RAMBOLL ENVIRON

Ref.: HYDHZMBEEM00_0_3831L.16

1 February 2016

By Fax (3698 5999) and By Post

Ove Arup & Partners
Chief Resident Engineer's Office
5 Ying Hei Road, Tung Chung, Lantau
Hong Kong

Attention: Mr. Paul Appleton

Dear Sir,

Re: Agreement No. CE 48/2011 (EP)
Environmental Project Office for the
HZMB Hong Kong Link Road, HZMB Hong Kong Boundary Crossing Facilities, and Tuen Mun-Chek Lap Kok Link – Investigation

Contract No. HY/2010/02 – HZMB HKBCF – Reclamation Works
Annual EM&A Review Report for March 2013 to February 2014

Reference is made to the Environmental Team's submission of the Annual EM&A Review Report for March 2013 to February 2014 certified by the ET Leader (ET's ref.: "60249820/C/RMKY16012902" dated 29 January 2016) and provided to us via e-mail on 29 January 2016.

We are pleased to inform you that we have no adverse comment on the captioned Annual EM&A Review Report for March 2013 to February 2014.

The ET Leader and the dolphin specialist of the ET are reminded that the EM&A report should never be regarded as a platform to express their own opinions towards a government topic, or to advocate his/her personal ideas, and also our verification to your report does not release any of your obligation in the EM&A Manual under the applicable Environmental Permit(s) for this project.

Thank you very much for your attention and please feel free to contact the undersigned should you require further information.

Yours faithfully,
For and on behalf of
Ramboll Environ Hong Kong Limited

Raymond Dai
Independent Environmental Checker

c.c.	HyD	Mr. Matthew Fung	(By Fax: 3188 6614)
	HyD	Mr. Wai-Ping Lee	(By Fax: 3188 6614)
	AECOM	Ms. Echo Leong	(By Fax: 2317 7609)
	CHEC	Mr. Lim Kim Chuan	(By Fax: 2578 0413)

Internal: DY, YH, LP, CL, ENPO Site

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China Harbour Engineering Company Limited

Contract No. HY/2010/02

Hong Kong – Zhuhai – Macao Bridge Hong Kong Boundary Crossing Facilities – Reclamation Works

Annual Review Report for March 2013- February 2014

[01/2016]

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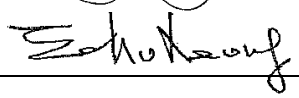
Reviewed, Approved and Certified:	Echo Leong (ETL)	

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EXECUTIVE SUMMARY

Contract No. HY/2010/02 – Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Reclamation Work (here below, known as "the Contract") mainly comprises reclamation at the northeast of the Hong Kong International Airport of an area of about 130-hectare for the construction of an artificial island for the development of the Hong Kong Boundary Crossing Facilities (HKBCF), and about 19-hectare for the southern landfall of the Tuen Mun - Chek Lap Kok Link (TMCLKL). It is a designated Project and is governed by the current permits for the Contract, i.e. the amended Environmental Permits (EPs) issued on 17 July 2015 (EP-353/2009/I) and 13 March 2015 (EP-354/2009/D) (for TMCLKL Southern Landfall Reclamation only).

Ove Arup & Partners Hong Kong Limited (Arup) was appointed by Highways Department (HyD) as the consultants for the design and construction assignment for the Contract's reclamation works (i.e. the Engineer for the Contract).

China Harbour Engineering Company Limited (CHEC) was awarded by HyD as the Contractor to undertake the construction work of the Contract.

ENVIRON Hong Kong Ltd. was employed by HyD as the Independent Environmental Checker (IEC) and Environmental Project Office (ENPO) for the Contract.

AECOM Asia Co. Ltd. (AECOM) was appointed by CHEC to undertake the role of Environmental Team for the Contract for carrying out the environmental monitoring and audit (EM&A) works.

The construction phase of the Contract under the EPs was commenced on 12 March 2012 and will be tentatively completed by early Year 2016. The EM&A programme, including air quality, noise, water quality and dolphin monitoring and environmental site inspections, was commenced on 12 March 2012.

This report documents the findings of EM&A works conducted in the period between 1 March 2013 and 28 February 2014. As informed by the Contractor, major activities in the reporting period were:-

Marine-based Works

- Cellular structure installation
- Connecting arc cell installation
- Laying geo-textile
- Sand blanket laying
- Maintenance of silt curtain
- Stone column installation
- Laying stone blanket
- Band drain installation trial
- Band drain installation
- Backfill cellular structure
- Instrumentation works
- Construction of temporary seawall
- Ground investigation
- Installation of silt screen at sea water intake of HKIA
- Cone penetration test;
- Silt curtain deployment and repairing
- Sand blanket trial
- Stone blankets laying.
- Construction of cellular structure

Land-based Works

- Site office erection and construction at Works Area WA2;
- Public Works Regional Laboratory erection and construction at Works Area WA3;
- Maintenance works of Public Works Regional Laboratory at Works Area WA3
- Constructing site access at Works Area WA2 to Ying Hei Road, Tung Chung;
- Drainage works at Works Area WA2 and WA3;
- Geotextile fabrication at Works Area WA2 and WA4; and
- Stone column installation barges setup and their maintenance works at Works Area WA4.

- Silt curtain fabrication at Works Area WA2 and WA4;
- Maintenance works of Site Office at Works Area WA2
- Maintenance works of Public Works Regional Laboratory at Works Area WA3
- Silt curtain fabrication at Works Area WA4
- Erection of site office for CHEC(GD) at Works Area WA2
- Green roof construction at Works Area WA2
- Construction of Temporary Marine Access at Works Area WA2
- Maintenance of Temporary Marine Access at Works Area WA2

A summary of monitoring and audit activities conducted in the reporting period is listed below:

24-hour Total Suspended Particulates (TSP) monitoring	62 sessions
1-hour TSP monitoring	62 sessions
Noise monitoring	48 sessions
Impact water quality monitoring	155 sessions
Impact dolphin monitoring	24 surveys
Joint Environmental site inspection	51 sessions

Breaches of Action and Limit Levels for Air Quality

A total of 15 Action level and 5 Limit Level exceedances were recorded during the 24-hr TSP impact monitoring period. No exceedance of 1-hour TSP exceedance level was recorded at all monitoring station during the 1-hr TSP impact monitoring period. Investigation into the possible causes of each exceedance was undertaken and reported in the respective monthly EM&A reports, the investigations results confirmed that the air quality exceedances were not related to Contract.

Breaches of Action and Limit Levels for Noise

One complains was received and therefore one (1) Action Level Exceedance of construction noise was recorded in the reporting period. Investigation into the possible causes of such exceedance was undertaken and reported in the respective monthly EM&A reports, the investigations results confirmed that the limit level exceedance was not related to Contract.

Breaches of Action and Limit Levels for Water Quality

Fifty-six (56) Action Level exceedances and seven (7) Limit Level exceedances were recorded at measured suspended solids (SS) values (in mg/L), one (1) Action Level exceedances were recorded at measured turbidity (in NTU), six (6) Action Level exceedance was recorded at measured DO (Bottom) (mg/L) and one (1) Limit Level exceedance was recorded at measured DO (S&M) (mg/L) during the reporting period. Investigation result shows that all the exceedances were not due to the Contract works except the Action Level Exceedance recorded at SR5 and Limit Level Exceedance recorded at IS10 on 18 Dec 13 were related to Contract.

Triggering of Event and Action Plan for Impact Dolphin Monitoring

One (1) Limit level exceedance and Six (6) Action Level Exceedances were recorded in the reporting period for impact dolphin monitoring. The investigation results showed that although no unacceptable changes in environmental parameters of this Contract have been measured, at this time it is not possible to make a conclusive assessment of this Contract's specific impact on dolphins. Event and Action Plan for Impact Dolphin Monitoring was triggered. For investigation results please refer to Appendix L of the corresponding quarterly reports.

Implementation Status and Review of Environmental Mitigation Measures

Most of the recommended mitigation measures, as included in the EM&A programme, were implemented properly in the reporting period. Reference is made to ET's proposal of the omission of air monitoring station (AMS 6) dated on 1 November 2012 and EPD's letter dated on 19 November 2012 regarding the conditional approval of the proposed omission of air monitoring station (AMS 6) for Contract No. HY/2010/02. The

aforesaid omission of Monitoring Station AMS6 was effective since 19 November 2012.

The recommended environmental mitigation measures effectively minimize the potential environmental impacts from the Contract. The EM&A programme effectively monitored the environmental impacts from the construction activities and ensure the proper implementation of mitigation measures. No particular recommendation was advised for the improvement of the programme.

Moreover, regular review and checking on the construction methodologies, working processes and plants were carried out to ensure the environmental impacts were kept minimal and recommended environmental mitigation measures were implemented effectively.

Complaint, Notification of Summons and Successful Prosecution
Eleven (11) environmental complaints were received in the reporting period.

One (1) summons and one (1) successful prosecution was received in the reporting period.

1 INTRODUCTION

1.1 Background

1.1.1 Contract No. HY/2010/02 – Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Reclamation Work (here below, known as "the Contract") mainly comprises reclamation at the northeast of the Hong Kong International Airport of an area of about 130-hectare for the construction of an artificial island for the development of the Hong Kong Boundary Crossing Facilities (HKBCF), and about 19-hectare for the southern landfall of the Tuen Mun - Chek Lap Kok Link (TMCLKL).

1.1.2 The environmental impact assessment (EIA) reports (Hong Kong – Zhuhai – Macao Bridge Hong Kong Boundary Crossing Facilities – EIA Report (Register No. AEIAR-145/2009) (HKBCFEIA) and Tuen Mun – Chek Lap Kok Link – EIA Report (Register No. AEIAR-146/2009) (TMCLKLEIA), and their environmental monitoring and audit (EM&A) Manuals (original EM&A Manuals), for the Contract were approved by Environmental Protection Department (EPD) in October 2009.

1.1.3 EPD subsequently issued the Environmental Permit (EP) for HKBCF in November 2009 (EP-353/2009) and the Variation of Environmental Permit (VEP) in June 2010 (EP-353/2009/A), November 2010 (EP-353/2009/B), November 2011 (EP-353/2009/C), March 2012 (EP-353/2009/D), October 2012 (EP-353/2009/E), April 2013 (EP-353/2009/F), August 2013 (EP-353/2009/G), January 2015 (EP-353/2009/H) and July 2015 (EP-353/2009/I). Similarly, EPD issued the Environmental Permit (EP) for TMCLKL in November 2009 (EP-354/2009) and the Variation of Environmental Permit (VEP) in December 2010 (EP-354/2009/A), January 2014 (EP-354/2009/B), December 2014 (EP-354/2009/C) and March 2015 (EP-354/2009/D).

1.1.4 The Contract is a designated Project and is governed by the current permits for the Contract, i.e. the amended EPs issued on 17 July 2015 (EP-353/2009/I) and 13 March 2015 (EP-354/2009/D) (for TMCLKL Southern Landfall Reclamation only).

1.1.5 A Contract Specific EM&A Manual, which included all Contract-relation contents from the original EM&A Manuals for the Contract, was issued in May 2012.

1.1.6 Ove Arup & Partners Hong Kong Limited (Arup) was appointed by Highways Department (HyD) as the consultants for the design and construction assignment for the Contract's reclamation works (i.e. the Engineer for the Contract).

1.1.7 China Harbour Engineering Company Limited (CHEC) was awarded by HyD as the Contractor to undertake the construction work of the Contract.

1.1.8 ENVIRON Hong Kong Ltd. was employed by HyD as the Independent Environmental Checker (IEC) and Environmental Project Office (ENPO) for the Contract.

1.1.9 AECOM Asia Co. Ltd. (AECOM) was appointed by CHEC to undertake the role of Environmental Team for the Contract for carrying out the EM&A works.

1.1.10 The construction phase of the Contract under the EPs was commenced on 12 March 2012 and will be tentatively completed by early Year 2016.

1.1.11 According to the Contract Specific EM&A Manual, there is a need of an EM&A programme including air quality, noise, water quality and dolphin monitoring and environmental site inspections. The EM&A programme of the Contract commenced on 12 March 2012.

1.2 Scope of Report

1.2.1 This is the second Annual EM&A Review Report under the Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Reclamation Works. This report presents a summary of the environmental monitoring and audit works, list of activities and mitigation measures proposed by the ET for the Contract from 12 March 2012 and 28 February 2013.

1.3 Contract Organization

1.3.1 The Contract organization structure is shown in Appendix A. The key personnel contact names and numbers are summarized in Table 1.1.

Table 1.1 Contact Information of Key Personnel

Party	Position	Name	Telephone	Fax
Engineer's Representative (ER) (Ove Arup & Partners Hong Kong Limited)	Chief Resident Engineer	Roger Marechal	2528 3031	2668 3970
IEC / ENPO (ENVIRON Hong Kong Limited)	Independent Environmental Checker	Raymond Dai	3743 0788	3548 6988
	Environmental Project Office Leader	Y.H. Hui	3743 0788	3548 6988
Contractor (China Harbour Engineering Company Limited)	General Manager (S&E)	Daniel Leung	3157 1086	2578 0413
	Environmental Officer	Richard Ng	3693 2253	2578 0413
	24-hour Hotline	Alan C.C. Yeung	9448 0325	--
ET (AECOM Asia Company Limited)	ET Leader	Echo Leong	3922 9280	2317 7609

1.4 Summary of Construction Works

1.4.1 The construction phase of the Contract under the EP commenced on 12 March 2012.

1.4.2 As informed by the Contractor, details of the major works carried out in the reporting period are listed below:-

Marine-based Works

- Cone penetration test;
- Geotextile laying and fabrication;
- Stone column installation trial;
- Silt curtain fabrication and deployment; and
- Stone column installation
- Maintenance of Silt curtain
- Silt curtain deployment and repairing
- Sand blanket trial
- Stone blankets laying.
- Band drain installation trial
- Stone column installation
- Construction of cellular structure
- Backfill cellular structure

Land-based Works

- Site office erection and construction at Works Area WA2;
- Public Works Regional Laboratory erection and construction at Works Area WA3;
- Maintenance works of Public Works Regional Laboratory at Works Area WA3
- Constructing site access at Works Area WA2 to Ying Hei Road, Tung Chung;
- Drainage works at Works Area WA2 and WA3;
- Geotextile fabrication at Works Area WA2 and WA4; and
- Stone column installation barges setup and their maintenance works at Works Area WA4.
- Silt curtain fabrication at Works Area WA2 and WA4;
- Hoarding erection at Work Areas Portion D and Works Area WA2
- Sign board erection at Works Area WA2

1.4.3 The construction programme of the Contract is shown in Appendix B.

1.4.4 The general layout plan of the Contract site showing the detailed works areas is shown in Figure 1.

1.4.5 The environmental mitigation measures implementation schedule are presented in Appendix C.

2 SUMMARY OF EM&A PROGRAMME REQUIREMENTS

2.1 Monitoring Parameters

2.1.1 The Contract Specific EM&A Manual designated 4 air quality monitoring stations, 2 noise monitoring stations, 21 water monitoring stations (9 Impact Stations, 7 Sensitive Receiver Stations and 5 Control/Far Field Stations) to monitor environmental impacts on air quality, noise and water quality respectively. Pre-set and fixed transect line vessel based dolphin survey was required in two AFCD designated areas (Northeast and Northwest Lantau survey areas). The impact dolphin monitoring at each survey area should be conducted twice per month.

2.1.2 For impact air quality monitoring, monitoring locations AMS2 (Tung Chung Development Pier) and AMS7 (Hong Kong SkyCity Marriott Hotel) were set up at the proposed locations in accordance with Contract Specific EM&A Manual. The conditional omission of Monitoring Station AMS6 was effective since 19 November 2012. For monitoring location AMS3 (Ho Yu College), as proposed in the Contract Specific EM&A Manual, approval for carrying out impact monitoring could not be obtained from the principal of the school. Permission on setting up and carrying out impact monitoring works at nearby sensitive receivers, like Caribbean Coast and Coastal Skyline, was also sought. However, approvals for carrying out impact monitoring works within their premises were not obtained. Impact air quality monitoring was conducted at site boundary of the site office area in Works Area WA2 (AMS3A) respectively. Same baseline and Action Level for air quality, as derived from the baseline monitoring data recorded at Ho Yu College, was adopted for this alternative air quality location. Due to hand over of work site where the AMS3A and NMS3A was located, it was proposed to EPD on 27 December 2014 to relocate both monitoring station to alternative location AMS3B and NMS3B and approval of such relocation was given by the EPD on 2 January 2014. The monitoring stations AMS3A and NMS3A were renamed to monitoring station AMS3B and NMS3B respectively after relocation on 29 January 2014.

2.1.3 For impact noise monitoring, monitoring locations NMS2 (Seaview Crescent Tower 1) was set up at the proposed locations in accordance with Contract Specific EM&A Manual. However, for monitoring location NMS3 (Ho Yu College), as proposed in the Contract Specific EM&A Manual, approval for carrying out impact monitoring could not be obtained from the principal of the school. Permission on setting up and carrying out impact monitoring works at nearby sensitive receivers, like Caribbean Coast and Coastal Skyline, was also sought. However, approvals for carrying out impact monitoring works within their premises were not obtained. Impact noise monitoring was conducted at site boundary of the site office area in Works Area WA2 (NMS3A) respectively. Same baseline noise level, as derived from the baseline monitoring data recorded at Ho Yu College was adopted for this alternative noise monitoring location.

2.1.4 In accordance with the Contract Specific EM&A Manual, twenty-one stations were designated for impact water quality monitoring. The nine Impact Stations (IS) were chosen on the basis of their proximity to the reclamation and thus the greatest potential for water quality impacts, the seven Sensitive Receiver Stations (SR) were chosen as they are close to the key sensitive receives and the five Control/ Far Field Stations (CS) were chosen to facilitate comparison of the water quality of the IS stations with less influence by the Contract/ ambient water quality conditions.

2.1.5 Due to safety concern and topographical condition of the original locations of SR4 and SR10B, alternative impact water quality monitoring stations, naming as SR4(N) and SR10B(N), were adopted, which are situated in vicinity of the original impact water quality monitoring stations (SR4 and SR10B) and could be reachable. Same baseline and Action Level for water quality, as derived from the baseline monitoring data recorded, were adopted for these alternative impact water quality monitoring stations.

2.1.6 The monitoring locations used during the reporting period are depicted in Figures 2, 3 and 4 respectively.

2.1.7 The Contract Specific EM&A Manual also required environmental site inspections for air quality, noise, water quality, chemical, waste management, marine ecology and landscape and visual impact.

2.2 Environmental Quality Performance (Action/Limit Levels)

2.2.1 The environmental quality performance limits (i.e. Action and/or Limit Levels) of air, water quality and Chinese White Dolphin monitoring were derived from the baseline air and water quality monitoring results at the respective monitoring stations, while the environmental quality performance limits of noise monitoring were defined in the EM&A Manual.

2.2.2 The environmental quality performance limits of air quality, noise, water and Chinese White Dolphin monitoring are given in Appendix D.

2.3 Environmental Mitigation Measures

2.3.1 Relevant environmental mitigation measures were stipulated in the Particular Specification and EPs (EP-353/2009/I and EP-354/2009/D) (for TMCLKL Southern Landfall Reclamation only) for the Contractor to adopt. A list of environmental mitigation measures and their implementation statuses are given in Appendix C.

3 MONITORING RESULTS

3.1 Air Quality Monitoring

3.1.1 Introduction

3.1.1.1. In accordance with the Contract Specific EM&A Manual, impact 1-hour Total Suspended Particulates (TSP) monitoring was conducted for at least three times every 6 days, while impact 24-hour TSP monitoring was carried out for at least once every 6 days at the 4 monitoring stations (AMS2, AMS3A/B[1], AMS6 and AMS7).

3.1.1.2. The monitoring locations for impact air quality monitoring are depicted in Figure 2. However, for AMS6 (Dragonair/CNAC (Group) Building), permission on setting up and carrying out impact monitoring works was sought, however, access to the premise has not been granted yet on this report issuing date.

3.1.1.3. The weather was mostly sunny, with occasional cloudy and occasional rainy in the reporting period. The major dust source in the reporting period included construction activities from the Contract, as well as nearby traffic emissions.

3.1.1.4. The number of monitoring events and exceedances recorded in each month of the reporting period are presented in Table 3.1 and Table 3.2 respectively.

3.1.1.5. The baseline and impact air quality monitoring data are provided in the baseline monitoring report and monthly EM&A reports respectively. The graphical plots of the impact air quality monitoring results are provided in Appendix E. No specific trend of the monitoring results or existence of persistent pollution source was noted.

Table 3.1 Summary of Number of Monitoring Events for 1-hr & 24-hr TSP Concentration

Monitoring Parameter	Location	No. of monitoring events
		Mar 13 – Feb 14
1-hr TSP	AMS2	186
	AMS3A/B[1]	186
	AMS7	186
24-hr TSP	AMS2	62
	AMS3A/B[1]	62
	AMS7	62

Table 3.2 Summary of Number of Exceedances for 1-hr & 24-hr TSP Monitoring

Monitoring Parameter	Location	Level of Exceedance	Level of Exceedance
			Mar 13 – Feb 14
1-hr TSP	AMS2	Action	0
		Limit	0
	AMS3A/B[1]	Action	0
		Limit	0
	AMS7	Action	0
		Limit	0
	Total		***0***
24-hr TSP	AMS2	Action	0
		Limit	0
	AMS3A/B[1]	Action	11
		Limit	5

[1] The monitoring stations AMS3A was renamed to monitoring station AMS3B respectively after relocation on 29 January 2014.

	AMS7	Action	4
		Limit	0
	Total		***20***

3.1.2 Environmental Mitigation Measures

3.1.2.1 Relevant Air mitigation measures, as recommended in the EIA Report were stipulated in the EM&A Manual for the Contractor to adopt. The implementation status of air quality mitigation measures is depicted in Appendix C.

3.1.3 Summary of Actions Taken in the event of Non-Compliance

3.1.3.1 Other than the mitigation measures implemented as mentioned in Appendix C, in the event of non-compliance, actions were taken in accordance with the Event-Action Plan in the EM&A Manual. The Contractor was notified immediately. Investigation was carried out within three working days of identification of non-compliance such as identifying the air pollution sources, checking the implementation status of the mitigation measures, etc., and measurement was repeated to confirm the investigation findings. Further investigation was carried out to identify the source of pollution when deemed necessary. In summary, no direct evidence between the exceedance at AMS3A/B[2], AMS7 and the Hong Kong Boundary Crossing Facilities - reclamation works could be established for all non-compliances and therefore no action was required to be taken.

3.1.4 Review of Reasons for and the implications of Non-Compliance

3.1.4.1 A total of 15 Action level and 5 Limit Level exceedances were recorded during the 24-hr TSP impact monitoring period. No exceedance of 1-hour TSP exceedance level was recorded at all monitoring station during the 1-hr TSP impact monitoring period. Investigation into the possible causes of each exceedance was undertaken and reported in the respective monthly EM&A reports.

3.1.5 Environmental Acceptability of the Contract

3.1.5.1 Trend of 1-hour and 24-hour TSP

3.1.5.1.1 The 24-hour TSP monitoring results were well below the Action and Limit levels, despite the exceedance caused by non Contract activities at AMS3A/B[2] and few isolated events at AMS7. The trend of TSP at AMS2, AMS3A/B[2] and AMS7 were comparable to the baseline range and showed no noticeable deterioration of air quality during the impact monitoring period.

3.1.5.2 Correlation between exceedances with possible dust generating activities

3.1.5.2.1 Possible dust generating activities of the Contract did not cause any noticeable deterioration in air quality at Hong Kong Boundary Crossing Facilities – Reclamation Works. With proper implementation of air quality mitigation measures, the monitoring results showed no adverse air quality impact.

3.1.5.3 Comparison of EM&A results with EIA predictions

Table 3.3 Maximum Predicted TSP concentrations under the "Mitigated" scenario

ASR	Location	Predicted Daily Concentrations*		Average Impact 1-hour TSP Levels, μg/m^3	Average Impact 24-hour TSP Levels, μg/m^3
		1-hour	24-hour		

[2] The monitoring station AMS3A was renamed to monitoring station AMS3B respectively after relocation on 29 January 2014.

AMS7	Hong Kong SkyCity Marriott Hotel	344	92	80	72

*Extracted from Table 5-8 of the EIA report

3.1.5.3.1 At 1-hour and 24-hour TSP monitoring station at AMS7, the average 24-hour TSP levels recorded in the EM&A programme were in similar magnitude as the Daily dust level predicted in the EIA.

3.1.6 **Practicality and Effectiveness of the EIA process and the EM&A programme**

3.1.6.1 Monitoring and auditing of air quality was recommended for the construction phase of the Contract in the EIA to ensure no exceedance of the TSP standard at the sensitive receiver.

3.1.6.2 The air quality monitoring methodology was effective in monitoring the air quality impacts of the Contract. Baseline monitoring of 1-hour and 24-hour TSP helped to determine the ambient TSP levels at the sensitive receiver prior to commencement of construction works. During periods when there were possible dust generating construction activities, impact monitoring of 24-hour TSP helped to determine whether the Contract caused unacceptable air quality impacts on the sensitive receiver. As the scope of the Contract mainly includes reclamation works during the reporting period and dust generation from the construction activities such as wind erosion and sand filling is the key concern during the construction phase. The monitoring of TSP was therefore considered to be cost effective for the Contract.

3.1.6.3 All recommended mitigation measures were applicable to the Contract. As discussed above, the Contract did not cause unacceptable air quality impacts. However, as the nature of the Contract is reclamation works of approximately 130 hectares of land in size, some mitigation measures in practice were generally focused on dust generating activities only. Nevertheless, the mitigation measures implemented were effective and efficient in controlling air quality impacts.

3.1.6.4 Monitoring and audit of 24-hour TSP levels had ensured that any deterioration in air quality was readily detected and timely actions taken to rectify any non-compliance. Assessment and analysis of 24-hour TSP results collected throughout the baseline and impact monitoring periods also demonstrated the environmental acceptability of the Contract. Weekly site inspections had ensured that the EIA recommended air quality mitigation measures were effectively implemented. The EM&A program is considered to be cost effective.

3.1.7 **Conclusion**

3.1.7.1 Air quality monitoring for the Contract was conducted during the baseline and impact monitoring periods. Key construction activities including geotextile laying, stone column installation, stone blanket laying, construction of cellular structure and backfill cellular structure. The trend of 1-Hour TSP and 24-hour TSP was comparable to the baseline range and showed no noticeable deterioration of air quality during the monitoring period. Although exceedances were recorded, they were isolated and short-term events. There is no evidence of long-term deteriorating trend.

3.1.7.2 The average 24-hour TSP levels recorded at AMS7 in EM&A programme were in similar magnitude with the Daily dust level predicted in the EIA. No TSP level was predicted by the Project EIA at AMS2 and AMS3A/B[3] and therefore, no comparison of EM&A data with EIA predictions could be made. Air quality mitigation measures implemented were effective in controlling air quality impacts.

[3] The monitoring station AMS3A was renamed to monitoring station AMS3B respectively after relocation on 29 January 2014.

3.2 Noise Monitoring

3.2.1 Introduction

3.2.1.1 Impact noise monitoring was conducted at the 2 monitoring stations (NMS2 and NMS3A/B[4]) for at least once per week during 07:00 – 19:00 in the reporting period.

3.2.1.2 The monitoring locations used during the reporting period are depicted in Figure 2.

3.2.1.3 Major noise sources during the noise monitoring included construction activities of the Contract and nearby traffic noise.

3.2.1.4 The number of impact noise monitoring events and exceedances are summarized in Table 3.4 and Table 3.5 respectively.

Table 3.4 Summary of Number of Monitoring Events for Impact Noise

Monitoring Parameter	Location	No. of monitoring events
		Mar 13 - Feb 14
Noise	NMS2	48
	NMS3A/B[4]	48

Table 3.5 Summary of Number of Monitoring Exceedances for Impact Noise

Monitoring Parameter	Location	Level of Exceedance	No. of Exceedance(s)
Noise	NMS2	Action	0
		Limit	0
	NMS3A/B[4]	Action	0
		Limit	0
	Total		**0**

[4] The monitoring station NMS3A were renamed to monitoring station NMS3B after relocation on 29 January 2014.

3.2.1.5 The graphical plots of the trends of the monitoring results are provided in Appendix F. No specific trend of the monitoring results or existence of persistent pollution source was noted.

3.2.2 Environmental Mitigation Measures

3.2.2.1. Relevant noise mitigation measures, as recommended in the EIA Report were stipulated in the EM&A Manual for the Contractor to adopt. The implementation status of noise mitigation measures is depicted in Appendix C. Construction Noise Permits were applied and complied with when construction works were carried out during restricted hours.

3.2.3 Non-compliance (exceedances) of the Environmental Quality Performance Limits (Action and Limit Levels)

3.2.3.1 Summary of Non-compliance (Exceedances)

3.2.3.1.1 Table 3.5 summarised the number exceedance recorded at each monitoring station throughout the impact monitoring period. There was no exceedance recorded at both NMS2 and NMS3A/B[5].

3.2.3.1.2 One complains was received; one (1) Action Level Exceedance of construction noise was recorded in the reporting period. Investigation into the possible causes of such exceedance was undertaken and reported in the respective monthly EM&A reports, the investigations results confirmed that the limit level exceedance was not related to Contract.

3.2.3.2 Summary of Actions Taken in the event of Non-Compliance

3.2.3.2.1 Investigation was carried out within three working days of identification of non-compliance. Assessments showed that all exceedances were not due to the works and therefore no action was required to be taken and these were verified by the IEC.

3.2.3.3 Review of Reasons for and the implications of Non-Compliance

3.2.3.3.1 There was one (1) action level exceedance recorded due to one noise complaint was received. Investigation into the possible causes of each exceedance was undertaken and reported in the respective monthly EM&A reports.

3.2.3.3.2 In summary, the average impact noise levels recorded in the reporting period were generally within the range of the predicted construction noise levels in the Project EIA.

3.2.4 Environmental Acceptability of the Contract

3.2.4.1 Trend of Measured Noise Level (Leq)

3.2.4.1.1 Other than an isolated event, the noise monitoring results for all monitoring stations were below the Limit levels. The trend showed no noticeable noise impact from the Contract during the impact monitoring period.

3.2.4.2 Correlation between exceedances with possible noise generating activities

3.2.4.2.1 No Exceedance was recorded for all monitoring stations. The impact noise levels recorded were generally similar to the predicted construction noise levels in the Project EIA.

3.2.4.2.2 For the complaint received during the monitoring period, investigation results confirmed that such exceedance was not related to the major construction activities of the Contract. Field observations indicated that construction activities, like sheet piling, percussive piling and excavation, were carrying out in nearby private developments (which are located at eastern and southern side of the Works Area WA2) during the course of monitoring, which contribute to the measured noise level. Therefore,

[5] The monitoring station NMS3A were renamed to monitoring station NMS3B after relocation on 29 January 2014.

noise generating activities of the Contract did not cause any noticeable noise impact at the sensitive receivers.

3.2.5 Comparison of EM&A results with EIA predictions

3.2.5.1 The EIA predicted that noise emitted by the use of Powered Mechanical Equipment (PME) on site would be the major source of noise impact during construction. The Construction Noise Impact at Noise Sensitive Receivers are summarised in Table 3.6 (extracted from Table 6-9 of the EIA Report).

Table 3.6 Construction Noise Impact at Noise Sensitive Receivers

NSR	Location	Predicted Noise Levels, dB(A)	
		Total Noise Impacts, dB(A)	Criterion, dB(A)
NMS2	Seaview Crescent Tower 1	74	75

3.2.5.2 During the construction period of the Contract, one (1) noise complaint was received in the impact monitoring period. The measured impact noise levels of the Contract for each monitoring station are summarised in Table 3.7 for comparison with EIA.

Table 3.7 Summary of Construction Noise Monitoring Results in the Reporting Period

NSR	Location	Average, dB(A), $L_{eq,30\ mins}$	Range, dB(A), $L_{eq,30\ mins}$	Limit Level, dB(A), $L_{eq,30\ mins}$
NMS2	Seaview Crescent Tower 1	66	62 - 68*	75
NMS3A/B[4]	Site Boundary of Site Office Area at Works Area WA2	65	57 - 69*	70

* +3dB(A) Façade correction included

3.2.5.3 The average impact noise levels recorded in EM&A during impact monitoring were all within the range of the predicted construction noise levels in the EIA Report. ET's assessment had shown that exceedances recorded were not due to the works of Reclamation Works and this had been verified by the IEC.

3.2.6 Practicality and Effectiveness of the EIA process and the EM&A programme

3.2.6.1 Monitoring and auditing of noise was recommended for the construction phase of the Contract in the EIA process to ensure compliance with the appropriate criterion at the receivers.

3.2.6.2 The noise monitoring methodology was effective in monitoring the noise impacts of the Contract. Baseline noise monitoring determined the ambient noise levels at the sensitive receivers prior to commencement of construction works. During periods when possible noise generating construction activities were on-going, impact noise monitoring would determine whether the Contract caused adverse noise impacts on the sensitive receivers. The monitoring methodology which focus on $L_{eq30\ minute}$ therefore considered to be cost effective for the Contract.

3.2.6.3 Noise mitigation measures recommended in the EIA Report were stipulated in the EM&A Manual for the Contractor to implement during the construction phase of the Contract. The list of noise mitigation measures is depicted in Appendix C. All recommended mitigation measures were applicable to the Contract. As discussed above, the Contract did not cause adverse noise impacts to the receivers. Therefore, the mitigation measures implemented were effective and efficient in controlling noise impacts.

3.2.6.4 Monitoring and audit of noise levels ensured that any noise impact to the receivers would readily be detected and timely actions could be taken to rectify any non-compliance. Assessment and analysis of noise results collected throughout the baseline and impact monitoring periods also demonstrated the environmental acceptability of the Contract. Weekly site inspections ensured that the EIA

recommended noise mitigation measures were effectively implemented. The EM&A program is considered to be cost effective.

3.2.7 **Conclusion**

3.2.7.1 The trend of L_{eq} was comparable to the baseline range and showed no noticeable noise impact during the impact monitoring period. Although exceedance was recorded, there was no evidence of long-term increasing trend. The average impact noise levels recorded in EM&A programme were all lower than the construction noise levels predicted in the EIA.

3.3 Water Quality Monitoring

3.3.1 Introduction

3.3.1.1 Impact water quality monitoring was conducted 3 times per week during mid-ebb and mid-flood tides at 21 water monitoring stations (9 Impact Stations, 7 Sensitive Receiver Stations and 5 Control/Far Field Stations).

3.3.1.2 The monitoring locations used during the reporting period are depicted in Figure 3.

3.3.1.3 Number of impact water quality monitoring events and exceedances recorded in the reporting period at each impact station are summarized in Table 3.8 and Table 3.9 respectively.

Table 3.8 Summary of Number of Monitoring Events for Impact Water Quality

Monitoring Parameter	Tide	No. of monitoring events
		Mar 13 - Feb 14
Water Quality	Mid-Ebb	155
	Mid-Flood	155

Table 3.9 Summary of Water Quality Exceedances in Mar 13-Feb 14

Station	Exceedance Level	DO (S&M)		DO (Bottom)		Turbidity		SS		Total	
		Ebb	Flood	Ebb	Flood	Ebb	Flood	Ebb	Flood	Ebb	Flood
IS5	Action	0	0	0	1 (10 June 13)	0	0	0	3 (7 Aug 13, 22 Nov 13; 10 Jan14)	0	4
	Limit	0	0	0	0	0	0	0	0	0	0
IS(Mf)6	Action	0	0	0	0	0	0	2 (11 Nov 13 and 16 Sept 13)	4 (8 May 13, 7 Aug 13; 11 & 20 Nov 13)	2	4
	Limit	0	0	0	0	0	0	0	0	0	0
IS7	Action	0	0	0	0	0	0	0	4 (8 May 13; 7 Aug 13; 20 Nov 13 and18 Oct 13)	0	4
	Limit	0	0	0	0	0	0	0	0	0	0
IS8	Action	0	0	0	0	0	0	0	3 (10 Apr and 8 May, 13; 6 Jan14)	0	3
	Limit	0	0	0	0	0	0	0	1 (20 Dec13)	0	1

Station	Exceedance Level	DO (S&M)		DO (Bottom)		Turbidity		**SS**		**Total**	
		Ebb	Flood	Ebb	Flood	Ebb	Flood	**Ebb**	**Flood**	**Ebb**	**Flood**
IS(Mf)9	Action	0	0	0	0	0	0	1 (8 May 13)	7 (8 May 13, 15 Nov13, 4 Oct 13 and 6 Sept 13; 18 Dec 13; 6 &15 Jan14	1	7
	Limit	0	0	0	0	0	0	0	(1) 17 Jan14	0	1
IS10	Action	0	0	1 (10 June 13)	1 (10 June 13)	0	0	0	4 (26 July 13; 6 Nov13, 7 Oct 13 and 30 Sept 13)	1	5
	Limit	0	0	0	0	0	0	0	(2) 25 Oct 13; 18 Dec13	0	2
IS(Mf)11	Action	0	0	1 (10 June 13)	1 (10 June 13)	0	0	0	0	1	1
	Limit	0	0	0	0	0	0	0	0	0	0
IS(Mf)16	Action	0	0	0	0	0	0	5 (29 Mar 13, 23 Aug 13; 4 & 22 Nov 13 and 04 Oct 13)	3 (22 Apr 13; 16 Oct 13; 21 Feb14)	5	3
	Limit	0	0	0	0	0	0	0	0	0	0
IS17	Action	0	0	0	0	0	1 (29 Apr 13)	2 (4 &15 Nov 13)	0	2	1
	Limit	0	0	0	0	0	0	0	0	0	0
SR3	Action	0	0	0	0	0	0	0	3 (7 Aug 13; 22 Nov13; 10 Jan14)	0	3
	Limit	0	0	0	0	0	0	0	0	0	0

Station	Exceedance Level	DO (S&M)		DO (Bottom)		Turbidity		**SS**		**Total**	
		Ebb	Flood	Ebb	Flood	Ebb	Flood	**Ebb**	**Flood**	**Ebb**	**Flood**
SR4(N)	Action	0	0	0	0	0	0	0	3 (10 Apr 13; 13 Nov13 and 18 Sept 13)	0	3
	Limit	0	0	0	0	0	0	1 (24 June 13)		1	0
SR5	Action	0	0	0	0	0	0	0	7 (26 Apr 13; 26 and 31 July 13; 6 Nov13, 7 Oct 13 and 30 Sept 13; 18 Dec 13)	0	7
	Limit	0	0	0	0	0	0	0	2 (29 Mar 13; 25 Oct 13)	0	2
SR6	Action	0	0	0	0	0	0	0	2 (6 Nov13; 3 Jan14)	0	2
	Limit	0	0	0	0	0	0	0	0	0	0
SR7	Action	0	0	0	0	0	0	0	0	0	0
	Limit	0	0	0	0	0	0	0	0	0	0
SR10A	Action	0	0	0	0	0	0	0	1 (6 Dec13)	0	1
	Limit	0	0	0	0	0	0	0	0	0	0
SR10B (N)	Action	0	0	0	1 (10 June 13)	0	0	0	2 (6 Nov13; 21 Oct 13)	0	3
	Limit	0	1 (10 June 13)	0	0	0	0	0	0	0	1
Total	**Action**	0	0	2	4	0	1	10	46	63	
	Limit	0	1	0	0	0	0	1	6	8	

Note: S: Surface;
M: Mid-depth;

3.3.1.4 Please refer to the monthly EM&A report (March 2013 to February 2014) accordingly for the details of the captioned exceedances.

3.3.1.5 The graphical plots of the trends of the monitoring results are provided in Appendix G. No specific trend of the monitoring results or existence of persistent pollution source was noted.

3.3.2 Environmental Mitigation Measures

3.1.2.1 Relevant water quality mitigation measures, as recommended in the EIA Report were stipulated in the EM&A Manual for the Contractor to adopt. The implementation status of water quality mitigation measure is depicted in Appendix C.

3.3.3 Non-compliance (exceedances) of the Environmental Quality Performance Limits (Action and Limit Levels)

3.3.3.1 Summary of Non-compliance (Exceedances)

3.3.3.1.1 Table 3.9 summarised the number of dissolved oxygen, turbidity and suspended solids exceedances recorded at each sensitive receiver station throughout the impact monitoring period. A total of 71 exceedances were recorded during the entire construction period with 63 Action level exceedances and 8 Limit level exceedances.

3.3.4 Review of Reasons for and the implications of Non-Compliance

3.3.4.1 Fifty-six (56) Action Level exceedances and seven (7) Limit Level exceedances were recorded at measured suspended solids (SS) values (in mg/L), one (1) Action Level exceedances were recorded at measured turbidity (in NTU), six (6) Action Level exceedance was recorded at measured DO (Bottom) (mg/L) and one (1) Limit Level exceedance was recorded at measured DO (S&M) (mg/L) during the reporting period. Investigation result shows that all the exceedances were not due to the Contract works except the Action Level Exceedance recorded at SR5 and Limit Level Exceedance recorded at IS10 on 18 Dec 13 were related to Contract.

3.3.4.2 The exceedances note at IS10 and SR5 on 18 Dec 13 were considered as Contract related. The silt curtain integrity checking record on 4 January 14 shows that the disconnected silt curtain observed on 18 Dec 13 at northwest of HKBCF were rectified and the Contractor was further reminded to ensure provision of ongoing maintenance to the silt curtains and to carry out maintenance work once defects were found. For details of investigation please refer to monthly EM&A Report December 2014.

3.3.4.3 After review of the investigation results of the water quality exceedances (for detail of investigations please refer to section 4 of monthly EM&A report (Mar 13 to Feb 14), ambient conditions were considered to have effects on the water quality monitoring results. Exceedances were considered to be due to a combination of the following potential causes: 1. Rough sea condition caused by adverse weather and relatively strong current experienced during the monitoring period and 2. During the time when exceedances of DO were recorded at monitoring stations, relatively low DO values were also recorded at corresponding upstream Control Stations during ebb tide or flood tides indicating these exceedances of DO were unlikely to be contributed by Contract works. This indicated these exceedances of DO were unlikely to be contributed by Contract works. 3. Local effects in the vicinity of the monitoring station where exceedance was recorded.

3.3.5 Environmental Acceptability of the Contract

3.3.5.1 Trend of water quality

Dissolved Oxygen

3.3.5.1.1 The dissolved oxygen levels recorded in the impact monitoring period showed a seasonal trend in which lower DO levels were recorded during the wet season and higher DO levels were recorded during the dry season. One reason for this seasonal trend may have been the increase in water temperature during the wet season leading to decreases in the solubility of oxygen in water and vice

versa during the dry season. The trend of dissolved oxygen levels was presented in Appendix G. Other than an isolated action level exceedance, the trend of dissolved oxygen levels at each monitoring stations in Appendix G did not show any noticeable deterioration of dissolved oxygen levels.

Turbidity

3.3.5.1.2 The turbidity levels were fairly distributed at most monitoring station during the reporting period. While trend of turbidity levels at impact station IS17, IS(Mf)16, IS(Mf)9 and IS(Mf)6 were more fluctuated and a higher turbidity level were recorded from March 13 to May 13 and from October 13 to December 13. The trend of turbidity levels of each monitoring station was shown in Appendix G. However, despite one isolated event, turbidity levels of all monitoring stations were still lower than the Action Level during the monitoring period.

Suspended Solids

3.3.5.1.3 The trend of suspended solid levels of each impact monitoring station was shown similar with the control stations of each tide, i.e , slightly fluctuated between the period from September to December 2012. The trend of suspended solid levels of each monitoring station was shown in Appendix G.

3.3.6 Correlation between exceedances with possible marine construction activities

3.3.6.1 With proper implementation of water quality mitigation measures, marine construction activities of the Contract were not observed to cause any unacceptable water quality impacts to the sensitive receiver stations.

Table 3.10 Summary of number of water quality exceedances per monitoring month

Month	Sand Filling Rate m^3/month	Depth averaged DO	Depth averaged Turbidity	Depth averaged SS	Total
Mar-13	52568	0	0	2	2
Apr-13	119967	0	1	4	5
May-13	448159	0	0	5	5
Jun-13	245188.5	7	1	1	9
Jul-13	252327.4	0	0	3	3
Aug-13	287182.6	0	1	5	6
Sep-13	368995	0	0	5	5
Oct-13	602966	0	0	8	8
Nov-13	593481	0	0	15	15
Dec-13	930460	0	0	5	5
Jan-14	952135	0	0	7	7
Feb-14	886830	0	0	1	1

3.3.6.2 As shown in Table 3.10, there was no apparent correlation between the dredging and filling rates and the number of water quality exceedances recorded per monitoring day.

3.3.6.3 For dissolved oxygen, the numbers of dissolved oxygen exceedances show no noticeable deterioration of dissolved oxygen or correlation between filling rate and dissolve oxygen exceedance.

3.3.6.4 For turbidity, the numbers of turbidity exceedances show no noticeable deterioration of turbidity or correlation between filling rate and turbidity exceedance.

3.3.6.5 For suspended solids, the numbers of suspended solids exceedances show no noticeable deterioration of suspended solid or correlation between filling rate and suspended exceedance.

3.3.6.6 The trend did not show any correlation between water quality impact and the filling rates during the impact monitoring period.

3.3.6.7 With proper implementation of water quality mitigation measures, marine construction activities of the Contract were not observed to cause any unacceptable water quality impacts to the sensitive receiver stations.

3.3.7 Comparison of EM&A results with EIA predictions

3.3.7.1 Results from the sensitive receiver stations were compared with the EIA predictions for the sensitive receivers in the following manner:

- WSR 27 - San Tau Beach SSSI with SR3
- WSR 22c- Tai Ho Wan Inlet (outside) with SR4(N)
- WSR 25 - Cooling water intake at HK International Airport with SR5

Dissolved oxygen (DO)

3.3.7.2 According to Section 9.10.7.4 of the EIA Report, the dissolved oxygen depletion from the loss of sediment to suspension during the construction of the reclamation for HKBCF was calculated to be 0.4 mg/L at WSR25. Since, as stated in the Table 9.6a of the EIA report the DO of the NW Western water is generally high with average ranges between 5.7 – 6.8 mg/L and depletion will not be detrimental to the ecological systems of the area. The average Depth averaged DO record at SR5 is 7.8 mg/L in January 2014 when the filling rate/month is the highest during the reporting period and therefore no significant dissolved oxygen depletion from was noted during impact monitoring.

3.3.7.3 The baseline dissolved oxygen levels and the level of depletion during impact monitoring at each sensitive receiver are summarised in Tables 5.7.

Table 3.11 Comparison of depth averaged dissolved oxygen levels (Surface & Mid-depth, Bottom depth) during baseline and impact monitoring period (mgL^{-1})

Sensitive Receiver in Baseline	Associated Location during Impact Monitoring	Monitoring Depth	Baseline mean		Impact mean (January 2014)		Depletion during Impact Monitoring	
			Mid-ebb	Mid-flood	Mid-ebb	Mid-flood	Mid-ebb	Mid-flood
SR3	SR3*	Surface & mid	6.8	6.7	8.3	8.2	-1.5	-1.5
		Bottom	-	6.2	-	-	-	-
SR4^	SR4(N)**	Surface & mid	6.1	6.3	8.1	8.2	-2	-1.9
		Bottom	6.0	6.2	8.1	8.2	-2.1	-2
SR5	SR5**	Surface & mid	6.4	6.3	7.8	7.8	-1.4	-1.5
		Bottom	6.1	6.1	7.8	7.7	-1.7	-1.6
SR6	SR6**	Surface & mid	6.6	6.5	7.8	7.8	-1.2	-1.3
		Bottom	6.2	6.1	7.8	7.8	-1.6	-1.7
SR7	SR7**	Surface & mid	6.3	6.0	7.8	7.9	-1.5	-1.9

		Bottom	6.1	5.9	7.8	7.9	-1.7	-2
SR10A	SR10A	Surface & mid	6.0	6.0	7.7	7.7	-1.7	-1.7
		Bottom	5.7	5.8	7.7	7.7	-2	-1.9
SR10B^	SR10B(N)**	Surface & mid	6.1	6.0	7.7	7.8	-1.6	-1.8
		Bottom	6.2	5.8	7.7	7.8	-1.5	-2

^Due to safety issue, the water quality monitoring location of SR4 has been changed to SR4(N) during impact monitoring.
*Only mid-depth station of DO were monitored at SR3 in mid-ebb during baseline monitoring, in both mid-ebb and mid-flood during impact monitoring as the water depth less than 3m.
** The mid-depth station of DO was omitted at SR4(N) during impact monitoring as the water depth is less than 6m.

3.3.7.4 Comparing baseline averaged dissolved oxygen levels with EM&A results; no significant depletion was found at all sensitive receiver locations. There was no adverse effect on dissolved oxygen concentrations as a result of the filling works of the Contract as the depleted dissolved oxygen concentrations did not breach the Water Quality Objectives nor did they exceed the AL levels adopted for the Contract.

Suspended solids (SS)

3.3.7.5 The EIA determined the acceptability of elevations in suspended sediment concentrations based on the Water Quality Objectives. The Water Quality Objectives for suspended sediments for the North Western Water Control Zones were defined as being an allowable elevation of 30% above the background. The ambient and tolerance values for suspended sediment concentrations in the vicinity of sensitive receivers adopted in Table 9.11 of the EIA Report are presented in Table 3.12.

Table 3.12 Ambient and Tolerance Values for Suspended Sediment Concentrations (mgL^{-1}) in the Vicinity of Sensitive Receivers adopted in the EIA

Sensitive Receiver in EIA Report	Associated EPD Station	Ambient value (90th Percentile)		Tolerance value (30% Tolerance)	
		Dry Season	Wet Season	Dry Season	Wet Season
WSR 27	NM5,6,8	8.3	5.6	2.5	1.7
WSR 22c	NM1,2,3	5.5	3.7	1.7	1.1
WSR 25	NM1,2,3	5.5	3.7	1.7	1.1

3.3.7.6 The use of single layer silt curtain system has been modelled in the 2012 mitigated scenario. The predicted suspended sediment concentrations under the 2012 mitigated scenario of the Contract as shown in Table 9.21 in the EIA Report are summarised in Table 3.13.

Table 3.13 Calculated Elevations in Suspended Sediment Concentrations at Sensitive Receivers (mgL^{-1}) under the 2012 mitigated scenario from the EIA

Sensitive Receiver in EIA Report	Associated Location during Impact Monitoring	Calculated Elevations	
		Dry Season	Wet Season
WSR 27	SR3	0.0	0.0
WSR 22c	SR4(N)	0.1	0.0
WSR 25	SR5	3.0	2.7

3.3.7.7 For suspended solids, as the baseline monitoring was conducted in October 2011 which is the transitional season or just the start of dry season while no data were recorded in the wet season, direct comparison with the EIA predictions could not be made. The comparison of EM&A results with baseline results in the following paragraphs was based on the criteria of acceptability of 30 percent elevations above the background as defined in the Water Quality Objectives which was also used in scenario predictions in the EIA.

3.3.7.8 Baseline water quality monitoring for the Contract was conducted during the transitional season. The mean baseline suspended solids level at each sensitive receiver and 30 percent of the baseline mean are presented in Table 3.14.

Table 3.14 Baseline suspended solids levels and 30% of baseline mean (mgL^{-1})

Associated Location in Baseline Report	Baseline mean		30% of baseline mean	
	Mid-ebb	Mid-flood	Mid-ebb	Mid-flood
SR3	14.0	16.3	4.2	4.9
SR4	11.3	12.2	3.4	3.7
SR5	10.6	11.9	3.2	3.6
SR6	11.9	11.9	3.6	3.6
SR7	11.4	10.4	3.4	3.1
SR10A	10.2	10.2	3.1	3.1
SR10B	11.5	11.1	3.5	3.3

3.3.7.9 The average elevations in suspended solids concentrations of January 2014 were compared with the baseline levels are provided in Table 3.15.

Table 3.15 Average suspended solids levels at sensitive receivers (mgL^{-1}) in January 2014

Sensitive Receiver in Baseline	Associated Location during Impact Monitoring	Impact SS Mean (in January 2014)			
		Mid-ebb	Elevation	Mid-flood	Elevation
SR3	SR3	9.1	-4.9	11.3	-5.0
SR4	SR4(N)*	7.2	-4.1	8.8	-3.4
SR5	SR5	7.7	-2.9	11.6	-0.3
SR6	SR6	7.4	-4.5	11.4	-0.5
SR7	SR7	8.8	-2.6	9.5	-0.9
SR10A	SR10A	5.1	-5.1	8.0	-2.2
SR10B	SR10B(N)*	5.2	-6.3	7.7	-3.4

*Due to safety issue, the water quality monitoring location of SR4 & SR10b have been changed to SR4(N) & SR10B(N) respectively during impact monitoring.

3.3.7.10 With the highest filling rate in January 2014, the elevations in suspended solids levels were below 30 percent of the baseline suspended solids levels at all stations. Regional influences would have effects on the deterioration in water quality than activities at the work site. A combination of the following potential causes: 1. Rough sea condition caused by adverse weather and relatively strong current experienced during the monitoring period and 2. During the time when exceedances of DO were recorded at monitoring stations, relatively low DO values were also recorded at corresponding upstream Control Stations during ebb tide or flood tides indicating these exceedances of DO were unlikely to be contributed by Contract works. This indicated these exceedances of DO were unlikely to be contributed by Contract works. 3. Local effects in the vicinity of the monitoring station where exceedance was recorded.

3.3.8 Practicality and Effectiveness of the EIA process and the EM&A programme

3.3.8.1 Monitoring and audit of water quality was recommended for the construction phase of the Contract in the EIA process to ensure any deterioration in water quality would be readily detected and timely action could be taken to rectify the situation.

3.3.8.2 Baseline water quality monitoring determined the ambient water quality in the region prior to commencement of construction works. Impact water quality monitoring helped to determine whether the Contract would cause unacceptable water quality impacts on the sensitive receivers. Post-Contract water quality monitoring upon completion of all marine construction activities helped to demonstrate the return of ambient conditions that existed prior to commencement of the construction works.

3.3.8.3 Water quality mitigation measures were recommended in the EIA and a list of water quality mitigation measures were stipulated in the EM&A Manual for the Contractor to implement during the construction phase of the Contract. The list of water quality mitigation measures is depicted in Appendix C. All recommended mitigation measures were applicable to the Contract. Precautionary measures including installation of silt curtains were also implemented to prevent migration of suspended solids towards the sensitive receivers. Monitoring results showed that water quality at sensitive receivers was affected by regional water quality influenced by tidal and climatic conditions, local impacts from the vicinity of the receivers. As discussed above, the Contract was not observed to cause unacceptable water quality impacts to the sensitive receivers. Therefore, the mitigation measures implemented were effective and efficient in controlling water quality impacts.

3.3.8.4 Monitoring and audit of water quality ensured that any water quality impacts to the receivers would be readily detected and timely actions could be taken to rectify any non-compliance. Assessment and analysis of water quality results collected throughout the baseline, impact and post-Contract monitoring periods also demonstrated the environmental acceptability of the Contract. Weekly site

inspections ensured that the EIA recommended water quality mitigation measures were effectively implemented.

3.3.9 **Conclusion**

3.3.9.1 Water quality monitoring for the Contract was conducted during the baseline and impact monitoring periods. For dissolved oxygen, turbidity and suspended solids levels, a total of 36 exceedances were recorded. Assessment indicated that there was no correlation between the filling rates and the number of water quality exceedances recorded. Exceedances were considered to be due to a combination of factors including 1. Rough sea condition caused by adverse weather and relatively strong current experienced during the monitoring period and 2. During the time when exceedances of DO were recorded at monitoring stations, relatively low DO values were also recorded at corresponding upstream Control Stations during ebb tide or flood tides indicating these exceedances of DO were unlikely to be contributed by Contract works. This indicated these exceedances of DO were unlikely to be contributed by Contract works. 3. Local effects in the vicinity of the monitoring station where exceedance was recorded.

3.3.9.2 The DO and SS levels recorded at SR3, SR4 (N) and SR5 were in similar magnitude as predicted in the Project EIA. No comparison could be made from SR6 to SR10B(N) as predictions were not made in the Project EIA. For turbidity, as no prediction was made in the Project EIA, no comparison could be made. With the implementation of water quality mitigation measures recommended in the EIA and water quality mitigation measures implemented during the EM&A programme, marine construction activities of the Contract did not cause any unacceptable water quality impacts to the sensitive receivers.

3.4 Dolphin Monitoring

3.4.1 Introduction

3.4.1.1 In accordance with the requirements specified in Section 9.3 of the EM&A Manuel, monthly vessel-based surveys were conducted to monitor impacts on the Indo-Pacific humpback or Chinese white dolphin (*Sousa chinensis*). The surveys were conducted in the areas known as NEL and NWL and travelled the transect lines depicted in Figure 4.

3.4.1.2 The total transect length for NEL and NWL combined is approximately 111km although some Contract and other works at times have caused temporary truncation of some lines, particularly lines 1,2,9 and 10.

3.4.1.3 Surveys were conducted twice per month, using combined line transect and photo-identification techniques. The research team comprised qualified and experienced researchers and Marine Mammal Observers (MMO).

3.4.1.4 The mitigation measures for dolphins are included in the Environmental Permit for this Contract are included in Appendix C.

3.4.2 Environmental Mitigation Measures

3.4.2.1 Relevant mitigation measures for dolphins, as recommended in the EIA Report were stipulated in the EM&A Manual for the Contractor to adopt. The implementation status of mitigation measures for dolphins is depicted in Appendix C.

3.4.3 Summary of Actions Taken in the event of Non-Compliance

3.4.3.1 Action Level and Limit Level (AL/LL) values were implemented during this reporting period. This Contract reports on AL/LL relevant to NEL and NWL monitoring areas (see Appendix D; Table 5).

3.4.3.2 One (1) Limit level exceedance and Six (6) Action Level Exceedances were recorded in the reporting period for impact dolphin monitoring. The investigation results showed that although no unacceptable changes in environmental parameters of this Contract have been measured, at this time it is not possible to make a conclusive assessment of this Contract's specific impact on dolphins. Event and Action Plan for Impact Dolphin Monitoring was triggered. For investigation results please refer to Appendix L of the corresponding quarterly reports.

Table 3.16 Summary of Dolphin Monitoring Limit level and Action level Exceedances

Quarterly period		STG*	ANI**	Level Exceeded
March 2013- May 2013	**NEL**	0.0	0.0	Limit Level
	NWL	3.0	8.6	
June 2013- August 2013	**NEL**	1.8	1.8	Action
	NWL	5.7	16.6	Action
September 2013- November 2013	**NEL**	0.0	0.0	Action
	NWL	6.7	24.7	Action
December 2013- February 2014	**NEL**	0.5	0.5	Action
	NWL	4.5	20.7	Action

* STG represents groups of dolphins (recorded on effort)
** ANI represents number of individual dolphins (recorded on effort)

3.4.4 Summary of Survey Effort and Dolphin Sightings

3.4.4.1 Vessel-based surveys have been conducted monthly from March 2013 to February 2014, i.e., during the second year of the construction phase. A total of 50 survey days were completed between March 2013-February 2014 (Table 1 of Appendix H). A total of 2667.1km were completed whereas 2595.4km were conducted under favourable conditions (defined as Beaufort Sea State 3 or better and with visibility of >1km) between March 2013-February 2014 (Table 2 of Appendix H). Between March 2013-February 2014, a total of 135 dolphin sightings were recorded, 91 as on effort and 44 as opportunistic[6] (Figure 1 of Appendix H). In the first year of impact monitoring (2012-13), 49 survey days were completed, with a total of 2627.5km completed with 2601.4km were conducted under favourable conditions. In both years, >97% of the total track length covered was under favourable conditions. In the first year of impact monitoring, a total of 203 dolphin sightings were recorded, 145 as on effort and 58 as opportunistic. The total number of sightings has decreased between the first and second year and year two of impact monitoring.

3.4.5 Distribution

3.4.5.1 Sightings of dolphins were divided into quarterly periods and an increase then decrease in the number of sightings is depicted as the year progresses through each quarter, i.e., lowest use in March – May 2013, high use in June – November 2013 and, again, lower use in December 2013-February 2014. NEL is used during the summer and autumn periods when the number of sightings in Hong Kong waters is highest (Figure 2 of Appendix H). This is a similar pattern to the first year of impact monitoring, although the overall number of sightings within NEL during the second year of monitoring is less.

3.4.6 Encounter Rate

3.4.6.1 Encounter rates of "on effort" sightings (i.e., groups) per area per quarter for this reporting period[7]. For NEL, so few sightings occurred that trends are difficult to discern; the highest number of dolphins were encountered in Summer months (June – August) with an encounter rate of < 1 (encounters per 100km surveyed) for the rest of the year. NWL encounter rates show a distinct patterns of increasing rate from spring to summer with the lowest rate recorded in winter. This pattern is also apparent in the long term monitoring data collated by AFCD. Observation of encounter rates for both areas combined indicates that winter and spring encounter rates are reduced when compared to summer and autumn. This trend is apparent in the first year of impact monitoring too. In both years one and two of impact monitoring, no on effort encounters were noted in the quarter March – May in NEL. NEL encounter rates for other quarters are lower in year two, ranging from 2 to 6 dolphins (Year 1) to <1 to 2 dolphins (Year 2) per 100km effort. Within NWL, quarterly encounter rates range from 3 to 6 dolphins (Year 1) and 5 to 9 dolphins (Year 2) per 100km on effort.

3.4.7 Group Size

3.4.7.1 The majority of all sightings recorded were of less than five individual dolphins (75%). Mother and calves were often associated with larger groups (5 or more individual dolphins) and it has been hypothesised that these large groups provide protection and support to calves and mothers. In Hong Kong waters in the past, larger groups have been associated with active fishing trawlers, although trawling was discontinued in Hong Kong prior to the period that this report covers. There is no particular behavioural activity associated with larger group size and the distribution of larger groups is not focused in any particular area (Figure 4 of Appendix H). In the first year of impact monitoring, larger group sizes were associated with fishing vessels. As trawlers are now prohibited in Hong Kong

[6] "On effort" sightings are classified as those sightings which are made when the vessel is on the designated trackline and observers are actively searching. "Opportunistic sightings" are those sightings which occur while travelling between tracklines, additional sightings made when travelling back to a transect line after photographing a dolphin group and/or any dolphins noted when transiting between areas or on passage to transect lines.

[7] The same calculation as implemented in the AFCD Annual Monitoring Reports was used; [(total 'on effort" sightings/total track conducted in Beaufort Sea State 3 or better)*100] for both NEL and NWL separately and for the two areas combined.

waters, there were fewer larger groups recorded between years, may be due to the absence of these trawlers.

3.4.8 **Habitat use**

3.4.8.1 The EM&A Manuel stipulated that surveys be conducted in such a way as to be comparable to the baseline survey for this Contract (September -November 2011) and to the long term annual monitoring conducted by AFCD. As such, analyses of density per survey effort (DPSE) and sightings per survey effort (SPSE) were calculated in accordance with the methodology detailed in AFCD reports (e.g., AFCD 2012[8]). The survey areas are divided into 1km x 1km squares and the relative number of sightings and densities are calculated for each block. NEL has 55 blocks and NWL has 90 blocks (only blocks of more than 0.75km2 are included). For the period March 2013-February 2014, DPSE was calculated in six categories, ranging from low use to high use. NEL and NWL have 0% and 10% of each respective area classified as high use (> 60 DPSE); 0% (NEL) and 14% (NWL) as moderate use (20.1-60 DPSE); and 100% (NEL) and 76% (NWL) as low use (< 20 DPSE). (Figure 5 of Appendix H).

3.4.8.2 For the period March 2013-February 2014, SPSE was calculated in six categories, ranging from low use to high use. NEL and NWL have 0% and 8% of each respective area classified as high use (> 15 SPSE); 9% (NEL) and 20% (NWL) as moderate use (5.1-15 SPSE); and 91% (NEL) and 72% (NWL) as low use (< 5 SPSE) (Figure 6 of Appendix H).

3.4.8.3 For the period February 2011 – January 2012, DPSE was calculated in six categories, ranging from low use to high use. NEL and NWL have 4% and 17% of each respective area classified as high use (> 60 DPSE); 20% (NEL) and 16% (NWL) as moderate use (20.1-60 DPSE); and 76% (NEL) and 68% (NWL) as low use (< 20 DPSE) (Figure 7 of Appendix H). These figures were compared to impact monitoring data for March 2013-February 2014 (Table 3 of Appendix H). For DPSE in NWL, there was an increase in low use grid cells, a decrease in moderate use cells and a decrease in high use cells. Noting the geographical location of the cells between advanced and impact monitoring, (Figures 8 of Appendix H) there are less high use cells in the centre of the NWL area indicating that habitat utilisation of this area has decreased. In NEL, no more high use areas are noted, only low use. The previously most frequented areas adjacent to the Brothers islands are still frequented by dolphins, however, the area along the coast of northern Lantau which was previously frequented by dolphins, has no sightings. This indicates that fewer dolphins occur in NEL and the area they use has reduced. Looking at the pattern observed in year one of impact monitoring, a higher density of dolphins occurred close to HKBCF compared to advanced monitoring, however, by year two, the number and area in which the dolphins occur has reduced.

3.4.8.4 For the period February 2011 – January 2012, SPSE was calculated in six categories, ranging from low use to high use. NEL and NWL have 9% and 22% of each respective area classified as high use (> 15 SPSE); 31% (NEL) and 27% (NWL) as moderate use (5.1-15 SPSE); and 60% (NEL) and 51% (NWL) as low use (< 5 SPSE) (Figure 7 of Appendix H). These figures were compared to impact monitoring data for March 2013-February 2014 (Table 3 of Appendix H). For SPSE in NWL, there has been an increase in low use grid cells and a reduction in both moderate and high use area. This correlates with that observed for DPSE, unsurprisingly as they are derived from interrelated data (see Figures 3 and 4 of Appendix H). For SPSE in NEL, this is also true, with an observed increase in low use areas and a concomitant decrease in high and moderate use cells, when compared to impact monitoring.

3.4.8.5 For March 2012 – February 2013, construction activities at HKBCF steadily increased and both DSPE and SPSE, showed a consistent high use of those areas directly adjacent to HKBCF. In March 2013 – February 2014, HKBCF peaked in activity and several other Contracts were initiated in the NEL area. Data from the year end of the reporting year indicate that the NEL habitat is being used less than the previous year.

3.4.9 **Mother and Calf Pairs**

3.4.9.1 Sightings of mothers and calves were made throughout the year mainly in the north of NWL and once, in NEL adjacent to the HKBCF site. (Figure 8 of Appendix H). Although it is often difficult to

[8] Agriculture, Fisheries and Conservation Department (AFCD) 2012. *Annual Marine Mammal Monitoring Programme April 2011-March 2012.)* The Agriculture, Fisheries and Conservation Department, Government of the Hong Kong SAR.

identify calves, using high resolution images and the identity of mothers, it is sometimes possible to track poorly marked individual calves, while they still stay in close proximity to their mother. Calves were sighted on 25 occasions and comprise a minimum of six individuals using the identity of the mothers to assign identity to the calves. Six known females, HZMB 026, HZMB 044, HZMB 050. HZMB 073, HZMB 098 and HZMB 116 were all photographed with calves. The calf of HZMB 026 was first photographed in January 2013 (outside this reporting year) and again in June 2013. HZMB 026 has not been sighted within this reporting year again. HZMB 044 is a well-known individual and is recorded in AFCD records as NL98. She was first sighted with a calf in September 2012 (outside this reporting year) which was still with her in April 2013. She was sighted again February 2014, and although no calf was closely associated with her, there were two large calves/juvenilles in the group either of which are the correct age class to be a calf born in 2012. HZMB 050 was sighted with a large calf in February 2013 (outside this reporting year) and again in January 2014. Sightings of this individual with a calf have been seen throughout the reporting year. HZMB 073 was first sighted with a calf in October 2012 (outside this reporting year) and again in April 2013. HZNB 073 was also sighted in May 2013, however, there was no calf associated with her during this encounter. Given the behavior of calves to stay closely associated with their mothers for a year plus, it is likely that the calf of HZMB 073 is deceased. No further sightings of HZMB 073 have been recorded since May 2013. HZMB 098 is a well known individual which also features in the AFCD photo identification catalogue (NL104). She was sighted with a calf in May 2013 and most recently in August 2014 (outside the reporting year) still with her calf. HZMB 116 was identified initially in December 2013 when she had a calf. She was subsequently sighted in August 2014 (outside the reporting year) with also with the calf (Figure 9 of Appendix H). In the first year of monitoring, a minimum of 14 individual calves were recorded.

3.4.10 Activities and Associations with Fishing Boats

3.4.10.1 Four distinctive behavioural categories were defined; “associated with fishing trawler”, “feeding”, “travelling” and “surface active”. Three other categories were also defined; “multiple” (more than one behaviour was observed at one time), “other” and “unknown”. During the spring (March – May 2013) and winter (December 2013 – February 2014), dolphins were most often engaged in travelling activities (Figure 10 of Appendix H). An increase in travelling activities is noted in Dec 2013-Feb 2014 when compared to Dec 2012-Feb 2013. During the summer and autumn months (June – November 2013) foraging activities (both feeding and associated with fishing vessels) was the predominant activity (Figure 11 of Appendix H). This was also the case in June to November 2012 (Figure 12 of Appendix H). Although a ban is in place on commercial trawling, a style of purse seine fishing has become more common in Hong Kong waters and dolphins are often associated with this type of fishing when it occurs in the habitat (Figure 13 of Appendix H).

3.4.10.2 During surveys conducted in 2011-12, specific behavioural information was only recorded for approximately 20% of all sightings made. In 2012-13, the area of Lung Kwu Chau in NWL is highlighted as an important feeding area as it is again in 2013-14. The area to the south of NWL is also important for feeding/surface active behaviours (Figure 14 of Appendix H) which highlights the continued importance of this area for multiple activities for all age classes of dolphins, including mother and calf groups.

3.4.11 Photo Identification Catalogue

3.4.11.1 A total of 107 dolphins comprise the photo identification catalogue established specifically for the HZMB Project (Table 4 of Appendix H). Not all dolphins photographed are identifiable as only individuals with unambiguous marks, cuts and/or pigmentation or with uniquely shaped fins can be included in the photo-identification catalogue. Of the identifiable dolphins recorded, the most often sighted dolphins (HZMB 002, HZMB 041; HZMB 044 and HZMB 054) were seen on eleven, nine, nine and fourteen separate days, respectively. Of the 107 dolphins identified during impact monitoring, 53 individuals (just under half) were seen only once between March 2012 and February 2014 (Table 4 of Appendix H).The photo-identification catalogue numbered 94 individuals in year one of impact monitoring. As many of the dolphins that use the waters of NEL and NWL are noted as residents (by other studies, e.g., AFCD annual monitoring) they might therefore, be more likely to be added to the catalogue during the initial effort of the study and thereafter, a lower number of newly identified individuals would be added to the catalogue yearly. This has also been the case in

studies elsewhere of resident delphinid populations. In addition, fewer numbers of dolphins were seen in year one compared to year two of the impact study.

3.4.12 **Dolphin Abundance**

3.4.12.1 It was not possible to calculate a meaningful abundance estimate for NEL as only 5 on effort sightings were made within the reporting period. For NEL and NWL combined, the overall abundance estimate is 38 [95% CI 6.2, 97.8]).

3.4.13 **Environmental Acceptability of the Contract**

3.4.13.1 It was recognized in the EIA that the HZMB is adjacent to upon several areas of importance to the dolphin population of Hong Kong. As such, it was stipulated in the EM&A Manuel for the HKBCF that a suitable analytical technique be proposed and implemented so that significant changes could be detected. A multi-parameter spatial (sometimes known as predictive) model was proposed and reviewed by management authorities and analyses developed as and when data has been made available. The purpose of the model was to make predictions of future habitat use, derived from baseline information, and compare these predictions to actual observations. Environmental covariates, such as salinity, temperature, depth, etc., which may also be drivers of dolphin habitat use, are also tested within spatial models so as to either eliminate or incorporate any influence these may have. The model thus incorporated environmental variables salinity, temperature, turbidity, depth, tidal state, time of day, as well as information associated with the sighting, e.g., groups size, behavior, boat association. Following the October 2015 CWD trend meeting, ENPO suggested that the brief information regarding density surface modelling presented in Quarterly EM&A Reports and Annual EM&A Review Reports be provided as a separate report with details for review before incorporating it into the EM&A reports. This ET agreed all such data and results be provided separately for review before incorporating into this and subsequent reports. It is anticipated that the detailed density surface modelling report will be ready for review in early 2016. Following the October 2015 CWD trend meeting, ENPO suggested that the brief information regarding density surface modelling presented in Quarterly EM&A Reports and Annual EM&A Review Reports be provided as a separate report with details for review before incorporating it into the EM&A reports. This ET agreed all such data and results be provided separately for review before incorporating into this and subsequent reports. It is anticipated that the detailed density surface modelling report will be ready for review in early 2016.

3.4.14 **Summary**

3.4.14.1 The variable nature of habitat use, group size, behavior, mother and calf occurrence and encounter rates by small delphinids and the ability to detect significant change in small populations is a challenge faced by many research studies. Historical data from AFCD also shows such variability (in AFCD annual monitoring reports). A view of individual distribution and behavioural activities for the reporting year do show that areas of importance, such as Lung Kwu Chau, are still being frequented, behavioural activities appear similar to that known from pre construction information and that several calves have survived throughout the reporting year and beyond. There is an emerging trend for NEL where it seems that fewer sightings are being made and it is likely that data from the third year of activities will confirm this. This is to be expected given that marine construction has been increasing in NEL both with Contract related activities and other marine civil works.

3.4.14.2 The modelling approach shows that there has been a significant change in habitat use from baseline to construction phase and areas of previous high density, although still frequented, are still being used by dolphins for many activities. The more spatially explicit model derived from point transect data shows that during the first year of construction, dolphins were shifted, understandably, from the cordoned off HKBCF site itself and, instead, occurred in higher density around the northeast section of the HKBCF site. The modeling approach can be used to test changes in distribution as the works progress whereas the line transect data provides information from the NEL and NWL habitat and the point transect data provides finer scale information on habitat shifts immediately adjacent to the HKBCF site and the Brothers Islands.

3.4.15 **Verification of Impact Statements Stated in EIA and Supporting Documentation**

3.4.15.1 The Statements made in the EIA and supporting documents are descriptive and do not provide a quantitative framework against which to compare data gathered the impact monitoring for the purposes of verifying impact on CWD. Further, some statements made pertain only to the operational phase of HZMB (that is, when all in water construction works are completed) and not the explicit impacts of the many different construction activities which are required to construct HZMB. In the interests of thoroughness, any impact statements made in key documents relevant to HKBCF are extracted here and commented on with regards to the data gathered from this the reporting year of construction activities at HKBCF.

3.4.15.2 The EIA report for HZMB[9] makes several statements with regards to impact on cetaceans during the construction phase in sections pertaining to water quality and bioaccumulation:

3.4.15.3 Construction Phase: In section 10.6.4.25 of the EIA report, it is stated that, "Contract has low potential to cause increased sewage discharge, therefore this potential impact is insignificant. The potential water quality impacts due to site runoff, sewage from workforce and wastewater from various construction activities, and accidental spillage would be controlled through the implementation of suitable mitigation measures, including temporary drainage system, chemical toilets, etc"

3.4.15.4 This Contract has consistently maintained water quality objectives as described in the EM&A Manual except where noted in Section 7.1.5. These exceptions, however, were subsequently found to be unrelated to Contract works.

3.4.15.5 In Section 10.6.4.37 of the EIA report, it is stated that, "Thus insignificant bioaccumulation impacts from the construction of HKBCF and HKLR are predicted for CWD (except perhaps with the exception of silver – as per 10.6.4.32)"

3.4.15.6 It is noted that for both of the above impact predictions to be investigated more thoroughly, long term trends in pathogens and toxin loads in CWD should be analysed. This has recently been completed for the Pearl River Delta (PRD) population of CWD and it is noted that both bioaccumulation and biomagnification are significantly higher than populations elsewhere (Gui et al 2014[10]). In light of this new information, the statements made in the EIA may need to be re-assessed and the allowable limits for water quality parameters revised.

3.4.15.7 In Section 10.7.2.8 of the EIA report, it is stated that, "164 ha of sea area (138 ha reclamation and 26 ha works area) will be lost during construction due to HKBCF reclamation near the northeast Airport Island. Although the sea area is only utilised by limited number of individual CWD, it is of moderate ecological value due to the close proximity with dolphin hotspot. Moderate impact is anticipated and mitigation measures are required. As the habitat loss due to construction would largely be carried forward to the operational phase and become permanent habitat loss, mitigation measures for operational phase (see Section 10.7.4) will mitigate this impact as well)"

3.4.15.8 At HKBCF, moderate impact is anticipated but the degree or type of impact is not quantified in any numerical, spatial or temporal scale. In the second year of construction activities at HKBCF there is an emerging pattern of decreased habitat use as indicated by encounter rate and number and type of "high" density cells in NEL. It is anticipated that this trend will become more apparent in 2014-2015 reporting year. Anecdotal information from press reports indicate that a higher than usual mortality has been reported in recent months. Appropriate review of these data should be made by the responsible authority to investigate any possible relationship with both anthropogenic activities and natural processes in the dolphins habitat. The impact of "permanent habitat loss" as a result of the HKBCF reclamation Section 10.7.4. of the EIA), is stated to be fully mitigated by the establishment of a Marine Protected Area after the construction phase of the Contract is completed. This predication

[9] Ove Arup & Partners Hong Kong Ltd 2009 HZMB – HKBCF & HKLR EIA Report. 24037-REP-125-01 Pages 83-5, 97, 115
[10] Gui, D., Yu, R., He, X., Tu, Q., Chen, L. and Wu, Y. Bioaccumulation and biomagnid=fication of persistent organic pollutants in Indo-Pacific humpback dolphins (*Sousa chinensis*) from the Pearl River Estuary, China. *Chemosphere* 114:106-113

cannot be assessed until the HZMB operational phase starts and the Marine Park Area is established.

3.4.15.9 The Ecological Baseline Survey[11] defines an Impact Index which is used to predict impact for each area through which the HZMB structure passes. HKBCF is located in the area defined as the "Northeast Lantau Section (NELS) – from the eastern edge of the airport platform to its connection to the North Lantau Highway".

3.4.15.10 It is noted that this report states (Section 5.7.10) that,"it is imperative that cumulative impacts along the whole alignment [of HZMB] are thoroughly assessed".

3.4.15.11 A reference to cumulative impacts is made in Section 10.7.6 of the EIA. Section 10.7.6.3 is relevant to HKBCF. This refers only to the cumulative impact of the permanent loss of CWD habitat and no other impacts of either the construction or operational phase of the HZMB Project. Nonetheless, the conclusion of this section states that the setting up of a marine park "effectively mitigates" CWD habitat loss. As such, this prediction cannot be verified until such a time as a marine park is established.

3.4.15.12 As a rigorous cumulative assessment has not yet been conducted, there is little quantitative information against which impact survey observations can be made. Further, there are no predictions which deal specifically with the activities at HKBCF and no predictions of direct, temporary or residual impacts on CWD. As such, it is anticipated that impacts to the CWD population which have not been defined in the original EIA will occur as construction activities progress at HKBCF. At this time, a cumulative impact assessment has not yet been conducted

3.4.16 Practicality and Effectiveness of the EM&A Programme

3.4.16.1 Monitoring and auditing of marine mammals was recommended for the construction phase of HKBCF to evaluate impact on marine mammals.

3.4.16.2 Combined line transect and photo-identification methodologies have been used as part of the AFCD long term monitoring programme for over 15 years. As such, a long term data set can be used to establish trends in population distribution and abundance over the long term.

3.4.16.3 The AFCD annual monitoring reports for the period 2011-2012, 2012-13 and 2013-14 have all stated that a significant decline had been detected in population abundance in the NEL area over the last decade. Only long term inter annual abundance estimates can be used to detect such changes. This decline was noted prior to construction had begun at HKBCF.

3.4.17 Conclusion

3.4.17.1 Between March 2013 and February 2014, dolphins have not been deterred from the area immediately adjacent to HKBCF although both habitat use and the number of sightings have decreased.

3.4.17.2 Marine mammal monitoring was conducted between March 2013 and February 2014 in accordance with EM&A Manuel methodologies. These methodologies have been invaluable in the past in determining both broad scale and long term patterns of distribution, abundance, association, habitat use and behavioral activities. There is historically much variation in these parameters and most observations to date have concurred with observations documented previously with the now emerging trend of decreased habitat use within NEL. As AFCD reports have reported a significant decline in this area prior to HKBCF construction activities, it is difficult to distinguish how much HKBCF activities may have influenced this existing decline.

[11] Agreement No. MW 01/2003. Hong Kong- Zhuhai- Macao Bridge: Hong Kong Section and the North Lantau Highway Connection: Ecological Baseline Survey. Final 9 Month Ecological Baseline Survey Report the (p 42 – 43)

4 ENVIRONMENTAL SITE INSPECTION AND AUDIT

4.1.1 Site Inspection

4.1.1.1 Site Inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for the Contract. In the reporting period, 52 site inspections were carried out. Recommendations on remedial actions were given to the Contractors for the deficiencies identified during the site audits.

4.1.1.2 Particular observations during the site inspections are described below:

Air Quality

4.1.1.3 Stockpile of sand was observed entire surface wet at WA2 and at works area at Portion A. The Contractor was reminded that stockpile of aggregate or dusty materials shall be sprayed with water so as to maintain the entire surface wet; or covered entirely by impervious sheeting or placed in sheltered areas to mitigate potential fugitive dust emission. (Reminder)

4.1.1.4 Side curtain attached to the tipping point of a conveyor belt on a filling barge was provided to filling barge but was observed not fully enclosed. The Contractor was reminded to provide a fully enclosed side curtain for filling activities. (Reminder)

4.1.1.5 Dark smoke was observed emitted on barges when sand material was being transferred to another barge. The Contractor was reminded to rectify the situation such as to maintain their equipment in good condition to prevent emission of dark smoke. The Contractor maintained their equipment in good condition to prevent emission of dark smoke. (Closed)

4.1.1.6 Bags of cement was observed not entirely covered by impervious sheeting, the Contractor was reminded to keep the bags of cement covered entirely by impervious sheeting. The Contractor rectified the situation and kept the bags of cement covered entirely by impervious sheeting. (Closed)

Noise

4.1.1.7 An idle air compressor was found without a valid noise emission label on FTB19 and barge Sun Moon Kee. The Contractor was reminded to stick a valid noise emission label onto the compressor prior to operation of the compressor. (Reminder)

4.1.1.8 Plants mounted on construction vessels were observed acoustically-decoupled, but a generator was still observed not totally acoustically-decoupled on barge Shang Ho Bo 601 and on barge Fai Yu 3228. The Contractor was advised to continue to provision of enhancement works i.e. to provide sufficient acoustic decoupling measure(s) such as acoustic mat to noisy equipment. The Contractor was reminded that insufficient/inadequate mitigation measures must be swiftly rectified. The Contractor provided sufficient acoustic decoupling measures to generator on Fai Yu 3228. (Reminder)

4.1.1.9 Noise Emission Label (NEL) of an air compressor was observed missing. The Contractor was reminded to properly display the NEL on all compressors. The Contractor properly display the NEL the Compressors observed on Kiu Chi. (Closed)

Water Quality

4.1.1.10 Disconnected silt curtain was observed at the western side of the silt curtain. The Contractor was advised to provide sufficient mitigation measures and swiftly carry out maintenance once defects of the perimeter silt curtain are found during the daily checking and/or monthly diver inspection. (Closed)

4.1.1.11 Defects were observed at portion B (southwest part of the perimeter silt curtain), E2 (northeast part of the perimeter silt curtain) and around portion C2a (northwest part of the perimeter silt curtain) and at portions E1, C2a and C2c. The Contractor rectified the defects of the silt curtain at portion B

(southwest part of the perimeter silt curtain), E2 (northeast part of the perimeter silt curtain) and around portion C2a (northwest part of the perimeter silt curtain) so the silt can be effectively prevented from dispersing from the inside to the outside of the site boundary. Contractor rectified the defects of the localized silt curtain. (Closed)

4.1.1.12 Defect was observed within the side of the enclosing silt curtain on barge AP4 and when stone column was installed. The contractor was rectified the defected silt curtain in order to prevent silt plumes from dispersing out from the vicinity of active stone column works. The contractor rectified the defected silt curtain in order to prevent silt plumes from dispersing out from the vicinity of active stone column works.

4.1.1.13 A fuel tank which is not in use was observed without drip tray or bunding. The Contractor was reminded to provide mitigation measures such as drip tray or bunding to fuel tank before use. (Reminder)

4.1.1.14 Oil drums, chemical containers and generator were observed without the provision of drip trays at Portion, on barge 天駿 3, on barge SHB205, on temporary rock bund and on Portion A. Generator was observed without bunding or drip tray on Sanhang Floating Crane 7, on barge Evershine No.1, barge 401 and FTB17. Machine and generator were observed without drip tray/tarpaulin sheet underneath at rock bund and works area at Portion A and on steel cell. The Contractor provided drip trays to oil drums, chemical container and generator to retain leakage, if any. (Closed)

4.1.1.15 Containers of chemical to be used and chemical waste were placed together in Hong Fai. The Contractor should store the chemical and chemical waste separately. Subsequently, the Contractor stored the chemical and chemical waste separately. (Closed)

4.1.1.16 Movable lighting machineries were observed to be placed on bare ground of Portion D, on SHB205 and at works area at Portion A without the provision of drip trays. It was observed that drip trays were provided to movable lighting machineries at temporary rock bund and at works area at portion A and on SHB205. The Contractor was advised to continue to provide drip tray or equivalent measures to retain potential oil leakage to movable lighting machineries. (Closed)

4.1.1.17 Trays of oil drums were found to be placed near to the shore. The Contractor should secure the oil drums with drip tray away from the shore to ensure no washing off of oil occurs. (Closed)

4.1.1.18 One of the existing bunding was found too low on Shang Ho Bo 601, barge FTB 17 and FTB19. The Contractor was reminded to enhance the height of the existing bunding to effectively contain potential oil leakage. The Contractor enhanced the height of the existing bunding to effectively contain potential oil leakage. (Closed)

4.1.1.19 The screw at the outlet of a drip tray on barge AP4, FTB20, SHB 208 barge Evershine No.1, FTB17, SHB402, on barge SHB401, on Barge Fai Yu 3228, on barge AP4, on barge Evershine 668, on barge Yat Fai, at works area of portion A and on temporary rock bund was observed missing. The Contractor provided effective mitigation measures to effectively seal the outlet of the drip tray to prevent potential oil seepage in April 2013. The Contractor was advised to provide effective mitigation measures to effectively seal the outlet of the all drip tray to prevent potential oil seepage. (Closed)

4.1.1.20 The silt curtain enclosing the stone column installation works was observed removed and as informed by the Contractor, this is due to maintenance of the stone column installation facility. The Contractor was reminded to install a layer of silt curtain near the active stone column installation points. (Reminder)

4.1.1.21 Litter and silty plumes were observed when filling material was being used for filling cellular structure number C057. The Contractor stopped the activity to prevent litter and silty plumes from dispersing. The Contractor was advised to provide mitigation measures such as silt curtain to enclose active filling activities at cellular structures to prevent litter and silty plumes from dispersing. (Reminder)

4.1.1.22 It was observed that the frame of bunding on barge SHB 401 and on barge Fai Yu 3228 were deformed. The Contractor was reminded to fix the deformed part of frame so that the bunding may have appropriate height to confine potential oil leakage. (Reminder)

4.1.1.23 Oil stain was observed on barge FTB19 and SHB205, on barge Fai Yu 3228, Evershine No.1, barge Yat Fat, barge Kiu Chiu and on temporary rock bund. The Contractor was reminded to provide mitigation measures such adsorbents to clean the oil stain. The Contractor immediately provided mitigation measures such as adsorbents to clean the oil stain and treated the used absorbents as chemical waste. (Closed)

4.1.1.24 Oil stain was discovered over the sea on 25 July 2013 at 11:20 near the cell K038 at Portion B. The Contractor was advised to follow the actions stated on the Spill Response Plan and clear the oil waste on sea. The Contractor rectified the situation and clear the oil waste on sea using absorption boom according to the Spill Response Plan. The used absorption boom was disposed of as chemical waste. (Closed)

4.1.1.25 Turbid water was observed at the southwestern silt curtain entrance area. Refer to the photo taken and site observations, sources of impact likely due to the turbine activities and/or movement of vessel at shallow water (at near the entrance at southwestern of the Construction site and/or when vessel's propeller was turn on at shallow water). The dispersion of turbid water from the inside of the perimeter silt curtain to the outside of the perimeter silt curtain is potentially due to defects of perimeter silt curtain at certain sections and/or insufficient overlapping at entrance/exit of the perimeter silt curtain. The Contractor was advised to regularly evaluate the integrity of the perimeter silt curtain by reviewing the results obtained from daily checking or/and monthly diver inspections specified by the Silt Curtain Deployment Plan. The Contractor was advised to provide sufficient mitigation measures and swiftly carry out maintenance once defects of the perimeter silt curtain are found during the above mentioned daily checking and/or monthly diver inspection. The Contractor was provided mitigation measures and carried out maintenance above mentioned defects of the perimeter silt curtain are found. (Closed)

4.1.1.26 The Contractor was advised to regularly evaluate the integrity of the perimeter silt curtain by reviewing the results obtained from daily checking or/and monthly diver inspections specified by the Silt Curtain Deployment Plan. The Contractor was advised to provide sufficient mitigation measures and swiftly carry out maintenance once defects of the perimeter silt curtain are found during the above mentioned daily checking and/or monthly diver inspection. (Closed)

4.1.1.27 During site inspection audit, sandfilling seem to be conducted at one end of the temporary rock bund. The Contractor was reminded to conduct sandfilling behind at least 200m leading temporary rock bund/seawall. (Reminder)

Chemical and Waste Management

4.1.1.28 Oil drums were found improperly stored on barge Chi Full, Kiu Chi (AP1), FTB20, FTB17, SHB 209, Fai Yui 3228, FTB19, SHB 205, Sun Moon Kee, on barge SHB401, on rock bund, works area at Portion A, on an area outside Contractor's site office. The Contractor immediately provided mitigation measures and put the oil drum inside bunding or remove the oil drum. The Contractor was reminded to provide mitigation measures such as drip tray or bunding to all oil drums. (Reminder)

4.1.1.29 Vibratory clamps were found improperly stored on barge SHB305. The Contractor should provide proper measures, like drip trays and tarpaulin sheet coverage, to retain any leaked oil from the plants. Vibratory clamps found improperly stored on barge SHB305 were removed in the reporting month. (Closed)

4.1.1.30 Oil drums were found without proper labels on barge FTB 18, FTB 19, FTB17, SHB 209 and Evershine No.1. The Contractor provided mitigation measures and labeled the oil drums. The Contractor was reminded to provide mitigation measures such as labeling to all oil drums. The Contractor provided mitigation measures such as labeling to all oil drums. (Closed)

4.1.1.31 General waste was observed uncovered on barge Fai Yui 3228 and SHB305. The Contractor rectified the condition upon notification by providing bin bags to waste and relocated them to a waste collection point. The Contractor was reminded to keep the barge surface clean and tidy. (Reminder)

4.1.1.32 Oil stains were observed on the barge surface of barge SHB 208 and FTB 20. The Contractor was reminded to clear the oil stain using absorbent material and dispose of as chemical waste. The Contractor was cleared the oil stain using absorbent material and dispose of as chemical waste. (Closed)

4.1.1.33 Oil was observed within the mechanical parts of a machine on FTB18. The Contractor was reminded to prevent oil being transferred from inside the drip tray to the barge surface. (Reminder)

4.1.1.34 General waste was observed improperly covered. The Contractor immediately provided mitigation measures such as to remove the general waste via a waste collector. The Contractor was reminded to provide mitigation measures such bin bag(s) or container to properly cover all general waste. (Reminder)

4.1.1.35 Waste water was observed accumulated inside bunding on FTB21. The Contractor was reminded to clear the waste oil with water and disposed of as chemical waste. The Contractor cleared the waste oil with water and disposed of as chemical waste. (Closed)

4.1.1.36 A battery and chemical container was observed placed on barge FTB20 without drip tray. The Contractor was relocated that battery and chemical container inside the drip tray immediately. (Closed)

4.1.1.37 Bags of waste were observed accumulated on barge Four Sea 8, barge Hing Fai, barge AP4 and various locations on a works area at Portion A. The Contractor was reminded to clear the waste regularly to prevent accumulation. (Reminder)

4.1.1.38 Litter and general refuse was observed accumulated on sea. The Contractor was reminded to avoid/clear any foam, oil, grease, chemicals, litter, food or other objectionable matter due to the Contract works presented in the water within and adjacent to the works site. The Contractor avoided any foam, oil, grease, chemicals, litter, food or other objectionable matter due to the Contract works presented in the water within and adjacent to the works site. The Contractor was reminded to collect and clear the waste on sea regularly. (Closed)

4.1.1.39 General refuse were found on various location of the works area at Portion A. The Contractor was reminded to clear the general refuse regularly. The Contractor was reminded to maintain the site in a clean and tidy condition i.e. to properly store the general refuse at designated waste storage area(s). The Contractor cleared the general maintain the site in a clean and tidy condition. (Closed)

4.1.1.40 Rubbish bin was observed without being covered; the Contractor was reminded to properly store general waste and covers all rubbish bins. The Contractor properly store general waste and covers all rubbish bins. (Closed).

4.1.1.41 Construction waste such as band drain was observed along the northern edge of works area at Portion A and on edge of temporary rock bund. The Contractor was advice to properly store and dispose construction waste such as band drain. (Closed)

Landscape and Visual Impact

4.1.1.42 No adverse observation was identified in the reporting period.

Others

4.1.1.43 The Contractor was reminded to properly display relevant Environmental Permit at an appropriate location i.e. near entrance on barge Kam Shun 368, so that it may be easily noticed. (Reminder)

4.1.1.44 Water was observed accumulate inside car tyre on barge Yat Fat. The Contractor was reminded to keep the site clean and tidy and clear the water accumulated inside car to prevent mosquito breeding. The Contractor rectified the situation by clearing the car tyre on barge Yat Fat. (Closed)

4.1.1.45 The Contractor has rectified most of the observations as identified during environmental site inspection in the reporting period. Rectifications of remaining identified items are undergoing by the Contractor. Follow-up inspections on the status on provision of mitigation measures will be conducted to ensure all identified items are mitigated properly.

5 ADVICE ON THE SOLID AND LIQUID WASTE MANAGEMENT STATUS

5.1 Summary of Solid and Liquid Waste Management

5.1.1 The Contractor registered as a chemical waste producer for this Contract. Sufficient numbers of receptacles were available for general refuse collection and sorting.

5.1.2 As advised by the Contractor, 7,540,721.9 m^3 of imported fill were imported for the Contract use in the reporting period. 24.3kg of metals, 956kg of paper/cardboard packaging, 550.1kg of plastics, 14,000kg of chemical waste and 312m^3 of others, e.g. general refuse were generated and disposed of in the reporting period. Summary of waste flow table is detailed in Appendix I.

5.1.3 The Contractor is advised to properly maintain on site C&D materials and wastes collection, sorting and recording system, dispose of C&D materials and wastes at designated ground and maximize reuse / recycle of C&D materials and wastes. The Contractor is reminded to properly maintain the site tidiness and dispose of the wastes accumulated on site regularly and properly.

5.1.4 The Contractor is reminded that chemical waste containers should be properly treated and stored temporarily in designated chemical waste storage area on site in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.

6 IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

6.1 Implementation Status of Environmental Mitigation Measures

6.1.1 As informed by the Contractor on 9 May 13, one summons was received on 29 April 13 regarding the suspected violation case of Noise Control Ordinance (Cap.400) at Works Area WA4 on 31 Oct 2012. The details of the non-compliance, investigation actions taken including follow-up site inspection conducted out by the ET and rectification actions and preventive actions provided by the Contractor was summarized at section 7 of the Quarterly EM&A summary report for September 2012 – November 2012. As informed by the Contractor in August 13, the Contractor was subsequently prosecuted on 21 May 2013 for breaching Cap.400 Noise Control Ordinance.

6.1.2 A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in Appendix C. Moreover, regular review and checking on the construction methodologies, working processes and plants were carried out to ensure the environmental impacts were kept minimal and recommended environmental mitigation measures were implemented effectively. .

6.1.3 Training of marine travel route for marine vessels operator was given to relevant staff and relevant records were kept properly.

6.1.4 Regarding the implementation of dolphin monitoring and protection measures (i.e. implementation of Dolphin Watching Plan, Dolphin Exclusion Zone and Silt Curtain integrity Check), regular checking were conducted by the experienced MMOs within the works area to ensure no dolphin was trapped by the enclosed silt curtain systems. Any dolphin spotted within the enclosed silt curtain systems was reported and recorded. Relevant procedures were followed and measures were well implemented. Silt curtain systems were also inspected timely in accordance to the submitted plan. All inspection records were kept properly.

6.1.5 Acoustic decoupling measures on noisy plants on construction vessels were checked regularly and these measures were well implemented.

6.1.6 The Contractor was reminded to carry out necessary actions to rectify the above deficiencies and the Contractor was reminded not to operate those PME during restricted hours without compliance with the CNP conditions.

6.1.7 The Contractor was reminded to strictly comply with the condition of the CNP.

7 SUMMARY OF EXCEEDANCES OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMIT

7.1 Summary of Exceedances of the Environmental Quality Performance Limit

7.1.1. A total of 15 Action level and 5 Limit Level exceedances were recorded during the 24-hr TSP impact monitoring period. No exceedance of 1-hour TSP exceedance level was recorded at all monitoring station during the 1-hr TSP impact monitoring period. Investigation into the possible causes of each exceedance was undertaken and reported in the respective monthly EM&A reports.

7.1.2. One complains was received; one (1) Action Level Exceedance of construction noise was recorded in the reporting period. Investigation into the possible causes of such exceedance was undertaken and reported in the respective monthly EM&A reports, the investigations results confirmed that the limit level exceedance was not related to Contract.

7.1.3. The Contractor was recommended to continue implementing existing noise mitigation measures.

7.1.4. Fifty-six (56) Action Level exceedances and seven (7) Limit Level exceedances were recorded at measured suspended solids (SS) values (in mg/L), one (1) Action Level exceedances were recorded at measured turbidity (in NTU), six (6) Action Level exceedance was recorded at measured DO (Bottom) (mg/L) and one (1) Limit Level exceedance was recorded at measured DO (S&M) (mg/L) during the reporting period. Investigation result shows that all the exceedances were not due to the Contract works except the Action Level Exceedance recorded at SR5 and Limit Level Exceedance recorded at IS10 on 18 Dec 13 were related to Contract.

7.1.5. Cumulative statistics on exceedances is provided in Appendix J.

8 SUMMARY OF COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

8.1 Summary of Environmental Compliants, Notification of Summons and Successful Prosecutions

8.1.1 Total of eleven (11) environmental complaints were received in the reporting period. The Environmental Complaint Handling Procedure is annexed in Figure 5.

8.1.2 One (1) complaint was referred by EPD to ET regarding the construction noise impact from cranes operating from the barges for the Hong Kong –Zhuhai-Macao Bridge Hong Kong Project generating squeak noise in the evening of 1 Mar 2013 causing annoyance to him/her. The investigation results show that the complaint was non-Contract related.

8.1.3 One (1) complaint was referred by EPD regarding oil dumping observed from various vessels operating for HZMB HK Contracts near Tung Chung Development Pier over the past few months. The investigation results showed that the complaint was non-Contract related.

8.1.4 One (1) complaint referred to the Contractor by EPD on 10 May 2013 regarding the scattered debris of silt curtain noted at Sha Lou Wan and Tung Chung Bay. Immediate inspection and clean up action was taken by the Contractor.

8.1.5 One (1) follow-up complaint referred by EPD was received on 23 May 2013 regarding the oil stain noted near Tung Chung Development Pier for past few months.

8.1.6 One (1) complaint was logged by the Contractor regarding the leakage from work barges causing water pollution near Tuen Mun Richland Garden received on 26 Sept 13. With refer to the available information such as photo record of the incident cannot indicate that the leakage from work barges was caused by the vessel of this Contract and the complaint could not be concluded as Contract related.

8.1.7 As informed by the Contractor on 5 Nov 13, one (1) noise complaint received on 14 Sept 13 was referred to the Contractor of HKBCF on 1 Nov 13. The captioned complaint involves noise generated by a tug boat operating near a pier at Tung Chung around 05:55am-06:45am on 14 Sept 13. After investigation, the complaint is considered not likely to be related to the construction works

8.1.8 As informed by the Contractor, complaint received from Penta-Ocean – Gitanes Joint Venture (CV/2012/03) mentioned that the formation works of the Contaminated Mud Pit CMP1 to the South of the Brothers (CMP1 of SB) which has been completed in mid-August 2013 and the pit has been commissioned for receiving contaminated marine mud from other Contracts starting from 16 August 2013. However, it was recently observed that some of the Contract vessels of HY/2010/02 had berthed within the said pit and those anchorages would likely cause disruption to the underlying contaminated mud and thus induce unfavourable contamination impact to the surrounding marine environment. In this regard, they reminded the contractor to avoid berthing of their vessels within the boundary of CMP1 of SB thereafter for the sake of environmental concern. After investigation, the complaint is considered not likely to be related to the construction works.

8.1.9 As informed by the Contractor on 5 Dec 13, one complaint was noted on 12 Nov regarding a barge moving through the southern channel. After investigation, the noise complaint was considered as non-Contract related.

8.1.10 As informed by the Contractor on 12 Dec 13. A complaint involves the leakage of sand from barges causing water discoloration at sea near Tuen Mun Pierhead Garden and sand material without properly covered was blown to the inside of the residential area which caused disturbance to residence. With refer to available information provided and monitoring data recorded on 09 Dec 13, it cannot indicate that the water quality impact and air quality impact were caused by the vessel of this Contract and therefore the complaint could not be concluded as related to this Contract

8.1.11 As informed by the Contractor on 6 Jan 14, A complaint involves barges loaded with sand material without properly covered was blown to the inside of the residential area of Tuen Mun Pierhead Garden which caused disturbance to residence was received on 27 Dec 13. With refer to available information provided, it cannot indicate that the water quality impact and air quality impact were caused by the vessel of this Contract and therefore the complaint could not be concluded as related to this Contract.

8.1.12 EPD referred a complaint from complainant who advised that blackish mud was found along the edge of the construction site of Hong Kong-Zhuhai-Macao Bridge Hong Kong Project near the airport in the morning of 18 January 2014. After receipt of the complaint, site daily was reviewed and follow-up investigation has been conducted and excavation and dredging activities were not observed within the site boundary of HKBCF during the joint site inspection audit. Therefore in accordance with the investigation results, the complaint is considered as not related to contract HY/2010/02

8.1.13 1 summons and 1 prosecution were recorded in this reporting period. As informed by the Contractor on 9 May 13, one summons was received on 29 April 13 regarding the suspected violation case of Noise Control Ordinance (Cap.400) at Works Area WA4 on 31 Oct 2012. The details of the non-compliance, investigation actions taken including follow-up site inspection conducted out by the ET and rectification actions and preventive actions provided by the Contractor was summarized at section 7 of the Quarterly EM&A summary report for September 2012 – November 2012. As informed by the Contractor in August 13, the Contractor was subsequently prosecuted on 21 May 2013 for breaching Cap.400 Noise Control Ordinance.

8.1.14 Statistics on complaints, notifications of summons and successful prosecutions are summarized in Appendix J.

9 REVIEW OF THE VALIDITY OF THE EIA PREDICTION

9.1 A total of 15 Action level and 5 Limit Level exceedances were recorded during the 24-hr TSP impact monitoring in the reporting period and it was considered not related to the Contract works. All the rest of air quality monitoring results in the reporting period were below the Action Levels established in the baseline air quality monitoring carried out in November 2011. The result was in line with the Environmental Impact Assessment (EIA) prediction that dust generation would be controlled and would not exceed the acceptable criteria, with proper implementation of the recommended dust mitigation measures.

9.2 Only one (1) construction noise monitoring exceedance was recorded in the reporting period. This is generally in line with the EIA and ERR prediction that with the implementation of noise mitigation measures, the construction noise from the Contract works will meet the stipulated criterion at the residential NSRs and at a majority of the education institutions as predicted by the EIA.

9.3 71 water quality monitoring exceedances were recorded in the reporting period and it was considered not related to the Contract works except 1 Action Level exceedance recorded at SR5 and Limit Level Exceedance recorded at IS10 on 18 Dec 13 were considered as related to Contract. As rectification was provided by the Contractor and recurrence of Contract related exceedance was not observed in the subsequent monitoring events. Considering all the rest of water quality monitoring results in the reporting period were below the Action Levels established in the baseline water quality monitoring carried out in November 2011. The result was in line with the Environmental Impact Assessment (EIA) prediction that water quality impact would be controlled and would not exceed the acceptable criteria, with proper implementation of the recommended water quality mitigation measures.

10 REVIEW OF ENVIRONMENTAL IMPLEMENTATION STATUS

10.1 The impact air quality, noise and water quality monitoring programme ensured that any environmental impact to the receivers would be readily detected and timely actions could be taken to rectify any non-compliance. The environmental monitoring results indicated that the construction activities in general were in compliance with the relevant environmental requirements and were environmentally acceptable. The weekly site inspection ensured that all the environmental mitigation measures recommended in the EIA were effectively implemented. Despite the minor deficiencies found during site audits, the Contractor had taken appropriate actions to rectify deficiencies within reasonable timeframe. Therefore, the effectiveness and efficiency of the mitigation measures were considered high in most of the time.

10.2 For all the parameters under monitoring as mentioned in Section 3, the measured levels were in line with the EIA predictions generally. This indicates that the mitigation measures were effectively implemented.

11 REVIEW OF EM&A PROGRAMME

11.1 The environmental monitoring methodology was considered well established as the monitoring results were found in line with the EIA predictions.

11.2 As effective follow up actions were promptly taken once exceedances were recorded, no further exceedance occurred for each case. The EM&A programme was considered successfully and

12 COMMENTS, RECOMMENDATIONS AND CONCLUSIONS

12.1 Comments on mitigation measures

12.1.1 According to the environmental site inspections performed in the reporting period, the following recommendations were provided:

12.2 Air Quality Impact

- All working plants and vessels on site should be regularly inspected and properly maintained to avoid dark smoke emission.
- All vehicles should be washed to remove any dusty materials before leaving the site.
- Haul roads should be sufficiently dampened to minimize fugitive dust generation.
- Wheel washing facilities should be properly maintained and reviewed to ensure properly functioning.
- Temporary exposed slopes and open stockpiles should be properly covered.
- Enclosure should be erected for cement debagging, batching and mixing operations.
- Water spraying should be provided to suppress fugitive dust for any dusty construction activity.

12.3 Construction Noise Impact

- Quieter powered mechanical equipment should be used as far as possible.
- Noisy operations should be oriented to a direction away from sensitive receivers as far as possible.
- Proper and effective noise control measures for operating equipment and machinery on-site should be provided, such as erection of movable noise barriers or enclosure for noisy plants. Closely check and replace the sound insulation materials regularly
- Vessels and equipment operating should be checked regularly and properly maintained.
- Noise Emission Label (NEL) shall be affixed to the air compressor and hand-held breaker operating within works area.
- Better scheduling of construction works to minimize noise nuisance.

12.4 Water Quality Impact

- Regular review and maintenance of silt curtain systems, drainage systems and desilting facilities in order to make sure they are functioning effectively.
- Construction of seawall should be completed as early as possible.
- Regular inspect and review the loading process from barges to avoid splashing of material.
- Silt, debris and leaves accumulated at public drains, wheel washing bays and perimeter u-channels and desilting facilities should be cleaned up regularly.
- Silty effluent should be treated/ desilted before discharged. Untreated effluent should be prevented from entering public drain channel.
- Proper drainage channels/bunds should be provided at the site boundaries to collect/intercept the surface run-off from works areas.
- Exposed slopes and stockpiles should be covered up properly during rainstorm.

12.5 Chemical and Waste Management

- All types of wastes, both on land and floating in the sea, should be collected and sorted properly and disposed of timely and properly. They should be properly stored in designated areas within works areas temporarily.
- All chemical containers and oil drums should be properly stored and labelled.
- All plants and vehicles on site should be properly maintained to prevent oil leakage.
- All kinds of maintenance works should be carried out within roofed, paved and confined areas.
- All drain holes of the drip trays utilized within works areas should be properly plugged to avoid any oil and chemical waste leakage.
- Oil stains on soil surface and empty chemical containers should be cleared and disposed of as chemical waste.
- Regular review should be conducted for working barges and patrol boats to ensure sufficient measures and spill control kits were provided on working barges and patrol boats to avoid any spreading of leaked oil/chemicals.

12.6 Landscape and Visual Impact

- All existing, retained/transplanted trees at the works areas should be properly fenced off and regularly inspected.

12.7 Recommendations on EM&A Programme

12.7.1. The impact monitoring programme for air quality, noise, water quality and dolphin ensured that any deterioration in environmental condition was readily detected and timely actions taken to rectify any non-compliance. Assessment and analysis of monitoring results collected demonstrated the environmental impacts of the Contract. With implementation of recommended effective environmental mitigation measures, the Contract's environmental impacts were considered as environmentally acceptable. The weekly environmental site inspections ensured that all the environmental mitigation measures recommended were effectively implemented.

12.7.2. The recommended environmental mitigation measures, as included in the EM&A programme, effectively minimize the potential environmental impacts from the Contract. Also, the EM&A programme effectively monitored the environmental impacts from the construction activities and ensure the proper implementation of mitigation measures. No particular recommendation was advised for the improvement of the programme.

12.8 Conclusions

12.8.1 The construction phase and EM&A programme of the Contract commenced on 12 March 2012.

12.8.2 A total of 15 Action level and 5 Limit Level exceedances were recorded during the 24-hr TSP impact monitoring period. No exceedance of 1-hour TSP exceedance level was recorded at all monitoring station during the 1-hr TSP impact monitoring period. Investigation into the possible causes of each exceedance was undertaken and reported in the respective monthly EM&A reports, the investigations results confirmed that the air quality exceedances were not related to Contract. Possible dust generating activities of the Contract did not cause any noticeable deterioration in air quality at the area. The average 24-hour TSP level recorded at AMS7 in EM&A programme was lower than the daily dust level predicted in the EIA.

12.8.3 There was (1) one action level exceedance recorded due to one noise complaint was received. Noise generating activities of the Contract did not cause any noticeable noise impact at the sensitive receivers. The impact noise levels recorded were generally similar to the predicted construction noise levels in the Project EIA.

12.8.4 Fifty-six (56) Action Level exceedances and seven (7) Limit Level exceedances were recorded at measured suspended solids (SS) values (in mg/L), one (1) Action Level exceedances were recorded at measured turbidity (in NTU), six (6) Action Level exceedance was recorded at measured DO (Bottom) (mg/L) and one (1) Limit Level exceedance was recorded at measured DO (S&M) (mg/L) during the reporting period. Investigation result shows that all the exceedances were not due to the Contract works except the Action Level Exceedance recorded at SR5 and Limit Level Exceedance recorded at IS10 on 18 Dec 13 were related to Contract. After review of investigation results of water quality exceedances (for detail of investigations please refer to section 4 of monthly EM&A report (Mar 12 to Feb 13), ambient conditions were considered to have effects on the water quality monitoring results. Exceedances were considered to be due to a combination of the following potential causes 1. Rough sea condition caused by adverse weather and relatively strong current experienced during the monitoring period and 2. During the time when exceedances of DO were recorded at monitoring stations, relatively low DO values were also recorded at corresponding upstream Control Stations during ebb tide or flood tides indicating these exceedances of DO were unlikely to be contributed by Contract works. This indicated these exceedances of DO were unlikely to be contributed by Contract works. 3. Local effects in the vicinity of the monitoring station where exceedance was recorded. With proper implementation of water quality mitigation measures, marine construction activities of the Contract did not cause any unacceptable water quality impacts to the receivers.

12.8.5 One (1) Limit level exceedance and six (6) Action Level Exceedances were recorded in the reporting period for impact dolphin monitoring. The investigation results showed that although no unacceptable changes in environmental parameters of this Contract have been measured, at this time it is not possible to make a conclusive assessment of this Contract's specific impact on dolphins. Event and Action Plan for Impact Dolphin Monitoring was triggered. For investigation results please refer to Appendix L of the corresponding quarterly reports.

12.8.6 Environmental site inspection was carried out 52 times in the reporting period. Recommendations on remedial actions were given to the Contractors for the deficiencies identified during the site audits.

12.8.7 Eleven (11) environmental complaints were received in the reporting period.

12.8.8 One (1) summons and one (1) successful prosecution was received in the reporting period.

12.8.9 As discussed in the above sections, the Contract did not cause unacceptable environmental impacts or disturbance to air quality, noise, water quality in the vicinity near the reclamation works.

12.8.10 Apart from the above mentioned monitoring, most of the recommended mitigation measures, as included in the EM&A programme, were implemented properly in the reporting period.

12.8.11 The recommended environmental mitigation measures effectively minimize the potential environmental impacts from the Contract. The EM&A programme effectively monitored the environmental impacts from the construction activities and ensure the proper implementation of mitigation measures. No particular recommendation was advised for the improvement of the programme.

12.8.12 Moreover, regular review and checking on the construction methodologies, working processes and plants were carried out to ensure the environmental impacts were kept minimal and recommended environmental mitigation measures were implemented effectively.

812000 E 813000 E 814000 E 815000 E 816000 E 817000 E 818000 E 819000 E 820000 E 821000 E 822000 E 823000 E

825000 N 824000 N 823000 N 822000 N 821000 N 820000 N 819000 N 818000 N 817000 N 816000 N 815000 N

N

THE SITE

PROPOSED HONG KONG BOUNDARY CROSSING FACILITIES

HONG KONG INTERNATIONAL AIRPORT

SIU HO WAN WIND PROFILER

SIU HO WAN ANEMOMETER STATION

WORKS AREA WA4

WORKS AREA WA3

WORKS AREA WA2

TUNG CHUNG

THE BROTHERS

TSZ KAN CHAU

SIU MO TO

TAI MO TO

TO KAU WAN

CHEUNG SOK

LUK KENG BAY

YAM TSAI BAY

SHAM SHUI

SIU HO WAN

SAM PAK AU

LAI PIK SHAN

SZE WAN AU

TAI SHAN

PENNY'S BAY

DISCOVERY BAY (TAI PAK WAN)

YI PAK WAN

TUNG CHUNG BAY

POR KAI SHAN

TUNG CHUNG NEW TOWN EXTENSION

TUNG CHUNG NORTH EXTENSION COUNTRY PARK

TAI HO WAN

TUNG CHUNG CROSS ISLAND HIGHWAY

TUNG CHUNG EAST

TUNG CHUNG WEST

PEARL ISLAND

GOLDEN BEACH

DRAGON BEACH

PENG CHAU

TUNG WAN

NGAN CHAU

HUNG FA NGAN

SILVER MINE BAY BEACH

HONG KONG DISNEYLAND

TUNG CHUNG

N

HONG KONG INTERNATIONAL AIRPORT

HKBCF

HONG KONG DISNEYLAND

TUNG CHUNG

KEY PLAN

NOTES

1. ALL COORDINATES ARE RELATED TO HONG KONG 1980 GRID.
2. ALL LEVELS ARE IN METRES ABOVE HONG KONG PRINCIPAL DATUM (mPD).
3. REFER TO DRG NO. 211036/SL/1002 FOR THE DEFINITION OF SETTING OUT LINE (SOL) FOR THE HONG KONG BOUNDARY CROSSING FACILITIES (HKBCF) RECLAMATION SITE.
4. REFER TO DRG NO. 211036/SL/1004 FOR DETAILS OF SITE BOUNDARY.
5. FOR EXTENT OF SORTING FACILITIES AT FILL BANK AT TSEUNG KWAN O AREA 137 REFER TO DRG NO. 211036/SL/1015.

LEGEND

SITE BOUNDARY

SETTING OUT LINE (SOL)

WORKS AREA BOUNDARY

Rev	Description	By	Date
-	FOR CONSTRUCTION	HYJL	11/11

Consultant

ARUP 奧雅納工程顧問 Ove Arup & Partners Hong Kong Limited

Supported By :
- Ecosystems Ltd.
- EDA Marine Ltd.
- Geotechnical Consulting Group (Asia) Ltd.
- Hong Kong Cetacean Research Project
- InteliBuild Technyx Asia Limited
- Tony Gee and Partners LLP

Contract No. and Title:

Contract No. HY/2010/02
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities
- Reclamation Works

Drawing title

KEY PLAN

Drawing no.		Rev.
211036/SL/1001		-
Drawn: RL	Date: 11/09	Checked: KKY	Approved: DML
Scale: 1:20000 @A1 1:40000 @A3	Status: WORKING		

路政署 HIGHWAYS DEPARTMENT
港珠澳大橋香港工程管理處
Hong Kong - Zhuhai - Macao Bridge
Hong Kong Project Management Office

Printed by : 12/17/2011
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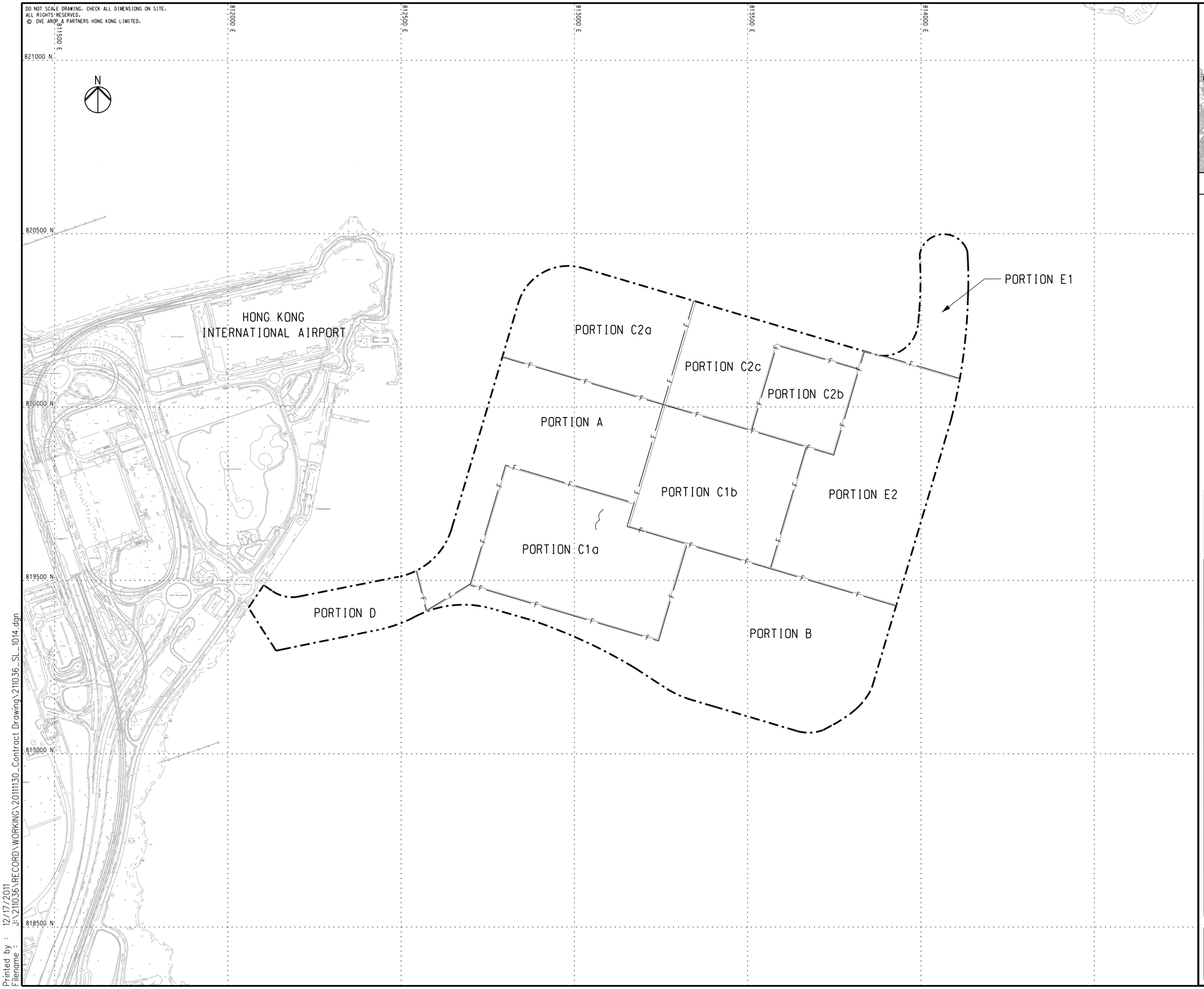

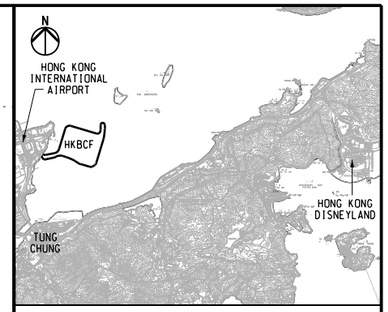

KEY PLAN

NOTES

1. FOR LEGENDS AND NOTES FOR CHAIN LINK FENCE AND GATE REFER TO DRG NO. 211036/SL/1013.
2. THE ERECTION OF CHAIN LINK FENCE AND GATES SHALL BE COMPLETED BY THE HANDOVER DATE OF EACH PORTION OF SITE, OR AS INSTRUCTED BY THE ENGINEER.
3. FOR SETTING OUT COORDINATES OF DIFFERENT PORTIONS OF SITE REFER TO DRG NO. 211036/SL/1003.
4. ACCESS POINTS BETWEEN PORTIONS SHALL BE PROVIDED BY THE CONTRACTOR. AND THE LOCATIONS SHALL BE AGREED WITH THE ENGINEER ON SITE.
5. FOR HOARDING AND FENCE AT FILL BANK AT TSEUNG KWAN O AREA 137 REFER TO DRG NO. 211036/SL/1015.

LEGEND

- SETTING OUT LINE (SOL)
- WORKS AREA BOUNDARY
- PORTIONS BOUNDARY LINE

Rev	Description	By	Date
-	FOR CONSTRUCTION	HYJL	11/11

Consultant

ARUP 奧雅納工程顧問 Ove Arup & Partners Hong Kong Limited

Supported By :
- Ecosystems Ltd.
- EDA Marine Ltd.
- Geotechnical Consulting Group (Asia) Ltd.
- Hong Kong Cetacean Research Project
- InteliBuild Technyx Asia Limited
- Tony Gee and Partners LLP

Contract No. and Title:
Contract No. HY/2010/02
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities
- Reclamation Works

Drawing title
WORKS AREA LAYOUT
AND HORADING PLAN
(SHEET 2 OF 3)

Drawing no.	Rev.
211036/SL/1014	-

Drawn	Date	Checked	Approved
RL	06/10	KKY	DML

Scale 1:5000 @A1 1:10000 @A3
Status WORKING

路政署 HIGHWAYS DEPARTMENT
港珠澳大橋香港工程管理處
Hong Kong - Zhuhai - Macao Bridge
Hong Kong Project Management Office

Printed by : 12/17/2011
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ISO A3 297mm x 420mm

Checked:

Project Management Initials:

809000 E
810000 E
811000 E
812000 E
813000 E
814000 E
815000 E

820000 N
819000 N
818000 N
817000 N
816000 N

PROPOSED HONG KONG BOUNDARY CROSSING FACILITIES

AMS7

AMS6

AMS3A
NMS3A

AMS2
NMS2

CHEK LAP KOK

HONG KONG INTERNATIONAL AIRPORT

SCENIC HILL

Pak Sha Tsui

TUNG CHUNG

LEGEND

AMS1 AIR MONITORING STATIONS

NMS1 NOISE MONITORING STATIONS

WIND STATION

AECOM

Figure 2

IMPACT AIR QUALITY AND NOISE
MONITORING STATIONS AND WIND STATION

HONG KONG - ZHUHAI - MACAO BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES
- RECLAMATION WORKS

Project No.: 60249820 Date: MAY 2012

Plot File by: Lammd 03/05/2012
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Plot File by: LAMMCL 13/04/2012
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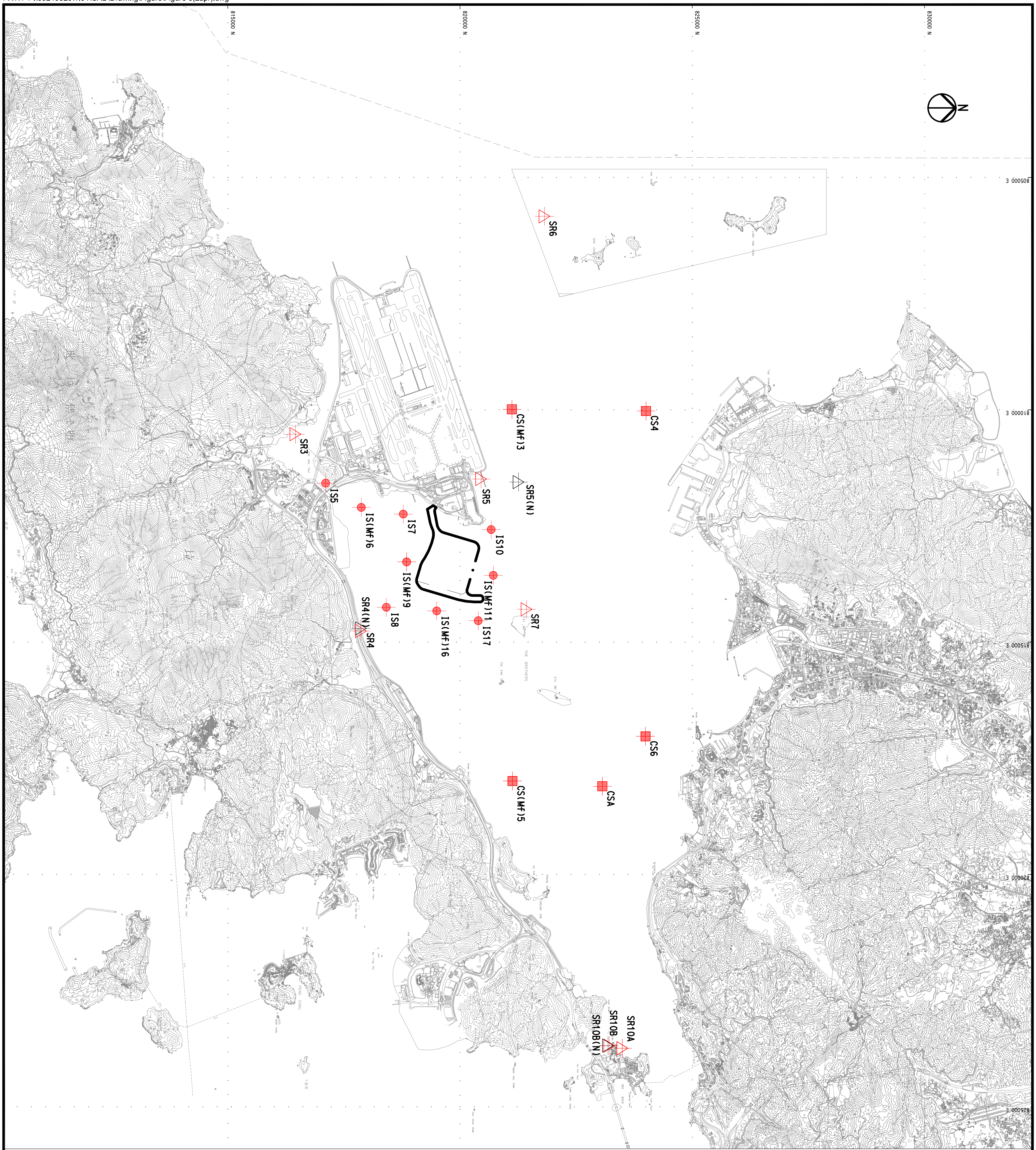
Project Management Initials: Checked: ISO A3 297mm x 420mm



LEGEND

- IS — IMPACT STATIONS
- CS — CONTROL / FAR FIELD STATIONS
- SR — SENSITIVE RECEIVERS STATIONS
- SR — SENSITIVE RECEIVERS STATIONS (RELOCATED)

SETTING OUT SCHEDULE

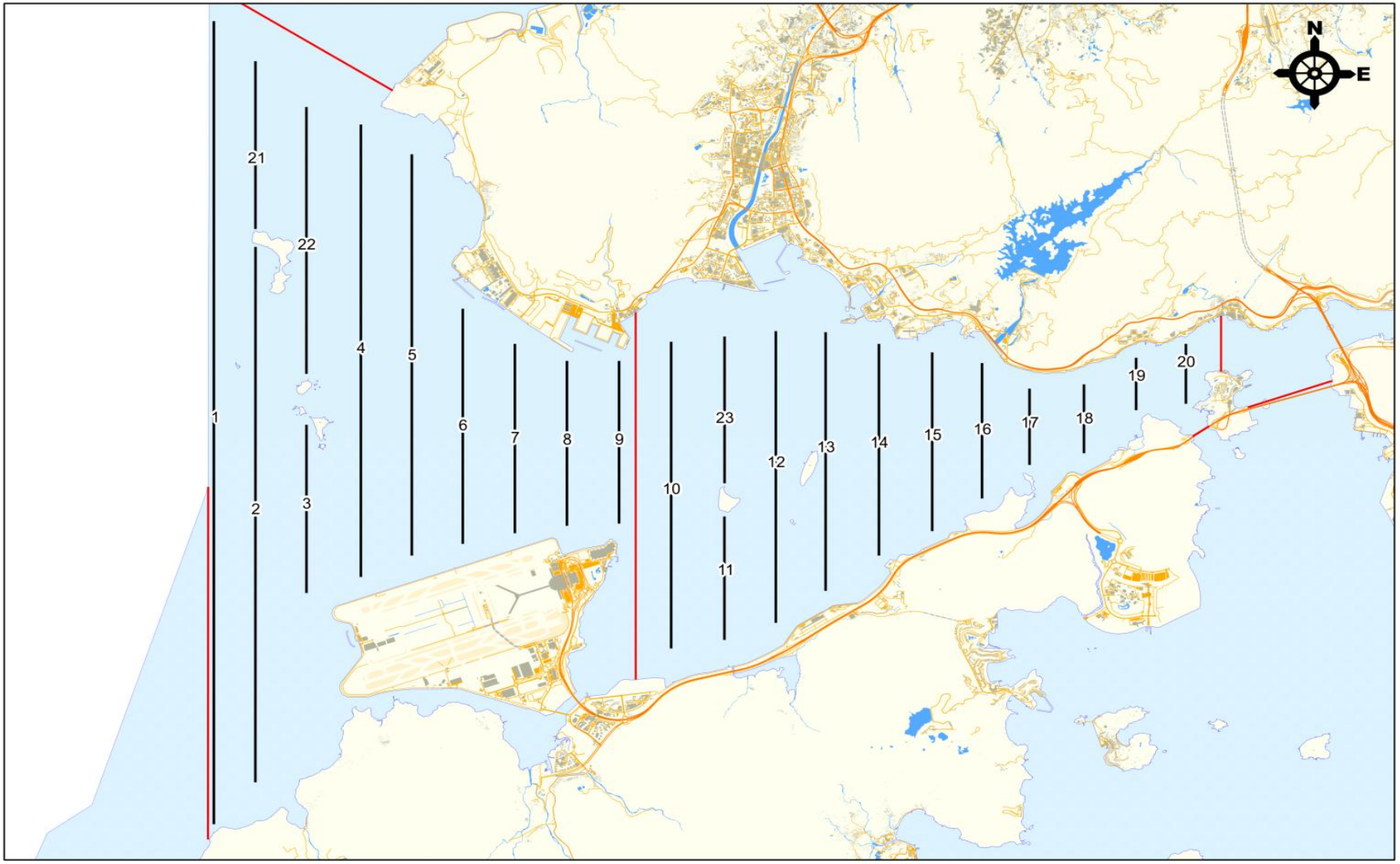
MONITORING STATIONS	CO-ORDINATES EASTING	NORTHING
IS5	811579	817106
IS(Mf)6	812101	817873
IS7	812244	818777
IS8	814251	818412
IS(Mf)9	813273	818850
IS10	812577	820670
IS(Mf)11	813562	820716
IS(Mf)16	814328	819497
IS17	814539	820391
SR3	810525	816456
SR4(N)	814705	817859
SR5	811489	820455
SR5(N)	811555	821258
SR6	805837	821818
SR7	814293	821431
SR10A	823741	823495
SR10B(N)	823683	823187
CS(Mf)3	809989	821117
CS(Mf)5	817990	821129
CS4	810025	824004
CS6	817028	823992
CSA	818103	823064

HONG KONG - ZHUHAI - MACAO BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES
- RECLAMATION WORKS
Project No.: 60249820 Date: APR 2012

IMPACT WATER QUALITY MONITORING STATIONS

AECOM

Figure 3



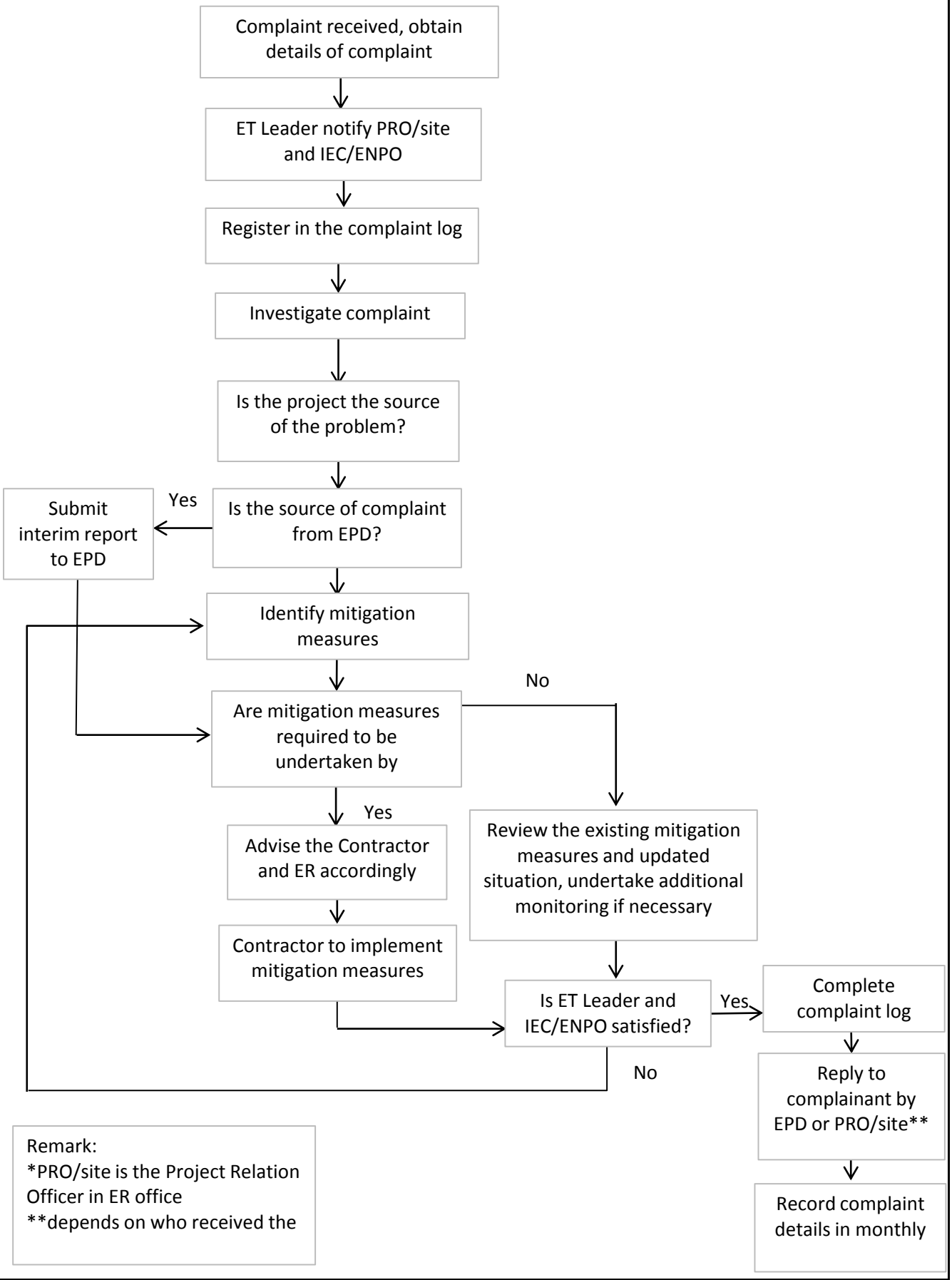
***Remark: Transect 10 is now 3.6km in length due to the HKBCF construction site. The total transect length for both NEL and NWL combined is 111km.**

HONG KONG - ZHUHAI - MACAO BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES
- RECLAMATION WORKS
Project No.: 60249820 Date: January 13

Impact Dolphin Monitoring
Line Transect Layout Map

AECOM

Figure 4



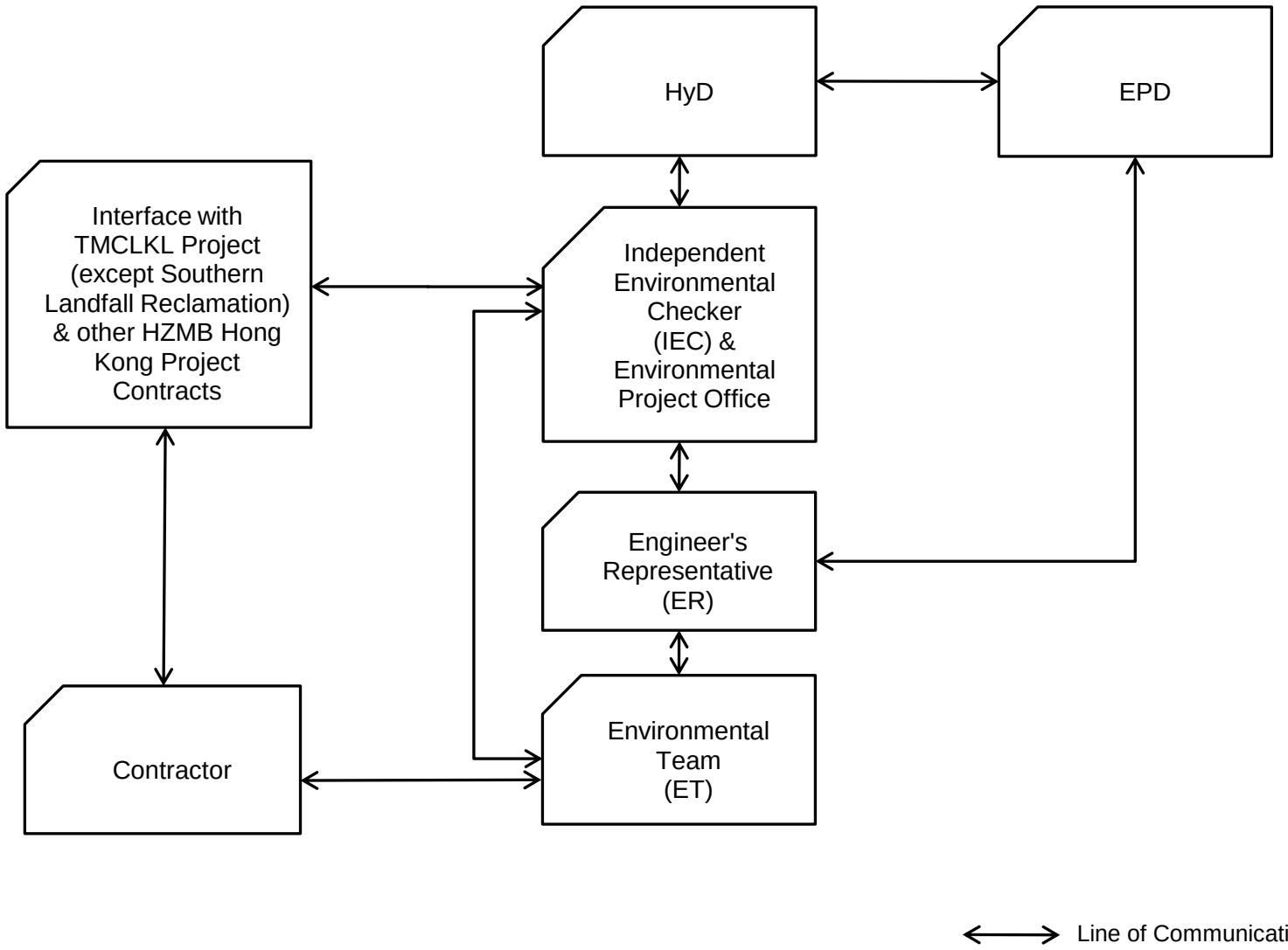
HONG KONG - ZHUHAI - MACAO BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES
- RECLAMATION WORKS

AECOM

Environmental Complaint Handling Procedure

Project No.: 60249820 **Date: July 2012**

Figure 5



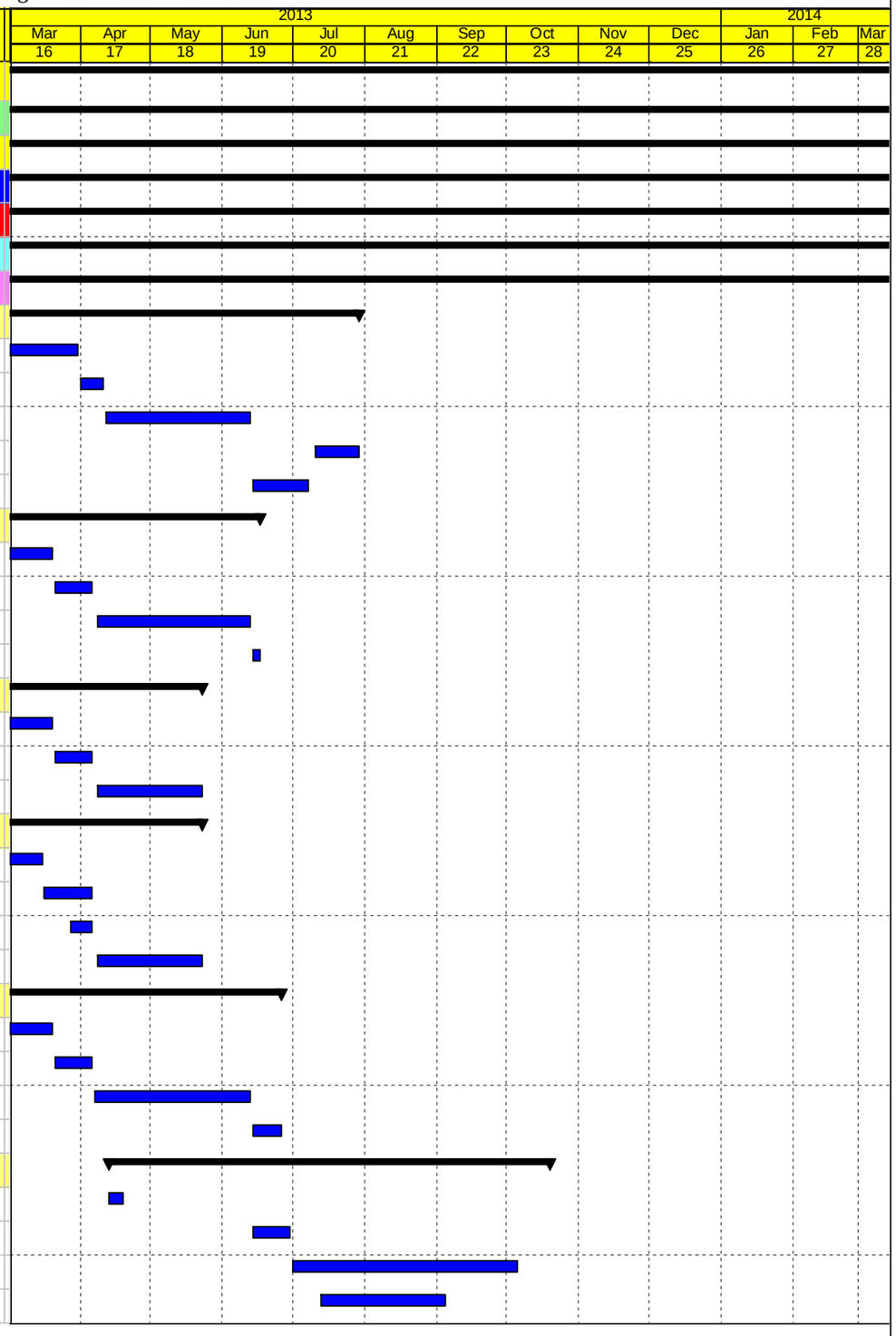
HONG KONG - ZHUHAI - MACAO BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES
--RECLAMATION WORKS
Project No.: 60249820 Date: March 2013

Project Organisation for Environmental Works

AECOM

Appendix A

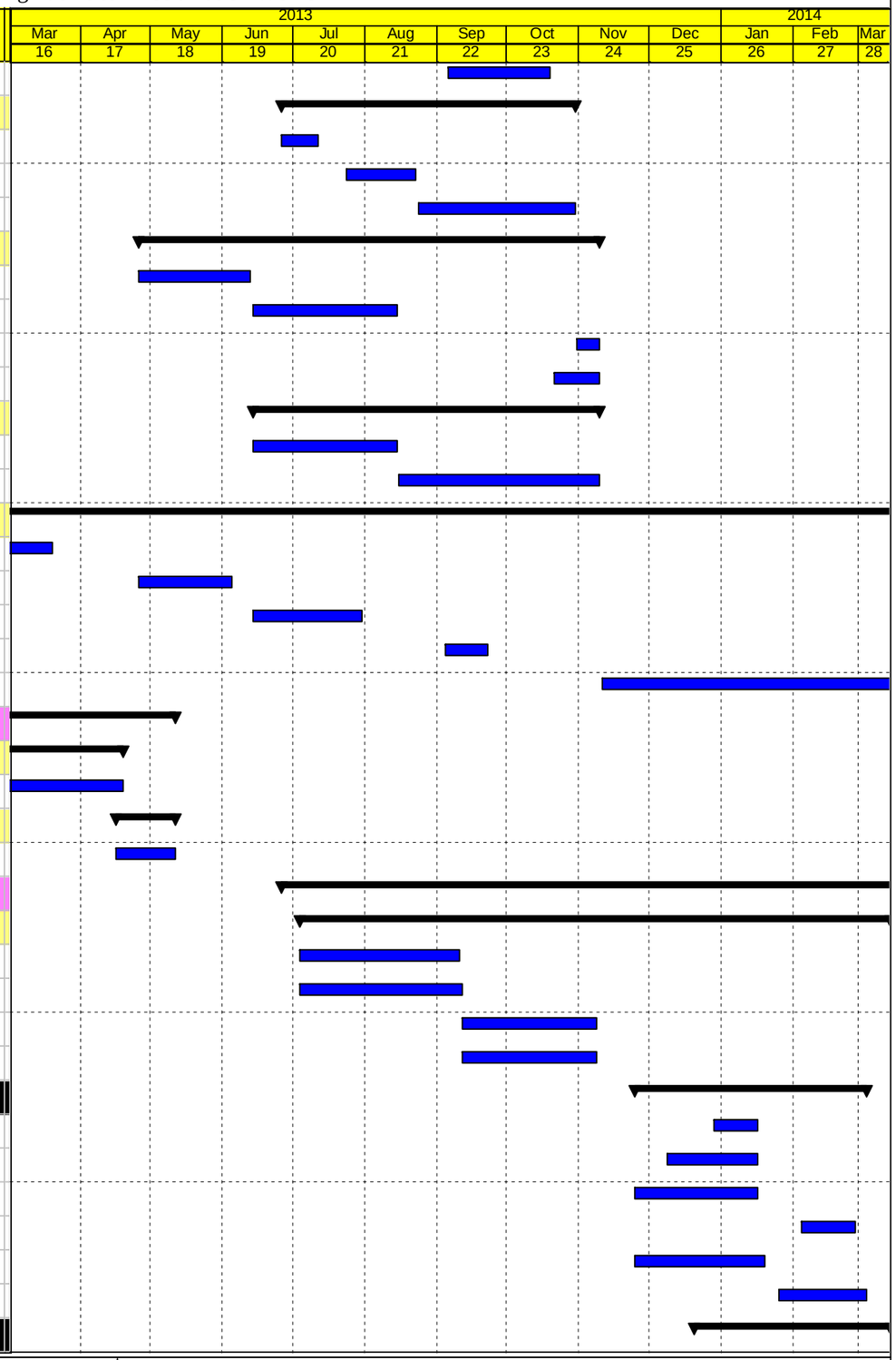
Activity ID	Activity Name	Original Duration	Start	Finish
34th Monthly Progress Report Status as on 21Oct2014 Ver.5h5		997	30-Nov-11 A	22-Aug-14 A
Work Zone, as defined in PS Clause 1.03(6)		608	11-Dec-12 A	10-Aug-14 A
Portion A, B, C & E		579	09-Jan-13 A	10-Aug-14 A
Portion A, B, C & E		579	09-Jan-13 A	10-Aug-14 A
Seawall		499	18-Jan-13 A	31-May-14 A
Ground Treatment		496	21-Jan-13 A	31-May-14 A
Stone Columns for Rubble Mound Seawall by Marine Plant		460	05-Feb-13 A	10-May-14 A
Portion A C118 - C121 4Cells 2,316Nos.		151	18-Feb-13 A	30-Jul-13 A
SC0A-1010	PA Removal of C120 for stone columns	39	18-Feb-13 A	31-Mar-13 A
SC0A-1015	PA Geotextile & Stone Blanket for stone columns at C118 - C121	10	01-Apr-13 A	11-Apr-13 A
SC0A-1020	PA Stone Columns C121 - C118 4cells 1,090nrs FTB17 & AP3 (19nrs/day) upto 13Jun2013	59	12-Apr-13 A	13-Jun-13 A
SC0A-1050	PA Stone Columns outermost C121 - C119 3cells 905nrs FTB19 (19nrs/day)	18	11-Jul-13 A	30-Jul-13 A
SC0A-1100	PA Stone Columns C118 - C118 1cells 321nrs FTB-AP3 (10nrs/day) from 14Jun2013	23	14-Jun-13 A	08-Jul-13 A
Portion A C122 - C124 3Cells 1,717Nos.		120	05-Feb-13 A	17-Jun-13 A
SC0A-2010	PA Stone Columns C122 - C124 3cells 398nrs FTB-AP3 upto 20Mar2013	38	05-Feb-13 A	20-Mar-13 A
SC0A-2020	PA Stone Columns C122 - C124 3cells 100nrs FTB-AP3 upto 6Apr2013	16	21-Mar-13 A	06-Apr-13 A
SC0A-2030	PA Stone Columns C122 - C124 3cells 838nrs (10nrs/day) FTB-AP3 upto 13Jun2013	63	08-Apr-13 A	13-Jun-13 A
SC0A-2050	PA Stone Columns C122 - C124 3cells 143nrs (19nrs/day) FTB19 from 14Jun2013	3	14-Jun-13 A	17-Jun-13 A
Portion A C125 - C128 4Cells 2,281Nos.		97	05-Feb-13 A	23-May-13 A
SC0A-3010	PA Stone Columns C125 - C128 4cells 902nrs FTB19 upto 20Mar2013	38	05-Feb-13 A	20-Mar-13 A
SC0A-3020	PA Stone Columns C125 - C128 4cells 502nrs FTB19 upto 6Apr2013	16	21-Mar-13 A	06-Apr-13 A
SC0A-3030	PA Stone Columns C125 - C128 4cells 444nrs (19nrs/day) FTB19	43	08-Apr-13 A	23-May-13 A
Portion A C129 - C131 3Cells 1,823Nos		108	05-Feb-13 A	23-May-13 A
SC0A-4010	PA Stone Columns C129 - C131 492nrs completed FTB20 upto 15Mar0213	33	05-Feb-13 A	15-Mar-13 A
SC0A-4020	PA Stone Columns FTB20 Maintenance	22	16-Mar-13 A	06-Apr-13 A
SC0A-4030	PA Stone Columns C129 - C131 250nrs completed FTB20 upto 6Apr2013	10	28-Mar-13 A	06-Apr-13 A
SC0A-4040	PA Stone Columns C129 - C131 497nrs (19nrs/day) FTB20	43	08-Apr-13 A	23-May-13 A
Portion A C132 - C134 3Cells 1,809Nos		129	05-Feb-13 A	26-Jun-13 A
SC0A-5010	PA Stone Columns C132 - C134 3cells 204nrs FTB-AP4 upto 20Mar2013	38	05-Feb-13 A	20-Mar-13 A
SC0A-5020	PA Stone Columns C132 - C134 3cells 77nrs FTB-AP4 upto 6Apr2013	16	21-Mar-13 A	06-Apr-13 A
SC0A-5030	PA Stone Columns C132 - C134 3cells 1,151nrs (10nrs/day) FTB-AP4 upto 13Jun13	63	07-Apr-13 A	13-Jun-13 A
SC0A-5040	PA Stone Columns C132 - C134 3cells 89nrs (19nrs/day) FTB20	12	14-Jun-13 A	26-Jun-13 A
Portion B K13 - K15 3Cells 1,104Nos		177	13-Apr-13 A	20-Oct-13 A
SC0B-1010	PB Modification of stone column barge FTB-AP2	7	13-Apr-13 A	19-Apr-13 A
SC0B-1030	PB Stone Columns K013 - K015 3cells 68nrs/1,104nrs from 14Jun to 30Jun2013 FTB-AP4	15	14-Jun-13 A	30-Jun-13 A
SC0B-1040	PB Stone Columns K013 - K015 3cells 470nrs/1,104nrs from 1Jul to 25Aug2013 FTB-AP2	90	01-Jul-13 A	05-Oct-13 A
SC0B-1045	PB Stone Columns FTB20 Modification	50	13-Jul-13 A	05-Sep-13 A



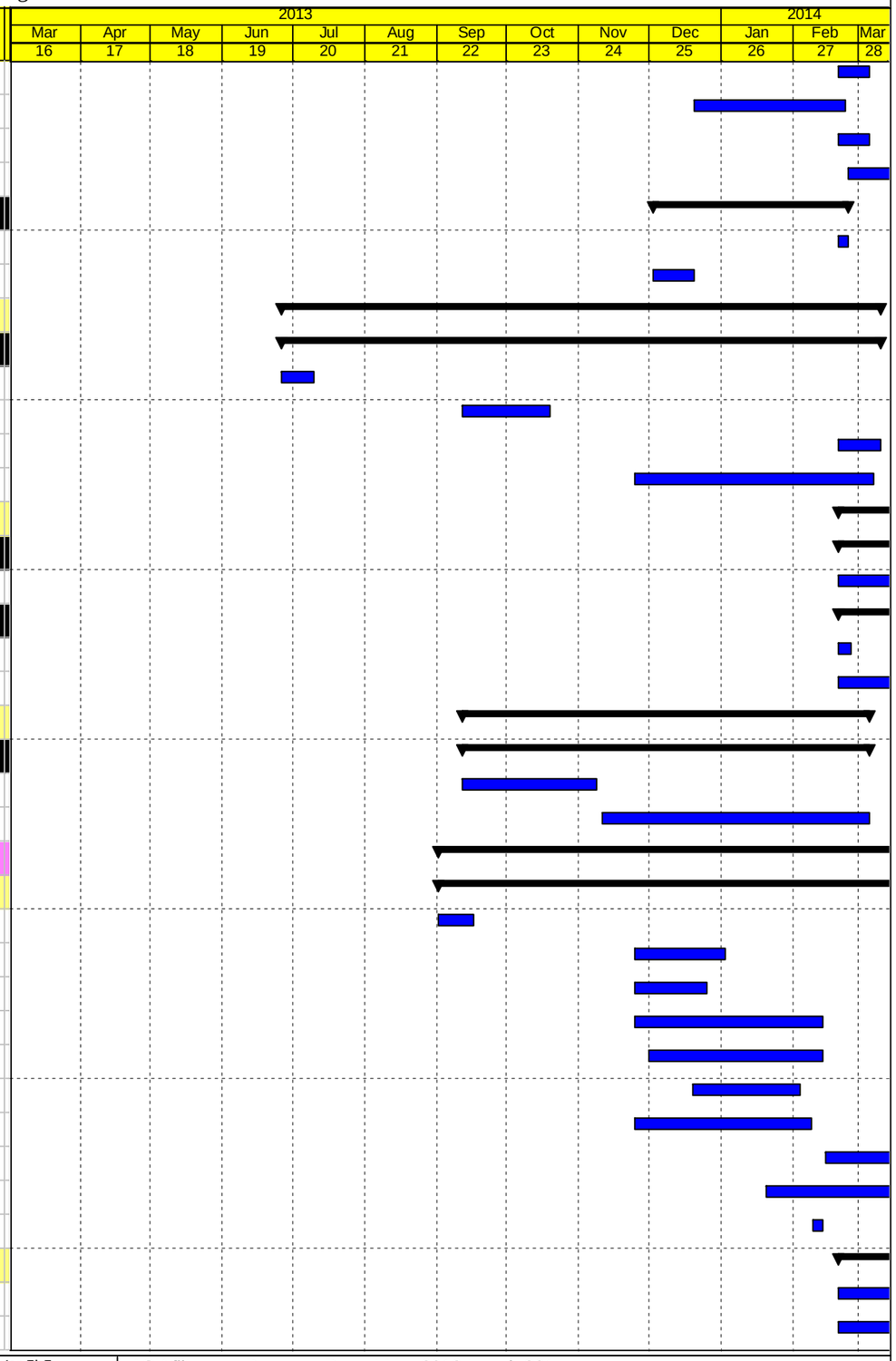
Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

TASK filter: ET Progress Report Mar 2013 to Feb 2014.
Resource Profile Filter:Aggregate.Stone Aggregate (cum)

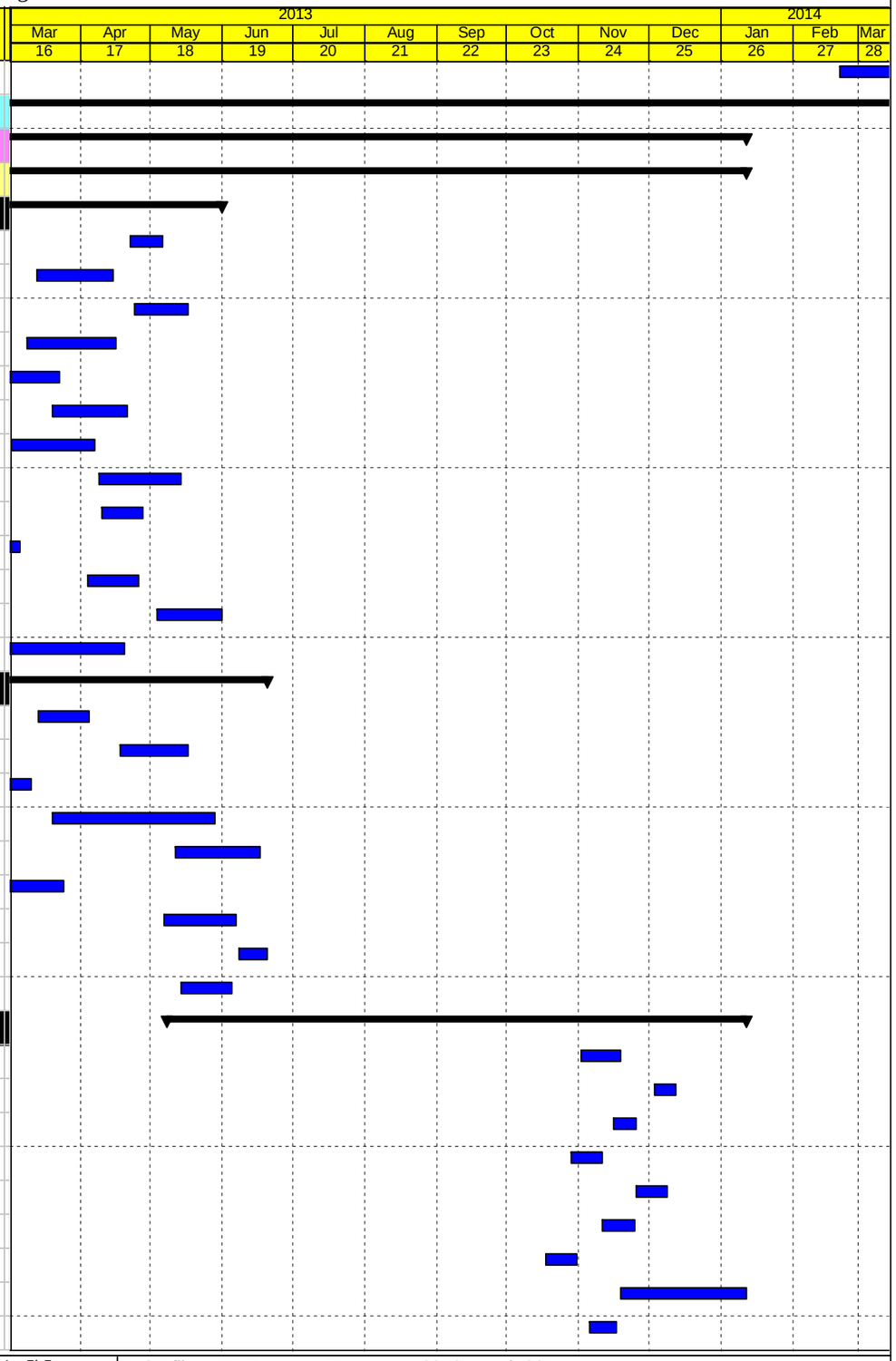
Activity ID	Activity Name	Original Duration	Start	Finish
SC0B-1050	PB Stone Columns K013 - K015 4cells 603nrs/1,104nrs (19nrs/day) FTB-20 from 6Sep2013	42	06-Sep-13 A	20-Oct-13 A
Portion B K16 - K20 5cells 1,950Nos		117	26-Jun-13 A	30-Oct-13 A
SC0B-2020	PB Stone Columns K016 - K020 4cells 203nrs/1,950nrs upto 12Jul2013	16	26-Jun-13 A	12-Jul-13 A
SC0B-2022	PB Stone Columns K016 - K018 3cells 229nrs/1,950nrs upto 23Aug2013 FTB-AP3	29	24-Jul-13 A	23-Aug-13 A
SC0B-4030	PB Stone Columns K016 - K018 3cells 765nrs/1,950nrs (19nrs/day) FTB19	62	24-Aug-13 A	30-Oct-13 A
Portion B K21 - K23 3Cells 1,144Nos		184	26-Apr-13 A	10-Nov-13 A
SC0B-3010	PB Stone Columns K021 - K023 3cells 143nrs/1144nrs upto 13Jun2013	46	26-Apr-13 A	13-Jun-13 A
SC0B-3020	PB Stone Columns K019 - K022 3cells 519nrs/1144nrs	58	14-Jun-13 A	15-Aug-13 A
SC0B-3030	PB Stone Columns K019 - K022 3cells 342nrs/1144nrs (19nrs/day) FTB19	10	31-Oct-13 A	10-Nov-13 A
SC0B-4040	PB Stone Columns K019 - K022 3cells 283nrs/1144nrs (14nrs/day) FTB20	19	21-Oct-13 A	10-Nov-13 A
Portion B K24 - K27 4Cells 1,568Nos		138	14-Jun-13 A	10-Nov-13 A
SC0B-4010	PB Stone Columns K024 - K027 5Cells 850nrs/1568nrs FTB-AP2 from 14Jun to 15Aug2013	58	14-Jun-13 A	15-Aug-13 A
SC0B-4020	PB Stone Columns outermost K024 - K027 5Cells 1051nrs/1568nrs (19nrs/day) from 16Aug2013 FTB16	80	16-Aug-13 A	10-Nov-13 A
Portion C2a C113 - C117 5Cells 3,258Nos		419	05-Feb-13 A	10-May-14 A
SC0A-1040	PC2A Stone Columns C113 - C117 5cells 329nrs FTB17 upto 20Mar2013	38	05-Feb-13 A	20-Mar-13 A
SC0A-1060	PC2A Stone Columns C113 - C117 5cells 753nrs (19nrs/day) FTB16 upto 13Jun2013	38	26-Apr-13 A	05-Jun-13 A
SC0A-1070	PC2A Stone Columns outermost C113 - C117 5cells 613nrs upto 31Jul13'	44	14-Jun-13 A	31-Jul-13 A
SC0A-1080	PC2A Stone Columns outermost C116 - C117 5cells 362nrs (19nrs/day) FTB17 from 5Sep2013	17	05-Sep-13 A	22-Sep-13 A
SC0A-1090	PC2A Stone Columns outermost C113 - C115 5cells 1,614nrs (19nrs/day) FTB17	164	11-Nov-13 A	10-May-14 A
Stone Columns Inside cellular structures by Marine Plant		101	21-Jan-13 A	12-May-13 A
Seawall Portion C2a at C103 - C112 10cells 1100nrs		80	21-Jan-13 A	19-Apr-13 A
SCIC-020	PC2a Stone Columns insdie cells & 2rows 2cells 522nrs/1100nrs (15nrs/day) FTB18	80	21-Jan-13 A	19-Apr-13 A
Seawall Portion E2 at C060 - C067 8cells @80nrs/cell 640nrs		25	16-Apr-13 A	12-May-13 A
SCIE2-010	PE2 Stone Columns inside cells & 2rows 8cells C060 - C067 640nrs (15nrs/day) FTB18	25	16-Apr-13 A	12-May-13 A
Stone Columns Outside cellular Structures by Marine Plant		311	26-Jun-13 A	31-May-14 A
Seawall Portion B at K028 - K052 25cells 4,910nrs		233	04-Jul-13 A	15-Mar-14 A
SCOB-0010	PB Stone Columns outermost K028 - K051 17cells 832nrs upto 11Sep2013	65	04-Jul-13 A	11-Sep-13 A
SCOB-0020	PB Stone Columns beside K028 - K051 24cells 358nrs upto 12Sep13' AP1, 2, 3 & 5	66	04-Jul-13 A	12-Sep-13 A
SCOB-0030	PB Stone Columns outermost K028 - K053 24cells 770nrs from 12Sep13' to 9Nov2013	55	12-Sep-13 A	09-Nov-13 A
SCOB-0040	PB Stone Columns beside K028 - K053 24cells 666nrs from 12Sep13' to 9Nov2013	55	12-Sep-13 A	09-Nov-13 A
K028 - K040		90	25-Nov-13 A	05-Mar-14 A
SCOB-A010	PB Stone Columns K028 - K031 Row 01-11 61nrs (8nrs/day) FTB16	19	29-Dec-13 A	17-Jan-14 A
SCOB-A020	PB Stone Columns K028 - K031 Row 12-14 134nrs (8nrs/day) FTB16	38	09-Dec-13 A	17-Jan-14 A
SCOB-A030	PB Stone Columns K032 - K037 Row 01-11 124 (14nrs/day) FTB20	51	25-Nov-13 A	17-Jan-14 A
SCOB-A040	PB Stone Columns K032 - K036 Row 12-14 233nrs (6nrs/day) AP5	23	05-Feb-14 A	28-Feb-14 A
SCOB-A050	PB Stone Columns K038 - K040 Row 01-11 110 (14nrs/day) FTB19	53	25-Nov-13 A	20-Jan-14 A
SCOB-A060	PB Stone Columns K037 - K040 Row 12-14 202nrs (6nrs/day) AP6	32	26-Jan-14 A	05-Mar-14 A
K041 - K046		75	21-Dec-13 A	15-Mar-14 A



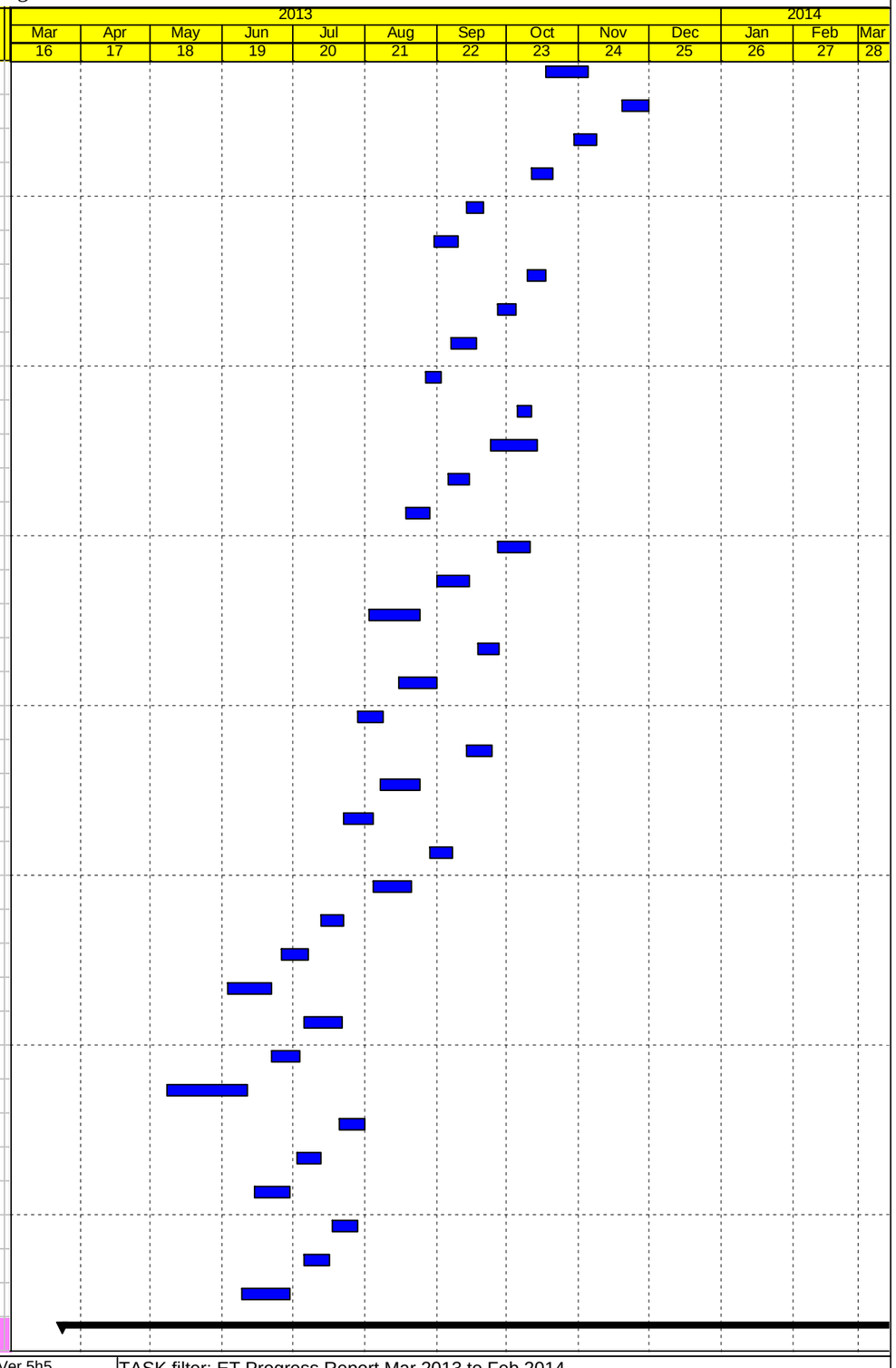
Activity ID	Activity Name	Original Duration	Start	Finish
SCOB-B010	PB Stone Columns K041 - K043 Row 01-11 233nrs (14nrs/day) FTB19	13	21-Feb-14 A	06-Mar-14 A
SCOB-B020	PB Stone Columns K041 - K043 Row 12-14 168nrs (8nrs/day) FTB16	57	21-Dec-13 A	24-Feb-14 A
SCOB-B030	PB Stone Columns K044 - K046 Row 01-11 125nrs (14nrs/day) FTB20	13	21-Feb-14 A	06-Mar-14 A
SCOB-B040	PB Stone Columns K044 - K046 Row 12-14 142nrs (8nrs/day) FTB16	18	25-Feb-14 A	15-Mar-14 A
K047 - K052		75	03-Dec-13 A	25-Feb-14 A
SCOB-C020	PB Stone Columns K047 - K052 Row 01-11 28nrs (6nrs/day) AP6	5	21-Feb-14 A	25-Feb-14 A
SCOB-C030	PB Stone Columns K047 - K052 Row 12-14 174nrs (6nrs/day) AP6	18	03-Dec-13 A	21-Dec-13 A
Seawall Portion E2 at K053 - C067 2,252nrs		236	26-Jun-13 A	11-Mar-14 A
K053 - C067		236	26-Jun-13 A	11-Mar-14 A
SCOE2-0010	PE2 Stone Columns outside K063 - K067 5cells 1395nrs (19nrs/day) FTB19	14	26-Jun-13 A	10-Jul-13 A
SCOE2-0020	PE2 Stone Columns beside K063 - K067 5cells 117nrs upto 9Nov2013	36	12-Sep-13 A	20-Oct-13 A
SCOE2-A010	PE2 Stone Columns K053 - K056 Row 01-11 251nrs (14nrs/day) FTB20	18	21-Feb-14 A	11-Mar-14 A
SCOE2-A020	PE2 Stone Columns K053 - K056 Row 12-14 160nrs (6nrs/day) AP5	93	25-Nov-13 A	08-Mar-14 A
Seawall Portion E1 at C068 - C091 24cells 6,428nrs		93	21-Feb-14 A	31-May-14 A
C068 - C079		93	21-Feb-14 A	31-May-14 A
SCOE1-A030	PE1 Stone Columns C072 - C075 Row 01-11 769nrs (14nrs/day) FTB20	93	21-Feb-14 A	31-May-14 A
C080 - C091		73	21-Feb-14 A	10-May-14 A
SCOE1-B030	PE1 Stone Columns C084 - C084 Row 01-11 94nrs (8nrs/day) FTB16	6	21-Feb-14 A	26-Feb-14 A
SCOE1-B060	PE1 Stone Columns C079 - C091 Row 12-14 279nrs (6nrs/day) AP7	73	21-Feb-14 A	10-May-14 A
Seawall Portion C at C103 - C112 10cells @197nrs/cell 1970nrs		159	12-Sep-13 A	06-Mar-14 A
Beside of front cellular walls C103-C112 985nrs		159	12-Sep-13 A	06-Mar-14 A
SCOC-A010	PC2a Stone Columns C112 - C103 10cells 620nrs (19nrs/day) FTB18 upto 9Nov2013	55	12-Sep-13 A	09-Nov-13 A
SCOC-A020	PC2a Stone Columns C105 - C106 Row 01-11 276nrs (18nrs/day) FTB18	104	11-Nov-13 A	06-Mar-14 A
Stone Columns Inside cells by Land Plant 2,640nrs		248	02-Sep-13 A	30-May-14 A
Seawall Portion B at K028 - K051 24cells 1,920nrs		240	02-Sep-13 A	22-May-14 A
SCIB0-005	PB Trial Stone Columns inside cells at K044 57nrs (6nrs/day/plant)	15	02-Sep-13 A	17-Sep-13 A
SCIB0-010	PB Stone Columns inside cells K028 - K030 191nrs (5nrs/day) LB-AP2	38	25-Nov-13 A	03-Jan-14 A
SCIB0-020	PB Stone Columns inside cells K031 - K032 151nrs (5nrs/day) LB-AP1	30	25-Nov-13 A	26-Dec-13 A
SCIB0-030	PB Stone Columns inside cells K033 - K036 274nrs (3nrs/day) LB-BV1	73	25-Nov-13 A	14-Feb-14 A
SCIB0-040	PB Stone Columns inside cells K037 - K039 240nrs (3nrs/day) LB-BC1	67	01-Dec-13 A	14-Feb-14 A
SCIB0-050	PB Stone Columns inside cells K040 - K040 80nrs (3nrs/day) LB-BV2	39	20-Dec-13 A	04-Feb-14 A
SCIB0-060	PB Stone Columns inside cells K041 - K043 237nrs (5nrs/day) LB-AP3	68	25-Nov-13 A	09-Feb-14 A
SCIB0-070	PB Stone Columns inside cells K044 - K046 136nrs (5nrs/day) LB-AP3	89	15-Feb-14 A	22-May-14 A
SCIB0-080	PB Stone Columns inside cells K047 - K050 267nrs (5nrs/day) LB-AP1	109	21-Jan-14 A	22-May-14 A
SCIB0-090	PB Stone Columns inside cells K051 - K051 23nrs (5nrs/day) LB-AP3	5	10-Feb-14 A	14-Feb-14 A
Seawall Portion E2 at K052 - C060 9cells 720nrs		92	21-Feb-14 A	30-May-14 A
SCIE2-020	PE2 Stone Columns inside cells K052 - K055 320nrs (5nrs/day) LB-AP2	92	21-Feb-14 A	30-May-14 A
SCIE2-040	PE2 Stone Columns inside cells K057 - C059 240nrs (3nrs/day) LB-BV1	89	21-Feb-14 A	27-May-14 A



Activity ID	Activity Name	Original Duration	Start	Finish
SCIE2-050	PE2 Stone Columns inside cells C061 - C062 240nrs (3nrs/day) LB-BV2	89	21-Feb-14 A	27-May-14 A
Cellular Structures		452	18-Jan-13 A	14-Apr-14 A
Cellular Main Cells 85cells		359	18-Jan-13 A	12-Jan-14 A
Full Guide Frames Method 85cells		359	18-Jan-13 A	12-Jan-14 A
Portion B K028 to K051 24cells		134	18-Jan-13 A	31-May-13 A
CS029-000	PB Cellular Structure K029 Type_C 1547m3	14	22-Apr-13 A	06-May-13 A
CS030-000	PB Cellular Structure K030 Type_C 1547m3	32	13-Mar-13 A	15-Apr-13 A
CS032-000	PB Cellular Structure K032 Type_C 1738m3	23	24-Apr-13 A	17-May-13 A
CS035-000	PB Cellular Structure K035 Type_C 1738m3	36	09-Mar-13 A	16-Apr-13 A
CS036-000	PB Cellular Structure K036 Type_C 1738m3	27	22-Feb-13 A	22-Mar-13 A
CS040-000	PB Cellular Structure K040 Type_C 1929m3	30	20-Mar-13 A	21-Apr-13 A
CS042-000	PB Cellular Structure K042 Type_C 1929m3	34	02-Mar-13 A	07-Apr-13 A
CS044-000	PB Cellular Structure K044 Type_C 1929m3	34	09-Apr-13 A	14-May-13 A
CS047-000	PB Cellular Structure K047 Type_C 1929m3	18	10-Apr-13 A	28-Apr-13 A
CS048-000	PB Cellular Structure K048 Type_C 1929m3	33	30-Jan-13 A	05-Mar-13 A
CS050-000	PB Cellular Structure K050 Type_C 1929m3	21	04-Apr-13 A	26-Apr-13 A
CS051-000	PB Cellular Structure K051 Type_C 1952m3	26	04-May-13 A	31-May-13 A
CSB00-010	PB Modification of guide frame for Cellular structures	84	18-Jan-13 A	20-Apr-13 A
Portion E2 K052 to C062 11cells		137	04-Feb-13 A	20-Jun-13 A
CS052-000	PE2 Cellular Structure K052 Type_C 1952m3	21	14-Mar-13 A	04-Apr-13 A
CS053-000	PE2 Cellular Structure K053 Type_C 1952m3	28	18-Apr-13 A	17-May-13 A
CS054-000	PE2 Cellular Structure K054 Type_C 1952m3	33	04-Feb-13 A	11-Mar-13 A
CS057-000	PE2 Cellular Structure C057 Type_C 2143m3	66	20-Mar-13 A	29-May-13 A
CS058-000	PE2 Cellular Structure C058 Type_C 2143m3	37	12-May-13 A	17-Jun-13 A
CS059-000	PE2 Cellular Structure C059 Type_C 2143m3	30	21-Feb-13 A	25-Mar-13 A
CS060-000	PE2 Cellular Structure C060 Type_C 2143m3	31	07-May-13 A	06-Jun-13 A
CS061-000	PE2 Cellular Structure C061 Type_C 2525m3	12	08-Jun-13 A	20-Jun-13 A
CS062-000	PE2 Cellular Structure C062 Type_C 2525m3	23	14-May-13 A	05-Jun-13 A
Portion C & E C112 to C063 50cells		249	08-May-13 A	12-Jan-14 A
CS063-000	PC Cellular Structure C063	15	02-Nov-13 A	19-Nov-13 A
CS066-000	PC Cellular Structure C066	9	04-Dec-13 A	13-Dec-13 A
CS067-000	PC Cellular Structure C067	9	16-Nov-13 A	26-Nov-13 A
CS068-000	PC Cellular Structure C068	12	29-Oct-13 A	11-Nov-13 A
CS069-000	PC Cellular Structure C069	12	26-Nov-13 A	09-Dec-13 A
CS070-000	PC Cellular Structure C070	13	11-Nov-13 A	25-Nov-13 A
CS071-000	PC Cellular Structure C071	12	18-Oct-13 A	31-Oct-13 A
CS072-000	PC Cellular Structure C072	44	19-Nov-13 A	12-Jan-14 A
CS073-000	PC Cellular Structure C073	10	06-Nov-13 A	17-Nov-13 A



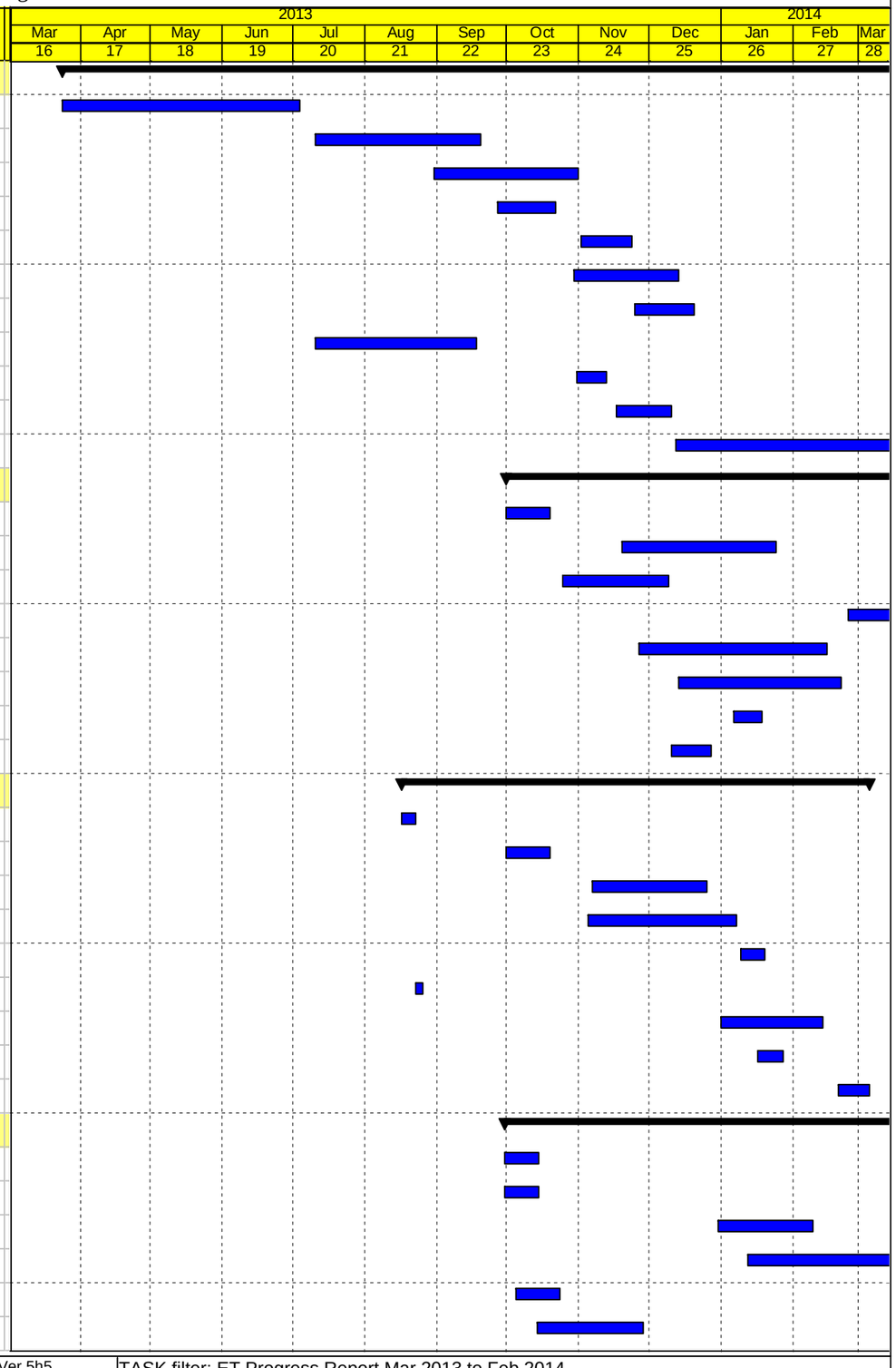
Activity ID	Activity Name	Original Duration	Start	Finish
CS074-000	PC Cellular Structure C074	16	18-Oct-13 A	05-Nov-13 A
CS075-000	PC Cellular Structure C075	10	20-Nov-13 A	01-Dec-13 A
CS076-000	PC Cellular Structure C076	10	30-Oct-13 A	09-Nov-13 A
CS077-000	PC Cellular Structure C077	7	12-Oct-13 A	21-Oct-13 A
CS080-000	PC Cellular Structure C080	7	14-Sep-13 A	21-Sep-13 A
CS081-000	PC Cellular Structure C081 Type_C 4667m3	11	31-Aug-13 A	10-Sep-13 A
CS082-000	PC Cellular Structure C082	7	10-Oct-13 A	18-Oct-13 A
CS083-000	PC Cellular Structure C083	7	27-Sep-13 A	05-Oct-13 A
CS084-000	PC Cellular Structure C084 Type_C 4094.5m3	12	07-Sep-13 A	18-Sep-13 A
CS085-000	PC Cellular Structure C085	8	27-Aug-13 A	03-Sep-13 A
CS086-000	PC Cellular Structure C086	6	06-Oct-13 A	12-Oct-13 A
CS087-000	PC Cellular Structure C087	16	24-Sep-13 A	14-Oct-13 A
CS088-000	PC Cellular Structure C088 Type_C 3712.5m3	10	06-Sep-13 A	15-Sep-13 A
CS089-000	PC Cellular Structure C089 Type_C 3712.5m3	11	19-Aug-13 A	29-Aug-13 A
CS090-000	PC Cellular Structure C090	12	27-Sep-13 A	11-Oct-13 A
CS091-000	PC Cellular Structure C091 Type_C 3533m3	15	01-Sep-13 A	15-Sep-13 A
CS092-000	PC Cellular Structure C092 Type_C 3533m3	23	03-Aug-13 A	25-Aug-13 A
CS093-000	PC Cellular Structure C093	9	19-Sep-13 A	28-Sep-13 A
CS094-000	PC Cellular Structure C094 Type_C 3342m3	17	16-Aug-13 A	01-Sep-13 A
CS095-000	PC Cellular Structure C095 Type_C 3342m3	12	29-Jul-13 A	09-Aug-13 A
CS096-000	PC Cellular Structure C096 Type_C 3342m3	11	14-Sep-13 A	25-Sep-13 A
CS097-000	PC Cellular Structure C097 Type_C 3342m3	18	08-Aug-13 A	25-Aug-13 A
CS098-000	PC Cellular Structure C098 Type_C 3342m3	14	23-Jul-13 A	05-Aug-13 A
CS099-000	PC Cellular Structure C099 Type_C 3342m3	11	29-Aug-13 A	08-Sep-13 A
CS100-000	PC Cellular Structure C100 Type_C 3342m3	17	05-Aug-13 A	21-Aug-13 A
CS101-000	PC Cellular Structure C101 Type_C 3338m3	11	13-Jul-13 A	23-Jul-13 A
CS102-000	PC Cellular Structure C102 Type_C 3338m3	13	26-Jun-13 A	08-Jul-13 A
CS103-000	PC Cellular Structure C103 Type_C 3338m3	20	03-Jun-13 A	22-Jun-13 A
CS104-000	PC Cellular Structure C104 Type_C 3338m3	17	06-Jul-13 A	22-Jul-13 A
CS105-000	PC Cellular Structure C105 Type_C 3338m3	13	22-Jun-13 A	04-Jul-13 A
CS106-000	PC Cellular Structure C106 Type_C 3147m3	36	08-May-13 A	12-Jun-13 A
CS107-000	PC Cellular Structure C107 Type_C 3147m3	12	21-Jul-13 A	01-Aug-13 A
CS108-000	PC Cellular Structure C108 Type_C 3147m3	11	03-Jul-13 A	13-Jul-13 A
CS109-000	PC Cellular Structure C109 Type_C 3147m3	16	15-Jun-13 A	30-Jun-13 A
CS110-000	PC Cellular Structure C110 Type_C 3147m3	12	18-Jul-13 A	29-Jul-13 A
CS111-000	PC Cellular Structure C111 Type_C 2956m3	12	06-Jul-13 A	17-Jul-13 A
CS112-000	PC Cellular Structure C112 Type_C 2956m3	22	09-Jun-13 A	30-Jun-13 A
Connecting Arcs		386	24-Mar-13 A	14-Apr-14 A



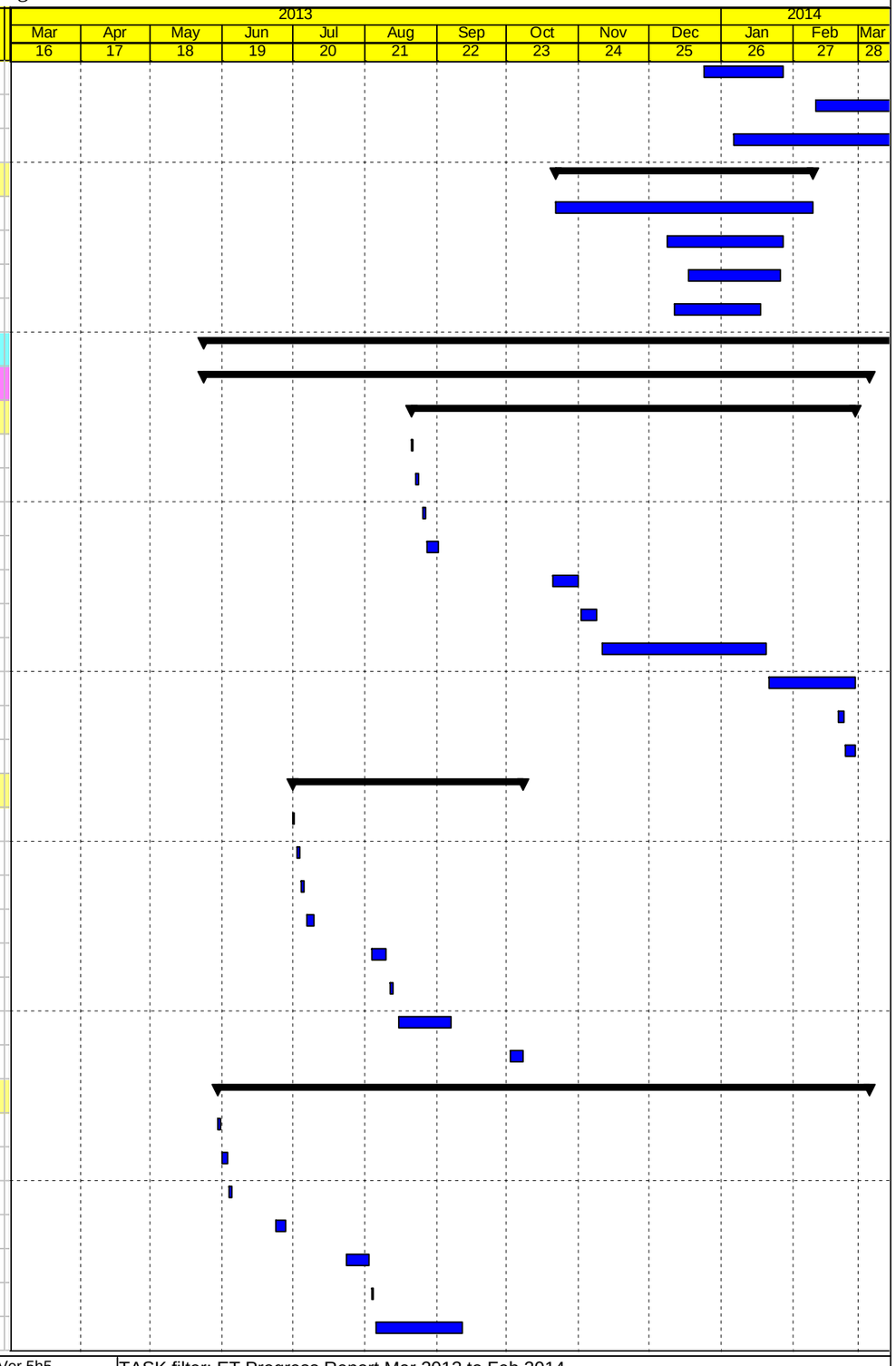
Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

TASK filter: ET Progress Report Mar 2013 to Feb 2014.
Resource Profile Filter:Aggregate.Stone Aggregate (cum)

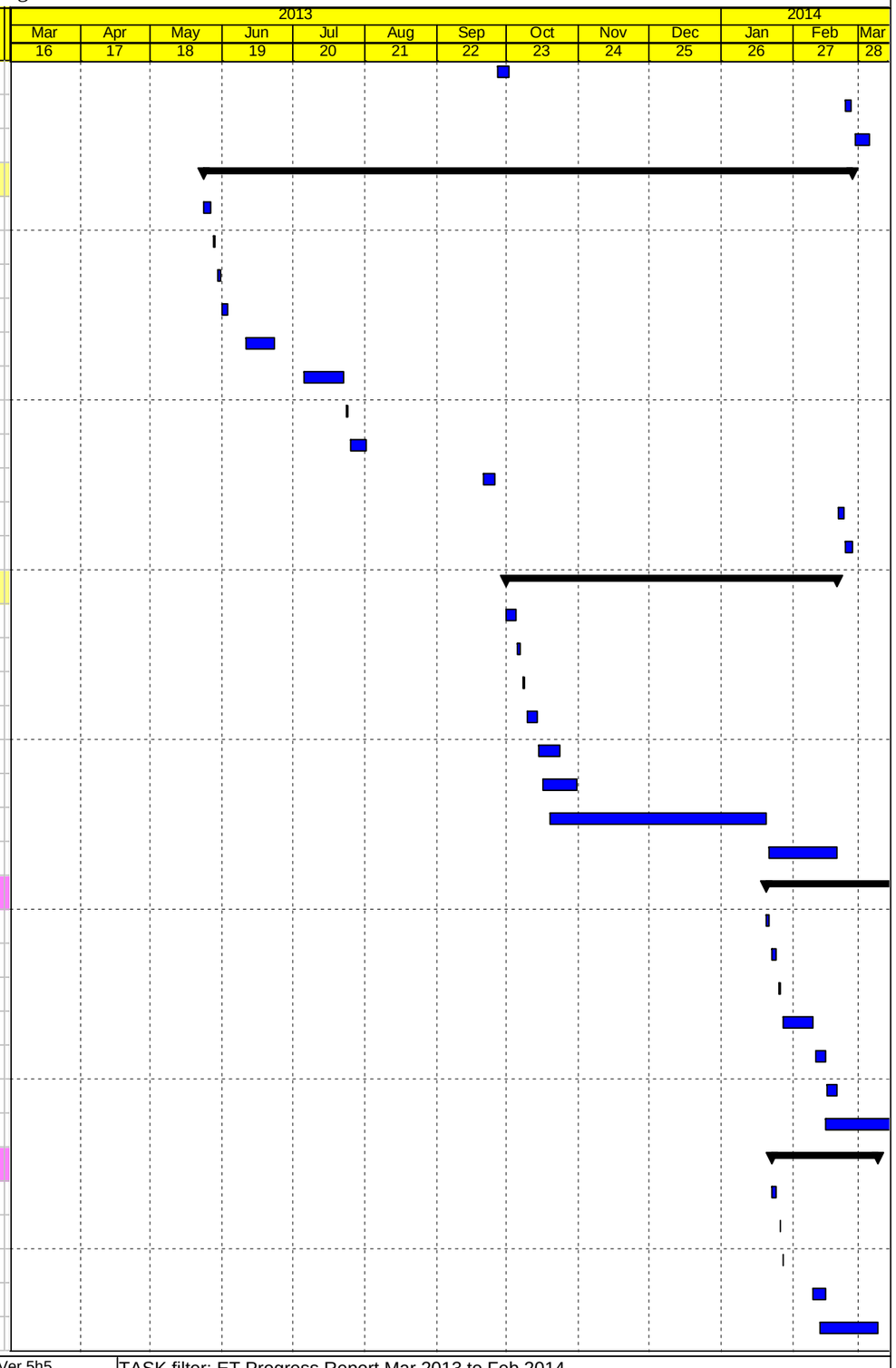
Activity ID	Activity Name	Original Duration	Start	Finish
Portion B between K028/K029 to K050/K051 23arcs		374	24-Mar-13 A	02-Apr-14 A
CA00B-000	PB Connecting Arc K037/K038 lower arcs type_c	95	24-Mar-13 A	04-Jul-13 A
CA00B-012L	PB Connecting Arc K028/K029 - K039/K040 (except K037/K038) Landside lower arcs 11nrs	66	11-Jul-13 A	20-Sep-13 A
CA00B-012S	PB Connecting Arc K028/K029 - K039/K040 (except K037/K038) Seaside lower arcs 11nrs	58	31-Aug-13 A	01-Nov-13 A
CA00B-014L	PB Connecting Arc K029/K030 & K030/K031 Landside upper arcs splicings 2nrs (HF)	20	27-Sep-13 A	22-Oct-13 A
CA00B-014S	PB Connecting Arc K029/K030 & K030/K031 Seaside upper arcs splicings 2nrs (HF)	19	02-Nov-13 A	24-Nov-13 A
CA00B-018	PB Final Backfill Cellular Cells & Arcs K028/K029 - K039/K040 Type_C 40295.5m3	40	30-Oct-13 A	14-Dec-13 A
CA00B-022	PB Connecting Arc K045/K046 Landside & Seaside upper arcs splicings 2nrs (HF)	24	25-Nov-13 A	21-Dec-13 A
CA00B-022L	PB Connecting Arc K040/K041 - K050/K051 Landside lower arcs 11nrs	64	11-Jul-13 A	18-Sep-13 A
CA00B-022S	PB Connecting Arc K040/K041 - K050/K051 Seaside lower arcs 11nrs	12	31-Oct-13 A	13-Nov-13 A
CA00B-025L	PB Connecting Arc K049/K050 & K050/K051 Landside upper arcs splicing 2nrs (201)	21	17-Nov-13 A	11-Dec-13 A
CA00B-028	PB Final Backfill Cellular Cells & Arcs K040/K041 - K050/K051 Type_C 48413m3	90	13-Dec-13 A	02-Apr-14 A
Portion E2 between K051/K052 to C066/C067 16arcs		147	01-Oct-13 A	29-Mar-14 A
CAE2-012L	PE2 Connecting Arc K051/K052 - K062/K063 Landside lower arcs 12nrs	15	01-Oct-13 A	20-Oct-13 A
CAE2-012S	PE2 Connecting Arc K051/K052 - C061/C062 Seaside lower arcs 11nrs	55	20-Nov-13 A	25-Jan-14 A
CAE2-014L	PE2 Connecting Arc K051/K052 - K053/K054 Landside upper arcs splicing 3nrs (201)	40	25-Oct-13 A	10-Dec-13 A
CAE2-014S	PE2 Connecting Arc K051/K052 - K053/K054 Seaside upper arcs splicing 3nrs (201) 30Mar2014	29	25-Feb-14 A	29-Mar-14 A
CAE2-016L	PE2 Connecting Arc K056/C057 & C057/C058 Landside upper arcs splicing 2nrs (HF)	65	27-Nov-13 A	16-Feb-14 A
CAE2-016S	PE2 Connecting Arc K056/C057 & C057/C058 Seaside upper arcs splicing 2nrs (HF)	56	14-Dec-13 A	22-Feb-14 A
CAE2-022L	PE2 Connecting Arc C062/C063 & C066/C067 Landside lower arcs 2nrs	11	07-Jan-14 A	19-Jan-14 A
CAE2-022S	PE2 Connecting Arc C062/C063 & C066/C067 Seaside lower arcs 2nrs	14	11-Dec-13 A	28-Dec-13 A
Portion C2a between C103/104 to C111/C112 9arcs		202	17-Aug-13 A	06-Mar-14 A
CAC2a-012L	PC2a Connecting Arc C107/C108 - C111/C112 Landside lower arcs 5nrs	7	17-Aug-13 A	23-Aug-13 A
CAC2a-012S	PC2a Connecting Arc C107/C108 - C111/C112 Seaside lower arcs 5nrs	15	01-Oct-13 A	20-Oct-13 A
CAC2a-014L	PC2a Connecting Arc C107/C108 - C111/C112 Landside upper arcs splicing 5nrs (205)	41	07-Nov-13 A	26-Dec-13 A
CAC2a-014S	PC2a Connecting Arc C107/C108 - C111/C112 Seaside upper arcs splicing 5nrs (205)	53	05-Nov-13 A	08-Jan-14 A
CAC2a-018	PC2a Final backfill cellular cells & Arcs C107/108 - C111/112 5arcs Type_C 32,309m3	9	10-Jan-14 A	20-Jan-14 A
CAC2a-032L	PC2a Connecting Arc C103/C104 - C106/C107 Landside lower arcs 4nrs	3	23-Aug-13 A	26-Aug-13 A
CAC2a-032S	PC2a Connecting Arc C103/C104 - C106/C107 Seaside lower arcs 4nrs	36	01-Jan-14 A	14-Feb-14 A
CAC2a-034L	PC2a Connecting Arc C105/C106 & C106/C107 Landside upper arcs splicing 2nrs (205)	10	17-Jan-14 A	28-Jan-14 A
CAC2a-034S	PC2a Connecting Arc C105/C106 & C106/C107 Seaside upper arcs splicing 2nrs (401)	12	21-Feb-14 A	06-Mar-14 A
Portion C2c between C091/C092 to C102/C103 12arcs		160	30-Sep-13 A	14-Apr-14 A
CAC2c-012L	PC2c Connecting Arc C097/C098 - C102/C103 Landside lower arcs 6nrs	12	30-Sep-13 A	15-Oct-13 A
CAC2c-012S	PC2c Connecting Arc C097/C098 - C102/C103 Seaside lower arcs 6nrs	12	30-Sep-13 A	15-Oct-13 A
CAC2c-014L	PC2c Connecting Arc C100/C101 - C104/C105 Landside upper arcs splicing 5nrs (205)	33	31-Dec-13 A	10-Feb-14 A
CAC2c-014S	PC2c Connecting Arc C101/C102 - C104/C105 Seaside upper arcs splicing 4nrs (401)	61	13-Jan-14 A	26-Mar-14 A
CAC2c-022L	PC2c Connecting Arc C091/C092 - C096/C097 Landside lower arcs 6nrs	16	05-Oct-13 A	24-Oct-13 A
CAC2c-022S	PC2c Connecting Arc C091/C092 - C096/C097 Seaside lower arcs 6nrs	40	14-Oct-13 A	29-Nov-13 A



Activity ID	Activity Name	Original Duration	Start	Finish
CAC2c-024L	PC2c Connecting Arc C094/C095 - C099/C100 Landside upper arcs splicing 6nrs (401)	27	25-Dec-13 A	28-Jan-14 A
CAC2c-024S	PC2c Connecting Arc C094/C095 - C100/C101 Seaside upper arcs splicing 7nrs (WC1)	32	11-Feb-14 A	19-Mar-14 A
CAC2c-034L	PC2c Connecting Arc C088/C089 - C093/C094 Landside upper arcs splicing 6nrs (WC1)	82	07-Jan-14 A	14-Apr-14 A
Portion E1 between C073/C074 to C090/C091 18arcs		90	22-Oct-13 A	10-Feb-14 A
CAE1-012L	PE1 Connecting Arc C080/C081 - C090/C091 Landside lower arcs 11nrs	91	22-Oct-13 A	10-Feb-14 A
CAE1-012S	PE1 Connecting Arc C080/C081 - C090/C091 Seaside lower arcs 11nrs	41	09-Dec-13 A	28-Jan-14 A
CAE1-032L	PE1 Connecting Arc C067/C068 - C076/C077 Landside lower arcs 10nrs	32	18-Dec-13 A	27-Jan-14 A
CAE1-032S	PE1 Connecting Arc C067/C068 - C076/C077 Seaside lower arcs 10nrs	30	12-Dec-13 A	18-Jan-14 A
Optimizing Rubble Mound Seawalls		300	24-May-13 A	19-Mar-14 A
Optimizing Portion A at C118 - C134		287	24-May-13 A	06-Mar-14 A
Seawall Portion A at C118 - C121, Ch5+100 to 4+880		174	21-Aug-13 A	28-Feb-14 A
RFA1-0010	PA at C121 - C118 Geotextile Type 1 above stone blanket 14,400m2	2	21-Aug-13 A	22-Aug-13 A
RFA1-0020	PA at C121 - C118 sound survey	2	23-Aug-13 A	24-Aug-13 A
RFA1-0030	PA at C121 - C118 settlement markers install	2	26-Aug-13 A	27-Aug-13 A
RFA1-0040	PA at C121 - C118 Filter Layer (Cat0 Fill 1m) under the Rubble Mound 10,200m3	5	28-Aug-13 A	02-Sep-13 A
RFA1-0050	PA at C121 - C118 Rockfill (Cat1) upto -3.0mPD 22,610m3	11	21-Oct-13 A	01-Nov-13 A
RFA1-0060	PA at C121 - C118 Sand Blanket behind upto -4.0mPD	8	02-Nov-13 A	09-Nov-13 A
RFA1-0070	PA at C121 - C118 Rockfill (Cat1) , filter layer & geotextile +2.5mPD 18,870m3	67	11-Nov-13 A	21-Jan-14 A
RFA1-0080	PA at C121 - C118 Rockfill (Cat1) for platform upto +2.5mPD 15,810m3	32	22-Jan-14 A	28-Feb-14 A
RFA1-0090	PA at C121 - C118 Rockfill (Cat1) upto +6.0mPD & geotextile laying 6,460m3	3	21-Feb-14 A	23-Feb-14 A
RFA1-0100	PA at C121 - C118 UnderLayer (Cat0) 0mPD 10,200m3	5	24-Feb-14 A	28-Feb-14 A
Seawall Portion A at C122 - C124, Ch5+220 to 5+100		93	01-Jul-13 A	08-Oct-13 A
RFA2-0010	PA at C122 - C124 Geotextile Type 1 above stone blanket 11,000m2	2	01-Jul-13 A	02-Jul-13 A
RFA2-0020	PA at C122 - C124 sound survey	2	03-Jul-13 A	04-Jul-13 A
RFA2-0030	PA at C122 - C124 settlement markers install	2	05-Jul-13 A	06-Jul-13 A
RFA2-0040	PA at C122 - C124 Filter Layer (Cat0 Fill 1m) under the Rubble Mound 7,800m3	4	07-Jul-13 A	10-Jul-13 A
RFA2-0050	PA at C122 - C124 Rockfill (Cat1) upto -3.0mPD 17,290m3	7	04-Aug-13 A	10-Aug-13 A
RFA2-0060	PA at C122 - C124 Sand Blanket behind upto -4.0mPD	2	12-Aug-13 A	13-Aug-13 A
RFA2-0070	PA at C122 - C124 Rockfill (Cat1) , filter layer & geotextile +2.5mPD 14,430m3	21	16-Aug-13 A	07-Sep-13 A
RFA2-0080	PA at C122 - C124 Rockfill (Cat1) for platform upto +2.5mPD 12,090m3	6	03-Oct-13 A	08-Oct-13 A
Seawall Portion A at C125 - C128, Ch5+400 to 5+220		256	30-May-13 A	06-Mar-14 A
RFA3-0010	PA at C125 - C128 Geotextile Type 1 above stone blanket 14,400m2	2	30-May-13 A	31-May-13 A
RFA3-0020	PA at C125 - C128 sound survey	2	01-Jun-13 A	03-Jun-13 A
RFA3-0030	PA at C125 - C128 settlement markers install	2	04-Jun-13 A	05-Jun-13 A
RFA3-0040	PA at C125 - C128 Filter Layer (Cat0 Fill 1m) under the Rubble Mound 10,200m3	5	24-Jun-13 A	28-Jun-13 A
RFA3-0050	PA at C125 - C128 Rockfill (Cat1) upto -3.0mPD 22,610m3	10	24-Jul-13 A	03-Aug-13 A
RFA3-0060	PA at C125 - C128 Sand Blanket behind upto -4.0mPD	2	04-Aug-13 A	05-Aug-13 A
RFA3-0070	PA at C125 - C128 Rockfill (Cat1) , filter layer & geotextile +2.5mPD 18,870m3	35	06-Aug-13 A	12-Sep-13 A



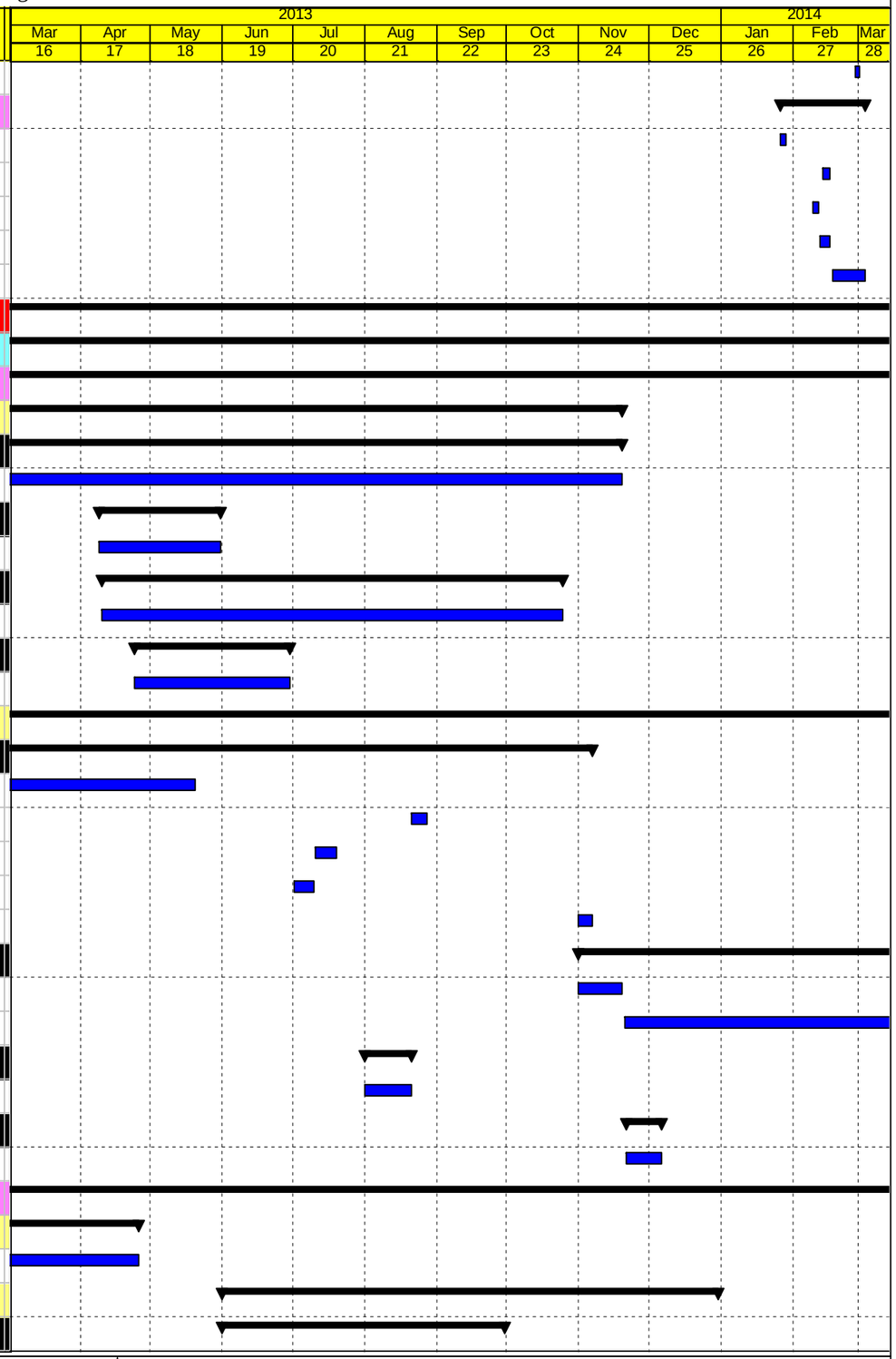
Activity ID	Activity Name	Original Duration	Start	Finish
RFA3-0080	PA at C125 - C128 Rockfill (Cat1) for platform upto +2.5mPD 15,810m3	5	27-Sep-13 A	02-Oct-13 A
RFA3-0090	PA at C125 - C128 Rockfill (Cat1) upto +6.0mPD & geotextile laying 6,460m3	3	24-Feb-14 A	26-Feb-14 A
RFA3-0100	PA at C125 - C128 UnderLayer 0mPD 10,200m3	6	28-Feb-14 A	06-Mar-14 A
Seawall Portion A at C129 - C131, Ch5+550 to 5+400		280	24-May-13 A	27-Feb-14 A
RFA4-0005	PA at C129 - C131 Ground Investigation	4	24-May-13 A	27-May-13 A
RFA4-0010	PA at C129 - C131 Geotextile Type 1 above stone blanket 11,000m2	2	28-May-13 A	29-May-13 A
RFA4-0020	PA at C129 - C131 sound survey	2	30-May-13 A	31-May-13 A
RFA4-0030	PA at C129 - C131 settlement markers install	2	01-Jun-13 A	03-Jun-13 A
RFA4-0040	PA at C129 - C131 Filter Layer (Cat0 Fill 1m) under the Rubble Mound 7,800m3	12	11-Jun-13 A	23-Jun-13 A
RFA4-0050	PA at C129 - C131 Rockfill (Cat1) upto -3.0mPD 17,290m3	17	06-Jul-13 A	23-Jul-13 A
RFA4-0060	PA at C129 - C131 Sand Blanket behind upto -4.0mPD	2	24-Jul-13 A	25-Jul-13 A
RFA4-0070	PA at C129 - C131 Rockfill (Cat1) , filter layer & geotextile +2.5mPD 14,430m3	7	26-Jul-13 A	02-Aug-13 A
RFA4-0080	PA at C129 - C131 Rockfill (Cat1) for platform upto +2.5mPD 12,090m3	6	21-Sep-13 A	26-Sep-13 A
RFA4-0090	PA at C129 - C131 Rockfill (Cat1) upto +6.0mPD & geotextile laying 4,940m3	3	21-Feb-14 A	23-Feb-14 A
RFA4-0100	PA at C129 - C131 UnderLayer 0mPD 7,800m3	4	24-Feb-14 A	27-Feb-14 A
Seawall Portion A at C132 - C134, Ch5+700 to 5+550		129	01-Oct-13 A	20-Feb-14 A
RFA5-0010	PA at C132 - C134 Geotextile Type 1 above stone blanket 9,730m2	5	01-Oct-13 A	05-Oct-13 A
RFA5-0020	PA at C132 - C134 sound survey	2	06-Oct-13 A	07-Oct-13 A
RFA5-0030	PA at C132 - C134 settlement markers install	2	08-Oct-13 A	09-Oct-13 A
RFA5-0040	PA at C132 - C134 Filter Layer (Cat0 Fill 1m) under the Rubble Mound 6,900m3	4	10-Oct-13 A	14-Oct-13 A
RFA5-0050	PA at C132 - C134 Rockfill (Cat1) upto -3.0mPD 15,295m3	10	15-Oct-13 A	24-Oct-13 A
RFA5-0060	PA at C132 - C134 Sand Blanket behind upto -4.0mPD	14	17-Oct-13 A	31-Oct-13 A
RFA5-0070	PA at C132 - C134 Rockfill (Cat1) , filter layer & geotextile +2.5mPD 12,765m3	87	20-Oct-13 A	21-Jan-14 A
RFA5-0080	PA at C132 - C134 Rockfill (Cat1) for platform upto +2.5mPD 10,695m3	24	22-Jan-14 A	20-Feb-14 A
Seawall Portion B at K013 - K017		50	21-Jan-14 A	19-Mar-14 A
RFB1-0010	PB at K013 - K017 Geotextile Type 1 above stone blanket 17,800m2	2	21-Jan-14 A	22-Jan-14 A
RFB1-0020	PB at K013 - K017 sound survey	3	23-Jan-14 A	25-Jan-14 A
RFB1-0030	PB at K013 - K017 settlement markers install	2	26-Jan-14 A	27-Jan-14 A
RFB1-0040	PB at K013 - K017 Filter Layer (Cat0 Fill 1m) under the Rubble Mound 8830m3	9	28-Jan-14 A	10-Feb-14 A
RFB1-0050	PB at K013 - K017 Rockfill (Cat1) upto -3.0mPD 6,660m3	5	11-Feb-14 A	15-Feb-14 A
RFB1-0060	PB at K013 - K017 Sand Blanket behind upto -4.0mPD	4	16-Feb-14 A	20-Feb-14 A
RFB1-0070	PB at K013 - K017 Rockfill (Cat1) , filter layer & geotextile +2.5mPD 5,040m3	30	15-Feb-14 A	19-Mar-14 A
Seawall Portion B at K018 - K022		40	23-Jan-14 A	10-Mar-14 A
RFB2-0010	PB at K018 - K022 Geotextile Type 1 above stone blanket 17,800m2	3	23-Jan-14 A	25-Jan-14 A
RFB2-0020	PB at K018 - K022 sound survey	1	27-Jan-14 A	27-Jan-14 A
RFB2-0030	PB at K018 - K022 settlement markers install	1	28-Jan-14 A	28-Jan-14 A
RFB2-0040	PB at K018 - K022 Filter Layer (Cat0 Fill 1m) under the Rubble Mound 8835m3	6	10-Feb-14 A	15-Feb-14 A
RFB2-0050	PB at K018 - K022 Rockfill (Cat1) upto -3.0mPD 6660m3	24	13-Feb-14 A	10-Mar-14 A



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

TASK filter: ET Progress Report Mar 2013 to Feb 2014.
Resource Profile Filter:Aggregate.Stone Aggregate (cum)

Activity ID	Activity Name	Original Duration	Start	Finish
RFB2-0060	PB at K018 - K022 Sand Blanket behind upto -4.0mPD	2	28-Feb-14 A	02-Mar-14 A
Seawall Portion B at K023 - K027		30	27-Jan-14 A	04-Mar-14 A
RFB3-0010	PB at K023 - K027 Geotextile Type 1 above stone blanket 17,800m2	3	27-Jan-14 A	29-Jan-14 A
RFB3-0020	PB at K023 - K027 sound survey	3	14-Feb-14 A	17-Feb-14 A
RFB3-0030	PB at K023 - K027 settlement markers install	3	10-Feb-14 A	12-Feb-14 A
RFB3-0040	PB at K023 - K027 Filter Layer (Cat0 Fill 1m) under the Rubble Mound 8835m3	4	13-Feb-14 A	17-Feb-14 A
RFB3-0050	PB at K023 - K027 Rockfill (Cat1) upto -3.0mPD 6660m3	14	18-Feb-14 A	04-Mar-14 A
Reclamation		569	09-Jan-13 A	31-Jul-14 A
Ground Treatment		569	09-Jan-13 A	31-Jul-14 A
Geotextile		407	09-Jan-13 A	31-Mar-14 A
Existing Seabed Below -5mPD		284	16-Jan-13 A	20-Nov-13 A
Land Portion C2a		284	16-Jan-13 A	20-Nov-13 A
GERC2a-010	PC2a Geotextile for sand blanket	284	16-Jan-13 A	20-Nov-13 A
Land Portion C2c		50	09-Apr-13 A	31-May-13 A
GERC2c-010	PC2c Geotextile for sand blanket	50	09-Apr-13 A	31-May-13 A
Land Portion C2b		185	10-Apr-13 A	25-Oct-13 A
GERC2b-010	PC2b Geotextile for sand blanket	185	10-Apr-13 A	25-Oct-13 A
Land Portion E1		63	24-Apr-13 A	30-Jun-13 A
GERE1-010	PE1 Geotextile for sand blanket	63	24-Apr-13 A	30-Jun-13 A
Existing Seabed above -5mPD		407	09-Jan-13 A	31-Mar-14 A
Land Portion A		278	09-Jan-13 A	07-Nov-13 A
GERA0-010	Geotextile 188,100m2 for sand blanket PA Main Area C118 to C126 10,000m2/day	119	09-Jan-13 A	20-May-13 A
GERA0-020	Geotextile 31,350m2 for sand blanket PA Edge Area C118 to C121 10,000m2/day	7	21-Aug-13 A	28-Aug-13 A
GERA0-030	Geotextile 31,350m2 for sand blanket PA Edge Area C122 to C126 5,000m2/day	9	11-Jul-13 A	20-Jul-13 A
GERA0-040	Geotextile 23,512m2 for sand blanket PA Edge Area C127 to C129 5,000m2/day	9	02-Jul-13 A	10-Jul-13 A
GERA0-050	Geotextile 31,350m2 for sand blanket PA Edge Area C130 to C134 5,000m2/day	7	01-Nov-13 A	07-Nov-13 A
Land Portion B		136	01-Nov-13 A	31-Mar-14 A
GERB0-010	PB Geotextile for sand blanket at K013 - K027	19	01-Nov-13 A	20-Nov-13 A
GERB0-015	PB Geotextile for sand blanket at K028 - K040	117	21-Nov-13 A	31-Mar-14 A
Land Portion C1a		20	01-Aug-13 A	21-Aug-13 A
GERC1a-010	PC1a Geotextile for sand blanket	20	01-Aug-13 A	21-Aug-13 A
Land Portion C1b		15	21-Nov-13 A	06-Dec-13 A
GERC1b-010	PC1b Geotextile for sand blanket East	15	21-Nov-13 A	06-Dec-13 A
Sand Blankets		454	30-Jan-13 A	28-Apr-14 A
Variation of Environmental Permit - Sand Blanket laying in all portions		87	30-Jan-13 A	26-Apr-13 A
VEP-10030	VEP Approval by EPD	87	30-Jan-13 A	26-Apr-13 A
Existing Seabed below -5mPD		198	01-Jun-13 A	31-Dec-13 A
Land Portion C2a		112	01-Jun-13 A	30-Sep-13 A



Remaining Level of Effort
Actual Level of Effort
Actual Work
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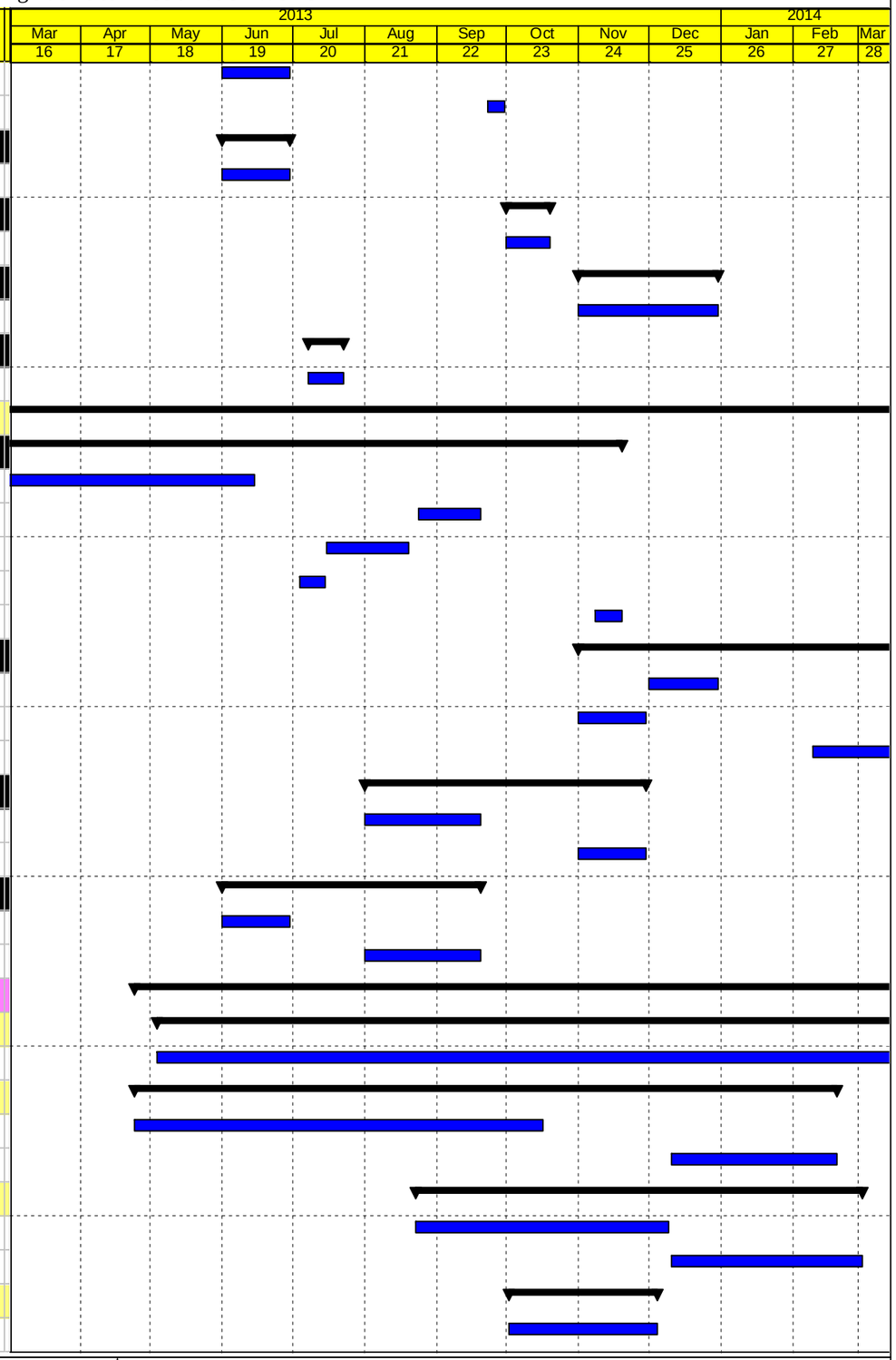
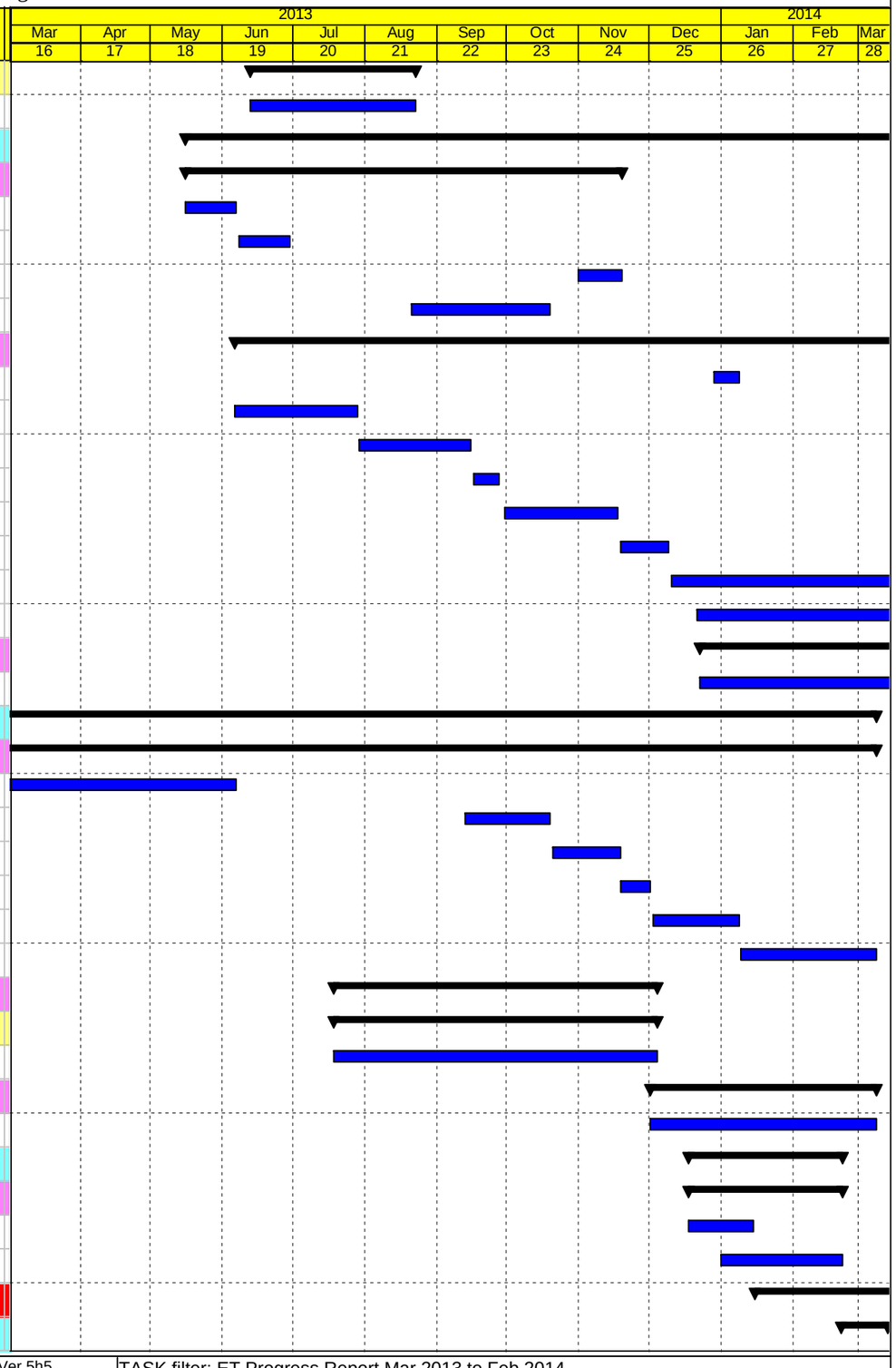
Milestone
Summary

TASK filter: ET Progress Report Mar 2013 to Feb 2014.
Resource Profile Filter:Aggregate.Stone Aggregate (cum)

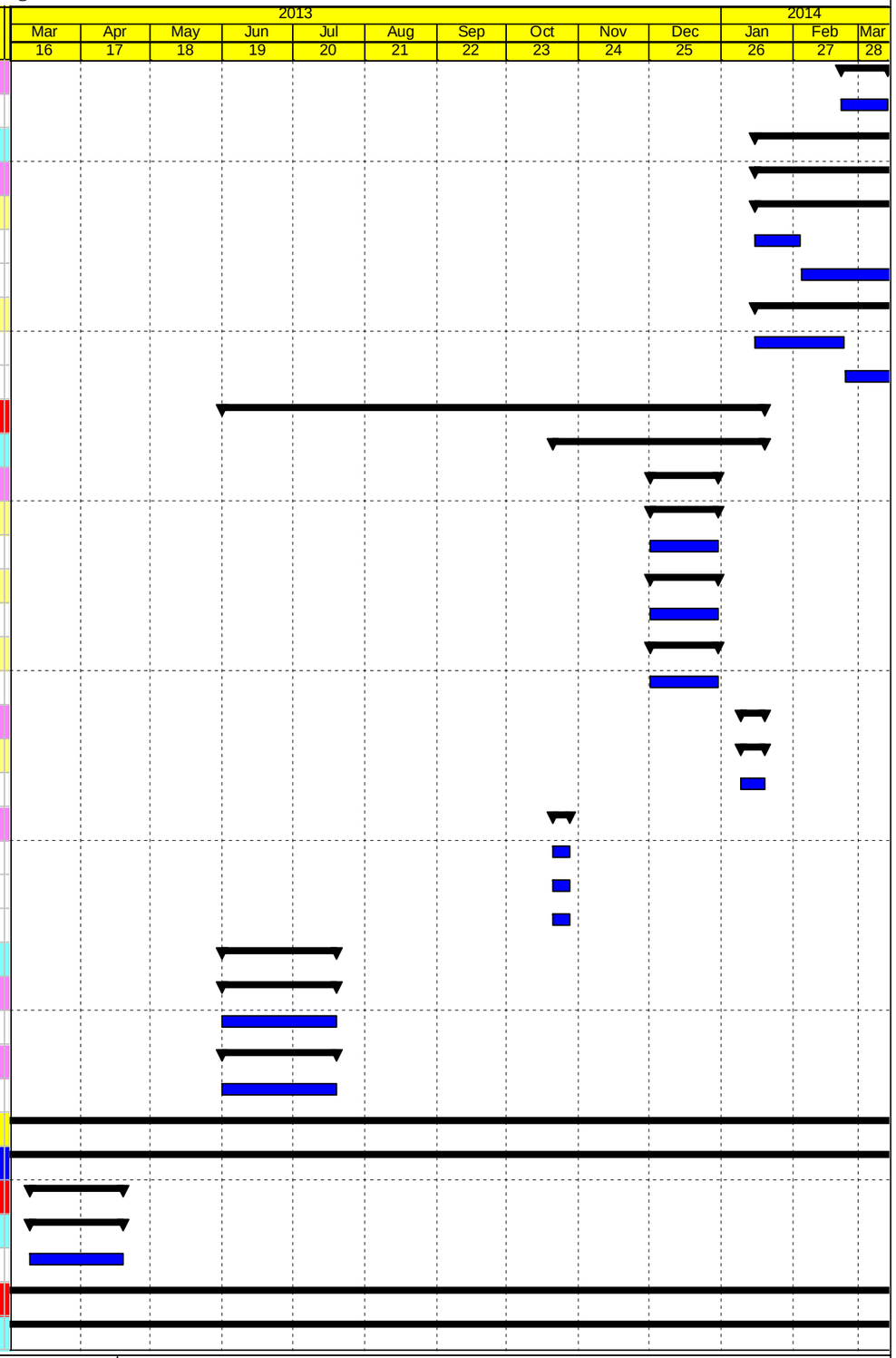
Activity ID	Activity Name	Original Duration	Start	Finish
SABRC2a-01	Sand Blankets at PC2a 37,000m3 2,000m3/day East	27	01-Jun-13 A	30-Jun-13 A
SABRC2a-02	Sand Blankets at PC2a 36,000m3 1,000m3/day West	7	23-Sep-13 A	30-Sep-13 A
Land Portion C2c		27	01-Jun-13 A	30-Jun-13 A
SABRC2c-01	Sand Blankets at PC2c 9,000m3 5,000m3/day	27	01-Jun-13 A	30-Jun-13 A
Land Portion C2b		19	01-Oct-13 A	20-Oct-13 A
SABRC2b-01	Sand Blankets at PC2b 9,000m3 2,000m3/day	19	01-Oct-13 A	20-Oct-13 A
Land Portion E2 Northern Part		57	01-Nov-13 A	31-Dec-13 A
SABRE2-010	Sand Blankets at PE2 71,000m3 5,000m3/day North-West	57	01-Nov-13 A	31-Dec-13 A
Land Portion E1		15	08-Jul-13 A	23-Jul-13 A
SABRE1-010	Sand Blankets at PE1 15,000m3 5,000m3/day	15	08-Jul-13 A	23-Jul-13 A
Existing Seabed Above -5mPD		399	18-Feb-13 A	28-Apr-14 A
Land Portion A		256	18-Feb-13 A	20-Nov-13 A
SABRA0-010	Sand Blankets 557,500m3 PA Main Area stg1 6,000m3/day	110	18-Feb-13 A	15-Jun-13 A
SABRA0-020	Sand Blankets 114,779m3 PA Edge Area C118 to C121 4,000m3/day	25	24-Aug-13 A	20-Sep-13 A
SABRA0-030	Sand Blankets 163,971m3 PA Edge Area C122 to C126 2,000m3/day	34	16-Jul-13 A	20-Aug-13 A
SABRA0-040	Sand Blankets 180,367m3 PA Edge Area C127 to C131 2,000m3/day	11	04-Jul-13 A	15-Jul-13 A
SABRA0-050	Sand Blankets 98383m3 PA Edge Area C132 to C134 4,000m3/day	12	08-Nov-13 A	20-Nov-13 A
Land Portion B		162	01-Nov-13 A	28-Apr-14 A
SABRB0-010	Sand Blankets at PB Edge K013 - K027 171,900m3 10,000m3/day	29	01-Dec-13 A	31-Dec-13 A
SABRB0-020	Sand Blankets at PB Main K028 - K051 200,550m3 5,000m3/day	28	01-Nov-13 A	30-Nov-13 A
SABRB0-030	Sand Blankets at PB Edge K028 - K056 200,550m3 5,000m3/day	72	10-Feb-14 A	28-Apr-14 A
Land Portion C1a		113	01-Aug-13 A	30-Nov-13 A
SABRC1a-01	Sand Blankets at PC1a 191,000m3 5,000m3/day North	47	01-Aug-13 A	20-Sep-13 A
SABRC1a-02	Sand Blankets at PC1a 191,000m3 5,000m3/day South	28	01-Nov-13 A	30-Nov-13 A
Land Portion C1b		103	01-Jun-13 A	20-Sep-13 A
SABRC1b-01	Sand Blankets at PC1b 142000m3 2,000m3/day West	27	01-Jun-13 A	30-Jun-13 A
SABRC1b-02	Sand Blankets at PC1b 142000m3 5,000m3/day East	47	01-Aug-13 A	20-Sep-13 A
Vertical Band Drains by Marine Plant		426	24-Apr-13 A	31-Jul-14 A
Land Portion C2a 1,760nrs		416	04-May-13 A	31-Jul-14 A
VBDC2a-010	PC2a Vertical Band Drains 52,300nrs completed by marine plant	416	04-May-13 A	31-Jul-14 A
Land Portion C2c 62,400nrs		277	24-Apr-13 A	20-Feb-14 A
VBDC2c-010	Vertical Band Drains 40,192nrs by marine plant at PC2c	164	24-Apr-13 A	17-Oct-13 A
VBDC2c-020	Vertical Band Drains 22,208nrs by marine plant at PC2c (750nrs/ady)	63	11-Dec-13 A	20-Feb-14 A
Land Portion C2b 62,400nrs		174	23-Aug-13 A	03-Mar-14 A
VBDC2b-010	Vertical Band Drains 12,896nrs by marine plant at PC2b upto 10Dec2013	101	23-Aug-13 A	10-Dec-13 A
VBDC2b-020	Vertical Band Drains 49,504nrs by marine plant at PC2b (750nrs/day)	73	11-Dec-13 A	03-Mar-14 A
Land Portion E2 Northern Part 84,746nrs		61	02-Oct-13 A	05-Dec-13 A
VBDE2-010	Vertical Band Drains 23,032nrs by marine plant at PE2 upto 5Dec2013	61	02-Oct-13 A	05-Dec-13 A



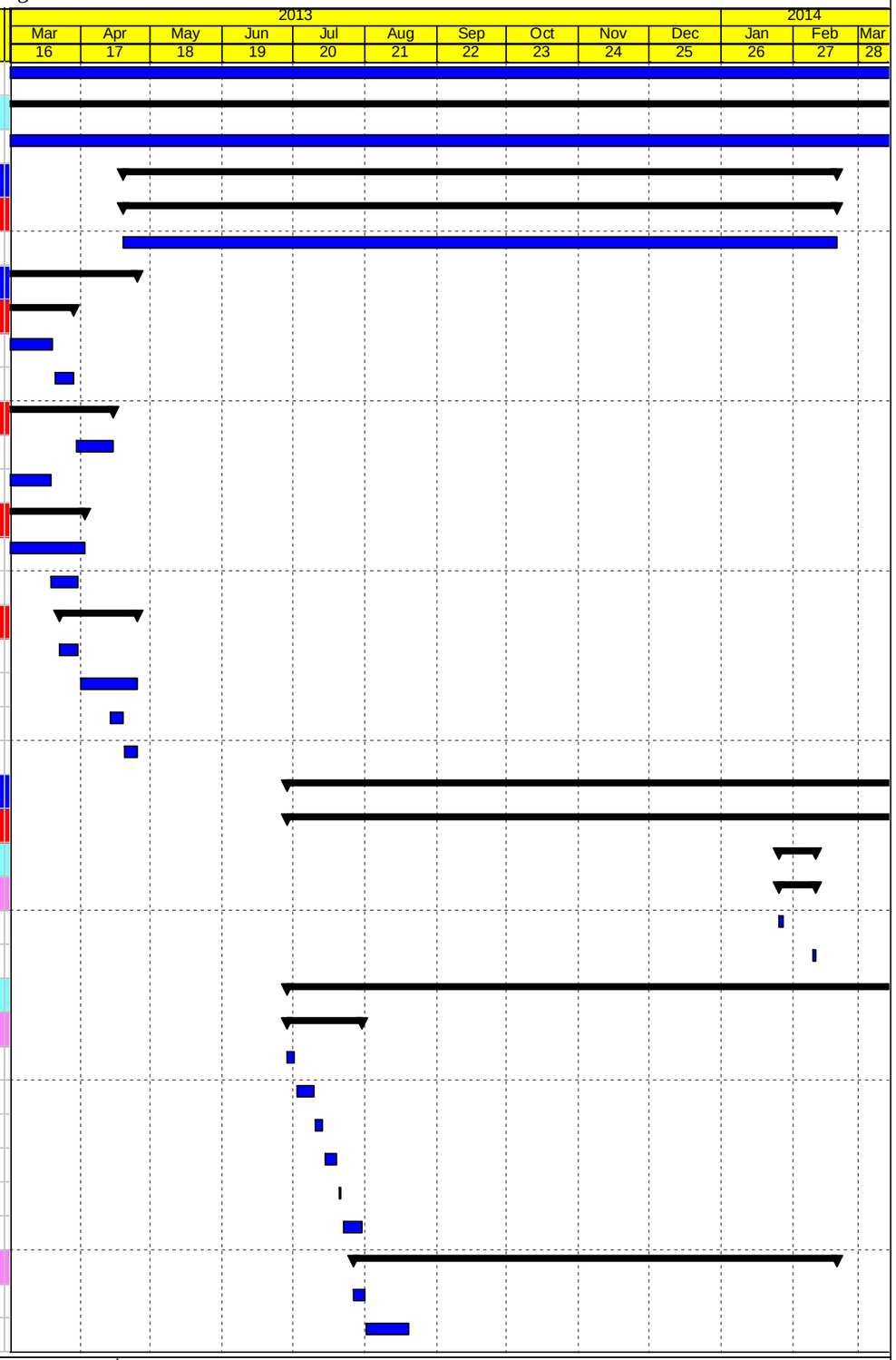
Activity ID	Activity Name	Original Duration	Start	Finish
Land Portion E1 23,744nrs		67	13-Jun-13 A	23-Aug-13 A
VBDE1-010	Vertical Band Drains 23,744nrs by marine plant at PE1 (750nrs/day) upto 23Aug2013	67	13-Jun-13 A	23-Aug-13 A
Marine Fill		310	16-May-13 A	20-Apr-14 A
Temporary Bund		175	16-May-13 A	20-Nov-13 A
TB0010	Construction of Enclosed Temp Seawall East-North Corner ((3+19)*4/2)=44m2x720m 31,680m3 (2,000m3/day)	21	16-May-13 A	07-Jun-13 A
TB0020	Construction of Enclosed Temp Seawall West-South Corner ((3+19)*4/2)=44m2x720m 31,680m3 (2,000m3/day)	21	08-Jun-13 A	30-Jun-13 A
TB0030	Construction of Northern side Temp Seawall to C118 13,200m3 (2,000m3/day)	19	01-Nov-13 A	20-Nov-13 A
TB0040	Construction of Northern side Temp Seawall to C122 13,200m3 (2,000m3/day)	56	21-Aug-13 A	20-Oct-13 A
Land Portion A		281	06-Jun-13 A	09-Apr-14 A
MFA0-010	Marine Fill Type A Sand 100% at PA Edge Area at C118 - C121 268,813m3 20,000m3/day	11	29-Dec-13 A	09-Jan-14 A
MFA0-020	Marine Fill Type A Sand 100% at PA Main Area (Enclosed Area PCB) 311,884m3 upto 29Jul2013	50	06-Jun-13 A	29-Jul-13 A
MFA0-030	Marine Fill Type A Sand 100% at PA Main Area (Enclosed Area PCB) 367,000m3 15,000m3/day	45	30-Jul-13 A	16-Sep-13 A
MFA0-040	Marine Fill Type A Sand 100% at PA Main Area 90,000m3 15,000m3/day PCB West	12	17-Sep-13 A	28-Sep-13 A
MFA0-050	Marine Fill Type A Sand 100% at PA Main Area 330,000m3 20,000m3/day PCB West	47	30-Sep-13 A	18-Nov-13 A
MFA0-060	Marine Fill Type A Sand 100% at PA Edge Area at C122 - C126 359,854m3 30,000m3/day	20	19-Nov-13 A	10-Dec-13 A
MFA0-070	Marine Fill Type A Sand 100% at PA Edge Area at C127 - C134 339,206m3 30,000m3/day CLP Substation	99	11-Dec-13 A	31-Mar-14 A
MFA0-080	Marine Fill Type A Sand 100% at PA 356,482m3 20,000m3/day other areas	96	22-Dec-13 A	09-Apr-14 A
Land Portion C1b		106	23-Dec-13 A	20-Apr-14 A
MFC1b-010	PC1b West Sand Fill upto +2.5mPD 680,000m3 20,000m3/day	106	23-Dec-13 A	20-Apr-14 A
Vertical Band Drains by Land Plant		417	17-Jan-13 A	09-Mar-14 A
Land Portion A 233,590nrs		417	17-Jan-13 A	09-Mar-14 A
VBDA0-010	Vertical Band Drains 21,696nrs by marine plant at PA PCB 17Jan13' to 7Jun13	129	17-Jan-13 A	07-Jun-13 A
VBDA0-020	Vertical Band Drains 407nrs by land plant at PA PCB upto 20Oct2013	35	13-Sep-13 A	20-Oct-13 A
VBDA0-030	Vertical Band Drains 21,000nrs by Land plant at PA PCB from 21Oct2013 to 19Nov2013	26	21-Oct-13 A	19-Nov-13 A
VBDA0-040	Vertical Band Drains 54,757nrs by Land plant at PA PCB East 3,000nrs/day	13	19-Nov-13 A	02-Dec-13 A
VBDA0-050	Vertical Band Drains 32,115nrs by Land plant at PA PCB West 3,000nrs/day	35	03-Dec-13 A	09-Jan-14 A
VBDA0-070	Vertical Band Drains 64,615nrs by Land plant at PA C122 - C126 Edge Side 1,400nrs/day (2VP)	51	10-Jan-14 A	09-Mar-14 A
Land Portion B 304,328nrs		130	19-Jul-13 A	05-Dec-13 A
Main Area 201,530nrs by Land		130	19-Jul-13 A	05-Dec-13 A
VBDB0-020	Vertical Band Drains by Marine plant at PB Main K028 - K054 47,530nrs from 19Jul13 to 5Dec2013	130	19-Jul-13 A	05-Dec-13 A
Land Portion C1b 98,260nrs by Land		98	02-Dec-13 A	09-Mar-14 A
VBDC1b-005	Vertical Band Drains 67,850nrs by Marine plant at PC1b	98	02-Dec-13 A	09-Mar-14 A
Earthwork Fill		57	18-Dec-13 A	22-Feb-14 A
Land Portion A		57	18-Dec-13 A	22-Feb-14 A
EFA0-010	Earthwork Fill Type D Sand 100% at PA (PCB East) 283,185m3 30,000m3/day	27	18-Dec-13 A	15-Jan-14 A
EFA0-030	Earthwork Fill Type D Sand 100% at PA (PCB West) 283,185m3 30,000m3/day	44	01-Jan-14 A	22-Feb-14 A
Surcharge		207	16-Jan-14 A	10-Aug-14 A
Temporary Jettys		18	22-Feb-14 A	14-Mar-14 A



Activity ID	Activity Name	Original Duration	Start	Finish
1st Temporary Jetty at C118		18	22-Feb-14 A	14-Mar-14 A
TP10020	Marine Piling 10nrs	18	22-Feb-14 A	14-Mar-14 A
Portion A Surcharge		207	16-Jan-14 A	10-Aug-14 A
Main Reclamation Areas		207	16-Jan-14 A	10-Aug-14 A
A1 PCB East		207	16-Jan-14 A	10-Aug-14 A
SURA0-110	Sand Surcharge Laying upto +11.5mPD at PA PCB East 446,001m3 30,000m3/day	14	16-Jan-14 A	04-Feb-14 A
SURA0-120	PA PCB East Surcharge Period +11.5mPD 6mths (8-2=6mths)	187	05-Feb-14 A	10-Aug-14 A
A1 PCB West		207	16-Jan-14 A	10-Aug-14 A
SURA0-210	Sand Surcharge Laying upto +11.5mPD at PA PCB West 446,002m3 30,000m3/day	32	16-Jan-14 A	23-Feb-14 A
SURA0-220	PA PCB WEST Surcharge Period +11.5mPD 6mths (8-2=6mths)	168	24-Feb-14 A	10-Aug-14 A
Geotechnical Instrumentation Works		193	01-Jun-13 A	20-Jan-14 A
Geotechnical Instrumentation Works for Seawalls		76	21-Oct-13 A	20-Jan-14 A
Portion A Instrumentation - SD		24	02-Dec-13 A	31-Dec-13 A
SD-24 C123		24	02-Dec-13 A	31-Dec-13 A
CTSD-240	Installation of SD-24 (C123) PA	24	02-Dec-13 A	31-Dec-13 A
SD-25 C128		24	02-Dec-13 A	31-Dec-13 A
CTSD-250	Installation of SD-25 (C128) PA	24	02-Dec-13 A	31-Dec-13 A
SD-26 C133		24	02-Dec-13 A	31-Dec-13 A
CTSD-260	Installation of SD-26 (C133) PA	24	02-Dec-13 A	31-Dec-13 A
Cluster Type SC 3nrs Strain Guage and Inclinometer Cluster inside cells		9	10-Jan-14 A	20-Jan-14 A
SC-3 C108 Portion C2a		9	10-Jan-14 A	20-Jan-14 A
CTSC3-010	Installation of SC-3 C108 PC2a	9	10-Jan-14 A	20-Jan-14 A
Cluster Type SE 26nrs Surface movement marker cluster at top of cell and sloping seawall		7	21-Oct-13 A	28-Oct-13 A
CTSE-240	Installation of SE-24 (C121) PA	7	21-Oct-13 A	28-Oct-13 A
CTSE-250	Installation of SE-25 (C126) PA	7	21-Oct-13 A	28-Oct-13 A
CTSE-260	Installation of SE-26 (C131) PA	7	21-Oct-13 A	28-Oct-13 A
Geotechnical Instrumentation Works for Reclamation RA & RB		41	01-Jun-13 A	20-Jul-13 A
RB		41	01-Jun-13 A	20-Jul-13 A
SMT1-010	Installation of RB at PA	41	01-Jun-13 A	20-Jul-13 A
Settlement Marker Type 2		41	01-Jun-13 A	20-Jul-13 A
SMT2-010	M2 - Installation of Settlement Marker Type2 at PA	41	01-Jun-13 A	20-Jul-13 A
Portion D		500	11-Dec-12 A	24-Apr-14 A
Submission		500	11-Dec-12 A	24-Apr-14 A
Design Submission		41	10-Mar-13 A	19-Apr-13 A
Settlement Assessment for Reclamation Areas at Portion D		41	10-Mar-13 A	19-Apr-13 A
PD-DGN-13080	Settlement Assessment for Reclamation Area at PD 4th comments	41	10-Mar-13 A	19-Apr-13 A
Method Statement Submission		500	11-Dec-12 A	24-Apr-14 A
Seawall		500	11-Dec-12 A	24-Apr-14 A



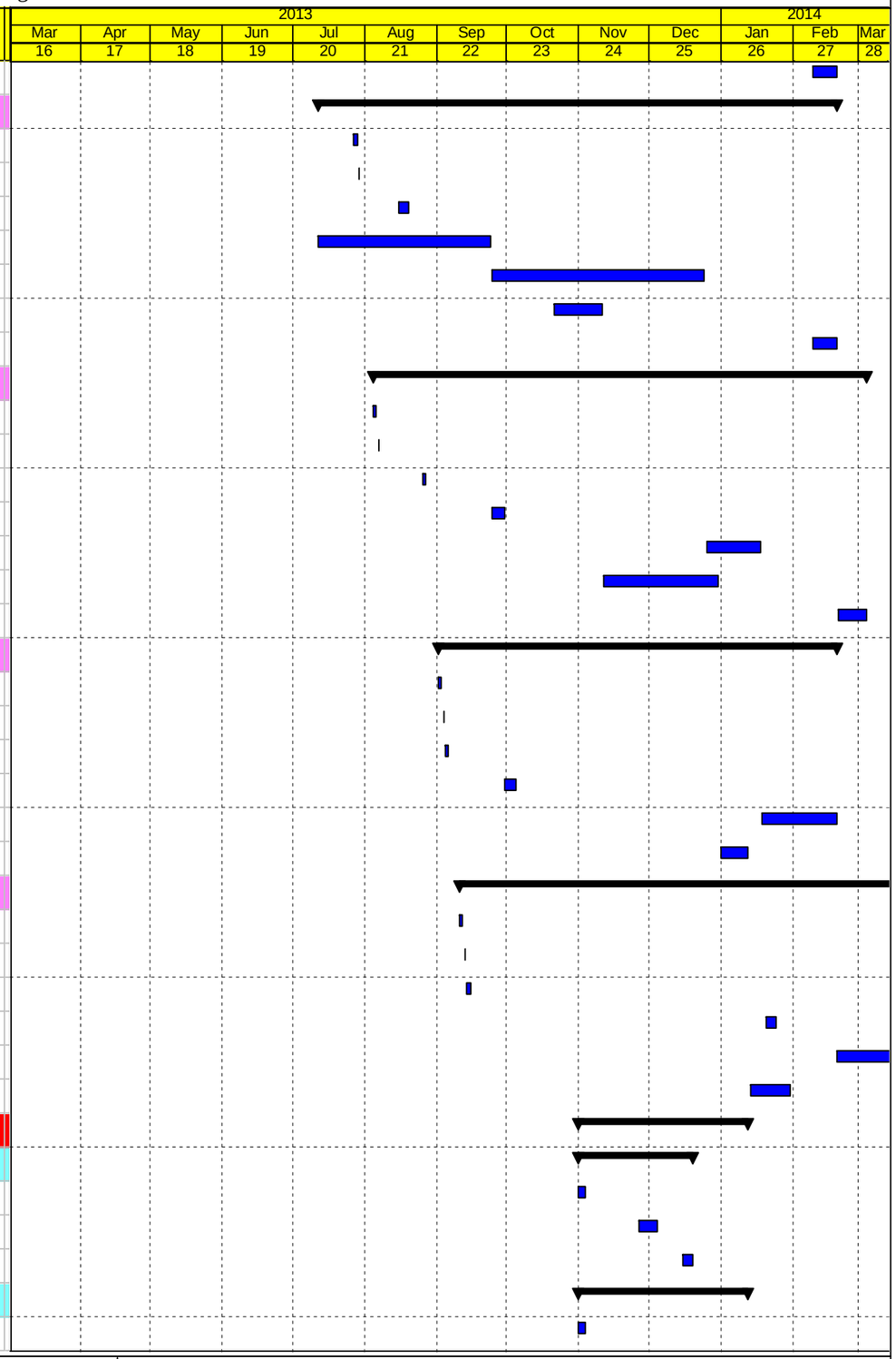
Activity ID	Activity Name	Original Duration	Start	Finish
PD-MTD-01040	MTD for Temporary Seawall Construction - Approval	500	11-Dec-12 A	24-Apr-14 A
Float & Sink installation of Culvert C1 - C4		500	11-Dec-12 A	24-Apr-14 A
PD-MTD-07020	MTD for Float & Sink of culvert C1 - C4 - Approval	500	11-Dec-12 A	24-Apr-14 A
Precast Yard for Seawall Blocks & Culverts		308	19-Apr-13 A	20-Feb-14 A
Concrete Blocks		308	19-Apr-13 A	20-Feb-14 A
PD-PY1-0100	Seawall Blocks for Temporary construction 1,190nrs	308	19-Apr-13 A	20-Feb-14 A
Stone Columns by Marine Plant		71	05-Feb-13 A	25-Apr-13 A
Stone Columns in Zone A 2,154nrs		46	05-Feb-13 A	29-Mar-13 A
A1630	PD Zone A Lower Stone Columns 357nrs/1166nrs AP1 upto 20Mar2013	38	05-Feb-13 A	20-Mar-13 A
A1634	PD Zone A Lower Stone Columns 119nrs/1166nrs (15nrs/day) AP1	8	21-Mar-13 A	29-Mar-13 A
Stone Columns in Zone B 2,906nrs		57	14-Feb-13 A	15-Apr-13 A
A1674	PD Zone B Lower Stone Columns 234nrs/1166nrs (15nrs/day) AP1	16	30-Mar-13 A	15-Apr-13 A
A1694	PD Zone B Upper Stone Columns 264nrs/1745nrs (15nrs/day) AP2	32	14-Feb-13 A	19-Mar-13 A
Stone Columns in Zone C 2,456nrs		51	05-Feb-13 A	03-Apr-13 A
A1580-30	PD Zone C Lower Stone Columns 772nrs/1,850nrs (15nrs/day) FTB16	51	05-Feb-13 A	03-Apr-13 A
A1580-50	PD Zone C Upper Stone Columns 326nrs/606nrs (15nrs/day) FTB-AP2 (subject to revise height limit by CAD)	12	19-Mar-13 A	31-Mar-13 A
Stone Columns at Box Culverts		31	23-Mar-13 A	25-Apr-13 A
A1604-32	PD C1 Culvert Stone Columns 118nrs/217nrs (15nrs/day) FTB16	8	23-Mar-13 A	31-Mar-13 A
A1604-34	PD C2 Culvert Stone Columns 175nrs/175nrs (15nrs/day) FTB16	23	01-Apr-13 A	25-Apr-13 A
A1604-50	PD C3 Culvert Stone Columns 120nrs/175nrs (15nrs/day) FTB-AP1	6	14-Apr-13 A	19-Apr-13 A
A1604-70	PD C4 Culvert Stone Columns 86nrs/147nrs (10nrs/day) FTB-AP1	5	20-Apr-13 A	25-Apr-13 A
Site Construction		276	29-Jun-13 A	31-Mar-14 A
Seawall Construction		265	29-Jun-13 A	20-Mar-14 A
Access at Portion D		11	26-Jan-14 A	11-Feb-14 A
Construction of Temporary Bridge		11	26-Jan-14 A	11-Feb-14 A
AA1010	Installation of Concrete Panel along Temporary Channel	2	26-Jan-14 A	28-Jan-14 A
AA1020	Prepare the Formation	2	10-Feb-14 A	11-Feb-14 A
Temporary Seawall		241	29-Jun-13 A	20-Mar-14 A
S4 Temporary Seawall (160m)		30	29-Jun-13 A	31-Jul-13 A
PDS4-00010	Outside Existing Seawall 80m Stone Aggregate upto -2.5mPD (6,000m3)	3	29-Jun-13 A	02-Jul-13 A
PDS4-00020	Outside Existing Seawall 80m Stone Aggregate upto +2.5mPD (16,000m3)	8	03-Jul-13 A	10-Jul-13 A
PDS4-00030	Geotextile laying 8shts	3	11-Jul-13 A	14-Jul-13 A
PDS4-00040	EC1 stone aggregate (1,200m3)	6	15-Jul-13 A	20-Jul-13 A
PDS4-00050	Other 80m Stone Aggregrate upto -2.5mPD (6,000m3)	2	21-Jul-13 A	22-Jul-13 A
PDS4-00060	Other 80m Stone Aggregate upto +2.5mPD (16,000m3)	8	23-Jul-13 A	31-Jul-13 A
70m Zone of Airport Existing Seawall		189	27-Jul-13 A	20-Feb-14 A
PDAS-00010	Airport Existing Seawall 70m Stone Aggregate upto -2.5mPD (7,000m3)	5	27-Jul-13 A	01-Aug-13 A
PDAS-00020	Airport Existing Seawall 70m Stone Aggregate upto +2.5mPD (30,000m3)	18	02-Aug-13 A	20-Aug-13 A



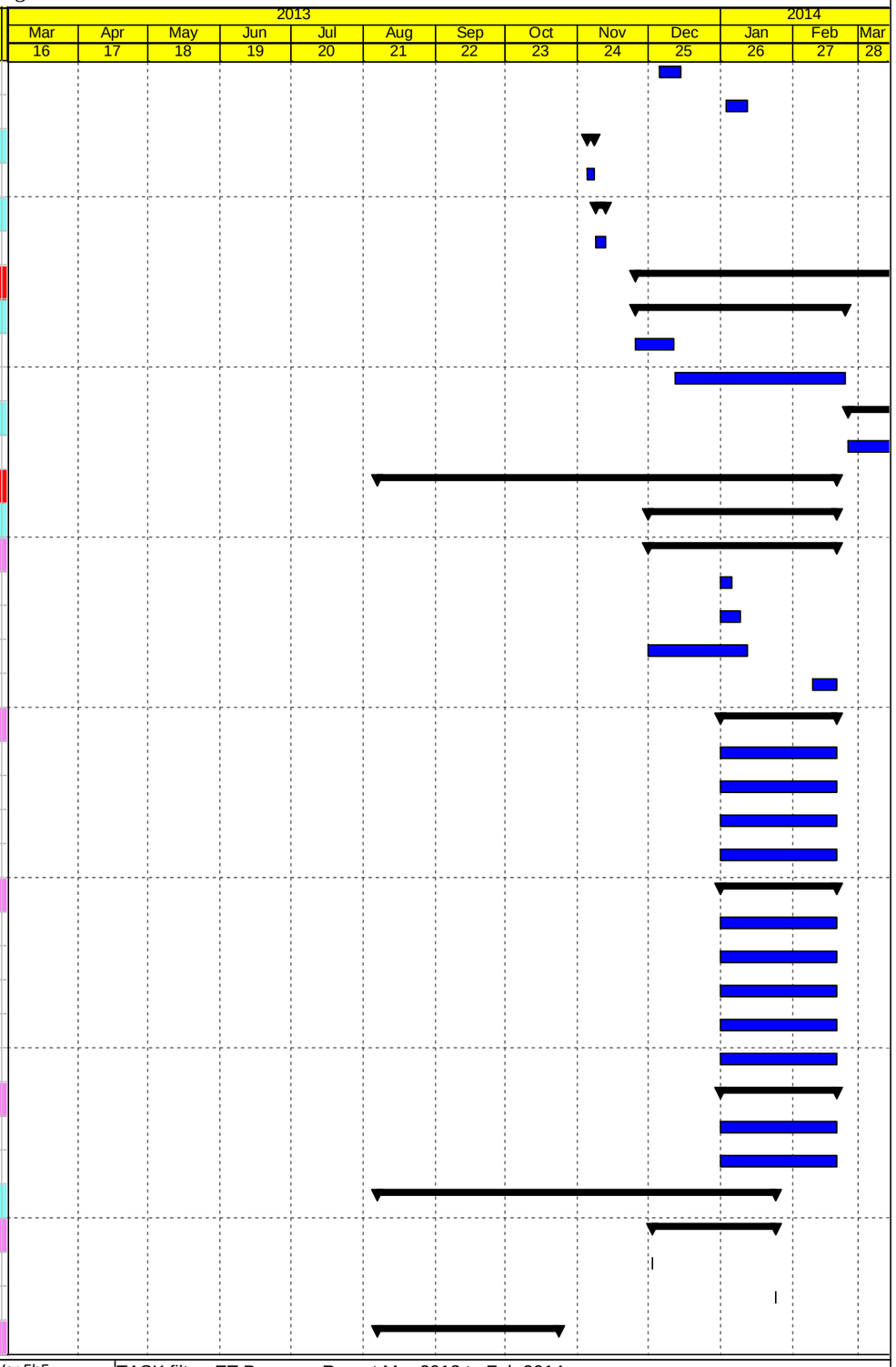
Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

TASK filter: ET Progress Report Mar 2013 to Feb 2014.
Resource Profile Filter:Aggregate.Stone Aggregate (cum)

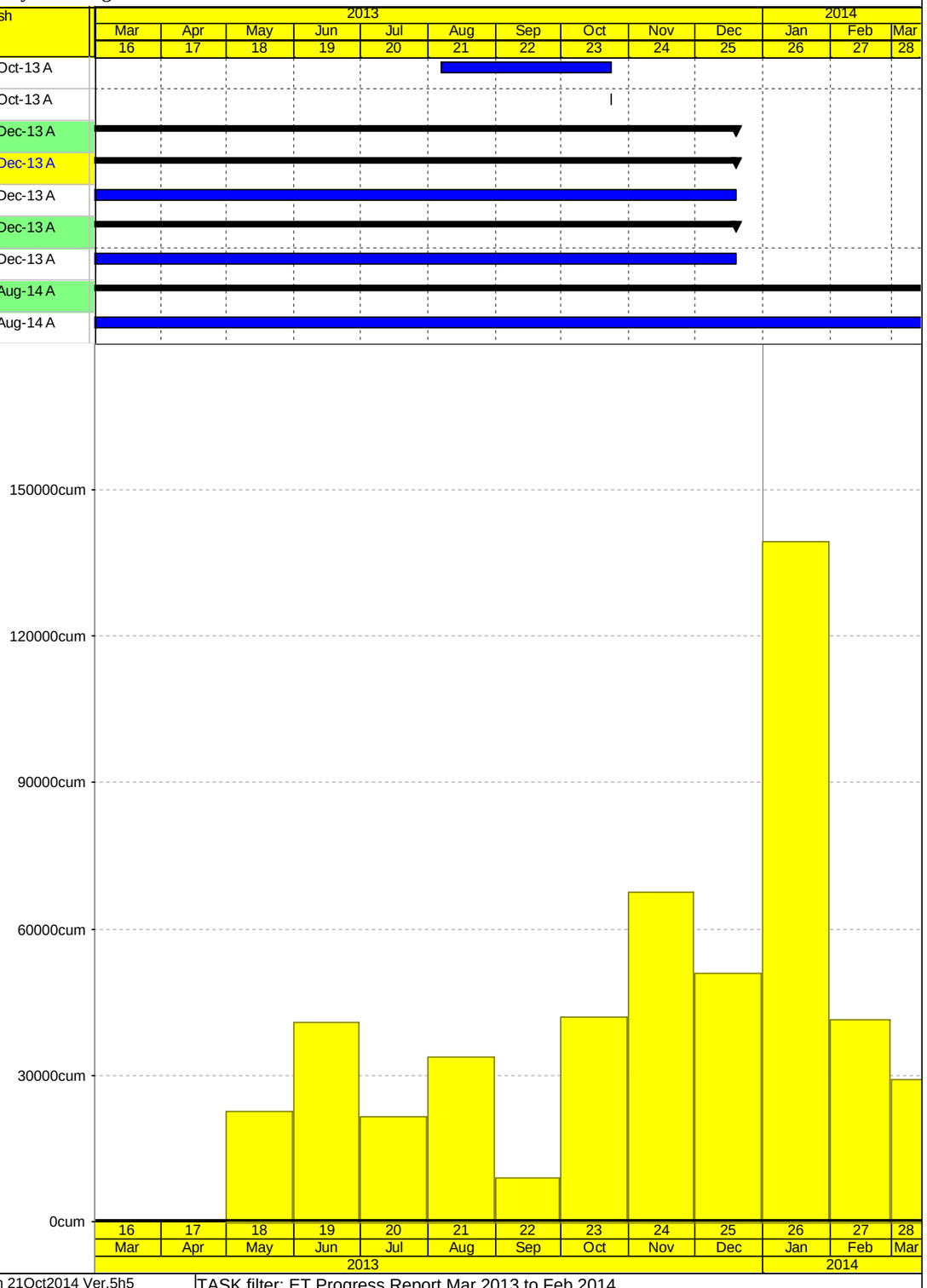
Activity ID	Activity Name	Original Duration	Start	Finish
PDAS-00030	Airport Existing Seawall 70m Seawall blocks installation 200nrs	10	10-Feb-14 A	20-Feb-14 A
Temporary Seawall CH6+136 - CH6+000 (136m)		203	12-Jul-13 A	20-Feb-14 A
PDTS-10010	Stone Blanket (10,000m3)	2	27-Jul-13 A	29-Jul-13 A
PDTS-10020	Geotextile Laying 12shts	1	30-Jul-13 A	30-Jul-13 A
PDTS-10025	S1 Temporary Seawall Rockfill type2 2,400m3	5	16-Aug-13 A	20-Aug-13 A
PDTS-10030	S1 Temporary Seawall Rockfill Type 1	69	12-Jul-13 A	24-Sep-13 A
PDTS-10040	S1 West1 Temporary Seawall Stone Aggregate 43,526m3 2,500m3/day	85	25-Sep-13 A	25-Dec-13 A
PDTS-10050	V2 West1 Temporary Seawall Stone Aggregate 45,198m3 2,500m3/day	20	21-Oct-13 A	11-Nov-13 A
PDTS-10060	V2 West1 Temporary Seawall Seawall blocks installation 350nrs	10	10-Feb-14 A	20-Feb-14 A
Temporary Seawall CH6+000 - CH5+900 (100m)		193	05-Aug-13 A	05-Mar-14 A
PDTS-20010	Stone Blanket (6,100m3)	2	05-Aug-13 A	06-Aug-13 A
PDTS-20020	Geotextile Laying 12shts	1	07-Aug-13 A	07-Aug-13 A
PDTS-20025	S1 Temporary Seawall Rockfill type2 2,400m3	2	26-Aug-13 A	27-Aug-13 A
PDTS-20030	S1 Temporary Seawall Rockfill type1 9,500m3	5	25-Sep-13 A	30-Sep-13 A
PDTS-20040	S1 West2 Temporary Seawall Stone Aggregate 43,526m3 2,500m3/day	23	26-Dec-13 A	18-Jan-14 A
PDTS-20050	V2 West2 Temporary Seawall Stone Aggregate 45,198m3 2,500m3/day	47	12-Nov-13 A	31-Dec-13 A
PDTS-20060	V2 West2 Temporary Seawall Seawall blocks installation 350nrs	12	21-Feb-14 A	05-Mar-14 A
Temporary Seawall CH5+900 - CH5+800 (100m)		156	02-Sep-13 A	20-Feb-14 A
PDTS-30010	Stone Blanket (7,900m3)	2	02-Sep-13 A	03-Sep-13 A
PDTS-30020	Geotextile Laying 12shts	1	04-Sep-13 A	04-Sep-13 A
PDTS-30025	S1 Temporary Seawall Rockfill type2 2,400m3	2	05-Sep-13 A	06-Sep-13 A
PDTS-30030	S1 Temporary Seawall Rockfill type1 9,500m3	6	30-Sep-13 A	05-Oct-13 A
PDTS-30040	S1 East1 Temporary Seawall Stone Aggregate 43,526m3 2,500m3/day	26	19-Jan-14 A	20-Feb-14 A
PDTS-30050	V2 East1 Temporary Seawall Stone Aggregate 45,198m3 2,500m3/day	12	01-Jan-14 A	13-Jan-14 A
Temporary Seawall CH5+800 - CH5+650 (150m)		173	11-Sep-13 A	20-Mar-14 A
PDTS-40010	Stone Blanket (7,900m3)	2	11-Sep-13 A	12-Sep-13 A
PDTS-40020	Geotextile Laying 11shts	1	13-Sep-13 A	13-Sep-13 A
PDTS-40025	S1 Temporary Seawall Rockfill type2 2,400m3	2	14-Sep-13 A	16-Sep-13 A
PDTS-40030	S1 East2 Temporary Seawall Rockfill type1 14,600m3	5	21-Jan-14 A	25-Jan-14 A
PDTS-40040	S1 East2 Temporary Seawall Stone Aggregate 43,527m3 2,500m3/day	27	20-Feb-14 A	20-Mar-14 A
PDTS-40050	V2 East2 Temporary Seawall Stone Aggregate 45,198m3 2,500m3/day	15	14-Jan-14 A	31-Jan-14 A
Reclamation below +2.5mPD		69	01-Nov-13 A	13-Jan-14 A
West1 (South CH 0 - 100 & North CH 6136 - 6000)		47	01-Nov-13 A	20-Dec-13 A
A1630a	PD - Aggregate bedding & sand blanket at C1	4	01-Nov-13 A	04-Nov-13 A
A1630b	PD - Marine Fill Type A Sand 100% upto +0mPD at West1 30,540m3 5,000m3/day	9	27-Nov-13 A	05-Dec-13 A
A1630c	PD - Marine Fill Type A Sand 100% upto +2.5mPD at West1 30,540m3 5,000m3/day	5	16-Dec-13 A	20-Dec-13 A
West2 (South CH 100 - 225 & North CH 6000 - 5900)		69	01-Nov-13 A	13-Jan-14 A
A1630a10	PD - Aggregate bedding & sand blanket at C2	4	01-Nov-13 A	04-Nov-13 A



Activity ID	Activity Name	Original Duration	Start	Finish
A1630b10	PD - Marine Fill Type A Sand 100% upto +0mPD at West2 30,540m3 5,000m3/day	9	06-Dec-13 A	15-Dec-13 A
A1630c10	PD - Marine Fill Type A Sand 100% upto +2.5mPD at West2 30,540m3 5,000m3/day	9	04-Jan-14 A	13-Jan-14 A
East1 (South CH 225 - 325 & North CH 5900 - 5800)		4	05-Nov-13 A	08-Nov-13 A
A1635a	PD - Aggregate bedding & sand blanket at C3	4	05-Nov-13 A	08-Nov-13 A
East2 (South CH 325 - 450 & North CH 5800 - 5650)		4	09-Nov-13 A	13-Nov-13 A
A1635a10	PD - Aggregate bedding & sand blanket at C4	4	09-Nov-13 A	13-Nov-13 A
Vertical Band Drain by Land Base		126	26-Nov-13 A	31-Mar-14 A
Zone C & alternative 10,498nrs upto 23Feb2014		72	26-Nov-13 A	24-Feb-14 A
A1631	PD - Install vertical band drain at existing seawall 70m by land Plant 1,418nrs upto 12Dec2013	15	26-Nov-13 A	12-Dec-13 A
A1632	PD - Install vertical band drain 9,080nrs at West1 by Land Plant upto 24Feb2014 (4VP +2HP(NS))	58	13-Dec-13 A	24-Feb-14 A
Zone C & B1 outstanding 8,521nrs from 24Feb2014		35	25-Feb-14 A	31-Mar-14 A
A1635	PD - Install vertical band drain 8,520nrs by Land Plants 250nrs/day (4VP + 2HP(NS))	35	25-Feb-14 A	31-Mar-14 A
Instrumentation & Monitoring Requirements		198	07-Aug-13 A	20-Feb-14 A
West Portion		82	01-Dec-13 A	20-Feb-14 A
Vertical Seawalls - Cluster Type DV-1 & DV-2		82	01-Dec-13 A	20-Feb-14 A
DV-1010	PD - Surface Movements Marker (Type 3B) 4nrs west	6	01-Jan-14 A	06-Jan-14 A
DV-1020	PD - Combine Inclinometer and Extensometer 2nrs west	10	01-Jan-14 A	10-Jan-14 A
DV-1030	PD - Sub-surface Settlement Marker 2nrs west	44	01-Dec-13 A	13-Jan-14 A
DV-1040	PD - Settlement Marker (Type 2) 2nrs west	11	10-Feb-14 A	20-Feb-14 A
Sloping Seawalls - Cluster Type DS-1 & DS-2		51	01-Jan-14 A	20-Feb-14 A
DS-1010	PD - Surface Movement Marker (Type 3B) 4nrs east	51	01-Jan-14 A	20-Feb-14 A
DS-1020	PD - Combine Inclinometer and Extensiometer 2nrs east	51	01-Jan-14 A	20-Feb-14 A
DS-1030	PD - Sub-surface Settlement Marker 2nrs east	51	01-Jan-14 A	20-Feb-14 A
DS-1040	PD - Settlement Marker (Type 2) 2nrs east	51	01-Jan-14 A	20-Feb-14 A
Reclamation - Cluster Type RA 3sets		51	01-Jan-14 A	20-Feb-14 A
RA-1010	PD - Extensometer 3nrs	51	01-Jan-14 A	20-Feb-14 A
RA-1020	PD - Standpiipe / Casagrande Piezometer 3nrs	51	01-Jan-14 A	20-Feb-14 A
RA-1030	PD - Double Tip Virbrating Wire Piezometer 9nrs	51	01-Jan-14 A	20-Feb-14 A
RA-1040	PD - Sub-surface Settlement Marker 3nrs	51	01-Jan-14 A	20-Feb-14 A
RA-1050	PD - Settlement Marker (Type 2) 6nrs	51	01-Jan-14 A	20-Feb-14 A
Reclamation - Cluster Type RB 4sets		51	01-Jan-14 A	20-Feb-14 A
RB-1010	PD - Sub-Surface Settlement Marker 4nrs west	51	01-Jan-14 A	20-Feb-14 A
RB-1020	PD - Settlement Marker (Type 2) 4nrs west	51	01-Jan-14 A	20-Feb-14 A
East Portion		172	07-Aug-13 A	25-Jan-14 A
Reclamation - Cluster Type RA 1set		54	03-Dec-13 A	25-Jan-14 A
RA-1090	PD - Sub-surface Settlement Marker 1nr	1	03-Dec-13 A	03-Dec-13 A
RA-1100	PD - Settlement Marker (Type 2) 2nrs	1	25-Jan-14 A	25-Jan-14 A
Reclamation - Cluster Type RB 4sets		79	07-Aug-13 A	24-Oct-13 A



Activity ID	Activity Name	Original Duration	Start	Finish
RB-1030	PD - Sub-Surface Settlement Marker 4nrs east	79	07-Aug-13 A	24-Oct-13 A
RB-1040	PD - Settlement Marker (Type 2) 4nrs east	1	24-Oct-13 A	24-Oct-13 A
Works Area WA2 (Tung Chung)		615	30-Nov-11 A	20-Dec-13 A
Zone B		615	30-Nov-11 A	20-Dec-13 A
A3090	Maintenance of Site	615	30-Nov-11 A	20-Dec-13 A
Works Area WA4 (To Kau Wan)		548	23-Feb-12 A	20-Dec-13 A
A1910	Maintenance of Site Zone A	548	23-Feb-12 A	20-Dec-13 A
Works Area TKO Fill Bank		568	25-Sep-12 A	22-Aug-14 A
WA-TKO-1050	Maintainance of Site in Zone C	570	25-Sep-12 A	22-Aug-14 A



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

TASK filter: ET Progress Report Mar 2013 to Feb 2014.
Resource Profile Filter:Aggregate.Stone Aggregate (cum)

Appendix C - Implementation Schedule of Environmental Mitigation Measures

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Location	Implementation Status
Air Quality				
S5.5.6.1 of HKBCFEIA	A1	The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	All construction sites	V
S5.5.6.2 of HKBCFEIA and S4.8.1 of TKCLKLEIA	A2	Proper watering of exposed spoil should be undertaken throughout the construction phase: • Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; • Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; • A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones. • Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • When there are open excavation and reinstatement works, hoarding of not less than	All construction sites	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Location	Implementation Status
		2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period; • The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials; • Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously; • Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet; • Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding; • Any skip hoist for material transport should be totally enclosed by impervious sheeting; • Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top		

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Location	Implementation Status
		and the 3 sides; • Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed; • All unpaved roads/exposed area shall be watered which results in dust suppression by forming moist cohesive films among the discrete grains of road surface material. • No burning of debris or other materials on the works areas is allowed; • Water spray shall be used during the handling of fill material at the site and at active cuts, excavation and fill sites where dust is likely to be created; • Open dropping heights for excavated materials shall be controlled to a maximum height of 2m to minimise the fugitive dust arising from unloading; • During transportation by truck, materials shall not be loaded to a level higher than the side and tail boards, and shall be dampened or covered before transport. Materials having the potential to create dust shall not be loaded to a level higher than the side and tail boards, and shall be covered by a clean tarpaulin. The tarpaulin shall be properly secured and shall extend at least 300mm over the edges of the side and tail boards; • Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and		

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Location	Implementation Status
		• Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.		
S5.5.6.3 of HKBCFEIA and S4.8.1 of TKCLKLEIA	A3	The Contractor should undertake proper watering on all exposed spoil and associated work areas (with at least 8 times per day) throughout the construction phase.	All construction sites	V
S5.5.6.4 of HKBCFEIA and S4.11 of TKCLKLEIA	A4	Implement regular dust monitoring under EM&A programme during the construction stage.	Selected representative dust monitoring station	V
S5.5.7.1 of HKBCFEIA	A5	The following mitigation measures should be adopted to prevent fugitive dust emissions for concrete batching plant: • Loading, unloading, handling, transfer or storage of any dusty materials should be carried out in totally enclosed system; • All dust-laden air or waste gas generated by the process operations should be properly extracted and vented to fabric filtering system to meet the emission limits for TSP; • Vents for all silos and cement/ pulverised fuel ash (PFA) weighing scale should be	All construction sites	N/A

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Location	Implementation Status
		fitted with fabric filtering system; • The materials which may generate airborne dusty emissions should be wetted by water spray system; • All receiving hoppers should be enclosed on three sides up to 3m above unloading point; • All conveyor transfer points should be totally enclosed; • All access and route roads within the premises should be paved and wetted; and • Vehicle cleaning facilities should be provided and used by all concrete trucks before leaving the premises to wash off any dust on the wheels and/or body.		
S5.5.2.7 of HKBCFEIA	A6	The following mitigation measures should be adopted to prevent fugitive dust emissions at barging point: • All road surface within the barging facilities will be paved; • Dust enclosures will be provided for the loading ramp; • Vehicles will be required to pass through designated wheels wash facilities; and • Continuous water spray at the loading points.	All construction sites	N/A (Construction in process)
Construction Noise (Air borne)				
S6.4.10 of HKBCFEIA	N1	Use of good site practices to limit noise emissions by considering the following: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme;	All construction sites	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Location	Implementation Status
		• machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; • silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works; • mobile plant should be sited as far away from NSRs as possible and practicable; • material stockpiles, mobile container site officer and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.		
S6.4.11 of HKBCFEIA	N2	Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.	All construction sites	V
S6.4.12 of HKBCFEIA	N3	Install movable noise barriers (typically density @14kg/m^2), acoustic mat or full enclosure close to noisy plants including air compressor, generators, saw.	For plant items listed in Appendix 6D of the EIA report at all construction sites	N/A
S6.4.13 of HKBCFEIA	N4	Select “Quiet plants” which comply with the BS 5228 Part 1 or TM standards.	For plant items listed in Appendix 6D of the EIA report at all	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Location	Implementation Status
			construction sites	
S6.4.14 of HKBCFEIA	N5	Sequencing operation of construction plants where practicable.	All construction sites where practicable	V
S5.1 of TMCLKLEIA	N6	Implement a noise monitoring under EM&A programme.	Selected representative noise monitoring station	V
Waste Management (Construction Waste)				
S12.6 of TMCLKLEIA	WM1	The Contractor shall identify a coordinator for the management of waste.	All construction sites	V
S12.6 of TMCLKLEIA	WM2	The Contractor shall apply for and obtain the appropriate licenses for the disposal of public fill, chemical waste and effluent discharges.	All construction sites	V
S12.6 of TMCLKLEIA	WM3	EM&A of waste handling, storage, transportation, disposal procedures and documentation through the site audit programme shall be undertaken.	All construction sites	V
S8.3.8 of HKBCFEIA and S12.6 of TMCLKLEIA	WM4	*Construction and Demolition Material* The following mitigation measures should be implemented in handling the waste: • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; • Carry out on-site sorting; • Make provisions in the Contract documents to allow and promote the use of	All construction sites	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Location	Implementation Status
		recycled aggregates where appropriate; • Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; • Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; • Implement an enhanced Waste Management Plan similar to ETWBTC (Works) No. 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction; • In addition, disposal of the C&D materials onto any sensitive locations such as agricultural lands, etc. should be avoided. The Contractor shall propose the final disposal sites to the Project Proponent and get its approval before implementation; and • The surplus surcharge should be transferred to a fill bank.		
S8.3.9-S8.3.11 of HKBCFEIA and S12.6 of TMCLKLEIA	WM5	*C&D Waste* • Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. Metal hoarding and falsework should	All construction sites	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Location	Implementation Status
		be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage. • The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage.		
S8.2.12-S8.3.15 of HKBCFEIA and S12.6 of TMCLKLEIA	WM6	*Chemical Waste* • Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. • Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 liters unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation. • The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3 sides; have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the	All construction sites	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Location	Implementation Status
		largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest; have adequate ventilation; covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated. • Disposal of chemical waste should be via a licensed waste collector; be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre which also offers a chemical waste collection service and can supply the necessary storage containers; or be to a reuser of the waste, under approval from the EPD.		
S8.3.16 of HKBCFEIA and S12.6 of TMCLKLEIA	WM7	*Sewage* • Adequate numbers of portable toilets should be provided for the workers. The portable toilets should be maintained in a state, which will not deter the workers from utilizing these portable toilets. Night soil should be collected by licensed collectors regularly.	All construction sites	V
S8.3.17 of HKBCFEIA and S12.6 of TMCLKLEIA	WM8	*General Refuse* • The site and surroundings shall be kept tidy and litter free. General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes. • A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law.	All construction sites	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Location	Implementation Status
		• Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit should be provided if feasible. • Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme should be considered by the Contractor. In addition, waste separation facilities for paper, aluminum cans, plastic bottles etc., should be provided. • Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including reduction, reuse and recycling of wastes. • Sufficient dustbins shall be provided for storage of waste as required under the Public Cleansing and Prevention of Nuisances By-laws. In addition, general refuse shall be cleared daily and shall be disposed of to the nearest licensed landfill or refuse transfer station. • All waste containers shall be in a secure area on hardstanding.		

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Location	Implementation Status
Water Quality (Construction Phase)				
	W1	Mitigation during the marine works to reduce impacts to within acceptable levels have been recommended and will comprise a series of measures that restrict the method and sequencing of backfilling, as well as protection measures. Details of the measures are provided below: • Reclamation filling for the Project shall not proceed until at least 200m of leading seawall at the reclamation area formed above +2.2mPD, unless otherwise agreement was obtained from EPD, except for the 300m gaps for marine access. All underwater filling works shall be carried out behind seawalls to avoid dispersion of suspended solids outside the Project limit; • Except for the filling of the cellular structures, not more than 15% public fill shall be used for reclamation filling below +2.5mPD during construction of the seawall; • After the seawall is completed except for the 300m marine access as indicated in the EPs, not more than 30% public fill shall be used for reclamation filling below +2.5mPD, unless otherwise agreement from EPD was obtained; • Upon completion of 200m leading seawall, no more than a total of 60 filling barge trips per day shall be made with a cumulative maximum daily filling rate of 60,000 m3 for HKBCF and TMCLKL southern landfall reclamation during the filling operation; and	During filling	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Location	Implementation Status
		• Upon completion of the whole section of seawall except for the 300m marine access as indicated in the EPs, no more than a total of 190 filling barge trips per day shall be made with a cumulative maximum daily filling rate of 190,000 m3 for the remaining filling operations for HKBCF and TMCLKL southern landfall reclamation. • Floating type perimeter silt curtains shall be around the HKBCF site before the commencement of marine works. Staggered layers of silt curtain shall be provided to prevent sediment loss at navigation accesses. The length of each staggered layers shall be at least 200m; • Single layer silt curtain to be applied around the North-east airport water intake; • The silt-curtains should be maintained in good condition to ensure the sediment plume generated from filling be confined effectively within the site boundary; • The filling works shall be scheduled to spread the works evenly over a working day; • Cellular structure shall be used for seawall construction; • A layer of geotextile shall be placed on top of the seabed before any filling activities take place inside the cellular structures to form the seawall; • The conveyor belts shall be fitted with windboards and conveyor release points shall be covered with curtain to prevent any spillage of filling materials onto the surrounding waters; and • An additional layer of silt curtain shall be installed near the active stone column		

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Location	Implementation Status
		installation points. A layer of geotextile with stone blanket on top shall be placed on the seabed prior to stone column installation works. • All vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash		
S9.11.1.3 of HKBCFEIA and S6.10 of TMCLKLEIA	W2	<u>Land Works</u> General construction activities on land should also be governed by standard good working practice. Specific measures to be written into the works contracts should include: • wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters; • sewage effluent and discharges from on-site kitchen facilities shall be directed to Government sewer in accordance with the requirements of the WPCO or collected for disposal offsite. The use of soakaways shall be avoided; • storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks;	All land-based construction sites	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Location	Implementation Status
		• silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm; • temporary access roads should be surfaced with crushed stone or gravel; • rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities; • measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system; • open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms; • manholes (including any newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers; • discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system; • all vehicles and plant should be cleaned before they leave the construction site to ensure that no earth, mud or debris is deposited by them on roads. A wheel washing bay should be provided at every site exit;		

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Location	Implementation Status
		• wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain; • the section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel; • wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects; • vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be located under roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor in accordance with the requirements of the WPCO or collected for offsite disposal; • the contractors shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up immediately; • waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance; • all fuel tanks and chemical storage areas should be provided with locks and be sited on sealed areas. The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank; and • surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the storm water system..		
S9.14 of	W3	Implement a water quality monitoring programme	At identified	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Location	Implementation Status
HKBCFEIA and S6.10 of TMCLKLEIA			monitoring location	
S6.10 of TMCLKLEIA	W4	All construction works shall be subject to routine audit to ensure implementation of all EIA recommendations and good working practice.	All construction site areas	V
Ecology (Construction Phase)				
S10.7 of HKBCFEIA and S8.14 of TMCLKLEIA	E1	• Install silt curtain during the construction • Limit works fronts • Construct seawall prior to reclamation filling where practicable • Good site practices • Strict enforcement of no marine dumping • Site runoff control • Spill response plan	Seawall, reclamation area	V
S10.7 of HKBCFEIA	E2	• Watering to reduce dust generation; prevention of siltation of freshwater habitats; Site runoff should be desilted, to reduce the potential for suspended sediments, organics and other contaminants to enter streams and standing freshwater.	Land-based works areas	V
S10.7 of HKBCFEIA and S8.14 of	E3	• Good site practices, including strictly following the permitted works hours, using quieter machines where practicable, and avoiding excessive lightings during night time.	Land-based works areas	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Location	Implementation Status
TMCLKLEIA				
S10.7 of HKBCFEIA and S8.14 of TMCLKLEIA	E4	• Dolphin Exclusion Zone • Dolphin watching plan	Marine works	V
S10.7 of HKBCFEIA and S8.14 of TMCLKLEIA	E5	• Decouple compressors and other equipment on working vessels • Proposal on design and implementation of acoustic decoupling measures applied during reclamation works • Avoidance of percussive piling	Marine works	V
S10.7 of HKBCFEIA and S8.14 of TMCLKLEIA	E6	• Control vessel speed • Skipper training • Predefined and regular routes for working vessels; avoid Brothers Islands	Marine traffic	V
S10.10 of HKBCFEIA and S8.14 of TMCLKLEIA	E7	• Vessel based dolphin monitoring	Northeast and Northwest Lantau	V
Fisheries				
S11.7 of HKBCFEIA	F1	• Reduce re-suspension of sediments • Limit works fronts	Seawall, reclamation area	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Location	Implementation Status
		• Good site practices • Strict enforcement of no marine dumping • Spill response plan		
S11.7 of HKBCFEIA	F2	• Install silt-grease trap in the drainage system collecting surface runoff	Reclamation area	V
Landscape & Visual (Construction Phase)				
S14.3.3. 3 of HKBCFEIA and S10.9 of TMCLKLEIA	LV1	*Mitigate Landscape Impacts* G1/CM4 Grass-hydroseed or sheeting bare soil surface and stock pile areas. G9 Reserve of loose natural granite rocks for re-use. Provide new coastline to adopt "natural-look" by means of using armour rocks in the form of natural rock materials and planting strip area accommodating screen buffer to enhance "natural-look" of new coastline.	All construction site areas	N/A
S10.9 of TMCLKLEIA	LV2	*Mitigate Landscape Impacts* CM7 Ensure no run-off into water body adjacent to the Project Area.	All construction site areas	V
S14.3.3. 3 of HKBCFEIA	LV4	*Mitigate Visual Impacts* V1 Minimize time for construction activities during construction period.	All construction site areas	V
S10.9 of TMCLKLEIA	LV5	*Mitigate Visual Impacts* CM6 Control night-time lighting and glare by hooding all lights.	All construction site areas	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Location	Implementation Status
EM&A				
S15.2.2 of HKBCFEIA	EM1	An Independent Environmental Checker needs to be employed as per the EM&A Manual.	All construction site areas	V
S15.5 - S15.6 of HKBCFEIA	EM2	• An Environmental Team needs to be employed as per the EM&A Manual. • Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. • An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.	All construction site areas	V

Legend: V = implemented; x = not implemented; N/A = not applicable

Appendix D - Summary of Action and Limit Levels

Table 1 – Action and Limit Levels for 1-hour TSP

Location	Action Level	Limit Level
AMS2	374 $\mu g/m^3$	500 $\mu g/m^3$
AMS3A*	368 $\mu g/m^3$	500 $\mu g/m^3$
AMS6	360 $\mu g/m^3$	500 $\mu g/m^3$
AMS7	370 $\mu g/m^3$	500 $\mu g/m^3$

Remarks: * Action Level set out at AMS3 Ho Yu College is adopted.

Table 2 – Action and Limit Levels for 24-hour TSP

Location	Action Level	Limit Level
AMS2	176 $\mu g/m^3$	260 $\mu g/m^3$
AMS3A*	167 $\mu g/m^3$	260 $\mu g/m^3$
AMS6	173 $\mu g/m^3$	260 $\mu g/m^3$
AMS7	183 $\mu g/m^3$	260 $\mu g/m^3$

Remarks: * Action Level set out at AMS3 Ho Yu College is adopted.

Table 3 – Action and Limit Levels for Construction Noise (0700-1900 hrs of normal weekdays)

Location	Action Level	Limit Level
NMS2	When one documented complaint, related to 0700 – 1900 hours on normal weekdays, is received from any one of the sensitive receivers	75 dB(A)
NMS3A		*65 / 70 dB(A)

*Daytime noise Limit Level of 70 dB(A) applies to education institutions, while 65dB(A) applies during school examination period.

Table 4 – Action and Limit Levels for Water Quality

Parameters	**Action**	**Limit**
DO in mg L^{-1} (Surface, Middle & Bottom)	Surface and Middle 5.0 Bottom 4.7	Surface and Middle 4 .2 (except 5 mg/L for FCZ) Bottom 3.6
SS in mg L^{-1} (depth-averaged)	23.5 and 120% of upstream control station's SS at the same tide of the same day	34.4 and 130% of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes
Turbidity in NTU (depth-averaged)	27.5 and 120% of upstream control station's turbidity at the same tide of the same day	47.0 and130% of upstream control station's turbidity at the same tide of the same day

Notes:

1. "depth-averaged" is calculated by taking the arithmetic means of reading of all three depths.
2. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
3. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

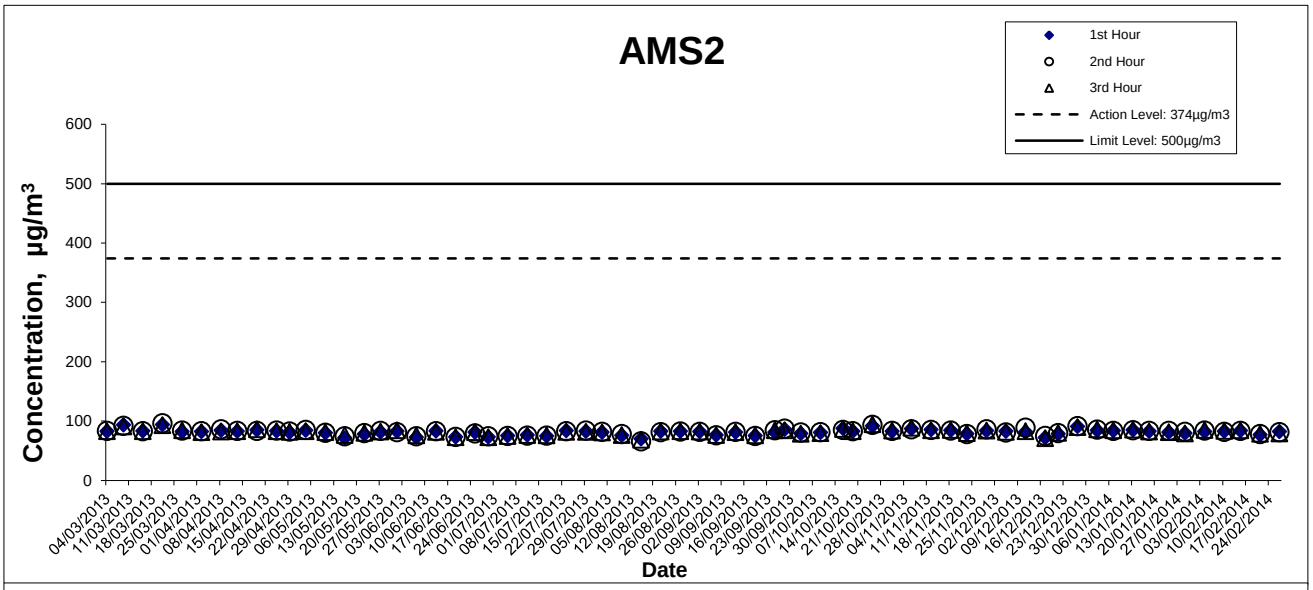
Table 5(a) Action and Limit Levels for Chinese White Dolphin Monitoring - Approach to Define Action Level (AL) and Limit Level (LL):

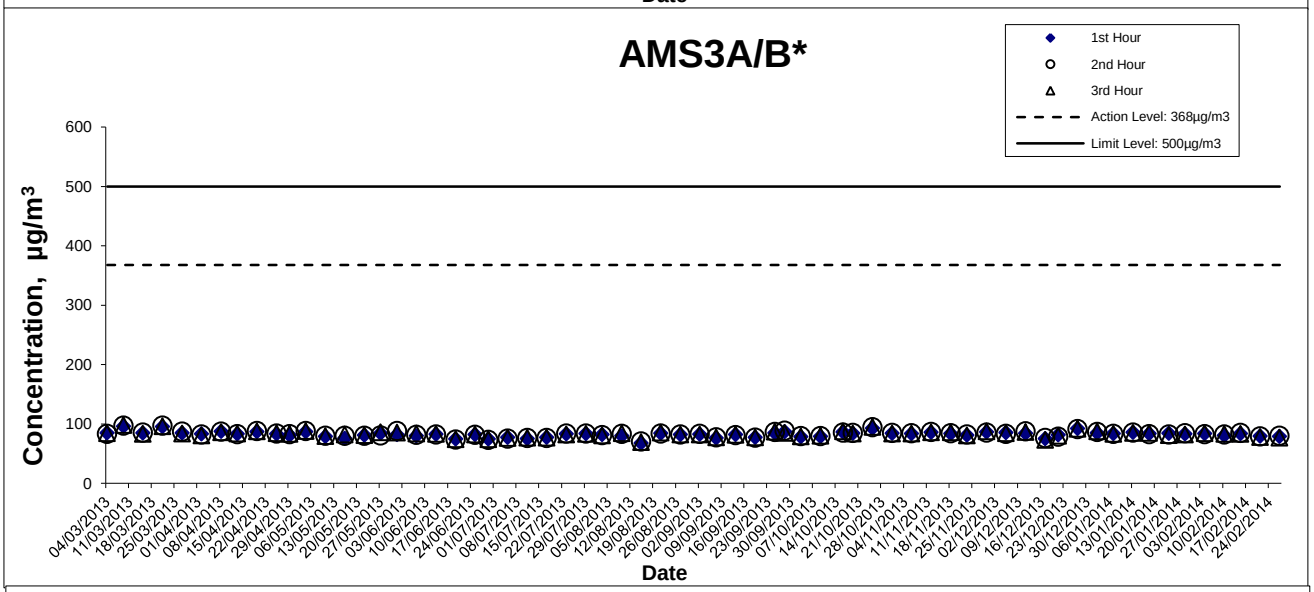
	North Lantau Social Cluster	
	NEL	**NWL**
Action Level	(STG < 70% of baseline) & (ANI < 70% of baseline)	(STG < 70% of baseline) & (ANI < 70% of baseline)
Limit Level	[(STG < 40% of baseline) & (ANI < 40% of baseline)] AND [(STG < 40% of baseline) & (ANI < 40% of baseline)]	

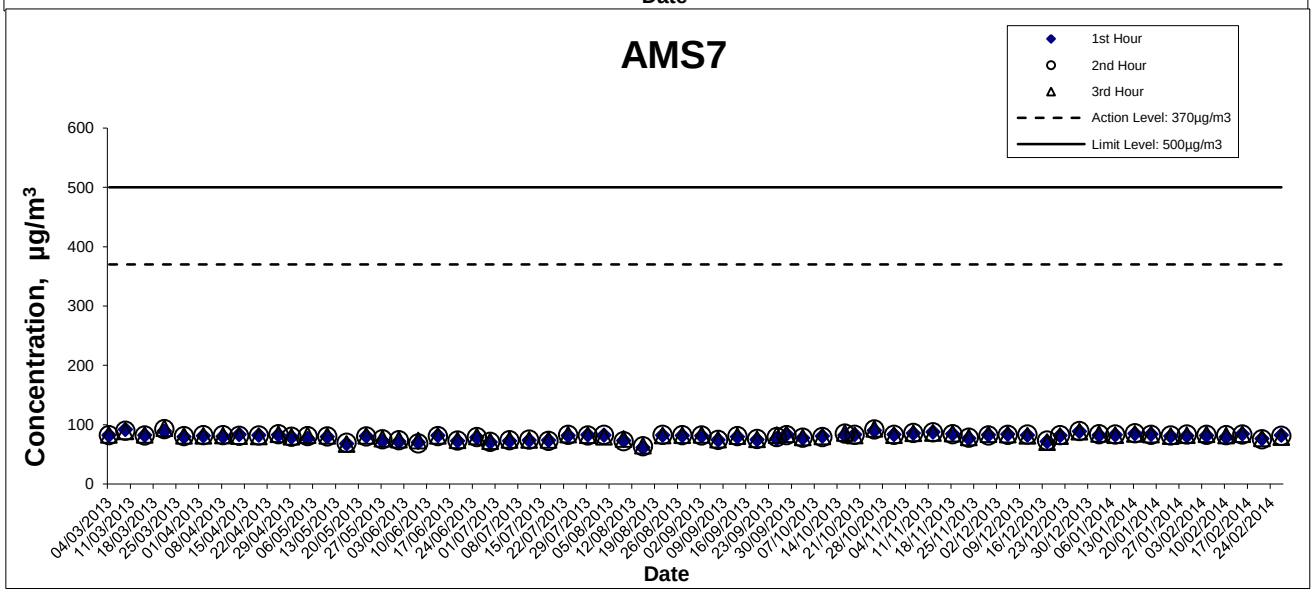
For North Lantau Social Cluster, action level will be trigger if either NEL **or** NWL fall below the criteria; limit level will be triggered if both NEL **and** NWL fall below the criteria.

Table 5(b) Derived Value of Action Level (AL) and Limit Level (LL) for Chinese White Dolphin Monitoring

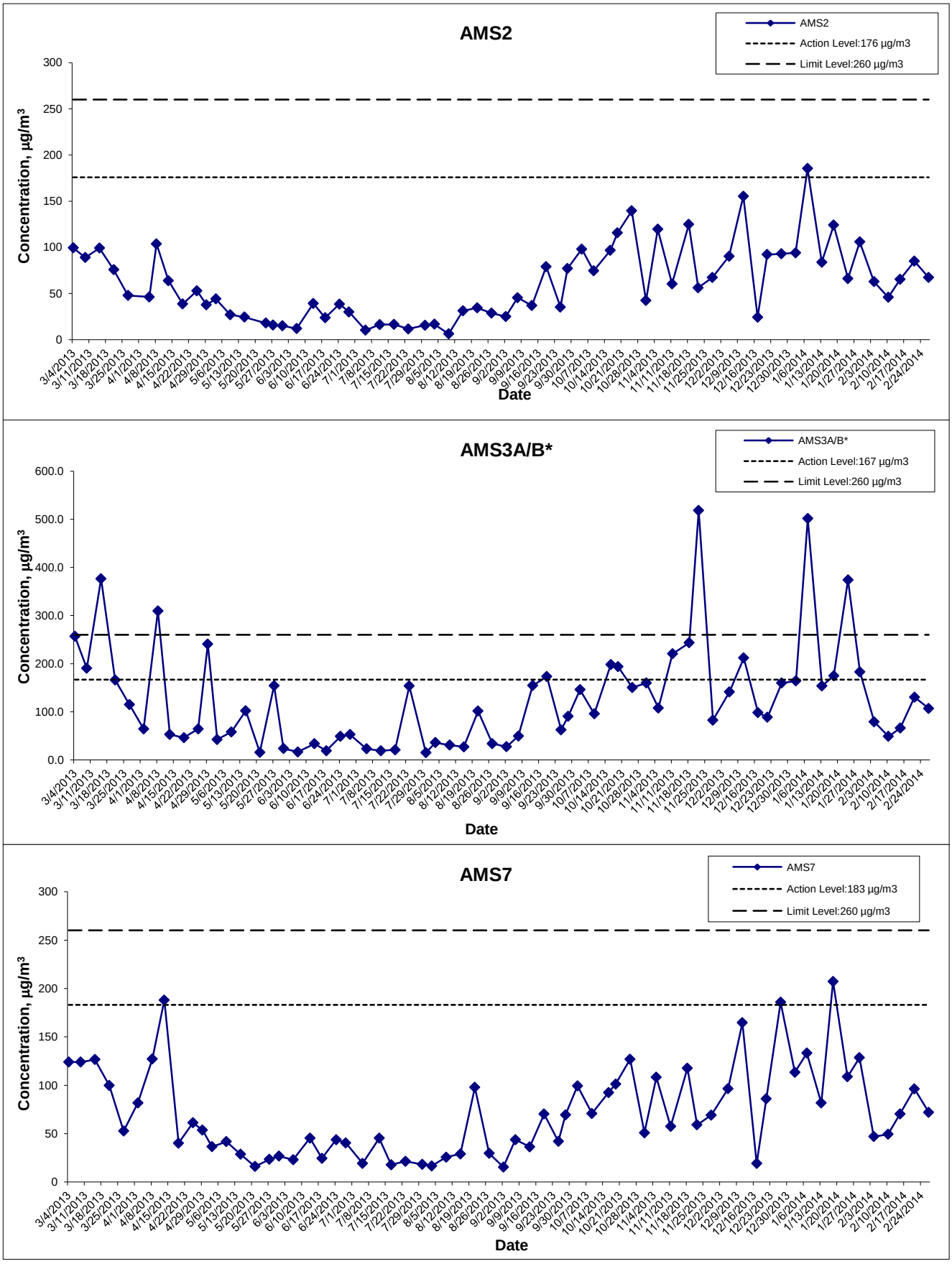
	North Lantau Social Cluster	
	NEL	**NWL**
Action Level	(STG < 4.2) & (ANI < 15.5)	(STG < 6.9) & (ANI < 31.3)
Limit Level	[(STG < 2.4) & (ANI <8.9)] AND [(STG < 3.9)& (ANI < 17.9)]	



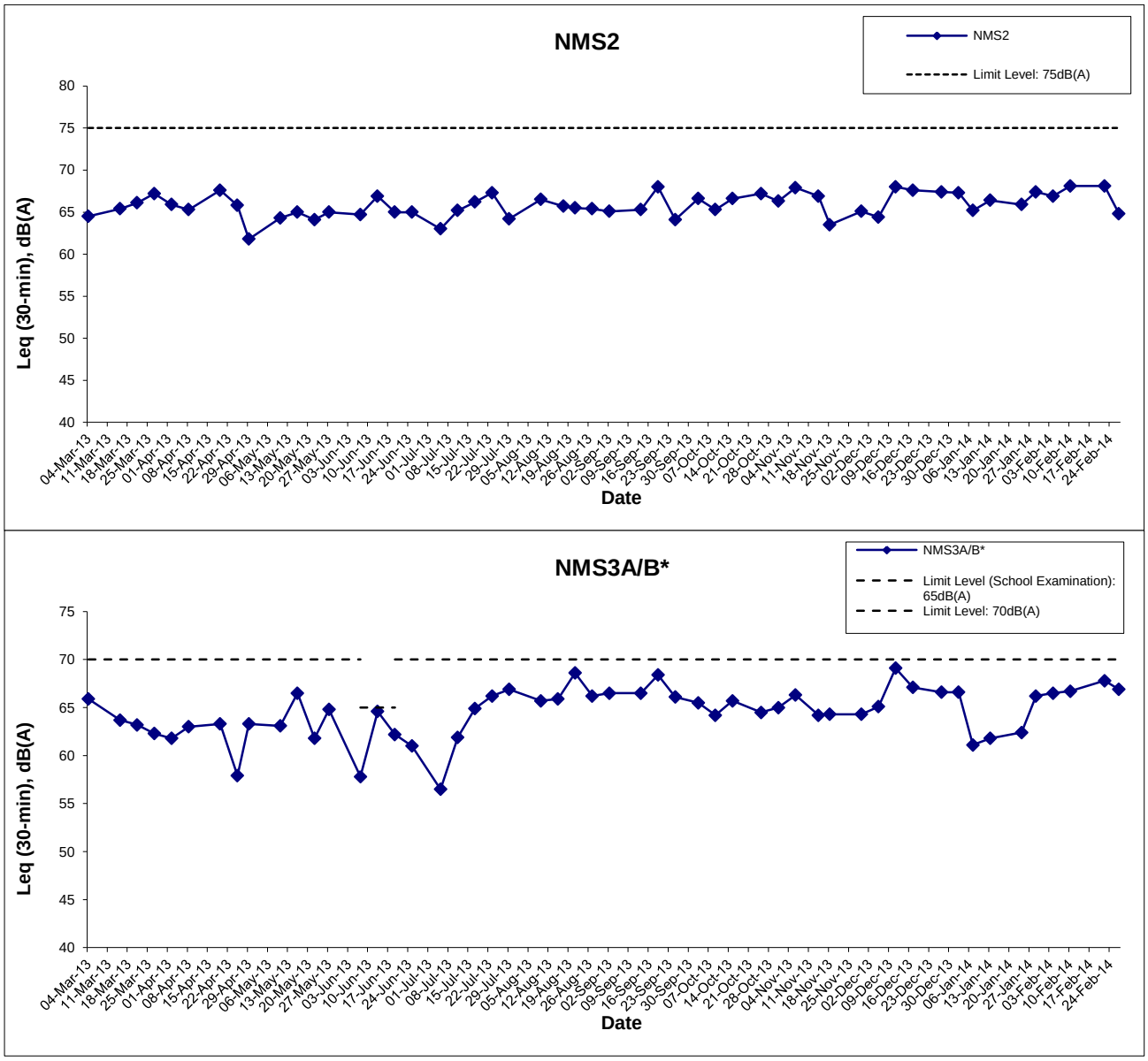




*The monitoring stations AMS3A was renamed to monitoring station AMS3B respectively after relocation on 29 January 2014.



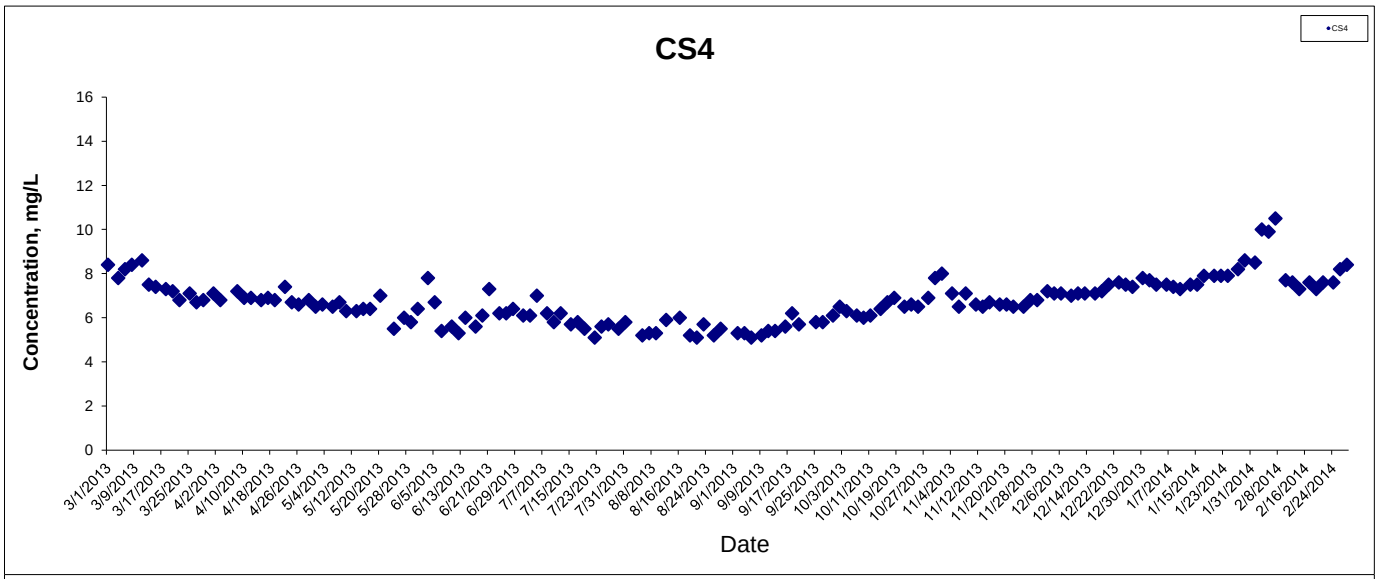
*The monitoring stations AMS3A was renamed to monitoring station AMS3B respectively after relocation on 29 January 2014.

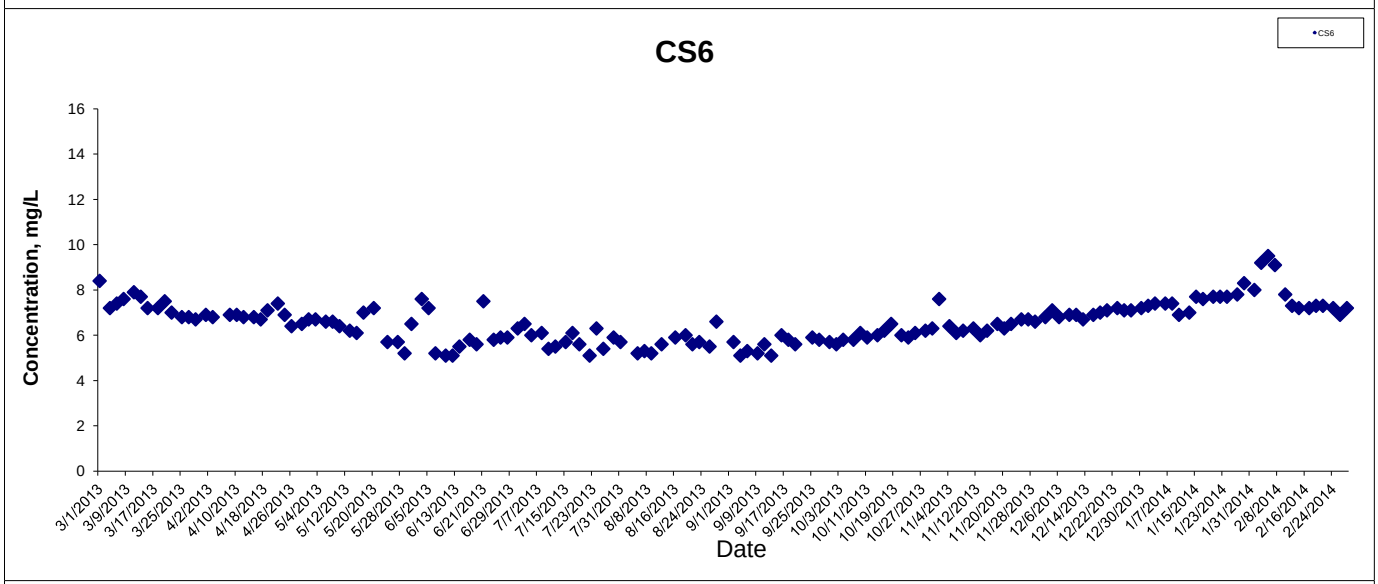


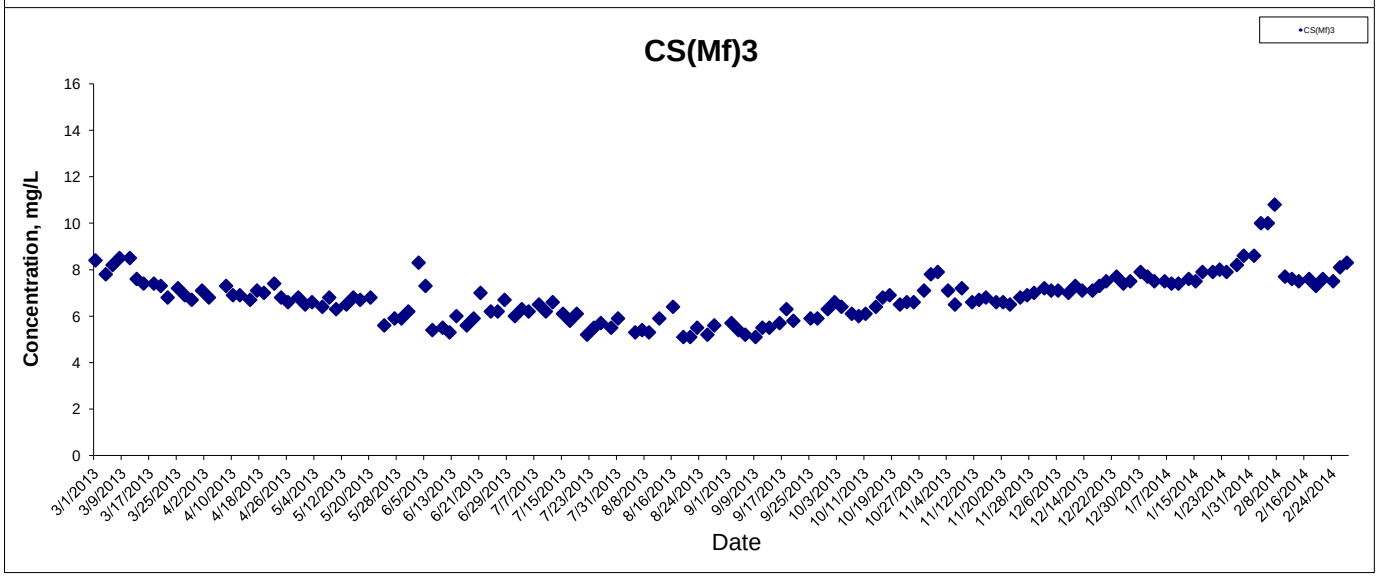
*The monitoring station NMS3A were renamed to monitoring station NMS3B after relocation on 29 January

Remarks: Effective from July 2012, the Limit Level at NMS3A was revised to 70dB(A). Daytime noise Limit Level of 70 dB(A) applies to education institutions, while 65dB(A) applies during school examination period.

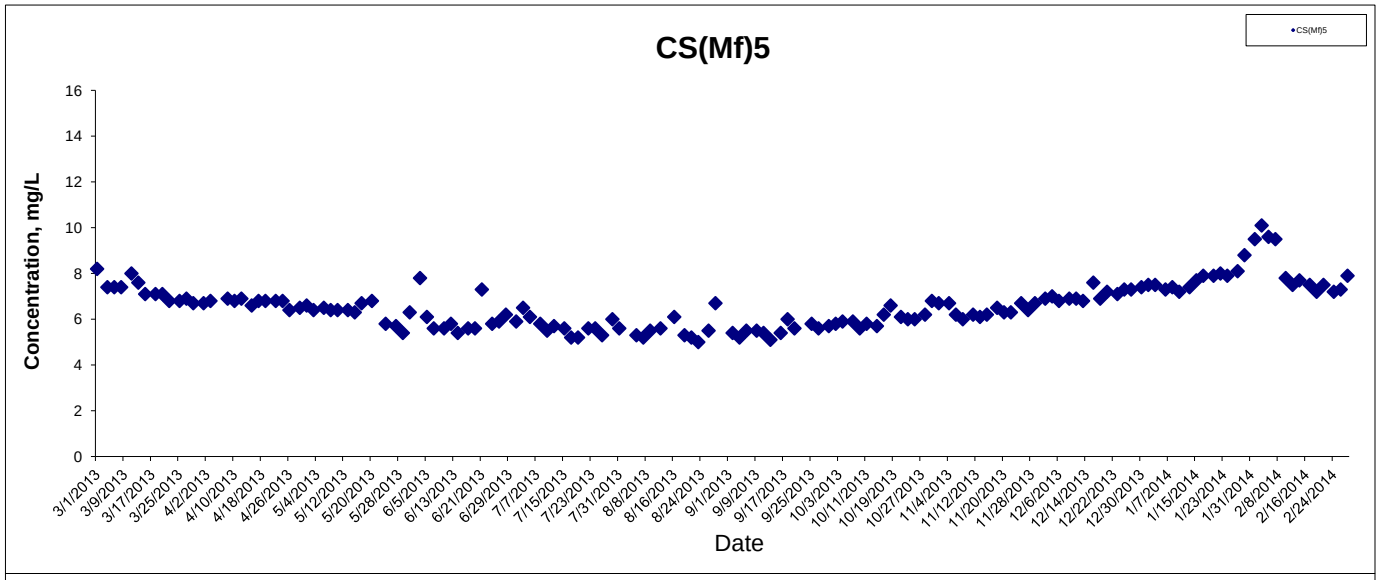
Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide

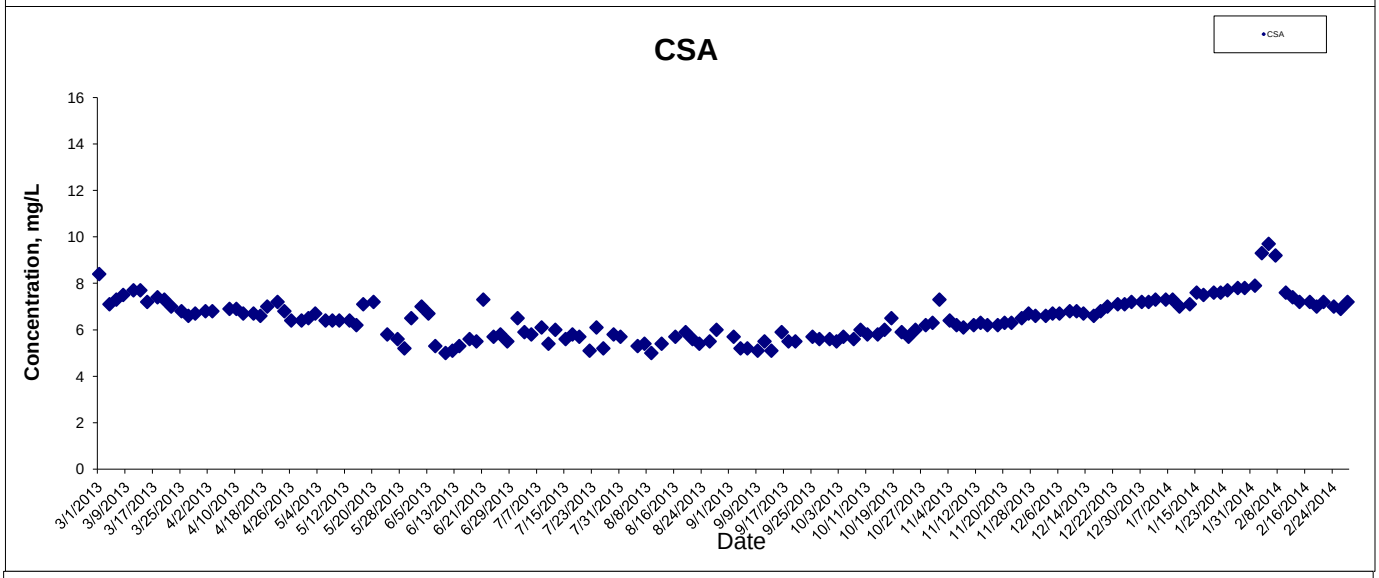


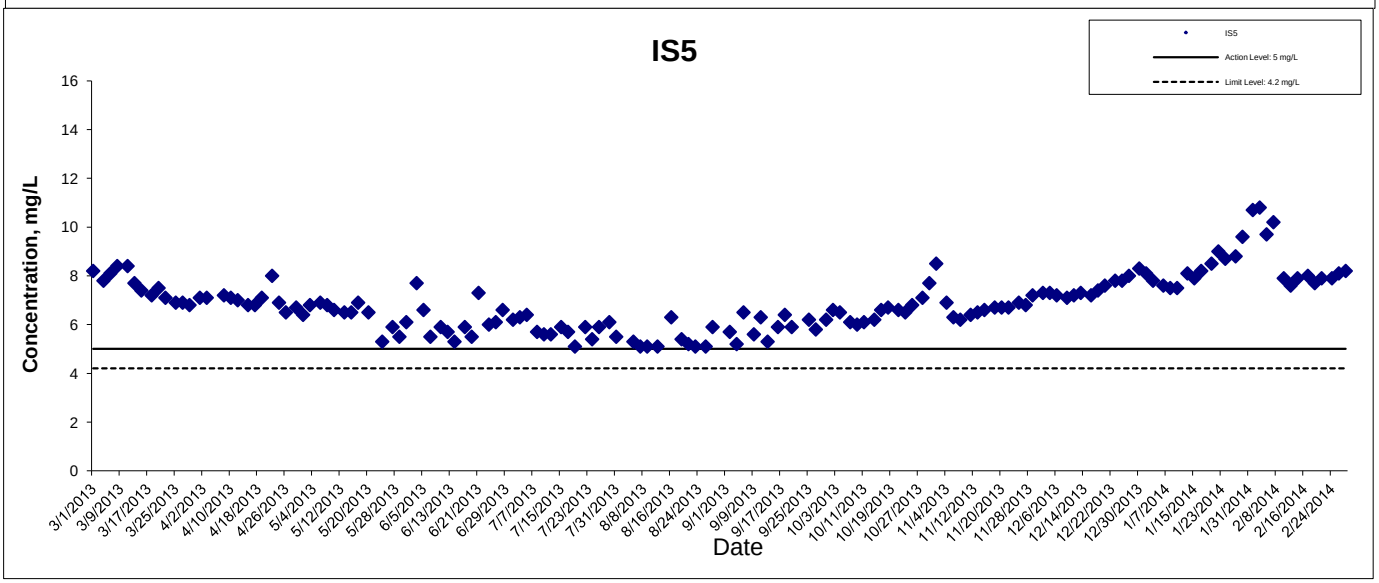




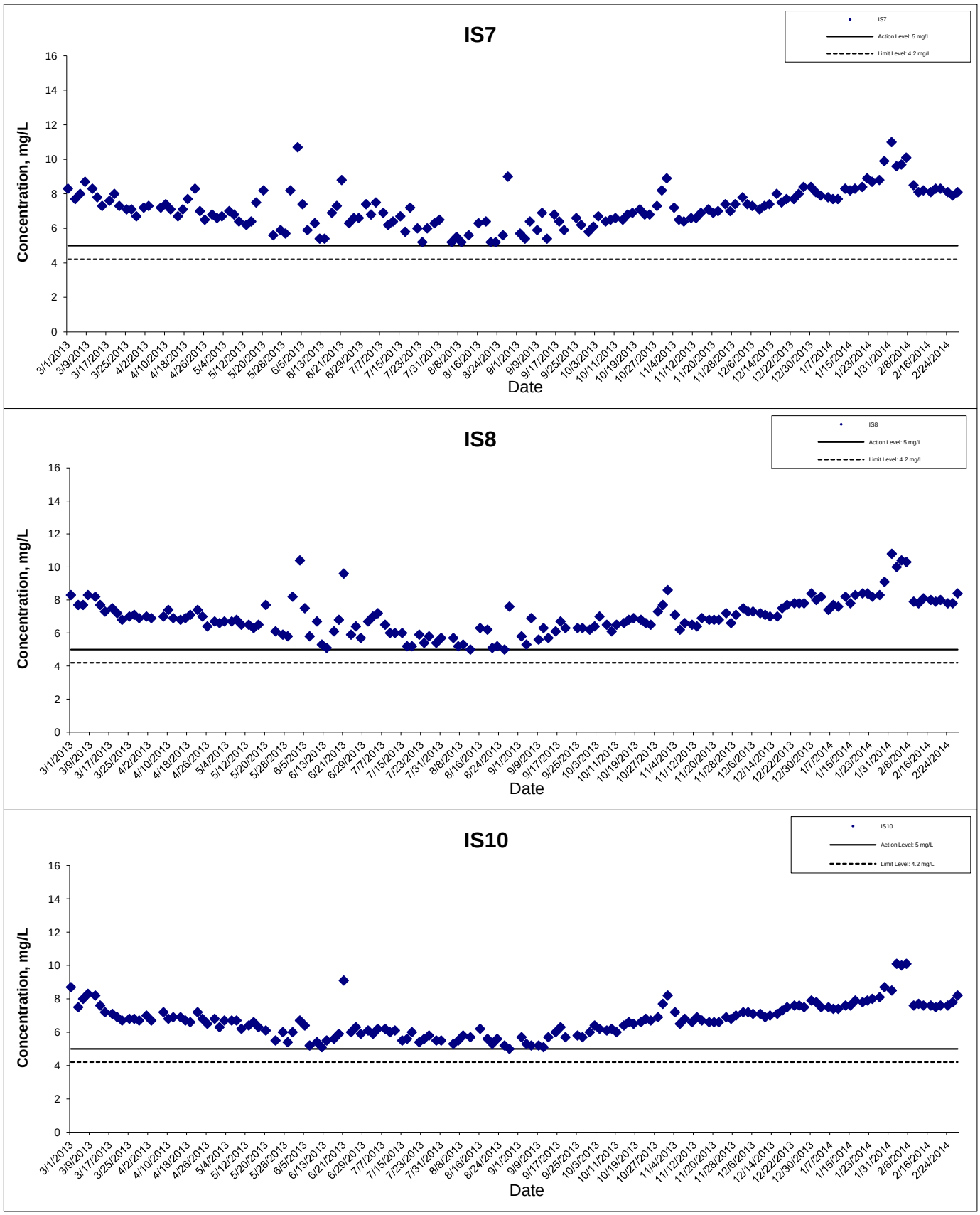
Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



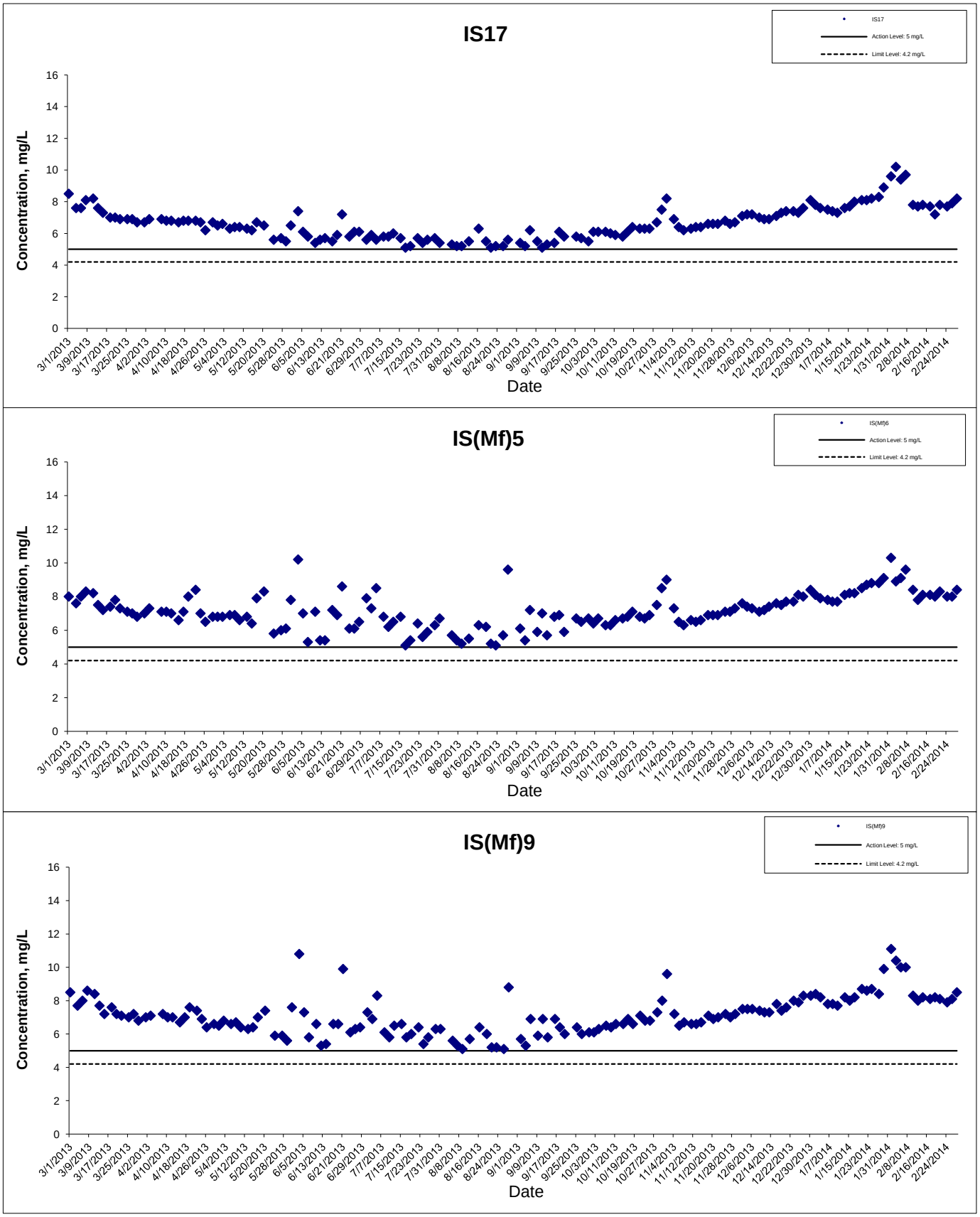




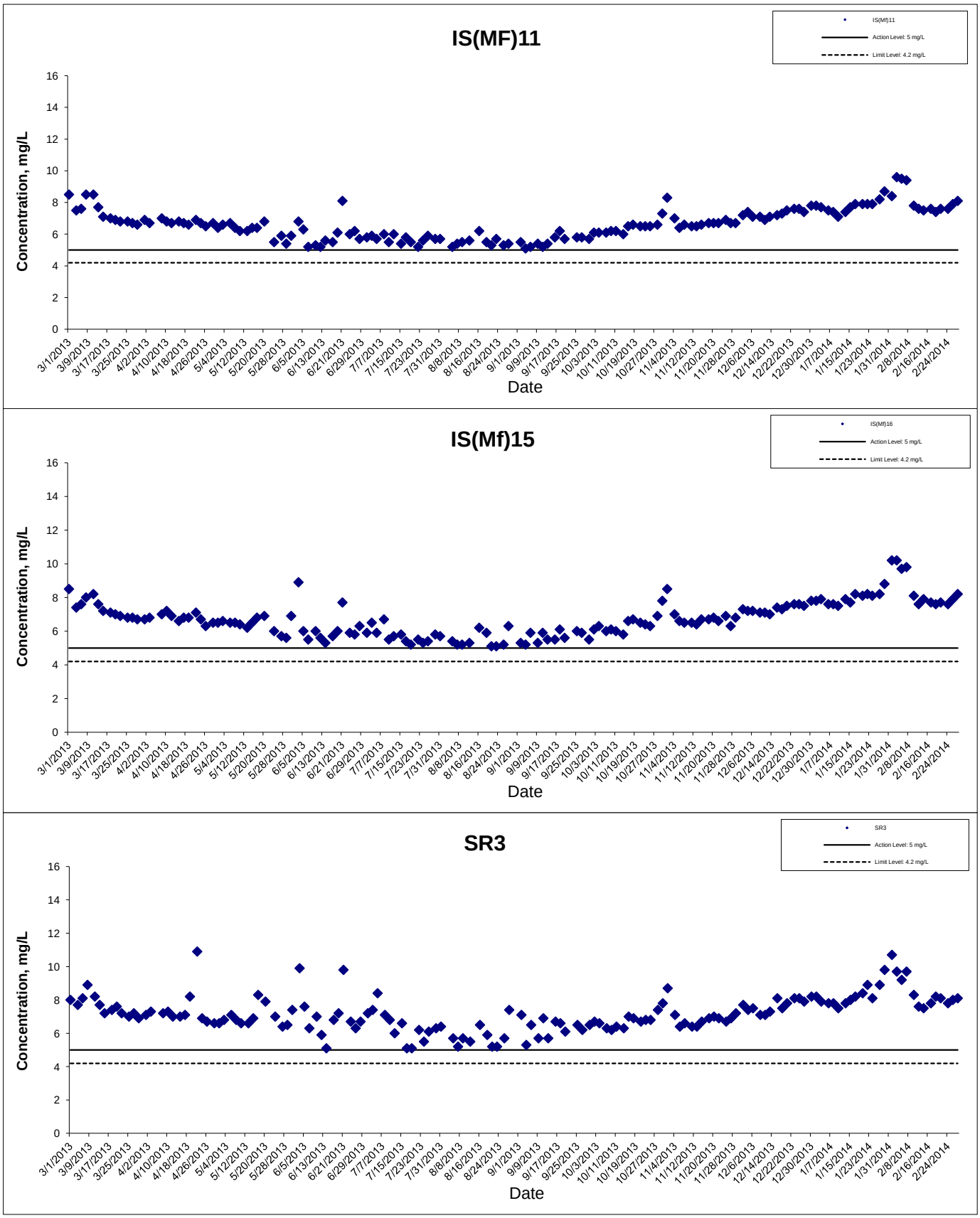
Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



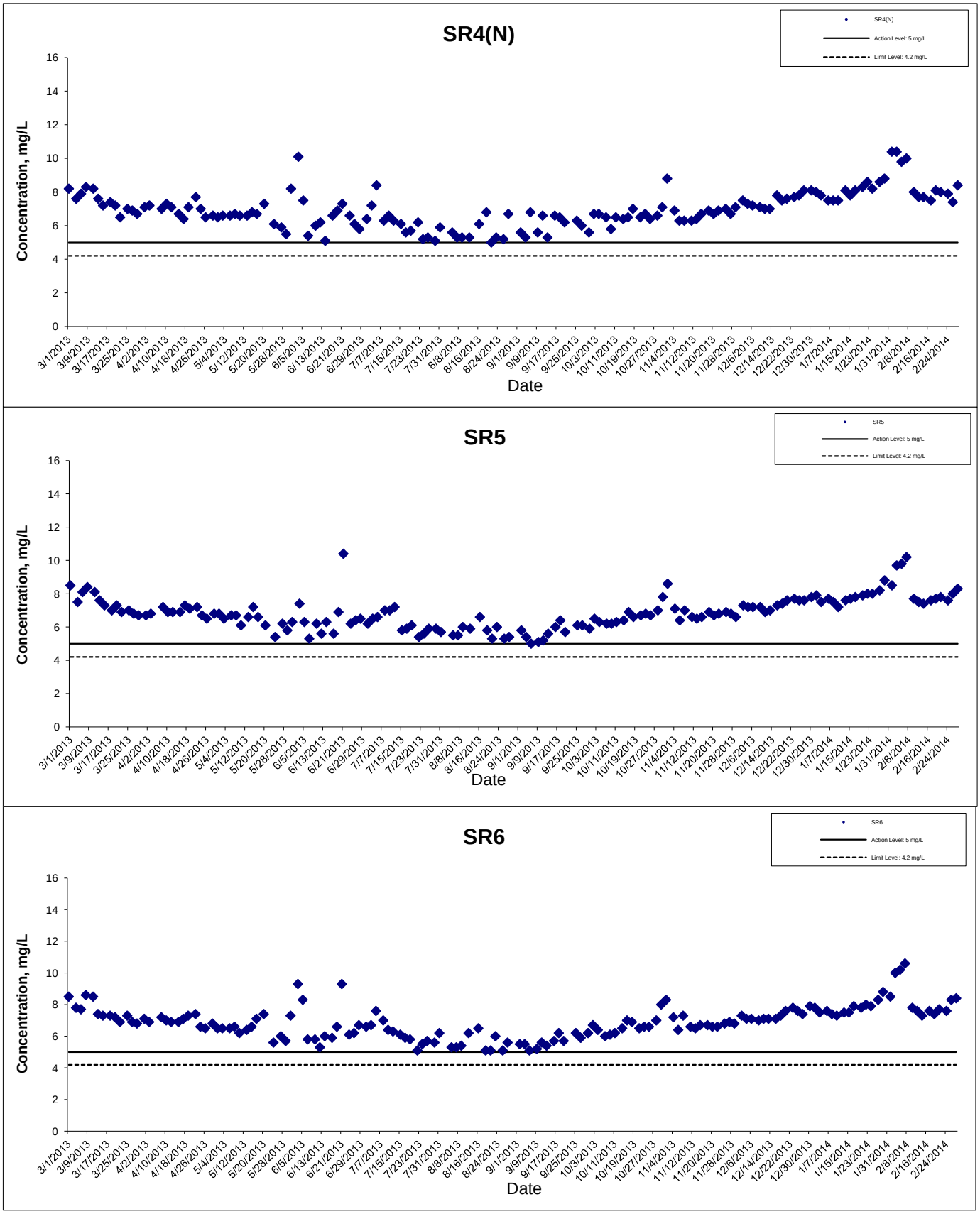
Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



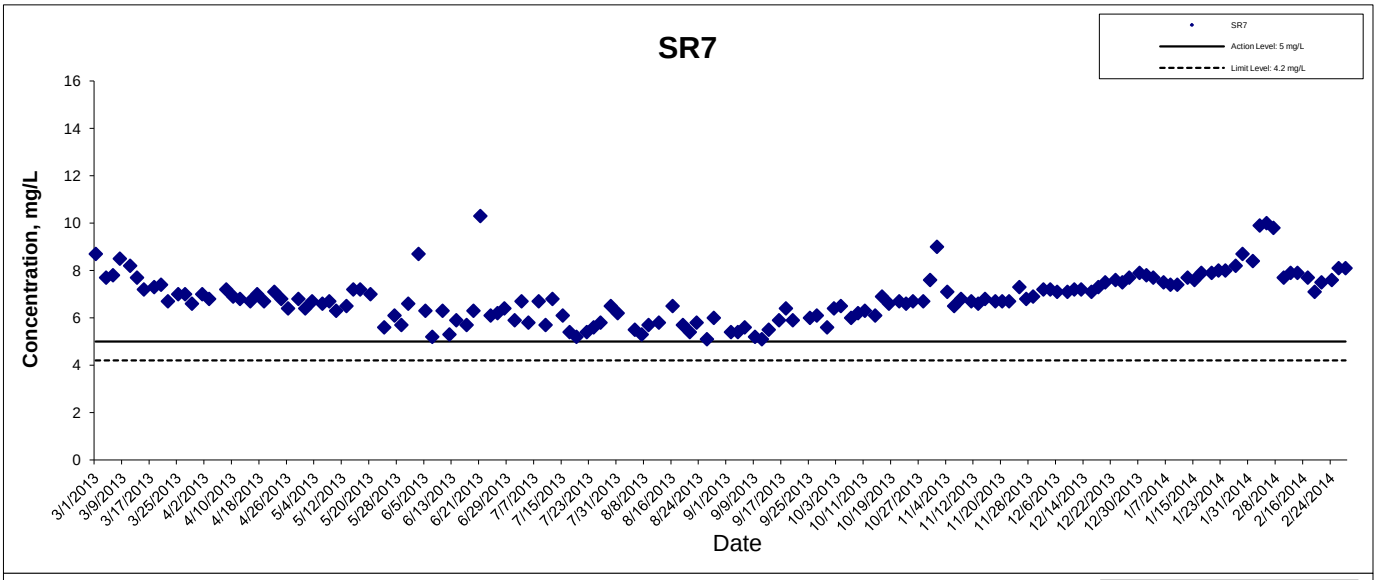
Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide

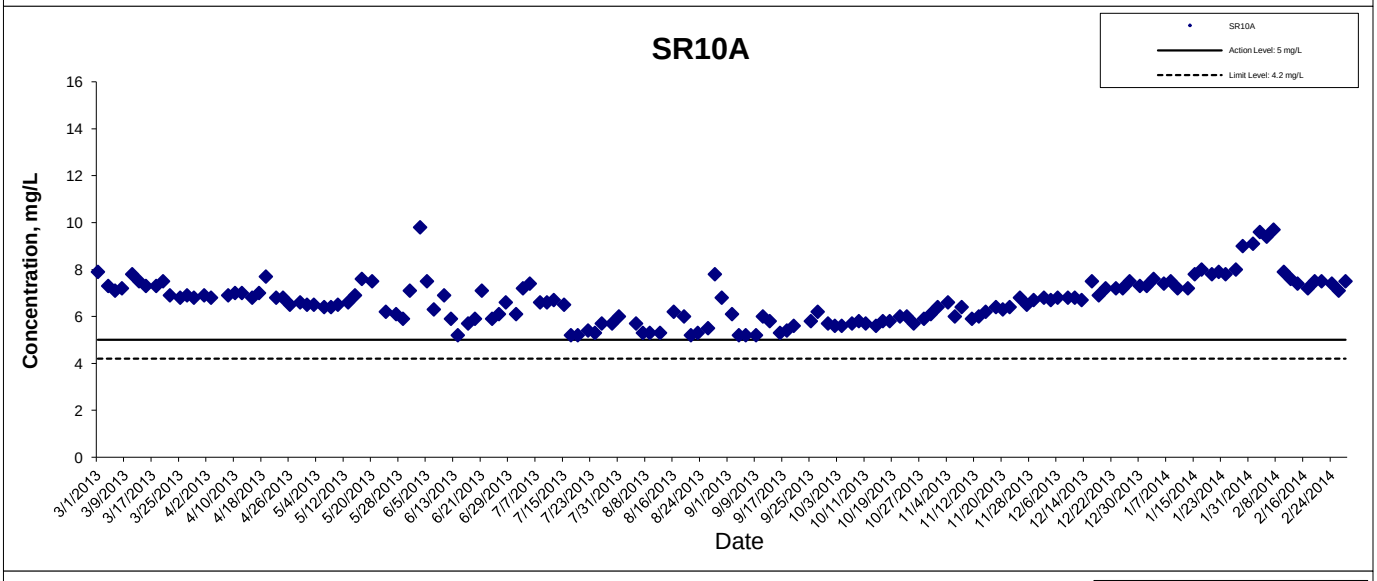


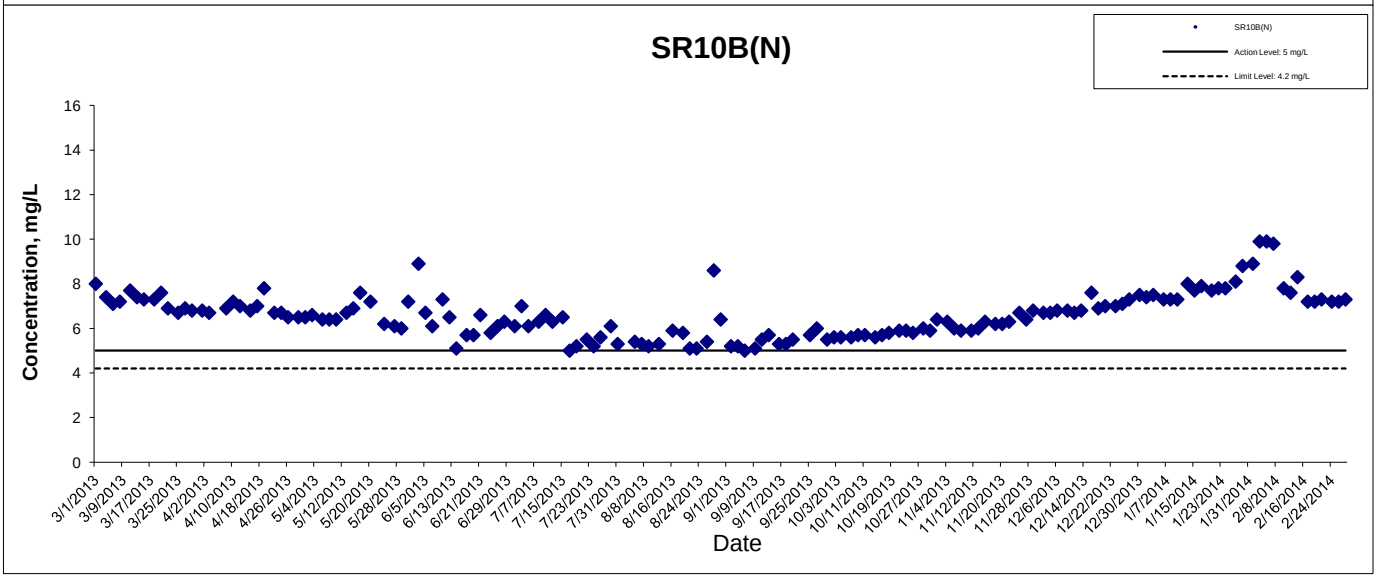
Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide





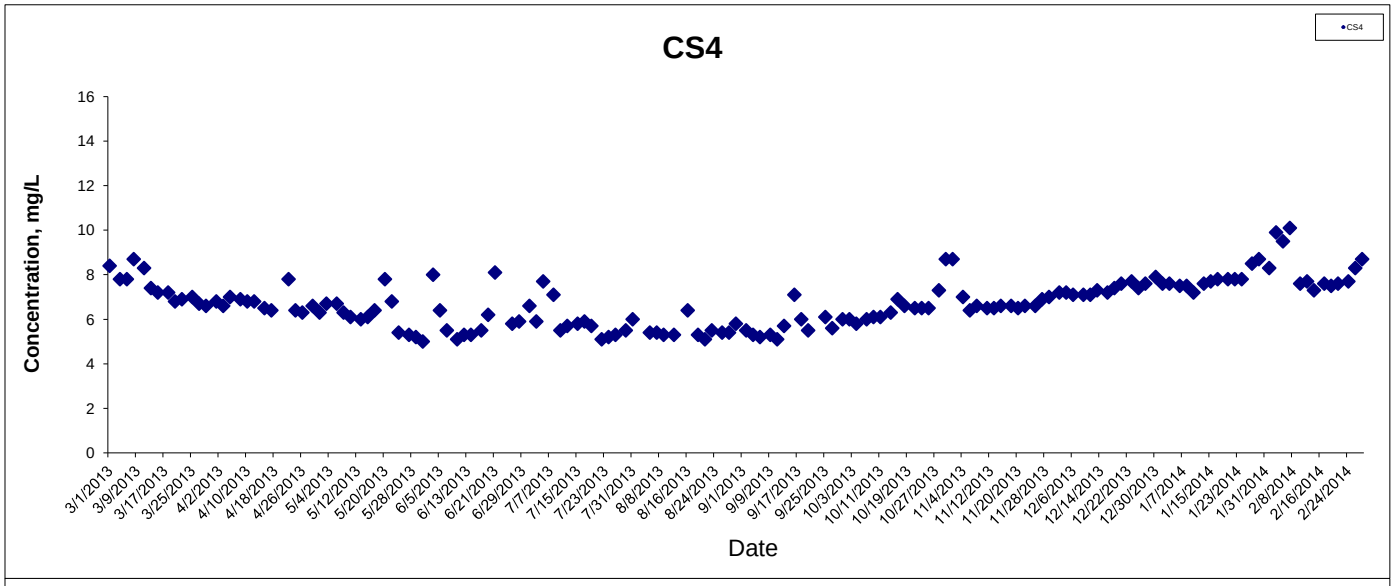


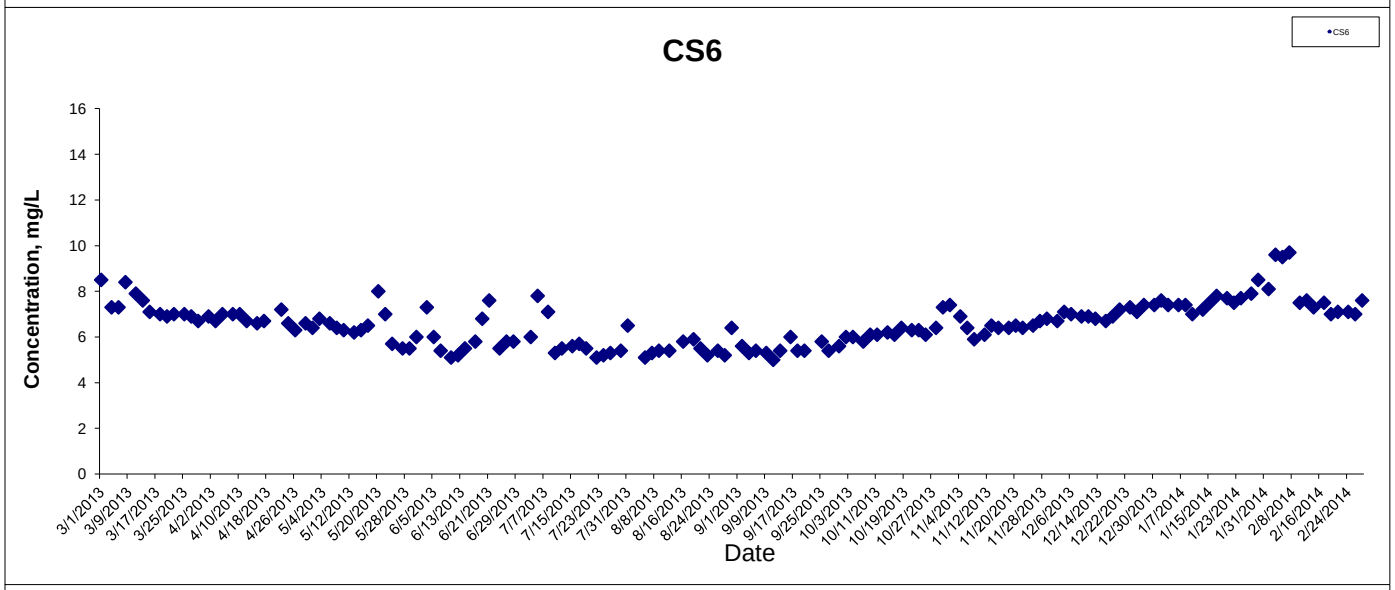
HONG KONG - ZHUHAI - MACAO BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES
- RECLAMATION WORKS

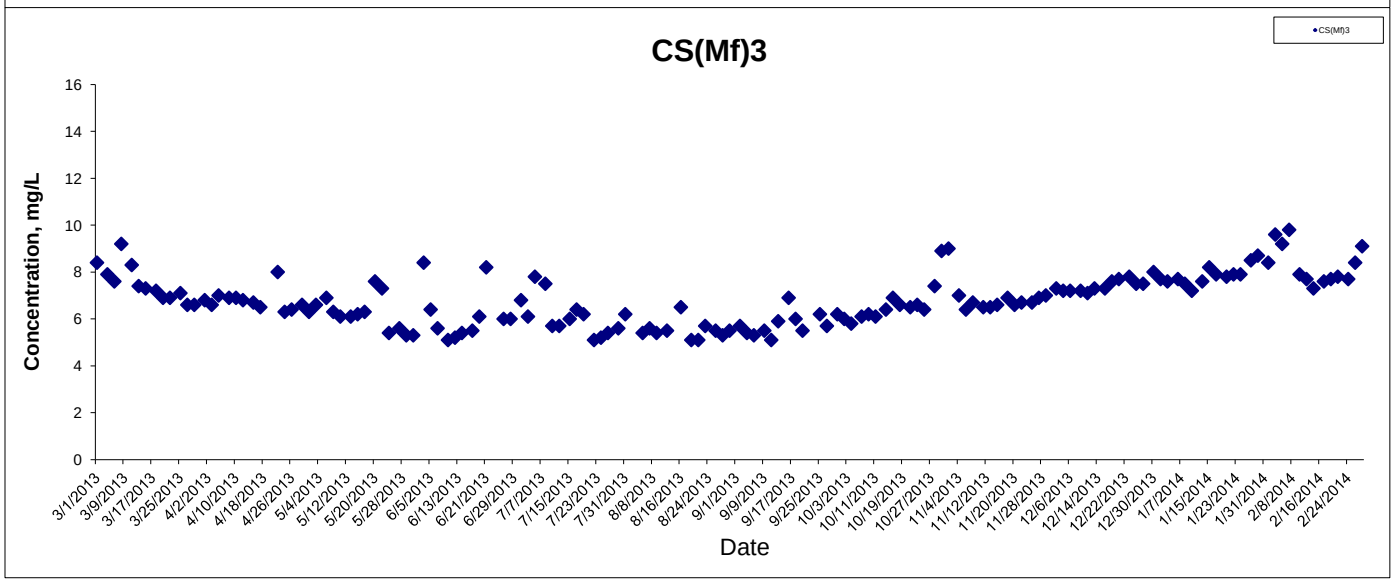
Graphical Presentation of Impact Water Quality Monitoring Results

Project No.: 60249820 **Date: May 2014** **Appendix G**

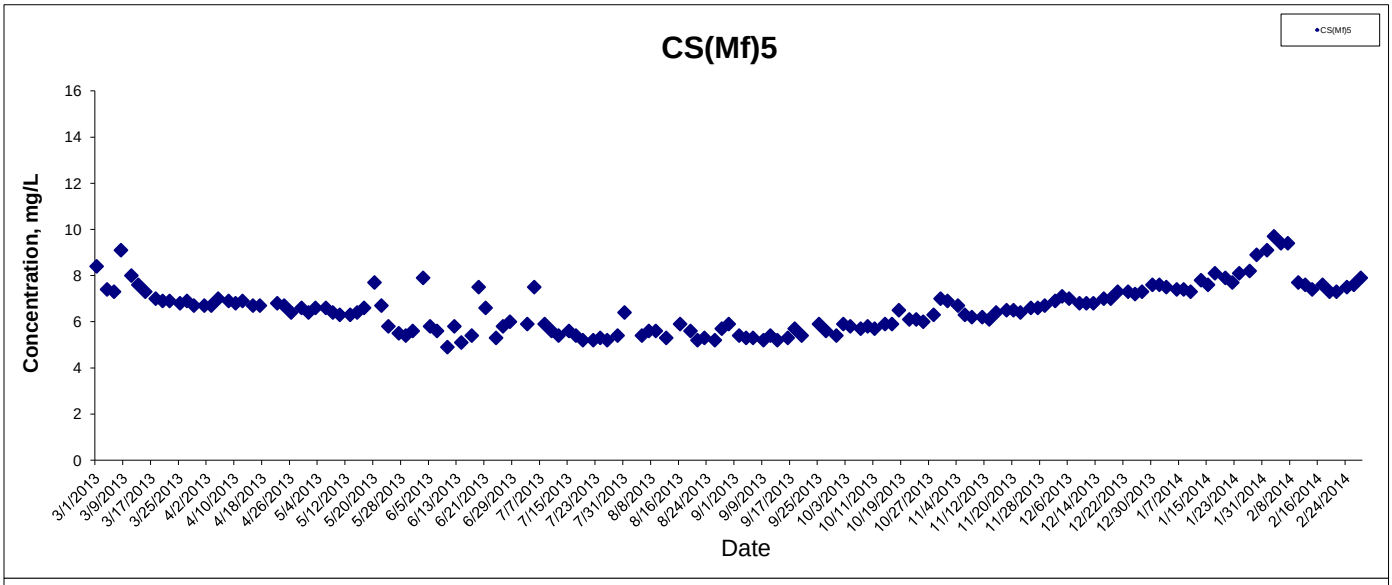
Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide

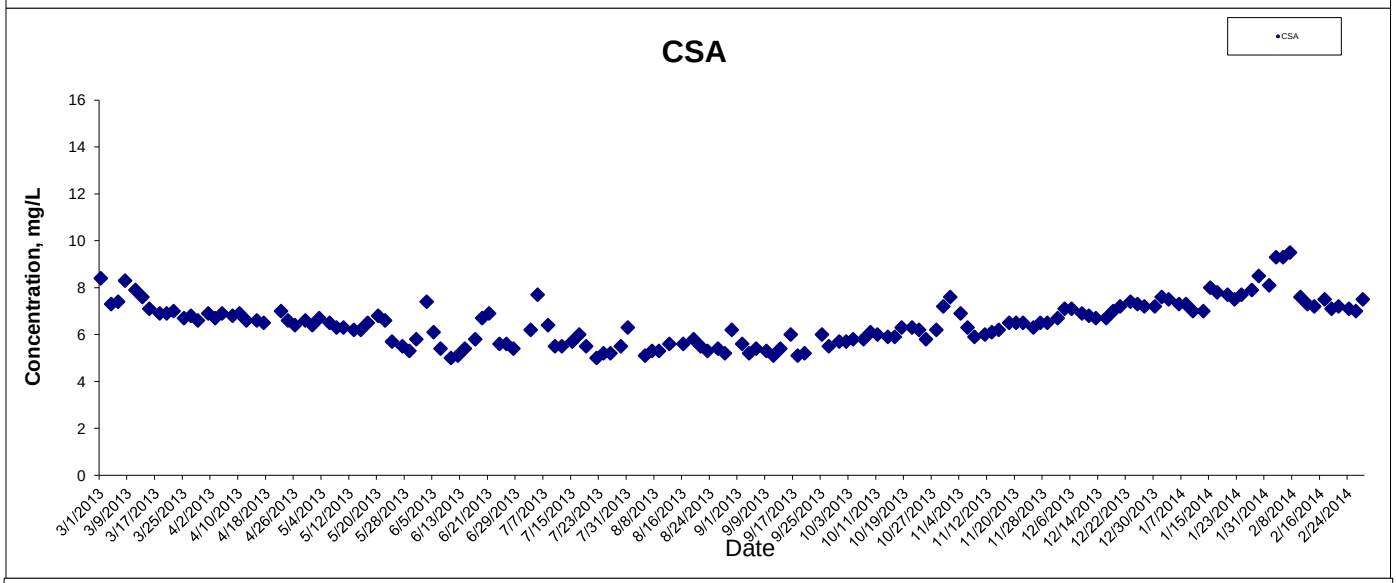


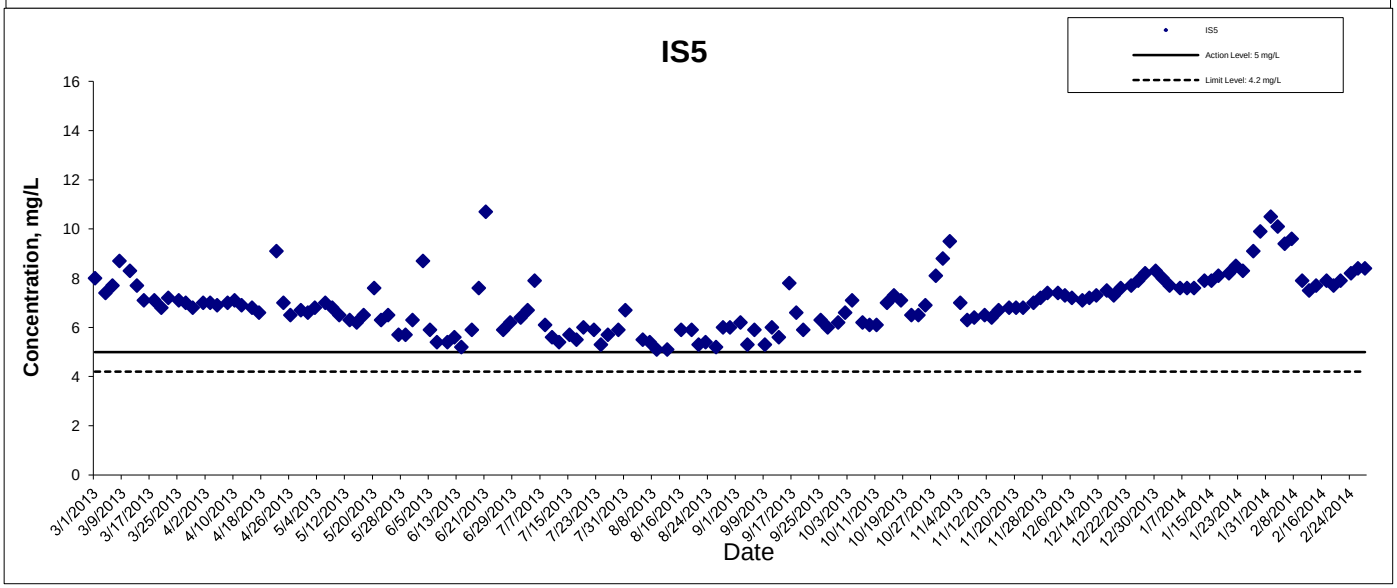




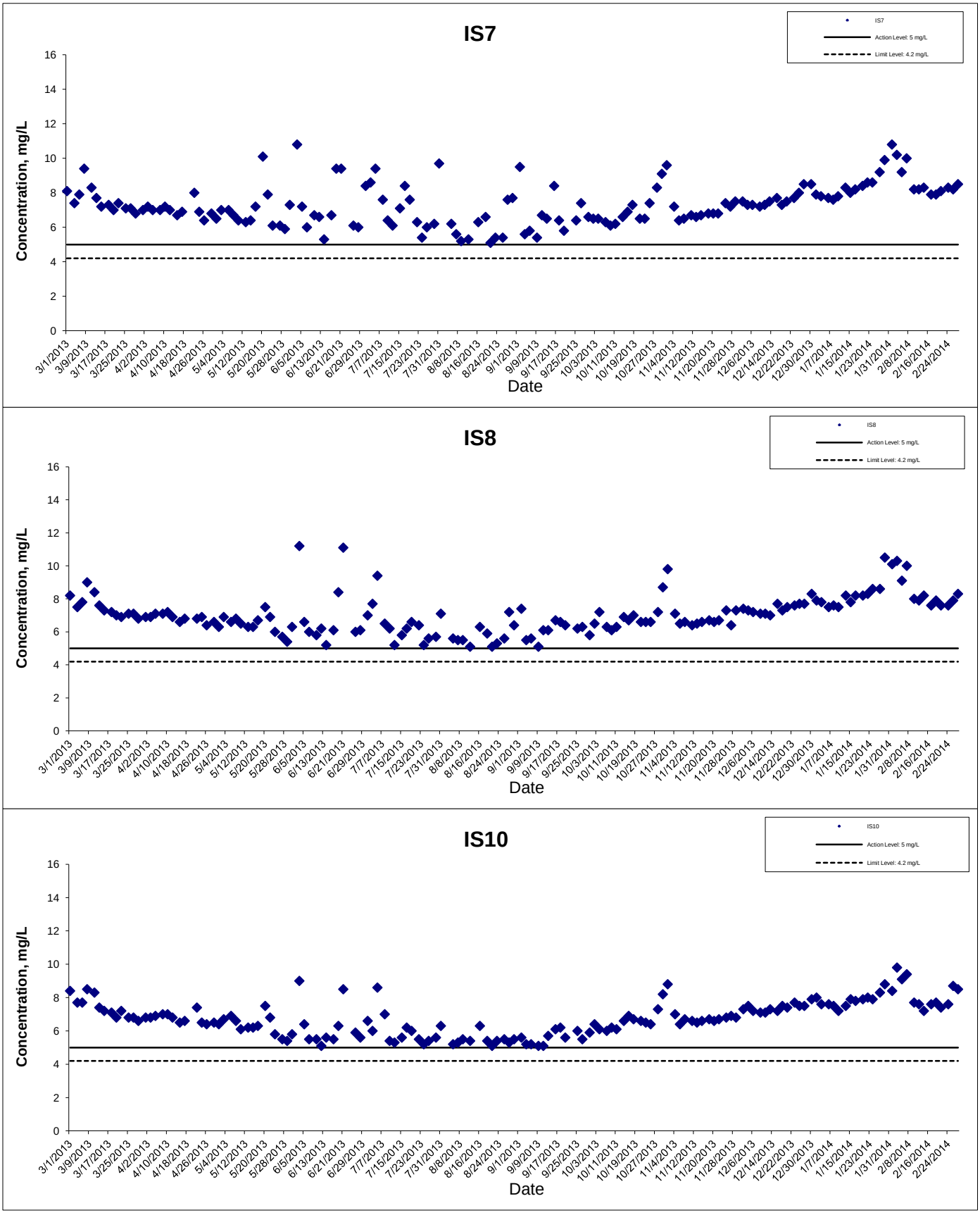
Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



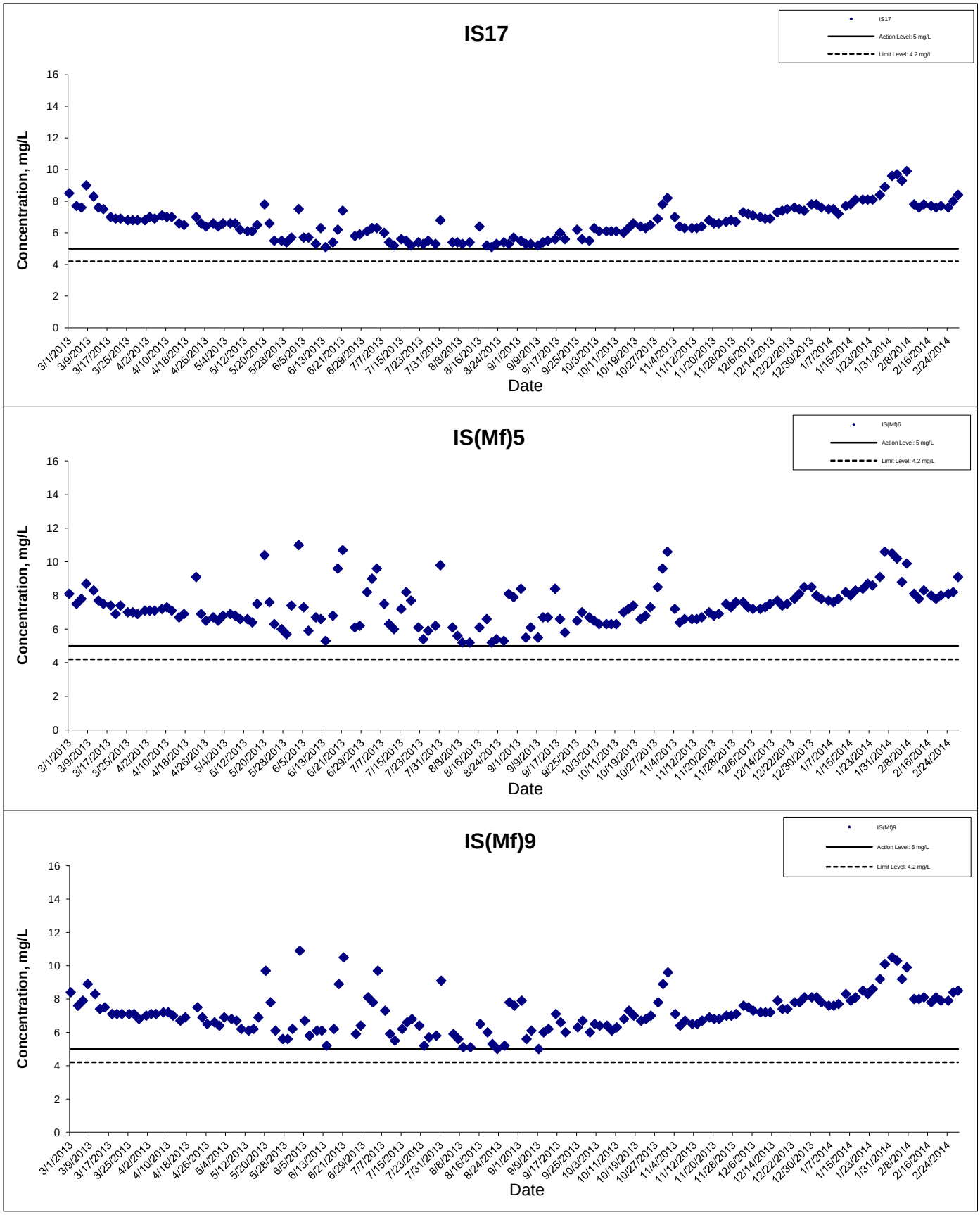




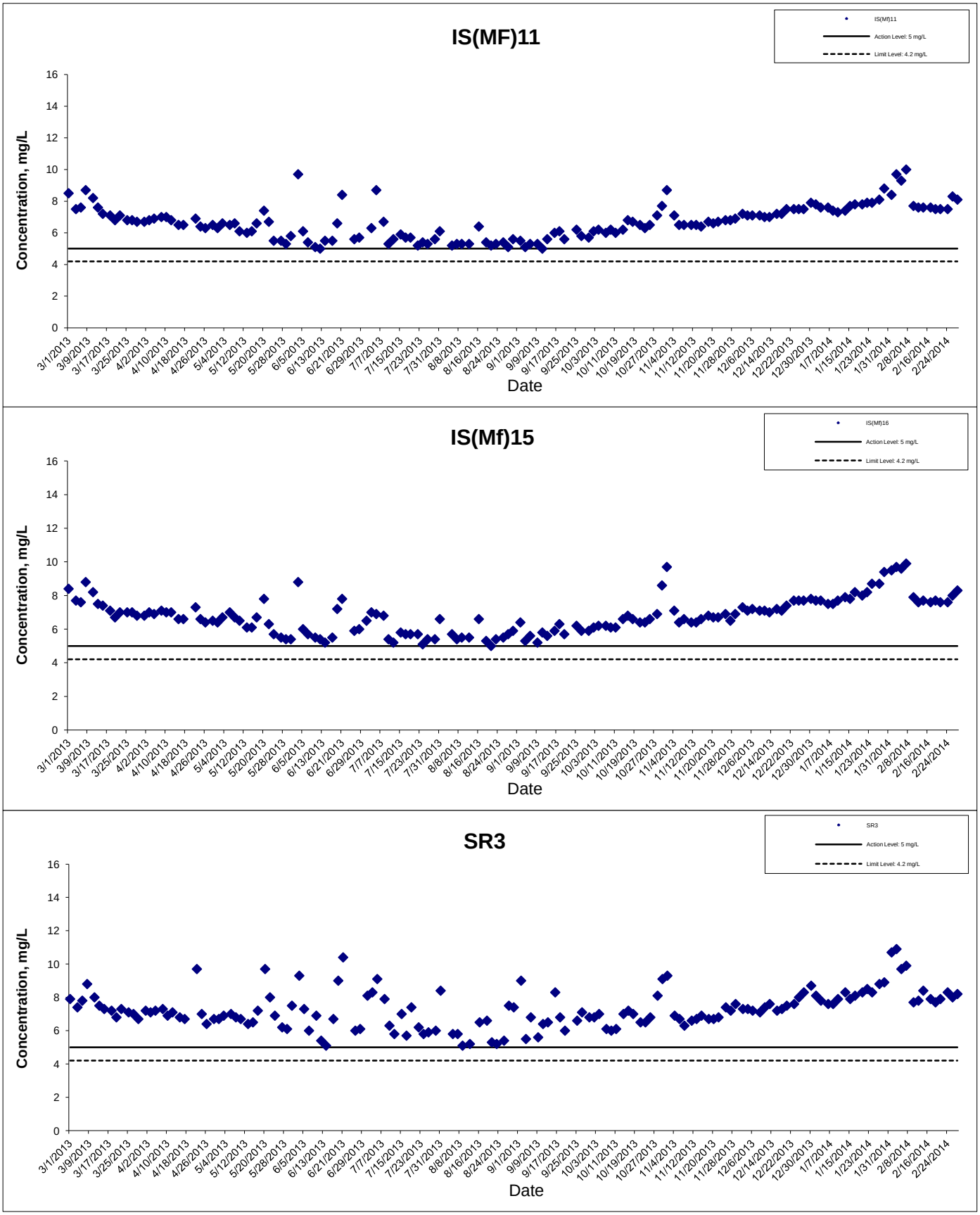
Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



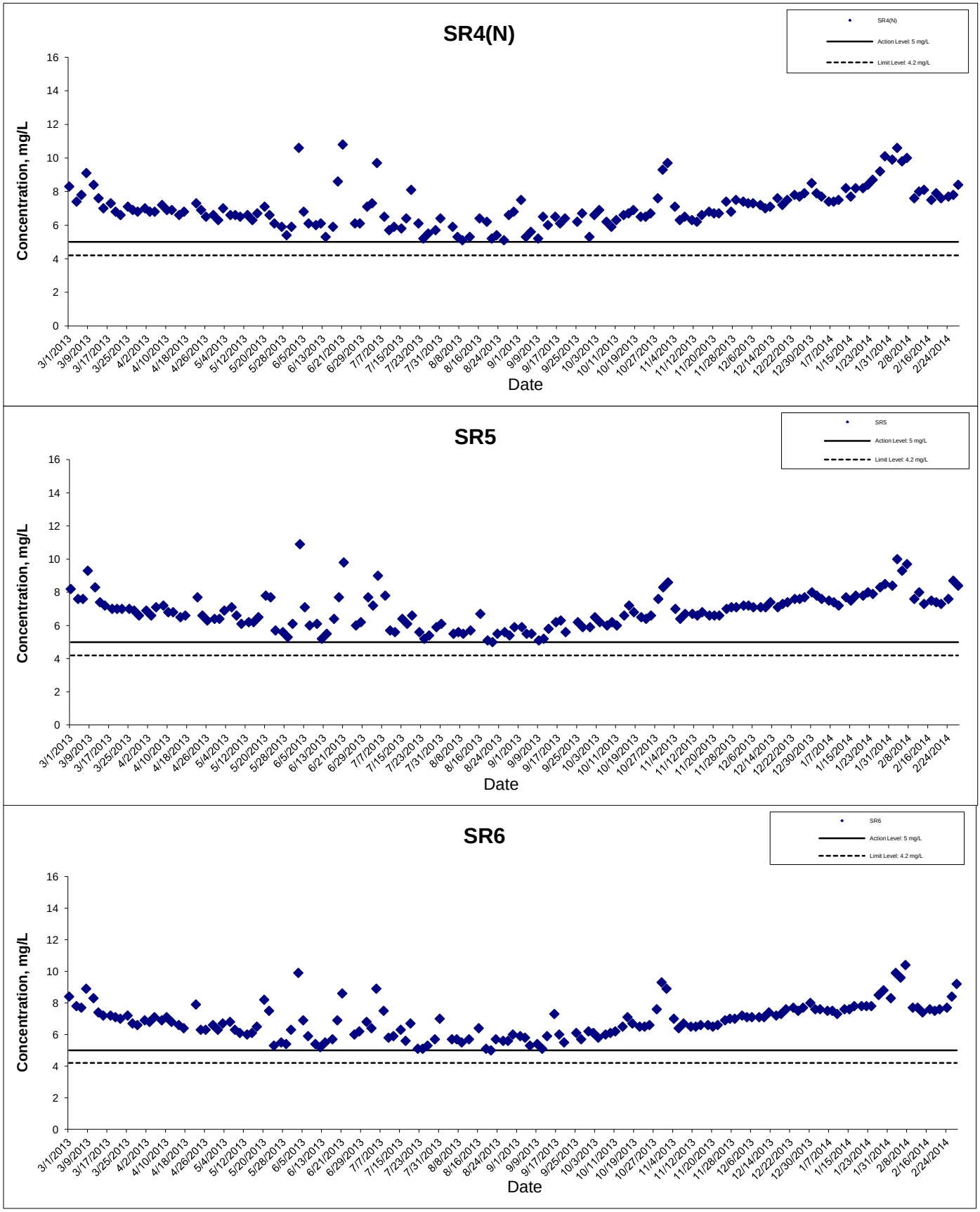
Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



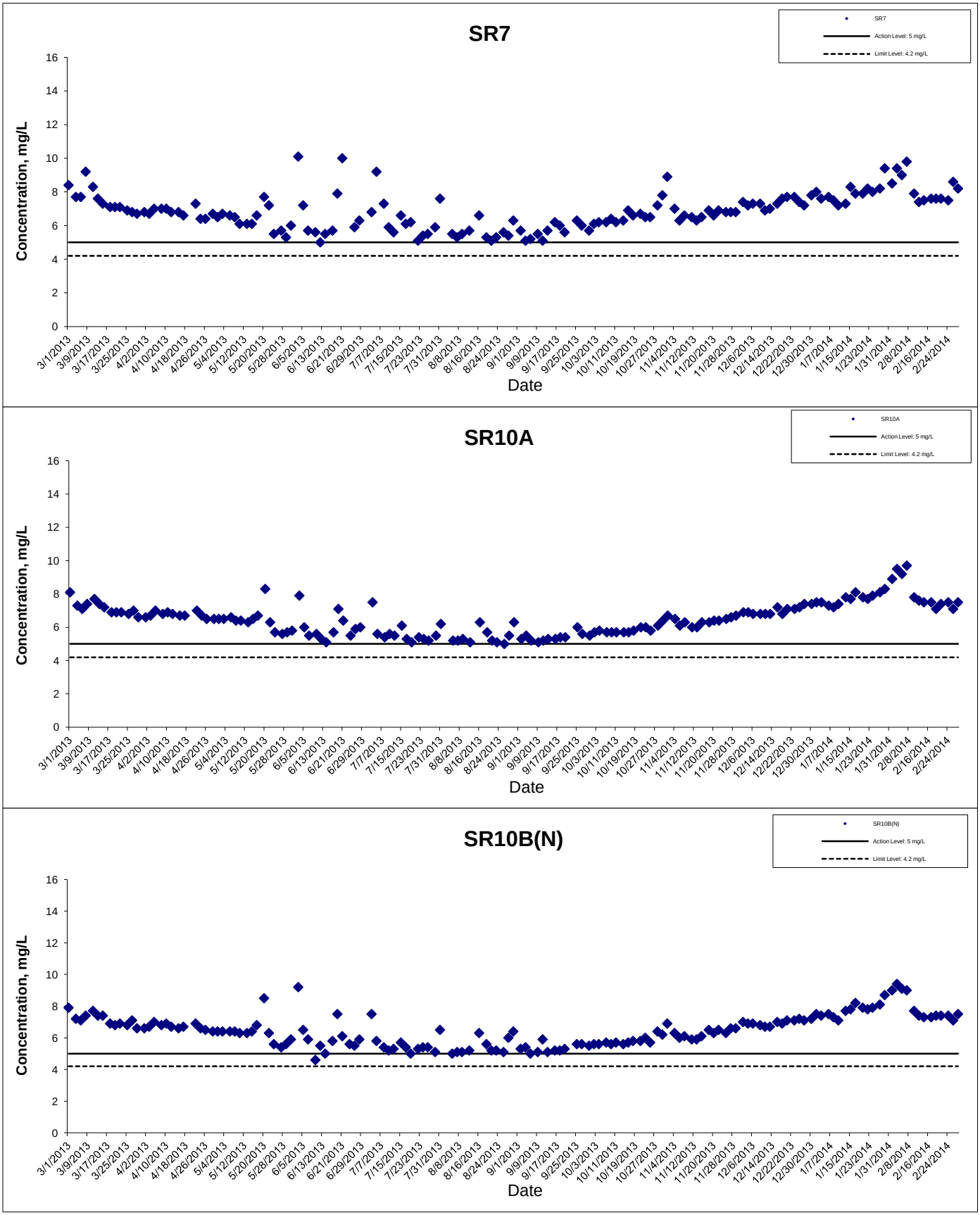
Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



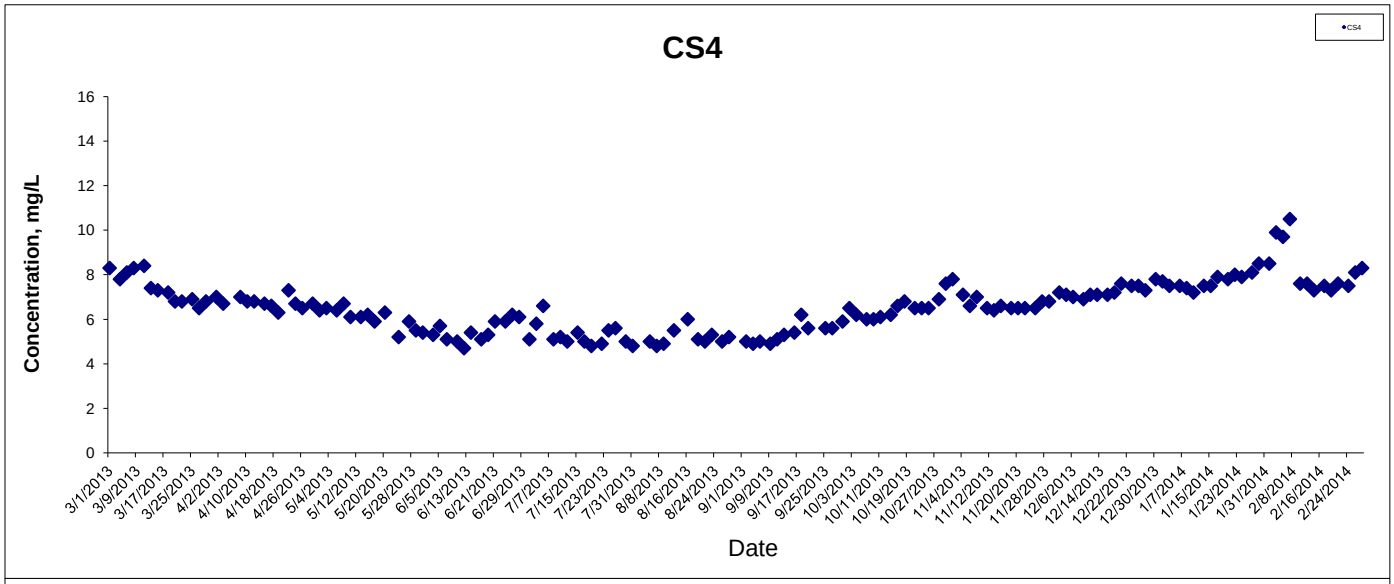
Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide

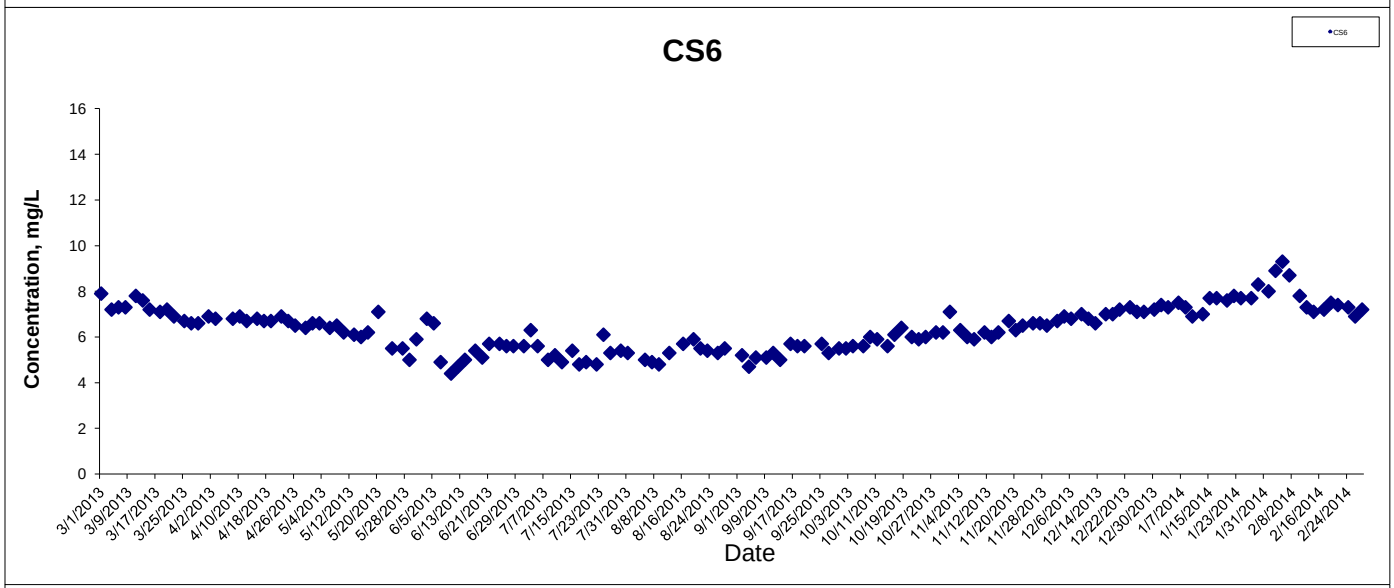


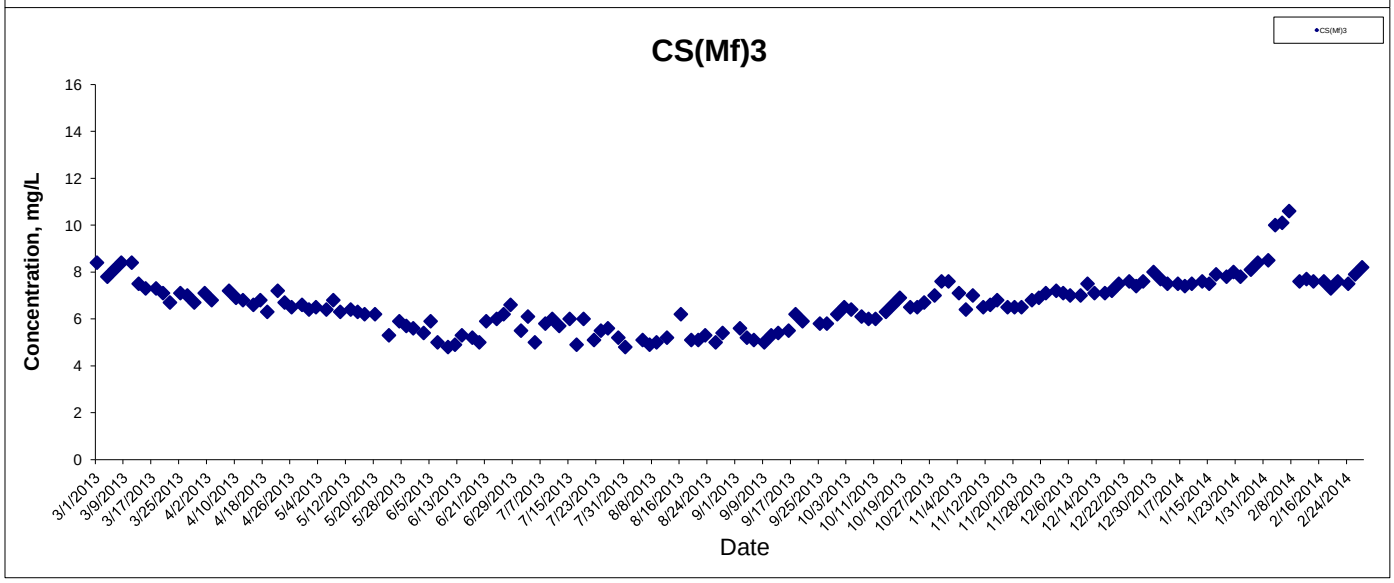
Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



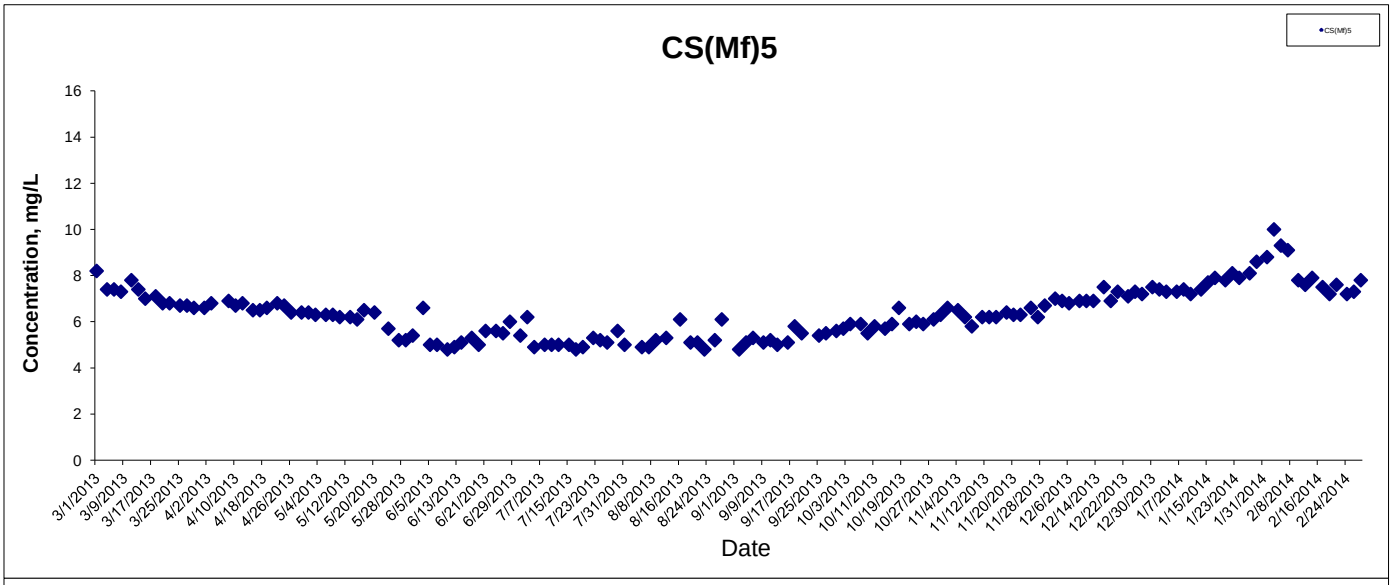
Dissolved Oxygen (Bottom) at Mid-Ebb Tide

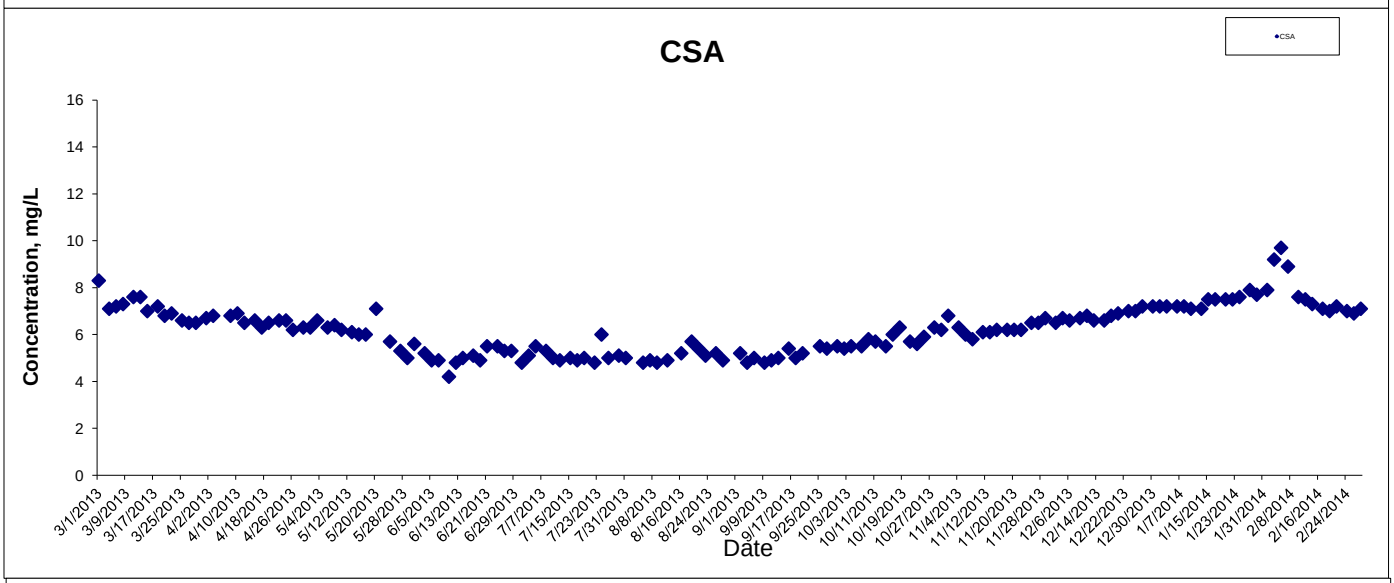


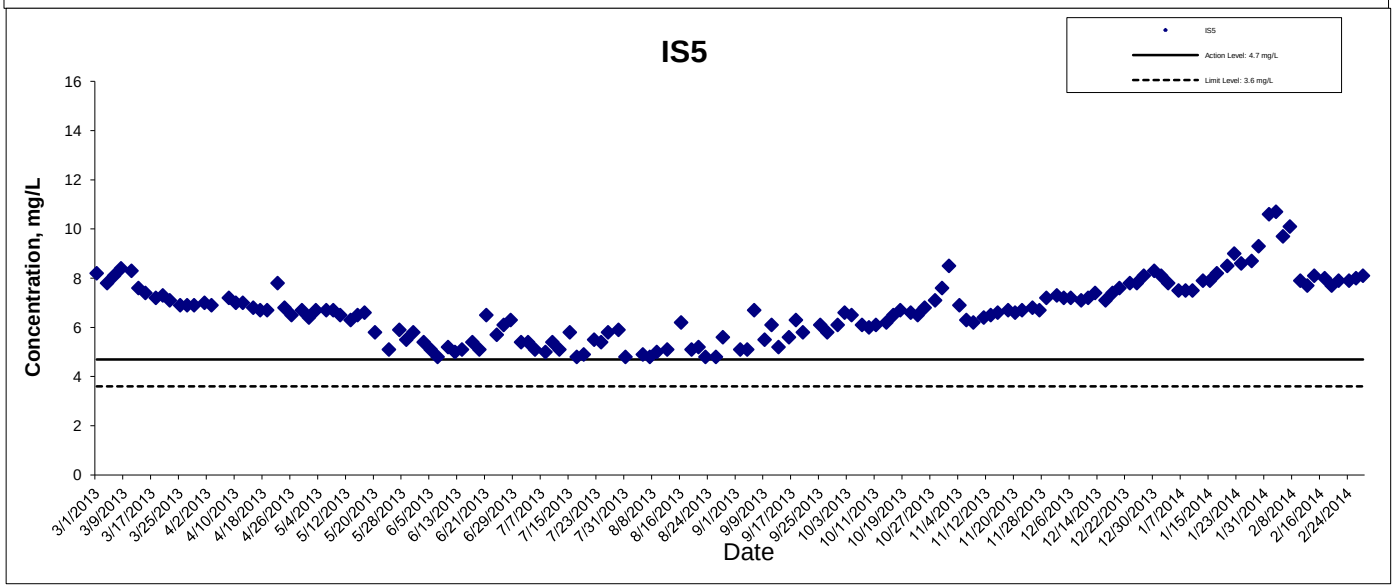




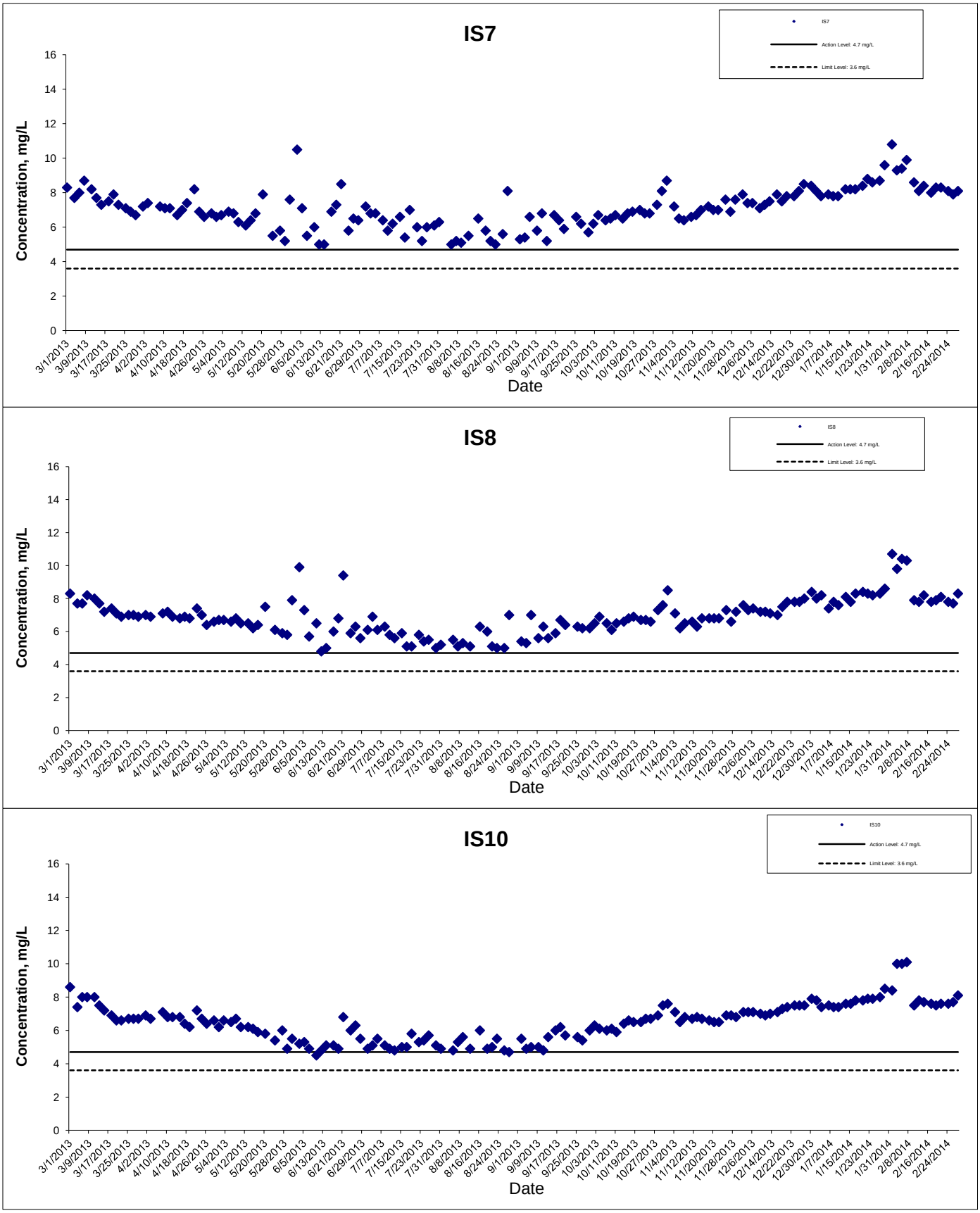
Dissolved Oxygen (Bottom) at Mid-Ebb Tide



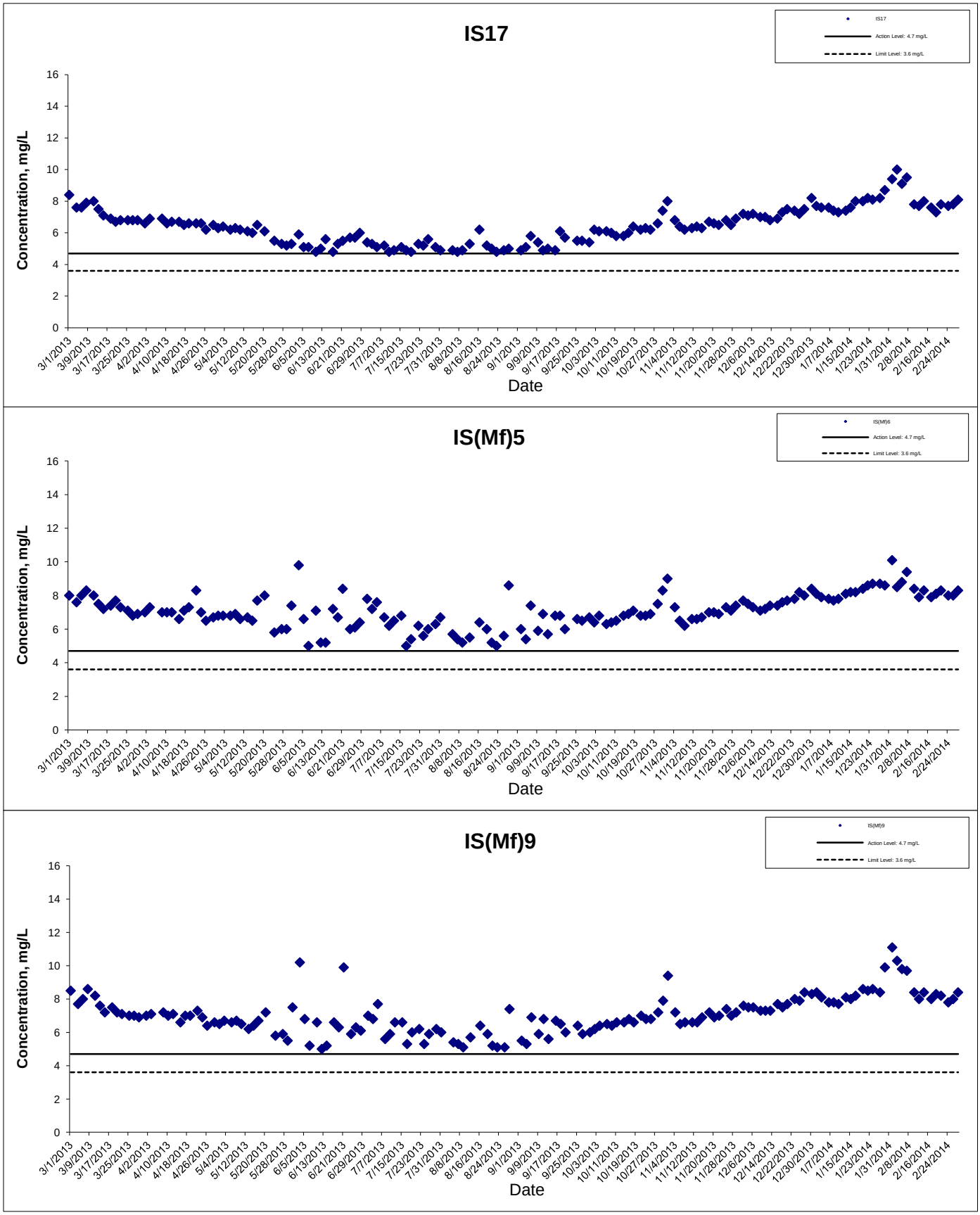




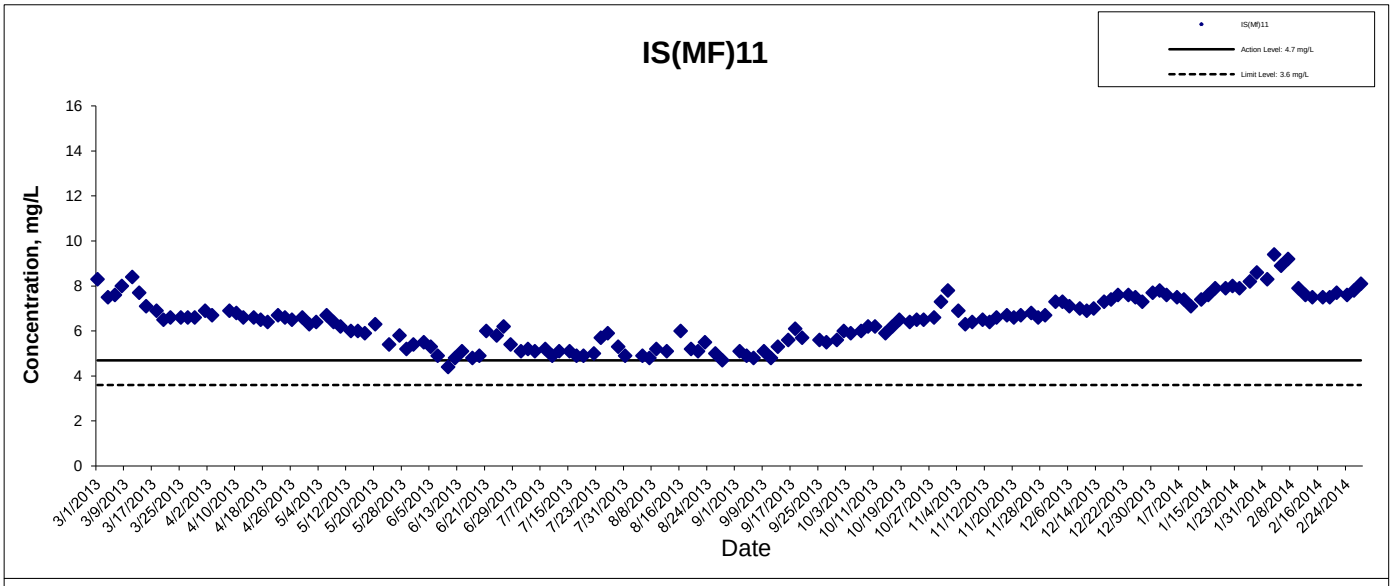
Dissolved Oxygen (Bottom) at Mid-Ebb Tide

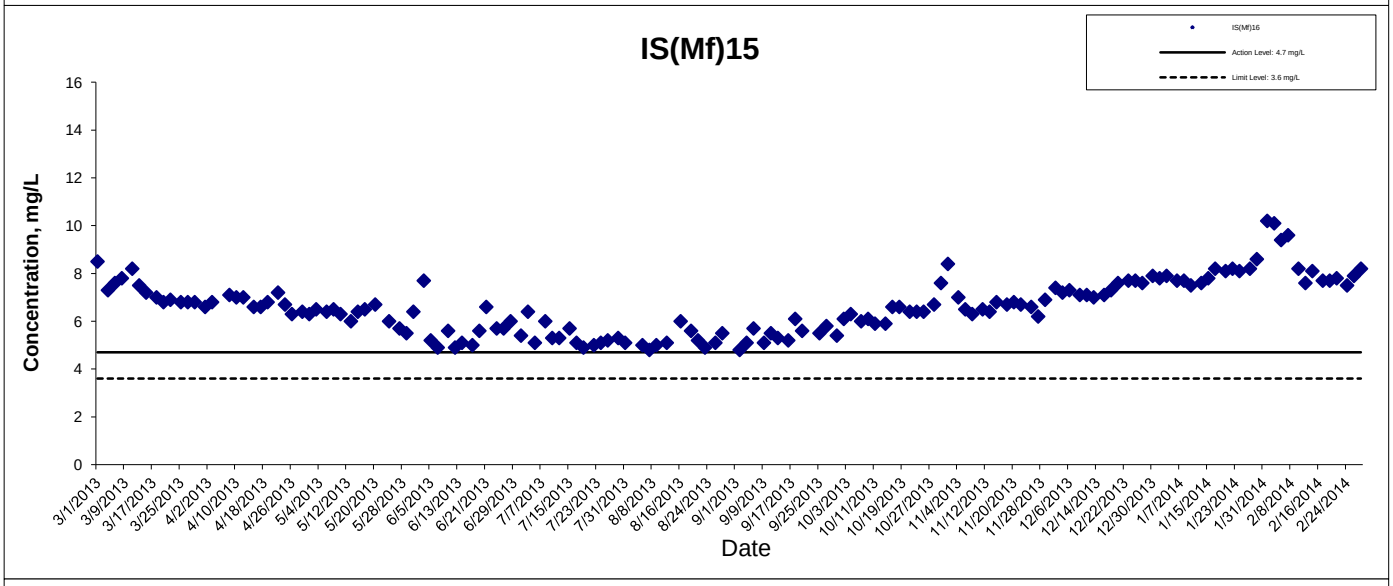


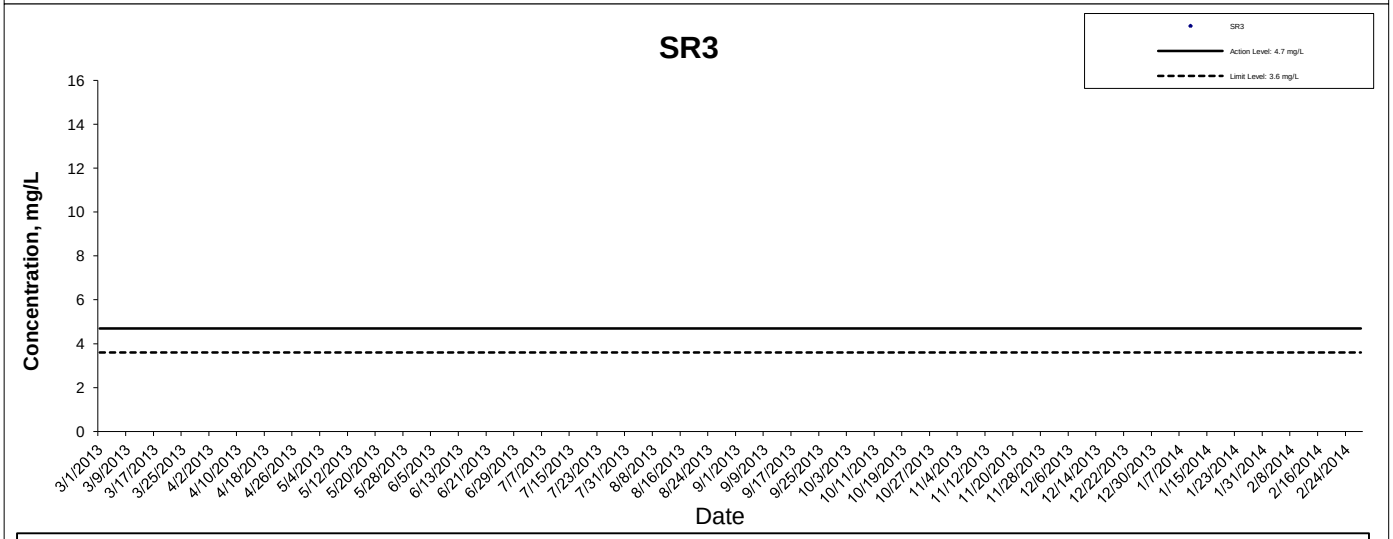
Dissolved Oxygen (Bottom) at Mid-Ebb Tide



Dissolved Oxygen (Bottom) at Mid-Ebb Tide

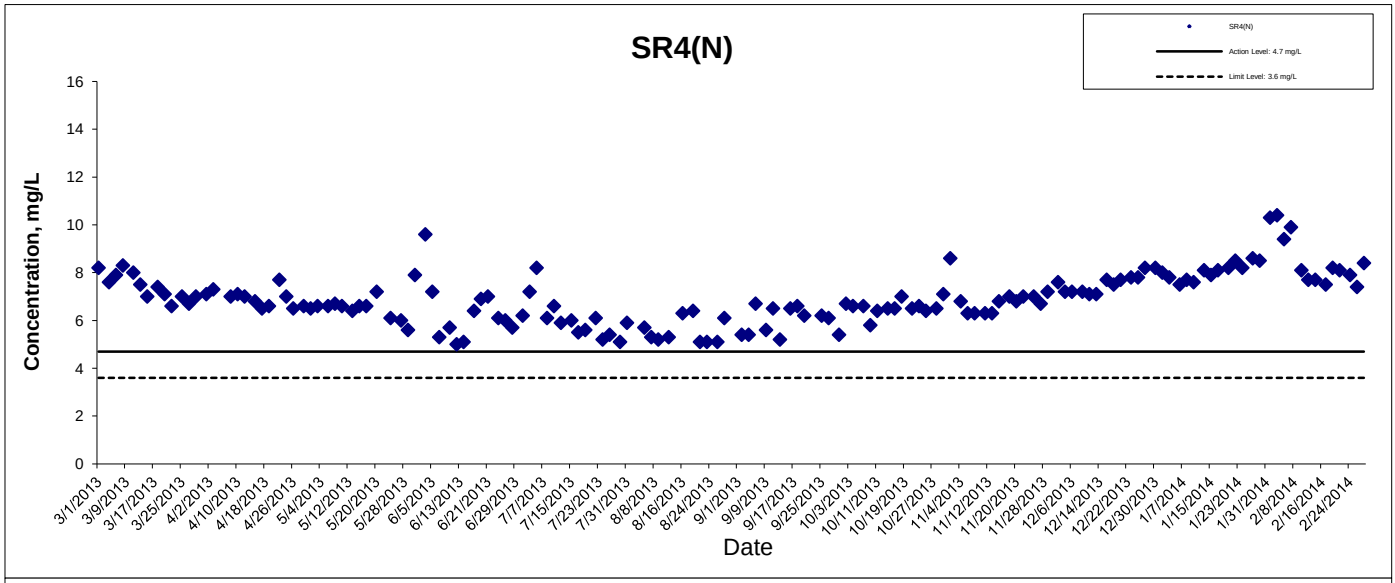


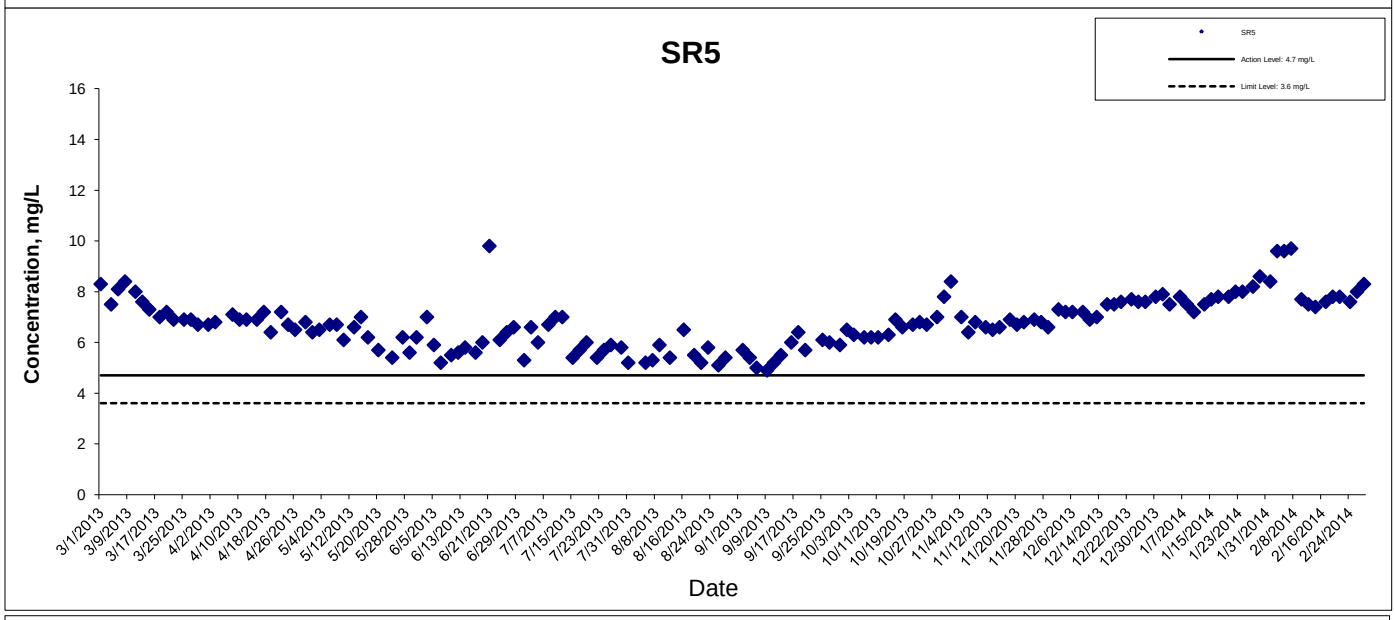


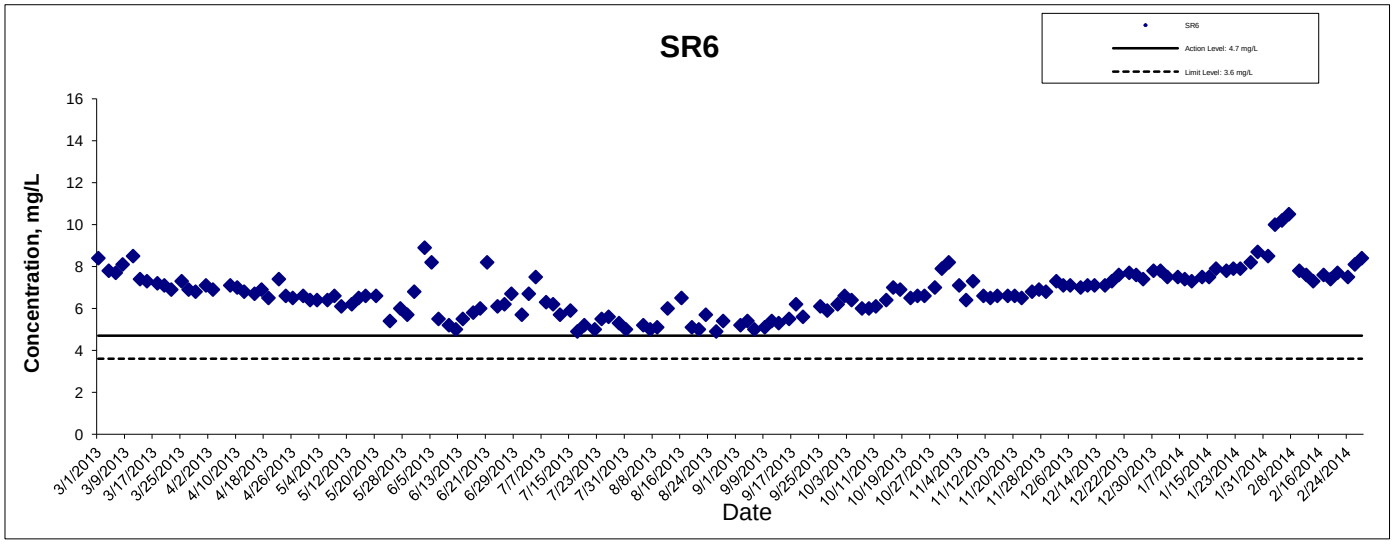


As the measured water depths were less than 3 m during all monitoring days, water samples are collected at mid-depth only .

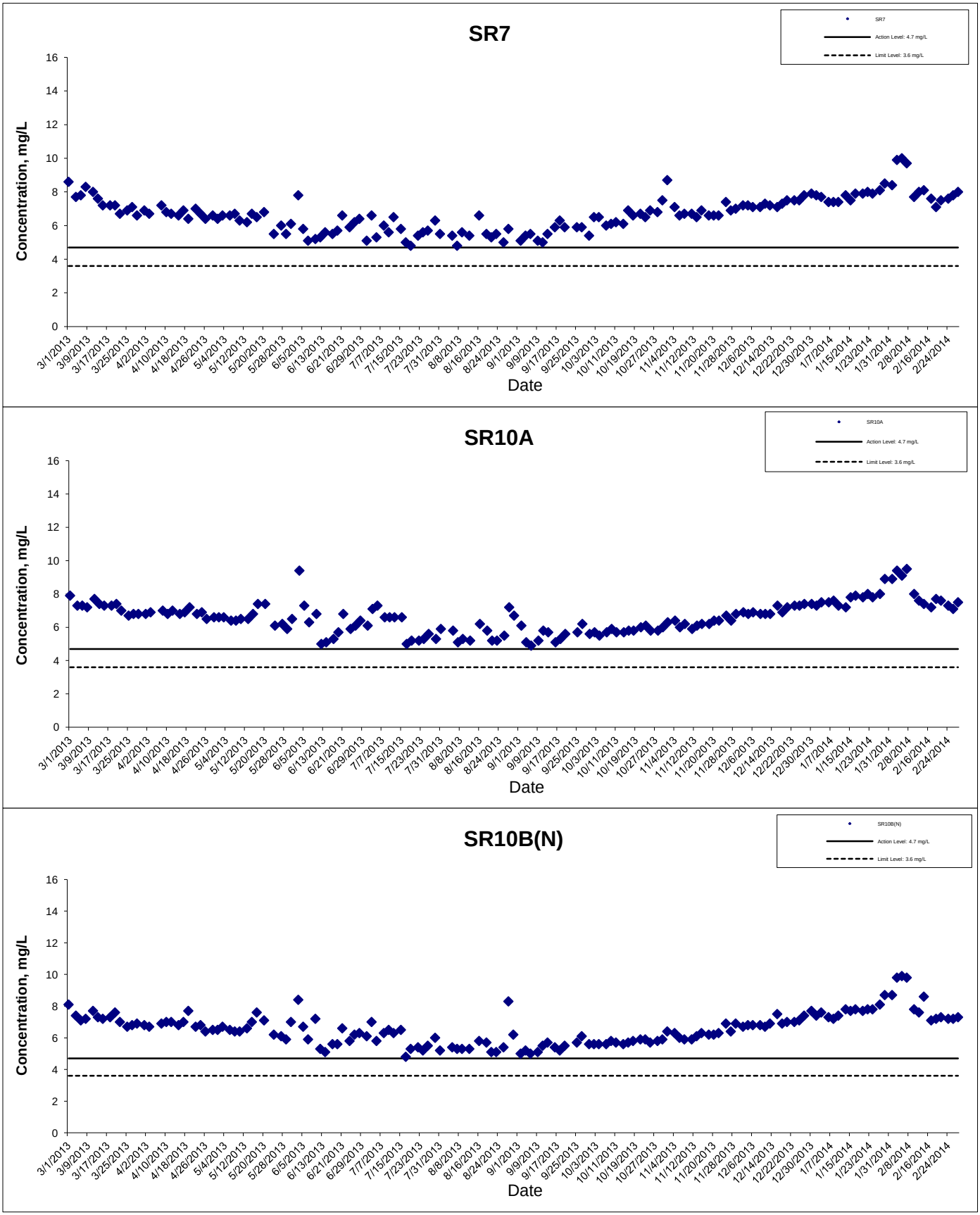
Dissolved Oxygen (Bottom) at Mid-Ebb Tide



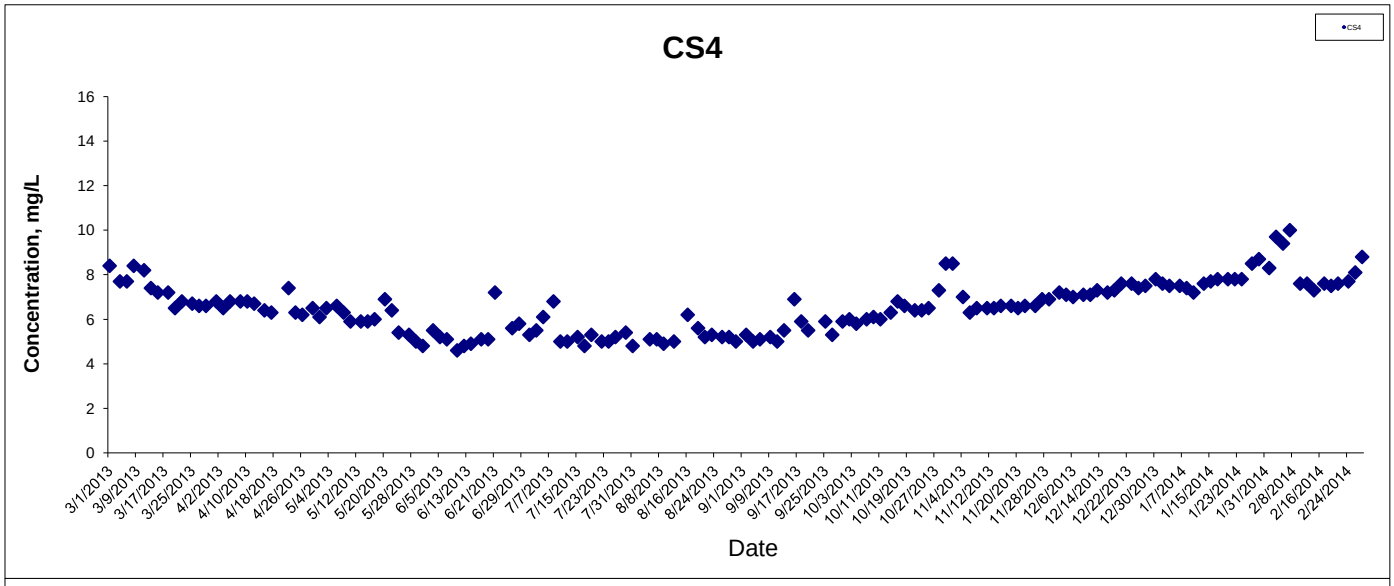


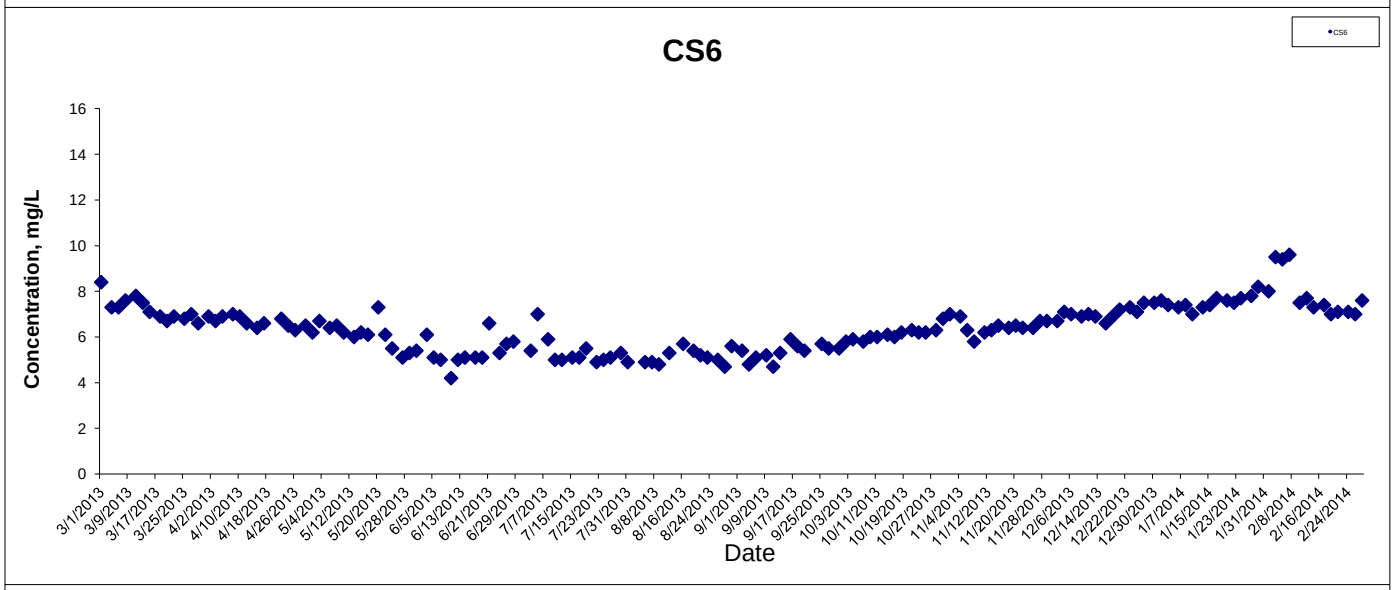


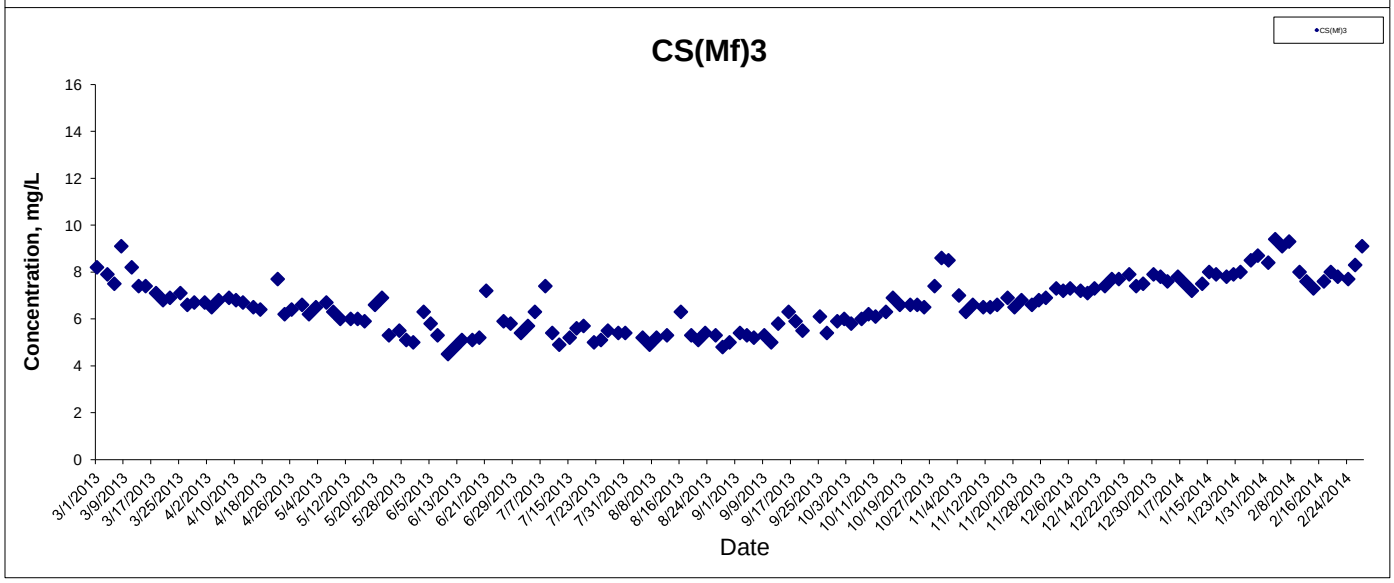
Dissolved Oxygen (Bottom) at Mid-Ebb Tide



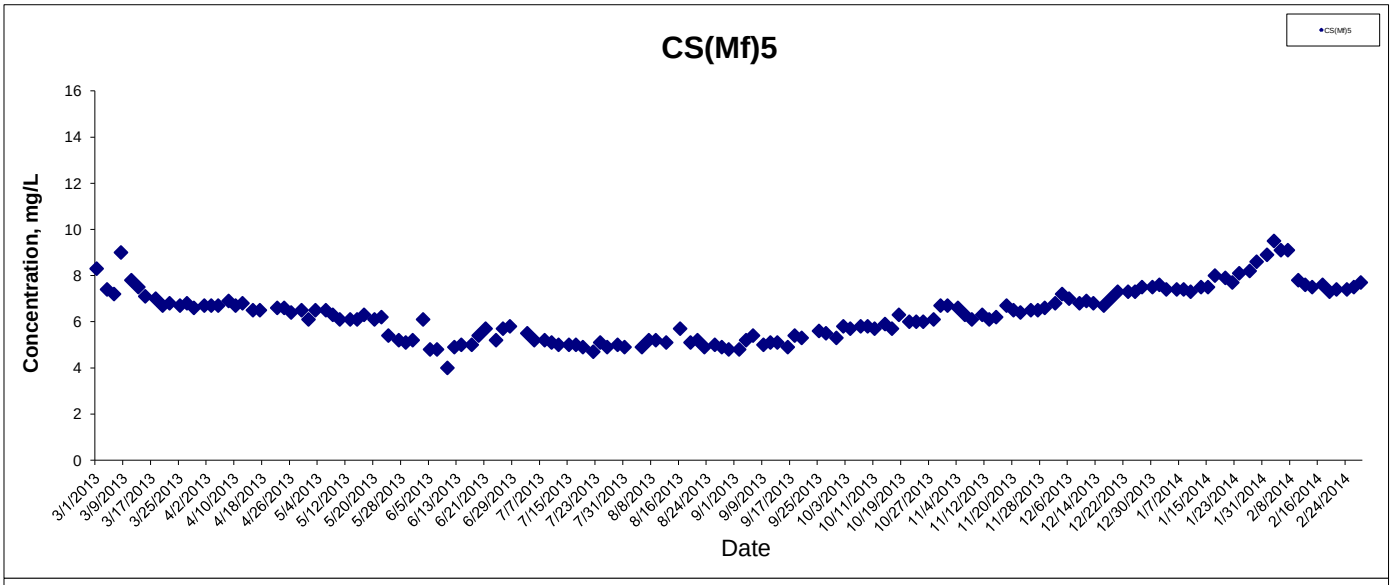
Dissolved Oxygen (Bottom) at Mid-Flood Tide

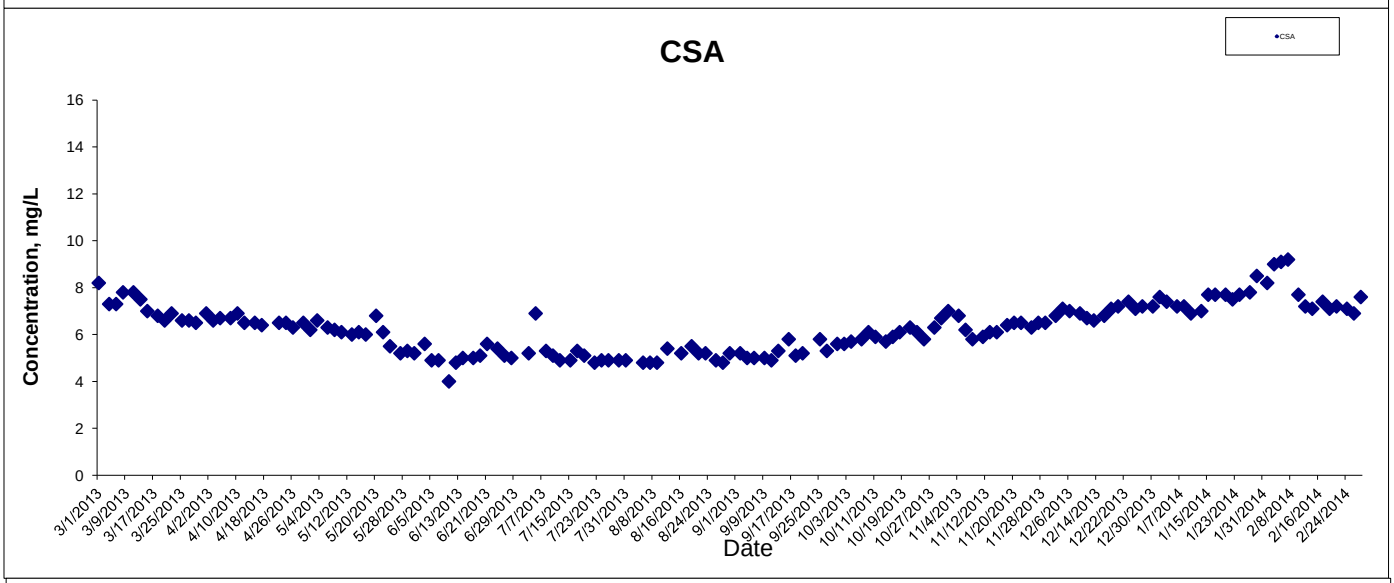


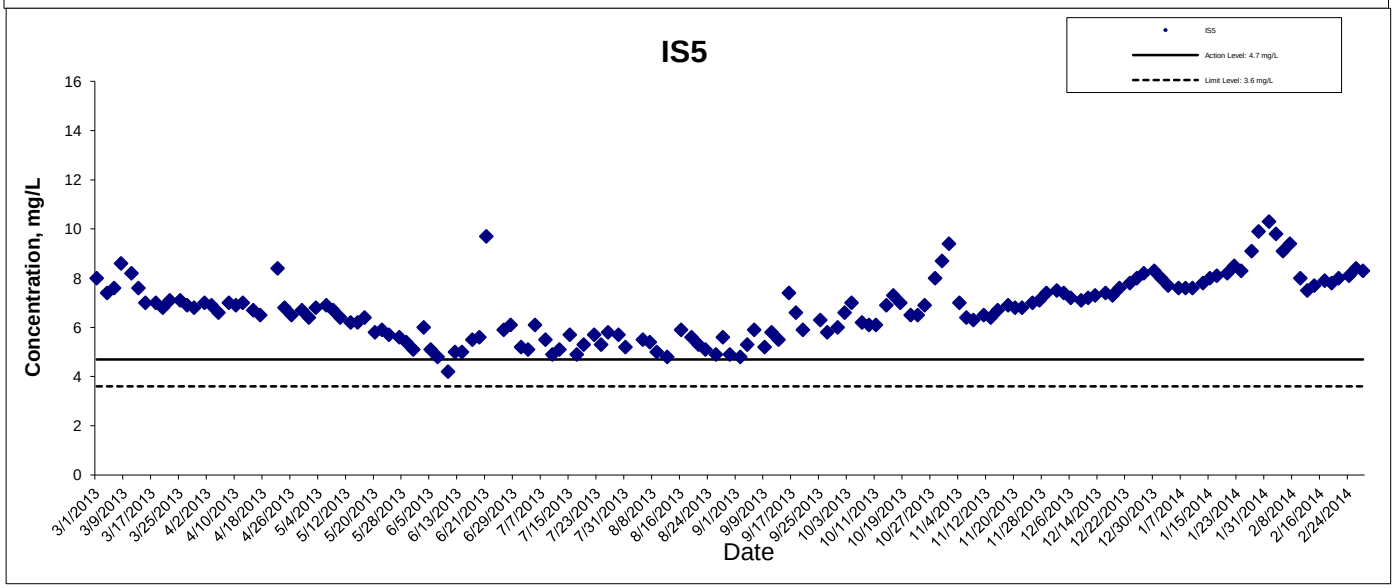




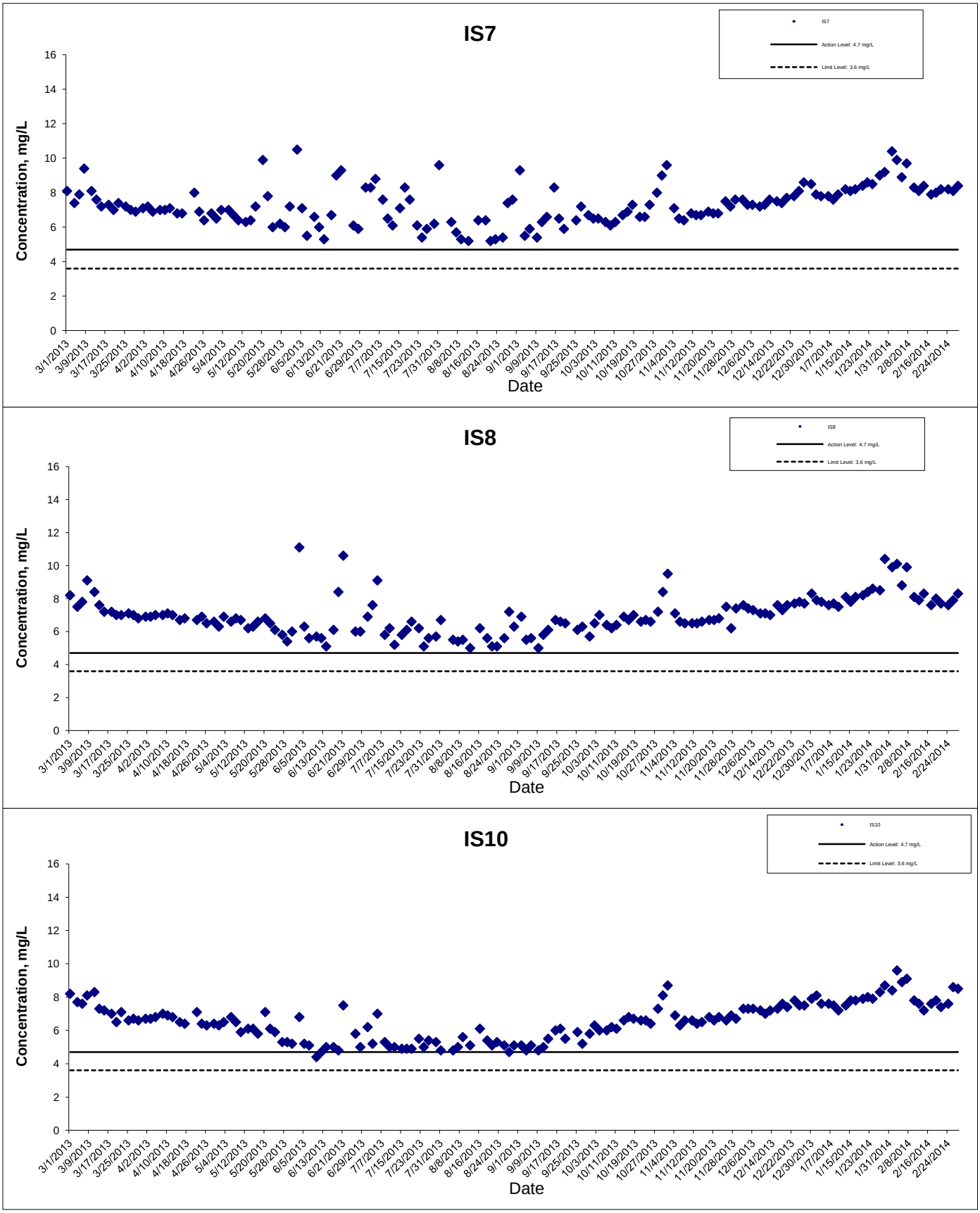
Dissolved Oxygen (Bottom) at Mid-Flood Tide



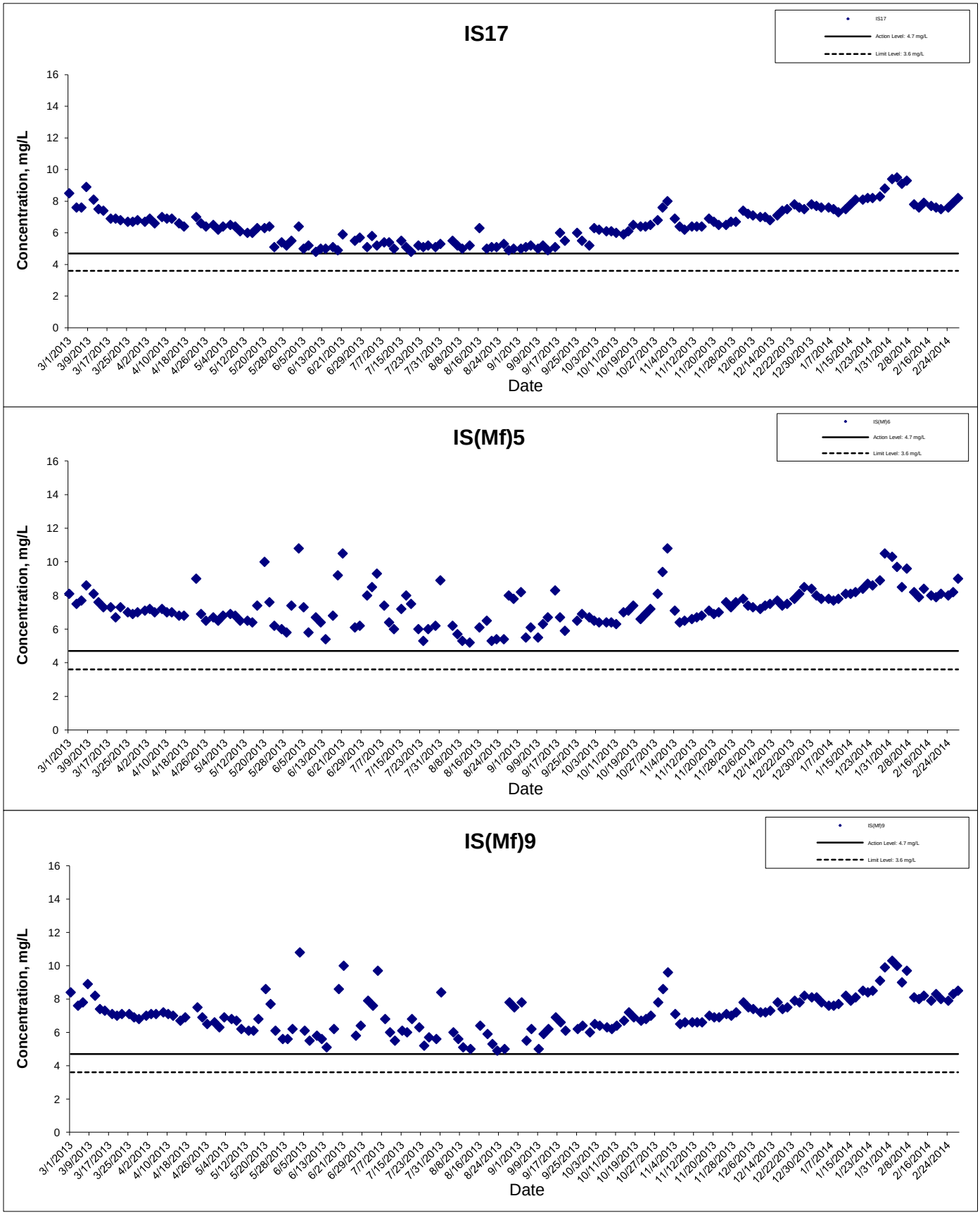




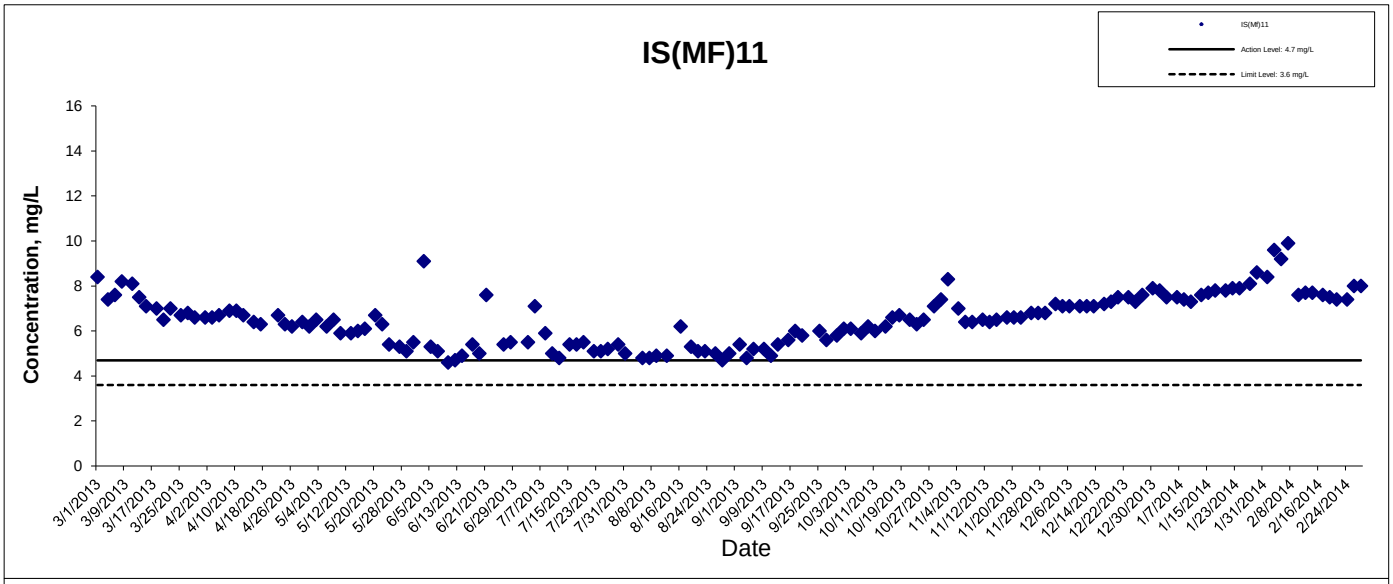
Dissolved Oxygen (Bottom) at Mid-Flood Tide

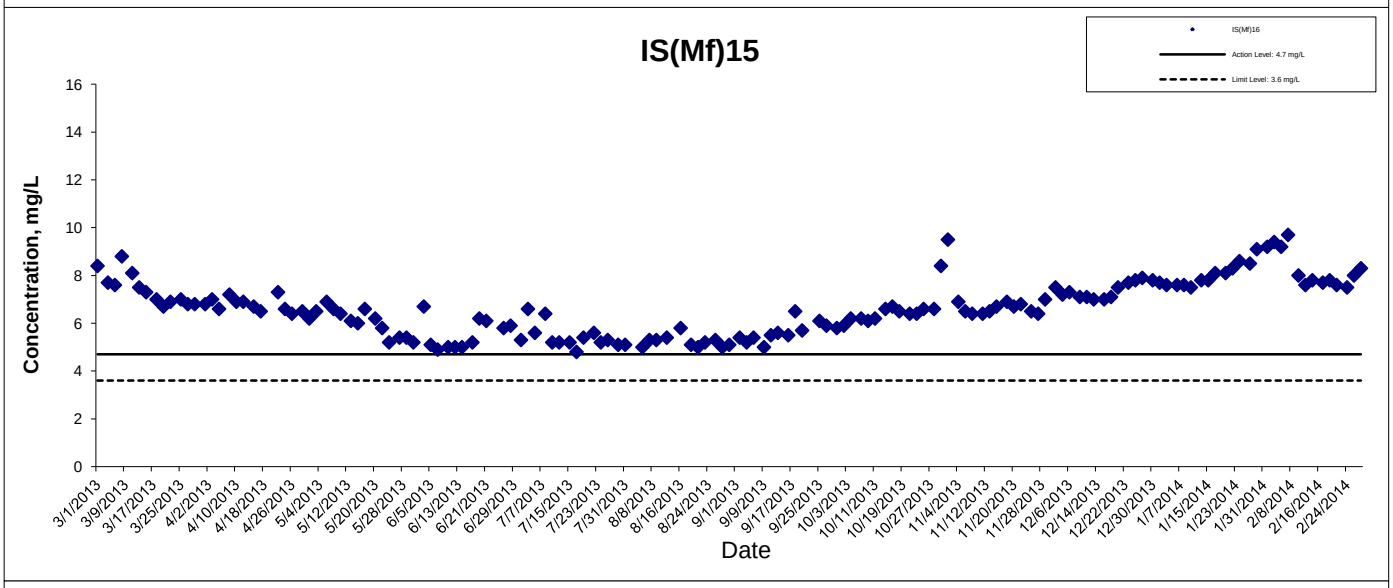


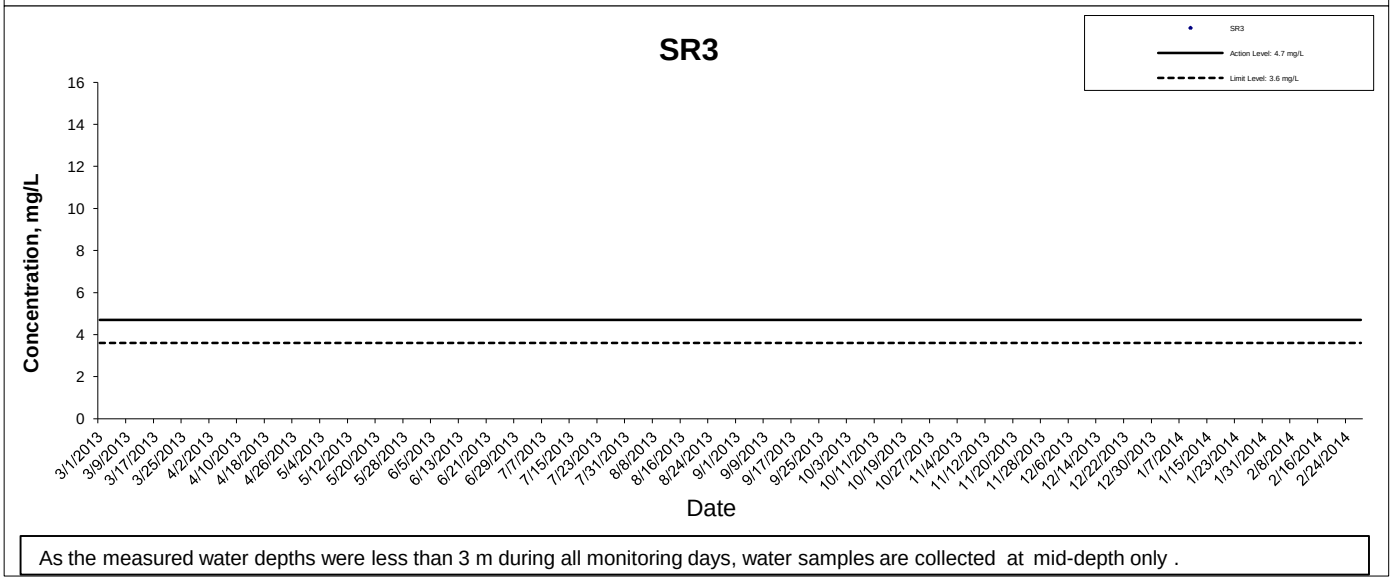
Dissolved Oxygen (Bottom) at Mid-Flood Tide



Dissolved Oxygen (Bottom) at Mid-Flood Tide







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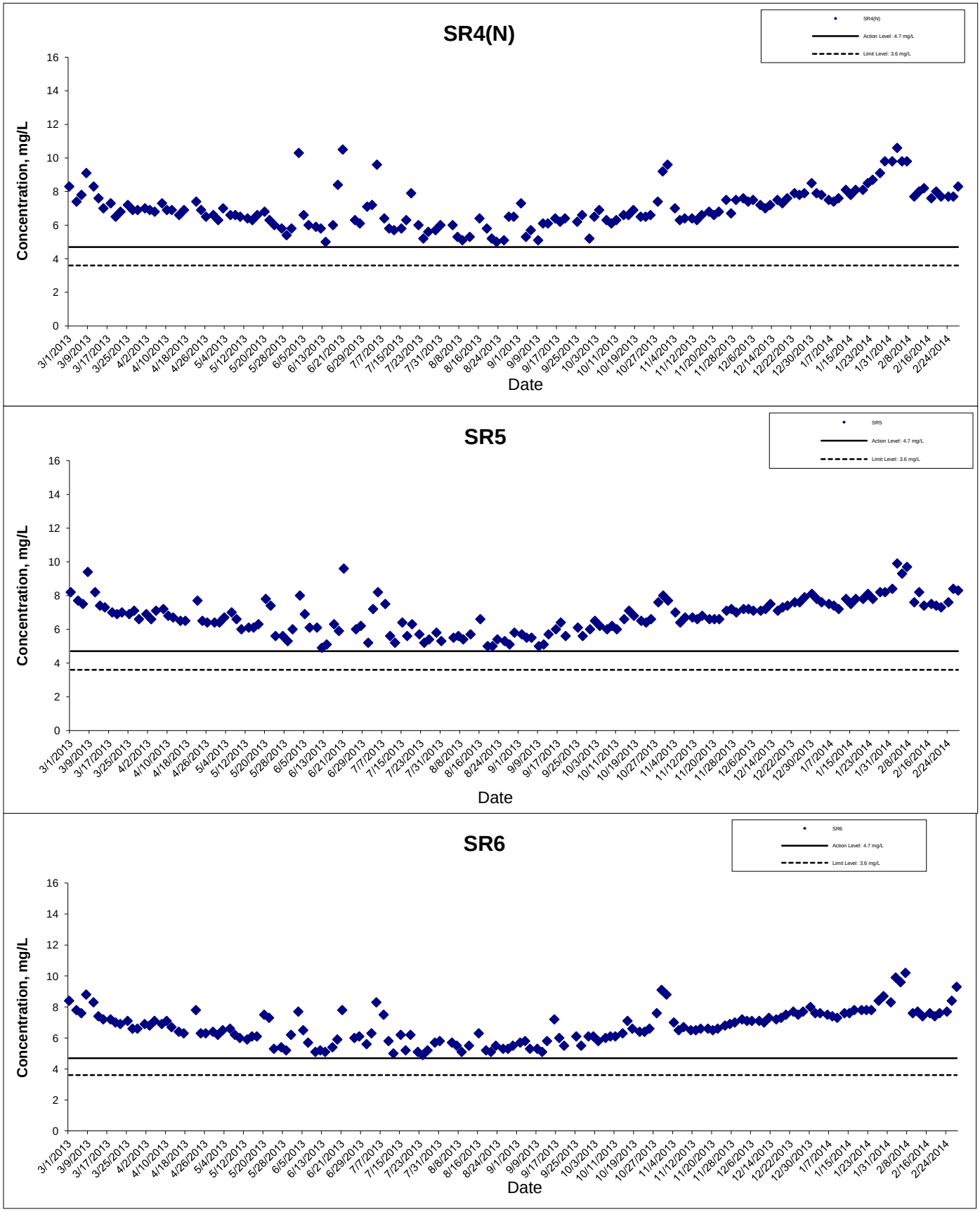
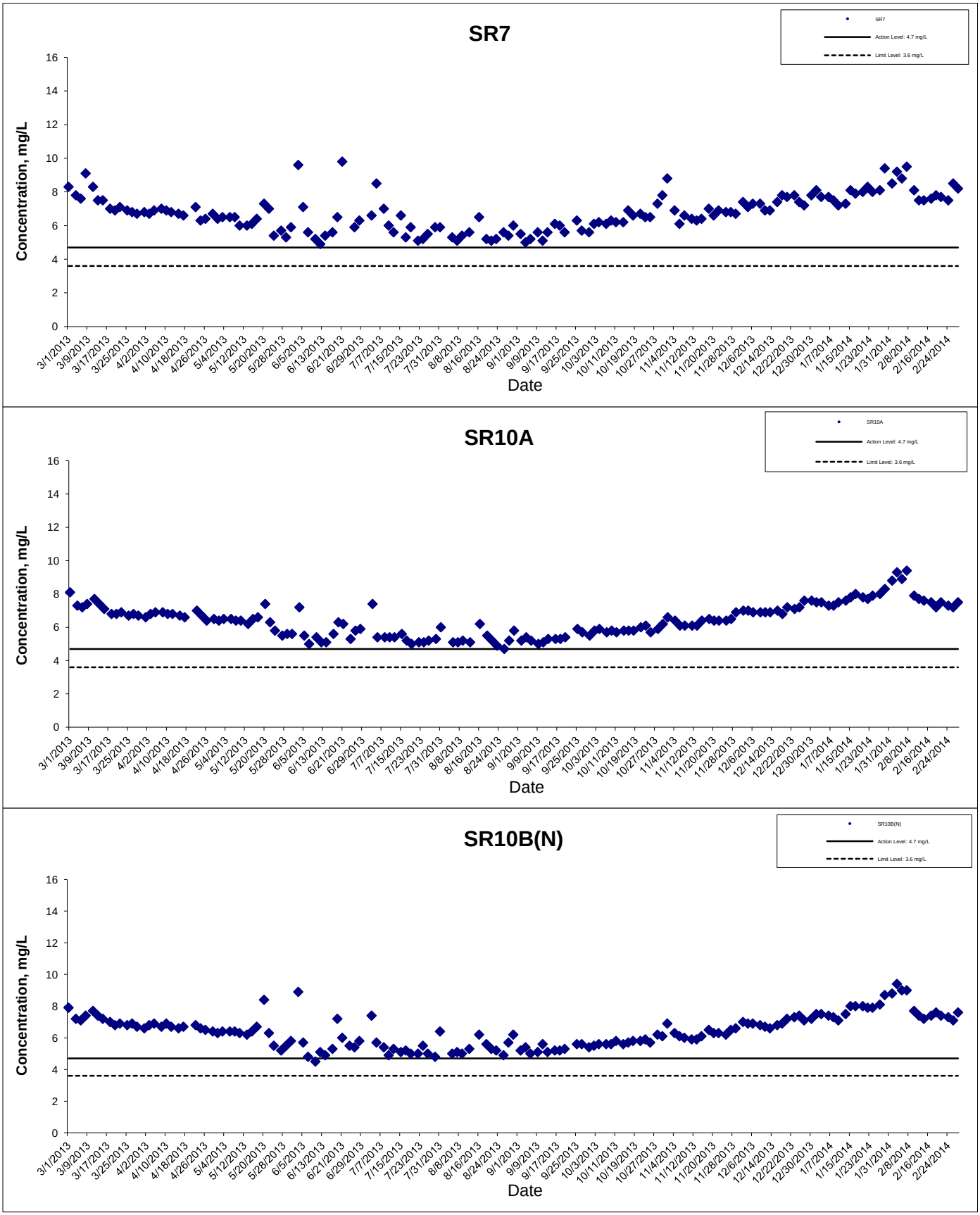
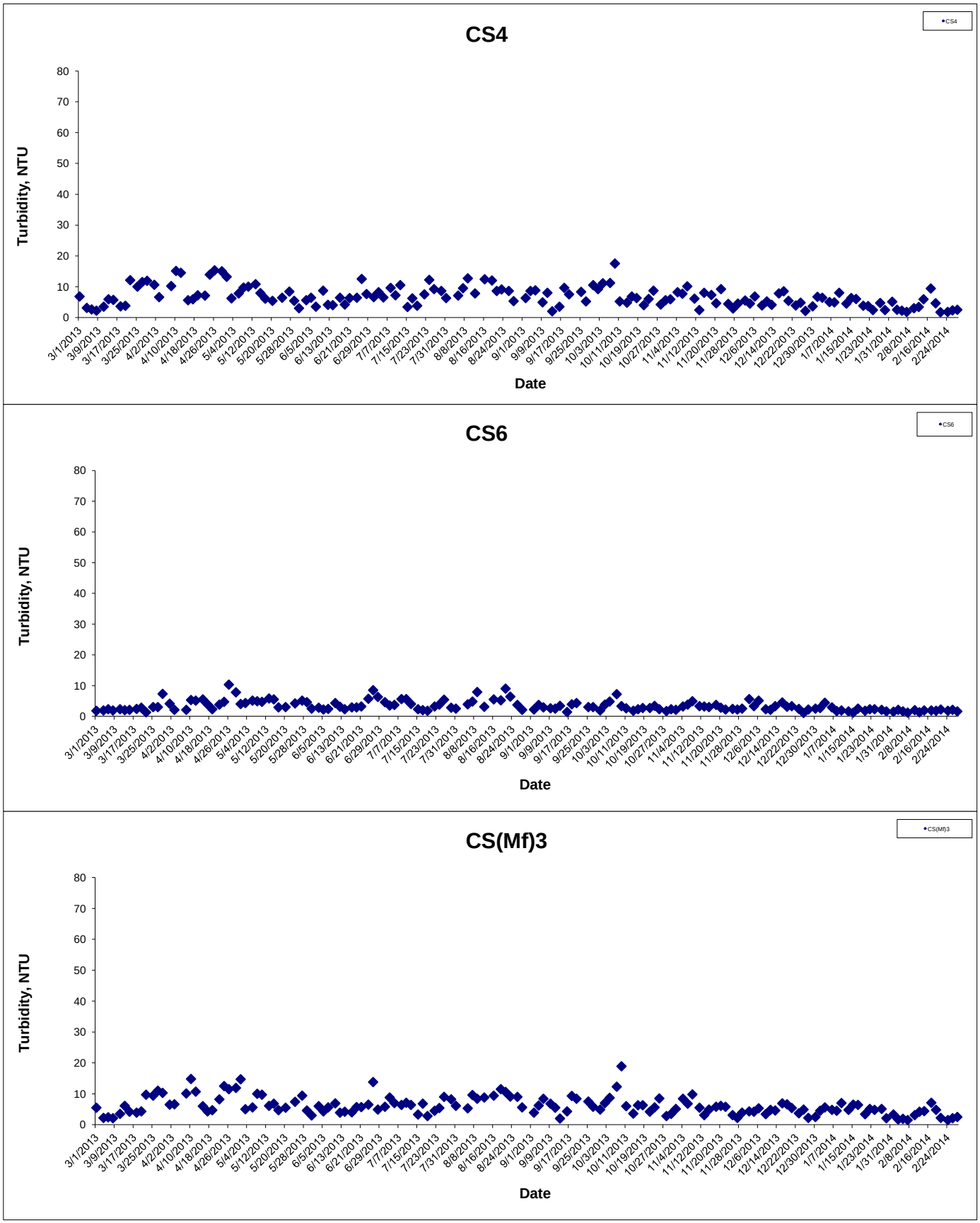
Dissolved Oxygen (Bottom) at Mid-Flood Tide



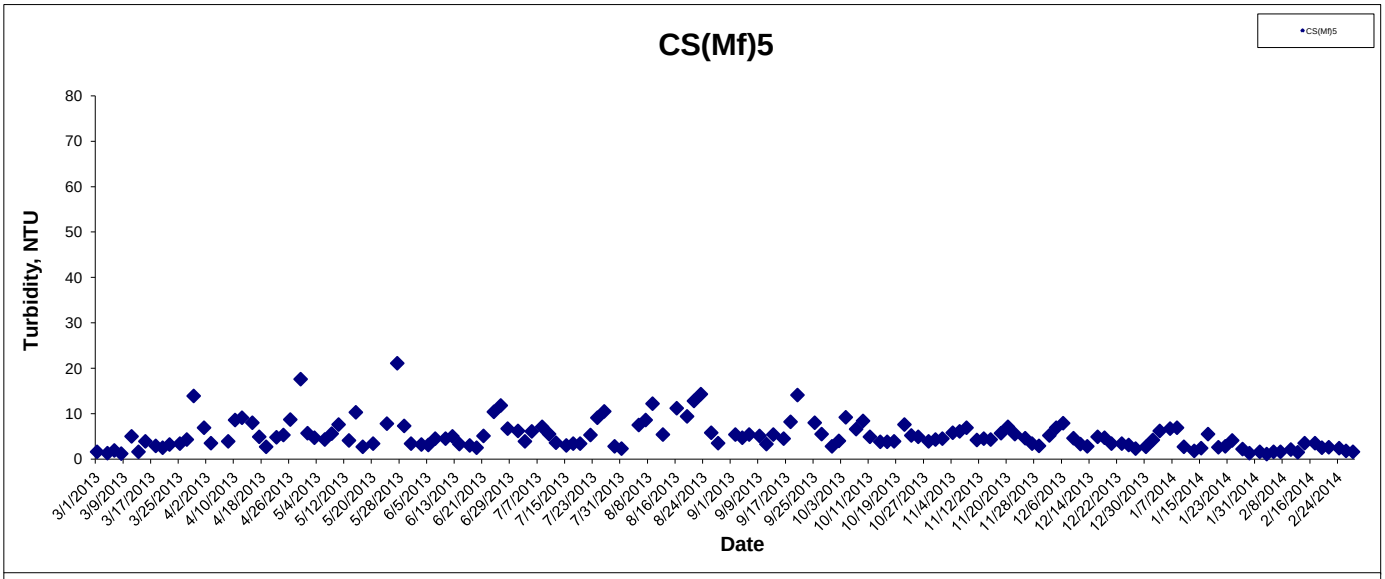
Dissolved Oxygen (Bottom) at Mid-Flood Tide

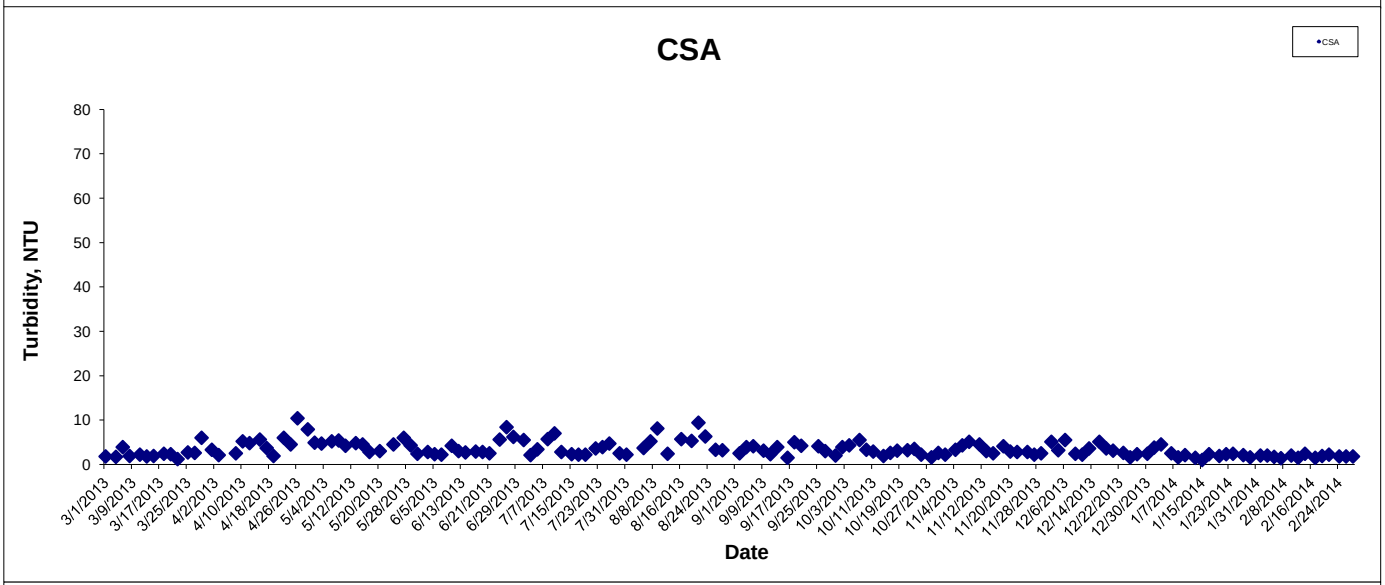


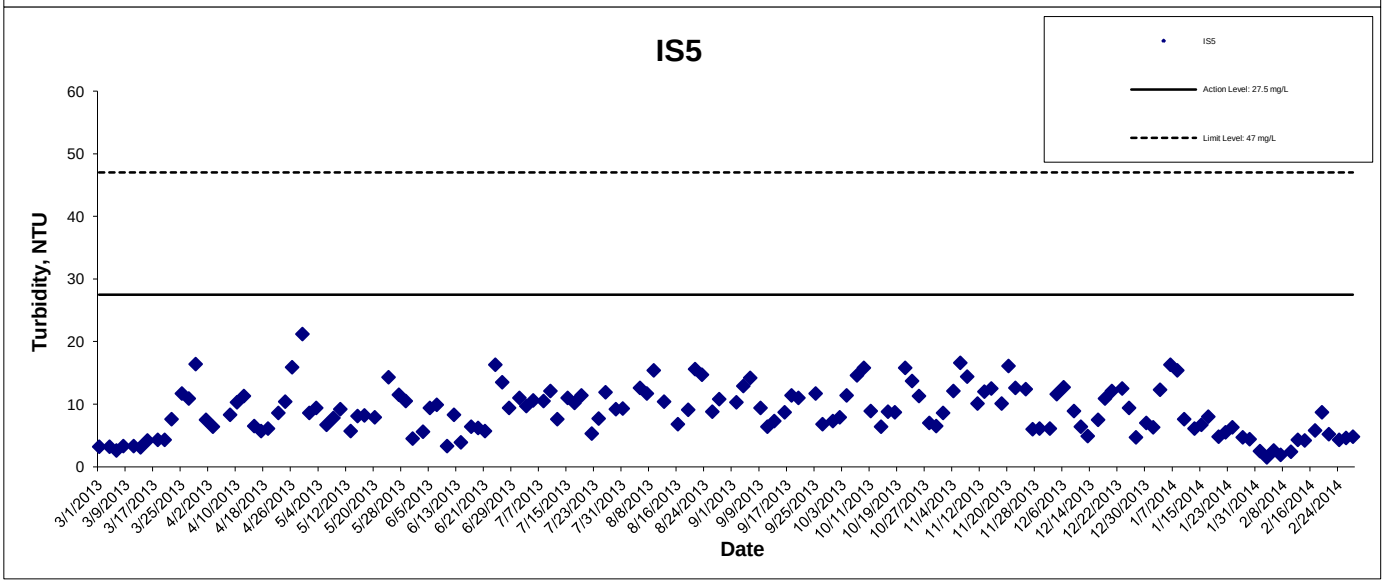
Turbidity at Mid-Ebb Tide



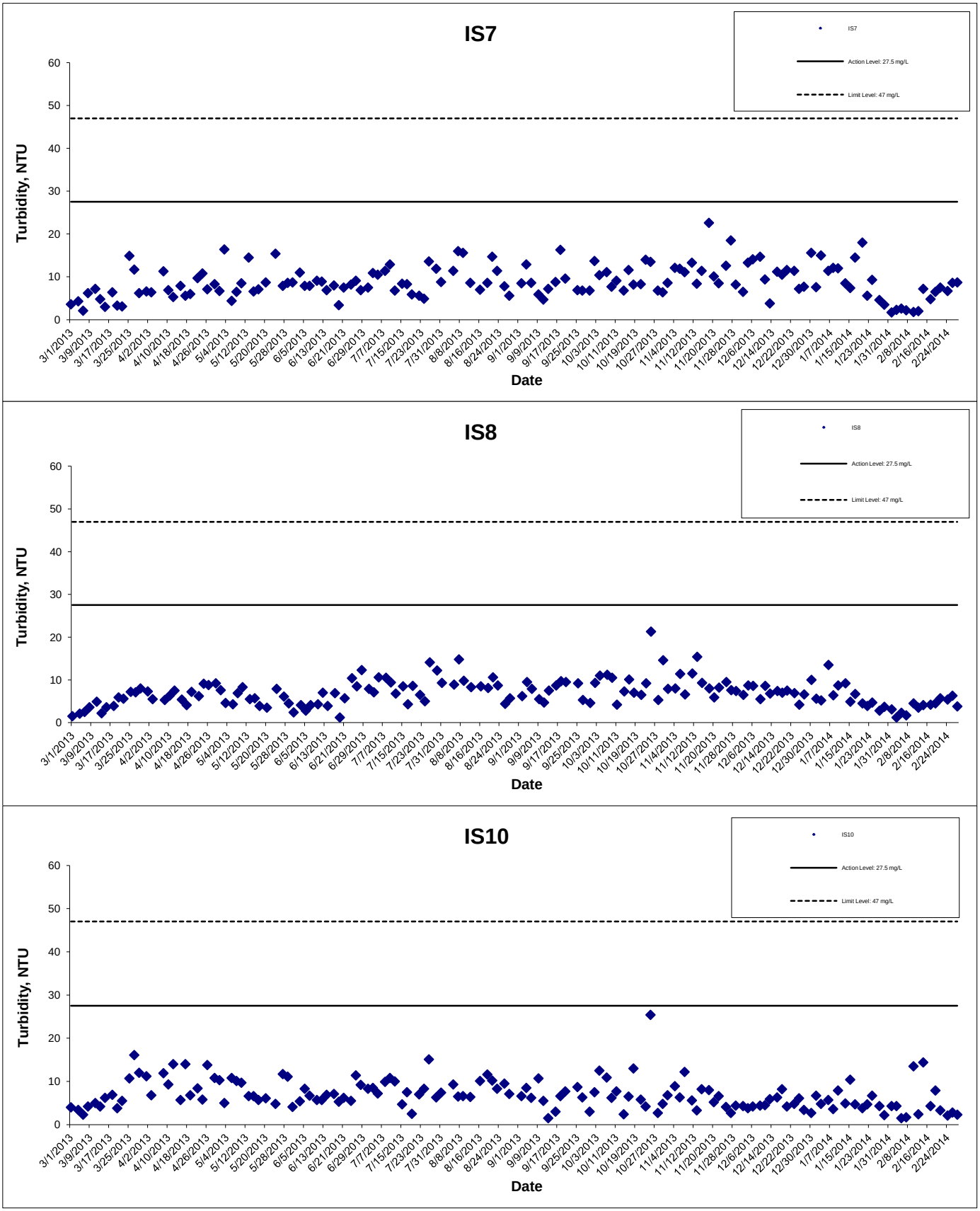
Turbidity at Mid-Ebb Tide



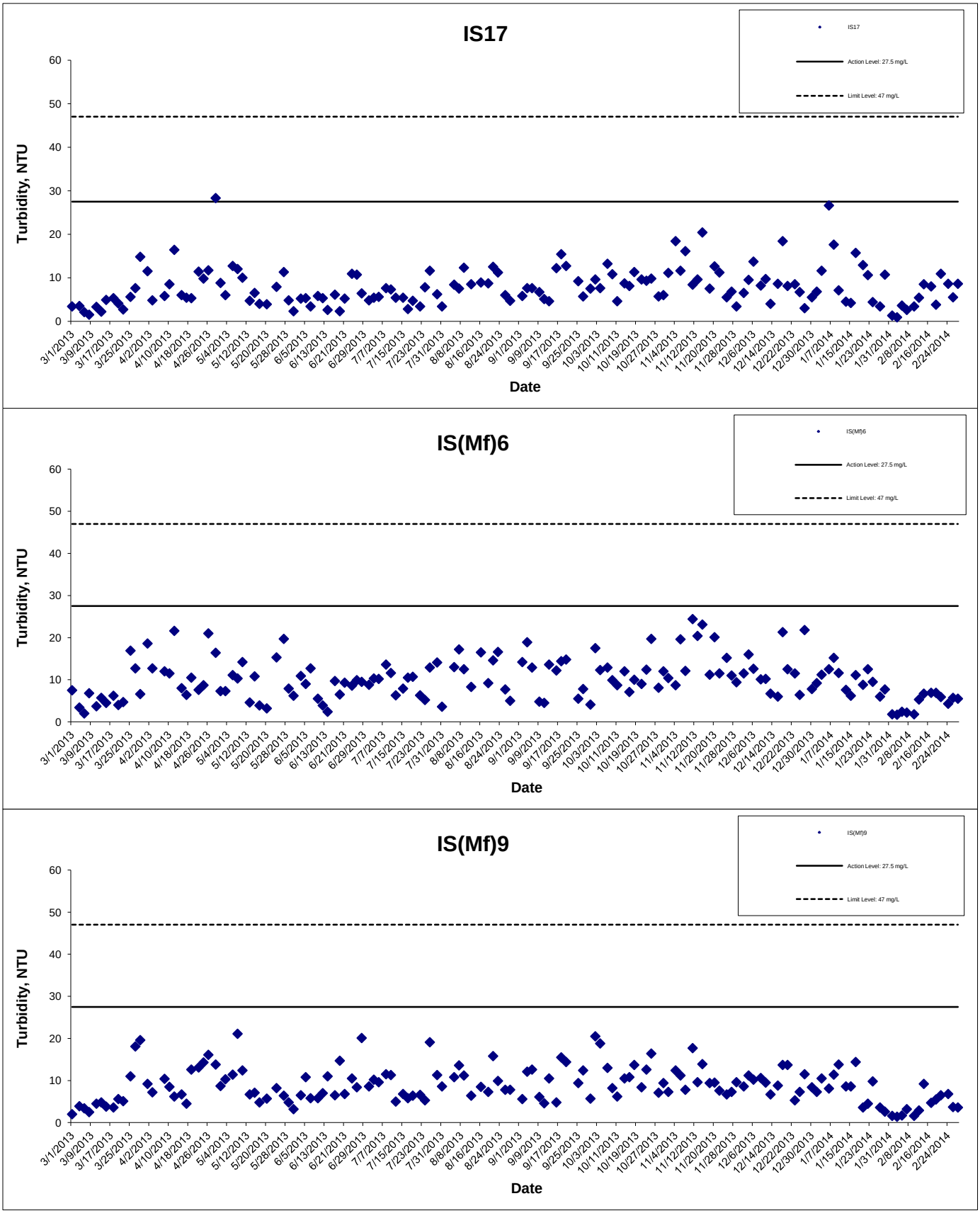




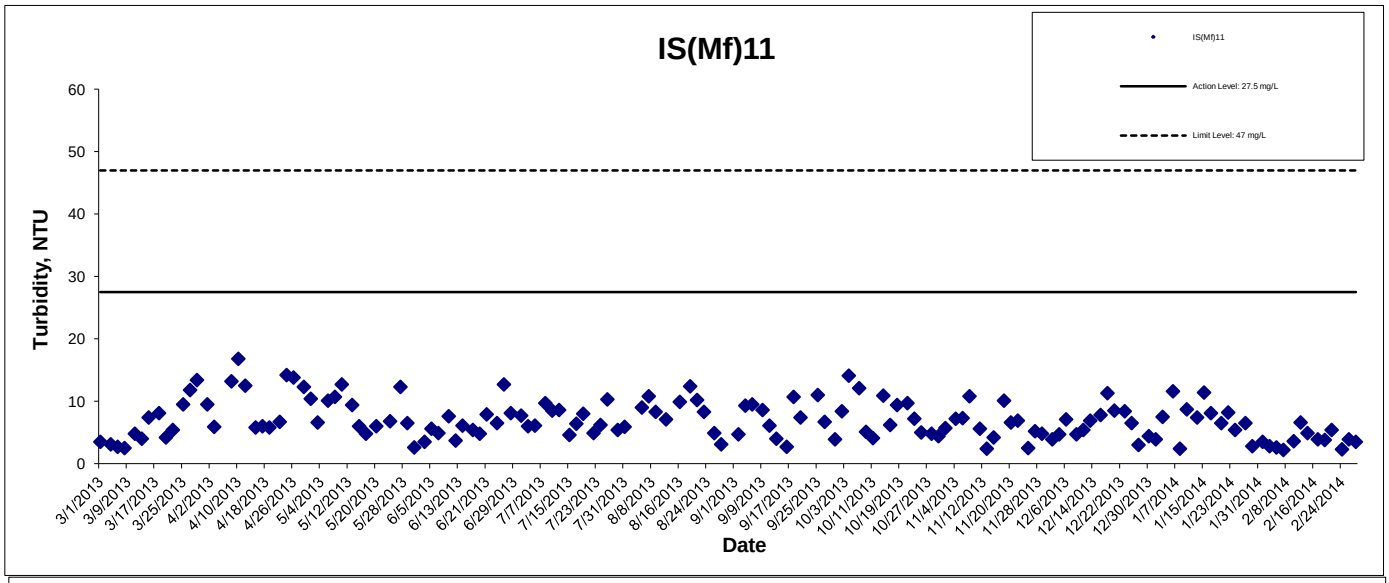
Turbidity at Mid-Ebb Tide

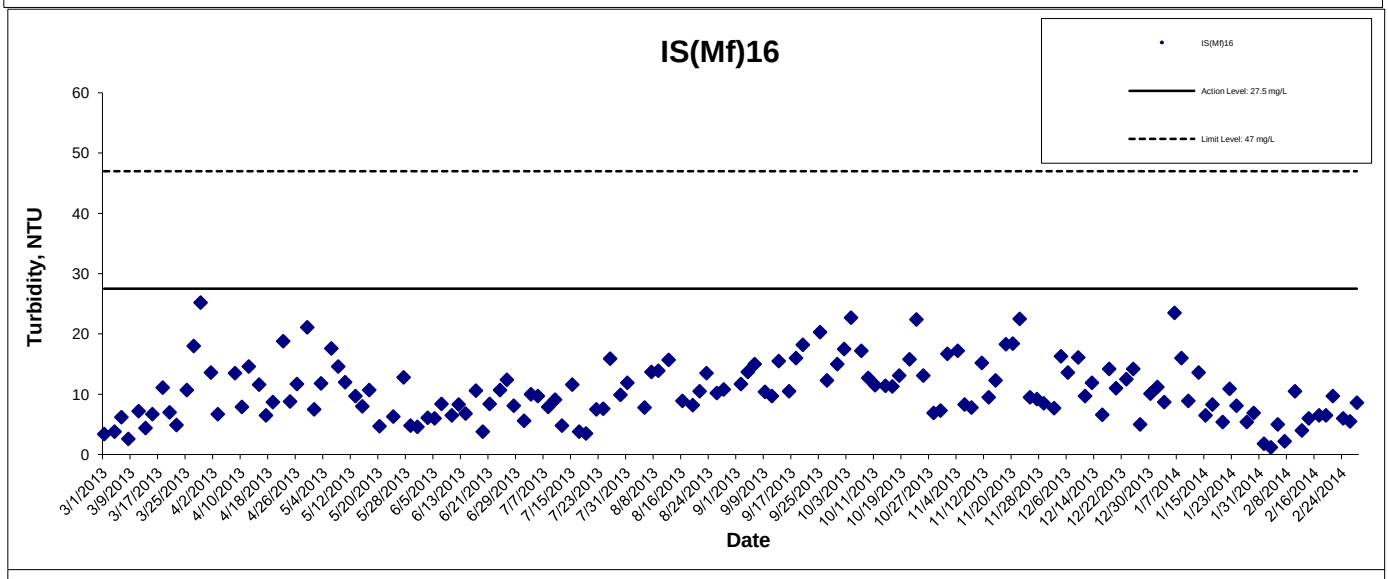


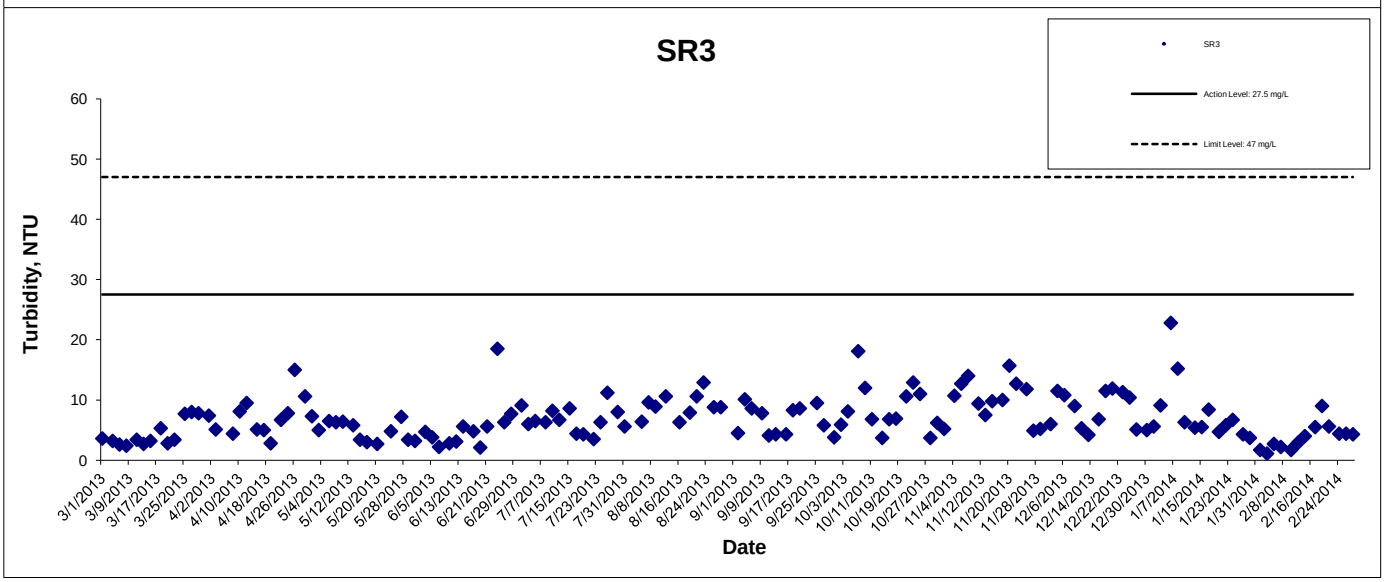
Turbidity at Mid-Ebb Tide



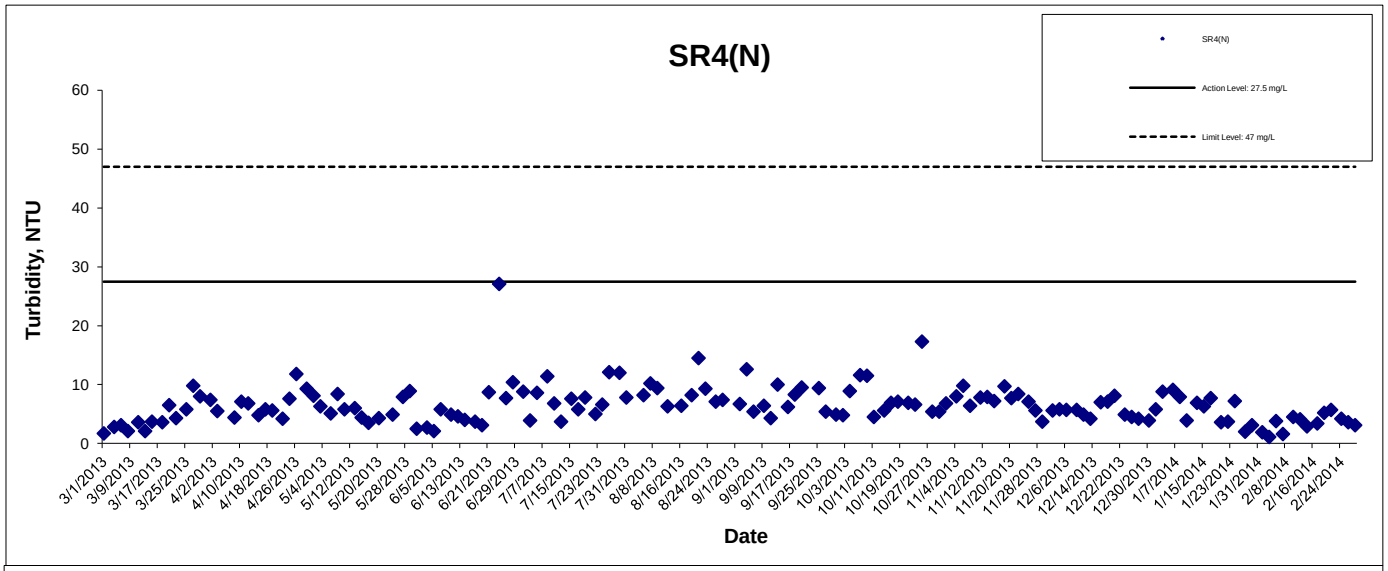
Turbidity at Mid-Ebb Tide

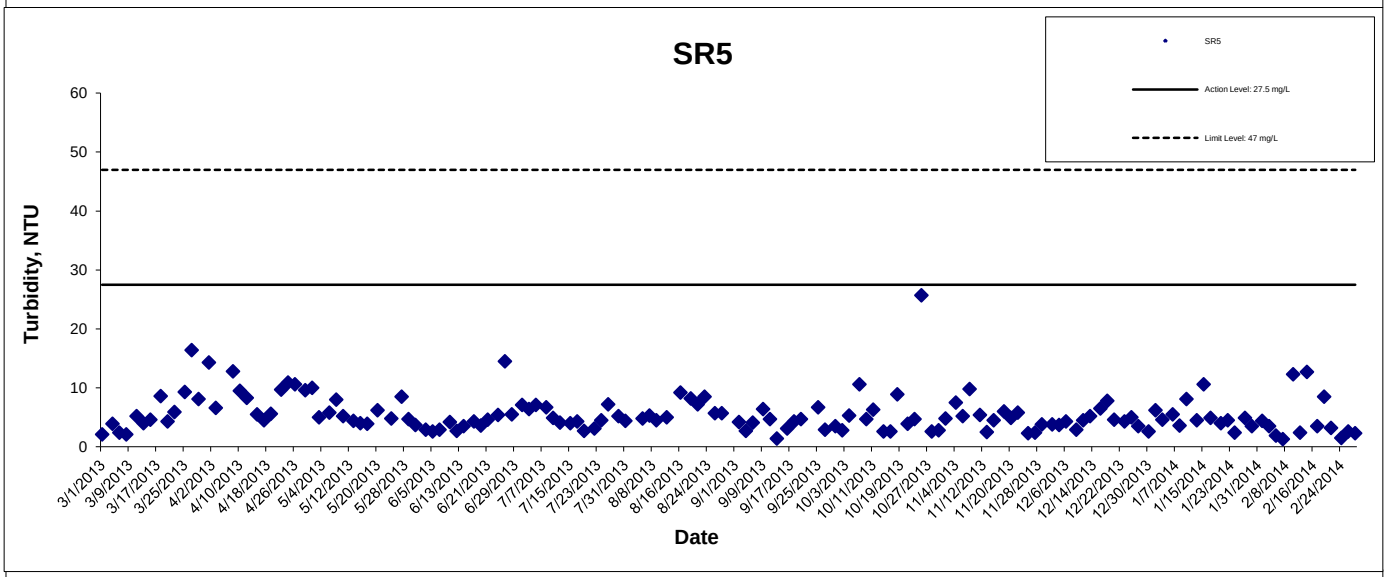


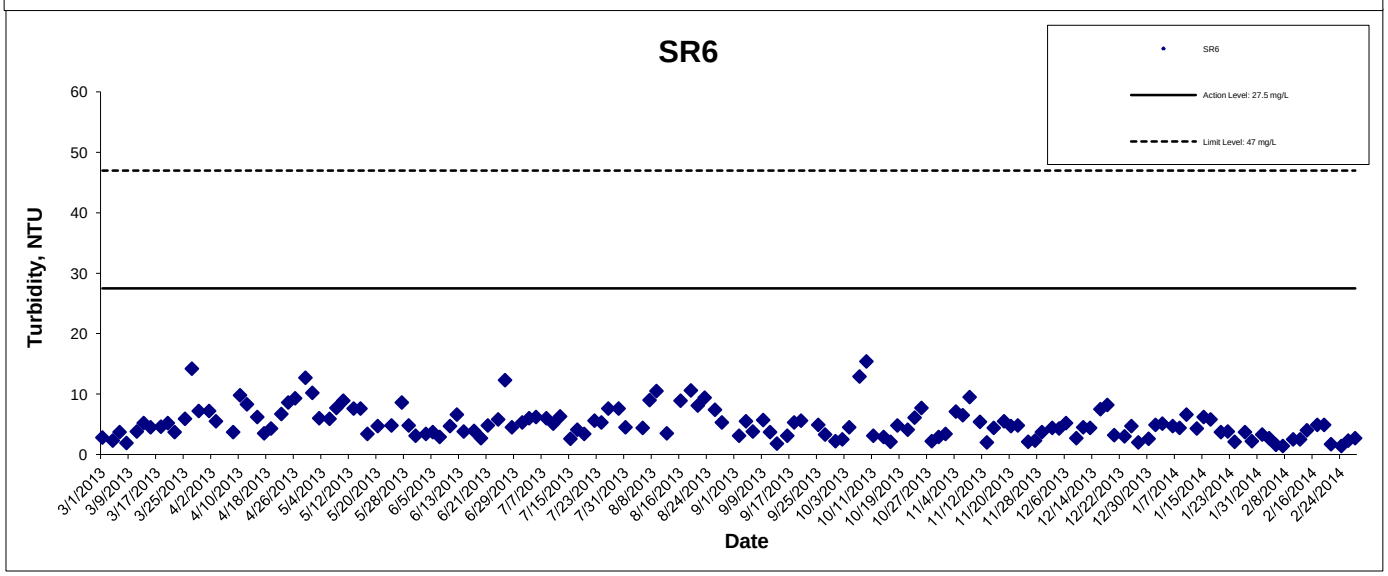




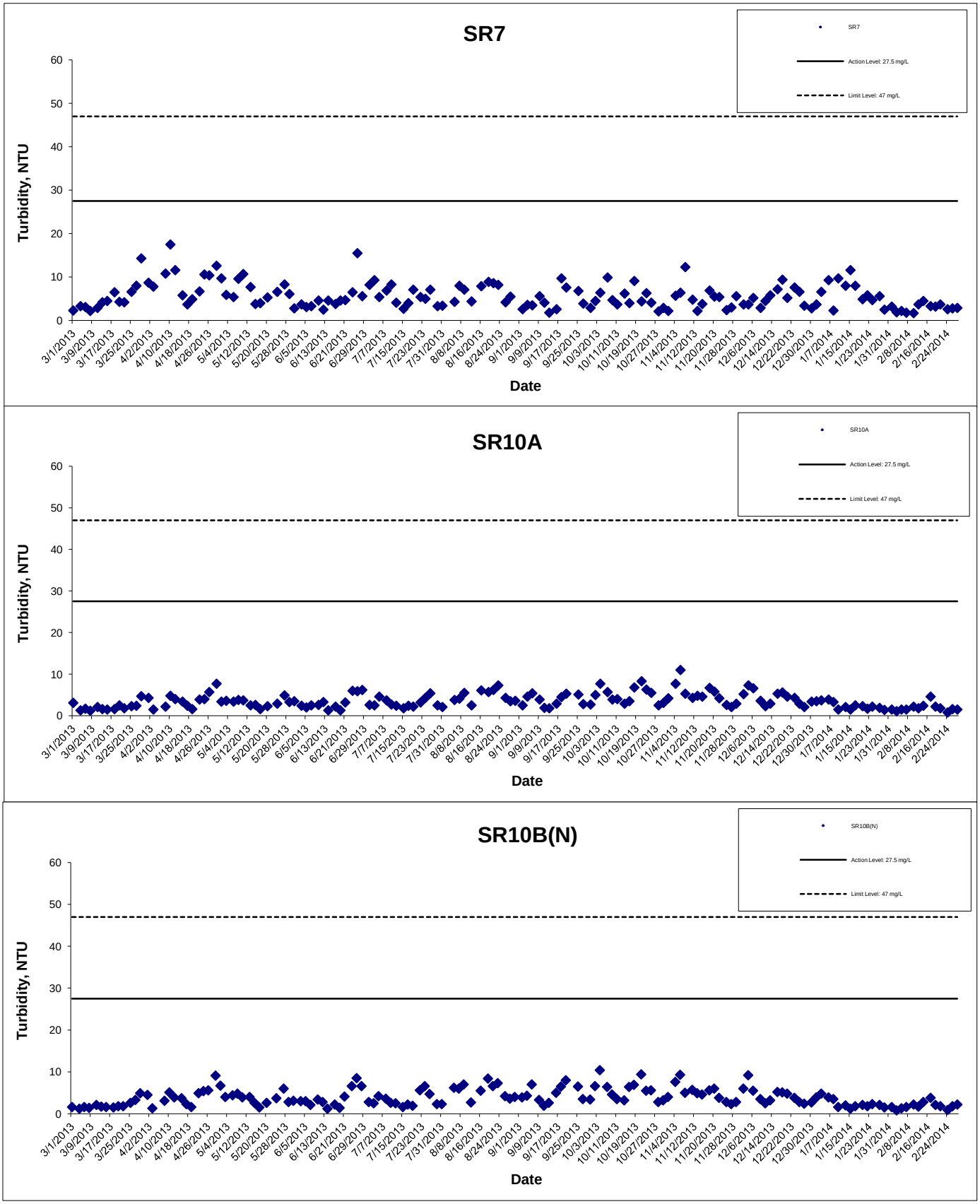
Turbidity at Mid-Ebb Tide



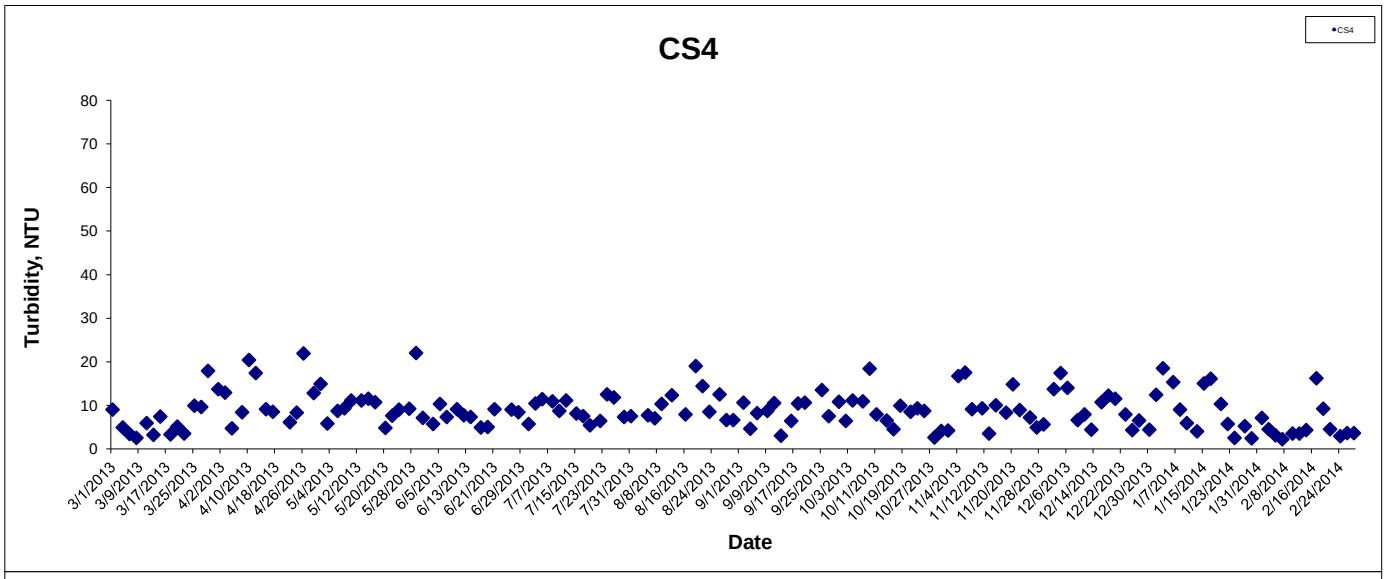


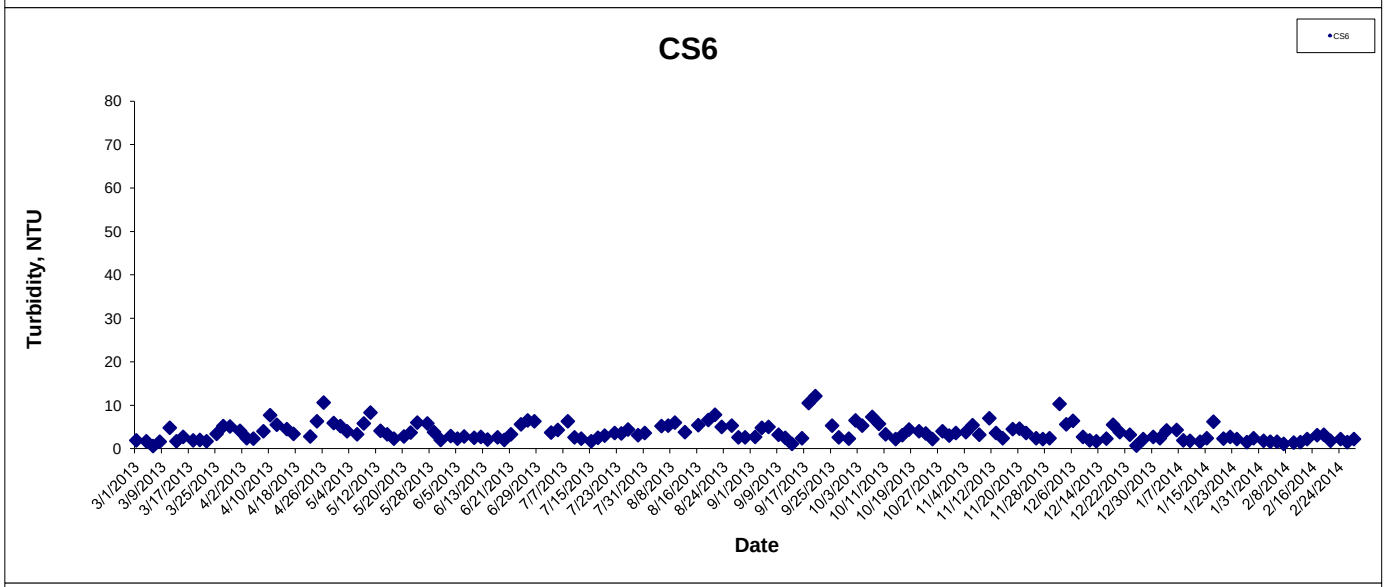


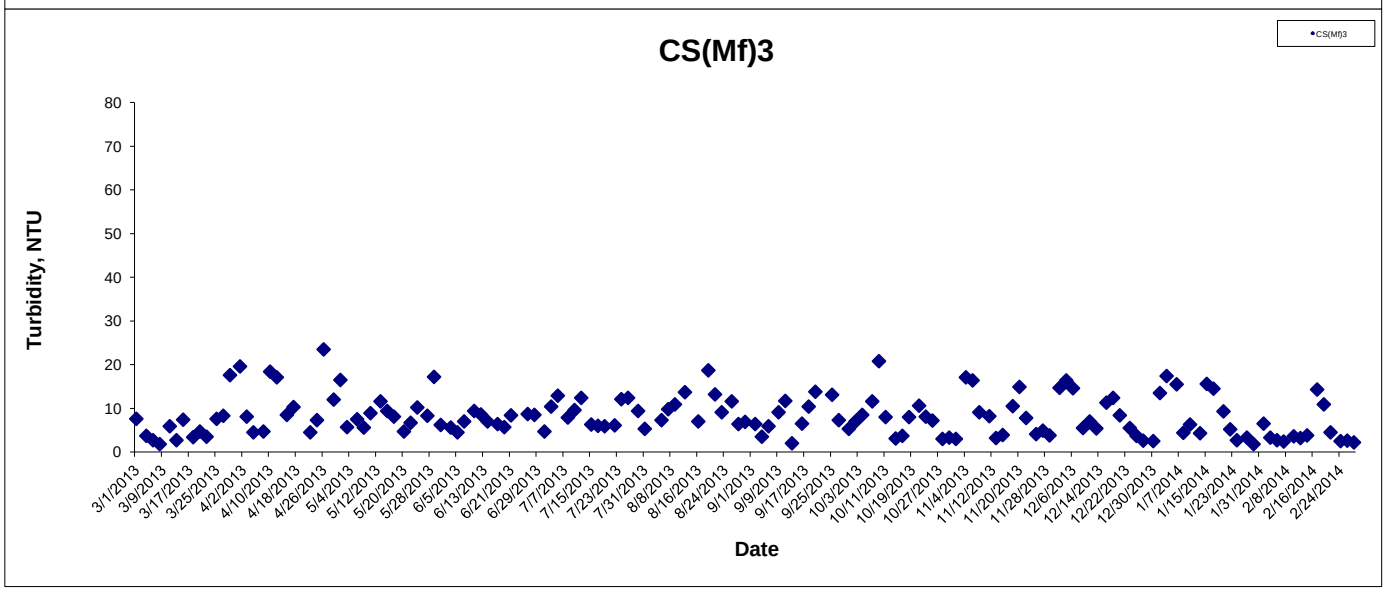
Turbidity at Mid-Ebb Tide



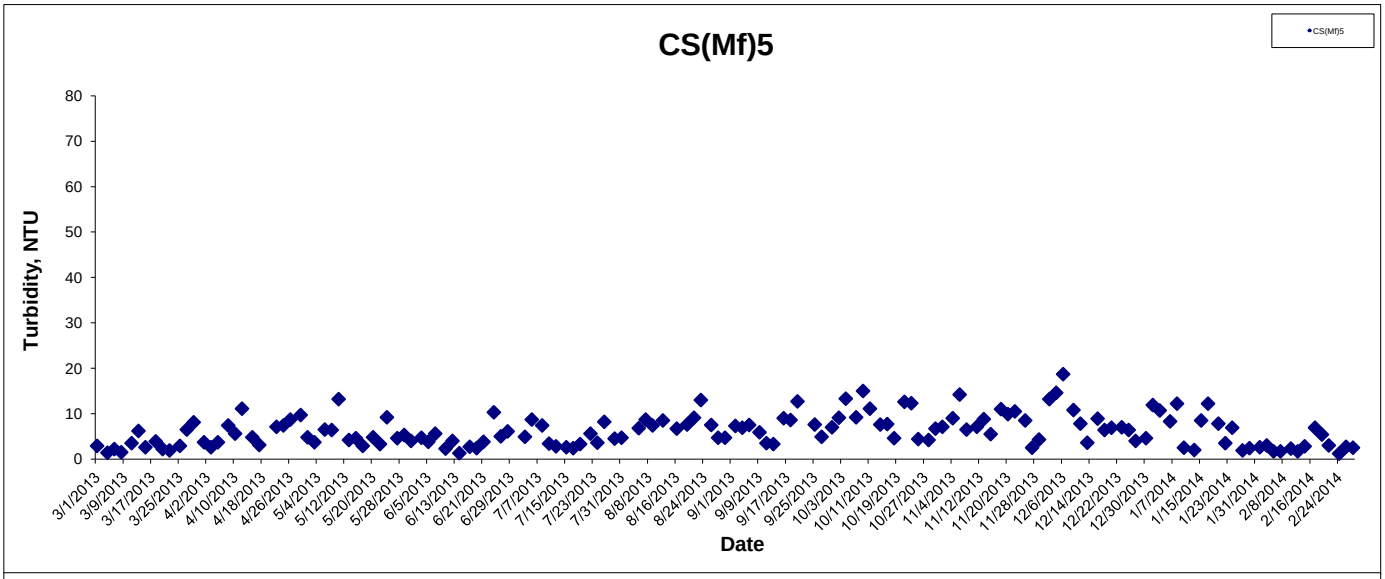
Turbidity at Mid-Flood Tide

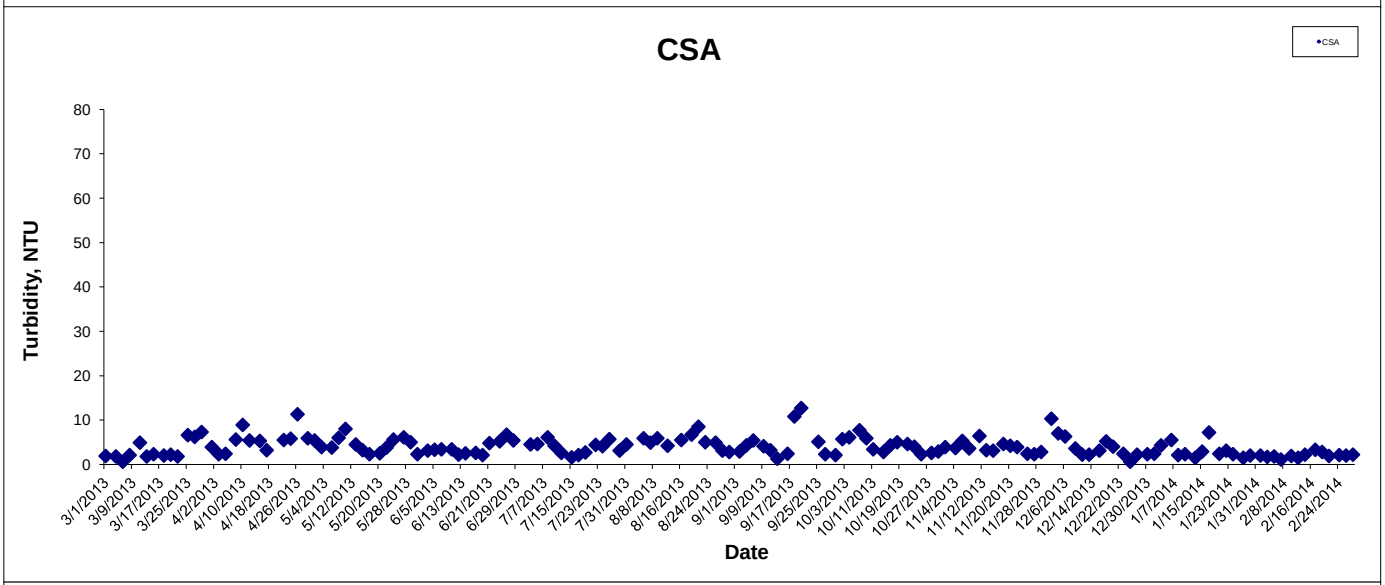


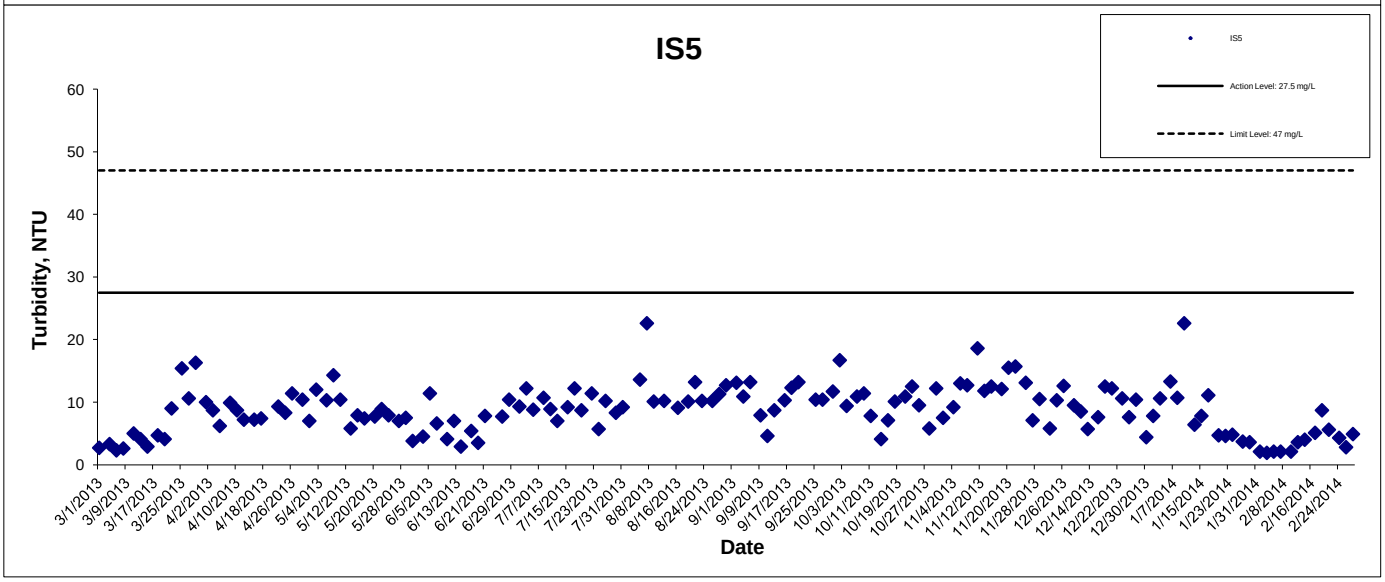




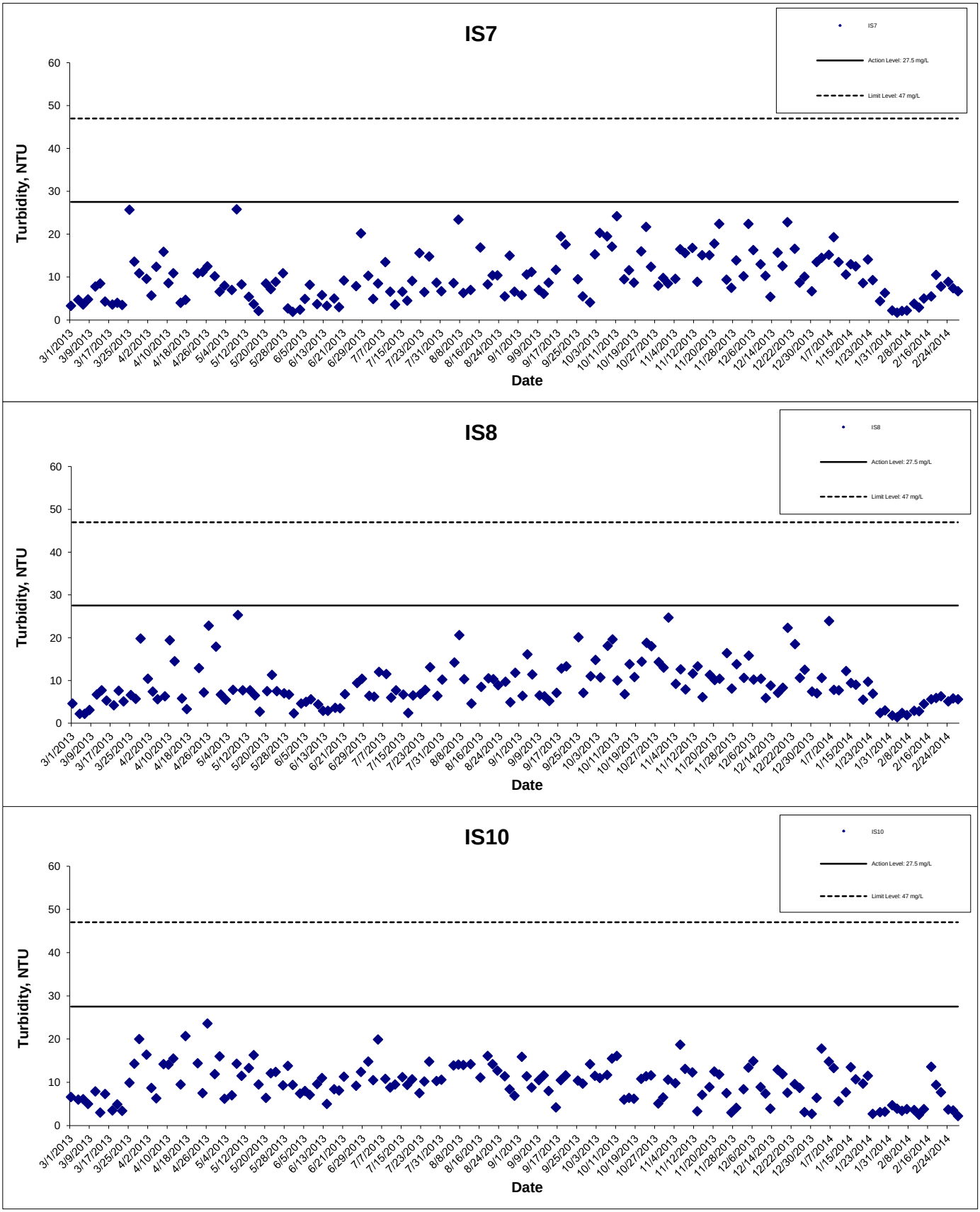
Turbidity at Mid-Flood Tide



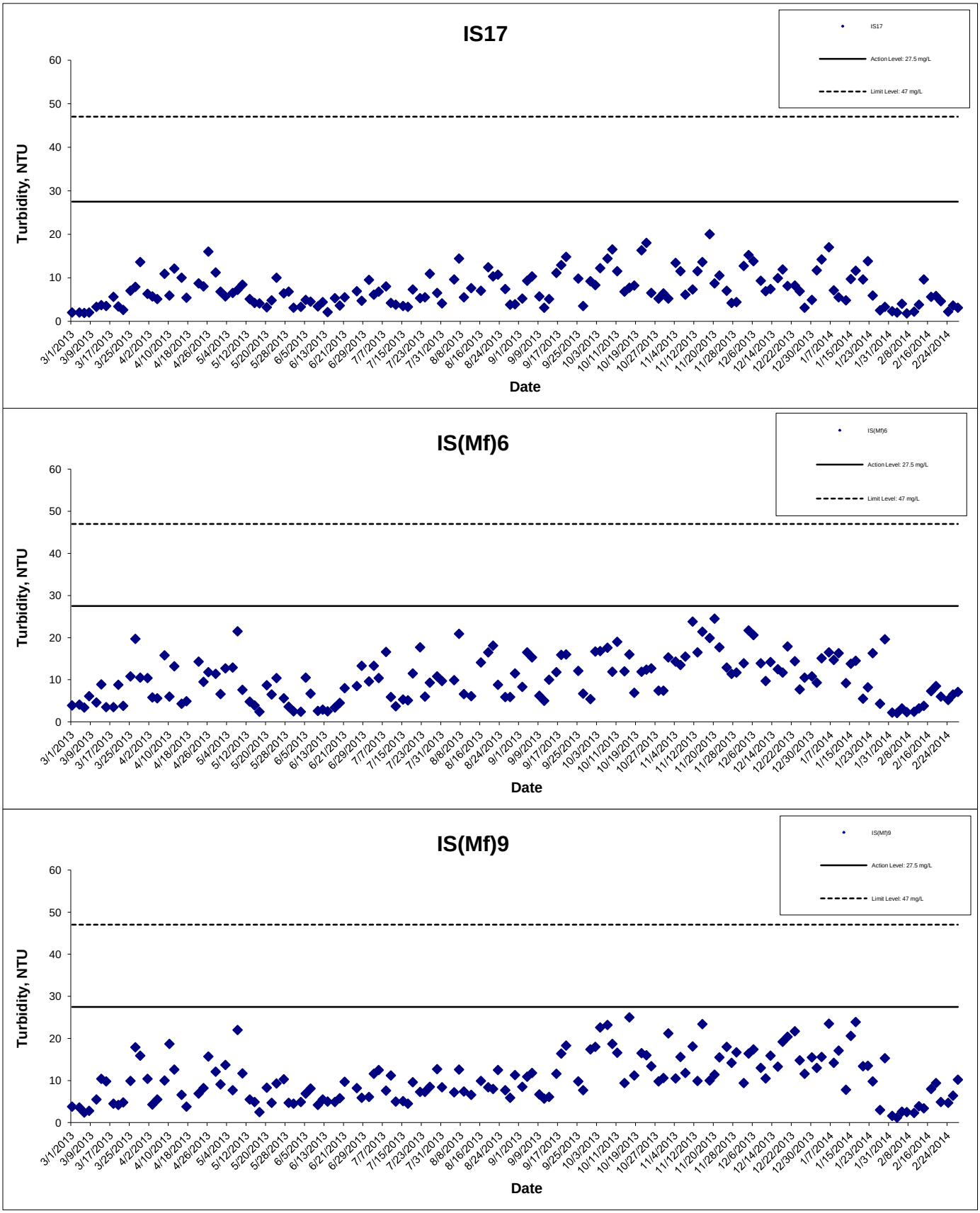




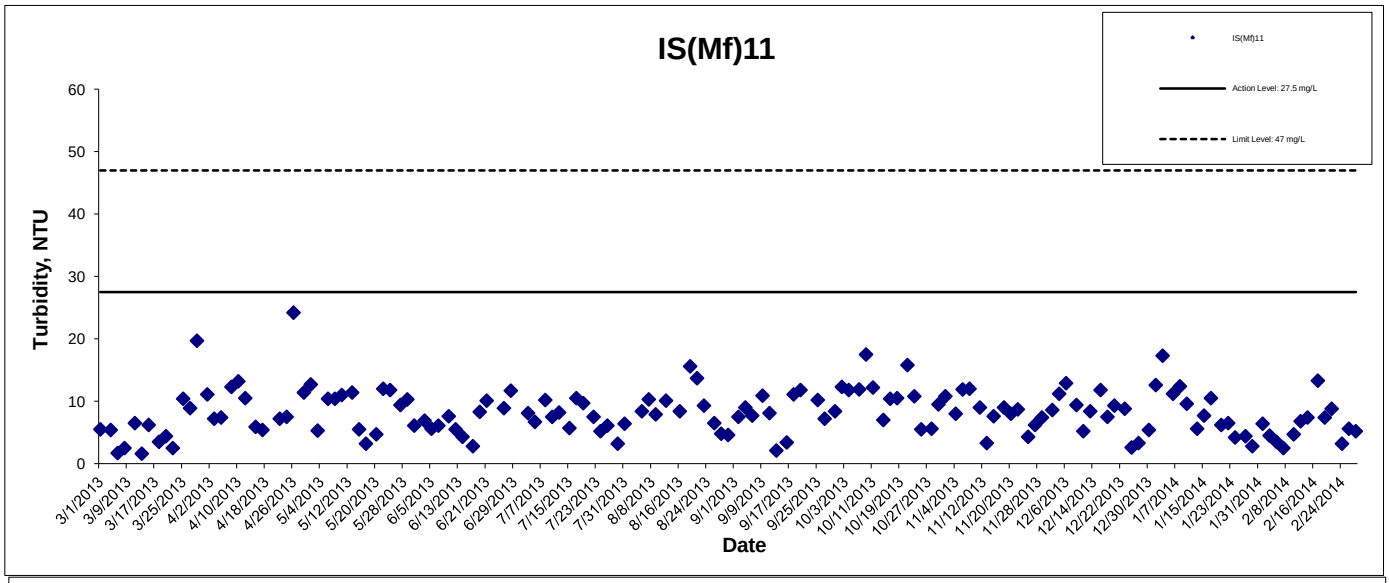
Turbidity at Mid-Flood Tide

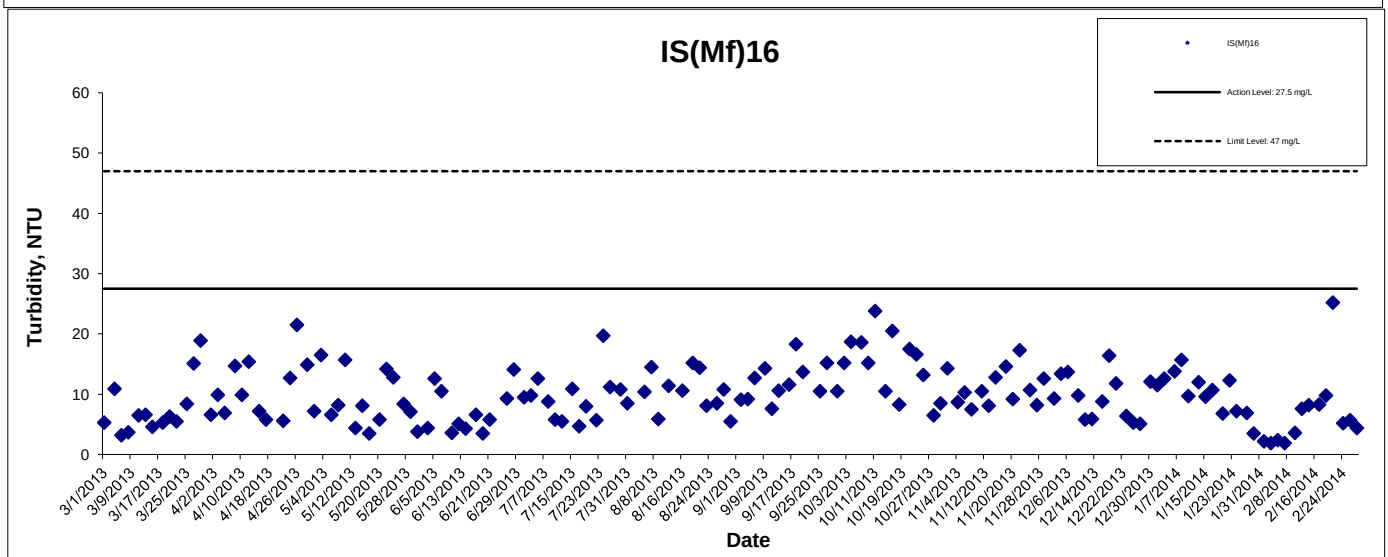


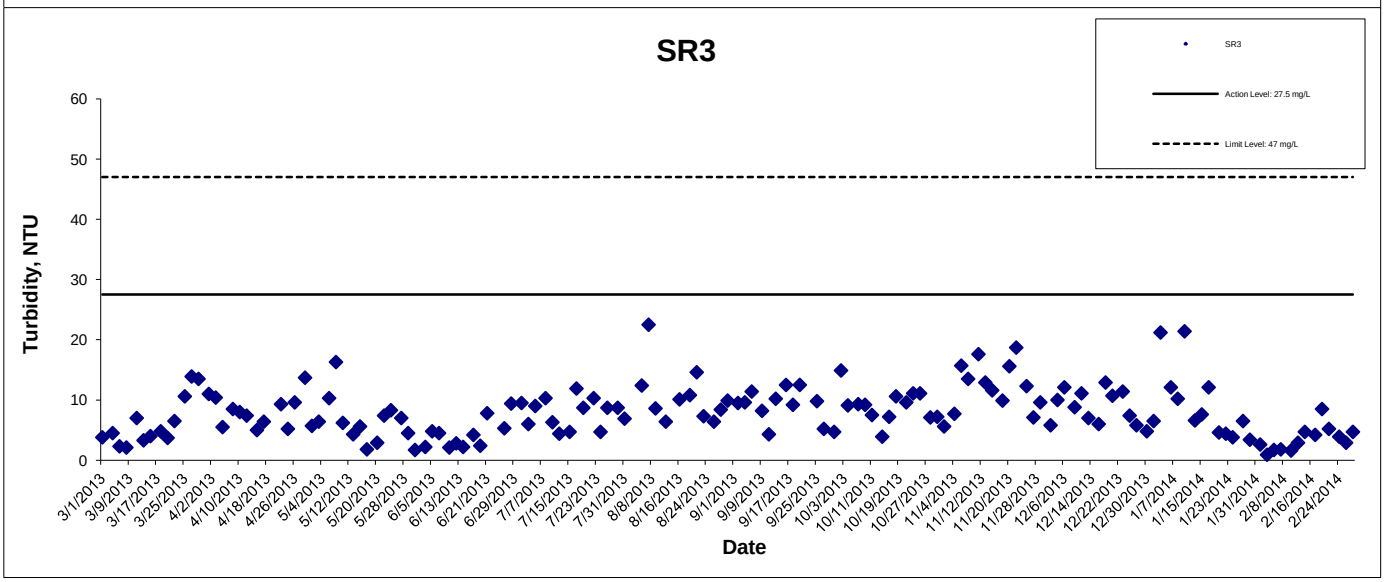
Turbidity at Mid-Flood Tide



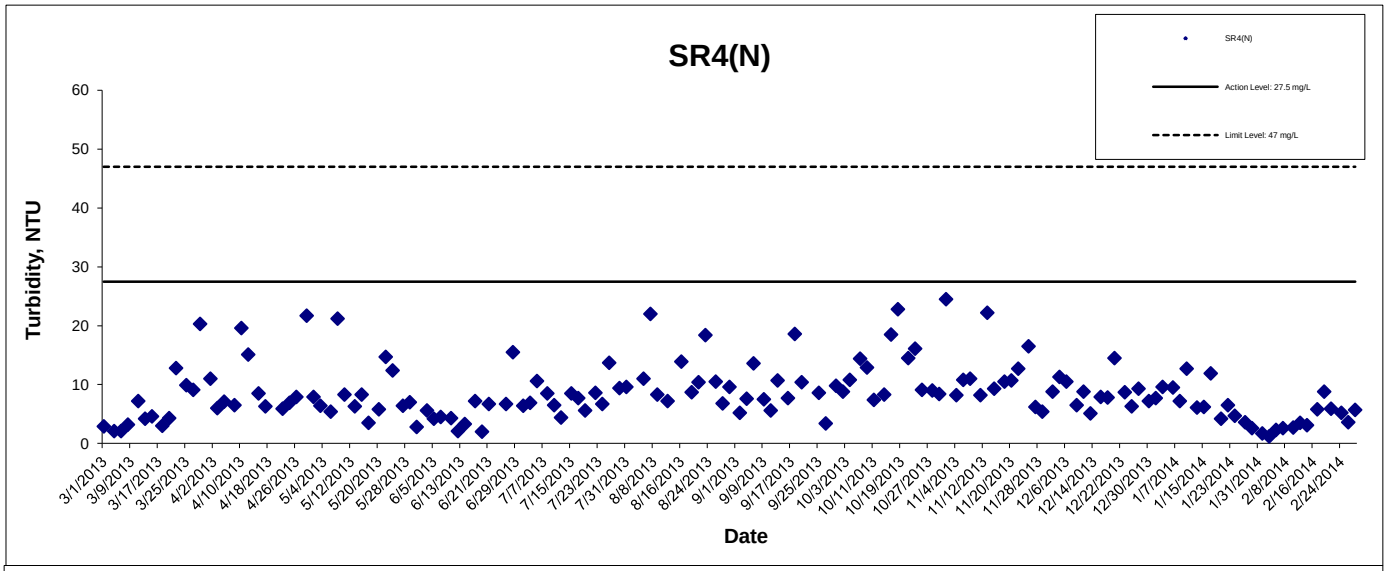
Turbidity at Mid-Flood Tide

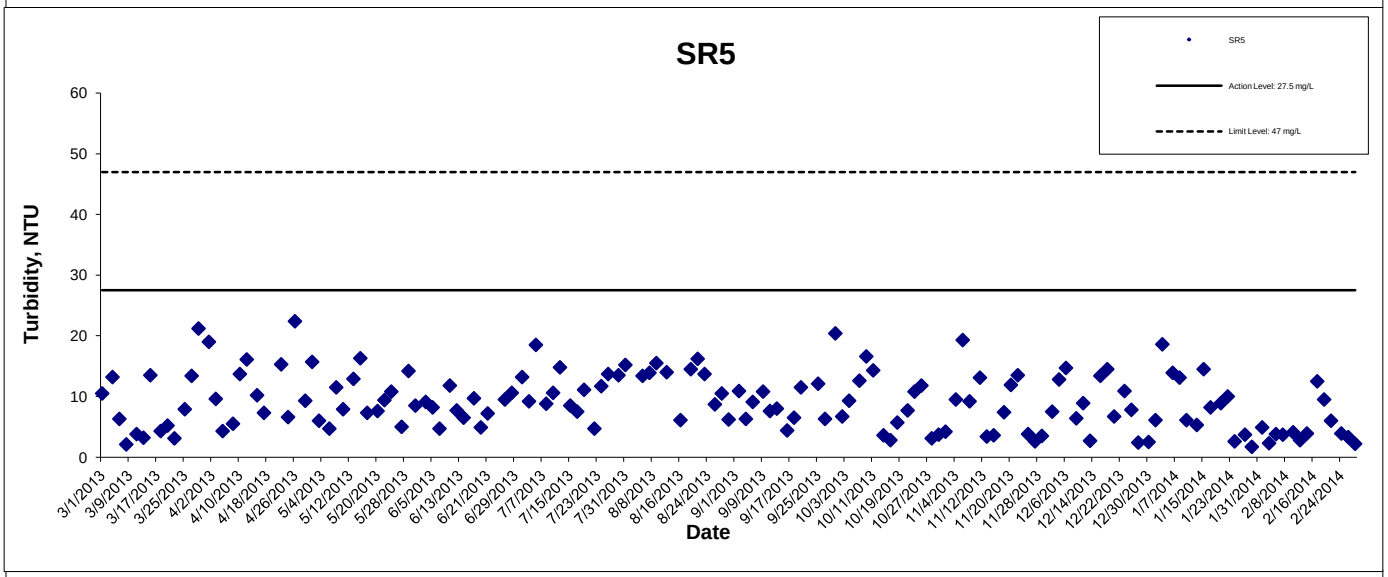


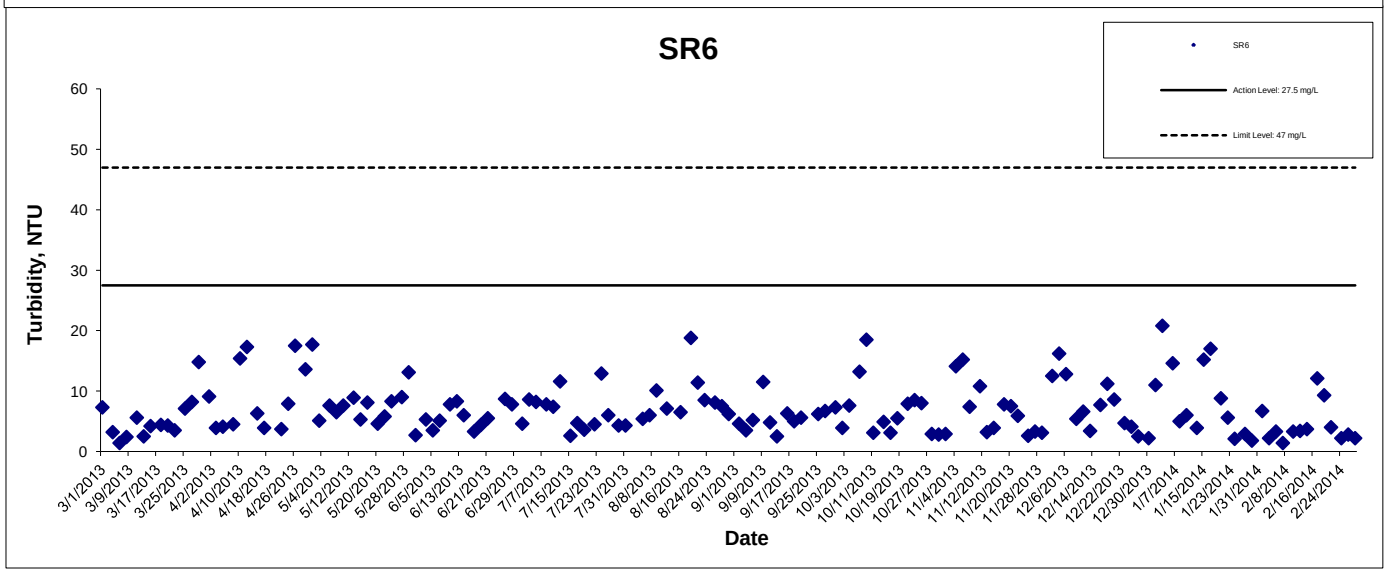




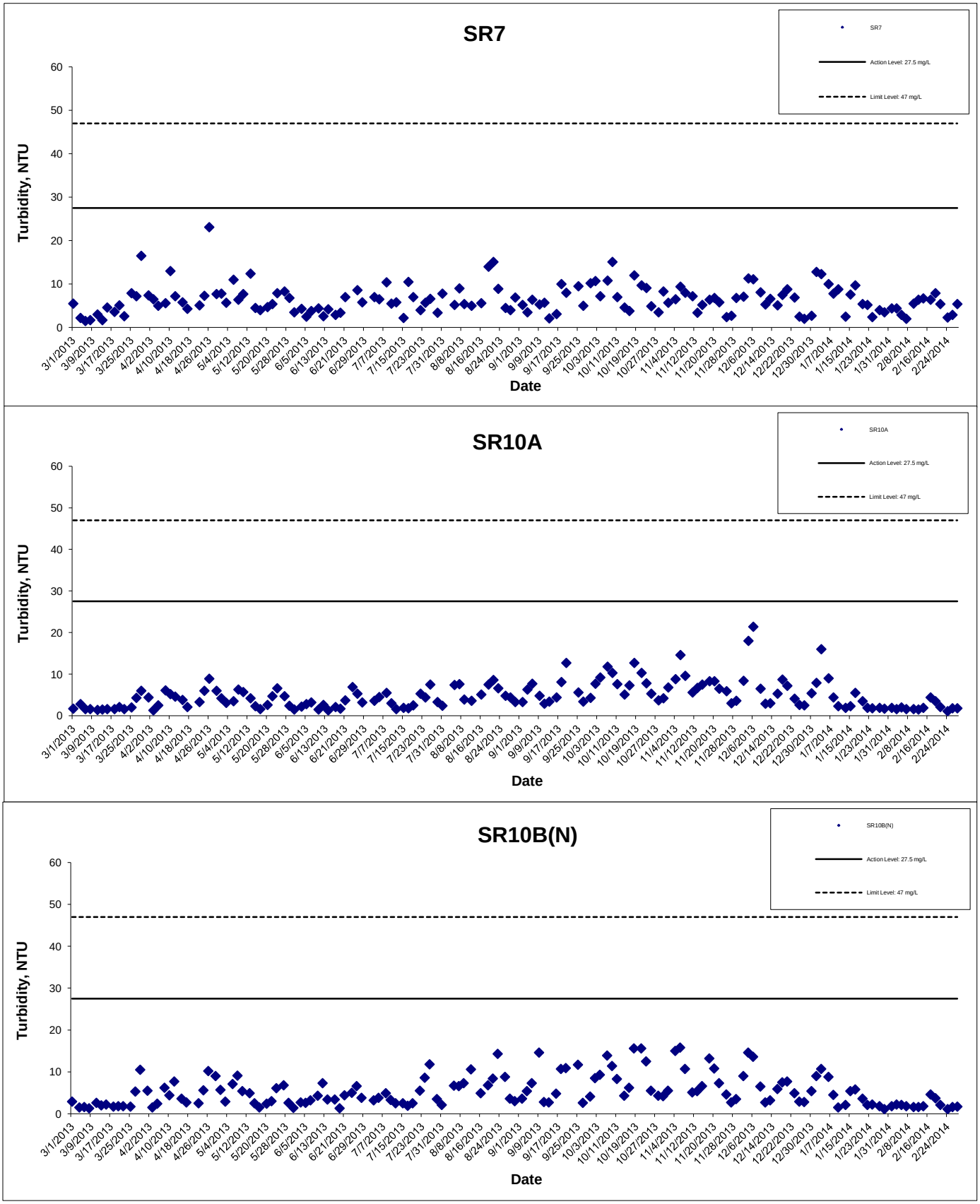
Turbidity at Mid-Flood Tide



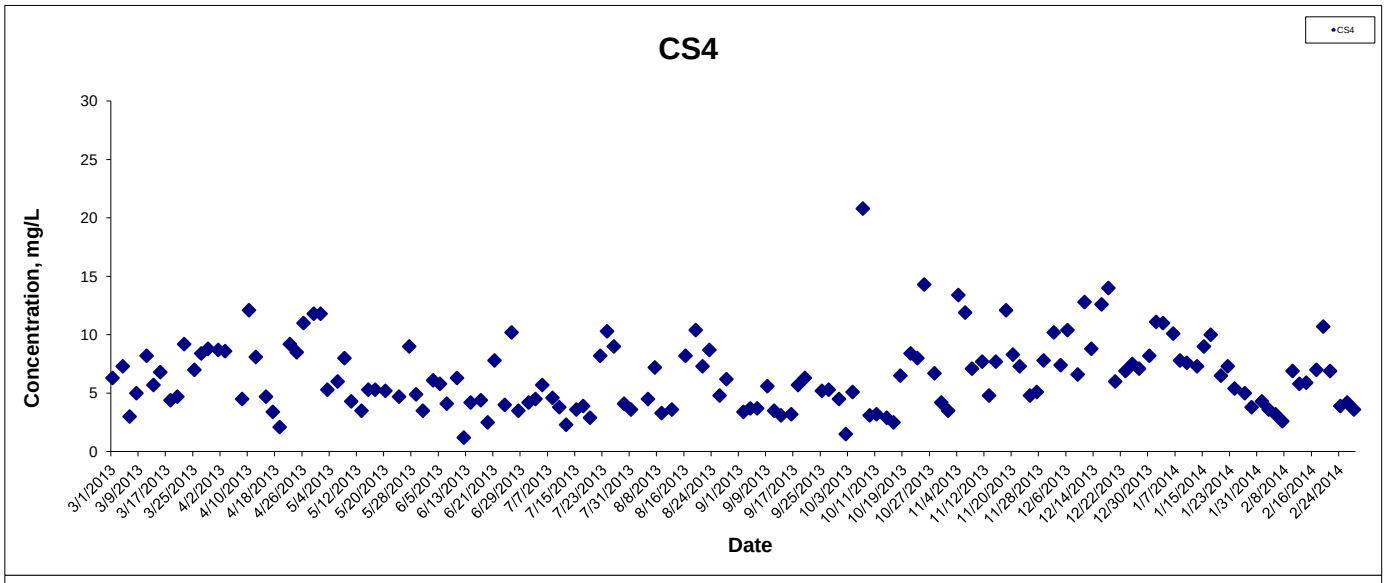


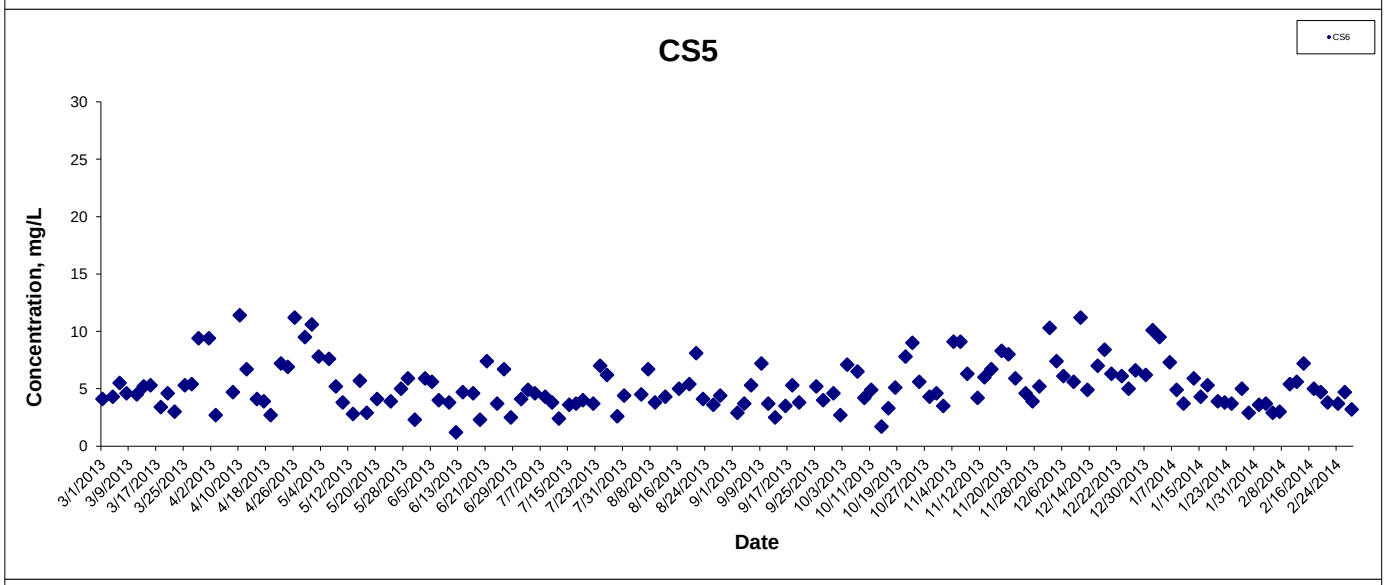


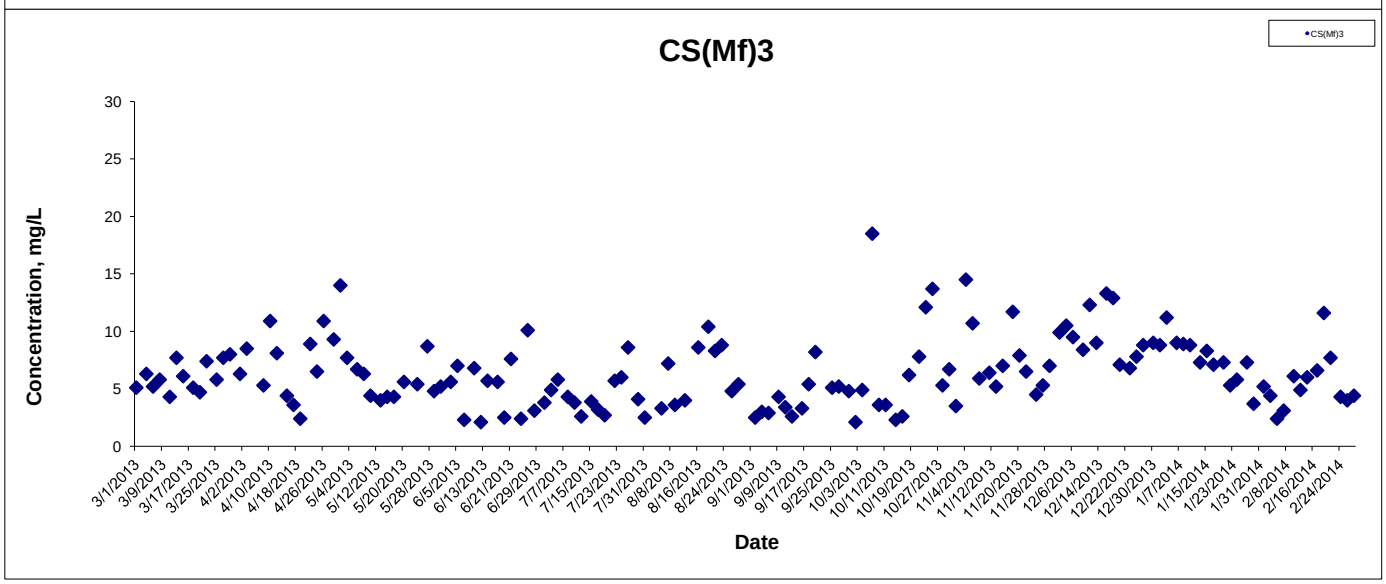
Turbidity at Mid-Flood Tide



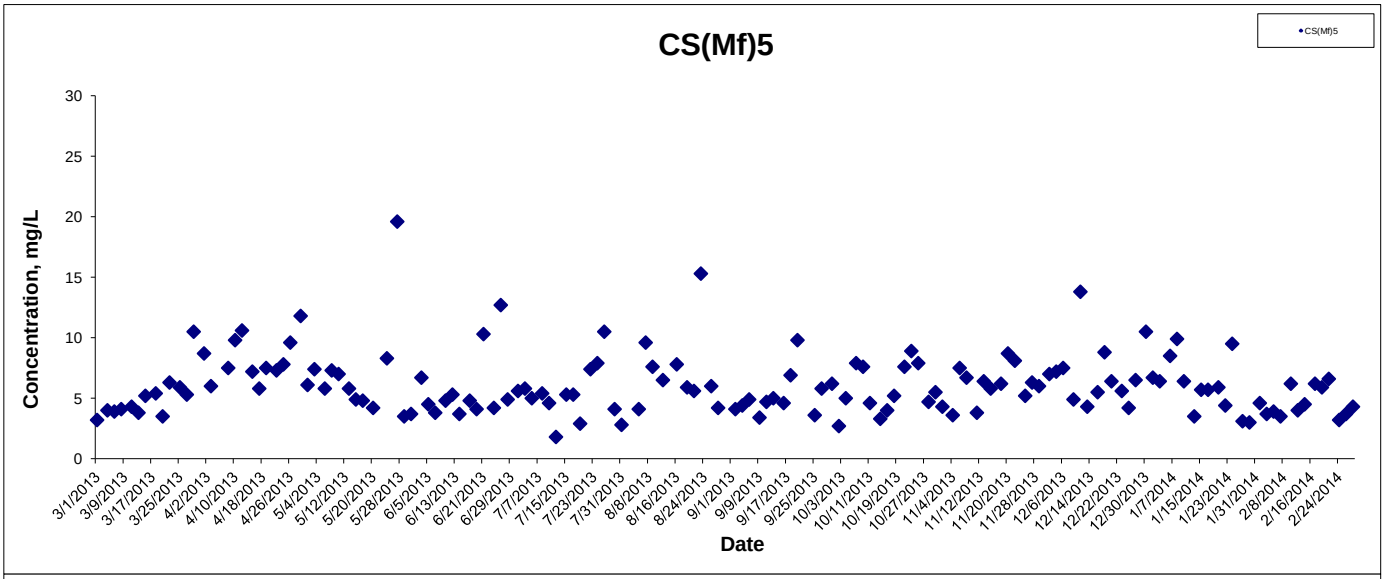
Suspended Solids at Mid-Ebb Tide

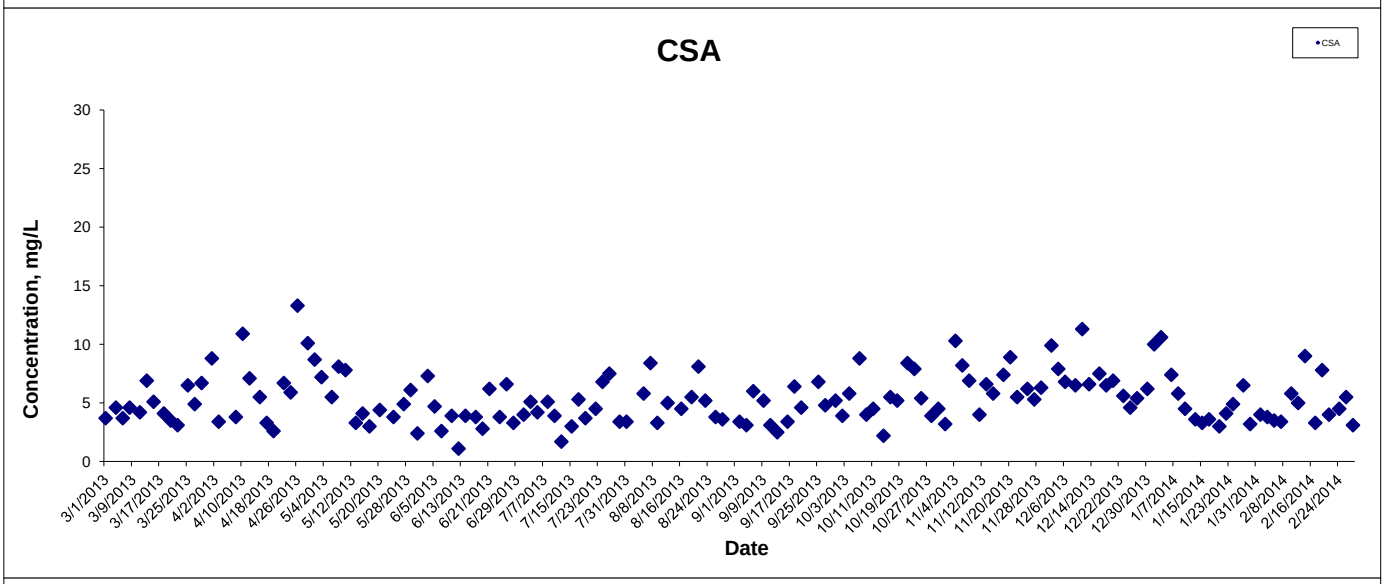


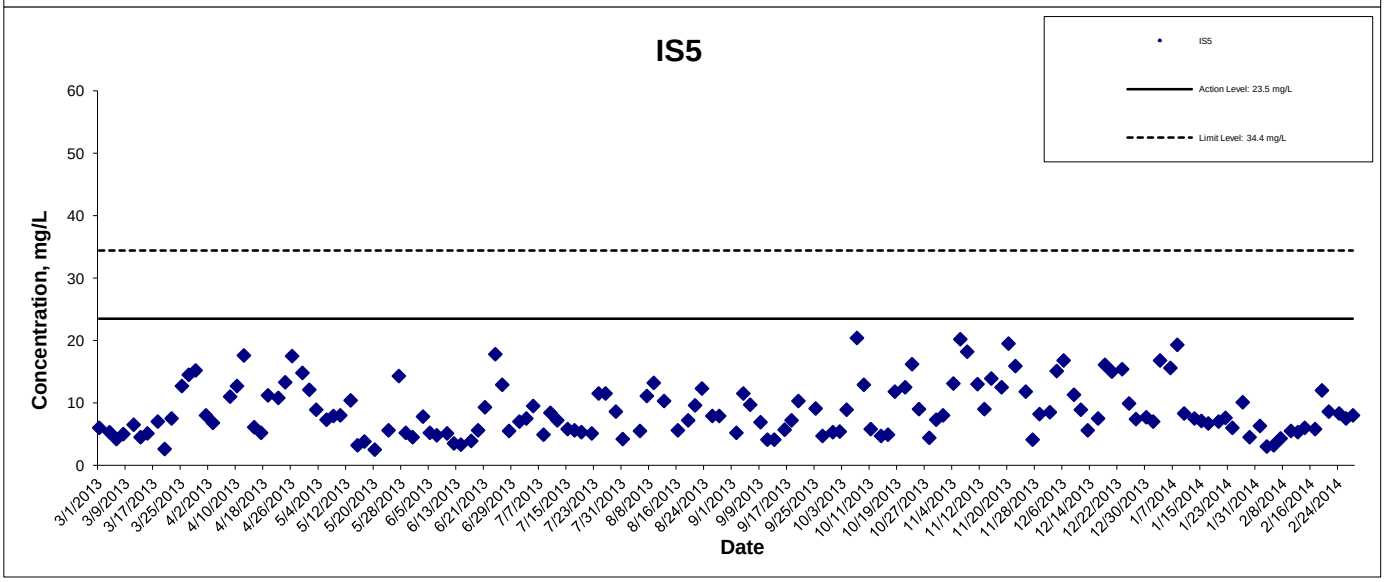




Suspended Solids at Mid-Ebb Tide







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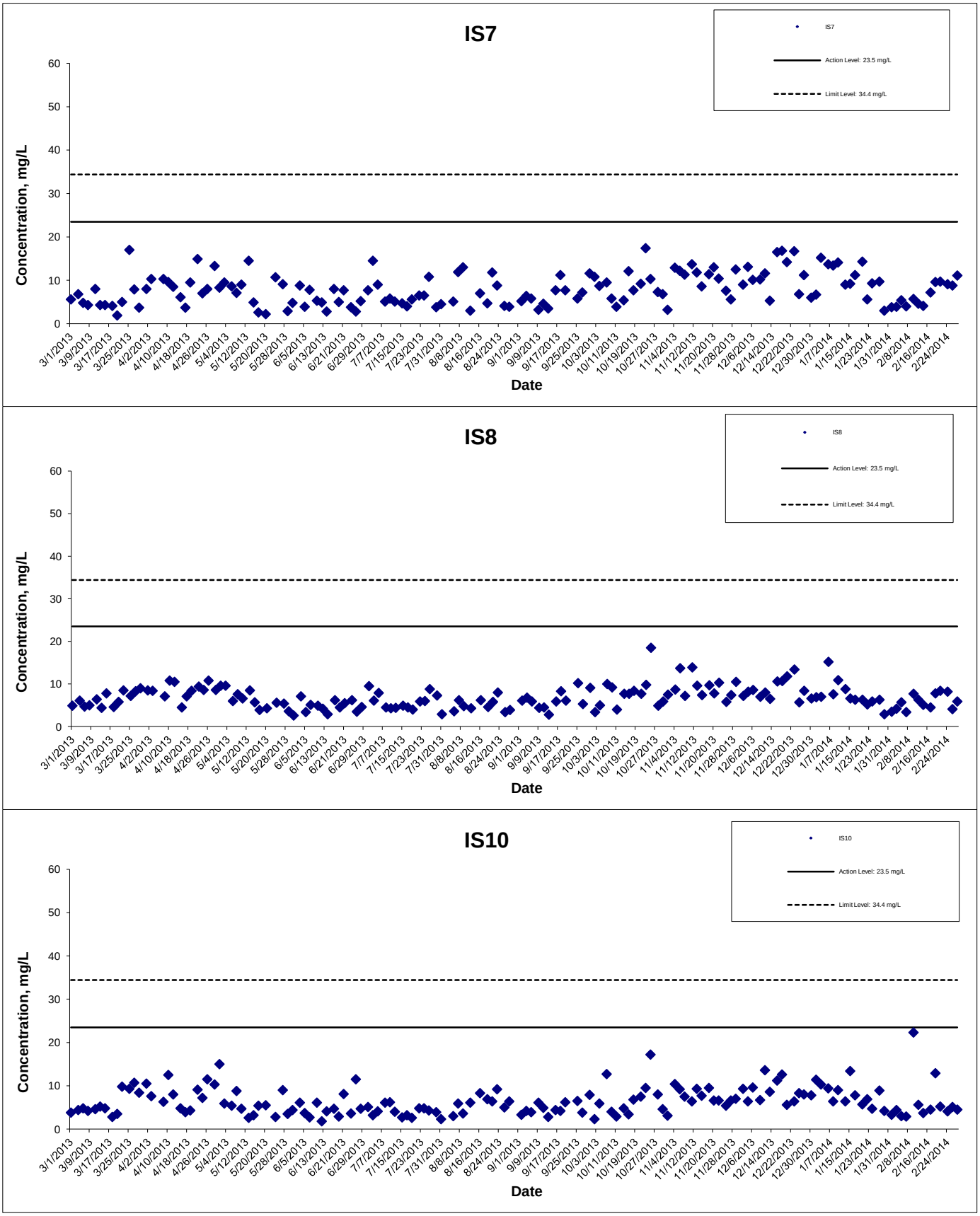

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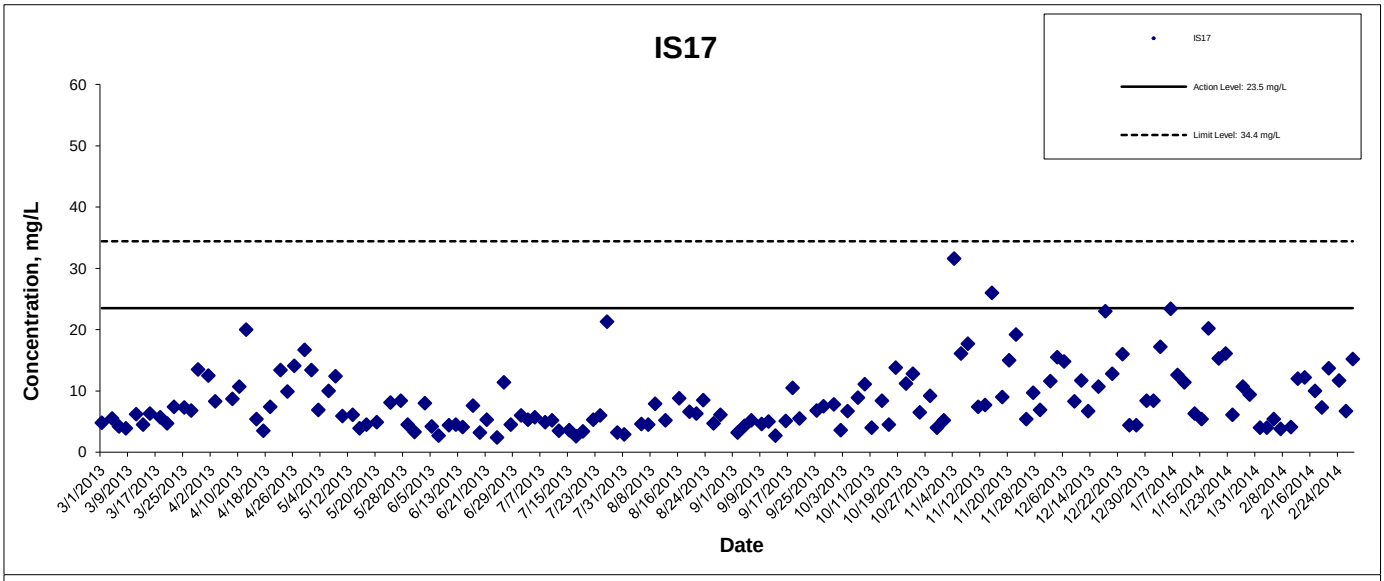

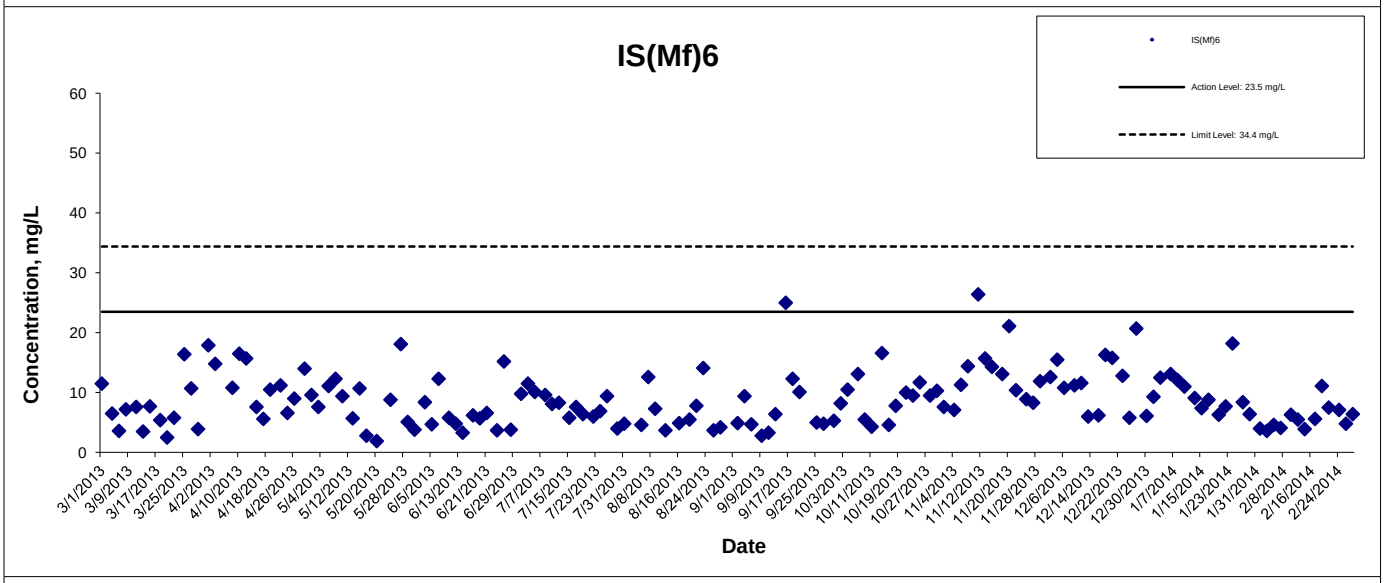

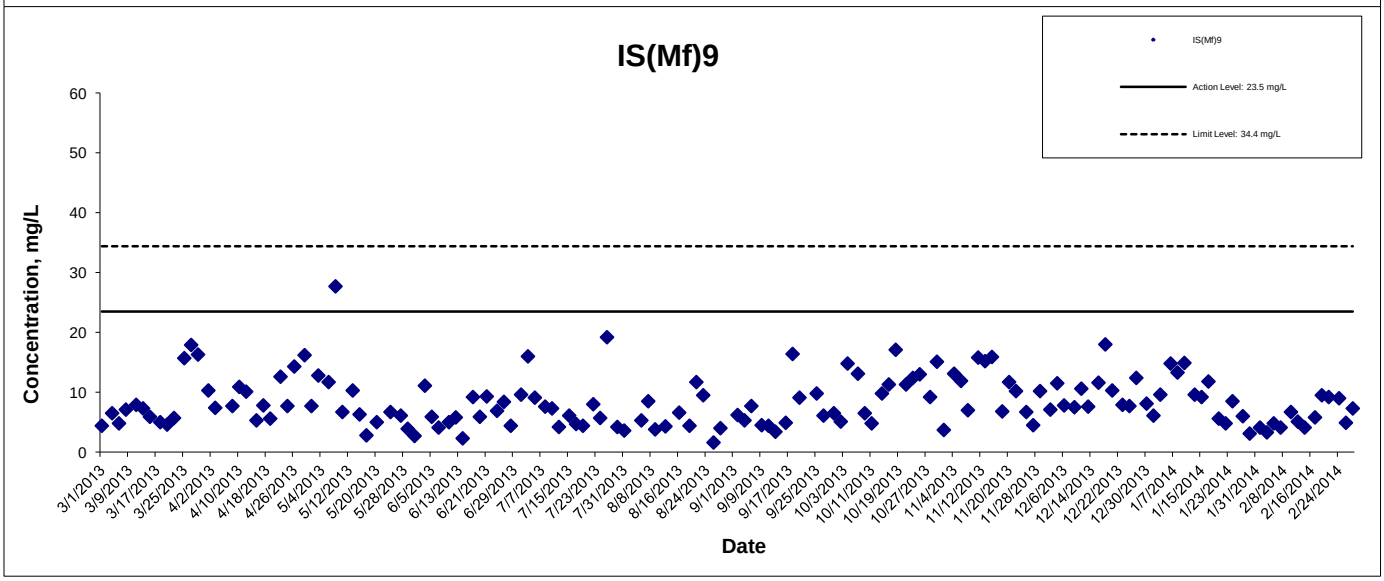

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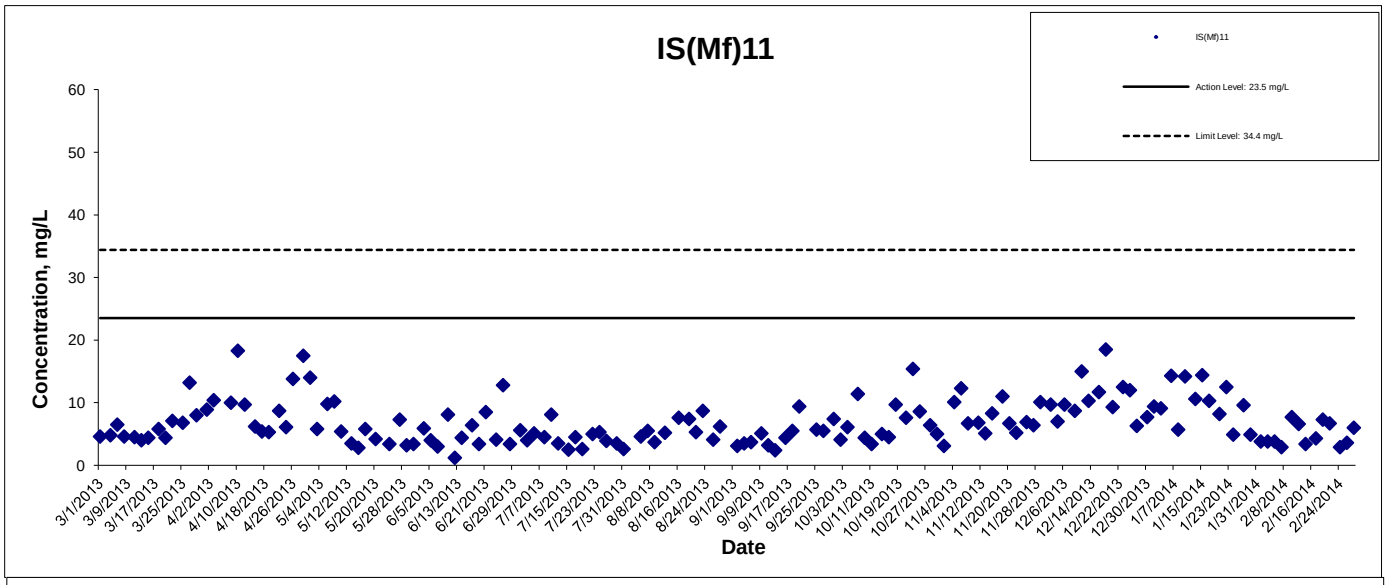

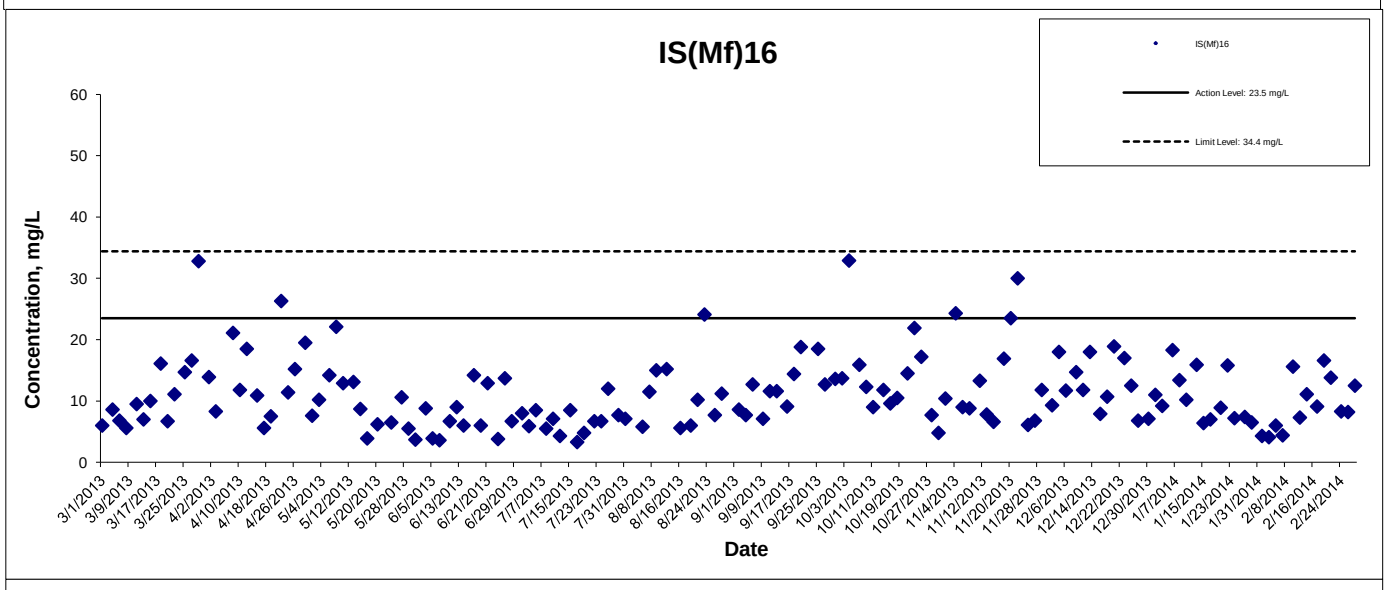

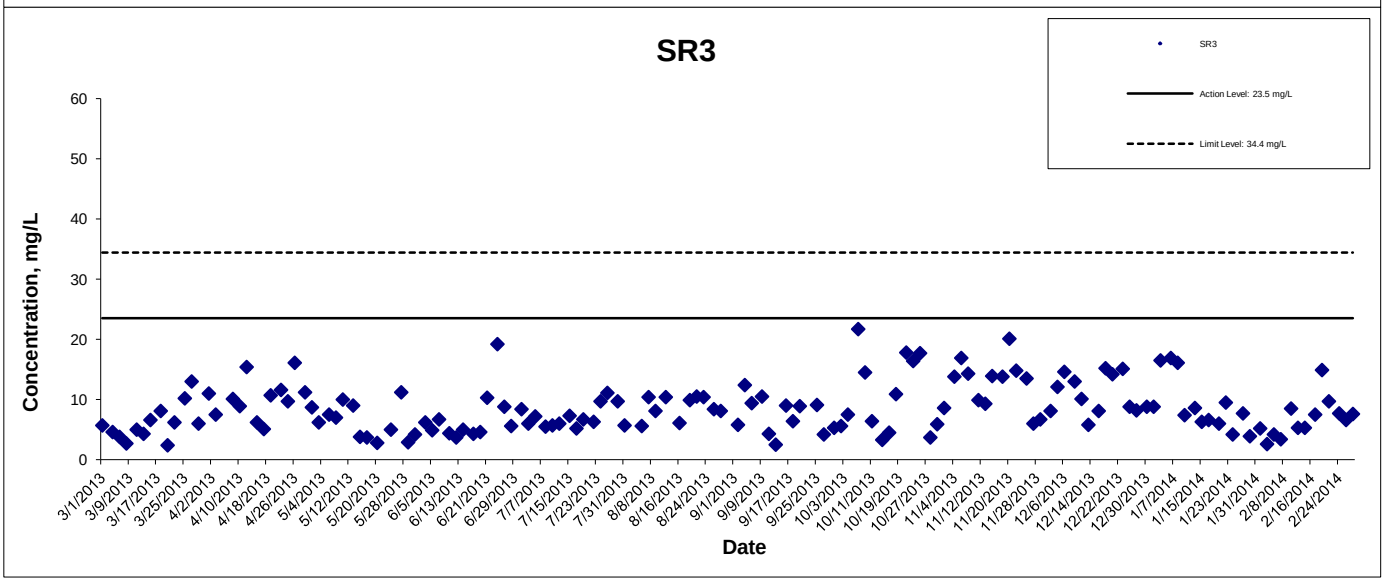

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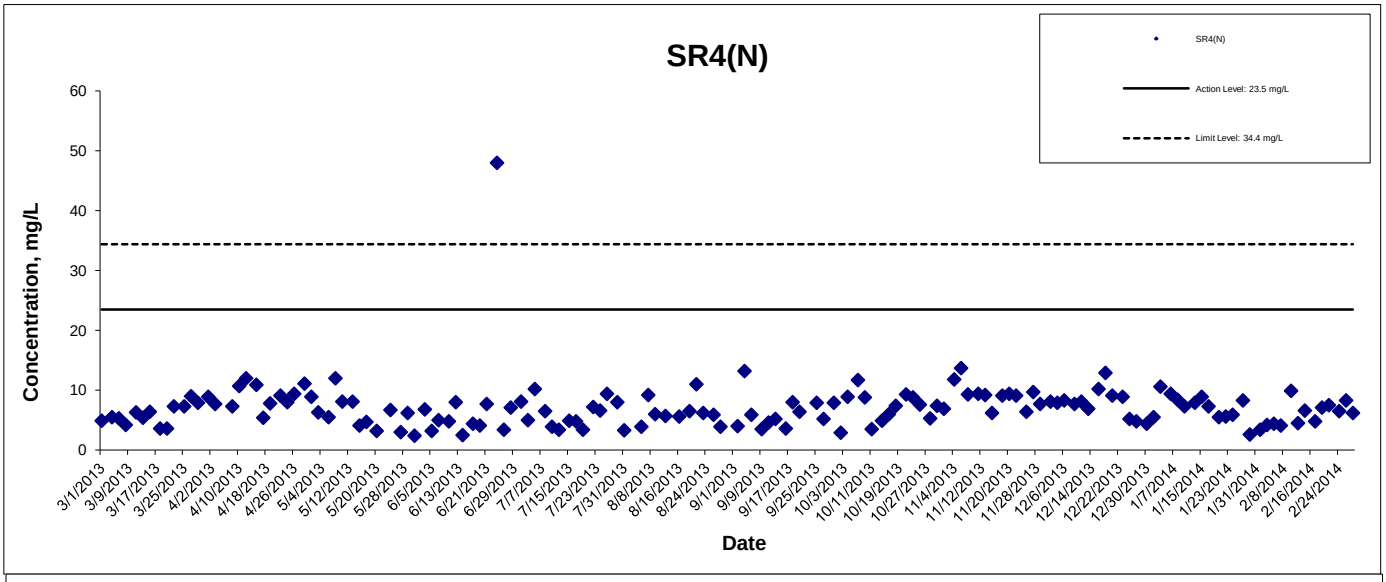

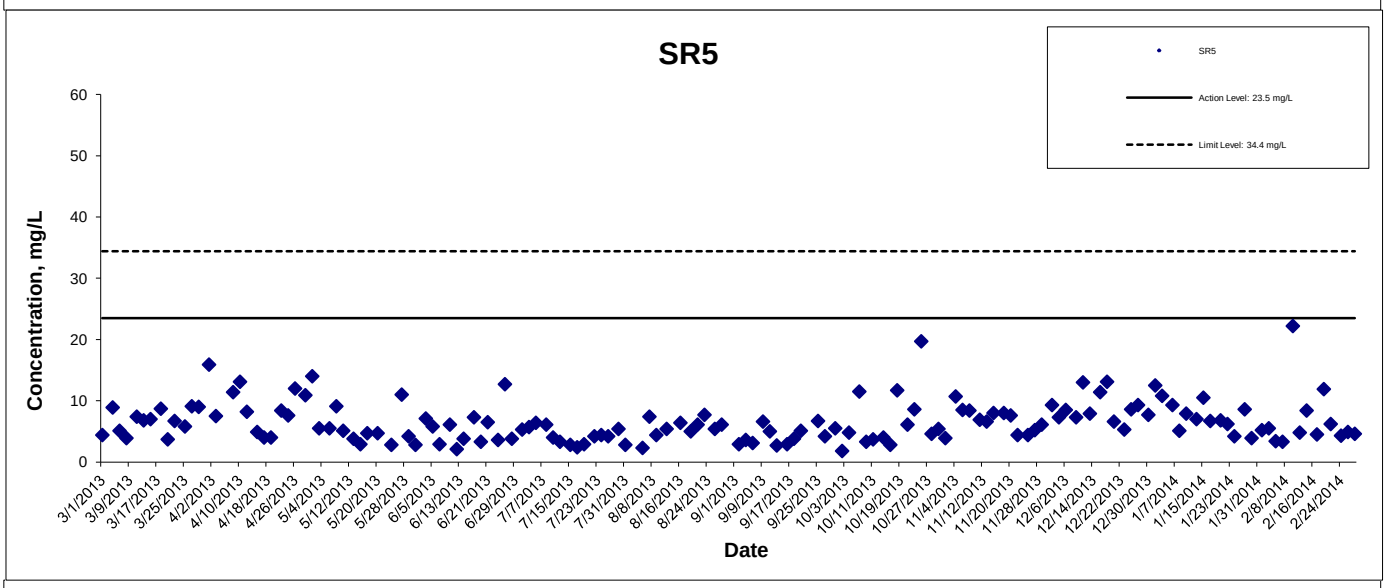

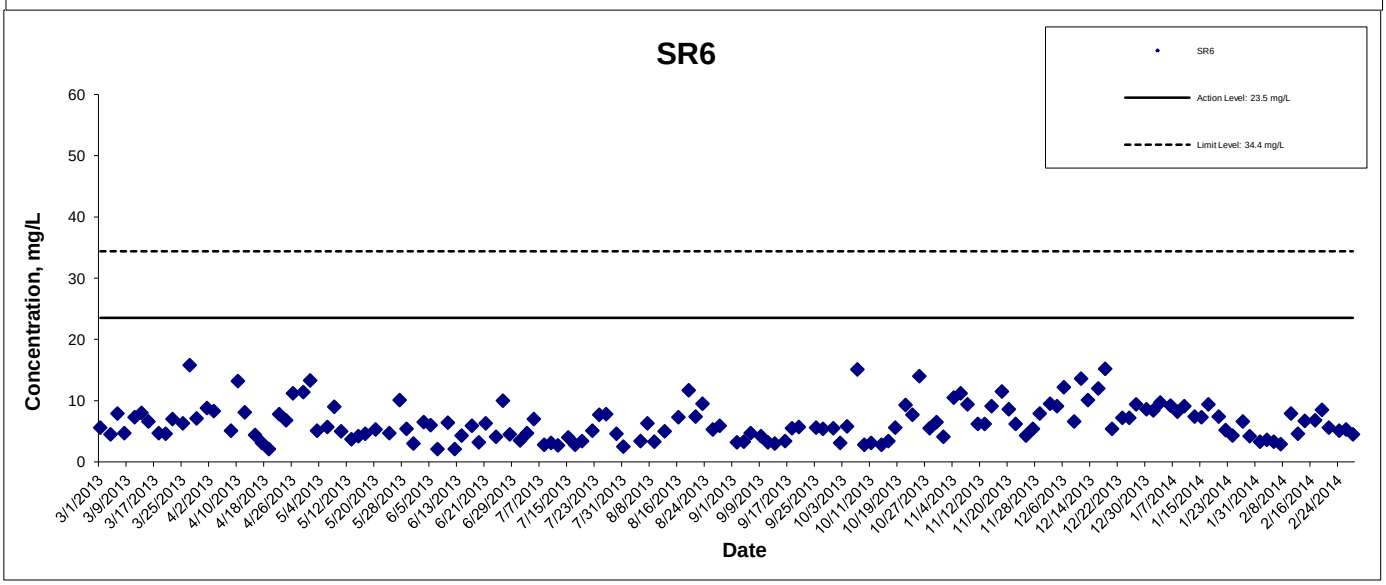

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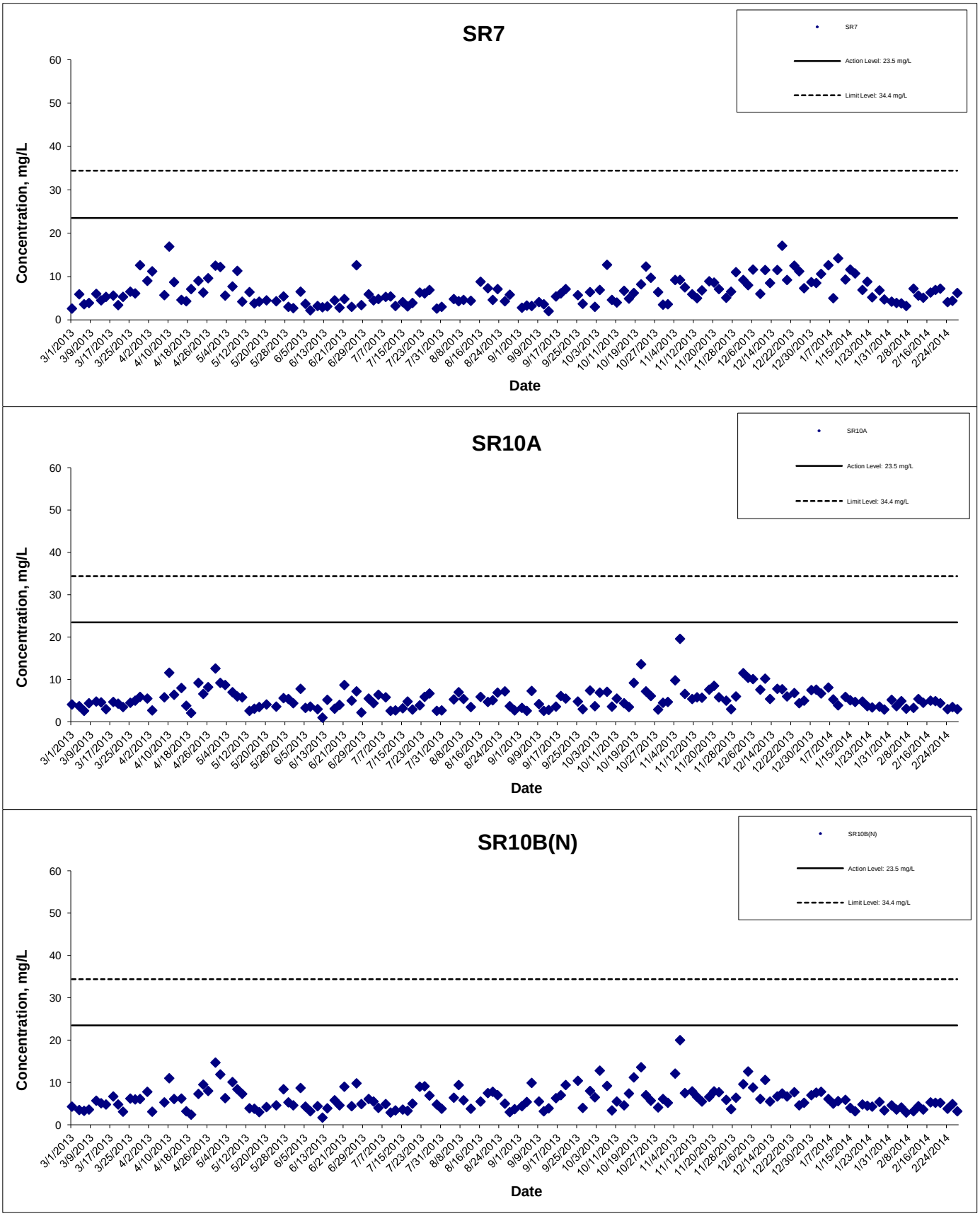
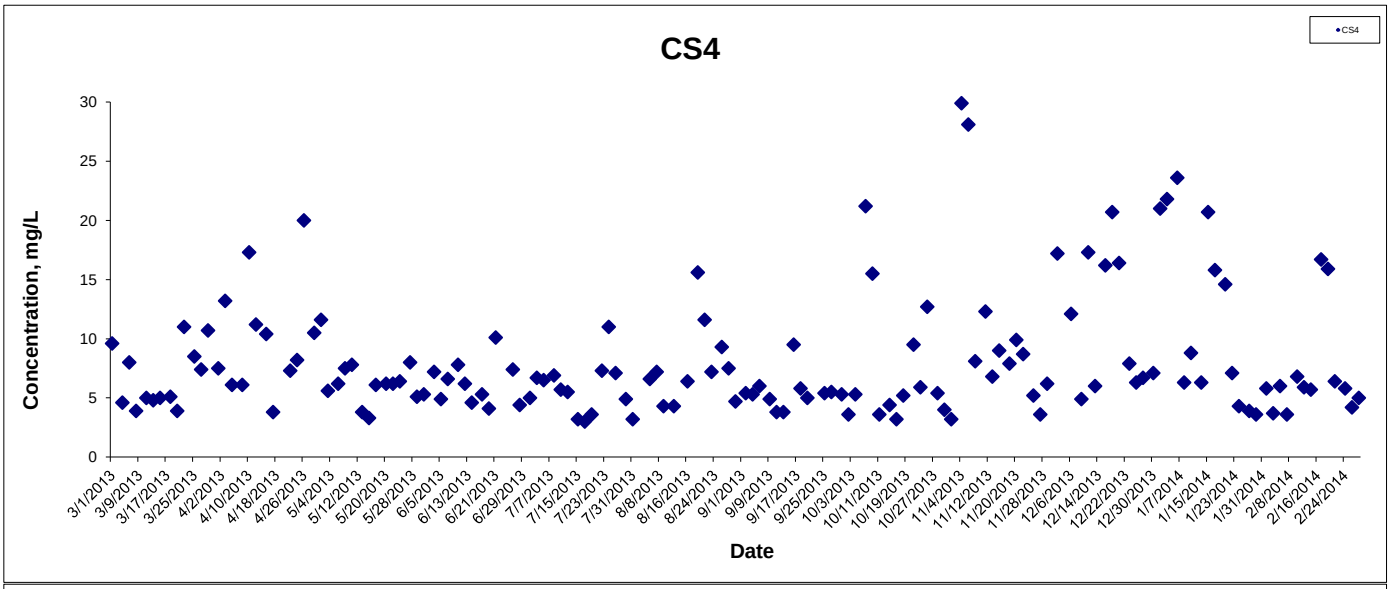
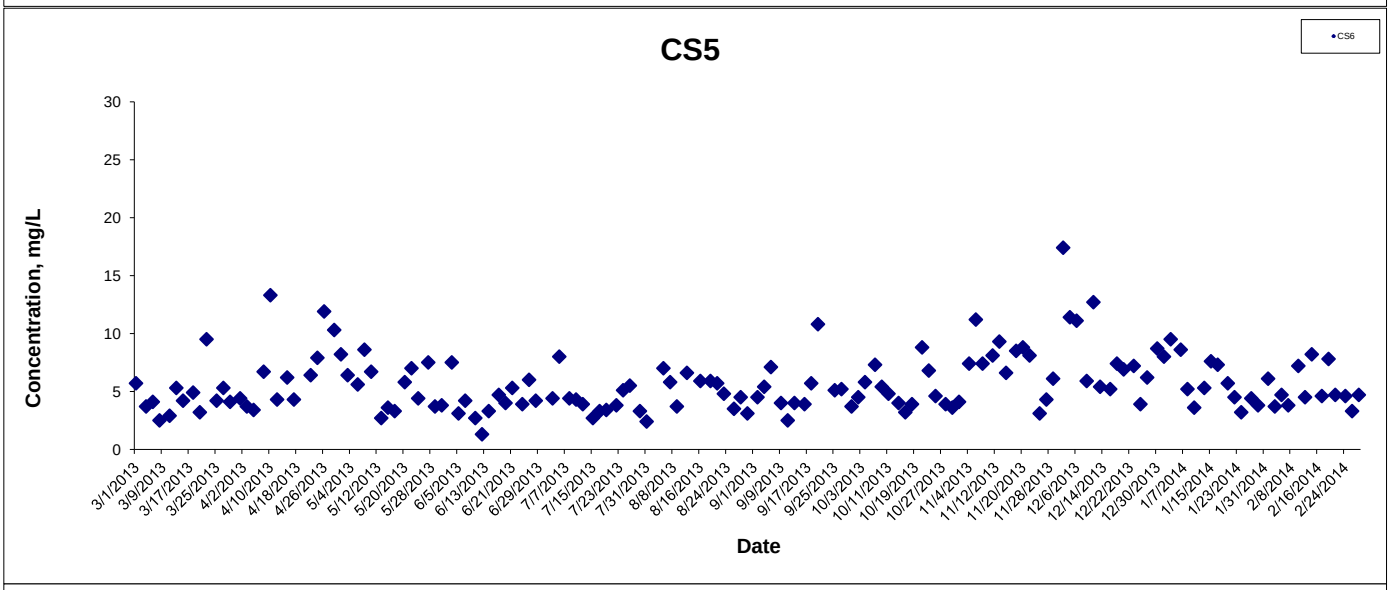
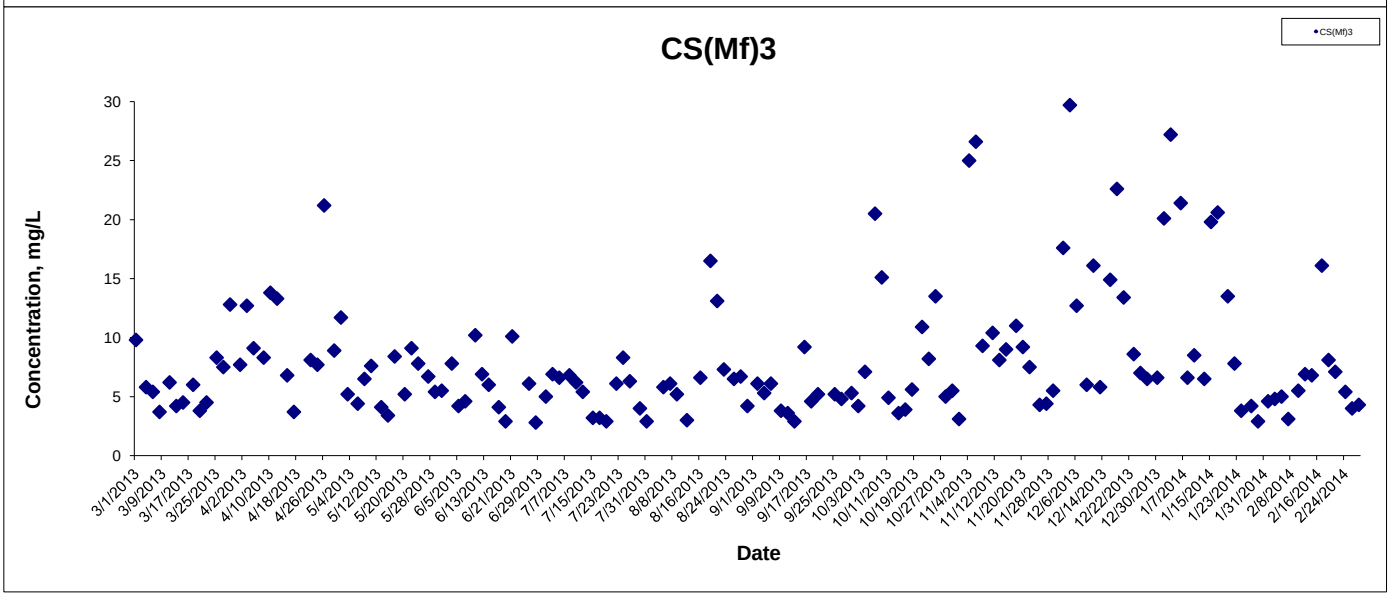


Suspended Solids at Mid-Flood Tide







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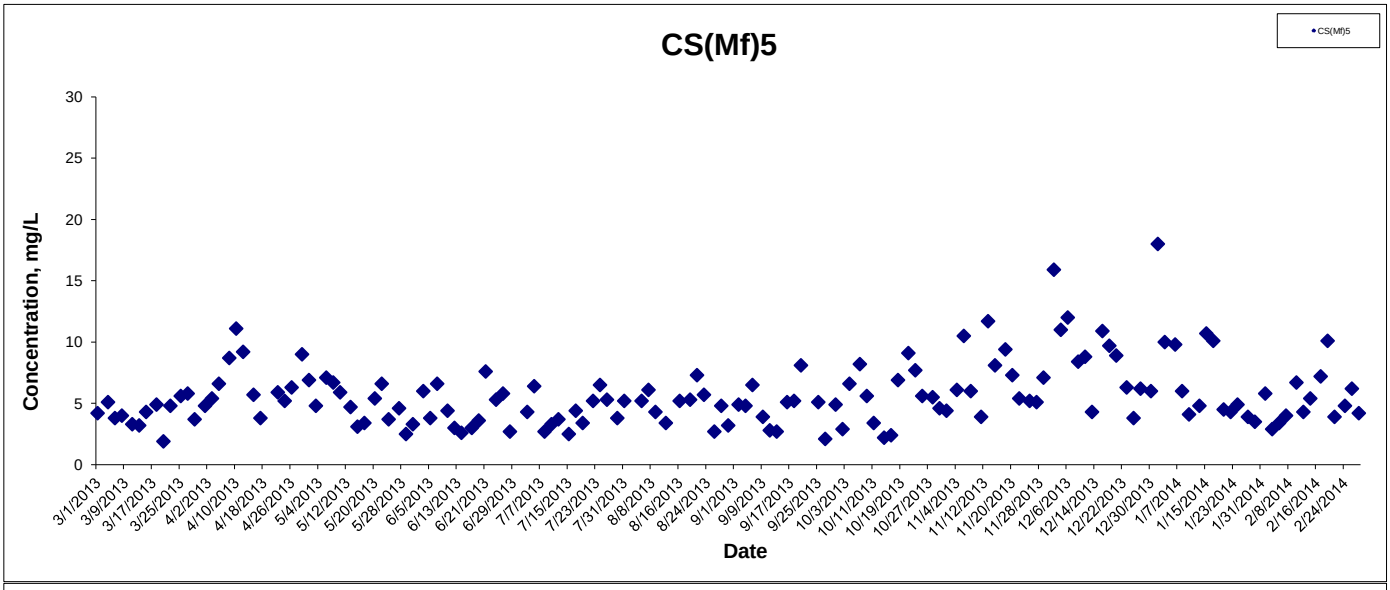

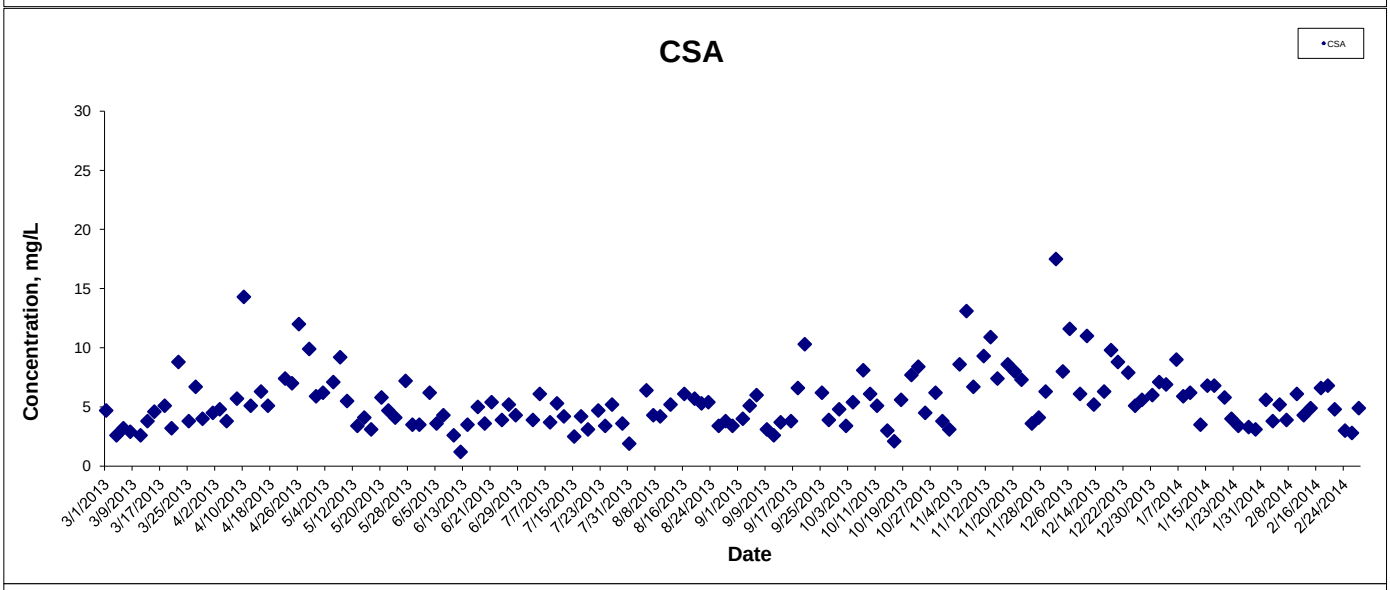

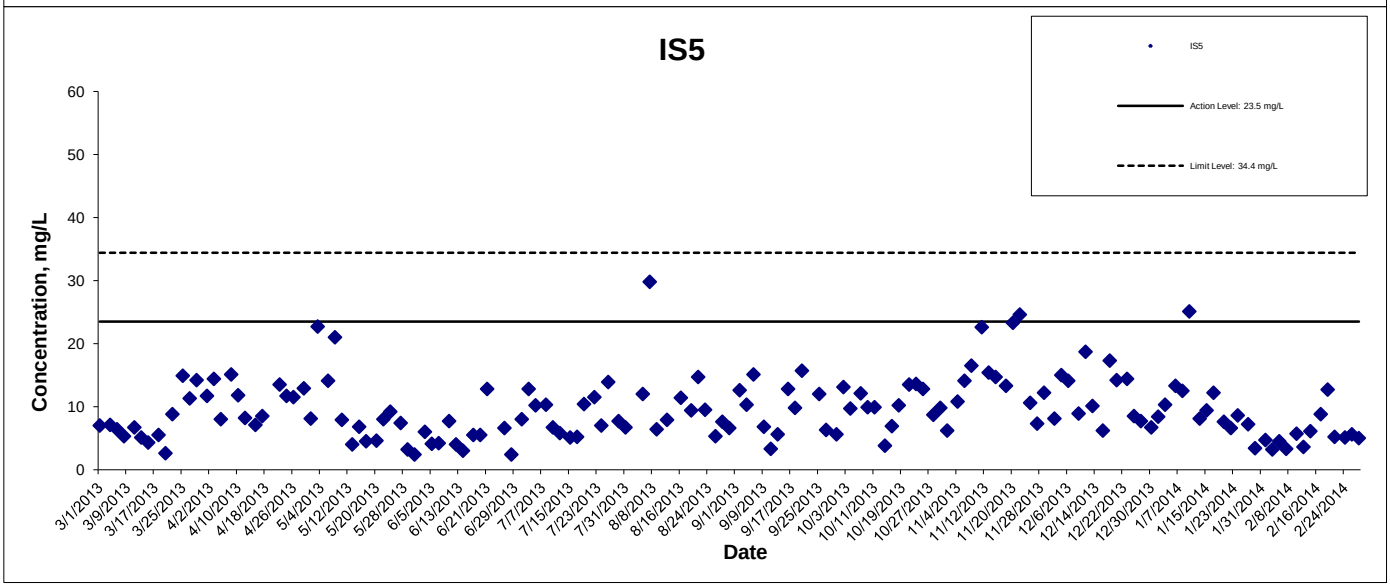

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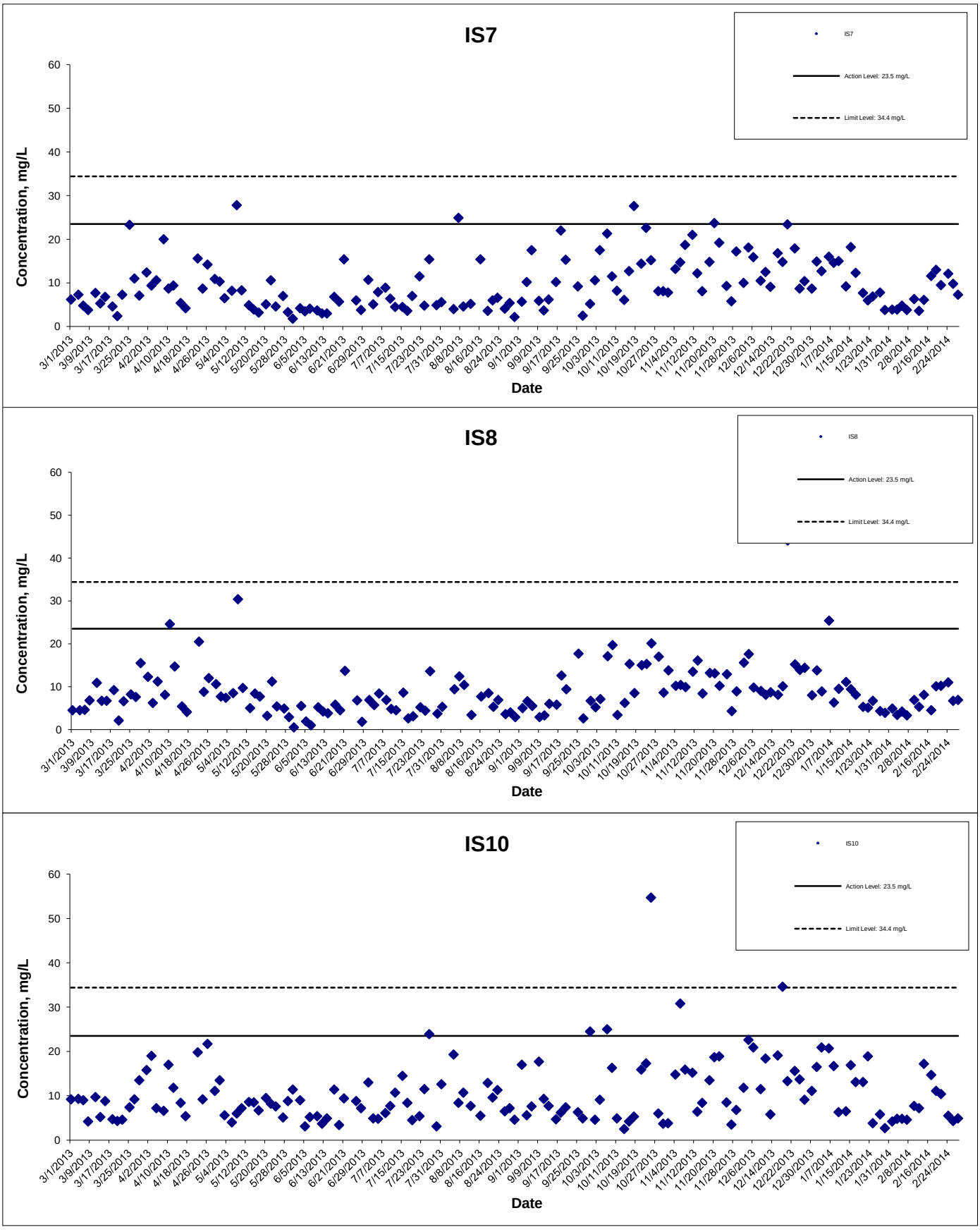

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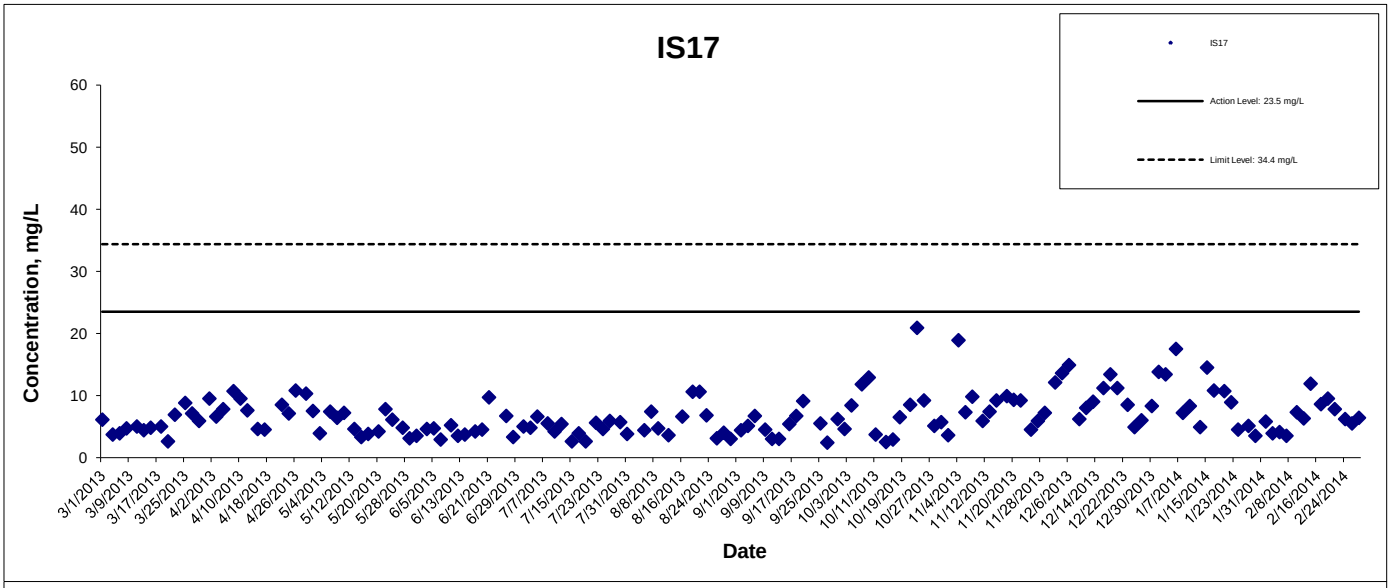

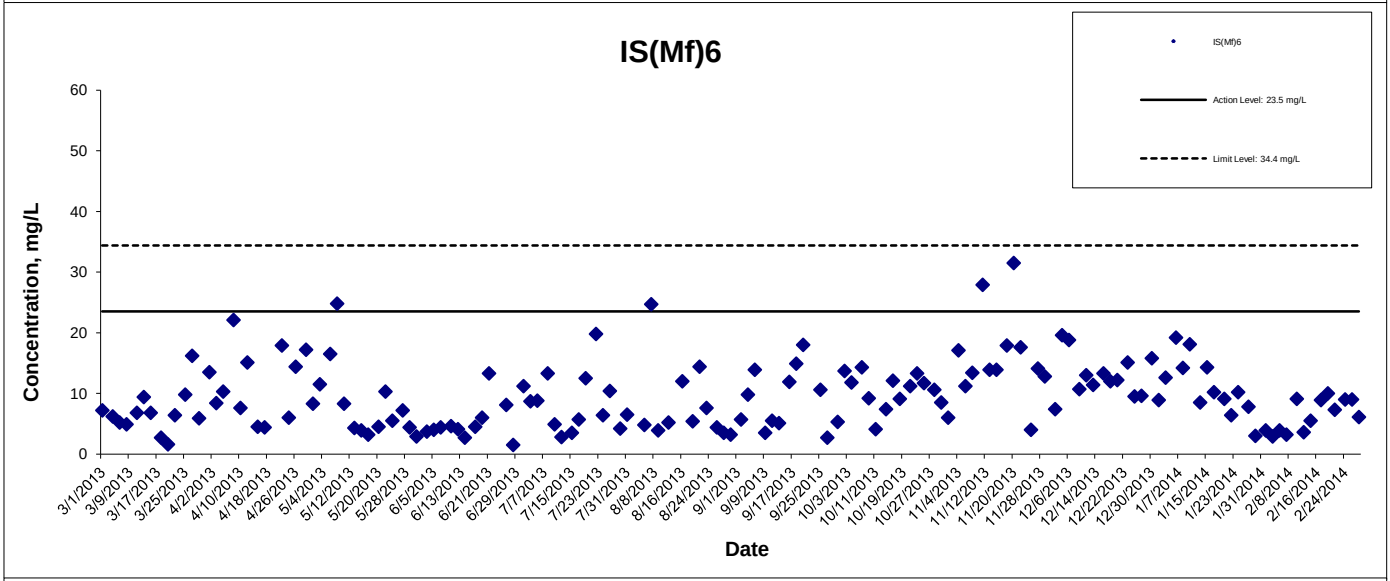

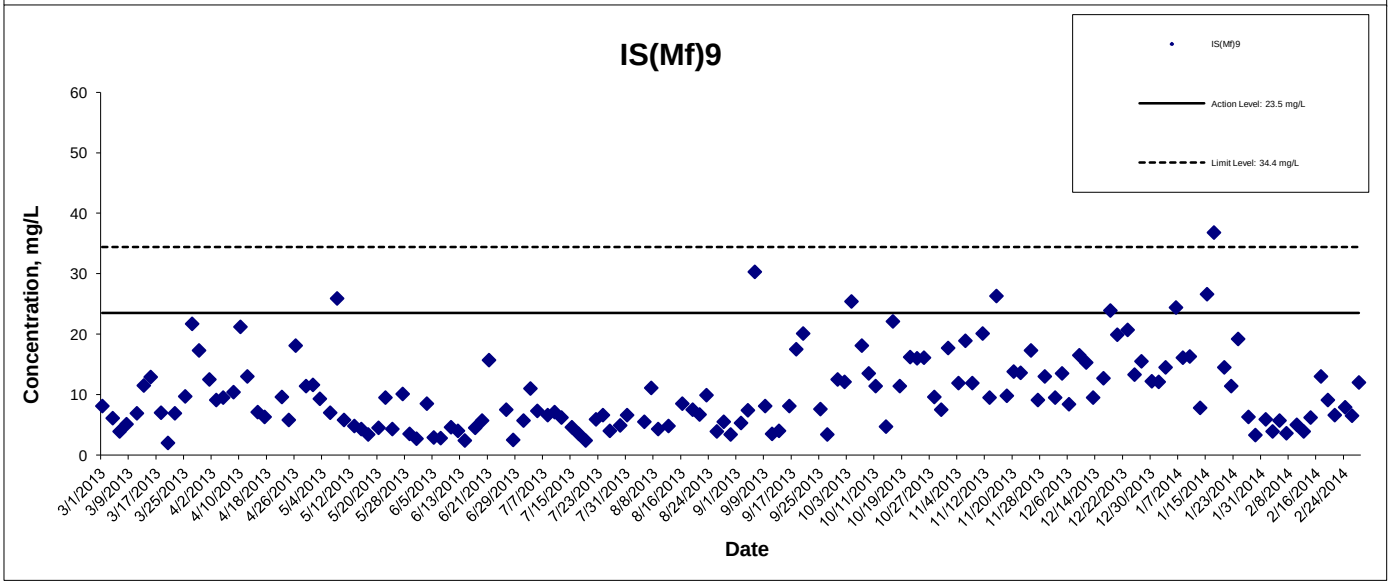

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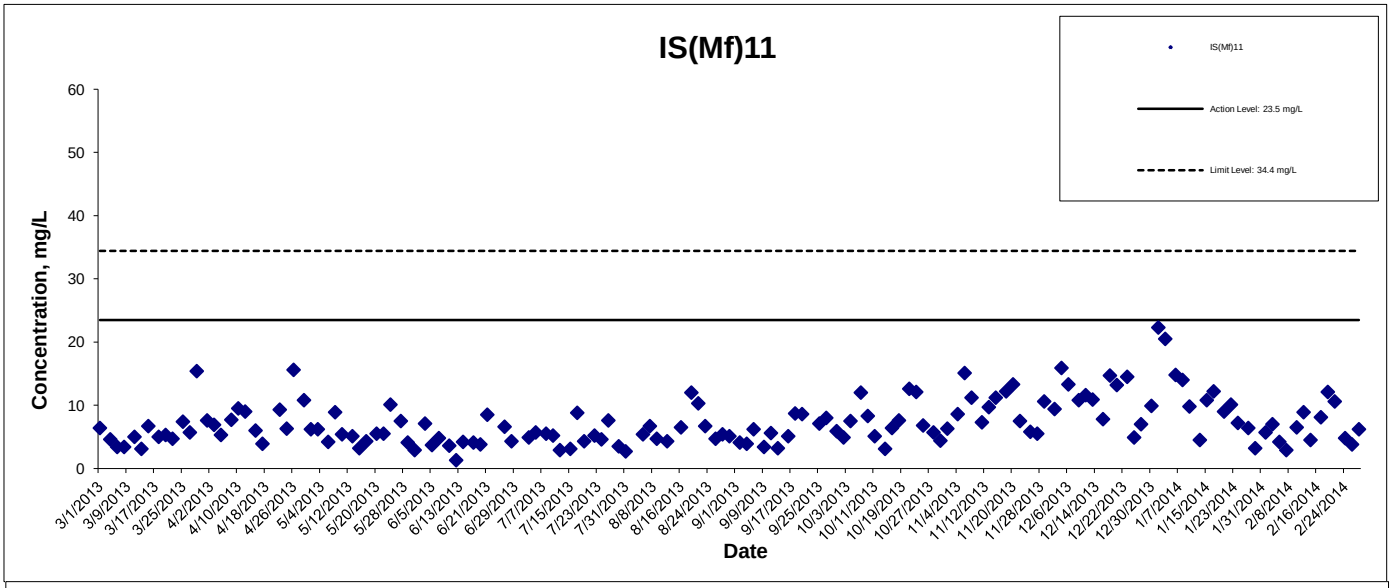

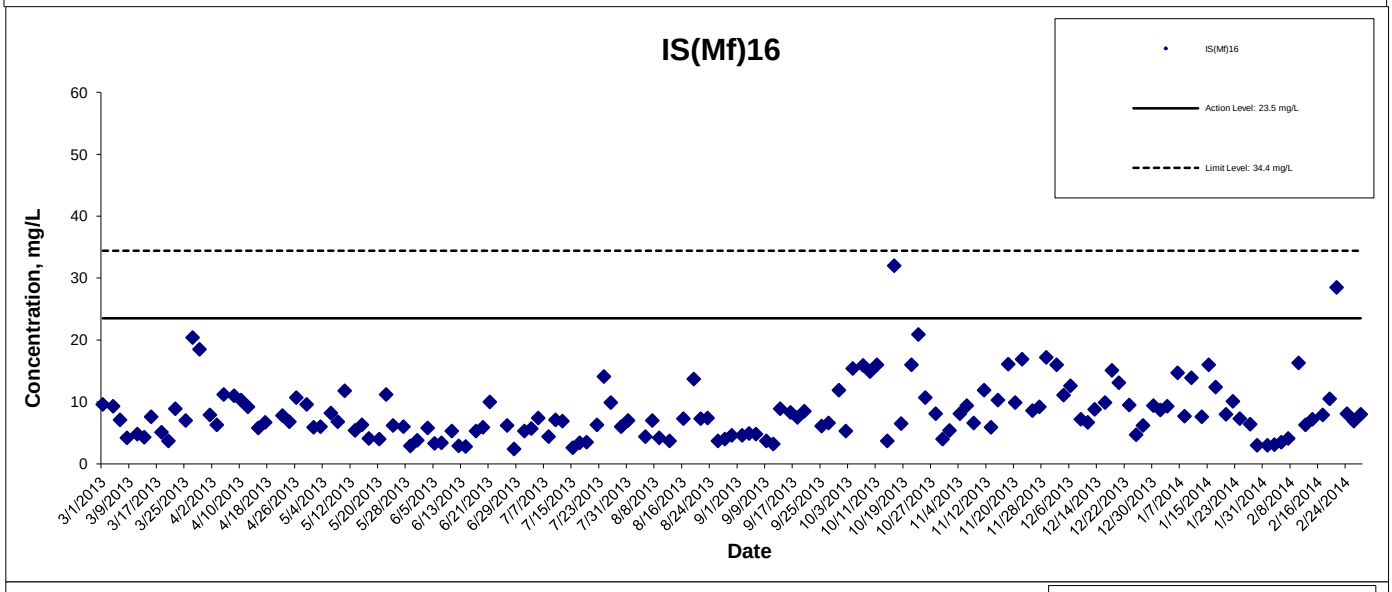

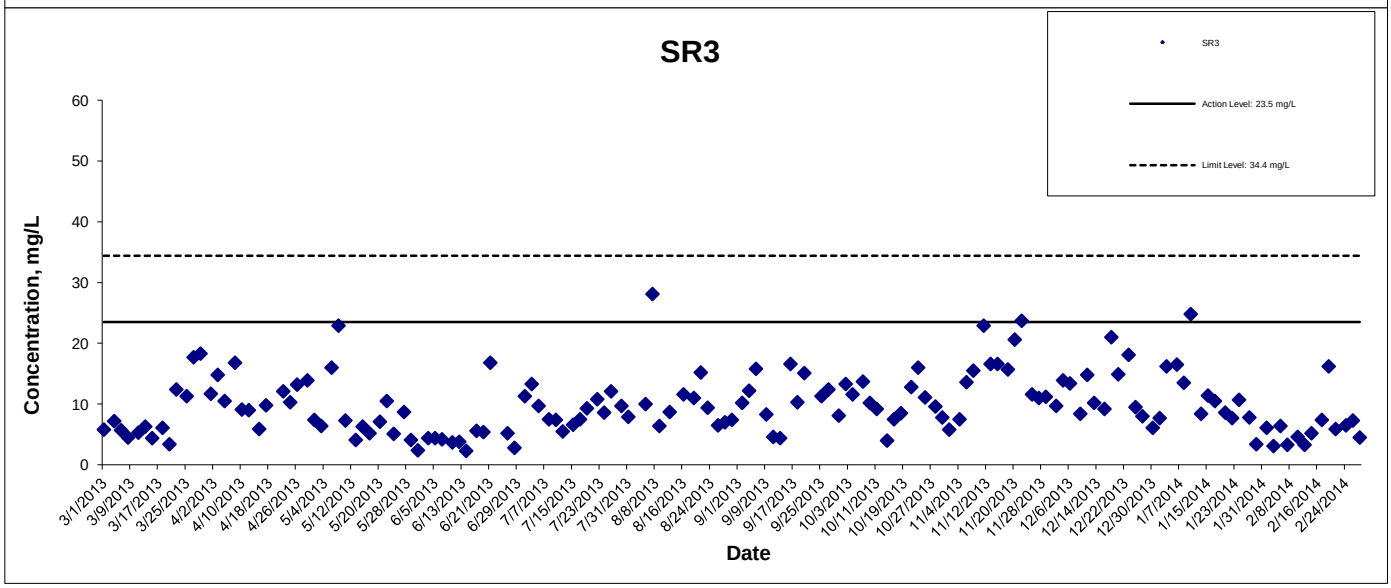

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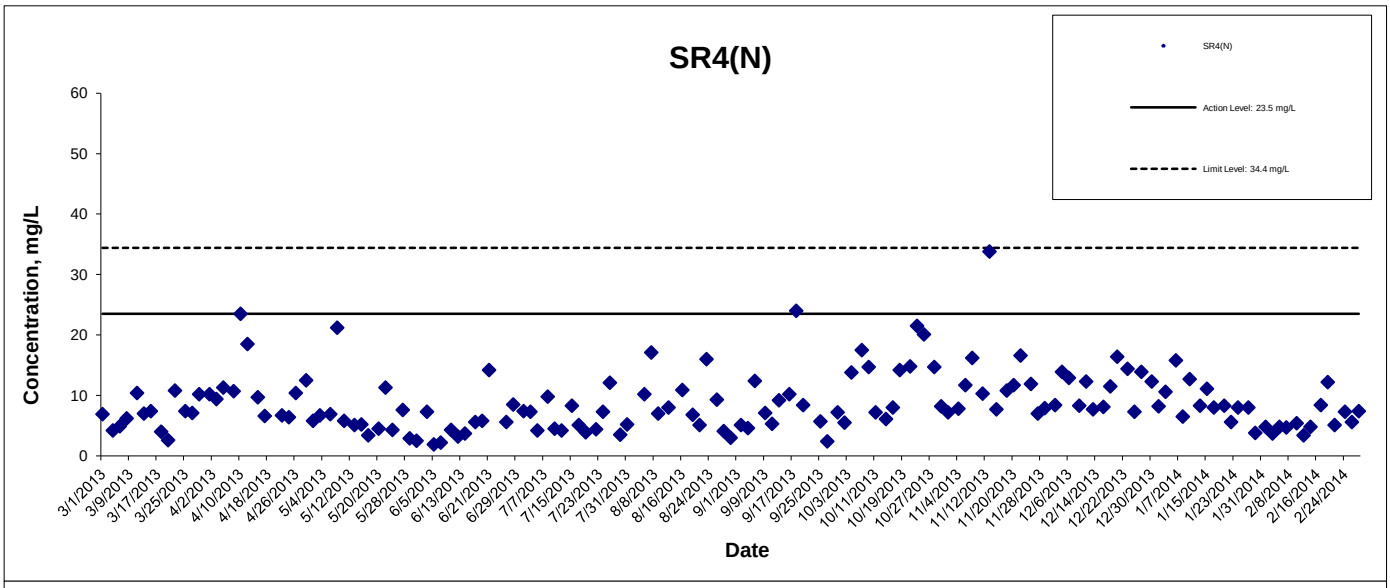

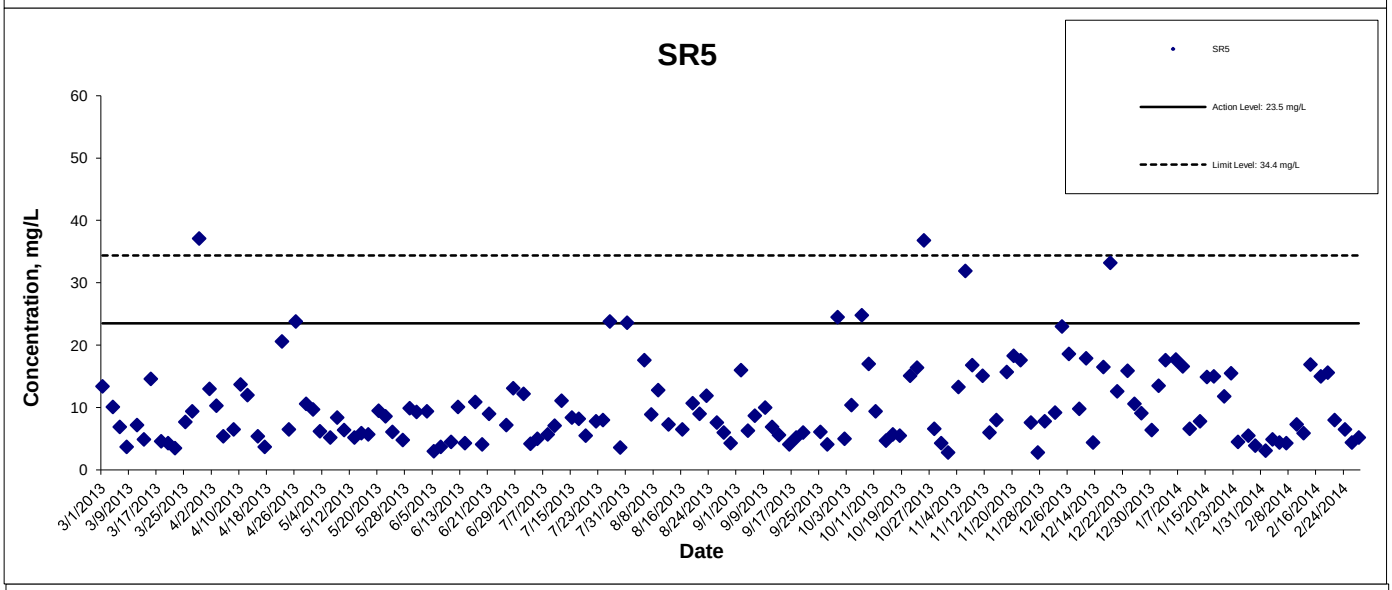

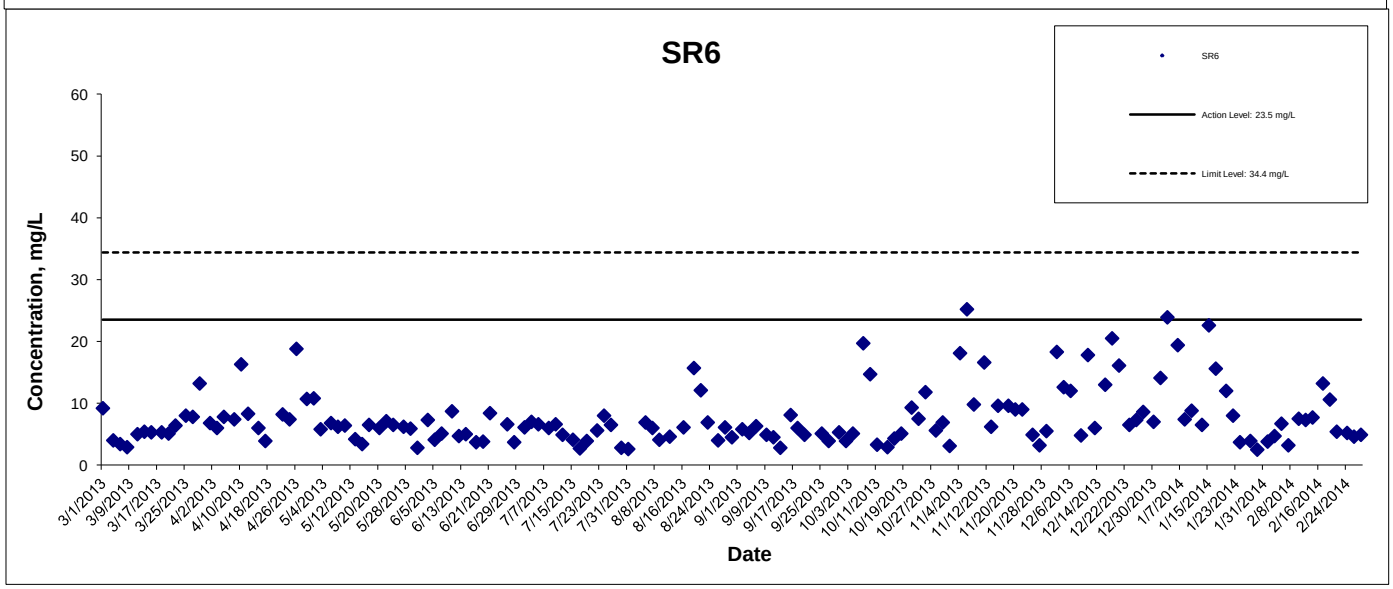

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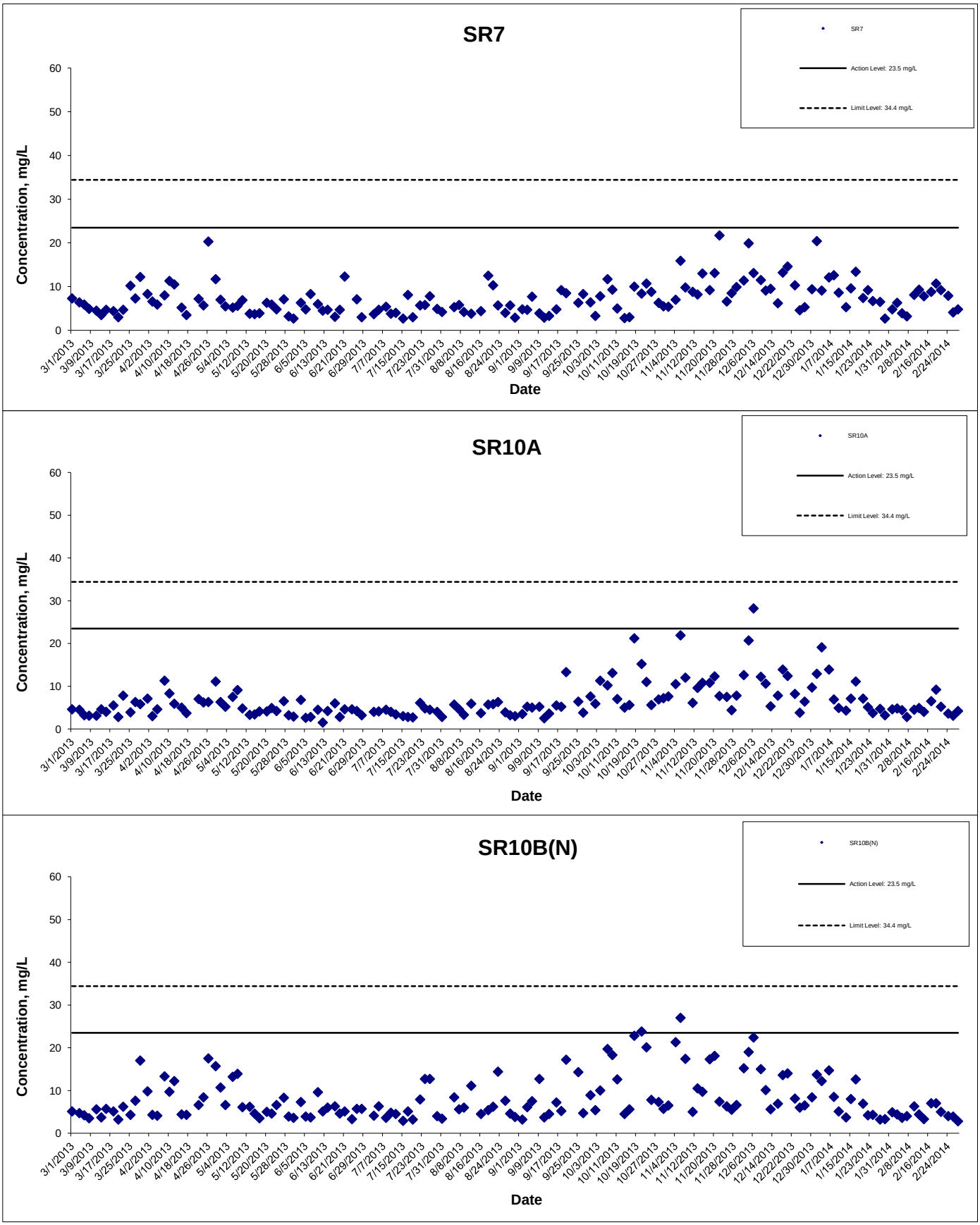

China Harbour Engineering Company Limited

Summary of Waste Flow Table (Mar 2013 - Feb 2014)

Project : Hong Kong – Zhuhai – Macao Bridge, Hong Kong Boundary Crossing Facilities – Reclamation Works Contract No.: HY/2010/02

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete (see Note 1)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste (see Note 4)	Others, e.g. general refuse (see Note 3)
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000 m^3)
Mar-13	0.0000	0.0000	0.0000	0.0000	0.0000	121.1545	0.0000	0.0000	0.0000	2.0000	0.0130
Apr-13	0.0000	0.0000	0.0000	0.0000	0.0000	197.7428	0.0000	0.0000	0.0000	0.0000	0.0260
May-13	0.0000	0.0000	0.0000	0.0000	0.0000	360.3733	0.0000	0.0000	0.0000	1.2000	0.0130
Jun-13	0.0000	0.0000	0.0000	0.0000	0.0000	415.9366	0.0000	0.0000	0.0000	0.0000	0.0130
Jul-13	0.0000	0.0000	0.0000	0.0000	0.0000	397.7040	0.0000	0.0000	0.5501	4.0000	0.0260
Aug-13	0.0000	0.0000	0.0000	0.0000	0.0000	447.7517	0.0000	0.0040	0.0000	1.6000	0.0325
Sep-13	0.0000	0.0000	0.0000	0.0000	0.0000	565.0243	0.0140	0.1400	0.0000	1.2000	0.0260
Oct-13	0.0000	0.0000	0.0000	0.0000	0.0000	800.3190	0.0000	0.1960	0.0000	0.0000	0.0325
Nov-13	0.0000	0.0000	0.0000	0.0000	0.0000	797.2930	0.0000	0.1960	0.0000	0.0000	0.0195
Dec-13	0.0000	0.0000	0.0000	0.0000	0.0000	1213.8441	0.0103	0.0000	0.0000	2.0000	0.0260
Jan-14	0.0000	0.0000	0.0000	0.0000	0.0000	1158.9828	0.0000	0.1680	0.0000	2.0000	0.0325
Feb-14	0.0000	0.0000	0.0000	0.0000	0.0000	1064.5957	0.0000	0.2520	0.0000	0.0000	0.0520
Total	0.0000	0.0000	0.0000	0.0000	0.0000	7540.7219	0.0243	0.9560	0.5501	14.0000	0.3120

Notes: (1) Broken concrete for recycling into aggregates.

(2) Plastics refer to plastic bottles/ containers, plastic sheets/ foam from packaging materials.

(3) Use the conversion factor : 1 full load of dumping truck being equivalent to 6.5m^3 by volume.

(4) Chemical waste refer to spent “battery” and “oil with water”.

Appendix J
Cumulative Statistics on Exceedances, Complaints, Notifications of Summons and Successful Prosecutions

Cumulative statistics on Exceedances

		Total no. recorded in this reporting period	Total no. recorded since project commencement
1-Hour TSP	Action	-	-
	Limit	-	-
24-Hour TSP	Action	-	-
	Limit	-	-
Noise	Action	-	-
	Limit	-	-
Water Quality	Action	1	1
	Limit	1	1

Remarks: Exceedances which are not project-related are not presented in this table.

Cumulative statistics on Exceedances, Complaints, Notifications of Summons and Successful Prosecutions

	Date Received	Subject	Status	Total no. received in this reporting period	Total no. received since project commencement
Environmental complaints	04 March13	One (1) complaint was referred by EPD to ET regarding the construction noise impact from cranes operating from the barges for the Hong Kong –Zhuhai-Macao Bridge Hong Kong Project generating squeak noise in the evening of 1 Mar 2013 causing annoyance to him/her. The investigation results show that the complaint was non-project related.	Closed	1	5

	08 April 13	One (1) complaint was referred by EPD regarding oil dumping observed from various vessels operating for HZMB HK projects near Tung Chung Development Pier over the past few months. The investigation results showed that the complaint was non-project related.	Closed	2	6
	10 May 2013	A complaint referred to the Contractor by EPD on 10 May 2013 regarding the scattered debris of silt curtain noted at Sha Lou Wan and Tung Chung Bay. Immediate inspection and clean up action was taken by the Contractor.	Closed	3	7
	23 May 2013	A follow-up complaint referred by EPD was received on 23 May 2013 regarding the oil stain noted near Tung Chung Development Pier for past few months.	Closed	4	8
	26 Sept 13	One (1) complaint was logged by the Contractor regarding the leakage from work barges causing water pollution near Tuen Mun Richland Garden received on 26 Sept 13. With refer to the available information such as photo record of the incident cannot indicate that the leakage from work barges was caused by the vessel of this Contract and the complaint could not be concluded as project related.	Closed	5	9
	1 Nov 13	As informed by the Contractor on 5 Nov 13, a noise complaint received on 14 Sept 13 was referred to the Contractor of HKBCF on 1 Nov 13. The captioned complaint involves	Closed	6	10

		noise generated by a tug boat operating near a pier at Tung Chung around 05:55am-06:45am on 14 Sept 13. After investigation, the complaint is considered not likely to be related to the construction works.			
	11 Nov 13	As informed by the Contractor, complaint received from Penta-Ocean – Gitanes Joint Venture (CV/2012/03) mentioned that the formation works of the Contaminated Mud Pit CMP1 to the South of the Brothers (CMP1 of SB) which has been completed in mid-August 2013 and the pit has been commissioned for receiving contaminated marine mud from other projects starting from 16 August 2013. However, it was recently observed that some of the project vessels of HY/2010/02 had berthed within the said pit and those anchorages would likely cause disruption to the underlying contaminated mud and thus induce unfavourable contamination impact to the surrounding marine environment. In this regard, they reminded the contractor to avoid berthing of their vessels within the boundary of CMP1 of SB thereafter for the sake of environmental concern. After investigation, the complaint is	Closed	7	11

		considered not likely to be related to the construction works.			
	5 Dec13	As informed by the Contractor on 5 Dec 13, one complaint was noted on 12 Nov regarding a barge moving through the southern channel. After investigation, the noise complaint was considered as non-project related.	Closed	8	12
	12 Dec13	As informed by the Contractor on 12 Dec 13. A complaint involves the leakage of sand from barges causing water discoloration at sea near Tuen Mun Pierhead Garden and sand material without properly covered was blown to the inside of the residential area which caused disturbance to residence. With refer to available information provided and monitoring data recorded on 09 Dec 13, it cannot indicate that the water quality impact and air quality impact were caused by the vessel of this Contract and therefore the complaint could not be concluded as related to this Contract	Closed	9	13
	6 Jan 14	As informed by the Contractor on 6 Jan, A complaint involves barges loaded with sand material without properly covered was blown to the inside of the residential area of Tuen Mun Pierhead Garden which	Closed	10	14

		caused disturbance to residence was received on 27 Dec 13. With refer to available information provided, it cannot indicate that the water quality impact and air quality impact were caused by the vessel of this Contract and therefore the complaint could not be concluded as related to this Contract.			
	21 Jan 14	EPD referred a complaint from complainant who advised that blackish mud was found along the edge of the construction site of Hong Kong-Zhuhai-Macao Bridge Hong Kong Project near the airport in the morning of 18 January 2014. After receipt of the complaint, site daily was reviewed and follow-up investigation has been conducted and excavation and dredging activities were not observed within the site boundary of HKBCF during the joint site inspection audit. Therefore in accordance with the investigation results, the complaint is considered as not related to contract HY/2010/02	Closed	11	15
Notification of summons	29 April 13	As informed by the Contractor on 9 May 13, one summons was received on 29 April 13 regarding the suspected violation case of Noise Control Ordinance (Cap.400) at Works Area WA4 on 31 Oct 2012.	-	1	1
Successful	21 May 2013	As informed by the Contractor in	-	1	1

Prosecutions		August 13, the Contractor was subsequently prosecuted on 21 May 2013 for breaching Cap.400 Noise Control Ordinance.			

Appendix K – Event Action Plan

Event / Action Plan for Air Quality

Event	Action			
	ET Leader	IEC	ER	Contractor
Action Level				
Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial to ER within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
Limit Level				
Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
Exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Event / Action Plan for Construction Noise

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
Action Level	1. Notify IEC and Contractor; 2. Identify source, investigate the causes of exceedance and propose remedial measures; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness.	1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented.	1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals.
Limit Level	1. Inform IEC, ER, EPD and Contractor; 2. Identify source; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Event / Action Plan for Water Quality

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
Action level being exceeded by one sampling day	1. Repeat *in situ* measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor and ER; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Repeat measurement on next day of exceedance to confirm findings.	1. Check monitoring data submitted by ET and Contractor's working methods; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly; 4. Assess the effectiveness of the implemented mitigation measures.	1. Confirm receipt of notification of non-compliance in writing; 2. Discuss with IEC on the proposed mitigation measures; 3. Make agreement on mitigation measures to be implemented; 4. Ensure mitigation measures are properly implemented.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment and consider changes of working methods; 4. Discuss with ET and IEC on possible remedial actions and propose mitigation measures to IEC and ER; 5. Implement the agreed mitigation measures. 6. Amend working methods if appropriate.

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
Action level being exceeded by two or more consecutive sampling days	1. Repeat *in situ* measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, Contractor and ER; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Action level; 8. Repeat measurement on next day of exceedance to confirm findings.	1. Check monitoring data submitted by ET and Contractor's working method; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly; 4. Assess the effectiveness of the implemented mitigation measures.	1. Confirm receipt of notification of non-compliance in writing; 2. Discuss with IEC on the proposed mitigation measures; 3. Make agreement on mitigation measures to be implemented; 4. Ensure mitigation measures are properly implemented; 5. Assess the effectiveness of the implemented mitigation measures.	1. Inform the Engineer and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment and consider changes of working methods; 4. Discuss with ET and IEC on possible remedial actions and propose mitigation measures to IEC and ER within 3 working days of notification; 5. Implement the agreed mitigation measures; 6. Amend working methods if appropriate.

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
Limit level being exceeded by one sampling day	1. Repeat *in-situ* measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, Contractor, ER and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level.	1. Check monitoring data submitted by ET and Contractor's working method; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly; 4. Assess the effectiveness of the implemented mitigation measures.	1. Confirm receipt of notification of failure in writing; 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Request Contractor to critically review the working methods; 4. Ensure mitigation measures are properly implemented; 5. Assess the effectiveness of the implemented mitigation measures.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment and consider changes of working methods; 4. Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER; 5. Implement the agreed mitigation measures; 6. Amend working methods if appropriate.

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
Limit level being exceeded by two or more consecutive sampling days	1. Repeat *in-situ* measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor, ER and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days.	1. Check monitoring data submitted by ET and Contractor's working method; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the Contractor's mitigation measures whenever necessary to assure their effectiveness and advise the ER accordingly.	1. Confirm receipt of notification of failure in writing; 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Request Contractor to critically review the working methods; 4. Make agreement on the mitigation measures to be implemented; 5. Ensure mitigation measures are properly implemented; 6. Assess the effectiveness of the implemented mitigation measures; 7. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit level.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Take immediate action to avoid further exceedance; 3. Rectify unacceptable practice; 4. Check all plant and equipment and consider changes of working methods; 5. Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER; 6. Implement the agreed mitigation measures; 7. Resubmit proposals of mitigation measures if problem still not under control; 8. As directed by the Engineer, to slow down or to stop all or part of the construction activities until no exceedance of Limit level.

Event / Action Plan for Dolphin Monitoring

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
Dolphin numbers and behaviour patterns recorded in the impact and post-construction monitoring are significantly lower than or different from those recorded in the baseline monitoring	1. Repeat statistical data analysis to confirm findings; 2. Review historical data to ensure differences are as a result of natural variation or previously observed seasonal differences; 3. Identify source(s) of impact; 4. Inform the IEC, ER and Contractor; 5. Check monitoring data; 6. Discuss additional dolphin monitoring and any other measures, with the IEC and Contractor.	1. Discuss monitoring with the ET and the Contractor; 2. Review proposals for additional monitoring and any other measures submitted by the Contractor and advise the ER accordingly.	1. Discuss with the IEC additional monitoring requirements and any other measures proposed by the ET; 2. Make agreement on the measures to be implemented.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Discuss with the ET and the IEC and propose measures to the IEC and the ER; 3. Implement the agreed measures.

Appendix H Impact Dolphin Monitoring Survey Findings and Analysis

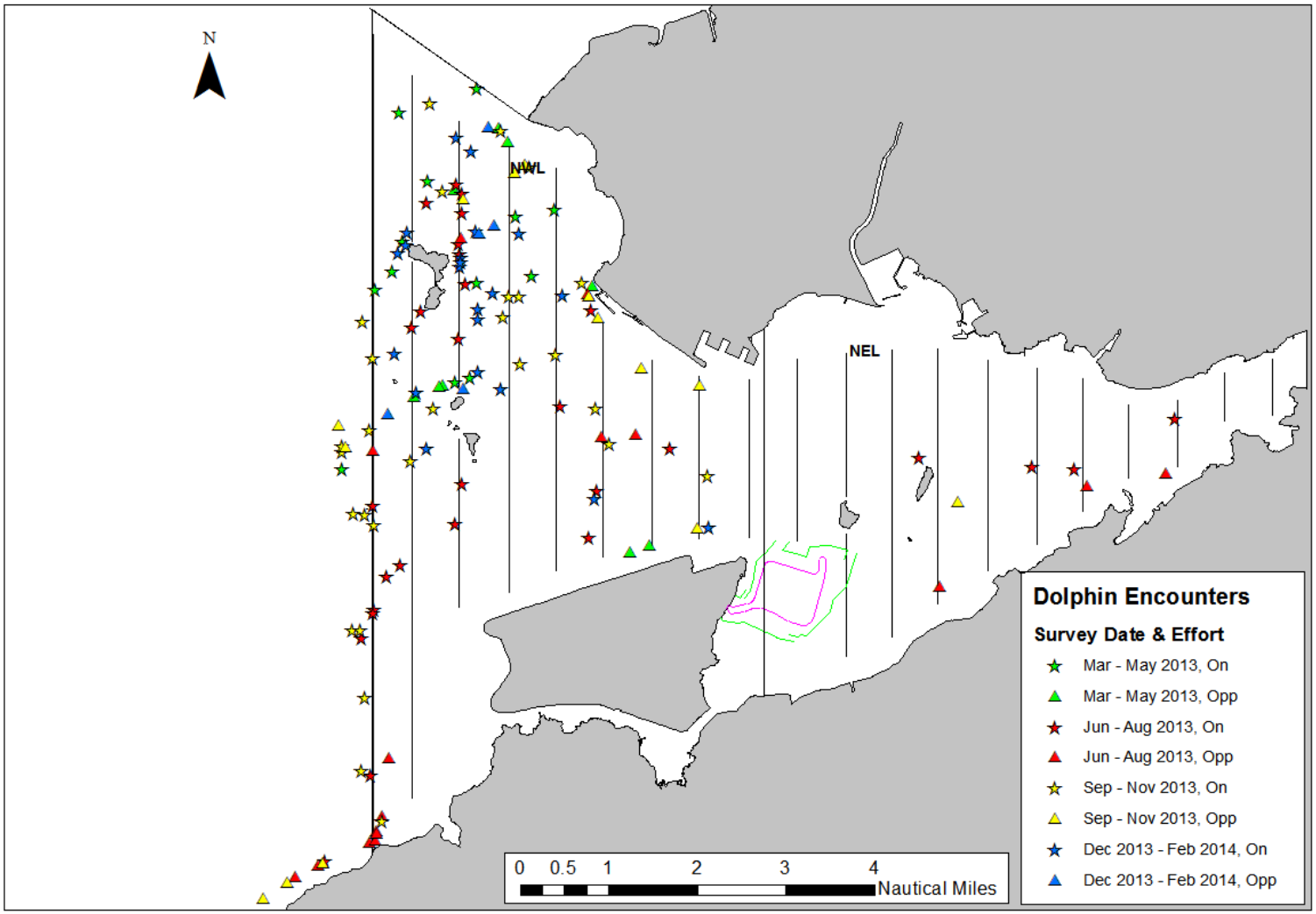

Figure 1 Dolphin Sightings Recorded During Monitoring Surveys, March 2013-February 2014

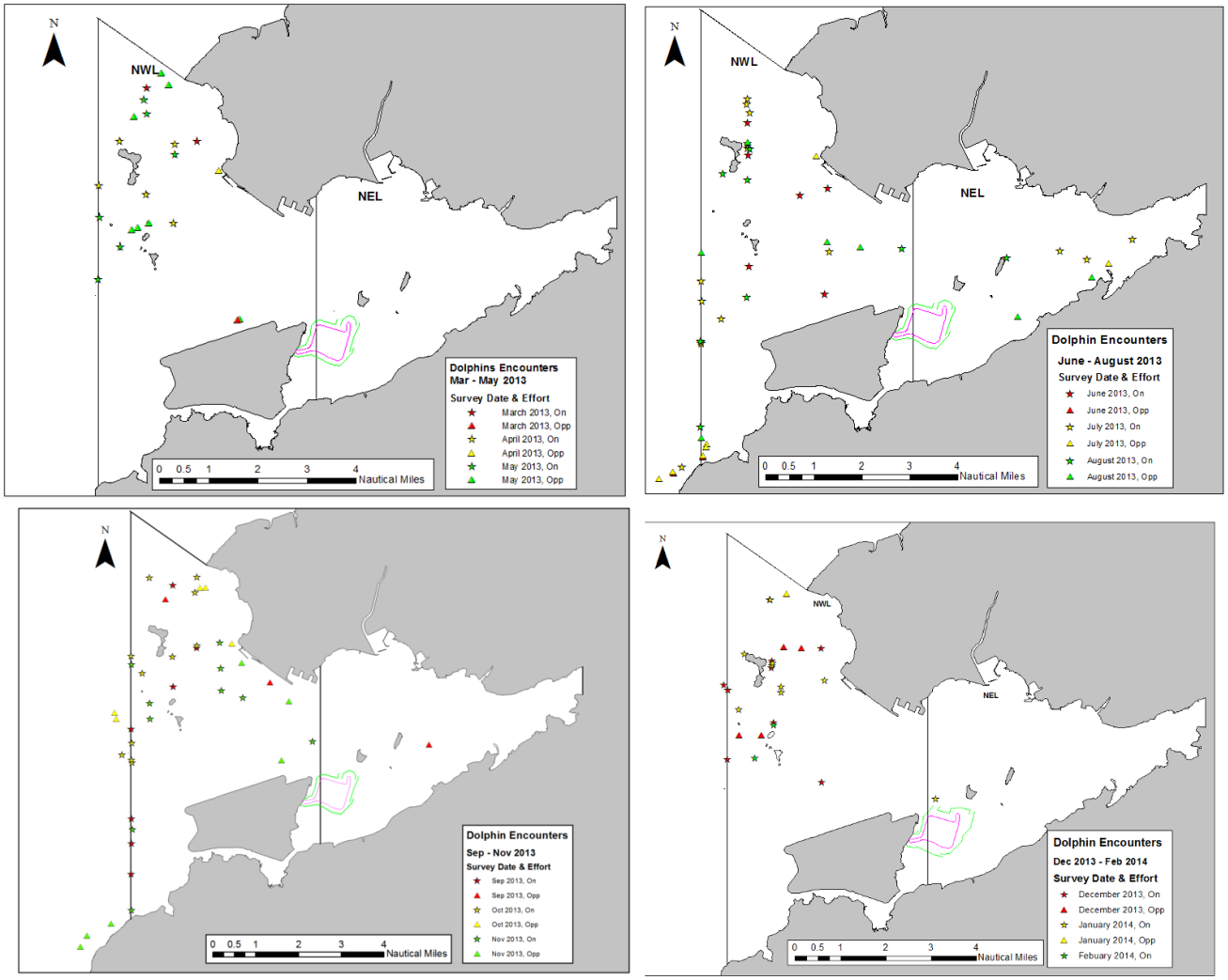

Figure 2 Dolphin Sightings Recorded per Quarter During Monitoring Surveys, March 2013-February 2014

Appendix H Impact Dolphin Monitoring Survey Findings and Analysis

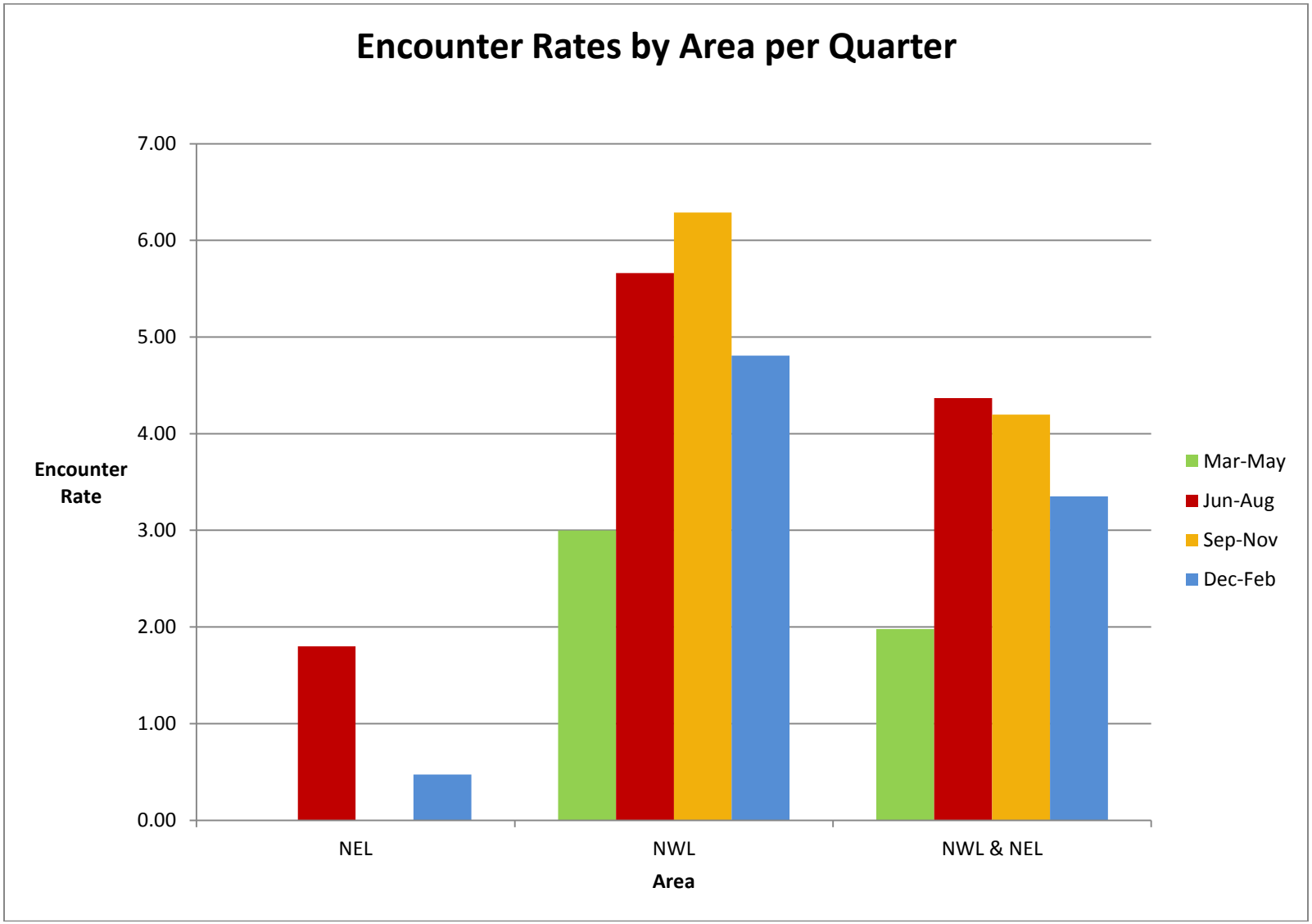

Figure 3 Encounter Rates of "On-Effort" Sightings (i.e., groups) for NEL, NWL and Combined per Quarter for the Period March 2013-February 2014

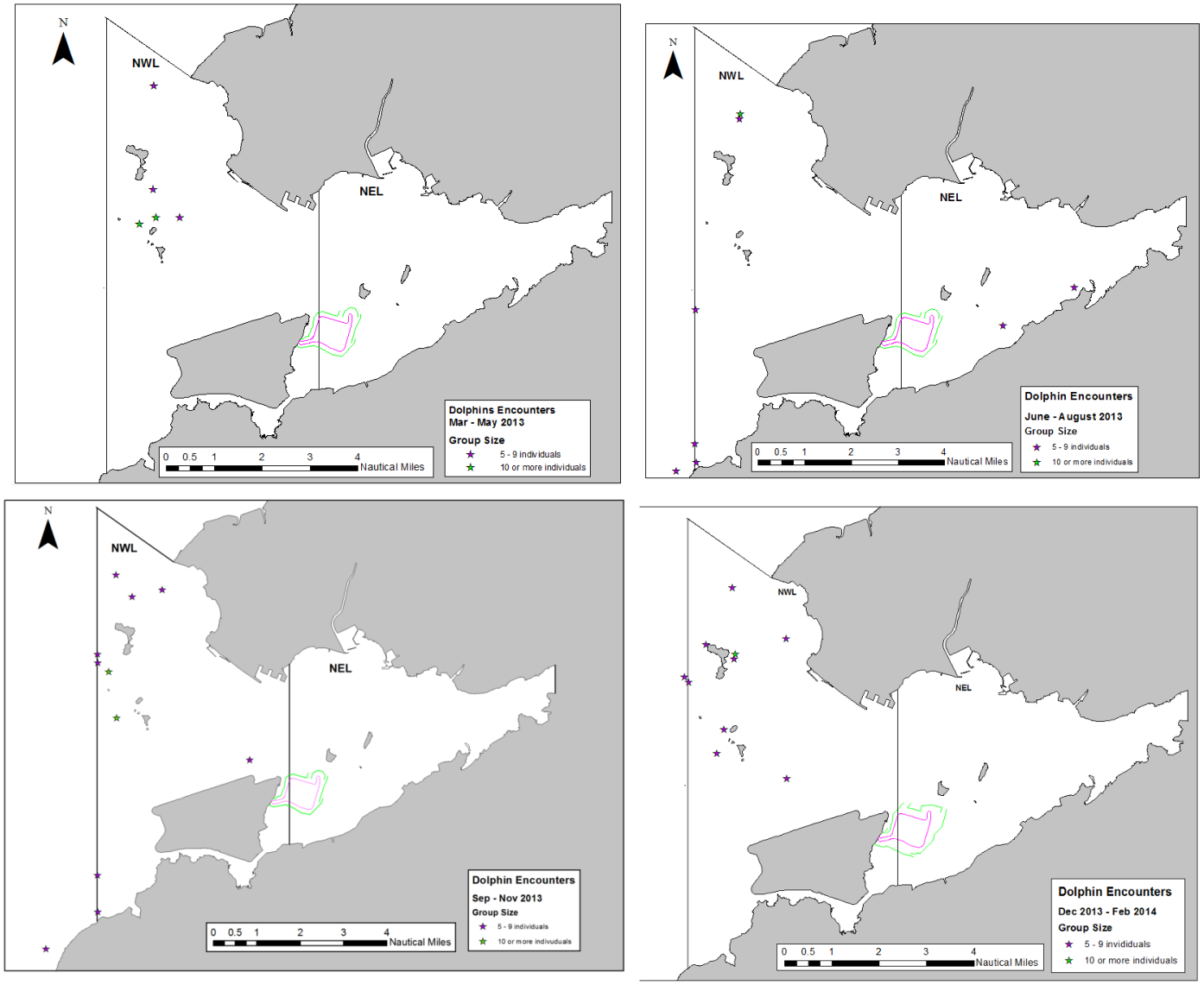

Figure 4 Dolphin Groups Sizes of More than Five Individuals per Quarter recorded between March 2013 and February 2014

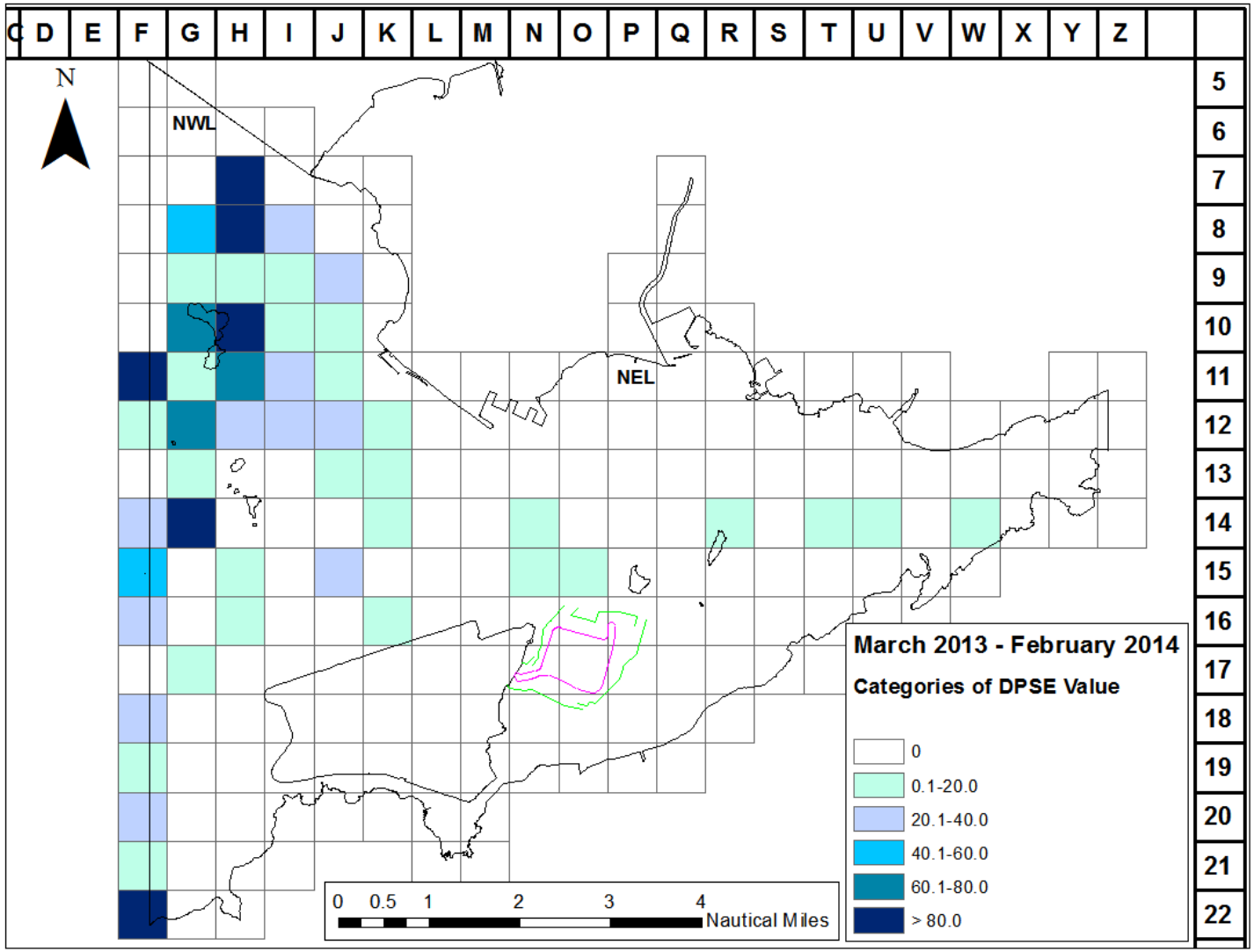

Figure 5 Dolphin density DPSE (number of dolphins per 100 units of survey effort) for March 2013- February 2014

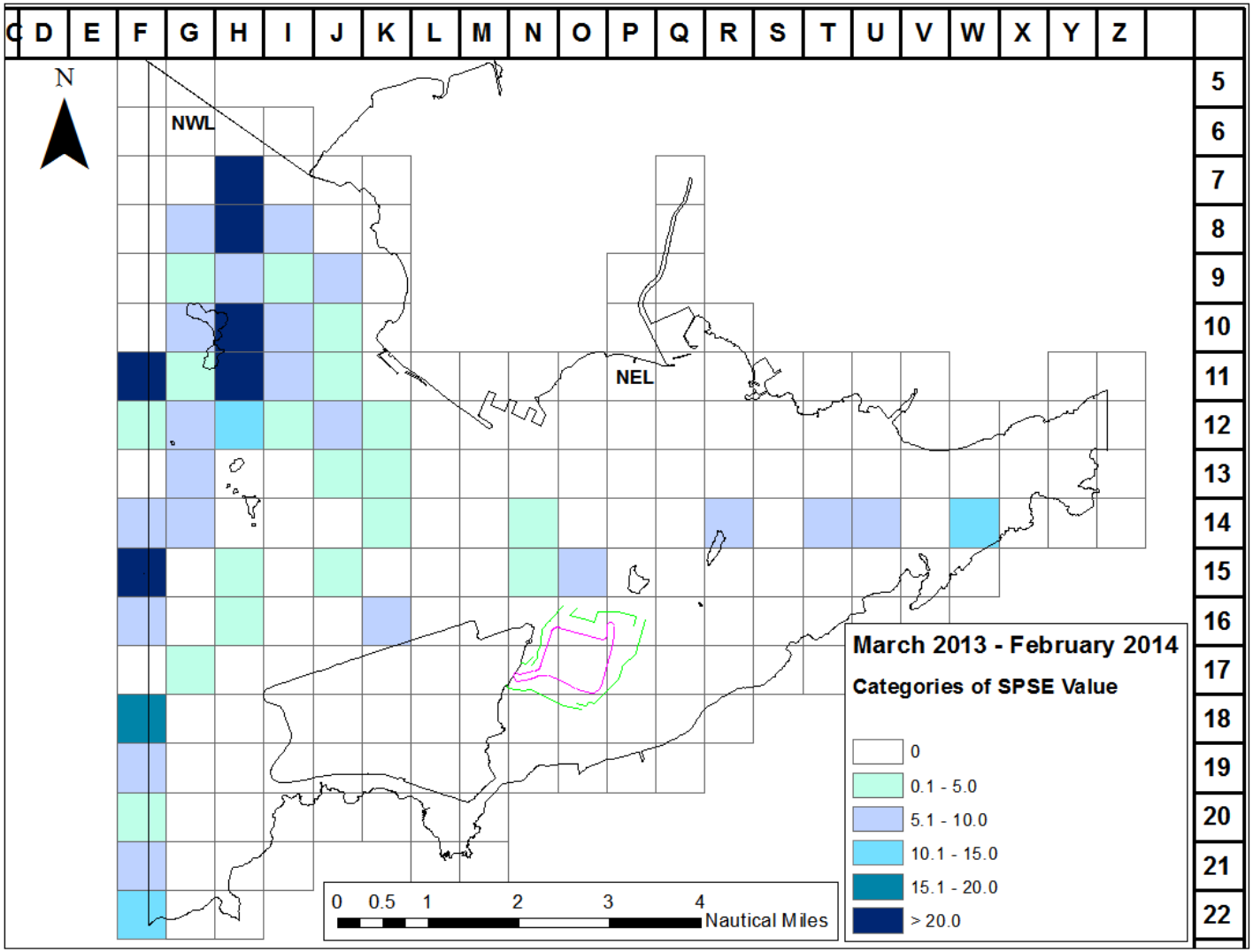

Figure 6 Sighting density SPSE (number of sightings per 100 units of survey effort) for March 2013- February 2014

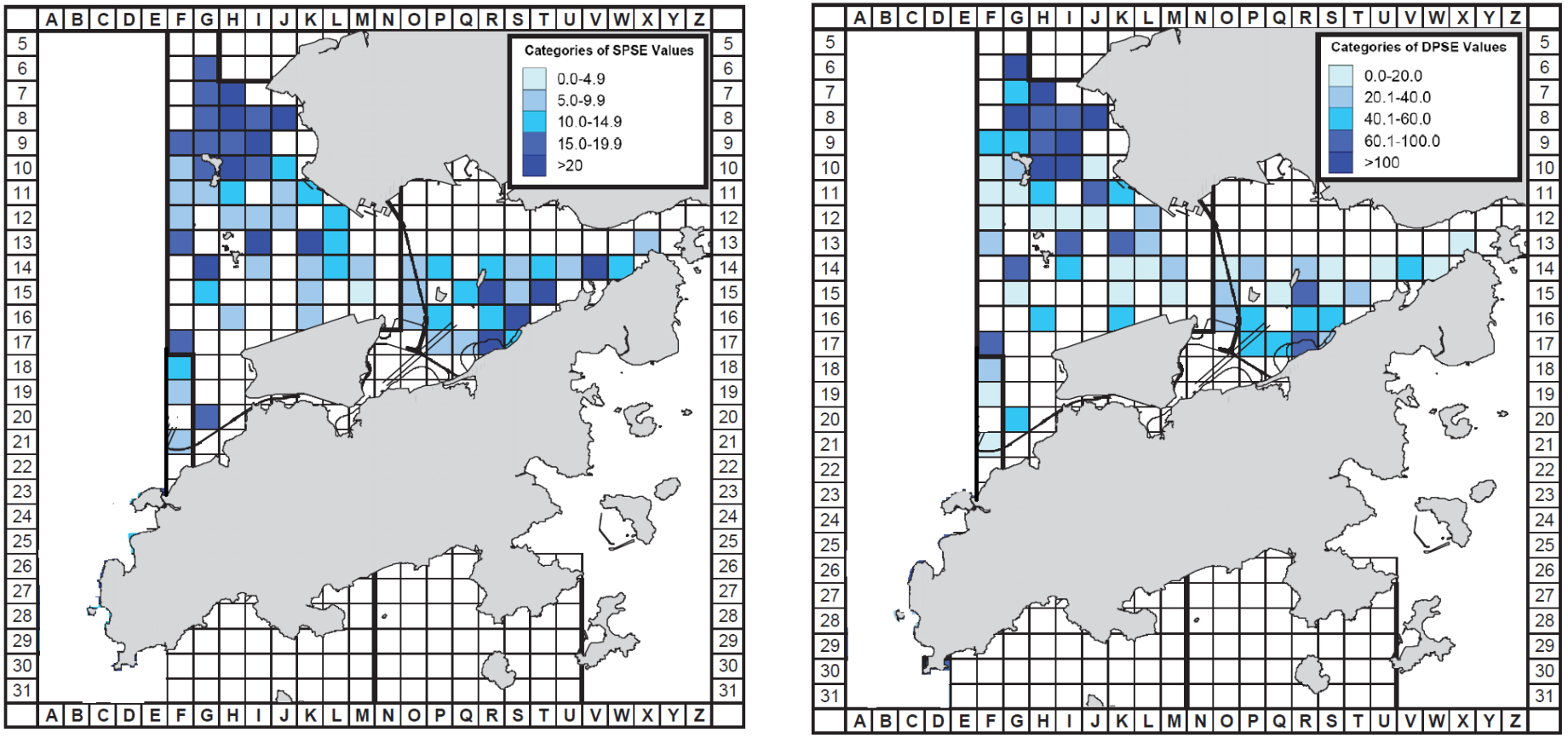

Figure 7. Yearly Dolphin Density Maps (number of dolphins/dolphin groups per 100 units of survey effort). Derived from Baseline and Advanced Chinese White Dolphin Monitoring for the period between February 2011 - January 2012

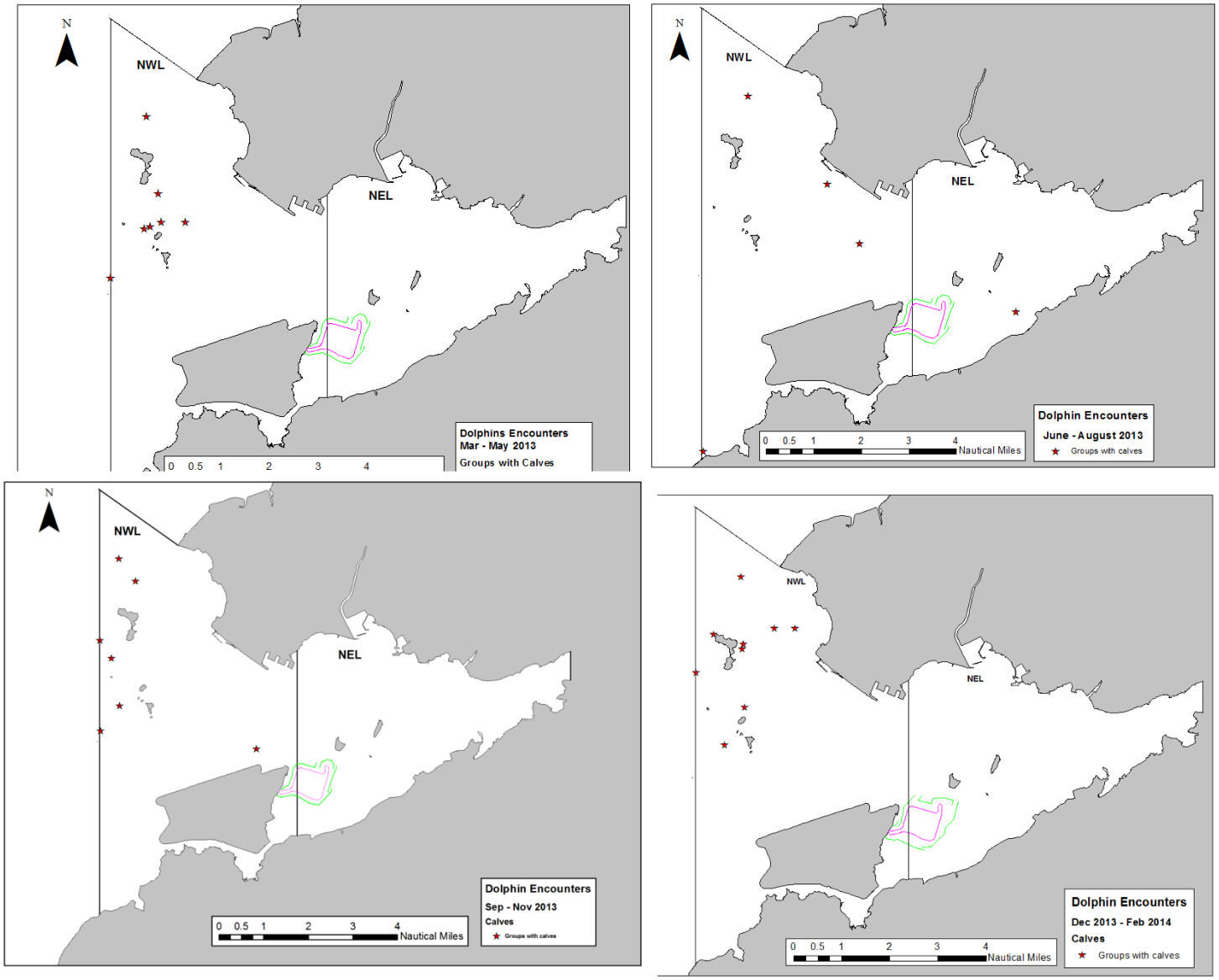

Figure 8 Mother and Calf Pairs Sighted per Quarter During Monitoring Surveys, March 2013-February 2014

HZMB 026 2013-01-28 12-22-30

HZMB 026 2013-06-25 15-11-22 01

HZMB 044 2012-09-18 17-15-04

HZMB 044 2013-04-01 14-37-57 02

HZMB 050 2013-02-15_14-57-02

HZMB 050 2014-01-10_11-31-05

HZMB 073 2012-12-10_11-27-37 with calf

HZMB 073 2013-04-01_14-23-54_05

Figure 9. Calves of females identified in the HZMB Catalogue seen during the year March 2012 and February 2014. Images of first and last sighting to indicate current longevity.

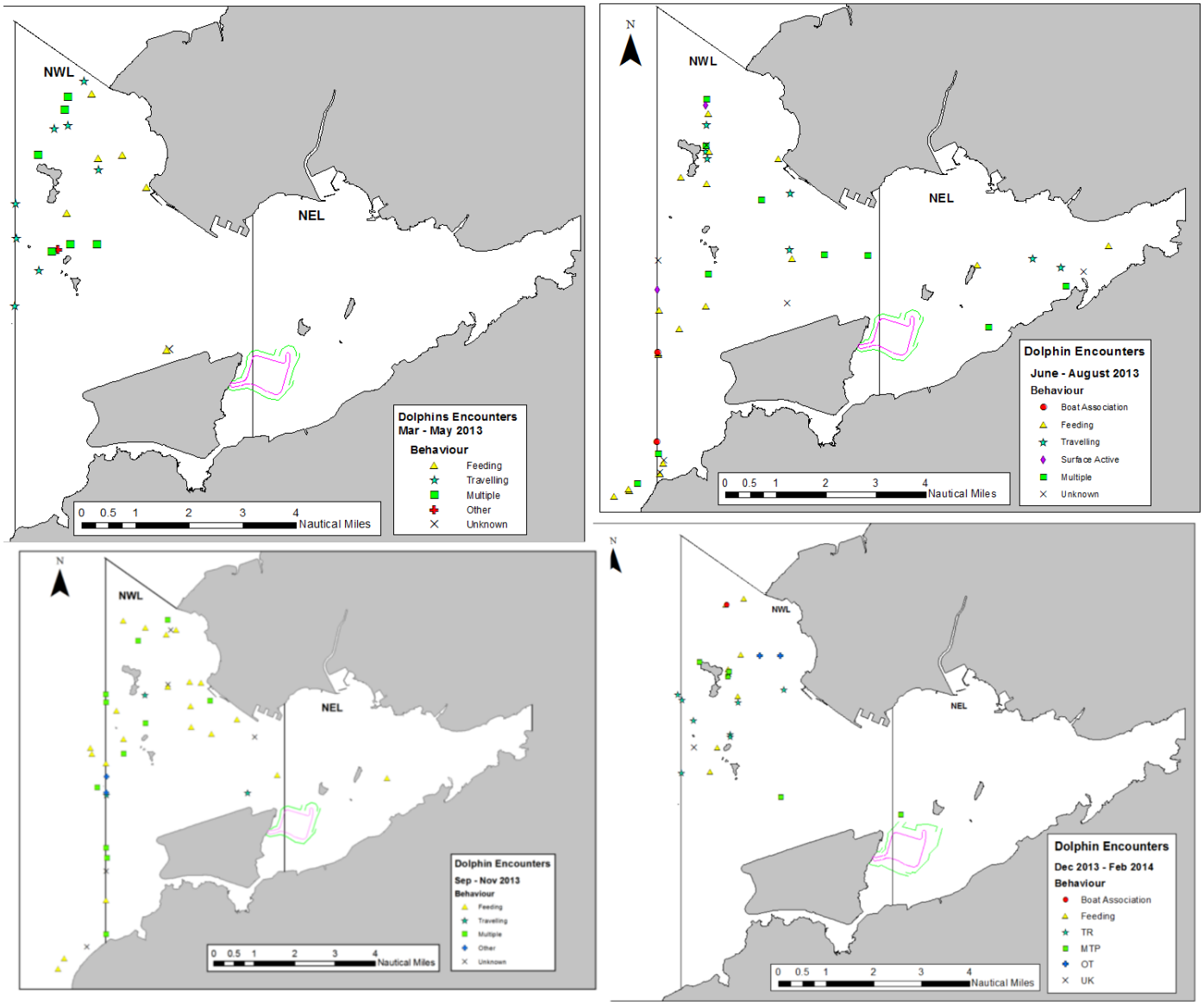

Figure 10. Dolphin Behavioural Activities per Quarter recorded between March 2013 and February 2014

Appendix H Impact Dolphin Monitoring Survey Findings and Analysis

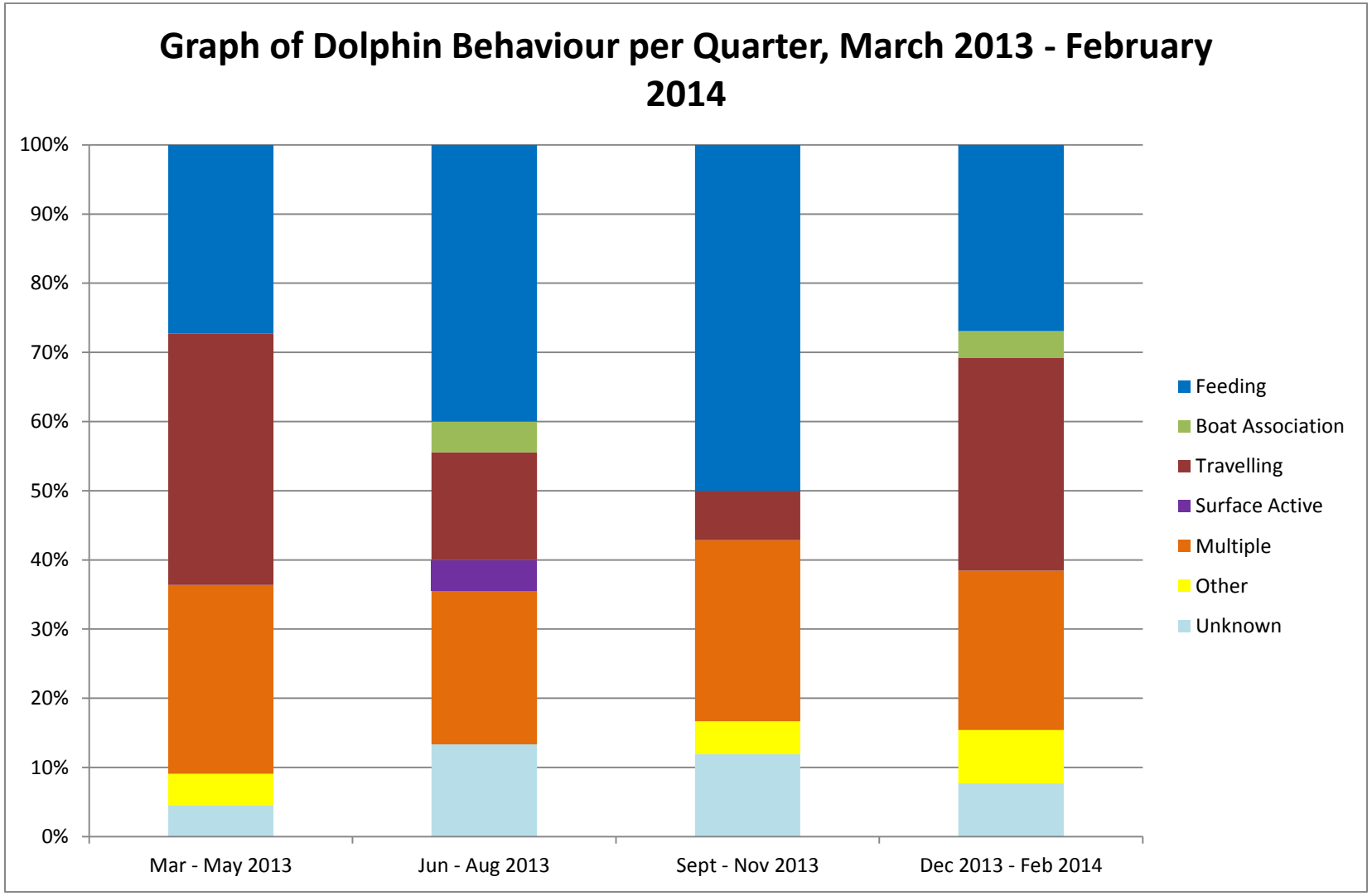

Figure 11 Dolphin Behavioural Activity per Quarter recorded between March 2013 and February 2014;

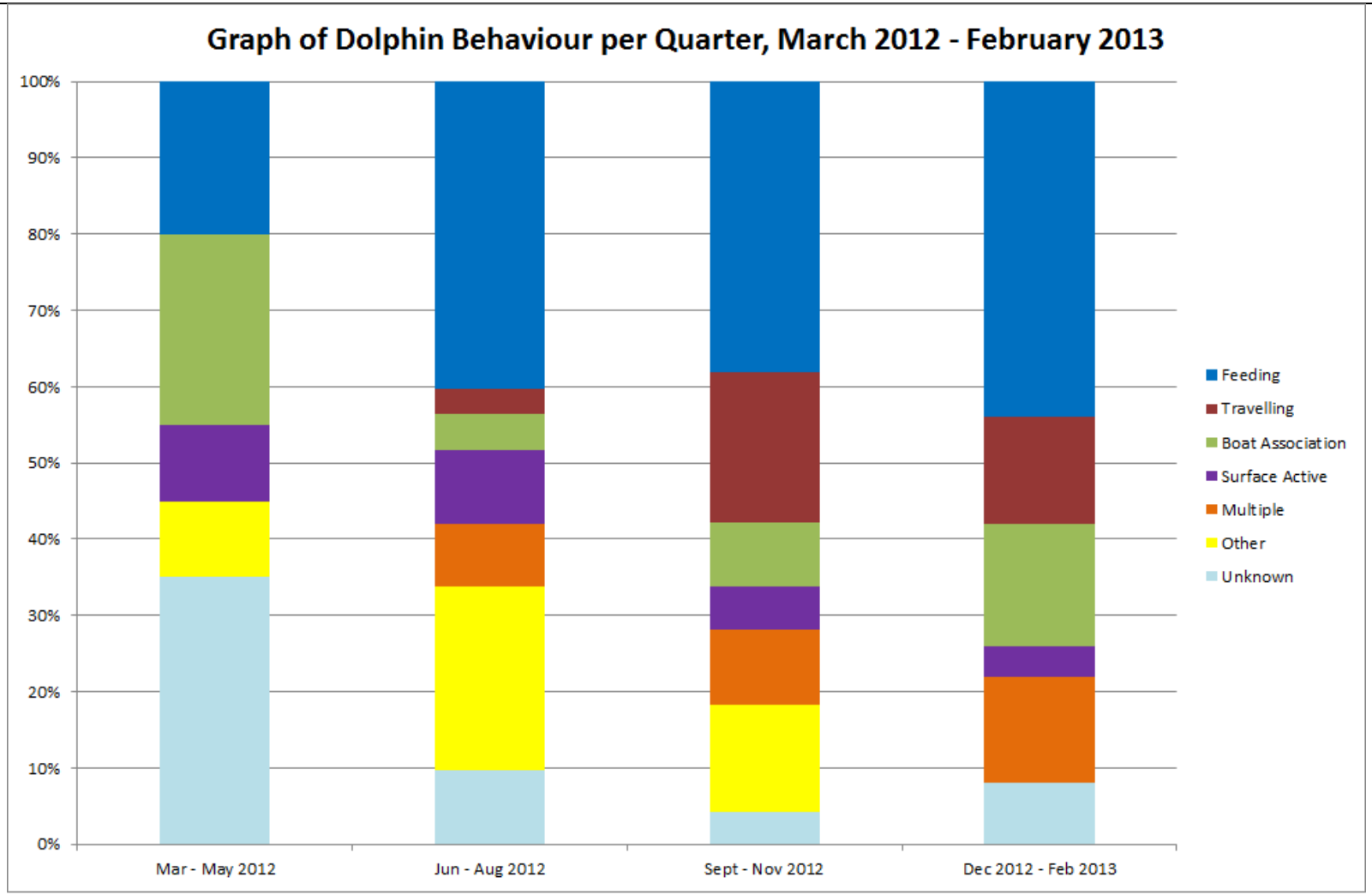

Figure 12 Dolphin Behavioural Activity per Quarter recorded between March 2012 and February 2013

Figure 13. Chinese white dolphins (*Sousa chinensis*) are often reported feeding in association with purse seine fishing boats

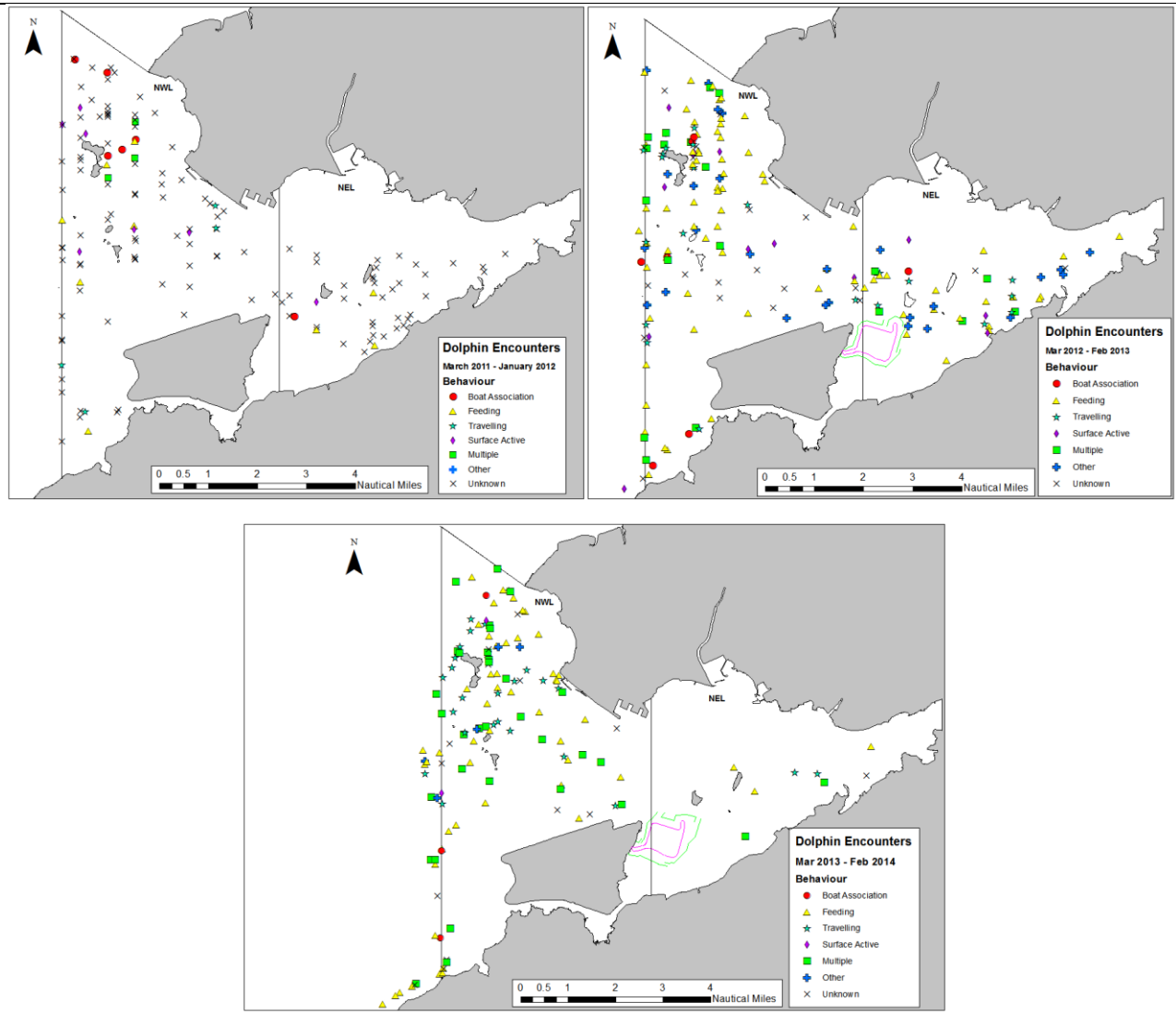

Figure 14. A Comparison of the location of behaviours in 2011-12 to 2013-14. The island in the northern part of NWL is highlighted as an important feeding area

Table 1 Impact Monitoring Survey Schedule and Details (March 2013 – February 2014)

Date	Location of Survey	No. Sightings ON	No. Sightings Opp	Total km ON EFFORT (favourable conditions)
3/18/2013	NE and NW Lantau	0	1	77.8
3/19/2013	NE Lantau	0	0	33.5
3/27/2013	NW Lantau	0	0	35.2
3/28/2013	NE and NW Lantau	2	0	64.3
4/1/2013	NW Lantau	5	1	63.9
4/2/2013	NE and NW Lantau	0	0	48.1
4/22/2013	NW Lantau	0	0	52.8
4/23/2013	NE and NW Lantau	0	0	40.5
5/9/2013	NW Lantau	3	4	64.6
5/10/2013	NE and NW Lantau	0	0	47.2
5/24/2013	NW Lantau	3	3	63.4
5/27/2013	NE and NW Lantau	0	0	47.6
6/13/2013	NW Lantau	2	2	67
6/14/2013	NE and NW Lantau	0	0	10.1
6/19/2013	NE Lantau	0	0	33.2
6/25/2013	NE and NW Lantau	3	0	59.9
6/26/2013	NW Lantau	1	0	49.3
7/8/2013	NW Lantau	5	6	63.5
7/9/2013	NE and NW Lantau	0	0	47.7
7/23/2013	NW Lantau	6	0	58.4
7/31/2013	NE and NW Lantau	3	1	52.4
8/5/2013	NW Lantau	3	2	70.9
8/6/2013	NE and NW Lantau	2	2	40.2
8/21/2013	NW Lantau	4	2	63.4
8/28/2013	NE and NW Lantau	0	0	26.1
8/30/2013	NE Lantau	0	1	21.7
9/17/2013	NE Lantau	0	0	32.5
9/19/2013	NE and NW Lantau	1	3	77.5
9/24/2013	NW Lantau	6	0	63.4
9/25/2013	NE and NW Lantau	0	0	47.6
10/15/2013	NW Lantau	6	3	59.7
10/17/2013	NE and NW Lantau	0	0	52.1
10/24/2013	NW Lantau	5	2	58.6
10/28/2013	NE and NW Lantau	0	0	51.8
11/1/2013	NE and NW Lantau	2	3	59.5
11/2/2013	NW Lantau	1	3	51

Date	Location of Survey	No. Sightings ON	No. Sightings Opp	Total km ON EFFORT (favourable conditions)
11/7/2013	NW Lantau	6	0	64.7
11/9/2013	NE and NW Lantau	1	0	47.5
12/19/2013	NW Lantau	4	1	62.1
12/21/2013	NE and NW Lantau	0	0	46.8
12/26/2013	NW Lantau	5	1	52.7
12/28/2013	NE and NW Lantau	1	2	59.6
1/6/2014	NW Lantau	5	1	51.5
1/7/2014	NE and NW Lantau	0	0	59.6
1/9/2014	NE and NW Lantau	2	0	59.2
1/10/2014	NW Lantau	2	0	50
2/10/2014	NW Lantau	0	0	43
2/11/2014	NE and NW Lantau	0	0	32
2/17/2014	NW Lantau	2	0	58
2/20/2014	NE and NW Lantau	0	0	52.3

Table 2 Impact Monitoring Survey Effort Summary (March 2013 – February 2014)

Date	Area	Beaufort	Effort (km)	Season	Vessel	Type
18/03/2013	NWL	1	74	SPRING	HKDW	IMPACT
18/03/2013	NEL	1	3.8	SPRING	HKDW	IMPACT
19/03/2013	NEL	1	29.9	SPRING	HKDW	IMPACT
19/03/2013	NEL	2	3.6	SPRING	HKDW	IMPACT
27/03/2013	NWL	1	6.8	SPRING	HKDW	IMPACT
27/03/2013	NWL	2	28.4	SPRING	HKDW	IMPACT
28/03/2013	NWL	1	6.8	SPRING	HKDW	IMPACT
28/03/2013	NWL	2	11.5	SPRING	HKDW	IMPACT
28/03/2013	NWL	3	9.2	SPRING	HKDW	IMPACT
28/03/2013	NWL	4	11.8	SPRING	HKDW	IMPACT
28/03/2013	NEL	1	30.2	SPRING	HKDW	IMPACT
28/03/2013	NEL	2	6.6	SPRING	HKDW	IMPACT
01/04/2013	NWL	1	31.7	SPRING	HKDW	IMPACT
01/04/2013	NWL	2	25.8	SPRING	HKDW	IMPACT
01/04/2013	NWL	3	6.4	SPRING	HKDW	IMPACT
02/04/2013	NWL	1	10.6	SPRING	HKDW	IMPACT
02/04/2013	NEL	0	4	SPRING	HKDW	IMPACT
02/04/2013	NEL	1	30.2	SPRING	HKDW	IMPACT
02/04/2013	NEL	2	3.3	SPRING	HKDW	IMPACT
22/04/2013	NWL	1	0.8	SPRING	HKDW	IMPACT
22/04/2013	NWL	2	19.9	SPRING	HKDW	IMPACT
22/04/2013	NWL	3	32.1	SPRING	HKDW	IMPACT
22/04/2013	NWL	4	17.6	SPRING	HKDW	IMPACT
23/04/2013	NWL	1	3.5	SPRING	HKDW	IMPACT
23/04/2013	NEL	1	36.6	SPRING	HKDW	IMPACT
23/04/2013	NEL	2	0.4	SPRING	HKDW	IMPACT
09/05/2013	NWL	1	59.5	SPRING	HKDW	IMPACT
09/05/2013	NWL	2	5.1	SPRING	HKDW	IMPACT
10/05/2013	NWL	1	10.2	SPRING	HKDW	IMPACT
10/05/2013	NEL	0	4.1	SPRING	HKDW	IMPACT
10/05/2013	NEL	1	31.1	SPRING	HKDW	IMPACT
10/05/2013	NEL	2	1.8	SPRING	HKDW	IMPACT
24/05/2013	NWL	0	15.8	SPRING	HKDW	IMPACT
24/05/2013	NWL	1	42.7	SPRING	HKDW	IMPACT
24/05/2013	NWL	2	0.6	SPRING	HKDW	IMPACT
24/05/2013	NWL	3	4.3	SPRING	HKDW	IMPACT
27/05/2013	NWL	2	3.2	SPRING	HKDW	IMPACT
27/05/2013	NWL	3	6.8	SPRING	HKDW	IMPACT
27/05/2013	NWL	4	0.3	SPRING	HKDW	IMPACT
27/05/2013	NEL	1	32.1	SPRING	HKDW	IMPACT
27/05/2013	NEL	2	3.7	SPRING	HKDW	IMPACT

Date	Area	Beaufort	Effort (km)	Season	Vessel	Type
27/05/2013	NEL	3	1.8	SPRING	HKDW	IMPACT
13/06/2013	NWL	1	28.1	SUMMER	HKDW	IMPACT
13/06/2013	NWL	2	31.7	SUMMER	HKDW	IMPACT
13/06/2013	NWL	3	7.2	SUMMER	HKDW	IMPACT
14/06/2013	NWL	1	6.6	SUMMER	HKDW	IMPACT
14/06/2013	NEL	1	3.5	SUMMER	HKDW	IMPACT
19/06/2013	NEL	1	33.2	SUMMER	HKDW	IMPACT
25/06/2013	NEL	1	16.2	SUMMER	HKDW	IMPACT
25/06/2013	NEL	2	18.6	SUMMER	HKDW	IMPACT
25/06/2013	NEL	3	2	SUMMER	HKDW	IMPACT
25/06/2013	NWL	2	8.2	SUMMER	HKDW	IMPACT
25/06/2013	NWL	3	14.9	SUMMER	HKDW	IMPACT
25/06/2013	NWL	4	1.6	SUMMER	HKDW	IMPACT
26/06/2013	NWL	2	14	SUMMER	HKDW	IMPACT
26/06/2013	NWL	3	35.3	SUMMER	HKDW	IMPACT
08/07/2013	NWL	1	29.9	SUMMER	HKDW	IMPACT
08/07/2013	NWL	2	22.1	SUMMER	HKDW	IMPACT
08/07/2013	NWL	3	11.5	SUMMER	HKDW	IMPACT
09/07/2013	NWL	1	10	SUMMER	HKDW	IMPACT
09/07/2013	NEL	1	27.2	SUMMER	HKDW	IMPACT
09/07/2013	NEL	2	9.2	SUMMER	HKDW	IMPACT
09/07/2013	NEL	3	1.3	SUMMER	HKDW	IMPACT
23/07/2013	NWL	0	3.8	SUMMER	HKDW	IMPACT
23/07/2013	NWL	1	32.6	SUMMER	HKDW	IMPACT
23/07/2013	NWL	2	22	SUMMER	HKDW	IMPACT
31/07/2013	NWL	2	12.3	SUMMER	HKDW	IMPACT
31/07/2013	NWL	3	3.2	SUMMER	HKDW	IMPACT
31/07/2013	NEL	1	2	SUMMER	HKDW	IMPACT
31/07/2013	NEL	2	25.9	SUMMER	HKDW	IMPACT
31/07/2013	NEL	3	9	SUMMER	HKDW	IMPACT
05/08/2013	NWL	1	63	SUMMER	HKDW	IMPACT
05/08/2013	NWL	2	7.9	SUMMER	HKDW	IMPACT
06/08/2013	NWL	1	3.1	SUMMER	HKDW	IMPACT
06/08/2013	NEL	1	22.4	SUMMER	HKDW	IMPACT
06/08/2013	NEL	2	9.3	SUMMER	HKDW	IMPACT
06/08/2013	NEL	3	5.4	SUMMER	HKDW	IMPACT
21/08/2013	NWL	1	46.2	SUMMER	HKDW	IMPACT
21/08/2013	NWL	2	17.2	SUMMER	HKDW	IMPACT
28/08/2013	NWL	1	10.7	SUMMER	HKDW	IMPACT
28/08/2013	NEL	1	15.4	SUMMER	HKDW	IMPACT
30/08/2013	NEL	1	14.6	SUMMER	HKDW	IMPACT
30/08/2013	NEL	2	7.1	SUMMER	HKDW	IMPACT

Date	Area	Beaufort	Effort (km)	Season	Vessel	Type
17/09/2013	NEL	1	9.2	AUTUMN	HKDW	IMPACT
17/09/2013	NEL	2	15.6	AUTUMN	HKDW	IMPACT
17/09/2013	NEL	3	7.7	AUTUMN	HKDW	IMPACT
17/09/2013	NEL	4	1	AUTUMN	HKDW	IMPACT
19/09/2013	NEL	2	3.5	AUTUMN	HKDW	IMPACT
19/09/2013	NWL	1	10.6	AUTUMN	HKDW	IMPACT
19/09/2013	NWL	2	44.7	AUTUMN	HKDW	IMPACT
19/09/2013	NWL	3	18.7	AUTUMN	HKDW	IMPACT
24/09/2013	NWL	1	23.6	AUTUMN	HKDW	IMPACT
24/09/2013	NWL	2	19.4	AUTUMN	HKDW	IMPACT
24/09/2013	NWL	3	20.4	AUTUMN	HKDW	IMPACT
25/09/2013	NWL	1	7.6	AUTUMN	HKDW	IMPACT
25/09/2013	NWL	2	2.7	AUTUMN	HKDW	IMPACT
25/09/2013	NEL	1	20.3	AUTUMN	HKDW	IMPACT
25/09/2013	NEL	2	17	AUTUMN	HKDW	IMPACT
15/10/2013	NWL	1	35.8	AUTUMN	HKDW	IMPACT
15/10/2013	NWL	2	23.9	AUTUMN	HKDW	IMPACT
17/10/2013	NWL	1	1.1	AUTUMN	HKDW	IMPACT
17/10/2013	NWL	2	7.4	AUTUMN	HKDW	IMPACT
17/10/2013	NWL	3	6	AUTUMN	HKDW	IMPACT
17/10/2013	NEL	1	9.2	AUTUMN	HKDW	IMPACT
17/10/2013	NEL	2	20.5	AUTUMN	HKDW	IMPACT
17/10/2013	NEL	3	7.9	AUTUMN	HKDW	IMPACT
24/10/2013	NWL	1	12.2	AUTUMN	HKDW	IMPACT
24/10/2013	NWL	2	32.7	AUTUMN	HKDW	IMPACT
24/10/2013	NWL	3	13.7	AUTUMN	HKDW	IMPACT
24/10/2013	NWL	4	0.1	AUTUMN	HKDW	IMPACT
28/10/2013	NWL	1	4.9	AUTUMN	HKDW	IMPACT
28/10/2013	NWL	2	10.2	AUTUMN	HKDW	IMPACT
28/10/2013	NEL	1	14.6	AUTUMN	HKDW	IMPACT
28/10/2013	NEL	2	10.7	AUTUMN	HKDW	IMPACT
28/10/2013	NEL	3	11.4	AUTUMN	HKDW	IMPACT
01/11/2013	NEL	1	35.4	AUTUMN	HKDW	IMPACT
01/11/2013	NWL	1	14.6	AUTUMN	HKDW	IMPACT
01/11/2013	NWL	2	9.5	AUTUMN	HKDW	IMPACT
02/11/2013	NWL	2	26.7	AUTUMN	HKDW	IMPACT
02/11/2013	NWL	3	24.3	AUTUMN	HKDW	IMPACT
02/11/2013	NWL	4	1.2	AUTUMN	HKDW	IMPACT
07/11/2013	NWL	1	43.4	AUTUMN	HKDW	IMPACT
07/11/2013	NWL	2	21.3	AUTUMN	HKDW	IMPACT
09/11/2013	NEL	1	10	AUTUMN	HKDW	IMPACT
09/11/2013	NEL	2	21.2	AUTUMN	HKDW	IMPACT

Date	Area	Beaufort	Effort (km)	Season	Vessel	Type
09/11/2013	NEL	3	6.5	AUTUMN	HKDW	IMPACT
09/11/2013	NWL	1	3.7	AUTUMN	HKDW	IMPACT
09/11/2013	NWL	2	6.1	AUTUMN	HKDW	IMPACT
19/12/2013	NWL	2	40.5	WINTER	HKDW	IMPACT
19/12/2013	NWL	3	21.6	WINTER	HKDW	IMPACT
21/12/2013	NWL	2	7.9	WINTER	HKDW	IMPACT
21/12/2013	NWL	3	2.1	WINTER	HKDW	IMPACT
21/12/2013	NEL	1	8.3	WINTER	HKDW	IMPACT
21/12/2013	NEL	2	20.9	WINTER	HKDW	IMPACT
21/12/2013	NEL	3	7.6	WINTER	HKDW	IMPACT
26/12/2013	NWL	2	35.8	WINTER	HKDW	IMPACT
26/12/2013	NWL	3	16.9	WINTER	HKDW	IMPACT
28/12/2013	NWL	1	4.8	WINTER	HKDW	IMPACT
28/12/2013	NWL	2	11.7	WINTER	HKDW	IMPACT
28/12/2013	NWL	3	6.9	WINTER	HKDW	IMPACT
28/12/2013	NEL	1	25	WINTER	HKDW	IMPACT
28/12/2013	NEL	2	11.2	WINTER	HKDW	IMPACT
06/01/2014	NWL	2	27.6	WINTER	HKDW	IMPACT
06/01/2014	NWL	3	23.9	WINTER	HKDW	IMPACT
07/01/2014	NWL	2	10.6	WINTER	HKDW	IMPACT
07/01/2014	NWL	3	12.5	WINTER	HKDW	IMPACT
07/01/2014	NEL	1	1.7	WINTER	HKDW	IMPACT
07/01/2014	NEL	2	33.1	WINTER	HKDW	IMPACT
07/01/2014	NEL	3	1.7	WINTER	HKDW	IMPACT
09/01/2014	NEL	1	20	WINTER	HKDW	IMPACT
09/01/2014	NEL	2	15.5	WINTER	HKDW	IMPACT
09/01/2014	NWL	2	23.7	WINTER	HKDW	IMPACT
10/01/2014	NWL	2	40.6	WINTER	HKDW	IMPACT
10/01/2014	NWL	3	9.4	WINTER	HKDW	IMPACT
10/02/2014	NWL	1	0.3	WINTER	HKDW	IMPACT
10/02/2014	NWL	2	4.9	WINTER	HKDW	IMPACT
10/02/2014	NWL	3	37.8	WINTER	HKDW	IMPACT
10/02/2014	NWL	4	25	WINTER	HKDW	IMPACT
11/02/2014	NWL	3	3.7	WINTER	HKDW	IMPACT
11/02/2014	NWL	4	2.4	WINTER	HKDW	IMPACT
11/02/2014	NEL	1	1.4	WINTER	HKDW	IMPACT
11/02/2014	NEL	3	26.9	WINTER	HKDW	IMPACT
11/02/2014	NEL	4	9.3	WINTER	HKDW	IMPACT
17/02/2014	NWL	2	15.7	WINTER	HKDW	IMPACT
17/02/2014	NWL	3	42.3	WINTER	HKDW	IMPACT
17/02/2014	NWL	4	1.4	WINTER	HKDW	IMPACT
20/02/2014	NWL	1	0.1	WINTER	HKDW	IMPACT

Date	Area	Beaufort	Effort (km)	Season	Vessel	Type
20/02/2014	NWL	3	14.7	WINTER	HKDW	IMPACT
20/02/2014	NEL	1	0.1	WINTER	HKDW	IMPACT
20/02/2014	NEL	2	11	WINTER	HKDW	IMPACT
20/02/2014	NEL	3	26.4	WINTER	HKDW	IMPACT

Table 3. Comparison of low, moderate and high habitat utilisation in NEL and NWL between years 2011-12 and 2013-14 (in %)

	Advanced*	2013-14	Advanced*	2013-14
Frequency of Use	NWL		NEL	
	DPSE			
<20	68	76	76	100
20-60	16	14	20	0
> 60	17	10	4	0
	SPSE			
<5	51	72	60	91
5-15	27	20	31	9
>15	22	8	9	0

*Advance = advance baseline monitoring conducted between 2011 and 2012.

Table 4 Sightings of Individually Identified Chinese White Dolphin (*Sousa chinensis*) between March 2012 – February 2014 and baseline sightings

Identification Number	Baseline Identification Number	Date (YYYY-MM-DD)	Sighting Number	Area Sighted
HZMB 118		2014-01-06	890	NWL
HZMB 117		2014-01-06	888	NWL
HZMB 116		2013-12-26	879	NWL
HZMB 115		2013-12-26	879	NWL
HZMB 114		2013-10-24	827	NWL
HZMB 113		2013-10-24	827	NWL
HZMB 112		2013-10-15	815	NWL
HZMB111		2013-10-15	815	NWL
HZMB 110		2013-10-15	812	NWL
HZMB 108		2013-08-30	780	NEL
HZMB 107		2013-08-21	770	NWL
HZMB 106		2013-08-21	769	NWL
HZMB 105		2013-07-08	711	NWL
HZMB 104		2013-07-08	711	NWL
HZMB 103		2013-07-08	711	NWL
HZMB 102		2013-07-08	706	NWL
HZMB 101		2013-07-08	706	NWL
HZMB 100		2013-07-08	706	NWL
HZMB 099		2013-06-13	681	NWL
		2013-06-13	680	NWL
HZMB 098	NL104	2014-01-06	888	NWL
		2013-11-02	849	NWL
		2013-11-02	845	NWL
		2013-10-24	831	NWL
		2013-07-08	711	NWL
		2013-05-24	659	NWL
HZMB 097		2013-05-09	647	NWL
HZMB 096		2013-04-01	621	NWL
HZMB 095		2013-08-30	780	NEL
		2013-06-25	697	NWL
		2013-06-13	682	NWL
		2013-04-01	621	NWL

Identification Number	Baseline Identification Number	Date (YYYY-MM-DD)	Sighting Number	Area Sighted
HZMB 094		2014-02-17	910	NWL
		2013-06-26	703	NWL
		2013-06-25	698	NWL
		2013-03-18	601	NWL
HZMB 093		2013-05-24	657	NWL
		2013-02-21	587	NWL
HZMB 092		2013-02-21	589	NWL
		2013-02-15	581	NWL
HZMB 091		2013-02-15	579	NWL
HZMB 090		2013-06-25	697	NWL
		2013-06-13	682	NWL
		2013-02-15	579	NWL
HZMB 089		2013-02-15	579	NWL
HZMB 088		2013-02-15	579	NWL
HZMB 087		2013-02-15	579	NWL
HZMB 086	NL242	2013-05-09	642	NWL
		2013-02-15	579	NWL
		2011-10-10	Baseline	NWL
HZMB 085		2013-06-26	703	NWL
		2013-02-15	579	NWL
HZMB 084		2013-02-14	575	NWL
HZMB 083	NL136	2013-12-19	863	NWL
		2013-03-28	607	NWL
		2013-02-15	579	NWL
		2013-01-28	568	NWL
		2012-01-28	564	NWL

Identification Number	Baseline Identification Number	Date (YYYY-MM-DD)	Sighting Number	Area Sighted
HZMB 082		2013-02-21	587	NWL
		2013-02-15	579	NWL
		2013-01-28	563	NWL
HZMB 081		2013-01-28	559	NWL
		2013-01-28	557	NWL
HZMB 080		2013-01-28	556	NWL
HZMB 079		2013-01-28	556	NWL
HZMB 078		2013-02-15	579	NWL
		2013-01-08	552	NWL
HZMB 077		2013-12-26	878	NWL
		2013-07-08	706	NWL
		2012-12-11	541	NWL
HZMB 076		2013-07-08	706	NWL
		2012-12-11	541	NWL
HZMB 075		2012-12-06	525	NEL
HZMB 074		2013-05-09	647	NWL
		2013-04-01	623	NWL
		2013-04-01	621	NWL
		2013-02-21	594	NEL
		2012-12-10	529	NEL
		2012-12-06	525	NEL
HZMB 073		2013-05-09	647	NWL
		2013-04-01	623	NWL
		2013-04-01	621	NWL
		2013-02-21	594	NEL
		2012-12-10	529	NEL
		2012-12-06	525	NEL
HZMB 072		2012-10-24	476	NWL

Identification Number	Baseline Identification Number	Date (YYYY-MM-DD)	Sighting Number	Area Sighted
HZMB 071		2012-10-24	475	NWL
		2012-10-12	466	NWL
HZMB 070		2012-10-24	476	NWL
HZMB 069		2013-08-21	774	NWL
		2013-07-08	711	NWL
		2012-10-24	476	NWL
HZMB 068		2013-11-01	839	NWL
		2012-10-24	476	NWL
HZMB 067		2012-10-24	475	NWL
HZMB 066	NL93	2013-01-28	559	NWL
		2012-12-11	537	NWL
		2012-10-24	475	NWL
		2012-10-12	466	NWL
HZMB 064		2013-05-09	647	NWL
		2013-01-28	561	NWL
		2012-10-24	475	NWL
		2012-10-12	466	NWL
HZMB 063		2013-05-09	647	NWL
		2012-10-12	466	NWL
HZMB 062		2012-12-06	525	NEL
		2012-10-11	457	NWL
HZMB 060		2012-09-18	447	NWL
HZMB 059		2013-02-21	591	NWL
		2012-09-18	445	NWL
HZMB 057		2012-09-18	440	NWL
HZMB 056		2012-09-18	442	NWL
		2012-09-05	433	NEL

Identification Number	Baseline Identification Number	Date (YYYY-MM-DD)	Sighting Number	Area Sighted
HZMB 055		2012-09-04	425	NWL
HZMB 054	CH34	2014-01-06	888	NWL
		2013-11-07	854	NWL
		2013-11-02	845	NWL
		2013-10-24	831	NWL
		2013-08-30	780	NEL
		2013-07-08	711	NWL
		2013-09-18	448	NWL
		2012-09-05	432	NEL
		2011-11-07	Baseline	NWL
		2011-11-05	Baseline	NWL
		2011-11-02	Baseline	NWL
		2011-11-01	Baseline	NEL
		2011-11-01	Baseline	NEL
		2011-10-28	Baseline	NWL
		2011-10-06	Baseline	NWL
HZMB 053		2012-09-04	425	NWL
HZMB 052		2012-09-04	423	NWL
HZMB 051	NL213	2013-05-09	644	NWL
		2013-04-01	622	NWL
		2013-02-15	582	NWL
		2013-02-15	581	NWL
		2013-01-28	559	NWL
		2013-01-28	556	NWL
		2012-09-04	422	NWL
HZMB 050		2014-01-10	900	NWL
		2014-01-06	888	NWL
		2013-02-15	579	NWL
		2012-09-04	421	NWL

Identification Number	Baseline Identification Number	Date (YYYY-MM-DD)	Sighting Number	Area Sighted
HZMB 049		2012-09-03	419	NWL
HZMB 048		2012-09-03	419	NWL
HZMB 047		2012-09-03	412	NWL
HZMB 046		2012-09-03	412	NWL
HZMB 045		2014-02-17	910	NWL
		2013-06-13	682	NWL
		2013-02-15	579	NWL
		2012-11-01	495	NWL
HZMB 044	NL98	2014-02-17	910	NWL
		2013-12-19	864	NWL
		2013-11-02	845	NWL
		2013-11-01	842	NWL
		2013-10-15	819	NWL
		2013-05-09	648	NWL
		2013-05-09	647	NWL
		2013-04-01	623	NWL
		2013-04-01	621	NWL
		2013-02-15	579	NWL
		2012-11-01	495	NWL
		2012-09-18	448	NWL
HZMB 043		2012-09-03	407	NWL
HZMB 042	NL260	2013-12-19	863	NWL
		2012-11-01	495	NWL
		2011-11-07	Baseline	NWL

Identification Number	Baseline Identification Number	Date (YYYY-MM-DD)	Sighting Number	Area Sighted
HZMB 041	NL24	2014-02-17	910	NWL
		2013-11-02	845	NWL
		2013-05-09	648	NWL
		2013-05-09	647	NWL
		2013-04-01	623	NWL
		2013-04-01	621	NWL
		2013-02-15	579	NWL
		2012-11-01	495	NWL
		2011-11-06	Baseline	NEL
		2011-11-05	Baseline	NWL
		2011-11-05	Baseline	NWL
		2011-10-10	Baseline	NWL
HZMB 040		2014-02-17	910	NWL
		2014-01-06	893	NWL
		2013-10-15	821	NWL
		2013-07-08	714	NWL
		2013-07-08	711	NWL
		2013-02-21	589	NWL
		2012-11-01	493	NWL
HZMB 038		2012-11-01	490	NWL
HZMB 037		2012-11-01	490	NWL
HZMB 036		2012-09-03	407	NWL
		2012-11-01	490	NWL
HZMB 035		2013-02-15	579	NWL
		2012-11-01	490	NWL
HZMB 034		2012-11-01	493	NWL
HZMB 028		2013-04-01	625	NWL
		2012-08-06	373	NWL
HZMB 027		2013-12-19	863	NWL
		2013-02-15	579	NWL
		2013-01-28	568	NWL
		2013-01-28	564	NWL
		2012-06-14	299	NWL

Identification Number	Baseline Identification Number	Date (YYYY-MM-DD)	Sighting Number	Area Sighted
HZMB 026		2013-06-25	697	NWL
		2013-05-09	642	NWL
		2013-01-28	561	NWL
		2012-06-13	295	NEL
HZMB 025		2013-02-22	596	NEL
		2013-02-21	591	NWL
		2012-12-06	525	NEL
		2012-10-11	457	NWL
		2012-06-13	295	NEL
HZMB 024		2013-03-18	601	NWL
		2012-06-13	295	NEL
HZMB 023		2014-01-06	888	NWL
		2013-07-08	715	NWL
		2013-07-08	711	NWL
		2013-04-01	619	NWL
		2013-02-21	589	NWL
		2013-02-15	579	NWL
		2012-07-10	330	NWL
HZMB 022		2014-01-06	888	NWL
		2013-10-24	827	NWL
		2013-07-08	715	NWL
		2013-07-08	711	NWL
		2013-04-01	619	NWL
		2013-02-21	589	NWL
		2013-02-15	579	NWL
		2012-07-10	330	NWL
HZMB 021	NL37	2012-07-10	330	NWL
		2011-09-16	Baseline	NWL
HZMB 020		2012-07-10	330	NWL
HZMB 019		2012-07-10	330	NWL

Identification Number	Baseline Identification Number	Date (YYYY-MM-DD)	Sighting Number	Area Sighted
HZMB 018		2014-02-17	910	NWL
		2013-05-09	647	NWL
		2013-02-21	594	NEL
		2012-12-10	529	NEL
		2012-07-10	330	NWL
HZMB 017		2012-07-10	330	NWL
HZMB 016		2013-07-08	706	NWL
		2012-12-11	539	NWL
		2012-09-18	446	NWL
		2012-09-04	421	NWL
		2012-07-10	330	NWL
HZMB 015		2012-07-10	330	NEL
HZMB 014	NL176	2013-12-26	880	NWL
		2012-08-06	373	NWL
		2012-06-13	295	NEL
		2011-11-06	Baseline	NEL
		2011-11-01	Baseline	NEL
		2011-11-01	Baseline	NEL
HZMB 013		2012-05-28	281	NWL
HZMB 012		2012-05-28	281	NWL
HZMB 011	EL01	2013-02-22	597	NEL
		2013-02-21	592	NEL
		2013-02-14	572	NEL
		2012-11-06	517	NEL
		2012-09-19	452	NWL
		2012-03-31	261	NEL
		2011-11-02	Baseline	NWL
		2011-11-01	Baseline	NEL
HZMB 009		2012-05-28	281	NWL

Identification Number	Baseline Identification Number	Date (YYYY-MM-DD)	Sighting Number	Area Sighted
HZMB 008		2012-05-28	281	NWL
HZMB 007	NL246	2012-12-10	529	NEL
HZMB 006		2013-02-21	594	NEL
		2012-12-11	539	NWL
		2012-11-01	495	NWL
		2012-03-29	250	NWL
HZMB 005		2013-11-09	860	NWL
		2013-11-07	858	NWL
		2013-10-15	813	NWL
		2012-12-10	532	NWL
		2012-08-06	374	NWL
		2012-05-28	287	NWL
HZMB 004		2012-09-04	421	NWL
		2012-03-31	262	NWL
HZMB 003	NL179	2014-10-15	812	NWL
		2013-06-25	697	NWL
		2012-12-10	529	NEL
		2012-03-31	261	NWL
		2011-11-06	Baseline	NEL
		2011-09-16	Baseline	NWL

Identification Number	Baseline Identification Number	Date (YYYY-MM-DD)	Sighting Number	Area Sighted
HZMB 002	WL111	2013-12-26	878	NWL
		2013-12-19	863	NWL
		2013-11-01	839	NWL
		2013-10-15	819	NWL
		2013-09-24	798	NWL
		2013-02-14	573	NWL
		2012-12-11	536	NWL
		2012-12-11	535	NWL
		2012-10-12	466	NWL
		2012-10-24	475	NWL
		2012-05-28	281	NWL
		2012-03-29	250	NWL
HZMB 001	WL46	2013-08-21	771	NWL
		2013-06-13	681	NWL
		2013-04-01	617	NWL
		2013-02-14	573	NWL
		2012-03-29	250	NWL
	CH98	2011-11-02	Baseline	NWL
	NL11	2011-11-02	Baseline	NWL
		2011-11-07	Baseline	NWL
	NL12	2011-11-02	Baseline	NWL
	NL33	2011-09-23	Baseline	NWL
		2011-11-01	Baseline	NEL
		2011-11-05	Baseline	NWL
		2011-11-07	Baseline	NWL
	NL37	2011-09-16	Baseline	NWL
	NL46	2011-10-28	Baseline	NWL

China Harbour Engineering Company Limited

Summary of Waste Flow Table (Mar 2013 - Feb 2014)

Project : Hong Kong – Zhuhai – Macao Bridge, Hong Kong Boundary Crossing Facilities – Reclamation Works Contract No.: HY/2010/02

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete (see Note 1)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste (see Note 4)	Others, e.g. general refuse (see Note 3)
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000 m^3)
Mar-13	0.0000	0.0000	0.0000	0.0000	0.0000	121.1545	0.0000	0.0000	0.0000	2.0000	0.0130
Apr-13	0.0000	0.0000	0.0000	0.0000	0.0000	197.7428	0.0000	0.0000	0.0000	0.0000	0.0260
May-13	0.0000	0.0000	0.0000	0.0000	0.0000	360.3733	0.0000	0.0000	0.0000	1.2000	0.0130
Jun-13	0.0000	0.0000	0.0000	0.0000	0.0000	415.9366	0.0000	0.0000	0.0000	0.0000	0.0130
Jul-13	0.0000	0.0000	0.0000	0.0000	0.0000	397.7040	0.0000	0.0000	0.5501	4.0000	0.0260
Aug-13	0.0000	0.0000	0.0000	0.0000	0.0000	447.7517	0.0000	0.0040	0.0000	1.6000	0.0325
Sep-13	0.0000	0.0000	0.0000	0.0000	0.0000	565.0243	0.0140	0.1400	0.0000	1.2000	0.0260
Oct-13	0.0000	0.0000	0.0000	0.0000	0.0000	800.3190	0.0000	0.1960	0.0000	0.0000	0.0325
Nov-13	0.0000	0.0000	0.0000	0.0000	0.0000	797.2930	0.0000	0.1960	0.0000	0.0000	0.0195
Dec-13	0.0000	0.0000	0.0000	0.0000	0.0000	1213.8441	0.0103	0.0000	0.0000	2.0000	0.0260
Jan-14	0.0000	0.0000	0.0000	0.0000	0.0000	1158.9828	0.0000	0.1680	0.0000	2.0000	0.0325
Feb-14	0.0000	0.0000	0.0000	0.0000	0.0000	1064.5957	0.0000	0.2520	0.0000	0.0000	0.0520
Total	0.0000	0.0000	0.0000	0.0000	0.0000	7540.7219	0.0243	0.9560	0.5501	14.0000	0.3120

Notes: (1) Broken concrete for recycling into aggregates.

(2) Plastics refer to plastic bottles/ containers, plastic sheets/ foam from packaging materials.

(3) Use the conversion factor : 1 full load of dumping truck being equivalent to 6.5m^3 by volume.

(4) Chemical waste refer to spent “battery” and “oil with water”.

Appendix J
Cumulative Statistics on Exceedances, Complaints, Notifications of Summons and Successful Prosecutions

Cumulative statistics on Exceedances

		Total no. recorded in this reporting period	Total no. recorded since project commencement
1-Hour TSP	Action	-	-
	Limit	-	-
24-Hour TSP	Action	-	-
	Limit	-	-
Noise	Action	-	-
	Limit	-	-
Water Quality	Action	1	1
	Limit	1	1

Remarks: Exceedances which are not project-related are not presented in this table.

Cumulative statistics on Exceedances, Complaints, Notifications of Summons and Successful Prosecutions

	Date Received	Subject	Status	Total no. received in this reporting period	Total no. received since project commencement
Environmental complaints	04 March13	One (1) complaint was referred by EPD to ET regarding the construction noise impact from cranes operating from the barges for the Hong Kong –Zhuhai-Macao Bridge Hong Kong Project generating squeak noise in the evening of 1 Mar 2013 causing annoyance to him/her. The investigation results show that the complaint was non-project related.	Closed	1	5

	08 April 13	One (1) complaint was referred by EPD regarding oil dumping observed from various vessels operating for HZMB HK projects near Tung Chung Development Pier over the past few months. The investigation results showed that the complaint was non-project related.	Closed	2	6
	10 May 2013	A complaint referred to the Contractor by EPD on 10 May 2013 regarding the scattered debris of silt curtain noted at Sha Lou Wan and Tung Chung Bay. Immediate inspection and clean up action was taken by the Contractor.	Closed	3	7
	23 May 2013	A follow-up complaint referred by EPD was received on 23 May 2013 regarding the oil stain noted near Tung Chung Development Pier for past few months.	Closed	4	8
	26 Sept 13	One (1) complaint was logged by the Contractor regarding the leakage from work barges causing water pollution near Tuen Mun Richland Garden received on 26 Sept 13. With refer to the available information such as photo record of the incident cannot indicate that the leakage from work barges was caused by the vessel of this Contract and the complaint could not be concluded as project related.	Closed	5	9
	1 Nov 13	As informed by the Contractor on 5 Nov 13, a noise complaint received on 14 Sept 13 was referred to the Contractor of HKBCF on 1 Nov 13. The captioned complaint involves	Closed	6	10

		noise generated by a tug boat operating near a pier at Tung Chung around 05:55am-06:45am on 14 Sept 13. After investigation, the complaint is considered not likely to be related to the construction works.			
	11 Nov 13	As informed by the Contractor, complaint received from Penta-Ocean – Gitanes Joint Venture (CV/2012/03) mentioned that the formation works of the Contaminated Mud Pit CMP1 to the South of the Brothers (CMP1 of SB) which has been completed in mid-August 2013 and the pit has been commissioned for receiving contaminated marine mud from other projects starting from 16 August 2013. However, it was recently observed that some of the project vessels of HY/2010/02 had berthed within the said pit and those anchorages would likely cause disruption to the underlying contaminated mud and thus induce unfavourable contamination impact to the surrounding marine environment. In this regard, they reminded the contractor to avoid berthing of their vessels within the boundary of CMP1 of SB thereafter for the sake of environmental concern. After investigation, the complaint is	Closed	7	11

		considered not likely to be related to the construction works.			
	5 Dec13	As informed by the Contractor on 5 Dec 13, one complaint was noted on 12 Nov regarding a barge moving through the southern channel. After investigation, the noise complaint was considered as non-project related.	Closed	8	12
	12 Dec13	As informed by the Contractor on 12 Dec 13. A complaint involves the leakage of sand from barges causing water discoloration at sea near Tuen Mun Pierhead Garden and sand material without properly covered was blown to the inside of the residential area which caused disturbance to residence. With refer to available information provided and monitoring data recorded on 09 Dec 13, it cannot indicate that the water quality impact and air quality impact were caused by the vessel of this Contract and therefore the complaint could not be concluded as related to this Contract	Closed	9	13
	6 Jan 14	As informed by the Contractor on 6 Jan, A complaint involves barges loaded with sand material without properly covered was blown to the inside of the residential area of Tuen Mun Pierhead Garden which	Closed	10	14

		caused disturbance to residence was received on 27 Dec 13. With refer to available information provided, it cannot indicate that the water quality impact and air quality impact were caused by the vessel of this Contract and therefore the complaint could not be concluded as related to this Contract.			
	21 Jan 14	EPD referred a complaint from complainant who advised that blackish mud was found along the edge of the construction site of Hong Kong-Zhuhai-Macao Bridge Hong Kong Project near the airport in the morning of 18 January 2014. After receipt of the complaint, site daily was reviewed and follow-up investigation has been conducted and excavation and dredging activities were not observed within the site boundary of HKBCF during the joint site inspection audit. Therefore in accordance with the investigation results, the complaint is considered as not related to contract HY/2010/02	Closed	11	15
Notification of summons	29 April 13	As informed by the Contractor on 9 May 13, one summons was received on 29 April 13 regarding the suspected violation case of Noise Control Ordinance (Cap.400) at Works Area WA4 on 31 Oct 2012.	-	1	1
Successful	21 May 2013	As informed by the Contractor in	-	1	1

Prosecutions		August 13, the Contractor was subsequently prosecuted on 21 May 2013 for breaching Cap.400 Noise Control Ordinance.			

Appendix K – Event Action Plan

Event / Action Plan for Air Quality

Event	Action			
	ET Leader	IEC	ER	Contractor
Action Level				
Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial to ER within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
Limit Level				
Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
Exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Event / Action Plan for Construction Noise

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
Action Level	1. Notify IEC and Contractor; 2. Identify source, investigate the causes of exceedance and propose remedial measures; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness.	1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented.	1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals.
Limit Level	1. Inform IEC, ER, EPD and Contractor; 2. Identify source; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Event / Action Plan for Water Quality

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
Action level being exceeded by one sampling day	1. Repeat *in situ* measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor and ER; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Repeat measurement on next day of exceedance to confirm findings.	1. Check monitoring data submitted by ET and Contractor's working methods; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly; 4. Assess the effectiveness of the implemented mitigation measures.	1. Confirm receipt of notification of non-compliance in writing; 2. Discuss with IEC on the proposed mitigation measures; 3. Make agreement on mitigation measures to be implemented; 4. Ensure mitigation measures are properly implemented.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment and consider changes of working methods; 4. Discuss with ET and IEC on possible remedial actions and propose mitigation measures to IEC and ER; 5. Implement the agreed mitigation measures. 6. Amend working methods if appropriate.

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
Action level being exceeded by two or more consecutive sampling days	1. Repeat *in situ* measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, Contractor and ER; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Action level; 8. Repeat measurement on next day of exceedance to confirm findings.	1. Check monitoring data submitted by ET and Contractor's working method; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly; 4. Assess the effectiveness of the implemented mitigation measures.	1. Confirm receipt of notification of non-compliance in writing; 2. Discuss with IEC on the proposed mitigation measures; 3. Make agreement on mitigation measures to be implemented; 4. Ensure mitigation measures are properly implemented; 5. Assess the effectiveness of the implemented mitigation measures.	1. Inform the Engineer and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment and consider changes of working methods; 4. Discuss with ET and IEC on possible remedial actions and propose mitigation measures to IEC and ER within 3 working days of notification; 5. Implement the agreed mitigation measures; 6. Amend working methods if appropriate.

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
Limit level being exceeded by one sampling day	1. Repeat *in-situ* measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, Contractor, ER and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level.	1. Check monitoring data submitted by ET and Contractor's working method; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly; 4. Assess the effectiveness of the implemented mitigation measures.	1. Confirm receipt of notification of failure in writing; 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Request Contractor to critically review the working methods; 4. Ensure mitigation measures are properly implemented; 5. Assess the effectiveness of the implemented mitigation measures.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment and consider changes of working methods; 4. Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER; 5. Implement the agreed mitigation measures; 6. Amend working methods if appropriate.

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
Limit level being exceeded by two or more consecutive sampling days	1. Repeat *in-situ* measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor, ER and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days.	1. Check monitoring data submitted by ET and Contractor's working method; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the Contractor's mitigation measures whenever necessary to assure their effectiveness and advise the ER accordingly.	1. Confirm receipt of notification of failure in writing; 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Request Contractor to critically review the working methods; 4. Make agreement on the mitigation measures to be implemented; 5. Ensure mitigation measures are properly implemented; 6. Assess the effectiveness of the implemented mitigation measures; 7. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit level.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Take immediate action to avoid further exceedance; 3. Rectify unacceptable practice; 4. Check all plant and equipment and consider changes of working methods; 5. Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER; 6. Implement the agreed mitigation measures; 7. Resubmit proposals of mitigation measures if problem still not under control; 8. As directed by the Engineer, to slow down or to stop all or part of the construction activities until no exceedance of Limit level.

Event / Action Plan for Dolphin Monitoring

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
Dolphin numbers and behaviour patterns recorded in the impact and post-construction monitoring are significantly lower than or different from those recorded in the baseline monitoring	1. Repeat statistical data analysis to confirm findings; 2. Review historical data to ensure differences are as a result of natural variation or previously observed seasonal differences; 3. Identify source(s) of impact; 4. Inform the IEC, ER and Contractor; 5. Check monitoring data; 6. Discuss additional dolphin monitoring and any other measures, with the IEC and Contractor.	1. Discuss monitoring with the ET and the Contractor; 2. Review proposals for additional monitoring and any other measures submitted by the Contractor and advise the ER accordingly.	1. Discuss with the IEC additional monitoring requirements and any other measures proposed by the ET; 2. Make agreement on the measures to be implemented.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Discuss with the ET and the IEC and propose measures to the IEC and the ER; 3. Implement the agreed measures.