	7.2	7.1	88.1	88.4	88.3	3.2	3.3	3.2		4.1	4.0	4.1	
					Middle	17.3	17.4	17.4	30.2	30.3	30.3	7.3	7.3	7.3	90.1	90.3	90.2	3.1	3.1	3.1	3.2	3.9	4.0	4.0	4.1
					Bottom	17.5	17.4	17.5	30.4	30.5	30.5	7.4	7.4	7.4	91.4	91.2	91.3	3.3	3.4	3.3		4.2	4.4	4.3	
S1	1400-1420	11.3	W	0.6	Surface	17.3	17.4	17.4	30.1	30.1	30.1	7.0	7.0	7.0	85.9	86.1	86.0	3.5	3.6	3.5		4.3	4.4	4.4	
					Middle	17.2	17.3	17.3	30.2	30.2	30.2	6.8	6.8	6.8	84.3	84.5	84.4	3.2	3.2	3.2	3.4	4.0	4.1	4.1	4.2
					Bottom	17.4	17.5	17.5	30.3	30.4	30.4	7.1	7.1	7.1	87.6	87.5	87.6	3.3	3.3	3.3		4.2	4.3	4.3	
G1	1334-1350	12.0	W	0.6	Surface	17.8	17.8	17.8	30.2	30.2	30.2	6.9	6.9	6.9	84.9	85.1	85.0	3.2	3.3	3.3		4.1	4.2	4.2	
					Middle	17.6	17.6	17.6	30.4	30.3	30.4	7.1	7.1	7.1	87.2	87.6	87.4	3.1	3.1	3.1	3.3	4.0	4.3	4.2	4.3
					Bottom	17.5	17.4	17.5	30.5	30.5	30.5	7.2	7.2	7.2	89.4	89.1	89.3	3.5	3.5	3.5		4.4	4.5	4.5	
E7	1311-1327	13.5	W	0.6	Surface	17.7	17.7	17.7	30.1	30.2	30.2	7.0	7.1	7.1	87.0	87.6	87.3	3.6	3.6	3.6		4.4	4.6	4.5	
					Middle	17.6	17.6	17.6	30.3	30.4	30.4	7.4	7.5	7.4	91.8	92.1	92.0	3.5	3.5	3.5	3.5	4.5	4.3	4.4	4.4
					Bottom	17.5	17.5	17.5	30.5	30.6	30.6	7.6	7.7	7.6	94.3	94.7	94.5	3.3	3.3	3.3		4.2	4.3	4.3	
F1	1250-1306	12.5	W	0.5	Surface	17.7	17.8	17.8	30.1	30.2	30.2	7.2	7.2	7.2	89.4	88.4	88.9	3.7	3.8	3.7		4.3	4.5	4.4	
					Middle	17.6	17.5	17.6	30.3	30.4	30.4	7.3	7.3	7.3	90.1	90.5	90.3	4.0	4.0	4.0	3.9	4.8	4.8	4.8	4.8
					Bottom	17.4	17.5	17.5	30.5	30.6	30.6	7.2	7.2	7.2	89.1	89.4	89.3	4.1	4.1	4.1		5.0	5.1	5.1	
G3	1228-1244	16.0	W	0.6	Surface	17.6	17.7	17.7	30.2	30.1	30.2	7.0	7.0	7.0	86.6	86.8	86.7	3.1	3.2	3.1		3.9	4.0	4.0	
					Middle	17.4	17.5	17.5	30.3	30.2	30.3	6.9	7.0	6.9	85.5	85.9	85.7	3.3	3.3	3.3	3.2	4.2	4.1	4.2	4.1
					Bottom	17.4	17.5	17.5	30.3	30.4	30.4	6.7	6.8	6.8	83.3	83.7	83.5	3.1	3.2	3.2		4.0	4.2	4.1	
E9	1207-1222	18.7	W	0.5	Surface	17.4	17.5	17.5	30.2	30.3	30.3	7.1	7.1	7.1	87.3	87.7	87.5	3.1	3.0	3.0		4.1	3.9	4.0	
					Middle	17.3	17.4	17.4	30.4	30.5	30.5	7.2	7.2	7.2	89.1	88.7	88.9	2.9	3.0	2.9	2.9	3.8	3.7	3.8	3.8
					Bottom	17.5	17.5	17.5	30.5	30.6	30.6	7.1	7.1	7.1	87.6	88.2	87.9	2.8	2.8	2.8		3.6	3.8	3.7	
S2	1145-1201	11.5	W	0.6	Surface	17.3	17.4	17.4	30.1	30.2	30.2	6.8	6.8	6.8	84.5	84.3	84.4	3.7	3.7	3.7		4.5	4.6	4.6	
					Middle	17.3	17.2	17.3	30.3	30.4	30.4	6.8	6.8	6.8	83.7	83.4	83.6	3.8	3.8	3.8	3.9	4.7	4.6	4.7	4.7
					Bottom	17.5	17.6	17.6	30.6	30.5	30.6	7.0	7.0	7.0	86.1	86.7	86.4	4.0	4.0	4.0		5.0	4.8	4.9	
G2	1121-1137	13.9	W	0.5	Surface	17.2	17.2	17.2	30.0	30.1	30.1	7.1	7.2	7.2	88.3	88.6	88.5	3.7	3.1	3.4		4.0	4.2	4.1	
					Middle	17.3	17.4	17.4	30.2	30.3	30.3	6.9	6.9	6.9	85.7	85.8	85.8	3.4	3.4	3.4	3.5	4.1	4.2	4.2	4.3
					Bottom	17.4	17.5	17.5	30.5	30.5	30.5	6.8	6.8	6.8	84.6	84.1	84.4	3.7	3.7	3.7		4.5	4.7	4.6	
S3	1100-1116	11.4	W	0.5	Surface	17.2	17.3	17.3	30.1	30.2	30.2	7.1	7.0	7.1	87.2	86.9	87.1	3.2	3.3	3.3		4.1	4.2	4.2	
					Middle	17.2	17.3	17.3	30.3	30.3	30.3	7.3	7.3	7.3	89.6	90.1	89.9	3.1	3.2	3.2	3.2	4.0	4.3	4.2	4.2
					Bottom	17.4	17.5	17.5	30.4	30.5	30.5	7.4	7.4	7.4	91.5	91.6	91.6	3.3	3.4	3.3		4.4	4.4	4.4	

Remark or Observation:

Note: \* Average

\*\* Depth Average

Date: 5-Feb-14  
 Weather: Cloudy  
 Sea Conditions: Small Wave  
 Zone A

Location	Sampling Time	Water Depth (m)	Current direction	Current speed (ms <sup>-1</sup> )	Monitoring Depth	Temperature (°C)			Salinity (ppt)			DO (mg/l)			DO Saturation (%)			Turbidity (NTU)				Suspended Solids (mg/l)			
						1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	D.A.**	1	2	Ave.*	D.A.**
C1	1500-1517	35.8	E	0.4	Surface	17.2	17.3	17.3	30.0	29.9	30.0	7.0	7.1	7.0	86.6	87.0	86.8	2.8	2.8	2.8		3.8	3.8	3.8	
					Middle	17.3	17.3	17.3	30.0	30.0	30.0	7.2	7.2	7.2	88.7	88.8	88.8	2.9	2.8	2.9	2.9	3.7	3.8	3.8	3.9
					Bottom	17.4	17.4	17.4	30.1	30.2	30.2	7.1	7.2	7.2	87.9	88.4	88.2	3.1	3.1	3.1		4.0	4.1	4.1	
E8	1522-1539	19.0	E	0.4	Surface	17.3	17.3	17.3	29.9	29.9	29.9	7.1	7.1	7.1	87.2	87.1	87.2	3.3	3.3	3.3		4.3	4.2	4.3	
					Middle	17.2	17.2	17.2	30.0	30.0	30.0	7.3	7.3	7.3	90.2	89.9	90.1	3.2	3.2	3.2	3.3	4.0	4.1	4.1	4.2
					Bottom	17.4	17.4	17.4	30.2	30.2	30.2	6.9	6.8	6.8	84.4	83.9	84.2	3.5	3.4	3.5		4.5	4.3	4.4	
S1	1545-1601	10.4	E	0.4	Surface	17.3	17.2	17.3	29.9	29.9	29.9	7.3	7.2	7.3	89.8	89.2	89.5	3.1	3.0	3.0		4.0	4.0	4.0	
					Middle	17.3	17.4	17.4	30.0	30.0	30.0	7.6	7.6	7.6	94.1	94.0	94.1	3.2	3.3	3.3	3.3	4.1	4.1	4.1	4.2
					Bottom	17.4	17.4	17.4	30.1	30.2	30.2	7.0	6.9	6.9	85.8	85.0	85.4	3.5	3.6	3.6		4.6	4.5	4.6	
G1	1606-1623	11.2	E	0.4	Surface	17.3	17.2	17.3	29.9	29.9	29.9	7.1	7.0	7.0	87.1	86.4	86.8	3.3	3.3	3.3		4.2	4.4	4.3	
					Middle	17.3	17.3	17.3	30.0	30.0	30.0	7.3	7.3	7.3	89.7	89.8	89.8	3.7	3.7	3.7	3.6	4.6	4.5	4.6	4.5
					Bottom	17.4	17.4	17.4	30.2	30.1	30.2	7.0	7.0	7.0	86.8	86.4	86.6	3.8	3.8	3.8		4.7	4.6	4.7	
E7	1628-1644	13.0	E	0.3	Surface	17.3	17.3	17.3	29.9	29.9	29.9	7.3	7.2	7.3	89.8	89.2	89.5	3.5	3.4	3.5		4.5	4.3	4.4	
					Middle	17.4	17.4	17.4	30.0	30.0	30.0	7.1	7.0	7.0	87.1	86.4	86.8	3.6	3.5	3.5	3.7	4.6	4.5	4.6	4.6
					Bottom	17.5	17.5	17.5	30.2	30.2	30.2	7.1	7.2	7.2	87.9	88.5	88.2	4.0	3.9	4.0		4.8	4.9	4.9	
F1	1649-1705	12.0	E	0.4	Surface	17.3	17.3	17.3	29.9	29.9	29.9	7.2	7.3	7.3	89.1	89.8	89.5	3.6	3.7	3.7		4.5	4.7	4.6	
					Middle	17.4	17.4	17.4	30.0	30.0	30.0	6.9	6.8	6.8	84.5	83.8	84.2	3.1	3.1	3.1	3.6	4.0	4.1	4.1	4.5
					Bottom	17.5	17.4	17.5	30.1	30.2	30.2	6.9	6.9	6.9	85.5	85.2	85.4	4.1	4.0	4.0		4.9	4.8	4.9	
G3	1710-1727	15.0	E	0.4	Surface	17.2	17.3	17.3	29.9	29.9	29.9	7.3	7.3	7.3	89.9	90.5	90.2	3.1	3.0	3.1		4.0	3.9	4.0	
					Middle	17.3	17.4	17.4	30.0	30.1	30.1	6.8	6.8	6.8	83.3	83.7	83.5	3.6	3.7	3.7	3.5	4.4	4.6	4.5	4.4
					Bottom	17.4	17.4	17.4	30.2	30.1	30.2	6.6	6.6	6.6	81.6	81.7	81.7	3.6	3.7	3.7		4.8	4.7	4.8	
E9	1734-1752	18.0	E	0.4	Surface	17.2	17.3	17.3	29.8	29.9	29.9	7.4	7.5	7.5	91.4	92.3	91.9	3.1	3.2	3.2		4.1	4.0	4.1	
					Middle	17.3	17.4	17.4	30.0	30.1	30.1	7.0	7.1	7.0	86.6	87.0	86.8	3.4	3.5	3.5	3.5	4.2	4.4	4.3	4.4
					Bottom	17.4	17.5	17.5	30.1	30.2	30.2	6.5	6.4	6.4	79.7	78.9	79.3	3.9	4.0	4.0		4.8	4.7	4.8	
S2	1800-1817	10.8	E	0.4	Surface	17.2	17.2	17.2	30.0	29.9	29.9	7.1	7.1	7.1	87.9	87.5	87.7	3.4	3.3	3.3		4.4	4.2	4.3	
					Middle	17.3	17.3	17.3	30.1	30.1	30.1	7.0	7.0	7.0	86.5	86.8	86.7	3.1	3.0	3.1	3.4	4.0	4.1	4.1	4.4
					Bottom	17.4	17.4	17.4	30.2	30.3	30.3	6.9	7.0	7.0	85.4	85.9	85.7	3.9	3.9	3.9		4.9	4.8	4.9	
G2	1825-1840	13.6	E	0.4	Surface	17.2	17.2	17.2	30.0	30.0	30.0	7.2	7.3	7.2	88.7	89.5	89.1	3.8	3.8	3.8		4.7	4.8	4.8	
					Middle	17.3	17.4	17.4	30.1	30.1	30.1	7.1	7.1	7.1	87.5	87.9	87.7	3.2	3.3	3.3	3.6	4.1	4.0	4.1	4.5
					Bottom	17.4	17.4	17.4	30.3	30.3	30.3	6.6	6.6	6.6	81.5	81.3	81.4	3.6	3.7	3.7		4.6	4.6	4.6	
S3	1845-1900	11.0	E	0.5	Surface	17.2	17.1	17.2	29.9	29.9	29.9	7.2	7.3	7.3	89.2	89.5	89.4	3.3	3.3	3.3		4.2	4.1	4.2	
					Middle	17.3	17.4	17.4	30.1	30.0	30.1	7.4	7.3	7.4	91.1	90.1	90.6	3.6	3.7	3.6	3.5	4.5	4.6	4.6	4.5
					Bottom	17.3	17.4	17.4	30.3	30.2	30.3	7.1	7.2	7.1	87.9	88.1	88.0	3.6	3.5	3.6		4.7	4.8	4.8	

Remark or Observation:

Note: \* Average

\*\* Depth Average



Date: 5-Feb-14  
 Weather: Cloudy  
 Sea Conditions: Small Wave  
 Zone A

Location	Sampling Time	Water Depth (m)	Current direction	Current speed (ms <sup>-1</sup> )	Monitoring Depth	Temperature (°C)			Salinity (ppt)			DO (mg/l)			DO Saturation (%)			Turbidity (NTU)				Suspended Solids (mg/l)			
						1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	1	2	Ave.*	D.A.**	1	2	Ave.*	D.A.**
C1	2250-2300	35.0	E	0.5	Surface	17.2	17.3	17.3	29.9	29.9	29.9	7.4	7.3	7.3	90.7	89.9	90.3	3.5	3.4	3.4		4.3	4.4	4.4	
					Middle	17.3	17.4	17.4	30.1	30.1	30.1	7.0	7.1	7.0	86.5	86.9	86.7	3.9	3.9	3.9	3.9	4.9	5.0	5.0	4.8
					Bottom	17.4	17.4	17.4	30.1	30.2	30.2	7.0	7.0	7.0	85.5	85.8	85.7	4.2	4.2	4.2		5.1	5.3	5.2	
E8	2230-2245	19.0	E	0.4	Surface	17.2	17.3	17.3	29.9	29.9	29.9	7.2	7.2	7.2	88.9	89.1	89.0	3.6	3.7	3.7		4.5	4.6	4.6	
					Middle	17.4	17.4	17.4	30.0	30.0	30.0	6.9	7.0	7.0	85.2	86.0	85.6	3.8	3.9	3.8	3.9	4.7	4.8	4.8	4.8
					Bottom	17.4	17.4	17.4	30.1	30.1	30.1	6.9	6.9	6.9	85.0	85.3	85.2	4.2	4.2	4.2		5.0	5.1	5.1	
S1	2200-2220	11.2	E	0.4	Surface	17.3	17.3	17.3	29.9	30.0	30.0	7.1	7.2	7.1	87.4	88.1	87.8	3.4	3.3	3.4		4.3	4.2	4.3	
					Middle	17.4	17.4	17.4	30.0	30.1	30.1	7.1	7.1	7.1	87.6	87.7	87.7	3.6	3.7	3.7	3.7	4.4	4.5	4.5	4.5
					Bottom	17.4	17.4	17.4	30.2	30.2	30.2	6.9	6.8	6.8	84.6	83.7	84.2	4.0	4.0	4.0		4.8	5.0	4.9	
G1	2134-2150	11.4	E	0.3	Surface	17.2	17.2	17.2	29.9	29.9	29.9	7.2	7.1	7.1	88.4	87.6	88.0	3.2	3.3	3.3		4.1	4.0	4.1	
					Middle	17.4	17.4	17.4	30.1	30.0	30.1	7.2	7.3	7.3	88.9	89.8	89.4	3.6	3.6	3.6	3.5	4.4	4.5	4.5	4.4
					Bottom	17.4	17.4	17.4	30.1	30.2	30.2	7.0	7.1	7.0	86.3	87.1	86.7	3.7	3.8	3.8		4.8	4.7	4.8	
E7	2111-2127	13.0	E	0.3	Surface	17.2	17.2	17.2	29.9	29.8	29.9	7.4	7.3	7.4	91.1	90.5	90.8	3.4	3.3	3.4		4.3	4.2	4.3	
					Middle	17.3	17.4	17.4	30.0	30.0	30.0	7.0	7.0	7.0	86.5	86.6	86.6	3.5	3.4	3.4	3.6	4.3	4.2	4.3	4.4
					Bottom	17.4	17.4	17.4	30.1	30.1	30.1	7.2	7.1	7.2	88.4	87.8	88.1	3.8	3.9	3.9		4.7	4.8	4.8	
F1	2050-2106	12.0	E	0.4	Surface	17.1	17.2	17.2	29.9	29.8	29.9	7.3	7.3	7.3	89.5	89.8	89.7	3.8	3.7	3.8		4.8	4.6	4.7	
					Middle	17.3	17.3	17.3	30.0	30.0	30.0	7.4	7.5	7.5	91.6	92.3	92.0	3.3	3.3	3.3	3.5	4.1	4.2	4.2	4.4
					Bottom	17.4	17.4	17.4	30.1	30.1	30.1	7.2	7.1	7.1	88.2	87.4	87.8	3.6	3.6	3.6		4.4	4.5	4.5	
G3	2028-2044	15.2	E	0.4	Surface	17.1	17.2	17.2	29.9	29.9	29.9	7.1	7.1	7.1	87.5	87.9	87.7	3.0	3.1	3.0		4.0	3.9	4.0	
					Middle	17.3	17.3	17.3	30.0	30.0	30.0	7.2	7.3	7.3	89.2	89.6	89.4	3.3	3.4	3.3	3.3	4.2	4.3	4.3	4.2
					Bottom	17.4	17.4	17.4	30.1	30.1	30.1	7.0	7.1	7.0	86.5	86.9	86.7	3.4	3.4	3.4		4.3	4.4	4.4	
E9	2007-2022	18.2	E	0.3	Surface	17.2	17.3	17.3	29.9	29.9	29.9	7.0	7.1	7.1	86.5	87.4	87.0	3.3	3.2	3.2		4.1	4.0	4.1	
					Middle	17.2	17.3	17.3	30.0	30.0	30.0	6.9	7.0	6.9	85.4	85.8	85.6	3.6	3.5	3.5	3.4	4.4	4.5	4.5	4.3
					Bottom	17.4	17.4	17.4	30.1	30.1	30.1	6.9	6.8	6.8	84.7	83.8	84.3	3.5	3.5	3.5		4.3	4.5	4.4	
S2	1945-2001	11.0	E	0.3	Surface	17.2	17.1	17.2	29.9	29.8	29.9	7.2	7.3	7.3	89.2	89.6	89.4	3.0	3.0	3.0		4.0	4.1	4.1	
					Middle	17.3	17.3	17.3	30.1	30.0	30.1	7.1	7.2	7.2	87.9	88.6	88.3	3.1	3.2	3.2	3.2	4.0	4.2	4.1	4.1
					Bottom	17.4	17.4	17.4	30.2	30.3	30.3	7.0	7.0	7.0	86.5	86.7	86.6	3.4	3.5	3.4		4.1	4.2	4.2	
G2	1921-1937	13.0	E	0.3	Surface	17.2	17.2	17.2	29.9	29.9	29.9	7.5	7.5	7.5	91.9	92.3	92.1	3.1	3.2	3.1		4.0	4.2	4.1	
					Middle	17.3	17.3	17.3	30.1	30.0	30.1	7.1	7.0	7.1	87.4	86.8	87.1	3.7	3.8	3.7	3.6	4.6	4.8	4.7	4.5
					Bottom	17.3	17.3	17.3	30.2	30.3	30.3	6.9	6.8	6.8	84.7	83.9	84.3	3.9	3.9	3.9		4.7	4.8	4.8	
S3	1900-1916	11.0	E	0.4	Surface	17.1	17.1	17.1	29.9	29.9	29.9	7.2	7.1	7.1	88.2	87.5	87.9	3.3	3.3	3.3		4.1	4.1	4.1	
					Middle	17.2	17.3	17.3	30.0	30.1	30.1	7.3	7.3	7.3	91.2	90.1	90.7	3.4	3.4	3.4	3.4	4.3	4.2	4.3	4.3
					Bottom	17.4	17.3	17.4	30.2	30.2	30.2	7.0	7.0	7.0	86.3	86.8	86.6	3.6	3.6	3.6		4.4	4.6	4.5	

Remark or Observation:

Note: \* Average

\*\* Depth Average

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