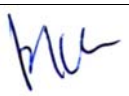
Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung

Monthly Environmental Monitoring & Audit (EM&A) Report for December 2007

(Report No. 382210/024)

Report Authorized For Issue By:	
	For and on Behalf of Black & Veatch Hong Kong Limited

Black & Veatch Hong Kong Limited
Room 1201-09, Millennium City 5,
418 Kwun Tong Road,
Kowloon, Hong Kong

The Hong Kong Jockey Club
One Sports Road
Happy Valley
Hong Kong

January 2008

Table of Content

List of Figure

List of Table

List of Annex

	Name	Signature	Date
Prepared	**Esther Tong**		Jan 2008
Checked	**Manuel Chua**		Jan 2008
Reviewed	**PK Lee**		Jan 2008

DOCUMENT CONTROL			Proposed Extension of Public Golf Course at Kau Sai Chau, Sai Kung	No. 382210/024
AMENDMENT RECORD				Prepared by: Esther Tong
Monthly EM&A Monitoring Report – December 2007			Client: **Hong Kong Jockey Club**	Initials: ET
				Date: January 2008
Pages:	**Date:**	**Issue No.**	**Description:**	**Initials:**
All	Jan 08	1	Monthly EM&A Report for submission to EPD	ET

Your ref:
Our ref: 40040032/CERT/01_08.doc

Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung
(Independent Environmental Checker)

CHECK CERTIFICATE

1. We certify that professional skill and care have been used in the checking of the Environmental Team's (ET) No.24 Monthly EM&A Report for December 2007 for the construction of Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung.

2. We certify that the ET's EM&A programme for the reporting period has been satisfactorily executed and the No. 24 Monthly EM&A report for December 2007 has been verified.

3. We comment that our evaluation of the ET's EM&A is based on a random audit process which cannot be guaranteed to have all non-conformities identified.

Signed 

_____
Independent Environmental Checker

Name Gary Tam

of Hong Kong Productivity Council
3/F., HKPC Building,
78 Tat Chee Avenue,
Kowloon

Date 7th January 2008

Executive Summary

This is the twenty-second Monthly Environmental Monitoring and Audit (EM&A) Report prepared by Black & Veatch, the designated Environmental Team (ET), for the Project "Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung". The construction works of golf course was commenced on 16th January 2006. This report presents the results of the EM&A works conducted in the month of December 2007 (25th November to 24th December 2007).

Summary of construction works undertaken during this report period

The final construction phase EM&A monitoring is completed after the final Golf Hole 2 was planted with turf in December 2007. The remaining works will be mainly defect rectification and minor maintenance works. The potential environmental impacts arising from the remaining construction activities are expected to be limited. The post-monitoring will commence in January 2008 and last for one month. The operation phase EM&A monitoring will then commence in February 2008.

No dredging of the permanent intake and outfall pipelines for the desalination plant had been carried out during the reporting month. Hong Kong Jockey Club (HKJC) continuously undertook the application of discharge licence.

Some hydroseeding areas were not fully covered with hydroseed and re-hydroseeding was required. The Contractor (CHEC) proposed that re-hydroseed at those low density areas in spring time 2008. According to site record, turf planting (tees, fairways and green) was completed at final golf Holes 2, 9 and 17. Applications of fertilizers and pesticides at Holes 1 to 18 and Holes 3 to 10, 12 to 13 & 18 respectively were recorded. All measured pesticides concentrations at all fresh water and marine monitoring stations was undetectable (November 2007). The construction of the closed low flow drainage for the East Course completed. No rainstorm event was recorded during the reporting month.

All of the closed low flow drainage system was completed to collect surface runoff and covered with turf during reporting month. No significant runoff was observed. For the Temporary Drainage Management Plan (TMDP), no revised plan was submitted to RE for approval during the two years construction phase. ET and the Engineer repeatedly reminded the Contractor to prevent silty/nutrient/pesticides runoff to the streams and marine water since the start of this year wet season.

Artificial rocks were observed depositing at downstream of Stream A after heavy rains on 3rd July 2007 which had already been occurred once last year (June 2006). The Contractor reported the rocks were cleared by hand without any use of machine in 11th August 2007. In the present terrestrial monitoring survey, some seedlings were planted in the rock-filled slope area within the buffer zone. The Contractor was reminded to enhance the buffer zone areas back to the baseline condition.

The temporary Sewage Treatment Plant (STP), sewage effluent was stored temporarily in a temporary storage tank since early May 2007 and discharge off-site by licenced Contractor. The sewage disposal was carried out by the CHEC on monthly basis. CHEC's site office and STP was removed in early December 2007 through temporary barging point. No information was submitted by CHEC regarding the STP performance during the reporting month.

Temporary stockpiles of construction wastes were observed and confined in several containers during the reporting month and located at the edge of the temporary barging point. Finishing works for permanent bridges at the Streams A, B, C and the Fresh Water Inland Marsh were in completed.

Terrestrial ecological monitoring was carried out in December 2007. Two species of Atyid shrimps, i.e. *Caridina fasciata* and *Cardina cantonensis*, which have been absent for several months in the monitoring for Stream C were still recorded since previous month but still in low density. For Stream D (control which is outside the construction area), Atyid shrimp *Caridina trifasciata* was still recorded.

The latest programme for the removal of the rock filled pier at the temporary barging point will be in mid-January 2008. CHEC prepared the method statement for HKJC, RE and ET for comments. ET provided comments in order to minimize the silty runoff and potential damage from unstable rocks during some critical removal stages to the nearby coral communities. In addition, ET recommended that CHEC should submit immediate actions, remedial actions and mitigation measures proposal when there is any coral damage occurred during the temporary barging point removal for AFCD and EPD approval before removal of the temporary barging point.

Due to the coral damage occurred in March 2006 during the construction of the temporary barging point, additional coral monitoring are recommended during the period of removal. The proposed temporary barging point removal programme is around one month. ET proposed to carry out the coral monitoring during the first, third and fifth weeks of the temporary barging point removal in order to cover the whole removal period. AFCD agreed the coral monitoring frequency in principal. If there is an extension of the removal programme due to any coral damage, further review on the coral monitoring frequency is required and will be submitted for AFCD and EPD approval.

Environmental Monitoring and Audit Progress

A summary of monitoring activities in this reporting period is shown as follows:

24-hour Total Suspended Particulates (TSP) monitoring at GCA B1	5 times
Water quality monitoring (marine + freshwater)	5 times
Terrestrial Ecology	1 time
Marine Ecology	1 time
Landscaping & Visual	2 times

Air Quality

5 sets of 24-hour TSP monitoring were carried out on 27th November, 3rd, 8th, 14th and 20st December 2007 at Bungalow A (GCA B1) at Kau Sai Chau during this reporting month.

Water Quality

5 sets of water quality monitoring were carried out on 26th November, 3rd, 10th, 17th and 24th December 2007 at 9 marine and 7 freshwater monitoring locations. No heavy rainstorm was hoisted during this reporting month.

Terrestrial Ecology

Terrestrial ecology was conducted on 7th and 28th December 2007. The majority of the construction works have been finished, and the stream buffer zones for the Streams A, B and C had been demarcated and maintained. The permanent access bridges for the Streams A and C had been constructed with the piers outside Stream buffer zone demarcation. The areas previously occupied by the temporary bridge piers were being restored by planting and hydroseeding. The buffer zones for the Streams A, B, and C were basically intact. More efforts have to be done at all disturbed buffer zone to ensure the plants and hydroseeding are growth healthy and higher in density. Aquatic life including Atyid shrimps were found in Stream B and Stream C. But the abundance of aquatic fauna in particular caridian shrimps, however, was still extreme low in Stream C after the heavy sedimentation incidents occurred in wet season 2007.

Stream D was in natural conditions similar to the condition during the Baseline Survey, and the aquatic fauna abundance was found resuming.

Marine Ecology

Marine ecology quarterly monitoring was conducted on 22nd and 23rd December 2007 at Site B2, Site C and Control Site. A seawall had constructed at Site B2 as the landing point of the temporary barging point. The number of tagged corals at Site B2 was increased from 20 to 50 in April 2006, which included the original B11 to B-20 and newly established B-21 to B-60. The distribution of these tagged corals was 20 to the north of the barge, 20 to the south of the barge, and 10 within the area of the barge. In previous monitoring, 6 tagged corals (B-17, B-19, B-50, B-51, B-59 & B-60) were found missing in Site B2 due to wave action and weather conditions. In the present survey, recovery on some corals, on which mortality had been reported previously, were found. New or further mortality on B-55 were found in the present survey. But these mortality records were still below the Action Level for the coral monitoring, i.e. "a 15% increase in the percentage of partial mortality of corals occurs at more than 20% of the tagged coral colonies at one or more monitoring sites". The Control Site still remained similar conditions as during the Baseline Survey (no mortality, sedimentation or bleaching was found), except the missing of X-05 colony.

Landscaping & Visual

Landscape and visual monitoring and site audits were carried on 5th and 17th December 2007. The Contractor shall take measures to improve the condition of damaged trees, provide adequate watering to newly hydroseeded area, planted shrubs, trees and transplanted trees as well as improve the quality of newly planted light standard, standard and heavy standard trees. Planting of compensatory and landscaping trees and shrubs were still in progress during the reporting month.

All transplanted trees were in fair condition except for T848. Mal-pruning of transplanted trees has not been rectified. Construction material was stockpiled within tree protection zones. A statement on the cause of death of tree T925 recorded in the last report is still outstanding.

The following works have been outstanding since July 2006: (i) Carry out surgery to damaged trees, (ii) Report the cause of death of tree T925, (iii) Re-fix the label of retained tree for easy identification, (iv) More frequent watering for transplanted trees, planted vegetation and hydroseeded grass, (v) Rectify the mal-pruning practice of the transplanted trees and (vi) Replace all trees and shrubs with poor quality.

Environmental Site Auditing

Five weekly joint environmental site audits were carried out on 27th November, 5th, 11th, 17th and 24th December 2007 with the Engineer and the Contractor's representatives. A monthly joint environmental site audit was carried out on 17th December 2007 by the Engineer, the Contractor's Representative and the Independent Environmental Checker (IEC).

Environmental Non-conformance

Air Quality

No exceedance of 24-hour TSP was recorded at GCA B1 during the reporting month.

Marine Water Quality

Two exceedances of suspended solids were recorded at KS. Nine exceedances of ammonia nitrogen were recorded at M_Marsh, TTC, M_BP, M_Coral and KS. Three exceedances of nitrate nitrogen were recorded at TTC and KS. Three exceedances of total inorganic nitrogen were recorded at M_Marsh, TTC and KS. Moreover, nine exceedances of chlorophyll a were recorded at M_Marsh, TTC, M_BP, M_Coral

and KS. Exceedances were considered due to the natural variation of the marine water and non-project related.

Freshwater Quality

One exceedance of turbidity was recorded at Stream B. Nine exceedances of suspended solids, six exceedances of ammonia nitrogen, sixteen exceedances of nitrate nitrogen and eighteen exceedances of total inorganic nitrogen were recorded at Streams A, B & C and the downstream of Freshwater Inland Marsh. Moreover, four exceedances of chlorophyll a were recorded at Streams A, B & C. Exceedances were considered due to the natural variation of the freshwater and non-project related.

As the upstream monitoring locations at Streams B & C (F_UB and F_UC) are located within the construction work area since September 2006, they have represented and have become impact monitoring stations instead of control stations in the environmental monitoring.

All notifications of exceedances and the subsequent exceedance incident reports were/would be forwarded to the relevant parties.

No environmental complaint / summon was received in this reporting month.

Implementation Status of Environmental Mitigation Measures

The Contractor was reminded the following issues and to take actions if necessary:

Air Quality

- Provide sufficient watering at the remaining haul road before temporary baring point and Hole 2 during removal; and
- Cover all soil and waste stockpiles with tarpaulin or other measures to reduce the dust emission before remove offsite;

Waste Management

- Properly dispose the construction waste off-site;
- Properly stockpile and regularly dispose the construction waste;

Ecology

- Enhancement of the newly hydroseeding areas located within the buffer zone area at downstream of the Stream A;
- Maintain the reinstated conditions (planting shrub) at Stream B2 buffer zone since March 2007 and Stream C buffer zone since May 2007; and
- Provide effective mitigation measures to prevent damage to the nearby corals during the removal of the temporary barging point.

Water Quality

- Desilting settled silt within the silt curtain which have been installed outside the fresh water inland marsh, near Hole 2, near Hole 4, inactive culture zone and Stream A before removal;
- Desilting of silt fence before removal; and
- Provide effective mitigation measures at the temporary barging point during removal of the temporary barging point.

Landscape & Visual

- Protect the retain trees with sufficient watering mainly located at the administration building;
- Provide sufficient water to the retain trees, transplanted trees, hydroseeding areas; and
- Provide incident report for the death of the retain trees.

Future Key Issues

The whole golf course was planted with turf in December 2007 and construction of golf course was completed. No major environmental impact is expected. The tentative programme for the removal of temporary barging point will commence in mid-January 2008. Additional coral monitoring will be carried out during the removal. Operation phase will commence in February 2008. The future key issues will be the potential water quality impact due to the use of nutrients and pesticides for the established turf and marine ecology impacts to corals and seagrass during the operation phase of the East Course.

1. Introduction

1.1 Background of the Project

1.1.1 Black & Veatch (hereinafter called the "ET") was appointed by Hong Kong Jockey Club (hereinafter called the "Project Proponent") to undertake Environmental Monitoring and Audit (EM&A) for "Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung" (hereinafter called the "Project"). Under the requirements of Section 4 of Environmental Permit EP-224/2005, EM&A programme as set out in the EM&A Manual is required to be implemented. In accordance with the EM&A Manual, environmental monitoring of air quality, water quality, terrestrial and marine ecology, landscape and visual, archaeology (watching brief) and land contamination are required for the Project. Application for Variation of an Environmental Permit by the Project Proponent on 2 August 2006 (Application No. VEP-222/2006) and the EP was superseded by EP-224/2005/A.

1.1.2 This report summarises the environmental monitoring and audit works for the Project in December 2007 (from 25th November to 24th December 2007).

1.2 Purpose of the Report

1.2.1 This is the twenty-second EM&A report which summarizes the impact monitoring results and audit findings for the EM&A programme during the reporting period from **25th November** to **24th December 2007.**

1.3 Structure of the Report

1.3.1 The structure of the report is shown in Table 1.1.

Table 1.1 Structure of the Report

Section		Description
1	Introduction	Details the scope and structure of the report
2	Project Information	Summarizes background and scope of the project, site description, project organization and contact details, construction programme, the construction works undertaken and the status of environmental permits/licenses during the reporting period.
3	Environmental Monitoring Requirement	Summarizes the monitoring parameters, programmes, methodology, frequency, location, action and limit levels, event action plans, environmental mitigation measures as recommended in the EIA report and relevant environmental requirements.
4	Implementation Status on Environmental Mitigation Measures	Summarizes the implementation of environmental protection measures during the reporting period.
5	Monitoring Results	Summarizes the monitoring results obtained in the reporting period.
6	Environmental Site Auditing	Summarizes the audit findings of the weekly site inspections undertaken within the reporting period.
7	Environmental Non-conformance	Summarizes any monitoring exceedance, environmental complaints and environmental summons within the reporting period.
8	Future Key Issues	Summarizes the impact forecast and monitoring schedule for the next post-monitoring month (January 2008).
9	Recommendations and Conclusions	Lists out any recommendations and provides an overall conclusion of the results and findings of the EM&A programme for the reporting period.

2. Project Information

2.1 Background

2.1.1 The Project comprises the following major components:

- Construction of the third 18-hole public golf course on the east side of the island, south of the existing golfing area;
- A new irrigation lake to collect surface runoff from the new 18-hole golf course. Water stored at the new irrigation lake can also be diverted to existing reservoir for tertiary treatment and recycling;
- A new desalination plant adjacent to the existing pier to serve as an additional irrigation water supply for the new golf course during dry season; and
- Expansion of existing administration and maintenance buildings.

2.1.2 The potential environmental impacts of the Project have been studied in the Environmental Impact Assessment (EIA) report (EIAO Register No. AEIAR- 091/2005). The EIA was approved on 14 November 2005 under the EIAO. An Environmental Permit (EP-224/2005) was granted on 28 November 2005. Application for Variation of an Environmental Permit by the Project Proponent on 2 August 2006 (Application No. VEP-222/2006) and the EP was superseded by EP-224/2005/A.

2.2 Site Description

2.2.1 A layout plan of the Project is provided in **Figure 1.1**.

2.3 Project Organization

2.3.1 Project organization and lines of communication are shown in **Figure 1.2**.

2.4 Construction Programme

2.4.1 The tentative construction programme for the Project is presented in **Annex A**. The construction works were commenced on 16 January 2006 and were scheduled to be completed by end of July 2007. According to the present schedule, the Project is to be extended.

2.5 Status of Environmental Submission

2.5.1 A summary of the reporting requirement for compliance with EP conditions of the Project is listed in Table 2.1.

Table 2.1 Summary of Compliance with EP Conditions

EP-224/2005	Environmental Permit Submission	Status	Remarks
2.3	Management organization of the main construction companies and/or any form of joint ventures associated with the construction of the Project.	Submitted	At least one week before the commencement of construction of the Project.
2.4	Contamination Assessment Plan (CAP) submission. If land contamination is confirmed by the site investigation, submission of a Remediation Assessment Plan (RAP) including a Contamination Assessment Report (CAR) is required.	Submitted	The Final Site Remediation Report (FSRR) was approved by EPD in this reporting month.
3.6	Detailed methodology for Coral Transplantation submission to the Director for approval.	Approved	Approved on 16th November 2006. Coral transplantation at Site D2 was completed in early December 2006. No dredging work for the desalination plant's intake and outfall pipelines was carried out. AFCD has no comment for the coral donor site survey, coral mapping survey and coral transplantation reports.
4.1	EM&A Manual (revised)	Submitted	At least two weeks before commencement of construction of the Project.
4.3	Baseline Monitoring Report	Submitted	At least two weeks before commencement of construction of the Project
4.5	Monthly EM&A Report	Submitted	within 10 working days after the end of the reporting month
5.1	Set up a dedicated web site and notify the Director in writing the Internet address.	Completed	Within 6 weeks after the commencement of construction of the Project (http://www.kscgolf.com/ema/index.asp)
3.4	Variation of Environmental Permit for the construction of the temporary crossings at Stream B during wet season.	Completed	Variation of Environmental Permit was approved on 18th August 2006. The revised registered EP was EP-224/2005/A.

2.6 Summary of EM&A Requirements

2.6.1 The EM&A programme requires environmental monitoring for air quality, water quality, terrestrial and marine ecology, landscape and visual, archaeology (watching brief) and land contamination. The EM&A requirements for each parameter are described in subsequent sections, including:

- All monitoring parameters;
- Action and Limit Levels for all environmental parameters;
- Event and Action Plans; and
- Environmental mitigation measures, as recommended in the project EIA final report.

2.6.2 A summary of impact EM&A requirements is presented in Table 2.2.

Table 2.2 Summary of Impact EM&A Requirements

Impacts	Parameters/descriptions	Locations	Frequencies	Duration
Air Quality	24-Hour TSP	1 Location	Once every 6 days	During Construction
	1-Hour TSP	1 Location	Three times in every 6 days	During Construction (As required when complaint received)
Water Quality	Dissolved Oxygen, Temperature, Turbidity, pH, Salinity and SS	9 marine and 7 freshwater locations	**First 3 months** 3 times a week, mid-ebb and mid-flood tides. If there is no exceedance occurs for the first 3 months, reduce to once per week.	During Construction
	Dissolved Oxygen, Temperature, Turbidity, pH, Salinity, SS, NO3-N, NO2-N, NH3-N, TP and selected pesticides.	9 marine and 7 freshwater locations	Once per week. If there is no exceedance occurs, monitoring frequency is subjected to change and shall be agreed with EPD.	During Construction: turf establishment period (permanent low flow drainage is not completed)
	Dissolved Oxygen, Temperature, Turbidity, pH, Salinity, SS, NO3-N, NO2-N, NH3-N, TP, Chl-a and selected pesticides.	9 marine and 6 freshwater locations	A 2-year of monitoring period for the operation phase is proposed. Monitoring should be carried out on bi-weekly basis for the first 12 months, after when the frequency will be reviewed by EPD.	During Operation
	Dissolved Oxygen, Temperature, Turbidity, pH, Salinity, SS, NO3-N, NO2-N, NH3-N, TP, Chl-a and selected pesticides	8 marine locations	Additional water quality monitoring shall be carried out after heavy rain storm or when there is an overflow event from the reservoir, irrigation buffer lake or detention ponds/tanks.	During Construction and Operation
Terrestrial Ecology	Monitoring aquatic fauna	Streams B, C & D	Once a month	During Construction
	Environmental Site Inspection mainly on intact of buffer zones	Streams A, B and C	Once a week	During Construction

Impacts	Parameters/descriptions	Locations	Frequencies	Duration
Marine Ecology	Transplanted corals	Site D2	Quarterly for one year after transplantation	During construction
	Natural corals	Site C, Site B2, Site D2, and the Control Site.	**<u>For Site D2 and the Control Site:</u>** Weekly at the first two weeks of dredging works for the desalination plant pipelines. If no exceedance was recorded, the monitoring schedule would be changed to biweekly till the pipeline construction works are finished. **<u>For Site C, B2 and the Control Site:</u>** Monthly for the first three months of the construction phase. If no exceedance was recorded, the monitoring schedule would be changed to quarterly during the rest of the construction phase.	During Construction
		Site C, Site D2 and the Control Site.	First three months would be monthly conducted during the first two years of the operation phase. If no exceedance was recorded, the monitoring schedule would be changed to semi-annually, i.e. once in dry season and once in wet season.	During Operation
	Seagrass bed	Site D3, and at Site D2 if seagrasses were found during the baseline monitoring.	Weekly during the first two weeks of dredging works, and then biweekly till the pipeline construction works are finished.	During Construction
		Site D3, and at Site D2 if seagrasses were found during the baseline monitoring.	During the first two years of the operation phase. The monitoring schedule during the first three months would be monthly. After that, the monitoring schedule would be changed to semi-annually, i.e. once in dry season and once in wet season.	During Operation
Landscape and Visual	Audits to ensure effective implementation of mitigation measures	Project area and at visual sensitive receivers	Auditing inspections and reporting shall be undertaken once every two weeks of the construction phase and once every two months of the operation phase.	During Construction and Operation
Archaeology (Watching Brief)	Monitor archaeological potential sites at major cut areas	Hole 2, Hole 11, Hole 12, Hole 14, Hole 15 and Hole 16.	The archaeologist should keep the AMO informed of the progress of watching brief. The archaeologist should submit progress reports every 3 months during the programme of the watching brief.	During Construction
Land Contamination	Total Sulphur and Total Lead	Locations 2, 3, 6, 7 & 8	One month before commencement of work at the identified 5 hotspots	During Construction
General Site Conditions	Environmental Site Inspection	Works areas and areas affected by works	Periodically (weekly basis)	During Construction

3. Environmental Monitoring Requirements

3.1 Air Quality

Monitoring Requirement

3.1.1 24-hour TSP monitoring was carried out at GCA B1 to monitor the construction dust impact level in this reporting period.

3.1.2 The established Action/Limit Levels (AL levels) for the 1-hour and 24-hour TSP monitoring works are summarized in Table 3.1 and Table 3.2.

Table 3.1 Action and Limit Levels for 1-hour TSP

Location	Description	Action Level	Limit Level
GCA B1	**Bungalow A** adjacent to Kau Sai Chau Public Golf Course Administration Building	277.2 μg m^{-3}	500 μg m^{-3}

Note: The action levels for GCA B1 are developed based on baseline monitoring result.

Table 3.2 Action and Limit Levels for 24-hour TSP

Location		Action Level	Limit Level
GCA B1	**Bungalow A** adjacent to Kau Sai Chau Public Golf Course Administration Building	187.4 μg m^{-3}	260 μg m^{-3}

Note: The action levels for GCA B1 are developed based on baseline monitoring result.

Monitoring Parameters, Frequency and Programme

3.1.3 The monitoring parameters and frequency are summarized in Table 3.3. The monitoring programme for the reporting period is shown in **Annex B**.

Table 3.3 TSP Monitoring Parameter and Frequency

Parameter	Frequency
24-hour TSP	Once every 6 days
1-hour TSP	3 times every 6 days (as required in case of complaints)

Monitoring Locations

3.1.4 In accordance with the EM&A Manual, one monitoring station (GCA B1) was selected and shown in **Figure 3.1**.

Monitoring Equipment

3.1.5 24-hour and 1-hour TSP (in case of complaints received) were performed using High Volume Samplers (HVS) and measured in-situ respectively. 24-hour TSP level of samples were collected using filters and High Volume Sampler and the collected samples were determined by a local HOKLAS accredited laboratory upon receipt of the samples and 1-hour TSP level will be performed in-situ.

3.1.6 High volume samplers (HVS - Model GS-2310 Accu-vol) complete with the appropriate sampling inlets were installed for 24-hour TSP sampling. The HVS is composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complies with USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50 Appendix B). A portable dust meter was used for the 1-hour TSP monitoring. Table 3.4 summarises the equipment used.

Table 3.4 Air Quality Monitoring Equipment

Equipment	Model
HVS Sampler	GS 2310 Accu-vol system
Calibrator	GMW 25
1-hour TSP Dust Meter	Laser Dust Monitor – Model LD-1 (L)

Monitoring Methodology and Calibration Details

24-hour TSP Monitoring

(i) Field Monitoring, Operation & Analytical Procedures

3.1.7 Operating/analytical procedures for the operation of HVS are as follows. The sampler was placed on a horizontal platform with appropriate supporting structure such that:

- the filter was at least 1.3 meters above ground;
- no two samplers were placed less than 2 metres apart;
- the distance between the sampler and an obstacle, such as buildings, were at least twice the height that the obstacle protrudes above the sampler;
- a minimum of 2 metres separation from walls, parapets and penthouses were required for the rooftop samplers;
- a minimum of 2 metres separation from any supporting structure, measured horizontally was provided;
- airflow around the sampler was unrestricted;
- no furnaces or incineration flues were operating near the sampler;
- the sampler was more than 20 metres from the dripline; and
- any wire fence and gate to protect the sampler, did not cause any obstruction during monitoring.

3.1.8 Prior to the commencement of the dust sampling, the flow rate of the high volume sampler was properly set (between 1.1 m3/min. and 1.4 m3/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.

3.1.9 For TSP sampling, fibreglass filters (G810) were used [Note: these filters have a collection efficiency of > 99% for particles of 0.3 mm diameter].

3.1.10 The power supply was checked to ensure the sampler worked properly.

3.1.11 On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air monitoring station.

3.1.12 The filter holding frame was then removed by loosening the four nuts and carefully a weighted and conditioned filter was centered with the stamped number upwards, on a supporting screen.

3.1.13 The filter was aligned on the screen so that the gasket formed an air-tight seal on the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.

3.1.14 The shelter lid was closed and secured with the aluminum strip.

3.1.15 The timer was then programmed. Information was recorded on the record sheeting, which included the starting time, the weather condition, and the filter number (the initial weight of the filter paper can be found out by using the filter number).

3.1.16 After sampling, the filter was transferred from the filter holder of the HVS to a sealable plastic bag and sent to the laboratory for weighing. The elapsed time was also recorded.

3.1.17 Before weighing, all filters were conditioned for 24 hours before weighing under temperature of 25°C ±3°C and the relative humidity (RH) < 50% ±5%, preferably 40%. The HOKLAS laboratory (ALS Technichem (HK) Pty Ltd) has comprehensive quality assurance and quality control programmes.

(ii) Maintenance

3.1.18 Proper maintenance would be provided for the HVS as described below:

3.1.19 The HVS motors and their accessories have been properly maintained. Appropriate maintenance such as routine motor brushes replacement (time interval for replacement is about 500 hours) and electrical wiring checking have been conducted to ensure that the equipment and necessary power supply were in good working condition.

3.1.20 Initial calibration of HVS was conducted upon installation of equipment. The subsequent calibration would be provided at 2-month intervals using GMW-25 Calibration Kit.

1-hour TSP Monitoring

(i) Measuring Procedures

3.1.21 The measuring procedures of the 1-hour dust meter have been in accordance with the Manufacturer's Instruction Manual as follows:

- Set POWER to "ON", push BATTERY button, make sure that the meter's indicator is in the range with a red line and allow the instrument to stand for about 3 minutes (Then, the air sampling inlet has been capped).
- Push the knob at MEASURE position.
- Push "O-ADJ" button. (Then meter's indication is 0).
- Push the knob at SENSI ADJ position and set the meter's indication to S value described on the Test Report using the trimmer for SENSI ADJ.
- Pull out the knob and return it to MEASURE position.
- Push "START" button.
- All measurement procedures in section 2.3 of the approved EM&A Manual are followed during the reporting period.

(ii) Maintenance

3.1.22 The 1-hour TSP meter would be checked at 3 month intervals and calibrated at 1-year intervals throughout all stages of the air quality baseline monitoring.

Event and Action Plans

3.1.23 The Event and Action Plan (EAP) for air quality monitoring is presented in **Annex C**.

3.2 Water Quality

Monitoring Requirement

3.2.1 Water quality monitoring was conducted in accordance with the EM&A Manual. Tables 3.5 & 3.6 show the established Action/Limit Levels for the water environmental monitoring parameters.

Table 3.5 Derived Summaries of Action and Limit Levels for Marine Water Quality

Parameters	Location	Action	Location	Limit
DO (Surface & Middle)	FCZ	6.0 mg/L	FCZ	5.3 mg/L
	All except FCZ	4.9 mg/L	All except FCZ	4.6 mg/L
DO (Bottom)	All	3.7 mg/L	All	3.4 mg/L
pH (depth-averaged)		N/A	All	6.5 - 8.5
SS (Depth-averaged)☆	FCZ	4.5 mg/L	FCZ	5.6 mg/L
	All except FCZ	6.1 mg/L	All except FCZ	10.6 mg/L
SS (Depth-averaged) Dredging for submarine pipelines⊕	M_RO1	6.1 mg/L	M_RO1	10.6 mg/L
Turbidity (Tby) (depth-averaged) ☆	FCZ	2.9 NTU☼	FCZ	3.9 NTU☼
	All except FCZ	3.3 NTU☼	All except FCZ	6.2 NTU☼
Ammonia Nitrogen (depth-averaged)	FCZ	0.02 mg/L	FCZ	0.03 mg/L
	All except FCZ	0.05 mg/L Δ	All except FCZ	0.05 mg/L Δ
Nitrate Nitrogen (depth-averaged)	FCZ	0.08 mg/L	FCZ	0.09 mg/L
	All except FCZ	0.09mg/L Δ	All except FCZ	0.09 mg/L Δ
Nitrite Nitrogen (depth-averaged)	FCZ	0.02 mg/L θ	FCZ	0.02 mg/L θ
	All except FCZ	0.02 mg/L	All except FCZ	0.04 mg/L
TIN (depth-averaged)	FCZ	0.12 mg/L	FCZ	0.14 mg/L
	All except FCZ	0.16 mg/L	All except FCZ	0.18 mg/L
Total Phosphorus (depth-averaged)	All	0.09 mg/L Δ	All	0.09 mg/L Δ

Remarks:
☆ : Action and limit levels are subjected to review especially for wet season throughout the construction phase of the project.
⊕ : Action and limit levels are subjected to review before the dredging works.
☼ : All are based on EM&A baseline monitoring data due to marked difference between EPD turbidity data and those from the baseline survey.
Δ : For nutrient monitoring (except NO_2-N) at non-FCZ stations, the trigger level has made reference to the existing golf course guideline values. The guideline value of NO_2-N is below the current detection limit of 0.01mg/L and thus not used.

θ : The same action and limit level of 0.02 mg/L is determined from the EM&A baseline data as 78% of the NO_2-N data are <= 0.01 mg/L and all remaining 22% equal to 0.02 mg/L.
FCZ including fish culture zones of Kai Lung Wan, Tai Tau Chau and Kau Sai
All except FCZ including remaining impact monitoring station of M_RO1, M_Marsh, M_BP and M_Coral.
Control monitoring locations: M_A & M_B

Table 3.6 Derived Summaries of Action and Limit Levels for Freshwater Water Quality

Parameters	Location	Action	Location	Limit
DO (mid-depth)		6.3 mg/L	All	4 mg/L ξ
pH (mid-depth)		N/A	All	6.0 - 9.0
SS (mid-depth) ☆	All	3.8 mg/L or 120% of upstream control station's SS at the same tide of the same day	All	8 mg/L or 130% of upstream control station's SS at the same tide of the same day
Turbidity (Tby) (mid-depth) ☆	All	3.1 NTU or 120% of upstream control station's Tby at the same tide of the same day	All	4 NTU or 130% of upstream control station's Tby at the same tide of the same day
Ammonia Nitrogen (mid-depth)		N/A	All	0.01 mg/L
Nitrate Nitrogen (mid-depth)	All	0.10 mg/L	All	0.11 mg/L
Nitrite Nitrogen (mid-depth)		N/A	All	0.01 mg/L
TIN (mid-depth)	All	0.12 mg/L	All	0.13 mg/L
Total Phosphorus (mid-depth)		N/A	All	0.02 mg/L

Remarks:
☆ : Action and limit levels are subjected to review especially for wet season.
Freshwater monitoring locations: F_UA, F_DA, F_UB, F_DB, F_UC, F_DC and F_Inland Marsh
As most of the freshwater samples were reported of NH_3-N, NO_2-N levels below the detection limit of 0.01 mg/L, limit level is set at 0.01 mg/L. Similarly for TP, a limit level of 0.02 mg/L (the detection limit of TP) is imposed.
ξ : Water Quality Objectives of the Port Shelter

Monitoring Parameters, Frequency and Programme

3.2.2 For marine water quality, measurements shall be taken at both mid-flood and mid-ebb tides and at three water depths (1 m below water surface, mid-depth and 1 m above sea bed, except where the water depth is less than 6 m, in which case the mid-depth station may be omitted). Should the water depth be less than 3 m, only the mid-depth station will be monitored.

3.2.3 For the stream course, measurements shall be taken at mid-water depth.

3.2.4 The water quality parameters which need to be monitored are as follows:

- Marine water quality - dissolved oxygen (DO), temperature, turbidity, suspended solids (SS), pH and salinity
- Freshwater water quality - dissolved oxygen (DO), temperature, turbidity, suspended solids (SS) , pH and salinity

3.2.5 Additional marine and freshwater water quality monitoring parameters for the impact monitoring during construction include nitrate nitrogen (NO_3-N), nitrite nitrogen (NO_2-N), ammonia nitrogen (NH_3-N), total phosphate (TP) and selected pesticides.

3.2.6 The ET Leader shall propose the additional monitoring parameters for approval by IC(E), Engineer, EPD and AFCD, and shall submit such information for approval at least 2 weeks before the turf establishment period.

3.2.7 Additional water quality monitoring at Tai Tau Chau FCZ (TTC), Kai Lung Wan FCZ (KLW), Kau Sai FCZ (KS), downstream of the existing marsh (M_Marsh), marine water of Port Shelter (M_Coral), existing reservoir (F_Inland M) and Control stations (M_A and M_B) shall be carried out after heavy rain storm or when there is an overflow event from the reservoir, irrigation buffer lake or detention ponds/tanks. The heavy rain storm shall be defined when there is an amber/red/black rainstorm warning signal issued by the Hong Kong Observatory. The water sample shall be taken within 24 hours after the black/red/amber rainstorm warning signal is cancelled. Please refer to revised EM&A manual for the sampling condition requirement after a heavy rain storm event occurs. The monitoring parameters shall include dissolved oxygen, temperature, turbidity, suspended solids, pH and salinity. Additional parameters shall be the same as stated in paragraphs 3.2.5-3.2.6.

Monitoring Frequency

3.2.8 The monitoring parameters and frequency are summarized in Table 3.7. The monitoring programme for the reporting period is shown in **Annex B**.

Table 3.7 Water Quality Monitoring Parameter, Frequency and Locations

Parameters	Frequency	Location
Dissolved Oxygen (mg/L)	**3 days per week** Marine water : 2 times per day – 1 for mid-flood and 1 for mid-ebb Freshwater : once per day	**Marine Water** Fish culture zone stations: TTC, KLW, KS Control stations: M_A, M_B Impact stations: M_BP, M_RO1, M_Marsh, M_Coral **Freshwater Water** Stream A (F_UA, F_DA) Stream B (F_UB, F_DB) Stream C (F_UC, F_DC) Inland Marsh (F_lnland_M)
Temperature (ºC)		
Turbidity (NTU)		
pH		
Salinity (ppt)		
Suspended Solids (mg/L)		

Monitoring Locations

3.2.9 The water quality monitoring locations for marine and freshwater (**Figure 3.2**) are summarized in Table 3.8.

Table 3.8 Water Quality Monitoring Locations during Construction Phase

Identification Number	Location	Co-ordinates		Approx. Water Depth	No. of Depth
Marine Water (9 stations)		**latitude**	**longitude**		
TTC	Tai Tau Chau Fish Culture Zone	22° 22' 03.7"	114° 19' 19.6"	9.5 m	3
KLW	Kai Lung Wan Fish Culture Zone	22° 22' 10.6"	114° 18' 01.4"	13 m	3
KS	Kau Sai Fish Culture Zone	22° 20' 26.5"	114° 18' 59.9"	11 m	3
M_BP	Temporary barging point	22° 21' 50.6"	114° 19' 16.7"	9.6 m	3
M_RO1	Desalination plant south of the existing pier	22° 21' 51.8"	114° 18' 17.7"	5 m	2
M _ Marsh	Discharge point at the existing marsh	22° 22' 19.8"	114° 19' 05.4"	7.7 m	3
M _ Coral	Marine water of Port Shelter	22° 21' 21.3"	114° 19' 42.7"	10.2m	3
M _ A	Water Control Station of Port Shelter	22° 22' 51.3"	114° 18' 34.5"	7.5 m	3
M _ B	Water Control Station of Port Shelter	22° 20' 26.4"	114° 20' 11.8"	16.5 m	3
Fresh Water (7 stations)					
F_UA	Upstream and downstream of stream A	22° 21' 32.3"	114° 19' 06.5"	-	1
F_DA		22° 21' 33.5"	114° 19' 06.8"		1
F_UB	Upstream and downstream of stream B	22° 21' 23.9"	114° 19' 16.1"	-	1
F_DB		22° 21' 27.2"	114° 19' 16.0"		1
F_UC	Upstream and downstream of stream C	22° 21' 14.8"	114° 19' 26.4"	-	1
F_DC		22° 21' 03.5"	114° 19' 32.0"		1
F _ Inland M	Downstream of the existing marsh (Inland)	22° 22' 17.9"	114° 18' 59.1"	-	1

Monitoring Equipment

3.2.10 The equipment listed below shall be supplied by the ET and approved by the IC(E) and the Engineer for water quality monitoring.

Dissolved Oxygen and Temperature Measuring Equipment

3.2.11 The instrument shall be a portable and weatherproof DO measuring instrument complete with cable and sensor, and use a DC power source. The equipment shall be capable of measuring:

- dissolved oxygen levels in the range of 0 - 20 mg L^{-1} and 0 - 200% saturation; and
- a temperature of 0 - 45 degrees Celsius.

3.2.12 It shall have a membrane electrode with automatic temperature compensation complete with a cable. Sufficient stocks of spare electrodes and cables shall be available for replacement where

necessary. (For example, YSI model 59 meter, YSI 5739 probe, YSI 5795A submersible stirrer with reel and cable or an approved similar instrument).

3.2.13 Should salinity compensation not be built-in in the DO equipment, in-situ salinity shall be measured to calibrate the DO equipment prior to each DO measurement.

Turbidity Measurement Instrument

3.2.14 Turbidity shall be measured in situ by the nephelometric method. The instrument shall be portable and weatherproof turbidity measuring instrument using a DC power source complete with cable, sensor and comprehensive operation manuals. It shall have a photoelectric sensor capable of measuring turbidity between 0 - 1000 NTU (for example, Hach model 2100P or an approved similar instrument). The cable shall not be less than 25m in length. The meter shall be calibrated in order to establish the relationship between NTU units and the levels of suspended solids.

Suspended Solids

3.2.15 A water sample at least 2.5L in capacity with messenger and using a 10m line should be collected. Samples should be submitted to HOKLAS accredited laboratory as soon as possible for gravimetric analysis for suspended.

Sampler

3.2.16 A water sampler is required. It shall comprise a transparent PVC cylinder, with a capacity of not less than 2 litres, which can be effectively sealed with latex cups at both ends. The sampler shall have a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler is at the selected water depth (for example, Kahlsico Water Sampler or an approved similar instrument).

Water Depth Detector

3.2.17 A portable, battery-operated echo sounder shall be used for the determination of water depth at each designated monitoring station. This unit can either be hand held or affixed to the bottom of the work boat, if the same vessel is to be used throughout the monitoring programme.

Salinity

3.2.18 A portable salinometer capable of measuring salinity in the range of 0 - 40 parts per thousand (ppt) shall be provided for measuring salinity of the water at each monitoring location.

pH

3.2.19 The instrument shall consist of a potentiometer, a glass electrode, a reference electrode and a temperature-compensating device. It shall be readable to 0.1pH in a range of 0 to 14. Standard buffer solutions of at least pH 7 and pH 10 shall be used for calibration of the instrument before and after use. Details of the method shall comply with APHA, 19th ed. 4500-HTB.

Flow Rate Meter

3.2.20 A portable, battery-operated flow meter should be used for the determination of water depth at each designated monitoring location and record in m^3/s. A hand held or meter fixed to the underside of the survey boat may be used.

Sample Containers and Storage

3.2.21 Water samples for laboratory analysis shall be stored in high density polythene bottles with no preservative added, packed in ice (cooled to 4°C without being frozen) and delivered to the laboratory and analysed as soon as possible after collection. Sufficient volume of samples shall be collected to achieve the required detection limit.

Monitoring Position Equipment

3.2.22 A hand-held or boat-fixed type digital Differential Global Positioning System (DGPS) with way point bearing indication or other equipment instrument of similar accuracy, shall be provided and used during marine water monitoring to ensure the monitoring vessel is at the correct location before taking measurements.

Monitoring Methodology and Calibration Details

3.2.23 Dissolved oxygen (DO), temperature, turbidity, pH and salinity were measured in situ at the designated water quality monitoring stations. General observation, weather conditions, with the sampling time, date and location were marked on the field record sheet.

3.2.24 Water samples were taken from each monitoring station for laboratory analysis. The sample identification number, sampling location, date, time, project name and analyses were required.

3.2.25 The samples were placed in a cooler with ice (to 4°C without being frozen) and kept away from sunlight. Samples were submitted to a Hong Kong Laboratory Accreditation Scheme (HOKLAS) or other international accredited laboratory for analysis within 24 hours of sampling.

Calibration of In-Situ Instruments

3.2.26 All in situ monitoring instruments were checked, calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme before use and subsequently re-calibrated at three monthly intervals throughout all stages of the water quality monitoring programme. Responses of sensors and electrodes were checked with certified standard solutions before each use. Wet bulb calibration for a DO meter were carried out before measurement at each monitoring location.

Laboratory Analysis

3.2.27 All laboratory work were carried out by ALS Technichem Pty Ltd (HOKLAS accredited laboratory). Water samples were collected at the monitoring and control stations for carrying out the laboratory determinations. The determination work will start within 24 hours after collection of the water samples. The analysis shall follow the standard methods according to APHA Standard Methods for the Examination of Water and Wastewater, 19th Edition, or an equivalent method approved by EPD.

Table 3.9 Analytical Methods to be applied to Water Quality Samples

Determinant	Standard Method	Reporting Limit
Suspended Solids	APHA 2540 D	2 mg/L
Nitrate Nitrogen	APHA 4500-NO_3^-	0.01 mg/L
Nitrite Nitrogen	APHA 4500-NO_2^-	0.01 mg/L
Ammonia Nitrogen	APHA 4500-NH_3(D)	0.01 mg/L
Total phosphorus	ASTM D515-88B	0.02 mg/L*
Chlorophyll a	APHA 10200 H2 &3	0.5 µg/L

Remarks: *After review baseline data, the detection limit report will be revised to 0.02 mg/L.

QA/QC Procedure

3.2.28 ALS Technichem Pty Ltd. has comprehensive quality assurance and quality control programmes. For QA/QC procedures of parameters, one duplicate sample was analysed for every batch of 20 samples as required by HOKLAS.

Event and Action Plans

3.2.29 The Event and Action Plan (EAP) for water quality monitoring is presented in **Annex C**.

3.3 Ecology

Introduction

3.3.1 The marine and terrestrial ecological monitoring surveys for the ecological EM&A were conducted in accordance with the EM&A manual.

3.3.2 As stipulated in the EM&A Manual, the ecological monitoring surveys for terrestrial ecology would be conducted monthly during the construction phase. Monitoring survey would consist of aquatic fauna survey. While the majority of the Project Area would be subject to site formation, natural streams would be partially or fully preserved and protected by buffer zones, and therefore would constitute the primary target of the terrestrial ecological monitoring. Special attention should thus be paid to ecologically sensitive streams to ensure minimum damage to existing vegetation and streams. The purpose of the monitoring survey was to check the conditions of the stream habitat and the associated aquatic fauna communities.

3.3.3 While the ecological monitoring surveys for marine ecology included coral monitoring at both the eastern and western coasts of Kau Sai Chau Island. The coral monitoring at the western coast would be conducted concurrently with the dredging works which however were cancelled due to the change of the plans, and therefore were not required. The coral monitoring at the eastern Kau Sau Chau would be monthly for the first three months of the construction phase, and if no exceedance was recorded, the monitoring schedule would be changed to quarterly during the rest of the construction phase. As a coral damage incident was recorded in March 2006, the monthly monitoring was extended for another three months from April 2006 to June 2006. No exceedance was recorded during these three months, the monitoring schedule were changed to quarterly after that till the end of the construction phase. Monitoring survey would consist of checking tagged corals at both impact sites and control site. The purpose of the monitoring survey was to check the conditions of the tagged corals and the impact sites. Although the dredging works for the desalination plant have yet to conduct, 89 natural corals near the plant were transplanted in November 2006. The transplanted corals would be monitored quarterly for a year.

Ecological Mitigation Measures and Implementations

3.3.4 Ecological mitigation measures to be implemented during the construction phase include the following:

- Establishment of buffer zones for the natural stream courses during both construction phase.
- Provision of temporary bypass channels or pipes during construction phase for stream courses subject to pipe culverting.
- Protection of water quality of the natural stream courses and temporary bypass channels or pipes.
- Transplantation of coral colonies within the dredging area for the desalination plant prior to the dredging works.

- Avoidance of corals when the anchoring points are deployed, and to shift the floating temporary barging point to the location with least corals within the mapping area.
- Regular site audit of ecological mitigation measures and good site practice.

Monitoring Frequency and Schedule

Terrestrial Ecology

3.3.5 As reported in the EIA Report, there were four perennial natural streams (Streams A-D) within the Assessment Area for the EIA Study. Streams A, B & C were located within the Project Area, while Stream D was outside the Project Areas and acted as the main stream draining the western part of the Assessment Area. Buffer Zone would be established for the three streams within the Project Area along their partial length (Stream A) or full length (Streams B & C) (**Figure 3.3**). Moreover, Streams B, C & D would be monitored for aquatic fauna monthly during the construction phase. Monitoring on the implementation of the mitigation measures for stream protection, the effectiveness of stream buffer zones, and the aquatic fauna in streams would be conducted during the entire construction phase.

3.3.6 The objectives of the monitoring survey are to check the status of *Caridina trifasciata* and *Nanhaipotamon hongkongensis*. The surveys covered natural stream courses within the assessment area (Streams A to D), and aquatic fauna were studied by various sampling methods depending upon site conditions. Methods included direct observation, active searching, and sample collection using hand-nets. Hand nets were used to collect swimming organisms such as shrimps and fish. Where necessary boulders on the stream beds were overturned to locate aquatic organisms such as crabs. Aquatic species encountered was recorded, with special attention to rare or protected species.

Marine Ecology

3.3.7 As required in the EM&A Manual, prior to the commencement of all construction works, a baseline survey of natural corals were conducted in December 2005. At each of the Site C, Site B2, Site D2 and a Control Site near the AFCD's Coral Buoy at Sharp Island (**Figure 3.4**), 20 natural coral colonies in good conditions (i.e. generally intact and no sign of bleaching) and significant sizes (preferably over 20 cm in diameter) were selected and tagged. Each of the tagged coral colonies was identified to species level and their conditions, in terms of percentages of survival, sedimentation and bleaching, were recorded. Each coral was attached with a plastic label with assigned number and then photographed. The species and the size of each tagged corals were also recorded. The species of corals to have been tagged included the following 15 species: *Cyphastrea serailia, Favia speciosa, Favites abdita, Favites pentagona, Goniastrea aspera, Goniopora columna, Hydnophora exesa, Leptastrea pruinosa, Lithophyllon undulatum, Pavona decussata, Platygyra acuta, Platygyra carnosus, Plesiastrea versipora, Psammocora superficialis, and Turbinaria peltata.* All tagged corals were in good conditions during the baseline survey, without significant sign of bleaching or being covered by sediments, and therefore were all recommended as the monitored coral colonies (all 80 tagged corals, 20 from each site). The seagrass beds in Site D3 were also surveyed for their extent, coverage percentage and health conditions during the baseline survey. The results of the baseline survey were presented in the Baseline Report. The original 20 tagged corals at Site B2 were re-organised in April 2006, with B-11 to B-20 retained, but 40 new tagged corals (B-21 to B-60) were established. The number of tagged corals at Site B2 was therefore increased from 20 nos. to 50 nos. The baseline conditions of these newly tagged corals (40 nos.) were presented in the monitoring Report for April 2006.

3.3.8 The reporting month (December 2007) was the Month 24 of the construction programme. As the dredging works for the desalination plant were cancelled, the impact sites to be monitored in this

monitoring survey were Site B2 and Site C (impact sites on the eastern Kau Sai Chau Island for the new golf course) only, while Site D2 and Site D3 (impact sites on the western Kau Sai Chau Island for desalination plant) were not required in this survey. The coral transplantation, which should be conducted prior to the commencement of dredging works, which was conducted in November 2006. 89 natural corals were transplanted and each was assigned with a number. These corals had been monitored quarterly for a year after transplantation. The monitoring on transplanted corals on the bedrock at Site D2 (see **Figure 3.5**) was commenced in December 2006 and had been finished in September 2007, and therefore was not required in this survey.

3.3.9 The schedule for the impact sites on the eastern Kau Sai Chau Island during construction would be monthly in the first three months of the construction programme, and if no exceedance was recorded then quarterly till the end of the construction. As coral damage incident was reported in Month Three of the construction programme, AFCD requested the monthly monitoring should be extended to cover another three months (April, May and June 2006). No exceedence was recorded during the extended three-month period and the schedule was change to quarterly. The present survey was the twelfth monitoring survey (the sixth quarterly survey on the eastern Kau Sai Chau Island). The survival and health conditions of the coral colonies were recorded.

3.3.10 During the weekly site inspection, ET also monitored and audited the implementation of the recommended mitigation measures for terrestrial and marine ecology. Monitoring locations for ecology are shown in **Figures 3.3 – 3.5**. The monitoring programme for the reporting period is shown in **Annex B**.

Event and Action Plans

3.3.11 The Event and Action Plan (EAP) for ecology monitoring is presented in **Annex C**.

3.4 Landscape and Visual

3.4.1 The EIA concluded that the landscape and visual impacts associated with the construction of the third golf course are anticipated to be acceptable with mitigation. In order to ensure that the effective management and implementation of landscape mitigation measures developed and defined in the EIA, the ET conducted regular site inspections of the construction work sites.

3.4.2 Auditing inspections and reporting are undertaken once every two weeks of the construction phase. The effectiveness of the mitigation works has been audited in order to ensure impact reduction levels are achieved as described in the EIA report for this monitoring month. The monitoring programme for the reporting period is shown in **Annex B.**

3.5 Archaeology (Watching Brief)

Introduction

3.5.1 The archeological impact assessment conducted in the EIA concluded that some potential for archaeological material remains at the Wan Chai Archaeological Site and a watching brief is recommended during the construction phase.

3.5.2 A watching brief is a process whereby a qualified and licensed archaeologist monitors the excavation works during the construction phase in areas identified (and agreed with the Antiquities and Monuments Office (AMO)) to be of archaeological potential.

3.5.3 The archaeologist conducting the watching brief should obtain a licence prior to commencement of works as stipulated in Section 12 of the Antiquities and Monuments Ordinance (Cap. 53). The licence was granted on 22nd December 2005.

Monitoring Location

3.5.4 The monitoring locations include Hole 2, Hole 11, Hole 12, Hole 14, Hole 15 & Hole 16. The monitoring locations are present in **Figure 3.6**.

Monitoring Frequency

3.5.5 A total of 18 days of monitoring is considered as minimum, and additional arrangement for watching brief should be made in consultation with AMO in case significant archaeological findings are unearthed in the course of excavation work.

Progress Report

3.5.6 Archaeologist should submit progress reports every 3 months during the programme of the watching brief.

3.5.7 A summary table for categories of archaeological find and recommended action is presented in **Annex C**.

3.6 Land Contamination

Potential Areas Recommended for Further Investigation

3.6.1 Contamination Assessment Plan (CAP) shall be submitted to EPD for approval before site investigation. If land contamination is confirmed by the site investigation, submission of a Remediation Assessment Plan (RAP) including a Contamination Assessment Report (CAR) is required. Potential 5 land contamination hotspots are presented in **Figure 3.7**.

4. Implementation Status on Environmental Protection Requirements

4.1.1 Major construction work of the third golf course were (i) sand capping at Holes 2 and 9, (ii) turfing at Holes 2, 9 & 17 (iii) permanent drainage / irrigation system / sub-soil drainage installation at central part (Holes 2 and 17) of East Course, (iv) hydroseeding at the permanent slope/bare grounds and (v) furnishing work at permanent bridges.

4.1.2 Routine site inspection was carried out on 11th December 2007. A water pump was observed located at the streambed of Stream C underneath bridge no. 15 in operation and pumping water to a nearby catchhole located at Hole 15. This activity will cause potential dehydration of Stream C resulting in violation of the Environmental Permit requirements.

4.1.3 The Contractor was reminded to provide sufficient dust suppression measures for loading/unloading activities and haul road (truck traffic).

4.1.4 No revised submission was received from the Contractor regarding the temporary drainage during the 2 years construction phase, in particular wet seasons.

4.1.5 The Contractor was reminded to dispose the construction waste regularly and properly off-site. The Contractor was reminded to provide proper container to prevent the waste accidentally dropping into the marine water. The Contractor was reminded to dispose more off-site regularly and to submit the chit tickets for our record.

4.1.6 Hydroseeding at scar areas within the East Course was completed before March 2007. However, some areas were required re-hydroseeding (due to soil erosion after rain and died out) and will be planted with native shrub. The Contractor proposed to carry out re-planting work in early spring 2008 before the next wet season come.

4.1.7 The removal of Contractor's site office and temporary sewage treatment plant (STP) was carried out in early December 2007 through the temporary barging point during daytime. Regarding the STP, no water quality report was submitted by CHEC regarding the performance of the sewage treatment plant since failure. Therefore, no discharge of sewage effluent from the sewage treatment plant to fresh water inland marsh is allowed.

4.1.8 No dredging work has been carried out near to the existing pier for the desalination plant pipelines. Summary of implementation status is provided in **Annex D**.

5. Monitoring Results

5.1 Air Quality

5.1.1 Dust monitoring was conducted as scheduled in the reporting month. Monitoring of air quality was conducted on 5 occasions in 25th November to 24th December 2007. All monitoring data are provided in **Annex E**. Monitoring of 24-hour TSP was conducted at GCA B1 on 27th November, 3rd, 8th, 14th and 20st December 2007. The QA/QC results for laboratory testing in the reporting month were acceptable. The QA/QC results are summarised in **Annex F**.

5.1.2 No exceedance of 24-hour TSP was recorded at GCA B1 during this reporting month.

5.2 Water Quality

5.2.1 Marine and freshwater water quality monitoring were conducted at the 9 and 7 designated monitoring stations respectively. All monitoring data are provided in **Annex E**.

5.2.2 Monitoring of marine and freshwater locations was conducted on 4 occasions in November to December 2007 (26th November, 3rd, 10th, 17th and 24th December 2007). The QA/QC results for laboratory testing in the reporting month were acceptable. The QA/QC results are summarised in **Annex F**. No rainstorm signal was hoisted during this reporting month.

5.2.3 Turf establishment progress is shown as follows:

- Hole 8 – February 2007 (Tee, fairway and green);
- Hole 5 – March 2007 (Tee, fairway and green);
- Hole 4 – April 2007 Tee, fairway and green);
- Hole 6 – May 2007 (Tee, fairway and green);
- Hole 7 – June 2007 (Tee, fairway and green);
- Hole 3 – June 2007 (Tee, fairway and green);
- Hole 11 – June 2007 (Tee, fairway, except green);
- Hole 18 – July 2007 (Tee, fairway, except green);
- Hole 15 – July 2007 (Tee, fairway and green)
- Hole 11 – July 2007 (Green)
- Hole 13 – August 2007 (Tee, fairway and green)
- Hole 14 – August 2007 (Tee, fairway and green)
- Hole 16 – August 2007 (Tee, fairway, except green)
- Hole 16 – September 2007 (Green)
- Hole 12 – September 2007 (Tee, fairway and green)
- Hole 10 – September 2007 (Tee, fairway and green)
- Hole 1 – October 2007 (Green)
- Hole 9 – October 2007 (Green)
- Hole 18 – October 2007 (Green)
- Hole 2 – November 2007 (Green, except fairway and tee)
- Hole 9 – November 2007 (fairway and tee)
- Hole 17 – November 2007 (green and tee except fairway)
- Hole 2 – December 2007 (Fairway and Tee)
- Hole 9 – December 2007 (Green)
- Hole 17– December 2007 (Fairway)

5.2.4 Water quality parameters include NH_3-N, NO_3-N, NO_2-N, TIN, TP and Chlorophyll a completely had covered all fresh water since from this reporting month.

5.2.5 Chemical applications were applied at the Holes 3 to 10, 12 to 13 & 18 during the reporting month. They are approved pesticides listed in the turfgrass management plan in the final EIA report. Water samples were required to send to overseas laboratory for analysis and testing.

Marine water

- M_Marsh: (i) one limit level exceedance of ammonia nitrogen, (ii) one action level exceedance of total inorganic nitrogen and (iii) one action level exceedance of chlorophyll a;
- TTC: (i) three limit level exceedances of ammonia nitrogen, (ii) two action level exceedances of nitrate nitrogen, (iii) one action level exceedance of total inorganic nitrogen and (iv) one action and two limit level exceedances of chlorophyll a;
- M_BP: (i) one limit level exceedance of ammonia nitrogen and (ii) one action level exceedance of chlorophyll a;
- M_Coral: (i) one limit level exceedance of ammonia nitrogen and (ii) one action level exceedance of chlorophyll a; and
- KS: (i) two action level exceedances of suspended solids, (ii) three limit level exceedances of ammonia nitrogen, (iii) one action level exceedance of nitrate nitrogen, (iv) one action level exceedance of total inorganic nitrogen and (v) one action and two limit exceedances of chlorophyll a.

5.2.6 The marine water exceedances were summarised in **Table 5.2-1.**

Table 5.2-1 Marine water Exceedance Summary November to December 2007

Monitoring Station	Exceedance Level	Date	Parameters	Project-related
M_Marsh	Action Level	26th Nov 07	Chl a	No
	Action Level	10th Dec 07	TIN	No
	Limit Level	10th Dec 07	NH_3-N	No
TTC	Limit Level	26th Nov 07	NH_3-N, Chl a	No
	Action Level	3rd Dec 07	NO_3-N	No
	Limit Level	3rd Dec 07	Chl a	No
	Action Level	10th Dec 07	NO_3-N, TIN	No
	Limit Level	10th Dec 07	NH_3-N	No
	Action Level	17th Dec 07	Chl a	No
	Limit Level	24th Dec 07	NH_3-N	No
M_BP	Action Level	26th Nov 07	Chl a	No
	Limit Level	24th Dec 07	NH_3-N	No
M_Coral	Action Level	26th Nov 07	Chl a	No
	Limit Level	24th Dec 07	NH_3-N	No
KS	Action Level	26th Nov 07	SS	No
	Limit Level	26th Nov 07	NH_3-N, Chl a	No
	Limit Level	3rd Dec 07	Chl a	No
	Action Level	10th Dec 07	NO_3-N, TIN	No
	Limit Level	10th Dec 07	NH_3-N	No
	Action Level	17th Dec 07	Chl a	No
	Action Level	24th Dec 07	SS	No
	Limit Level	24th Dec 07	NH_3-N	No

Remarks: Exceedances were mainly due to natural variation / rainstorm events of the marine water.

5.2.7 The range of the suspended solids, turbidity, ammonia nitrogen, chlorophyll a and total inorganic nitrogen measured at the Control Station (M_A) was in the same order of magnitude at various marine monitoring stations including M_Marsh, TTC, M_BP, M_Coral and KS. There is no significant difference of the measured concentrations between control station and impact stations and the exceedances were considered not project-related.

Freshwater

- Stream A: (i) one action level exceedance of suspended solids, (ii) one limit level exceedance of ammonia nitrogen, (iii) one limit level exceedance of nitrate nitrogen, (iv) one action and one limit level exceedances of total inorganic nitrogen and (v) one action level exceedance of chlorophyll a.
- Stream B: (i) one action level exceedance of turbidity, (ii) five action level exceedances of suspended solids, (iii) three limit level exceedances of ammonia nitrogen, (iv) eight limit level exceedances of nitrate nitrogen, (v) nine limit level exceedances of total inorganic nitrogen and (vi) one action level exceedance of chlorophyll a.
- Stream C: (i) two action level exceedances of suspended solids, (ii) one limit level exceedance of ammonia nitrogen, (iii) one action and three limit level exceedances of nitrate nitrogen, (iv) one action and three limit level exceedances of total inorganic nitrogen and (v) two limit level exceedances of chlorophyll a.
- Freshwater Inland Marsh: (i) one action level exceedance of suspended solids, (ii) one limit level exceedance of ammonia nitrogen, (iii) three limit level exceedances of nitrate nitrogen and (iv) three limit level exceedances of total inorganic nitrogen.

5.2.8 The freshwater water exceedances were summarised in **Table 5.2-2.**

Table 5.2-2 Freshwater Exceedance Summary November to December 2007

Monitoring Station	Exceedance Level	Date	Parameters	Project-related
F_DA	Action Level	26th Nov 07	TIN	No
	Limit Level	26th Nov 07	NH_3-N	No
	Action Level	10th Dec 07	Chl a	No
	Limit Level	17th Dec 07	NO_3-N, TIN	No
	Action Level	24th Dec 07	SS	No
F_UB	Action Level	26th Nov 07	SS	No
	Limit Level	26th Nov 07	NO_3-N, TIN	No
	Limit Level	3rd Dec 07	NO_3-N, TIN	No
	Action Level	10th Dec 07	SS	No
	Limit Level	10th Dec 07	NH_3-N, NO_3-N, TIN	No
	Action Level	17th Dec 07	Turbidity, Chl a	No
	Limit Level	17th Dec 07	NO_3-N, TIN	No
	Action Level	24th Dec 07	SS	No
F_DB	Limit Level	26th Nov 07	NO_3-N, TIN	No
	Limit Level	3rd Dec 07	NO_3-N, TIN	No
	Action Level	10th Dec 07	SS	No
	Limit Level	10th Dec 07	NH_3-N, NO_3-N, TIN	No
	Limit Level	17th Dec 07	NO_3-N, TIN	No
	Action Level	24th Dec 07	SS	No
	Limit Level	24th Dec 07	NH_3-N, TIN	No
F_UC	Action Level	3rd Dec 07	NO_3-N, TIN	No
	Limit Level	17th Dec 07	NO_3-N, TIN	No
	Action Level	24th Dec 07	SS	No
F_DC	Limit Level	26th Nov 07	Chl a	No
	Limit Level	3rd Dec 07	NO_3-N, TIN	No

Monitoring Station	Exceedance Level	Date	Parameters	Project-related
	Limit Level	10th Dec 07	NH_3-N, Chl a	No
	Limit Level	17th Dec 07	NO_3-N, TIN	No
	Action Level	24th Dec 07	SS	No
F_Inland M	Action Level	3rd Dec 07	SS	No
	Limit Level	10th Dec 07	NO_3-N, TIN	No
	Limit Level	17th Dec 07	NO_3-N, TIN	No
	Limit Level	24th Dec 07	NH_3-N, NO_3-N, TIN	No

Remarks:
Exceedances of turbidity, suspended soild and nutrients recorded at the Streams A, B, C and the Fresh Water Inland Marsh natural variation.

5.2.9 The range of the suspended solids, turbidity, ammonia nitrogen, nitrite nitrogen, chlorophyll a and total inorganic nitrogen measured at the downstream of Streams A, B & C were in the same order of magnitude to upstream of F_UA. There is no significant difference of the measured concentrations between control station and impact stations and the exceedances were considered not project-related.

5.2.10 For the upstream monitoring location (F_UB), it is located downstream to the construction area near Hole 10 and the monitoring location cannot be relocated further upstream (temporary bridges located at Streams B1 and B2) as no water was observed and available for sampling. For the upstream monitoring location (F_UC), it is located downstream to the construction area near Hole 16 and the monitoring location cannot be relocated further upstream as no water was observed and available for sampling. Therefore, the F_UC is considered the most upstream location of Stream C. Same as Stream B, it is considered that F_UC is also the impact monitoring location and F_UA was used as the representative control monitoring station.

5.2.11 The monitoring of pesticides were summarised in **Table 5.2-3.**

Table 5.2-3 Pesticides Monitoring Results November 2007

Date	Monitoring Station	Parameters	Monitoring Result
16th Nov 07	F_Inland_Marsh, M_Marsh, TTC, M_BP, M_Coral, KS, F_DB, F_DC	Iprodione	Undetectable
22nd Nov 07	M_BP, TTC, F_DA	Fipronil	Undetectable
22nd Nov 07	TTC, M_BP, F_DB, KS, M_Coral, F_DC	Chlorothalonil	Undetectable

5.3 Ecology

5.3.1 Terrestrial and marine ecology monitoring photos are provided in **Annex E**.

Terrestrial Ecology

5.3.2 The Monitoring Survey for the reporting month was conducted on 7th and 28th December 2007. The majority of the construction works within the project site were finished except some soft landscaping works..

5.3.3 Although the surveyed streams have not been previously affected by developments or pollution sources, they are relatively small. During the EIA study, water depth was found less than 0.3m in most of the stream reaches even during wet season. Within dry season, these streams would have very small surface flow or even no surface flow for most of the length.

5.3.4 Stream A is located within the Project Area. Its main stream section (downstream to the confluence of two tributaries) would be protected by stream buffer zone (**Figure 3.3**). Stream A had been heavily silted with sediments from eroded hillsides all year round, particularly at the main stream section. The stream had low flow.

5.3.5 The permanent bridge across Stream A was finished and the temporary access bridge had been removed. Remedial works had been conducted in the main stream course of Stream A (the section downstream to the confluence of tributaries A1 and A2). The remedial works were to remove the rubbles which had been washed down from the upper Tributary A2 during pipe culvert construction in June 2006. Although the riparian vegetation were not affected by the rubbles, and Stream A was of the lowest ecological value among the four natural streams (it was heavily silted with sediments from eroded hillsides all year round and only very limited aquatic fauna were recorded before), this section of stream channel was temporarily lost. Remedial works had thus been requested by the ET for clearing the rubbles, restoring the channel and improving the water quality, as the conditions of this stream is expected to improve after the construction of the golf course extension (in which the eroded hill slopes would be replaced by turf). A large portion of the fallen rubbles had been removed. It was found in previous monitoring that hydroseeding had been applied to the areas previously occupied by the temporary access bridge piers as restoration works. In the present monitoring survey, it was found that some seedlings were also planted in that area (see **Photo Plate 5.3-1**).

5.3.6 Stream B is located within the Project Area. It had clear flow (with little sediment in the stream beds) of moderate volume during the wet season. This stream also has two main tributaries, B1 and B2. The full length of Stream B (two tributaries and the main stream) would all be protected by buffer zone (**Figure 3.3** and **Figure 5.3-1**). Stream B also contains a long estuarine section of muddy sandy substrate.

5.3.7 An area of the buffer zone of Tributary B2 was previously accidentally cleared. As the function of the buffer zone for the stream protection might be affected, replanting with native shrub species was implemented as remedial action.

5.3.8 Sedimentation had been reported on the stream bed in previous monitoring, and had been attributed to the heavy rainfall and the recently constructed pipeline in the vicinity, as no additional encroachment was found in the buffer zone and the vegetation inside. The abundance of aquatic fauna, in particular Atyid shrimps, had also been found very low. But in recent monitoring survey, there was a certain degree of recovery in Stream B as the majority of the previously sighted sediments were absent, and the flow was clear and some species such as Freshwater shrimp *Macrobrachium* sp. and Atyid shrimps resumed. In the present survey, the flow in Stream B was still clear and no sign of sedimentation was found. But the flow was low, probably due to the dry season (see **Figure 5.3.1**). Moreover, Atyid shrimps were recorded in Stream B.

5.3.9 Stream C is located within the Project Area. This stream also has two main tributaries. It has had low but clear flow. In contrast to Stream B, Stream C drains to a sandy beach at Kau Chung Wan, and therefore lacks a clear estuarine zone. The full length of Stream C (two tributaries and the main stream) was protected by buffer zone (**Figure 3.3**). However the vegetation of a small area of the buffer zone was accidentally damaged. Remedial works such as replanting should be implemented for this area. The permanent bridge across Stream C had been in place, with the piers outside the buffer zone demarcation. The temporary bridge had been removed.

5.3.10 During previous monitoring, sedimentation in Stream C had been found on the majority of the main stream course of Stream C, and no aquatic fauna had been recorded. Some improvements were reported in previous monitoring surveys. In the present monitoring it was found that the conditions of Stream C had further improved as the majority of the previously sighted sediments

were absent, and the flow was clear. There was no sediment on the surfaces of aquatic plants. Two species of Atyid shrimps, i.e. *Caridina fasciata* (see **Figure 5.3.1**) and *Cardina cantonensis*, which have been absent for several months in this stream but were found again in the last monitoring, were still recorded in Stream C in this monitoring.

5.3.11 Stream D is located outside the Project Area but within the Assessment Area and is the main stream draining the west side of the Assessment Area. It had clear water and moderate flow levels. Stream D is the only stream with deeper water depth among the four streams (water depth over 0.3 m in some of the stream reaches). As Stream D is outside the construction area, buffer zone would not be needed for this stream. In the present survey, the flow was found clear in Stream D, and Atyid shrimp *Caridina trifasciata* was still recorded.

5.3.12 Photos of Streams A to C were shown in **Photo Plate 5.3-1 (Annex E)**. The habitats and vegetation beyond the works fronts, within the majority of the stream buffer zone (except an area in Stream C which was accidentally cleared before) and outside the project area, generally remained intact. No earthwork, human disturbance or fire disturbance was observed beyond the project site boundary other than the historical erosion of hillsides. Aquatic fauna communities were checked during the monitoring survey. No sedimentation was found on the stream bed in Stream B and Stream C, and aquatic fauna including Atyid shrimp were recorded in Stream B and Stream C *Caridina trifasciata* was still found in Stream D as in previous monitoring. Measures should be taken to prevent any further sedimentation incidents in the future.

Marine Ecology

5.3.13 The present Marine Ecological Monitoring Survey was conducted on 22nd and 23rd December 2007. The weather conditions were good on those date, the underwater visibility was good (approximately 3m). At Site C and the Control Site, the 20 colonies of natural corals selected during the Baseline Survey were recovered and checked for conditions, while at Site B2, 50 tagged corals (with 10 established in the Baseline Survey and 40 established in April 2006) were also checked. In previous monitoring surveys, one of the 20 tagged colonies at Control Site (i.e. X-05) and six of the 50 tagged corals at Site B2 (B-17, B-19, B-50, B-51, B-59 and B-60) were found lost, probably due to the wave actions.

5.3.14 Site B2 was the location for the temporary barging point. Some rectangular concrete blocks were deployed along the seaward side of the intertidal zone to form a seawall, and the area landward to this wall was filled with boulders. This was used as the landing point of the temporary barging point. Road surface was formed near the abandoned pier and connected to the landing point. The conditions of the tagged corals during the present survey were compared with the conditions during the Baseline Survey (for B-11 to B-20) or in April 2006 (for B-21 to B-60) (**Annex E - Photo Plates 5.3-2 to 5.3-6**). In previous monitoring six tagged corals at this site (i.e. B-17, B-19, B-50-B-51, B-59 and B-60) had been found missing, and were considered removed by the wave actions during the adverse weather conditions such as typhoons.

5.3.15 Mortality had been found on some tagged corals in Site B in previous monitoring. In the present monitoring, the majority of the coral colonies were in conditions similar as recorded in previous monitoring, but recoveries on some of the coral colonies were found, including B-11 (recovered from 50 to zero %), B-54 (recovered from 50% to zero%) (see **Table 5.3-1**). There were also some minor increases on mortality in some other colonies (e.g. B-55, increased from 60% to 70%), but these mortality records were still below the Action Level for the coral monitoring, i.e. "a 15% increase in the percentage of partial mortality of corals occurs at more than 20% of the tagged coral colonies at one or more monitoring sites". The remaining tagged corals were still similar with the baseline conditions during the Baseline Survey in December 2005 or in April 2006.

5.3.16 Site C was on the south-eastern coast of Kau Sai Chau Island and had a high coral coverage among the sites investigated during the EIA Study. The sizes of coral colonies at Site C were also larger than those at other sites. Site C was away from the boundary of the new golf course and would not be subject to direct impacts during construction. The site and its vicinity still remained similar conditions as during the Baseline Survey. All 20 tagged corals in Site C were recovered. Except C-04 (which had been destroyed by adverse weather and reported in previous monitoring), no mortality or sedimentation was found on other tagged corals (see **Table 5.3-2** and **Annex E - Photo Plates 5.3-7 to 5.3-8**).

5.3.17 The Control Site is the buoy of coral marker established by AFCD in Sharp Island. Similar with Site C, both the coral coverage percentage and the sizes of coral colonies were high at this site and would not be impacted by the Project. The site and its vicinity still remained similar conditions as during the Baseline Survey. Coral X-05 was lost in previous monitoring in June 2006. The remaining 19 tagged corals were recovered. The corals remained similar conditions as during the Baseline Survey (**Annex E - Photo Plates 5.3-9 to 5.3-10**). No mortality, sedimentation or bleaching was found on any of the tagged corals (see **Table 5.3-3**).

5.3.18 **Photo Plates 5.3-2** to **5.3-16** showed the photos of each tagged corals. The assigned numbers, species, mortality percentage, sedimentation coverage percentage and bleaching percentage of the baseline conditions of tagged corals and their present conditions were presented in **Tables 5.3-1** to **5.3-4** below.

Table 5.3-1 Conditions of tagged corals at Site B2

Code of tagged corals	Species*	Baseline Survey (December 2005 or April 2006)			Month 24 (December 2007)		
		Mortality (%)	Sedimentation (%)	Bleaching (%)	Mortality (%)	Sedimentation (%)	Bleaching (%)
Within the Temporary Barging Point Area							
B-11	*Turbinaria peltata*	0	0	0	0	0	0
B-12	*Plesiastrea versipora*	0	0	0	**50**	0	0
B-13	*Plesiastrea versipora*	0	0	0	**30**	0	0
B-14	*Goniastrea aspera*	0	0	0	0	0	0
B-15	*Lithophyllon undulatum*	0	0	0	0	0	0
B-16	*Favia speciosa*	0	0	0	0	0	0
B-17	*Favia speciosa*	0	0	0	Missing	Missing	Missing
B-18	*Turbinaria peltata*	0	0	0	**20**	0	0
B-19	*Favia speciosa*	0	0	0	Missing	Missing	Missing
B-20	*Favia speciosa*	0	0	0	0	0	0
To the North of the Temporary Barging Point Area							
B-21	*Favia speciosa*	0	0	0	0	0	0
B-22	*Cyphastrea serailia*	0	0	0	0	0	0
B-23	*Favia speciosa*	0	0	0	0	0	0
B-24	*Favia speciosa*	0	0	0	0	0	0
B-25	*Favites abdita*	0	0	0	0	0	0
B-26	*Cyphastrea serailia*	0	0	0	0	0	0
B-27	*Favia speciosa*	0	0	0	0	0	0
B-28	*Goniopora columna*	0	0	0	0	0	0
B-29	*Cyphastrea serailia*	0	0	0	0	0	0

Code of tagged corals	Species*	Baseline Survey (December 2005 or April 2006)			Month 24 (December 2007)		
		Mortality (%)	Sedimentation (%)	Bleaching (%)	Mortality (%)	Sedimentation (%)	Bleaching (%)
B-30	*Favia speciosa*	0	0	0	0	0	0
B-31	*Platygyra acuta*	**5**	0	0	0	0	0
B-32	*Favia speciosa*	**3**	0	0	0	0	0
B-33	*Turbinaria peltata*	0	0	0	0	0	0
B-34	*Cyphastrea serailia*	0	0	0	0	0	0
B-35	*Cyphastrea serailia*	0	0	0	0	0	0
B-36	*Platygyra acuta*	0	0	0	0	0	0
B-37	*Favia speciosa*	0	0	0	0	0	0
B-38	*Cyphastrea serailia*	0	0	0	0	0	0
B-39	*Cyphastrea serailia*	0	0	0	0	0	0
B-40	*Favia speciosa*	0	0	0	0	0	0
To the south of the Temporary Barging Point Area							
B-41	*Leptastrea pruinosa*	0	0	0	0	0	0
B-42	*Goniastrea aspera*	0	0	0	**10**	0	0
B-43	*Favia speciosa*	0	0	0	0	0	0
B-44	*Cyphastrea serailia*	0	0	0	0	0	0
B-45	*Platygyra acuta*	0	0	0	0	0	0
B-46	*Favia speciosa*	0	0	0	0	0	0
B-47	*Favites abdita*	0	0	0	0	0	0
B-48	*Cyphastrea serailia*	0	0	0	0	0	0
B-49	*Goniopora columna*	0	0	0	0	0	0
B-50	*Favia speciosa*	0	0	0	Missing	Missing	Missing
B-51	*Psammocora superficialis*	0	0	0	Missing	Missing	Missing
B-52	*Favia speciosa*	0	0	0	0	0	0
B-53	*Favia speciosa*	0	0	0	0	0	0
B-54	*Favia speciosa*	0	0	0	0	0	0
B-55	*Goniastrea aspera*	0	0	0	**70**	0	0
B-56	*Platygyra carnosus*	0	0	0	0	0	0
B-57	*Goniastrea aspera*	0	0	0	0	0	0
B-58	*Favia speciosa*	**5**	0	0	**30**	0	0
B-59	*Favia speciosa*	0	0	0	Missing	Missing	Missing
B-60	*Favia speciosa*	**5**	0	0	Missing	Missing	Missing

* Damaged corals were bold.

Table 5.3-2 Conditions of tagged corals at Site C

Code of tagged corals	Species	Baseline Survey (December 2005)			Month 24 (December 2007)		
		Mortality (%)	Sedimentation (%)	Bleaching (%)	Mortality (%)	Sedimentation (%)	Bleaching (%)
C-01	*Platygyra carnosus*	0	0	0	0	0	0
C-02	*Platygyra carnosus*	0	0	0	0	0	0
C-03	*Favia speciosa*	0	0	0	0	0	0
C-04	*Favites abdita*	0	0	0	**100**	0	0
C-05	*Turbinaria peltata*	0	0	0	0	0	0
C-06	*Favia speciosa*	0	0	0	0	0	0
C-07	*Platygyra acuta*	0	0	0	0	0	0
C-08	*Platygyra acuta*	0	0	0	0	0	0
C-09	*Favia speciosa*	0	0	0	0	0	0
C-10*	*Platygyra acuta*	0	0	0	0	0	0
C-11	*Favia speciosa*	0	0	0	0	0	0
C-12	*Platygyra acuta*	0	0	0	0	0	0
C-13	*Platygyra carnosus*	0	0	0	0	0	0
C-14	*Favia speciosa*	0	0	0	0	0	0
C-15	*Goniopora columna*	0	0	0	0	0	0
C-16	*Platygyra carnosus*	0	0	0	0	0	0
C-17	*Goniopora columna*	0	0	0	0	0	0
C-18	*Platygyra carnosus*	0	0	0	0	0	0
C-19	*Favites pentagona*	0	0	0	0	0	0
C-20	*Favia speciosa*	0	0	0	0	0	0

*C-10 had sign of anchor damages.

Table 5.3-3 Conditions of tagged corals at Control Site

Code of tagged corals	Species	Baseline Survey (December 2005)			Month 24 (December 2007)		
		Mortality (%)	Sedimentation (%)	Bleaching (%)	Mortality (%)	Sedimentation (%)	Bleaching (%)
X-01	*Platygyra carnosus*	0	0	0	0	0	0
X-02	*Platygyra carnosus*	0	0	0	0	0	0
X-03	*Platygyra carnosus*	0	0	0	0	0	0
X-04	*Pavona decussata*	0	0	0	0	0	0
X-05	*Hydnophora exesa*	0	0	0	Missing	Missing	Missing
X-06	*Platygyra carnosus*	0	0	0	0	0	0
X-07	*Platygyra carnosus*	0	0	0	0	0	0
X-08	*Favites abdita*	0	0	0	0	0	0
X-09	*Cyphastrea serailia*	0	0	0	0	0	0
X-10	*Cyphastrea serailia*	0	0	0	0	0	0

Code of tagged corals	Species	Baseline Survey (December 2005)			Month 24 (December 2007)		
		Mortality (%)	Sedimentation (%)	Bleaching (%)	Mortality (%)	Sedimentation (%)	Bleaching (%)
X-11	*Platygyra carnosus*	0	0	0	0	0	0
X-12	*Platygyra acuta*	0	0	0	0	0	0
X-13	*Platygyra acuta*	0	0	0	0	0	0
X-14	*Platygyra acuta*	0	0	0	0	0	0
X-15	*Platygyra acuta*	0	0	0	0	0	0
X-16	*Platygyra acuta*	0	0	0	0	0	0
X-17	*Favia speciosa*	0	0	0	0	0	0
X-18	*Platygyra acuta*	0	0	0	0	0	0
X-19	*Goniastrea aspera*	0	0	0	0	0	0
X-20	*Cyphastrea serailia*	0	0	0	0	0	0

5.4 Archaeology (Watching Brief)

Final Archaeology Watching Brief Report

5.4.1 The Final Archaeology Watching Brief Report was submitted to AMO in June 2007. No archaeological material was identified.

6. Environmental Site Auditing

6.1.1 The weekly site inspections were conducted by the ET with Contractor's representative and/or Jockey Club's representative on 27th November, 5th, 11th, 17th and 24th December 2007, and the monthly joined site inspection with IEC and the Contractor's representative undertaken on 17th December 2007. The following observations and recommendations were made.

Dust Mitigation Measures

6.1.2 As the construction site was planted in turf in mid-December 2007 and most of the trucks/heavy equipments is not required for heavy construction activities and thus transported offsite through temporary barging point.

6.1.3 The remaining haul road between temporary barging point and Hole 2 is expected to be demolished in January 2008 together with temporary barging point. The Contractor was reminded to provide sufficient mitigation measures to reduce the dust impact.

6.1.4 Temporary soil/construction wastes stockpile was located near to the temporary barging point. The Contractor was reminded to provide mitigation measures to prevent dust generation due to wind erosion.

Water Quality

6.1.5 Temporary Drainage Management Plan (TDMP) is critical to effectively manage the runoff from the construction site to the nearby streams and marine water, in particular wet season. According to our record, no revised (TDMP) was submitted by the Contractor to RE for approval for the wet seasons in 2006 and 2007. Numerous of silty runoff was recorded and observed during the wet seasons. In summary, water quality monitoring data revealed that the temporary drainage installed on site was considered insufficient and ineffective, in particular, to streams.

6.1.6 Similar to previous month, hydroseeding areas for final golf course layout and scar areas were established gradually in the past wet season. But many of the areas had to be re-planting due to the poor maintenance and low coverage of the grass. The Contractor proposed to re-planting in the coming spring 2008.

6.1.7 No dredging work for the permanent intake and outfall pipelines was carried out during the reporting month.

6.1.8 Construction of permanent bridges was completed before the wet season 2007. Remaining furnishing work at all bridges was completed during the reporting month.

Turfing

6.1.9 Fertilizer and chemical applications were applied in according to the approved Turf Management Plan during the reporting month.

Terrestrial and Marine Ecology

6.1.10 The hydroseeding areas at the downstream of Stream A within the buffer zone area were found not in good condition. The Contractor was required to reinstate the buffer zone back to baseline condition.

6.1.11 Water was actively pumping from Stream C to Hole 15 was recorded during the reporting month. ET requested CHEC to stop immediately to prevent further dehydrating the sensitive stream. ET considered that this activity is a violation of the Environmental Permit.

6.1.12 No illegal berthing was observed during the site audit. Floating pontoon was berthed at EP location at the temporary barging point. The barges were mainly deliver turf and construction wastes during the reporting month.

6.1.13 Regarding to the vegetation clearance of Streams B & C buffer zone due to the permanent drainage construction work, the area was planting with shrubs. The Contractor was reminded to keep the reinstated area in good and healthy condition for the newly plants.

6.1.14 The proposed removal programme of the temporary barging point will commence in mid-January 2008 and require one month. ET commented on the submitted method statement prepared by the Contractor to ensure the nearby coral communities are well-protected and avoid damage (in particular, silt and physical) during the removal period. The Contractor is required to submit the immediate and remedial action plans and mitigation measures proposal to AFCD for approval before commencement.

Waste / Chemical Management

6.1.15 Two containers were temporarily stored at the floating pontoon for temporarily storage of construction waste. CHEC was reminded continuously to handle the construction wastes properly before disposal.

6.1.16 The Contractor claimed that most of the 50 chit tickets were already used and considered insufficient in last site inspection. CHEC confirmed that they applied additional 100 chit tickets from EPD and were waiting response from EPD. However, refer to CHEC's letter dated 13th December 2007, 40 used chit tickets were reported with disposal details. CHEC was reminded to submit disposal records for our record.

6.1.17 ET and IEC considered that the current off-site disposal arrangement may deviate from the discharge licence. ET and IEC suggested the Contractor to inform EPD of their current disposal arrangement. However, the sewage treatment plant was removed together with the site office in early December 2007. The latest record of sewage disposal off-site was on 17th November 2007. The Contractor was reminded to submit disposal record for the last delivery during removal to ET and RE for record.

Landscape and Visual

6.1.18 The quality of newly planted standard trees and heavy standard trees are poor which is same as previous few months. The Contractor is reminded to take measures to improve the condition of damaged trees, provide adequate watering to newly hydroseeded area, planted shrubs, trees and transplanted trees as well as improve the quality of newly planted light standard, standard and heavy standard trees by such as frequently irrigate the plants and hydroseeded area and replace all substandard trees or shrubs. The planting of compensatory and landscaping trees and shrubs were in progress during the reporting month.

6.1.19 No surgery was carried out to the damaged trees next to the administration building after being damaged by the adjacent construction activities. The Contractor is also required to rectify the mal-pruning practice of the transplanted trees.

6.1.20 All transplanted trees were in fair condition except for T848. Mal-pruning of transplanted trees has not been rectified. A statement on the cause of death of tree T925 recorded is still outstanding.

Status of Environmental Licensing and Permitting

6.1.21 Permits / licences submission and approval status are summarised in Table 6.1.

Table 6.1 Summary of Environmental Licensing and Permit Status

Permit/licence/notification form title	Submission date	Status	Registration No./ Remarks
Application for a construction noise permit for the use of powered mechanical equipment for the purpose of carrying out construction work other than percussive pilling and/or the carrying out of prescribed construction work.	21st Jan 2006	Approved on 16th February 2006	GW-RE0012-06 (valid until 3rd July 2006)
Application for a construction noise permit for the use of powered mechanical equipment for the purpose of carrying out construction work other than percussive pilling and/or the carrying out of prescribed construction work.	6th Apr 2006	Approved on 9th Jun 06 (supersede the GW-RE0012-06)	GW-RE0157-06 (valid until 28th Nov 2006)
Application for a construction noise permit for the use of powered mechanical equipment for the purpose of carrying out construction work other than percussive pilling and/or the carrying out of prescribed construction work.	Nov 2006	Approved on 22nd Nov 06 (supersede the GW-RE0157-06)	GW-RE0384-06 (valid until 26th May 2007).
Application for a construction noise permit for the use of powered mechanical equipment for the purpose of carrying out construction work other than percussive pilling and/or the carrying out of prescribed construction work.	4th May 2007	Approved on 18th May 07 (supersede the GW-RE0384-06)	GW-RE0141-07 (valid until 25th Nov 2007).
Notification of the air pollution control (construction dust) regulation	21st Jan 2006	Acknowledge receipt from EPD on 27th February 2006	Ref. no.: 001006902
Registration as a chemical waste producer	10th Jan 2006	Register on 7th February 2006	WPN-5213-813-C1186-04
Application for a permit to dump material at sea under the Dumping at Sea Ordinance	10th Jan 2006	Deferred by CHEC on 17th March 2006 (CHEC/KSC3.9.1/0459)	No dredging work will be carried out between May to December 2006.
Application of exemption account for the construction waste charging scheme***	***12th Jan 2006***	***Approved on 16th January 2006***	***A/C no. 5005322 (valid until 2nd August 2007)***
Application for a licence for production pursuant to Section 14 of Air pollution Control Ordinance	2nd Mar 2006	The total silo capacity for the cement works was 45 tonnes which is lower than 50 tonnes. It is not a specified process, application is not required.	EPD letter refer. no.: EP640/EA/SK/015
Application for a licence under Water Pollution Ordinance – Construction Site	18th Mar 2006	Approved on 12th Sept 2006 (CHEC/KSC3/9.1/0414)	EPD letter refer. No: EP640/W4/J1003

*** The Contractor reported that 50 chit tickets were approved by EPD in December 2007. However, the Contractor claimed that additional 100 chit tickets are required in order to dispose all of the construction wastes. Up the latest record submitted by the Contractor, 40 chit tickets were used.

7. Environmental Non-Conformance

7.1 Summary of Environmental Non-Compliance

Air Quality

7.1.1 No exceedance of 24-hour TSP was recorded at GCA B1 during the reporting month.

Marine Water Quality

7.1.2 Two exceedances of suspended solids were recorded at KS. Nine exceedances of ammonia nitrogen were recorded at M_Marsh, TTC, M_BP, M_Coral and KS. Three exceedances of nitrate nitrogen were recorded at TTC and KS. Three exceedances of total inorganic nitrogen were recorded at M_Marsh, TTC and KS. Moreover, nine exceedances of chlorophyll a were recorded at M_Marsh, TTC, M_BP, M_Coral and KS. Exceedances were due to the natural variation of the marine water and considered non-project related.

Freshwater Quality

7.1.3 One exceedance of turbidity was recorded at Stream B. Nine exceedances of suspended solids, six exceedances of ammonia nitrogen, sixteen exceedances of nitrate nitrogen and eighteen exceedances of total inorganic nitrogen were recorded at Streams A, B & C and the downstream of Freshwater Inland Marsh. Moreover, four exceedances of chlorophyll a were recorded at Streams A, B & C. Exceedances were due to the natural variation of the freshwater and considered non-project related.

Terrestrial Ecology

7.1.4 The buffer zones for Stream A, B, and C were basically intact but the reinstated condition is considered not in good condition. The present of aquatic fauna, in particular caridian shrimps, was found extreme low density in Streams B & C during the reporting month. Intrusion at Stream C within the buffer zone area due to operation of water pump was observed.

Marine Ecology

7.1.5 Coral monitoring was carried out and no non-compliance was recorded during the reporting month.

7.2 Summary of Environmental Complaint

7.2.1 No environmental complaint was received in this reporting month.

7.3 Summary of Environmental Summons

7.3.1 No summon was received in this reporting month.

8. Future Key Issues

8.1 Key Issues for coming month

8.1.1 Major works to be taken for the coming monitoring period are summarized as follows.

- Removal of haul road and temporary barging point;
- Turf management;
- Disposal of construction waste;
- Compensatory and landscaping trees and shrubs planting;
- Hydroseeding at scar, permanent slope and damaged buffer zone areas;
- Removal and desilting of silt curtain and silt fence; and
- Operation of desalination plant if required

8.2 Monitoring Schedule for the coming month

8.2.1 The construction phase was completed in December 2007. Post-monitoring will be carried out in January 2008. The tentative schedule for the post-monitoring in the next month is presented in **Annex F**. The operation phase will be commenced in February 2008. The environmental monitoring will be conducted at the same monitoring locations in this reporting month. ET and IEC service for the construction EM&A will be completed in January 2008.

8.3 Construction programme for the next three month

8.3.1 The construction programme for the next month is presented in **Annex G.**

9. Recommendations and Conclusions

9.1.1 The Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken during the period from 25th November to 24th December 2007 in accordance with EM&A Manual and the requirement under EP-224-2005/A.

9.1.2 The Contractor was reminded to provide sufficient dust suppression mitigation measures especially during haul road and temporary barging point removal and large soils stockpiles.

9.1.3 The Contractor was reminded to dispose stockpiles of the construction waste off-site properly.

9.1.4 The Contractor was reminded to provide sufficient mitigation measures and proposed remedial action plan to AFCD approval before commencement in order to avoid coral damage during the temporary barging point removal.

9.1.5 The abundance of aquatic fauna, in particular caridian shrimps, was still found extreme low in Streams B & C.

7.1.6 Intrusion at Stream C within the buffer zone area due to operation of water pump was recorded during the reporting month.

9.1.6 Regarding the retained trees, the Contractor shall take the following measures:

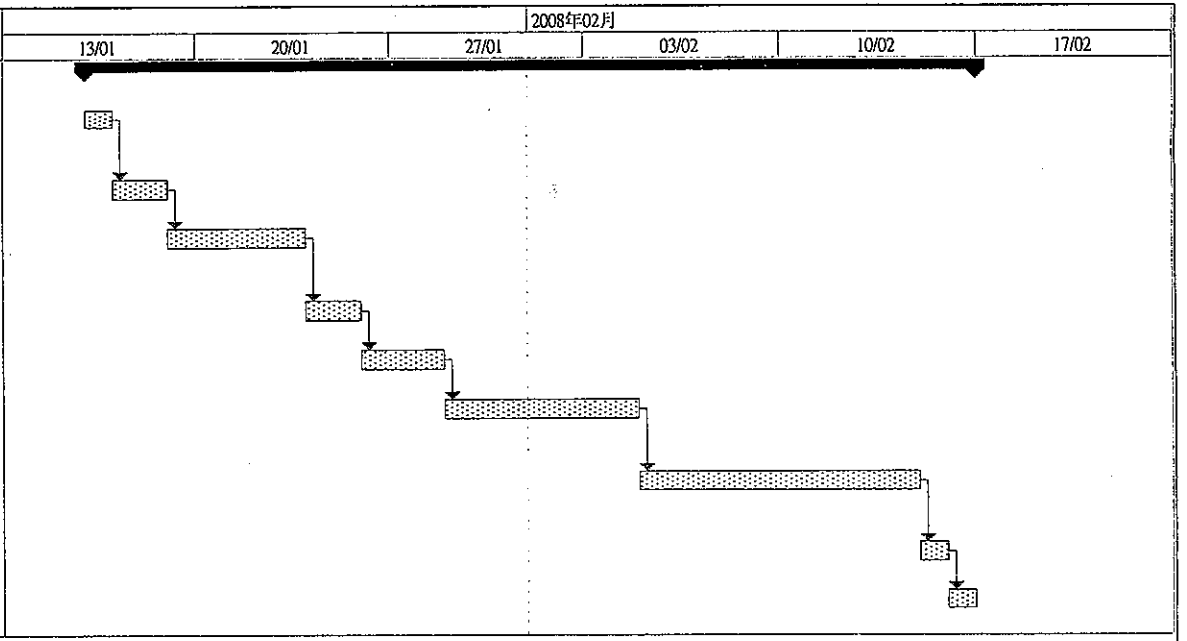
- Carry out surgery to damaged trees;
- Report the cause of death of tree T925;
- Re-fix the label of retained tree for easy identification;
- Maintain the tree protection zone required and remove all construction material / debris from the tree protection zone;
- More frequent watering for transplanted trees, planted vegetation and hydroseeded grass; and
- Rectify the mal-pruning practice of the transplanted trees.

9.1.7 No environmental complaint / summon was received during the reporting month.

9.1.8 The ET will keep track of the EM&A programme with respect to compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

Annex A
Tentative Construction Programme

識別碼	任務名稱	工期	開始時間	完成時間
1	**Dismantling of Rock-filled Pier**	**25 工作日**	**2008/01/16**	**2008/02/16**
2	Mobilization of Backhoe, Dump Truck and Flat Barge	1 工作日	2008/01/16	2008/01/16
3	Trench Excavation along Seawall Blocks	2 工作日	2008/01/17	2008/01/18
4	Loading and Unloading of Flat Barge at TKO Depot (1st Trip)	4 工作日	2008/01/19	2008/01/23
5	Installation of Silt Curtain	2 工作日	2008/01/24	2008/01/25
6	Removal of Seawall Blocks	2 工作日	2008/01/26	2008/01/28
7	Loading and Unloading of Flat Barge at TKO Depot (2nd Trip)	6 工作日	2008/01/29	2008/02/04
8	Loading and Unloading of Flat Barge at TKO Depot (3rd Trip)	6 工作日	2008/02/05	2008/02/14
9	Removal of Silt Curtain	1 工作日	2008/02/15	2008/02/15
10	Demobilization of Construction Plant	1 工作日	2008/02/16	2008/02/16



專案: Dismantling of Pier
日期: 2007/12/12

任務 進度 摘要 外部任務 期限
分割 里程碑 專案摘要報告 外部里程碑

22

Annex B
Monitoring Programme for the reporting month

November 2007						
Sun	**Mon**	**Tue**	**Wed**	**Thu**	**Fri**	**Sat**
25	26 WQ	27 AQ	28	29	30	

December 2007						
Sun	**Mon**	**Tue**	**Wed**	**Thu**	**Fri**	**Sat**
						1
2	3 AQ WQ	4	5 LV	6	7 TE	8 AQ
9	10 WQ	11	12	13	14 AQ	15
16	17 WQ LV	18	19	20 AQ	21	22 ME
23 ME	24 WQ	25	26	27	28 TE	29
30	31					

Remarks: AQ = TSP, WQ = Freshwater and Marine water quality, TE = Terrestrial Ecology, ME = Marine Ecology; LV = Landscape & Visual

Annex C
Event Action Plan

Event / Action Plan for Air Quality

EVENT	ACTION			
	ET	IC(E)	Engineer	CONTRACTOR
ACTION LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of complaint and propose remedial measures; 2. Inform IC(E) and Engineer; 3. Repeat measurement to confirm finding; 4. Increase to daily monitoring.	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.
2. Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IC(E) and Engineer; 3. Advise Engineer on effectiveness of proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase to daily monitoring; 6. Discuss with IC(E) and Contractor remedial actions required; 7. If exceedance continues, arrange meeting with IC(E) and Engineer; 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 possible remedial measures; 4. Advise ET on the effectiveness of proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm in writing receipt of notification of exceedance; 2. Notify Contractor; 3. Supervise proper implementation of remedial measures.	1. Submit proposals for remedial measures to Engineer within three working days of notification; 2. Implement agreed proposals; 3. Amend proposal if appropriate.
LIMIT LEVEL				
1. Exceedance for one sample	1. Identify source, investigate causes of exceedance and propose remedial measures; 2. Inform IC(E), Engineer, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase to daily monitoring; 5. Assess effectiveness of Contractor's remedial actions and keep IC(E), EPD and Engineer	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor possible remedial measures; 4. Advise Engineer on effectiveness of proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm in writing receipt of notification of exceedance; 2. Notify Contractor; 3. Supervise proper implementation of remedial measures.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IC(E) within three working days of notification; 3. Implement the agreed proposals; 4. Amend proposals if appropriate.

EVENT	ACTION			
	ET	IC(E)	Engineer	CONTRACTOR
	informed of results.			
2 Exceedance for two or more consecutive samples	1. Notify IC(E), Engineer, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase to daily monitoring; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation measures to be implemented; 6. Arrange meeting with IC(E) and Engineer to discuss remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IC(E), EPD and Engineer informed of results; 8. If exceedance stops, cease additional monitoring.	Discuss amongst Engineer, ET, and Contractor the potential remedial actions; Review Contractor's remedial actions whenever necessary to assure their effectiveness, and advise Engineer accordingly; Supervise implementation of remedial measures.	Confirm receipt of notification of exceedance in writing; Notify Contractor; In consultation with the IC(E), agree with the Contractor the remedial measures to be implemented; Supervise proper implementation of remedial measures; If exceedance continues, consider what portion of the works is responsible and instruct the Contractor to stop that portion of work until exceedance has abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IC(E) within three 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 instructed by Engineer until the exceedance is abated.

Event and Action Plan for Water Quality

Event	ET Leader	IC(E)	Engineer	Contractor
ACTION LEVEL				
Action level being exceeded by one sampling day	Repeat *in situ* measurement to confirm findings; Identify reasons for non-compliance and source(s) of impact; Inform IC(E) and Contractor; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IC(E) and Contractor; Repeat measurement on next day of exceedance.	Discuss mitigation measures with ET and Contractor ; Review proposals on mitigation measures submitted by Contractor and advise the Engineer accordingly; Assess effectiveness of implemented mitigation measures.	Discuss proposed mitigation measures with IC(E); Make agreement on mitigation measures to be implemented. Assess effectiveness of the implemented mitigation measures.	Inform the Engineer and confirm in writing notification of the non-compliance; Rectify unacceptable practice; Check all plant and equipment; Consider changes in working methods; Discuss with ET and IC(E) and propose mitigation measures to IC(E) and Engineer; Implement agreed mitigation measures.
Action level being exceeded by more than two consecutive sampling days	Repeat *in situ* measurement to confirm findings; Identify reasons for non-compliance and source(s) of impact; Inform IC(E) and Contractor; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IC(E) and Contractor; Ensure mitigation measures are implemented; Prepare to increase to daily monitoring; Repeat measurement on next day of exceedance.	Discuss mitigation measures with ET and Contractor ; Review proposals on mitigation measures submitted by Contractor and advise the Engineer accordingly; Assess effectiveness of implemented mitigation measures.	Discuss the proposed mitigation measures with IC(E); Make agreement on mitigation measures to be implemented; Assess effectiveness of implemented mitigation measures.	Inform Engineer and confirm in writing notification of the non-compliance; Rectify unacceptable practice; Check all plant and equipment; Consider changes in working methods; Discuss with ET and IC(E) and propose mitigation measures to IC(E) and Engineer within three working days; Implement agreed mitigation measures.
LIMIT LEVEL				
Limit level being exceeded by one sampling day	Repeat *in situ* measurement to confirm findings; Identify reasons for non-compliance and source(s) of impact; Inform IC(E) Contractor and EPD; Check monitoring data, all plant, equipment and Contractor's	Discuss mitigation measures with ET and Contractor; Review proposals on mitigation measures submitted by Contractor and advise the Engineer accordingly; Assess effectiveness of implemented mitigation measures.	Discuss proposed mitigation measures with IC(E), ET and Contractor; Request Contractor to critically review the working methods; Make agreement on mitigation measures to be implemented; Assess effectiveness of implemented	Inform Engineer and confirm in writing notification of the non-compliance; Rectify unacceptable practice; Check all plant and equipment; Consider changes in working methods; Discuss with ET, IC(E)

Event	ET Leader	IC(E)	Engineer	Contractor
	working methods; Discuss mitigation measures with IC(E), Engineer and Contractor; Ensure mitigation measures are implemented; Increase to daily monitoring until no exceedance of Limit level.		mitigation measures.	and Engineer and propose mitigation measures to IC(E) and Engineer within three working days; Implement agreed mitigation measures.
Limit level being exceeded by more than two consecutive sampling days	Repeat *in situ* measurement to confirm findings; Identify reasons for non-compliance and source(s) of impact; Inform IC(E), Contractor and EPD; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IC(E), Engineer and Contractor; Ensure mitigation measures are implemented; Increase to daily monitoring until no exceedance of Limit level for two consecutive days.	Discuss mitigation measures with ET and Contractor; Review proposals on mitigation measures submitted by Contractor and advise Engineer accordingly; Assess effectiveness of implemented mitigation measures.	Discuss proposed mitigation measures with IC(E), ET and Contractor; Request Contractor to critically review working methods; Make agreement on mitigation measures to be implemented; Assess effectiveness of implemented mitigation measures; Consider and if necessary instruct Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit level.	Inform Engineer and confirm in writing notification of the non-compliance; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Discuss with ET, IC(E) and Engineer and propose mitigation measures to IC(E) and Engineer within three working days; Implement agreed mitigation measures; As directed by the Engineer, slow down or stop all or part of the construction activities until no exceedance of Limit level.

Action and Limit level and Event Action Plan for natural corals monitoring

Parameters	Action Level	Limit Level
Sedimentation	a 15% increase in the percentage of sedimentation on the hard corals occurs at more than 20% of the tagged coral colonies at one or more monitoring sites	a 25% increase in the percentage of sedimentation on the hard corals occurs at more than 20% of the tagged coral colonies at one or more monitoring sites
Bleaching	a 15% increase in the percentage of bleaching of hard corals occurs at more than 20% of the tagged coral colonies at one or more monitoring sites	a 25% increase in the percentage of bleaching of hard corals occurs at more than 20% of the tagged coral colonies at one or more monitoring sites
Mortality	a 15% increase in the percentage of partial mortality of corals occurs at more than 20% of the tagged coral colonies at one or more monitoring sites	a 25% increase in the percentage of partial mortality of corals occurs at more than 20% of the tagged coral colonies at one or more monitoring sites

Action	Action Level	Limit Level
Construction phase	If the Action Level is exceeded the ET Leader should inform all parties (Contractor, Project Proponent, EPD, AFCD and IEC). The data from the water quality monitoring should also be reviewed. If the water quality monitoring shows no attributable effects of the installation works, then the Action Level is not triggered. If the water quality data indicate exceedances (for SS and/or turbidity) the ET Leader should discuss with the Contractor the most appropriate method of reducing suspended solids during dredging (e.g. reduce the rate of dredging), and/or control sedimentation during earth works (e.g. check the intactness and effectiveness of the temporary drainage system and stream buffer zone). This mitigated method should then be enacted on the next working day.	If the Limit Level is exceeded the ET Leader should inform all parties (Contractor, Project Proponent, EPD, AFCD and IEC) immediately. Should the Limit Level be exceeded, the contractor should stop dredging and/or earth works immediately and work out the solution according to the requirements of EPD and AFCD. The ET Leader should inform the Contractor to suspend dredging and/or earth works until an effective solution is identified. Once the solution has been identified and agreed with all parties dredging and/or earth works may commence
Operation phase	If the Action Level is exceeded the ET Leader should inform Golf Course Operator, EPD, and AFCD. The data from the water quality monitoring should also be reviewed. If the water quality monitoring shows no attributable effects of the installation works, then the Action Level is not triggered. If the water quality data indicate exceedances (salinity and/or pesticides) the ET Leader should discuss with the Golf Course Operator the most appropriate method of reducing salinity (e.g. reduce the daily operation time of the desalination plant), and/or control chemicals from runoff (e.g. reduce the frequency and quantity of chemical applied, check the intactness and effectiveness of the closed drainage system and stream buffer zone). This mitigated method should then be enacted on the next working day.	If the Limit Level is exceeded the ET Leader should inform all parties Golf Course Operator, EPD, and AFCD immediately. Should the Limit Level be exceeded, the Golf Course Operator should stop the operation of the desalination plant and/or the application of chemicals immediately and work out the solution according to the requirements of EPD and AFCD. The operation of the desalination plant and/or the application of chemicals would be suspended until an effective solution is identified.

Categories of Archaeological Finds and Recommended Action

Categories of Archaeological Material	Retrieval Procedure
Human burial • Skeleton remains • Items associated with human burial, i.e. grave goods	Full recording and recovering of human remains and associated features • Complete recoding by photography, drawing, written description • Full measurement of burial and surrounding matrix • Retrieval of human remains and associated materials • Retrieval of surrounding soil for further analysis
Intact features • Structural/architectural remains • Undisturbed context, such as hearth, midden, habitation area, assemblages of artefacts and/or environmental material	Limited recording and recovery of archaeological features • Recording and measurement of salient features by photography, drawing and written description • Retrieval of all archaeological material • Retrieval of samples from the surrounding matrix
Intact artefacts • Complete objects such as pottery, metal objects, stone and bone tools. The objects are complete but isolated and are no part of assemblages or feature.	Recovery of artefacts • Recovery of objects • Sampling of the surrounding matrix • Proper treatment with cleaning, marking and packing under international acceptable standards
Isolated material • Sherds, non-human bone, artefact fragments (metal, pottery, glass). There are no complete objects, the material is isolated and fragmentary in nature.	Recovery of artefact fragments/archaeological material • Recovery of material, such as artefact fragments, environmental material and sampling of surrounding matrix
Deposits with archaeological potential • Soil deposits which exhibit characteristics associated with archaeological remains in Hong Kong	Sampling of the deposit • Collection of soil samples from deposits displaying archaeological potential

Annex D
Implementation status on Environmental Protection Requirements

IMPLEMENTATION SCHEDULE OF THE PROPOSED MITIGATION MEASURES

Table 1 Implementation Schedule of Air Quality Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages**			Relevant Legislation and Guidelines	Implementation Status
					D	C	O		
Air Quality - Construction Phase									
4.7.1		In order that nuisance to air sensitive receivers is minimized, it is important to minimize dust emissions from construction activities including cut and fill operations and trucks movements on haul road. Dust control techniques should be considered to control dust to a level not exceeding the AQOs as well as the 1-hour TSP guideline level. These measures include: • Adoption of good site practices; • Avoid practices likely to raise dust level; • Frequent cleaning and damping down of stockpiles, dusty areas of the Site and the haul roads; • Reduce the speed of the vehicles (say 10 kph) on the haul road; • Reducing drop height during material handling; • Provision of wheel-washing facilities for Site vehicles leaving the Site; • Regular plant maintenance to minimize exhaust emission; • If concrete batching plant or rock crushing plant is planned to used, a license from EPD may be required depending on the total silo capacity since they are specified processes under the APCO. Modern plant should be designed to limit emissions	Work site / during construction	All contractors		√		EIAO-TM, APCO, Air Pollution Control (Construction Dust) Regulation	 N/A N/A Insufficient √ √ N/A √ N/A
4.7.2		Providing watering four times a day for dust suppression.							Insufficient

* All recommendations and requirements resulted during the course of EIA Process, including ACE and/or accepted public comment to the proposed project.
** D=Design, C=Construction, O=Operation; N/A = Not applicable

Table 2 Implementation Schedule of Water Quality Control Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location	Implementation Agent	Implementation Stages**			Relevant Legislation and Guidelines	Implementation Status
					D	C	O		
Water Quality – Construction phase									
6.11.4 6.11.5		<u>Proposed 18 holes Golf Course Layout Design</u> 20m buffer zones on both sides of the streams will be demarcated as a preventative mitigation measure to reduce the disturbance during construction phase of the golf course except for the portions of Streams A which is of low ecological value and an old tributary of Stream B. On one side of part of the Stream B, the buffer zone would be reduced to 5m. For the construction activity which is unavoidable near natural streams (within the buffer zone), mainly the construction of crossings, preventative mitigation measures during the construction stage should be follow by the Contractor, they are shown as follows: • The proposed works site inside or in the proximity of natural streams should be temporarily isolated, through by placement of sandbags or silt curtains and properly supported by props, to prevent adverse impacts on the stream water qualities; • The natural bottom and existing flow in the stream should be preserved to avoid disturbance to the stream habitats; • No direct and indirect discharge into the natural stream is allowed from any construction work activities; • Stockpiling of construction material, if any, should be properly covered and located away from any natural stream; • Monitor rain forecast closely and cover any exposed spoil when rainstorms are forecasted. Debris should be properly disposed of before rainstorm to avoid any inadvertent wash away into the stream; and • removal of existing vegetation alongside the stream should be avoided. When disturbance to vegetation is unavoidable, all disturbed areas should be hydroseeded or planted with suitable vegetation to blend in with the natural environmental upon completion of works.	Work site / During the construction period	All contractors		√		ProPECC PN 1/94; WPCO; TM-Effluent Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Water	√ Turfing was completed. Temporary drainage system at Holes 2, 9 & 17 provided on site was still considered insufficient and ineffective.
6.11.13		<u>Runoff and Drainage Management</u> ◆ **Diversion of upstream flows around the works areas for stream crossings and underground pipes**: To minimize the impact of upstream runoff on the Works area by preventing storm flows reaching the work areas. This will be done through provision of upstream cut-off drains to intercept the flows and divert them around the Works area. It would convey flows to downstream stream courses, or other elements of temporary drainage systems (such as storage facilities). ◆ **Temporary covering the works areas during severe storm events**: Significant rainstorm events can be reasonably well forecast and when heavy rain is predicted, mitigation measures should be provided for the vulnerable areas by using tarpaulins, plastic sheets or other temporary covering to protect works area and minimize damage and erosion. It is recommended not to cover the newly establishment grass areas, and if unavoidable, this should only to be done on a short term basis (less than 24 hours). ◆ **Silt traps and sedimentation tanks for main discharge routes form works area**: Sufficient and suitably sized silt traps and/or sedimentation tanks should be provided at the downstream ends of the systems to remove suspended solids prior to discharge. The discharge water quality shall be compliant with the *TM on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters* under the WPCO. The required volume of the sedimentation tanks will depend on the catchment area served. Multiple tanks in series may also be required where runoff might be expected to be silty. ◆ The design details of the temporary drainage system at turf establishment area follow the same principles of the permanent drainage system. However the component pipes, tanks, lakes and/or pumps may differ in size, shape, location, etc. from that of the permanent system, dependent upon the temporary runoff areas as compared with those of the permanent system. Additionally or alternatively, the temporary drainage system may consist of other methods to control soil erosion and/or to facilitate the collection of surface water runoff. The temporary drainage system will function during the period of time in which the permanent system is not yet completed. This circumstance will arise from the fact that the golf holes, inclusive of the permanent drainage system, will be constructed individually. As a result, the permanent drainage system may not be completed in its entirety until connection is made from each respective golf hole	Work site / During the construction period	All contractors		√		ProPECC PN 1/94; WPCO; TM-Effluent Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Water	No revised TDMP was submitted the Contractor for RE and ET approval and comment during this reporting month. The latest submitted drainage plan is the mitigation measures for the silty runoff which has not included the recycling the runoff during the turf establishment. The wastewater treatment facility was not provided. Turfing area was completed. Chemical applications were required and applied during the reporting month.

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location	Implementation Agent	Implementation Stages**			Relevant Legislation and Guidelines	Implementation Status
					D	C	O		
		area to the lake/reservoir. As the permanent drainage system is completed for each hole, the corresponding temporary system will be decommissioned and reused elsewhere. The temporary drainage system will be in use until the permanent system is functional in a given area. Once the permanent system is functional in a given area, the temporary system will be decommissioned and, wherever possible, the components re-used in another temporary drainage system installed elsewhere. It is anticipated that the maximum duration of use for the temporary drainage system in any given area will be one-year. The storage tanks and/or lakes will be designed to segregate suspended solids (or pollutants as may be the case in plant/equipment storage and refueling areas) as may be necessary by contract requirements and reuse. ◆ No irrigation, fertilizer and pesticide applications to the turf would be permitted during rainstorm events or when heavy rainstorm is predicted 24 hours before the application. • Runoff from materials storage areas, particularly fuel and chemicals storage area should be separated from the main drainage systems (bunded, if necessary) and provided with dedicated facilities throughout the construction period, such as petrol interceptors.							
6.11.14		The Contractor shall follow good site practices and be responsible for the design, construction, operation, and maintenance of all the mitigation measures as specified in *ProPECC PN1/94* on construction site drainage through the construction period. These practices include: • Temporary ditches should be provided to facilitate run-off discharge into appropriate watercourses, via a silt retention pond. • All drainage facilities and erosion and sediment control structures should be inspected monthly and maintained to ensure proper and efficient operation at all times. • Excavation of soil that cannot be avoided during the wet season, and exposed surface or open stockpiles should be covered with tarpaulin or other means. Other measures that need to be implemented before, during and after rainstorms are summarized in *ProPECC PN1/94*. • Exposed soil areas should be minimized to reduce potential for increase siltation and contamination of runoff. • Earthwork final surfaces should be well compacted and subsequent permanent work (turf establishment) should be immediately performed. • The Contractor shall contain within the site all surface runoff generated from the construction works, concreting works, dust control and vehicle washing, etc. • The Contractor shall arrange other measures, such as provision of sand bags or temporary diversion systems to prevent washing away of soil, silt or debris into any nearby natural streams. Any runoff shall be diverted into appropriate sediment traps before discharging to the nearby drainage system. The discharge water quality shall be compliant with the *TM on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters* under the WPCO. • The Contractor shall observe and comply with the Water Pollution Control Ordinance (WPCO) and its subsidiary regulations by implementing environmental protection measures (such as the use of silt traps) and preventing any point or non-point source of pollution.	Work site / During the construction period	All Contractor		√		ProPECC PN 1/94; WPCO; TM-Effluent Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Water	Same as above

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location	Implementation Agent	Implementation Stages**			Relevant Legislation and Guidelines	Implementation Status
					D	C	O		
6.11.15 6.11.16		<u>Concrete bridge construction</u> No work is allowed to come into contact with the underlying stream bed during the concrete bridge construction. During the construction of precast concrete bridge, if necessary, precaution measures should be taken to ensure no potentially polluting liquid or solid wastes fall into the stream. This is essential to avoid water quality impacts within ecologically sensitive streams. The Contractor shall good site follow practices, including, but no limited to:: • Construction work area for the precast concrete should be outside the designated stream buffer zone area; • The designated work area for precast concrete work should be covered to minimize the potential water runoff during rain from the construction area; • All water used within the concrete work area should be collected, stored and recycled to reduce resource consumption. Stormwater runoff from the works areas fro precast concreting works should drain under gravity towards a sedimentation basin. The overlying water from the sedimentation basin should be recycled for reuse within the plant. The deposited sediment should be dewatered and the dry matter should require disposal off-site. No water should be discharged outside the boundary of the precast concrete works area; • The use of tarpaulin sheet or other means (water impermeable texture) should be placed beneath precast concrete beam level (must be above the stream bed level) to capture any falling object during installation of precast concrete bridge on the footings or abutments; • Prohibition of any direct and indirect discharge into the streams; • The concrete bridge and footings of abutments must be completely above the high water mark; • All equipment and machinery must be free of leaks or excess oil and grease; • Equipment refueling or servicing or storage of fuel must be undertaken at a minimum of 30 meters from the stream; • Prevent soil and trash from getting into stream during construction by use of silt fence, fiber rolls, gravel bags and other effective means; • All bare soil (abutment slope or temporary stockpile) must be covered with tarpaulin or other means before forecast rain; and • Wash out concrete trucks or pumps only into designated washout pits.	Work site / During the construction period	All contractors		√		ProPECC PN 1/94; WPCO; TM-Effluent Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Water	Construction of all permanent bridges was completed before March 2007. Decking/finishing work of all bridges was completed during the reporting month.
6.11.19 6.11.20 6.11.21 6.11.22		<u>Dredging during Construction of Desalination Plant's intake and outfall</u> The intake and outfall pipelines will be constructed by dredging the seabed to form a trench and backfilled with a layer of bedding material (quarry run stone) before putting the pipelines in place. Once in place, the pipelines are covered with layers of rock armour on top of the pipelines to protect the pipelines against damage by wave action. The alternative backfilling material is from rock excavated during site formation if suitable. The materials used for the backfilling at the intake and outfall pipelines are stone and rock armour only. Transfer of backfilling materials onto the seabed from barge should be conducted by careful grabbing and unloading to seabed (to minimize sediment migration), thereby minimize impacts on water quality to nearby water sensitive receivers. As a preventative measures, silt curtain will also be required during the backfilling activities. The expected backfilling duration is approximate 2 months. The Contractor shall use backhoe for dredging works at a water depth of less than 2m and use close grab dredger for works with water depth of more than 2m. The estimated dredging works is about 50m long (where backhoe should be used for water less than 2m deep) and 70m long (where close grab dredger should be used for water more than 2m deep). Only one dredging method should be used at any one time. In order to avoid pollution during dredging, transporting and dumping of marine mud. Pollution avoidance measures shall include but not be limited to the following: • The maximum daily dredging rate for closed grab dredger should be $45m^3$/day; • The maximum daily dredging rate for backhoe should be $20m^3$/day; • Silt curtain should be installed for any dredging methods to protect the WSRs; • Closed grabs or sealed grabs should only be used for locations with water depths $\geq$ 2m; • Backhoe should only be used for locations with water depths $\leq$ 2m; • All equipment should be designed and maintained to minimise the risk of silt and other contaminants being released into the water column or deposited in locations other than designated location;	Work site / During the construction period	All contractors		√		ProPECC PN 1/94; WPCO; TM-Effluent Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Water	No dredging work for the desalination plant pipelines was carried out. Application of the discharge licence of the desalination plant was on-going.

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location	Implementation Agent	Implementation Stages**			Relevant Legislation and Guidelines	Implementation Status
					D	C	O		
		• Mechanical grabs should be designed and maintained to avoid spillage and should seal tightly while being lifted; • No trailing suction hopper dredgers would be deployed for the dredging of marine mud; • All vessels should 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; • All pipe leakages should be repaired promptly and plant shall not be operated with leaking pipes; • Before moving the vessels which are used for transporting dredged materials excess material should be cleaned from the decks and exposed fittings of vessels and the excess materials should never be dumped into the sea except at the approved locations; • Adequate freeboard should be maintained on barges to ensure that decks are not washed by wave action; • The Contractor should monitor all vessels transporting material to ensure that no dumping outside the approved location takes place. The contractor should keep and produce logs and other records to demonstrate compliance and that journey times are consistent with designated locations and copies of such records should be submitted to the engineer; • All bottom dumping vessels should be fitted with tight fitting seals to their bottom openings to prevent leakage of material; • Loading of barges and hoppers should be controlled to prevent splashing of dredged material to the surrounding water, and vessels should not be filled to a level which will cause overflowing of material or polluted water during loading or transportation; and • The engineer may monitor any or all vessels transporting material to check that no dumping outside the approved location nor loss of material during transportation takes place. The contractor should provide all reasonable assistance to the engineer for this purpose.							
6.11.23		In addition, baseline water quality monitoring before commencement of the marine works shall be carried out in the nearby waters to obtain baseline information for subsequence monitoring. Regular and frequent water quality monitoring shall be carried out throughout the whole construction period to ensure the water quality during construction is well within the established environmental guidelines and standards.							
6.11.24		Silt Curtain In order to minimize impacts during the whole construction period of desalination plant's intake and discharge outfall, silt curtains should be utilized to minimize sediment migration. The Contractor shall be responsible for the design, installation and maintenance of the silt curtains to minimize the impacts on the water quality and the protection of water sensitive receivers. The design and specification of the silt curtains shall be submitted by the Contractor to the Engineer for approval. Area of the silt curtain to enclose the works area should be minimized in order to reduce the disturbance of ecological sensitive areas nearby.							
6.11.25		A typical suspended solids reduction of 75% can be achieved with the incorporation of silt curtain. Two-layer silt curtains have generally been used for dredging projects of larger scale to further ensure this reduction. However, as the scale of proposed project is considered small, it is recommended to use single layer silt curtain which can achieve a minimum 75% suspended solids reduction.							
6.11.26		Silt curtains shall be formed from tough, abrasion resistant, permeable membranes, suitable for the purpose, supported on floating booms in such a way as to ensure that the sediment plume shall be restricted to within the limit of the works area.							
6.11.27		The silt curtain shall be formed and installed in such a way that tidal rise and fall are accommodated, with the silt curtains always extending from the surface to the bottom of the water column. The removal and reinstallation of such curtains during typhoon conditions shall be as agreed with the Director of Marine Department.							
6.11.28		The Contractor shall regularly inspect the silt curtains and check that they are moored and marked to avoid danger to marine traffic. Any damage to the silt curtain shall be repaired by the Contractor promptly and the works shall be stopped until the repair is effected to the satisfaction of the Engineer.							

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location	Implementation Agent	Implementation Stages**			Relevant Legislation and Guidelines	Implementation Status
					D	C	O		
		<u>General Construction Activities</u>							
6.11.29		Debris and refuse generated on-site should be collected, handled and disposed of properly to avoid entering adjacent watercourse. Stockpiles of construction materials should be kept covered when not being used.	Work site / During the construction period	All contractors		√		ProPECC PN 1/94; WPCO; TM-Effluent Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Water	Construction waste disposed off-site was reported. 50 chit tickets were approved by EPD in December 2007. 28 chit tickets were used in December 2007.
6.11.30		Oils and fuels should only be stored/handled in designated areas with pollution prevention facilities. Oil interceptors need to be regularly inspected and cleaned to avoid wash-out of oil during storm conditions.							Not observed
6.11.32		All fuel tanks should be provided with locks and be sited on sealed areas within bunds of capacity equal to 110% of the storage capacity of the largest tank.							✓
6.11.33		Good housekeeping practices and staff training are required to minimize careless spillage and keep the work space in a tidy and clean conditions at all times. Accidental spillage of chemicals in the works area would directly affect the aquatic environment. It is recommended that the Contractor should develop management procedures for chemical and implement an emergency plan to deal with chemical spillage in case of an accident.	Work site / During the construction period	All contractors		√		ProPECC PN 1/94; WPCO; TM-Effluent Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Water	Not observed
6.11.34		Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The chemical waste should be transported to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Facility at Tsing Yi. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes details the requirements to deal with chemical wastes. <u>On-Site Sewage Effluents</u>							No disposal record was received during the reporting month. The chemical waste storage area was located at temporary barging point.
6.11.35		In order to prevent sewage effluents affecting water courses, the following mitigation measures should be provided by the Contractor:- • Temporary sanitary facilities, such as portable chemical toilets, should be employed on-site to handle sewage from the workforce; • The toilet facilities should be more than 30 m from any watercourse; • Temporary storage tank should be provided to collect wastewater from kitchens or canteen, if any; • A licensed waste collector should be deployed to clean the chemical toilets on a regular basis which will be and disposed of at government sewage treatment facilities • Regular environmental audit on the construction site can provide an effective control of any malpractices and can achieve continual improvement of environmental performance on site. It is anticipated that sewage generation during the construction phase of the project would not cause water pollution problem after undertaking all required measures; and • Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment during the construction phase of the project.							√. A sewage treatment plant (STP) was provided at the site office. Approximate five mobile toilets were available on site at southern portion of the construction site. The STP and most of the mobile toilets were removed off-site. No sewage disposal record was submitted by the Contractor during the reporting month. No canteen was available. Not observe. √ Not observed
6.11.36		<u>Concrete batching plant</u> All water used within the concrete batching plant will be collected, stored and recycled to reduce resource consumption. This includes water used in the concrete batching process, truck cleaning, yard washing and dust suppression spraying. All spent dust suppression effluent will be collected and recycled. To minimize the potential water quality impacts that may generate from the concrete batching plant, a drainage system should be provided in this site. The batching plant area should be channelled to collect concrete washings for further treatment before reuse on-site and prevent concrete washings from directly entering the any stream or seawater. Site runoff should also be collected through the drainage system. To minimize the generation of contaminated site runoff from concrete production area, the concrete batching plant should be sheltered.	Work site / During the construction period	All contractors		√		ProPECC PN 1/94; WPCO; TM-Effluent Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Water	The concrete batching plant was dismantled.
6.11.37		Concrete washings and site runoff should be pumped to a wastewater treatment system with a sedimentation unit for removal of suspended solids such as waste concrete particles, silt and grit in order to achieve the discharge standards. pH adjustment should also be applied if the pH value of the collected concrete washings and site runoff is higher than the pH range specified in the discharge licence. This can be achieved by adding neutralizing regents, i.e. acidic additive. A discharge licence should be applied from EPD for discharge of effluent from the site. Analysis of effluent quality may be required as one of the licensing conditions of the discharge licence. The Contractor should collect effluent samples at the final discharge point in accordance with the required sampling frequency to test the specified water quality							

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location	Implementation Agent	Implementation Stages**			Relevant Legislation and Guidelines	Implementation Status
					D	C	O		
		parameters. The quality of the discharged effluent should comply with the discharge licence requirements. It is recommended to reuse the treated effluent for dust suppression and general cleaning on site, wherever possible.							
6.11.38		The drainage system should be maintained on a regular basis to remove the deposits on the channels. The sedimentation and pH adjustment systems should also be checked and maintained by competent persons to ensure that the systems are functioning properly at all times.							
6.11.39		The deposited sediment will be dewatered and the dry matter will require disposal off-site. The estimated maximum concentrate batching operation period during construction is 20 months.							
6.11.40		Sand, gravel and other bulk materials will be delivered from the production area by conveyor boats or derrick barges to the temporary barging point, and the material will then be loaded onto dump trucks by loaders and delivered to the on-site storage areas.							
6.11.41		Regular environmental inspections should be conducted to check the environmental performance of daily operation. These inspections will ensure proper installation and maintenance of pollution control measures, such as checking of sedimentation basin, wastewater recycling facility and enclosure of stockpiles, and the implementation of other mitigation measures.							

* All recommendations and requirements resulted during the course of EIA/EA Process, including ACE and/or accepted public comment to the proposed project.
** Des - Design, C = Construction, O = Operation
N/A Not applicable

Table 3 Implementation Schedule of Waste Management Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages **			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
Waste Management - Construction Phase									
7.7.2		Good site practice to minimize solid waste generation, including: ◆ nomination of approved personnel, such as a site manager, to be responsible for good site practices, and making arrangements for collection of all wastes generated at the site and effective disposal to an appropriate facility; ◆ training of site personnel in proper waste management and chemical waste handling procedures; ◆ provision of sufficient waste disposal points and regular collection for disposal; ◆ appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; ◆ regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; ◆ a Waste Management Plan should be prepared and should be submitted to the Engineer for approval. One may make reference to ETWB TCW No. 15/2003 for details; and ◆ a recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be proposed.	Work site / During the construction period	All Contractors		√		WDO; Public Health and Municipal Services Ordinance; The Land (Miscellaneous Provisions) Ordinance; ETWB TCW NO. 15/2003.	Construction Waste: Disposal recorded was received during the reporting month. Domestic Waste: No disposal recorded was received during the reporting month.
7.7.4		Good management and control can prevent the generation of significant amounts of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include: ◆ segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal; ◆ separate labelled bins shall be provided to segregate aluminium cans from other general refuse generated by the work force, and to encourage collection of by individual collectors; ◆ any unused chemicals or those with remaining functional capacity shall be recycled; ◆ maximising the use of reusable steel formwork to reduce the amount of C&D material; ◆ prior to disposal of C&D waste, it is recommended that wood, steel and other metals shall be separated for re-use and / or recycling to minimise the quantity of waste to be disposed of to landfill; ◆ proper storage and site practices to minimise the potential for damage or contamination of construction materials; ◆ plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste; ◆ minimize over ordering of concrete, mortars and cement grout by doing careful check before ordering.	Work site / During the construction period	All Contractors		√		WDO; Public Health and Municipal Services Ordinance; The Land (Miscellaneous Provisions) Ordinance; ETWB TCW NO. 15/2003.	N/A N/A N/A N/A N/A N/A N/A N/A
7.7.6 7.7.7		<u>Site Clearance Waste</u> Scrub and other vegetation will be stripped for the tees, fairways, greens and access roads. The normal route for disposal for such material is landfill but in this case it is proposed that vegetation is passed through a "chipper" to break down the material into a medium that can be used as mulch / compost and provide a seed-bank for natural hydroseeding of exposed areas. Non-inert materials should be kept separate and reused on-site as fill in preference to disposal at public filling areas which are operated by CEDD or disposal at landfill.	Work site / During the construction period	All Contractors		√		WDO; Public Health and Municipal Services Ordinance ; The Land (Miscellaneous Provisions) Ordinance; ETWB TCW NO. 15/2003.	All vegetated area within the construction area was removed and disposed off-site in March 2007. N/A
7.7.8		<u>Excavated Materials</u> Material generated during open cut works, and access route formation will comprise rock and soil and all this material will be reused in the site shaping process. It is anticipated that there will be no material requiring disposal off-	Work site / During the construction period	All Contractors		√		WDO; Public Health and Municipal Services Ordinance; The Land (Miscellaneous Provisions) Ordinance;	N/A

EIA Ref	EM& A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages **			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
		site in public filling areas.						ETWB TCW NO. 15/2003.	
7.7.9		Construction and Demolition (C&D) Material The C&D material generated from the site formation and demolition works should be sorted on-site into inert C&D material and C&D waste. In order to minimise the impact resulting from collection and transportation of C&D material for off-site disposal, the excavated material comprising fill material should be reused on-site as backfilling material. C&D waste, such as wood, plastic, steel and other metals should be reused or recycled and, as a last resort, disposed of to landfill. A suitable area(s) should be designated within the site for temporary stockpiling of C&D material and to facilitate the sorting process. The stockpiling/sorting area should be located far away from the identified sensitive receivers.	Work site / During the construction period	All Contractors		√		WDO; Public Health and Municipal Services Ordinance; The Land (Miscellaneous Provisions) Ordinance; ETWB TCW NO. 15/2003.	No sorting of construction waste was observed and improper stockpiles were observed at the temporary barging point.
7.7.10		Site fencing Some site fencing may be required. Attention should be paid to WBTC No. 19/2001 which introduce a new policy requiring the use of metallic site hoardings and signboards in order to reduce the amount of timber used on construction sites.	Work site / During the construction period	All Contractors		√		WBTC No. 19/2001	N/A
7.7.12 7.7.14 7.7.15 7.7.16 7.7.17 7.7.18		Chemical Waste Where the construction processes produce chemical waste, the Contractor must register with EPD as a Chemical Waste Producer. Wastes classified as chemical wastes are listed in the *Waste Disposal (Chemical Waste) (General) Regulation*. These wastes are subject to stringent disposal routes. EPD requires information on the particulars of the waste generation processes including the types of waste produced, their location, quantities and generation rates. A nominated contact person must be provided. Hard standing surfaces draining via oil interceptors shall be provided in works area compounds. Interceptors will be regularly emptied to prevent release of oils and grease into the surface water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain. Oil and fuel bunkers should be bunded to prevent discharge due to accidental spillages or breaches of tanks. Waste collected from any grease traps should be collected and disposed of by a licensed contractor. Any construction plant which is likely to leak oil, should have absorbent inert material e.g. sand, placed beneath it. This material should be replaced on a regular basis and the contaminated material should be stored in a designated, secure place. Any sand used for soaking oil waste is classified as chemical waste and should be disposed of in accordance with the *Waste Disposal (Chemical Waste) (General) Regulations*. Lubricants and waste oils are likely to be generated during the maintenance of vehicles and mechanical equipment. Used lubricants will be collected and stored in individual containers which are fully labelled. The containers should be stored in a designated secure place. If possible such waste should be sent to oil recycling companies; there are also companies which collect empty oil drums for reuse or refill. Oil and lubricant wastes are classified as chemical wastes, and if not recycled, should be collected by licensed collector and should be treated at the Chemical Waste Treatment Centre, Tsing Yi, or other sites licensed for disposal of waste oil. A trip ticket system operates to control the movement of such chemical waste and tickets have to be produced upon the request of EPD. Some paints and solvents are classified as chemical waste and, if used on site, will be subject to the stringent requirements of the *Waste Disposal (Chemical Waste) (General) Regulation.* Empty paint cans should be	Work site / During the construction period	All Contractors		√		Waste Disposal (Chemical Waste) (General) Regulation	As most of the heavy equipments and trucks were leaving the construction site. The temporary chemical storage area is relocated at the temporary barging point.

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages **			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
7.7.19		recycled or collected as waste. Any dry paint waste should be swept up and collected in containers for disposal. No lubricants, oils, solvents or paint products should be allowed to discharge into water courses, either by direct discharge, or as contaminants carried in surface water runoff from the construction site.							
7.7.20		Sewage An adequate number of portable toilets should be provided for the on-site construction workforce. The portable toilets shall be maintained in a state that will not deter the workers from using them.	Work site / During the construction period	All Contractors		√		WDO; Public Health and Municipal Services Ordinance; The Land (Miscellaneous Provisions) Ordinance; ETWB TCW NO. 15/2003.	N/A
7.7.21 7.7.22		General Refuse General refuse should be stored in enclosed bins or compaction units separate from C&D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light material. Solid and liquid wastes will be generated by the construction workers during the clearance/construction period. The refuse (mainly non-recyclable materials) will be collected regularly in black refuse bags and delivered to the existing solid waste disposal system and transferred to landfill for disposal.	Work site / During the construction period	All Contractors		√		WDO; Public Health and Municipal Services Ordinance; The Land (Miscellaneous Provisions) Ordinance; ETWB TCW NO. 15/2003.	N/A
7.7.23 7.7.25		Marine Sediments The basic requirements and procedures for dredged mud disposal are specified under the ETWB TCW No. 34/2002. The management of the dredging, use and disposal of marine mud is monitored by the Marine Fill Committee (MFC), while the licensing of marine dumping is the responsibility of the Director of Environmental Protection (DEP). The dredged marine sediments will be loaded onto barges and transported to the designated disposal site. During transportation and disposal of the dredged marine sediments, the following measures should be taken to minimise potential impacts on water quality: ◆ Bottom opening of barges shall be fitted with tight fitting seals to prevent leakage of material. Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved. ◆ Monitoring of the barge loading shall be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels shall be equipped with automatic self-monitoring devices as specified by the DEP.	Marine Dredging area / During the construction period	All Contractors		√		ETWB TCW NO. 34/2002.	No dredging works was carried out during the reporting month.

* All recommendations and requirements resulted during the course of EIA Process, including ACE and/or accepted public comment to the proposed project.
** D=Design, C=Construction, O=Operation; N/A = Not applicable

Table 4 Implementation Schedule of Ecological Impact Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
Construction Phase									
8.7.1		Terrestrial Ecology Haul roads would be located on future fairway and cart paths alignments to minimise temporary disturbance of habitats.	Work site / During the construction period	All Contractor		√		-	N/A
8.6.39		Avoid disturbance of stream bed during the construction of the permanent bridges by using precast unit of the bridge segments transported from other locations and installed to the proposed locations.	Stream crossing/ During the construction period	All Contractor		√		-	N/A
8.7.4		Good site practice. Construction materials must be stored at locations away the stream courses. Site runoff would be desilted in settling ponds to reduce the potential for suspended sediments, organics and other contaminants to enter stream and marine environment.	Work site / During the construction period	All Contractor		√		-	No silty runoff was observed during the reporting month.
8.9	Table 4.1	Streams B, C, and D will be monitored monthly during the construction phase to determine the status of *Caridina trifasciata* (shrimp) and *Nanhaipotamon hongkongensis* (freshwater crab). Stream condition will be recorded with reference to the protective buffer zone. Encroachment onto the buffer zone will be reported to the ER/ET. Sheet piling will be installed at the buffer zone perimeter as needed to prevent further encroachment. Stream sedimentation will be reported to the ER/ET, the agent causing sedimentation will be discovered, and sedimentation will be stopped.	Stream B, C & D/ During the construction phase	All Contractor		√			Monitoring has been carried out during this reporting month. Reinstated planting / hydroseeding at the buffer zone area of Stream A was considered not in good condition. Very low abundance of *Caridina trifasciata* (shrimp) was observed at Streams B and C during the ecology survey.
9.7.22		Marine Ecology The temporary drainage system, which would receive flows from all areas subject to earth works, would collect all site runoff. The collected runoff would be retained for turf grass irrigation.	Work site / During the construction period	All Contractor		√			N/A
9.8.5		Dredging for the two pipelines for the desalination plant would be require 50 days and would be scheduled to the extent possible from January to April 2006. This would avoid the flowering season for the seagrass *Halophila ovalis*, i.e. November and December (Fong et al. 2005) and the spawning season for corals, i.e. July to October (Lam 2000; Storlazzi, C. D. 2004).	Dredging area/ during dredging period	All Contractor		√			N/A
9.8.2	4.2.12	Coral colonies within the silt curtain, in particular the 79 colonies identified during the coral mapping survey, (see Appendix A9.2) would be transplanted. Prior to commencement of any marine construction works for the proposed project, the affected coral colonies would be tagged using plastic labels and a number would be assigned to each. The tagged corals in the dredging area at D2 site will be transplanted to the bedrock area about 80 m south of the ferry pier. All these transplantation works should be conducted by experienced marine ecologist(s) and should be completed before the commencement of marine construction works.	Dredging area/Prior to dredging	All Contractor		√			N/A
9.8.5		Silt curtains will be deployed during dredging for the desalination plant. With the deployment of silt curtains around the dredging area for the desalination plant, adverse water quality impacts associated with the dredging and backfilling would be controlled to acceptable levels.	Dredging area/Prior to dredging	All Contractor		√			N/A
		All anchoring points/structures of the floating pier would be located on the shore and/or at least 40m seaward to avoid the coral colonies at Site B2 which are concentrated within the first 15m seaward from the coastline and none recorded over 35m seaward.	Temporary barging point/ during construction of the barging point	All Contractor		√			Floating pontoon was located at designated location according to EP during the reporting month. The tentative programme for the removal temporary barging point will be in January 2008.
		The location of the floating pier would also be shifted from the original location for barging point at Zone 2 and Zone 3 of the mapping area in Site B2 (see Figure 2 in Appendix A9.2), to Zone 5 to further protect corals. Impacts to corals are not expected.	Temporary barging point/ during the entire construction phase	All Contractor		√			√

* All recommendations and requirements resulted during the course of EIA Process, including ACE and/or accepted public comment to the proposed project.
** D=Design, C=Construction, O=Operation
N/A Not applicable

Table 5 Implementation Schedule of Fisheries Impact Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages**			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
10.8.2		Construction phase In addition to the temporary drainage system which would collect site runoff for re-use for irrigation, site runoff would also be controlled by general site practices during the construction period.	Work site / During the construction period	All Contractor		√		N/A	Not observed
10.8.3		Silt curtains will be deployed during dredging for the desalination plant. With the deployment of silt curtains around the construction area, adverse water quality impacts associated with the dredging and back-filling would be controlled.	Work site / During the construction period	All Contractor		√		N/A	No dredging work for the desalination plant was carried out during the reporting month.
10.7.12		The majority of the heavy construction works, in particular, the cut and fill earth works, would be conducted within the 2005-2006 dry season.	Work site / During the construction period	All Contractor		√		N/A	N/A

* All recommendations and requirements resulted during the course of EIA Process, including ACE and/or accepted public comment to the proposed project.
** D=Design, C=Construction, O=Operation
N/A Not applicable

Table 6 Implementation Schedule of Landscape and Visual Impact Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages **			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
Landscape and Visual Impact - Construction Phase									
Table 12.13	MC1	Site offices and construction yards: • Site offices and the construction yard shall be decommissioned after construction. • Haul roads shall be decommissioned and restored with hydroseeding works after construction.	All site offices	All contractors		√		EIAO Guidance Note No. 8/2002	Complied
Table 12.13	MC2	Height of site offices: • The height of site offices shall be controlled in order to avoid visual impacts.	All site offices	All contractors		√		EIAO Guidance Note No. 8/2002	Complied. A two-storey high site office painted in green color has been constructed.
Table 12.13	MC3	Hoarding and screening: • Where practical the site offices areas, construction yards and storage areas shall be screened using olive green coated hoarding or vegetation around the peripheries of the works area until the completion of relevant construction phases.	All site office and construction yard areas.	All contractors		√		EIAO Guidance Note No. 8/2002	Hoarding along the site boundary was dismantled.
Table 12.13	MC4	Construction plant and building material: • Shall be orderly and carefully stored in order to appear neat and avoid visibility from outside where practical; • Excess materials shall be removed from site as soon as practical; • All construction plant shall be removed from site upon completion of construction works.	In all construction yards.	All contractors		√		EIAO Guidance Note No. 8/2002	Complied.
Table 12.13	MC5	Construction light: • To be oriented away from the viewing location of VSRs; and • All lighting shall have frosted diffusers and reflective covers. • While construction at night might be required from time to time, this should be controlled and minimised.	All construction lights.	All contractors		√		EIAO Guidance Note No. 8/2002	N/A
Table 12.13	MC6	Vegetation: • Temporary construction sites shall be restored to standards as good as, or better than, the original condition. In this respect, areas that are not covered by golf course grassing works shall be hydro seeded; • The potential for soil erosion shall be reduced at the construction stage by minimizing the extent of vegetation disturbance on site and providing a protective cover over exposed ground; and • No plant or building materials shall be stored under the dripline of retained trees and no vehicle movement or other construction activities like washing, concrete mixing etc shall be carried out under the dripline of trees.	All temporary construction sites.	All contractors		√		EIAO Guidance Note No. 8/2002	Hydroseeding has been carried out for erosion control but erosion occurred especially to the Restoration Slope. Complied.
Table 12.13	MT1	Compensation for losses: • The tree compensation to tree loss ratio shall be between 1:2 and 1:3; • At least 700 new trees shall have be of light standard or larger size.	As shown on mitigation measures plans.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: In progress
Table 12.13	MT2	The majority of compensation species shall comprise species that already occurs within the LIA boundaries;	General.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied. Construction Stage: In progress
Table 12.13	MT3	Where practical, trees that require removal shall be transplanted on Site;	General.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: Partial completed of transplantation works on site.
Table 12.13	MT4	New trees shall be planted in groups in order to screen visual impacts and to provide additional shade at the administration building, rain shelters and halfway houses.	As shown on mitigation measure plans.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: Tree planting are being carried out but the quality of most of the planted tree are in poor condition.

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages **			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
Table 12.13	MT5	Tree Planting on Slopes: • New slopes with a gradient larger than 30^{o} shall have whip tree planting. • Such whip trees shall comprise tree species with shrub-like characteristics, such as *Gordonia axillaries* (大頭茶) and *Raphiolepis indica* (車輪梅).	General.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: In progress.
Table 12.13	MT6	Tree planting works at the hill where the desalination plant will be located shall be carefully positioned in order to represent its original profile.	At the desalination plant.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: Completed
Table 12.13	MT7	Tree Preservation: • No tree shall be transplanted or felled without prior approval by relevant Government departments in accordance with WBTC 24/94, WBTC 14/2002 and ETWB 2/2004; • All trees that are marked for retention shall be fenced off with a 1.2m high fence around the dripline of trees or larger area; • Transplant preparation works shall be carried as soon as possible after commencement of construction. Rootball and crown pruning shall be carried out over at least 1 month.	All areas with existing trees	All contractors	√	√		WBTC 24/94, WBTC 14/2002, ETWB 2/2004	Design Stage: Tree felling approved.
Table 12.13	MT8	Buffer Areas • For streams the width of the buffer zones will be 20m from the stream bank. The only exception would be the buffer zone in the reach of upper tributary of stream B lying between the two parts of Hole 10, where the buffer will zone will be 5m, the dry tributary of stream B that will be converted to an underground culvert and the secondary tributary of stream A that will also be converted to an underground culvert. • No construction activities will be allowed in the buffer zones, except for site formation works, which are required for the construction of bridge footings.	At streams	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: No works in buffer areas at present.
Table 12.13	MS1	Bulk hydroseeding: • Bulk site formation works shall be followed with bulk hydroseeding as soon as practical.	General.	All contractors		√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: Hydroseeding completed.
Table 12.13	MS2	Grassing: • In the case of golf course areas, grassing shall be carried out as soon as practical after sanding and shaping; and • Sanding, shaping and grassing works shall be phased in sections.	At proposed grassing areas.	All contractors		√		EIAO Guidance Note No. 8/2002	Construction Stage: Completed.
	MS3	Restoration: • In the case of residual areas that were disturbed during construction, which will not be part of the golf course areas, detailed site formation works and shaping shall be followed by hydroseeding and shrub planting as soon as practical; and • The hydroseeding mix shall be composed of the following grass species*: Erograstic curvula Lolium Perenne Neyraudia reynaudiana Pennisetum purpureum*; and the following shrub / small tree species: *Gordonia axillaries, Rhaphiolepis indica* and *Rhodomyrtus tomentosa.*	At all residual areas.	All contractors		√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: Completed but some of the planted shrubs were withered due to inadequate watering.
Table 12.13	ME1	Screening: • Bridges and pumping stations shall be screened by tree and shrub planting; and • Retaining wall shall be covered with climber plants.	All bridges and pumping stations.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: In progress.
Table 12.13	ME2	Abutments of bridges shall be surfaced with stone of volcanic origin with a colour and texture similar to that of rock in the surrounding landscape;	All bridges.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: Completed.

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages **			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
Table 12.13	ME3	Above-ground walls and foundations of pumping stations shall be surfaced with stone of volcanic origin with a colour and texture similar to that of rock in the surrounding landscape.	All pumping stations.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: Completed.
Table 12.13	ME4	Above-ground covers of pumping stations shall have an olive green coating.	All pumping stations.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: In Progress.
Table 12.13	ME5	The desalination plant shall be located within the hill behind the pier. Slope cutting of this hill shall have a natural appearance with hydroseeding cover.	As shown on the mitigation measure plans.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: Desalination plant has been constructed. Landscape work to be commenced.
Table 12.13	ME6	Water tanks shall be located below surface level. Above-ground components shall be coated in olive green.	All water tanks.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: In Progress.
Table 12.13	MB1	Extensions of the clubhouse shall have a surface cover that is in visual harmony with the clubhouse itself.	All new extensions of the clubhouse.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: Completed.
Table 12.13	MB2	Shrub planting shall be implemented in front of the new golf cart parking area in order to screen low-level views.	The new golf cart parking area.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: Completed
Table 12.13	MB3	Tree and shrub planting shall be implemented on the peripheries of the maintenance building and its extensions.	At the maintenance building.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: Completed.
Table 12.13	MB4	Halfway houses and rain shelters shall be surfaced with either stone or beige and olive green paint.	At all halfway houses and rain shelters.	All contractors		√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: Completed.

* All recommendations and requirements resulted during the course of EIA Process, including ACE and/or accepted public comment to the proposed project.
** D=Design, C=Construction, O=Operation
N/A Not applicable

Table 7 Implementation Schedule of Cultural Heritage Mitigation Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages **			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
Construction Phase									
Table 13.4		Wan Chai Archaeological Site - Archaeological Watching Brief	Site formation and construction works	All Contractors		√		EIAO	Watching brief at Hole 2 was completed in February 2007.
Table 13.4		Grave #1 – Preservation in-situ - Fenced off three metre buffer zone around the grave	Site formation and construction works	All Contractors		√		EIAO	Buffer zone fencing was provided around at Grave 1.
Table 13.4		Grave #5 - Preservation by record; and recovery of structural elements (if required by AMO)	Construction phase (prior to commencement of works)	All Contractors		√		EIAO	The revised golf course design will not disturb the Grave 5 and will keep in-situ. No preservation record for this grave is required.
Table 13.4		Grave #20 - Preservation by record; and recovery of structural elements (if required by AMO)	Construction phase (prior to commencement of works)	All Contractors		√		EIAO	The preservation by record was completed in 23rd October 2006 and submitted to AMO for record.
Table 13.4		Any, as of yet unidentified graves at Kap Lo Kok. If a grave is found works will stop in the immediate vicinity of the grave until it can be inspected by AMO staff.	Site formation and construction works	All Contractors		√		EIAO	√

* All recommendations and requirements resulted during the course of EIA Process, including ACE and/or accepted public comment to the proposed project.
** D=Design, C=Construction, O=Operation
N/A Not applicable

Table 8 Implementation Schedule of Land Contamination Mitigation Measures

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages **			Relevant Legislation & Guidelines	Implementation status
					D	C	O		
Land Contamination - Construction Phase									
11.9.2		Since the exact cut areas on site during construction by the Contractor have not been determined at this stage, the Contractor should implement the suitable precautions and preventive measures for the discovery of buried or abandoned ordnance during the construction. Moreover, it is recommended that standard good practice should be implemented during the construction phase in order to minimize any potential exposure to contaminated soils or groundwater. These measures include: • The Contractor should sweep the area of intended excavation with a metal detector to check any ordnance underneath the ground prior to any excavation. • For any detection of metals under the ground, the Contractor should cease work immediately before confirming the identity of the cause. For any suspect of artillery ordnance, Hong Kong Police Force should be informed. • The use of bulk earth-moving excavator equipment would minimise construction workers' potential contact with the contaminated materials; • Exposure to any contaminated materials can be minimised by the wearing of appropriate clothing and personal protective equipment such as gloves (when interacting directly with suspected contaminated material), providing adequate hygiene and washing facilities and preventing smoking and eating during such activities; • Stockpiling of contaminated soil should be avoided. If this cannot be avoided, the stockpile of contaminated materials should be segregated from the uncontaminated ones. Moreover, the contaminated materials should be properly covered with waterproof material (e.g. tarpaulin sheet) to avoid leaching of contaminants, especially during rainy season. • Vehicles containing any excavated materials should be suitably covered to limit potential dust emissions or contaminated wastewater run-off, and truck bodies and tailgates should be sealed to prevent any leakage during transport or during wet conditions; • Only licensed waste haulers should be used to collect and transport any contaminated material to an appropriate disposal site and procedures should be developed to ensure that illegal disposal of waste does not occur; • Necessary waste disposal permits should be obtained, as required, from the appropriate authorities, in accordance with the *Waste Disposal Ordinance (Cap 354)*, *Waste Disposal (Chemical Waste) (General) Regulation (Cap 35)*, as required; • Records of the quantities of wastes generated and disposed of should be maintained; • Adequate washing facilities should be provided on site; and • In accordance with good construction practice, silt traps should be used to reduce the impact to drainage caused by suspended solids arising from disturbed ground, or any construction materials such as cement and gravel. Groundwater should be disposed of in accordance with the *Water Pollution Control Ordinance (Cap 358)*.	Work site / During the construction period	All Contractors		√		Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste) (General) Regulation (Cap 35); Water Pollution Control Ordinance (Cap 358).	Completed.
11.11.1		Based on preliminary site investigation, the site is considered as a potentially land contaminated site as hotspots of contamination of lead and sulphur were identified. Further investigation for land contamination at this site is therefore required and is detailed in the Contamination Assessment Plan (CAP) of this section to be undertaken prior to commencement of excavation works. A Contamination Assessment Report (CAR) should be prepared and if the results of the site investigation reveal contamination at the subject site, a Remediation Action Plan (RAP) should also be prepared and submitted together with the CAR to EPD for approval.	Work site / During the construction period	All Contractors		√		Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste) (General) Regulation (Cap 35); Water Pollution Control Ordinance (Cap 358).	Same as above.

* All recommendations and requirements resulted during the course of EIA Process, including ACE and/or accepted public comment to the proposed project.
** D=Design, C=Construction, O=Operation; N/A Not applicable

Annex E
Monitoring results

Air Quality

Date		Weather description	Temp (°C)	Relative Humidity (%)	Mean amount of cloud (%)	Total Rainfall (mm)	Wind direction
25-Nov-07	Sun	Fine and dry.	21.7	65	84	-	NE
26-Nov-07	Mon	Sunny periods and dry.	22.1	55	86	-	N
27-Nov-07	Tue	Sunny intervals and dry.	19.4	38	48	-	N
28-Nov-07	Wed	Fine and dry.	16.4	31	13	-	N
29-Nov-07	Thu	Fine and dry.	16.8	39	13	-	N to NE
30-Nov-07	Fri	Fine and dry.	17.1	56	21	-	N to NE
1-Dec-07	Sat	Fine and dry.	18.4	73	50	-	E to NE
2-Dec-07	Sun	Fine and dry.	20.4	69	45	-	E to NE
3-Dec-07	Mon	Fine and dry.	20	61	20	-	NE
4-Dec-07	Tue	Fine and dry.	18.6	68	51	-	NE
5-Dec-07	Wed	Mainly cloudy. A few rain patches later.	18.7	67	85	-	NE
6-Dec-07	Thu	Cloudy with a few rain patches.	19.4	67	82	-	N to NE
7-Dec-07	Fri	Sunny periods.	19.2	64	52	-	NE
8-Dec-07	Sat	Fine and dry.	18.4	72	55	-	NE
9-Dec-07	Sun	Mainly fine.	19.1	74	81	-	NE
10-Dec-07	Mon	Mainly fine.	19.7	78	45	-	NE
11-Dec-07	Tue	Mainly fine.	21.1	70	45	-	NE
12-Dec-07	Wed	Mainly fine.	21.6	73	43	-	NE
13-Dec-07	Thu	Mainly fine but hazy.	21.4	74	31	Trace	E
14-Dec-07	Fri	Mainly fine.	19.5	76	53	Trace	NE
15-Dec-07	Sat	Sunny periods.	19.3	78	43	-	E to NE
16-Dec-07	Sun	Sunny periods.	19.4	78	77	-	E
17-Dec-07	Mon	Sunny periods.	21.2	70	73	Trace	E

Date		Weather description	Temp (°C)	Relative Humidity (%)	Mean amount of cloud (%)	Total Rainfall (mm)	Wind direction
18-Dec-07	Tue	Sunny intervals.	21	77	64	-	E
19-Dec-07	Wed	Sunny intervals.	19.6	82	88	Trace	N
20-Dec-07	Thu	Sunny intervals.	19.9	79	72	-	N
21-Dec-07	Fri	Sunny intervals.	21.2	80	56	-	N
22-Dec-07	Sat	Sunny intervals.	21.7	84	73	Trace	N
23-Dec-07	Sun	Sunny intervals.	20.1	88	92	1.1	N
24-Dec-07	Mon	Mainly fine.	17.8	84	79	14.6	N

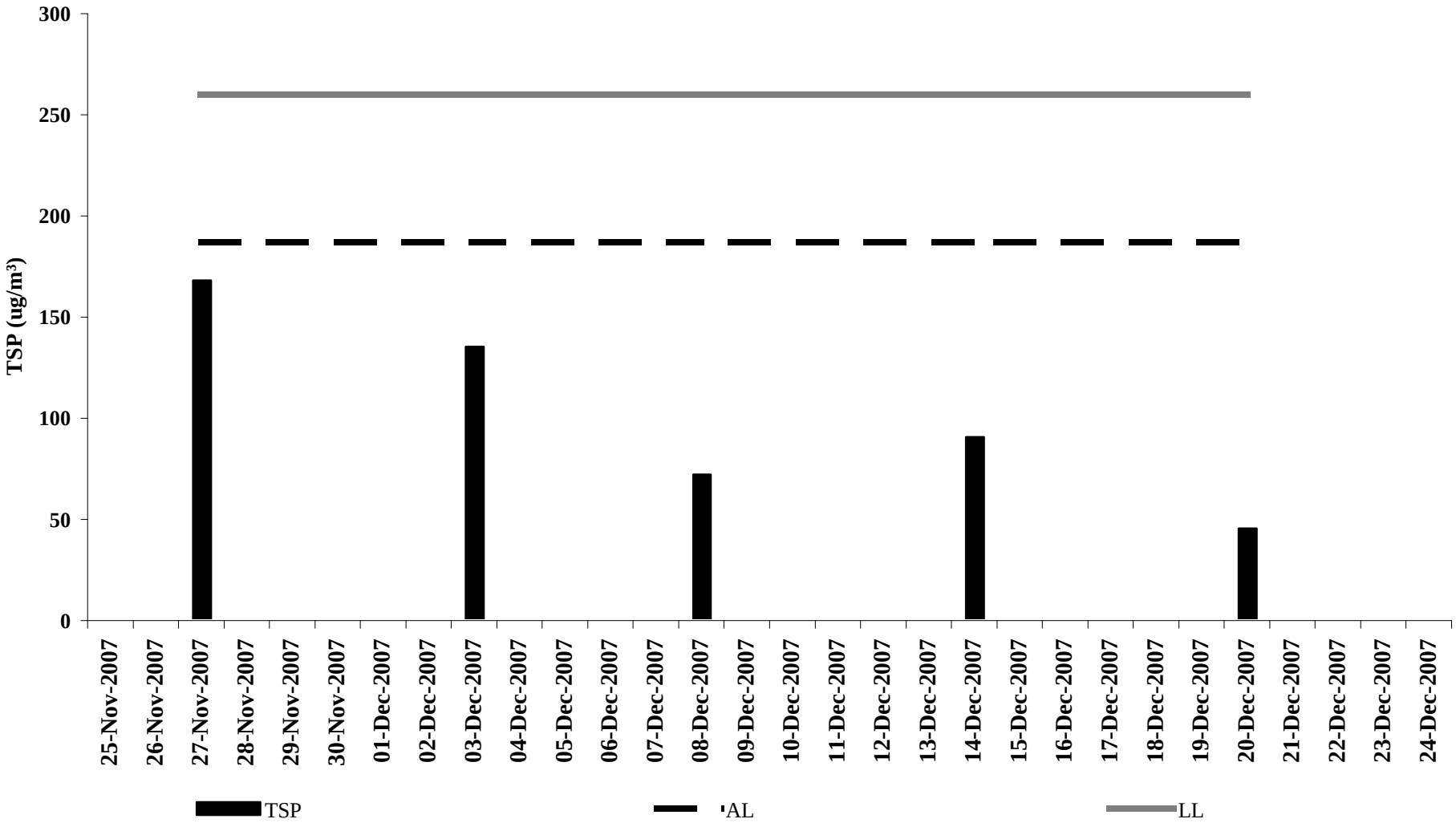
Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung
24-hour TSP Monitoring Results at Station GCA B1

Date	Filter Weight (g)		Flow Rate (m^3/min.)		Elapse Time		Sampling Time(hrs.)	Conc. (µg/m^3)	Weather Condition	Particulate weight(g)	Av. flow (m^3/min)	Total vol. (m^3)
	Initial	Final	Initial	Final	Initial	Final						
27-Nov-07	3.6016	3.9258	1.35	1.35	12368.5	12392.5	24.0	167.1	Sunny	0.32	1.35	1939.7
03-Dec-07	3.6284	3.8894	1.35	1.35	12392.5	12416.5	24.0	134.6	Sunny	0.26	1.35	1939.7
08-Dec-07	3.5371	3.6753	1.35	1.35	12416.5	12440.5	24.0	71.2	Sunny	0.29	1.35	1939.7
14-Dec-07	3.3142	3.4845	1.32	1.32	12440.5	12464.5	24.0	89.8	Sunny	0.29	1.35	1939.7
20-Dec-07	3.5394	3.6258	1.35	1.35	12464.5	12488.5	24.0	44.5	Fine	0.29	1.35	1939.7

Min	44.5
Max	167.1
Average	101.5

Remark: Bold value indicated an Action level exceedance
Bold & Italic value indicated an Limit level exceedance

24-hour TSP Monitoring Results at Station GCA B1



Water Quality

M_RO1	Surface								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	26-Nov-07	12:31	5.3	1.0	18.5	29.6	8.0	8.1	1.4
Mid-Ebb	03-Dec-07	08:01	5.5	1.0	18.3	29.4	7.6	8.2	2.0
Mid-Ebb	10-Dec-07	12:31	5.8	1.0	17.9	29.3	7.7	8.2	1.9
Mid-Ebb	17-Dec-07	08:01	5.2	1.0	18.1	29.4	7.6	8.2	1.1
Mid-Ebb	24-Dec-07	10:31	5.6	1.0	17.5	29.1	7.9	8.1	~~1.0~~

M_RO1	Surface								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	26-Nov-07	08:31	5.7	1.0	20.1	31.2	7.6	8.3	1.6
Mid-Flood	03-Dec-07	10:31	5.5	1.0	19.1	31.1	7.7	8.3	2.2
Mid-Flood	10-Dec-07	08:31	5.8	1.0	18.1	31.5	7.5	8.4	2.0
Mid-Flood	17-Dec-07	12:01	5.2	1.0	18.6	31.3	7.7	8.3	1.3
Mid-Flood	24-Dec-07	08:01	5.6	1.0	17.1	30.8	8.0	8.3	1.1

Remarks:

Action level	***Bold & Italic***
Limit level	**Bold**
< detection limit	~~Grey~~

M_RO1	Middle								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
	26-Nov-07								
	03-Dec-07								
	10-Dec-07								
	17-Dec-07								
	24-Dec-07								

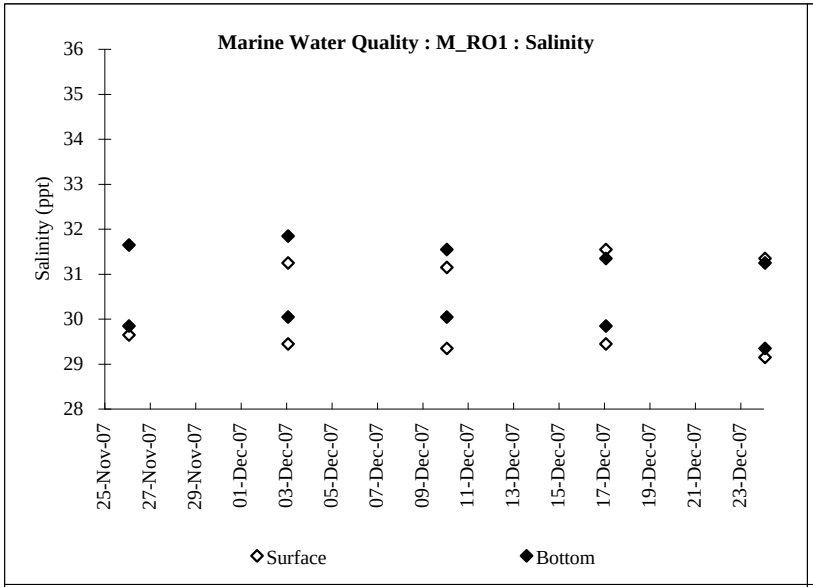
NOT USED

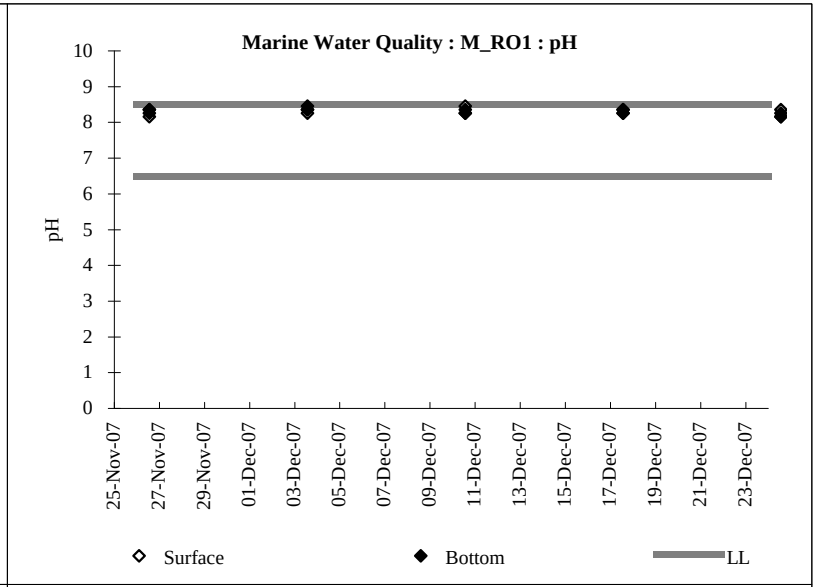
M_RO1	Middle								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
	26-Nov-07								
	03-Dec-07								
	10-Dec-07								
	17-Dec-07								
	24-Dec-07								

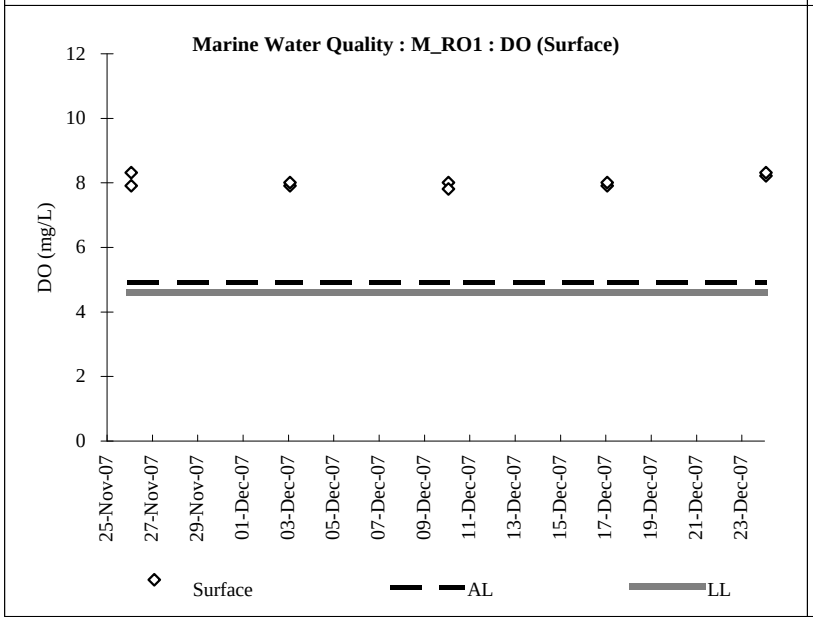
M_RO1	Bottom								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	26-Nov-07	12:30	5.3	4.3	18.6	29.8	8.0	8.2	2.1
Mid-Ebb	03-Dec-07	8:00	5.5	4.5	18.4	30.0	8.0	8.3	1.3
Mid-Ebb	10-Dec-07	12:30	5.8	4.8	18.1	30.0	7.7	8.2	1.6
Mid-Ebb	17-Dec-07	8:00	5.2	4.2	18.2	29.8	7.6	8.2	1.4
Mid-Ebb	24-Dec-07	10:30	5.6	4.6	17.5	29.3	7.8	8.1	1.3

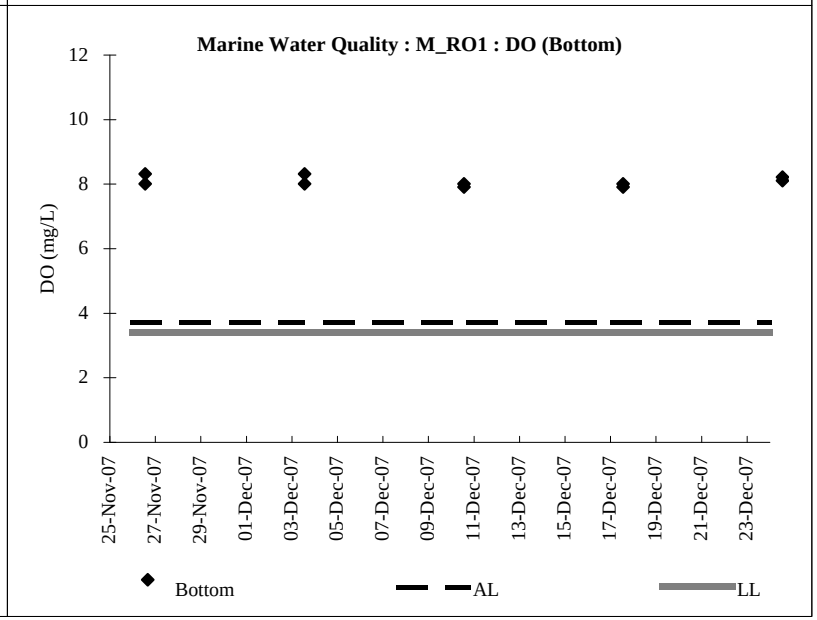
M_RO1	Bottom								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	26-Nov-07	8:30	5.7	4.7	19.2	31.6	7.7	8.3	2.0
Mid-Flood	03-Dec-07	10:30	5.5	4.5	18.8	31.8	7.7	8.4	1.1
Mid-Flood	10-Dec-07	8:30	5.8	4.8	18.3	31.5	7.6	8.3	1.3
Mid-Flood	17-Dec-07	12:00	5.2	4.2	18.4	31.3	7.7	8.3	~~1.0~~
Mid-Flood	24-Dec-07	8:00	5.6	4.6	17.1	31.2	7.9	8.2	~~1.0~~

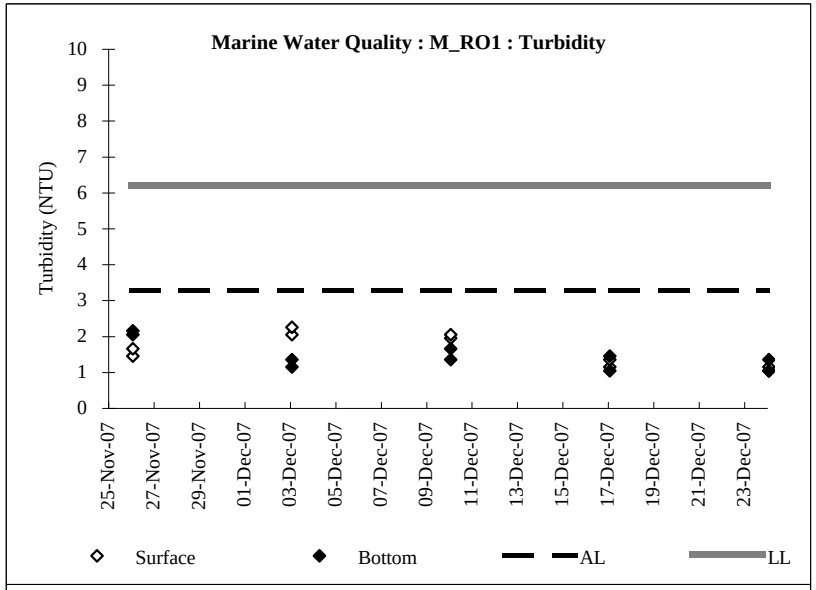
	Mid-Ebb			Mid-Flood			Depth-averaged
M_RO1	Surface	Midlle	Bottom	Surface	Midlle	Bottom	SS (mg/L)
26-Nov-07	6.0	-	2.0	8.0	-	4.0	5.0
03-Dec-07	3.0	-	2.0	~~2.0~~	-	~~2.0~~	2.3
10-Dec-07	5.0	-	3.0	3.0	-	~~2.0~~	3.3
17-Dec-07	3.0	-	~~2.0~~	~~2.0~~	-	2.0	2.3
24-Dec-07	7.0	-	4.0	~~2.0~~	-	3.0	4.0

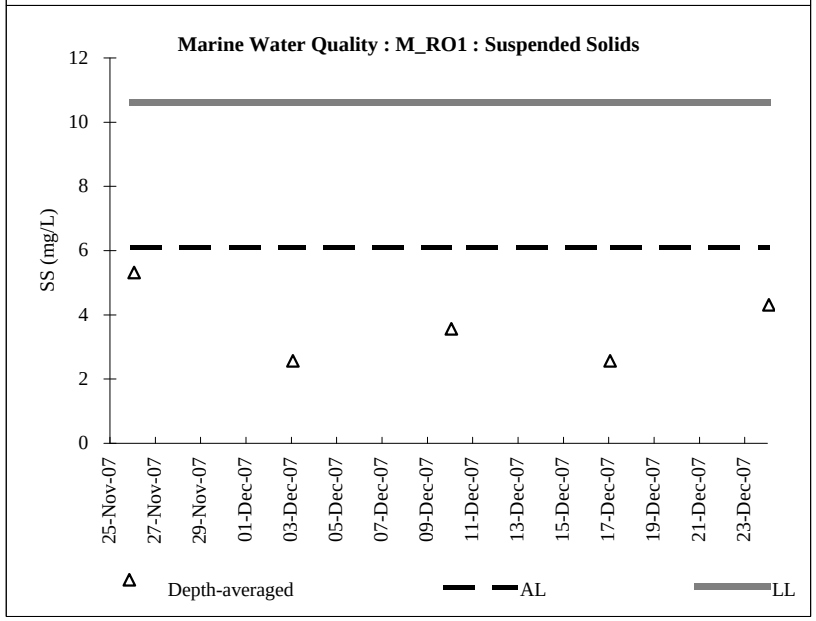

Marine Water Quality : M_RO1 : Salinity
Salinity (ppt)
36
35
34
33
32
31
30
29
28
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Bottom


Marine Water Quality : M_RO1 : pH
pH
10
9
8
7
6
5
4
3
2
1
0
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Bottom
LL


Marine Water Quality : M_RO1 : DO (Surface)
DO (mg/L)
12
10
8
6
4
2
0
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
AL
LL


Marine Water Quality : M_RO1 : DO (Bottom)
DO (mg/L)
12
10
8
6
4
2
0
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Bottom
AL
LL


Marine Water Quality : M_RO1 : Turbidity
Turbidity (NTU)
0
1
2
3
4
5
6
7
8
9
10
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Bottom
AL
LL


Marine Water Quality : M_RO1 : Suspended Solids
SS (mg/L)
0
2
4
6
8
10
12
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Depth-averaged
AL
LL

KLW	Surface								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	26-Nov-07	12:42	12.8	1.0	18.5	29.7	8.0	8.1	1.1
Mid-Ebb	03-Dec-07	08:12	13.1	1.0	18.3	29.9	7.7	8.2	1.0
Mid-Ebb	10-Dec-07	12:42	12.8	1.0	17.9	29.8	7.6	8.1	1.3
Mid-Ebb	17-Dec-07	08:12	12.5	1.0	18.1	29.7	7.5	8.2	1.1
Mid-Ebb	24-Dec-07	10:42	13.3	1.0	17.4	29.1	7.9	8.1	~~1.0~~

KLW	Surface								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	26-Nov-07	08:42	13.4	1.0	19.3	31.5	7.9	8.3	1.3
Mid-Flood	03-Dec-07	10:42	14.2	1.0	19.0	31.7	7.6	8.4	1.2
Mid-Flood	10-Dec-07	08:42	13.0	1.0	18.2	31.9	7.7	8.3	1.4
Mid-Flood	17-Dec-07	08:11	12.8	1.0	18.5	31.5	7.6	8.3	1.5
Mid-Flood	24-Dec-07	08:12	12.9	1.0	17.1	31.3	7.8	8.1	1.3

Remarks:

Action level	***Bold & Italic***
Limit level	**Bold**
< detection limit	~~Grey~~

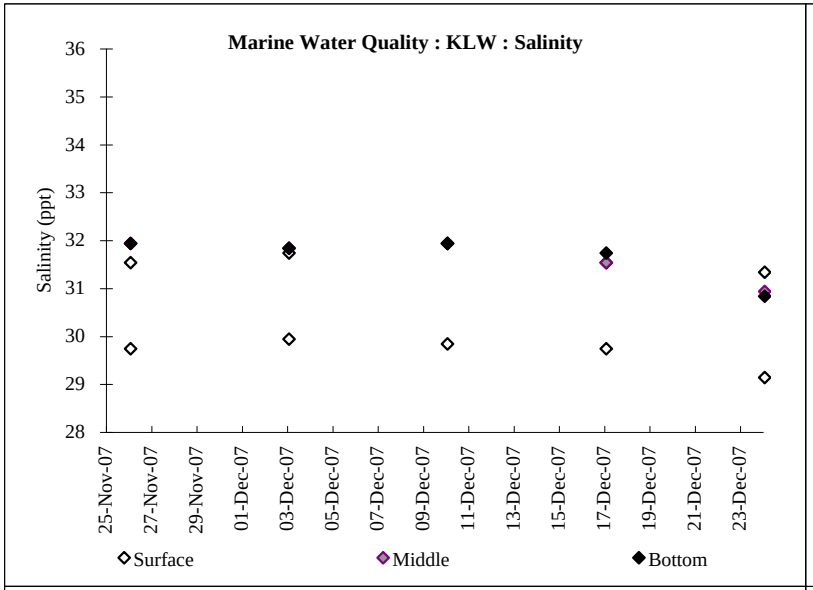
KLW	Middle								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	26-Nov-07	12:41	12.8	6.4	18.7	29.7	8.0	8.1	1.6
Mid-Ebb	03-Dec-07	08:11	13.1	6.6	18.5	29.9	7.7	8.2	1.6
Mid-Ebb	10-Dec-07	12:41	12.8	6.4	18.2	29.9	7.6	8.2	1.9
Mid-Ebb	17-Dec-07	08:11	12.5	6.3	18.1	29.7	7.6	8.3	1.3
Mid-Ebb	24-Dec-07	10:41	13.3	6.7	17.4	29.1	7.8	8.1	~~1.0~~

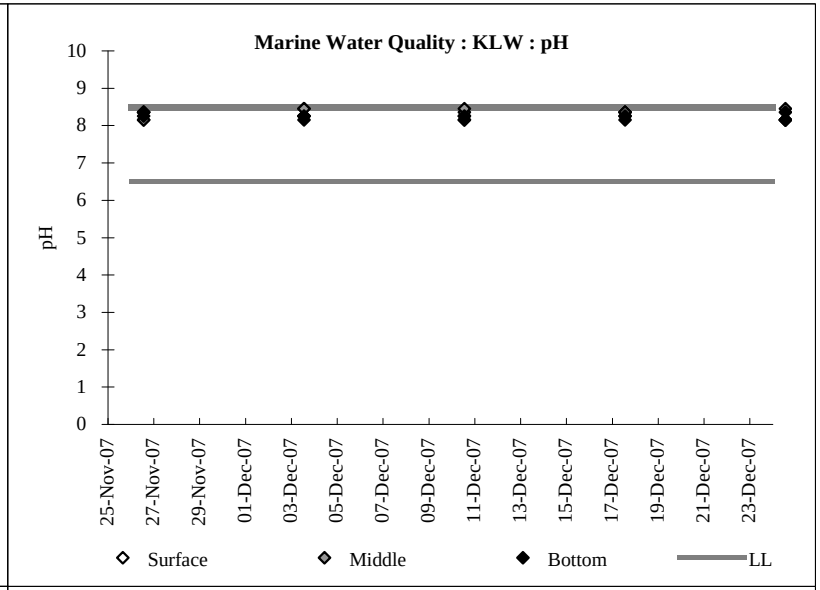
KLW	Middle								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	26-Nov-07	08:41	13.4	6.7	19.1	31.9	7.9	8.3	1.5
Mid-Flood	03-Dec-07	10:41	14.2	7.1	19.0	31.8	7.7	8.4	1.3
Mid-Flood	10-Dec-07	08:41	13.0	6.5	18.3	31.9	7.6	8.4	1.9
Mid-Flood	17-Dec-07	12:11	12.8	6.4	18.3	31.5	7.7	8.3	1.2
Mid-Flood	24-Dec-07	08:11	12.9	6.5	17.2	30.9	7.9	8.4	~~1.0~~

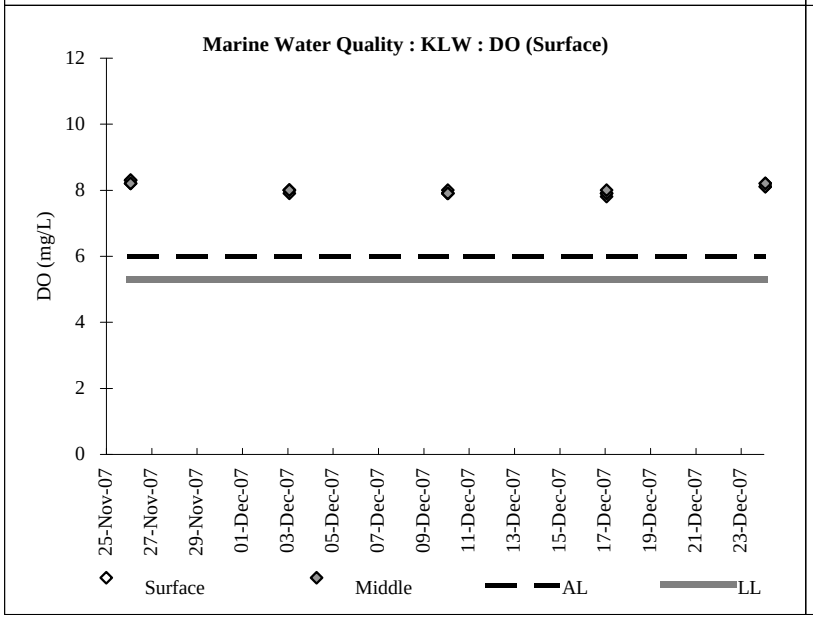
KLW	Bottom								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	26-Nov-07	12:40	12.8	11.8	18.7	29.8	8.1	8.2	1.0
Mid-Ebb	03-Dec-07	8:10	13.1	12.1	18.5	29.9	8.0	8.1	1.8
Mid-Ebb	10-Dec-07	12:40	12.8	11.8	18.3	29.9	8.0	8.1	2.0
Mid-Ebb	17-Dec-07	8:10	12.5	11.5	18.1	29.7	7.7	8.2	1.1
Mid-Ebb	24-Dec-07	10:40	13.3	12.3	17.2	29.0	7.9	8.1	~~1.0~~

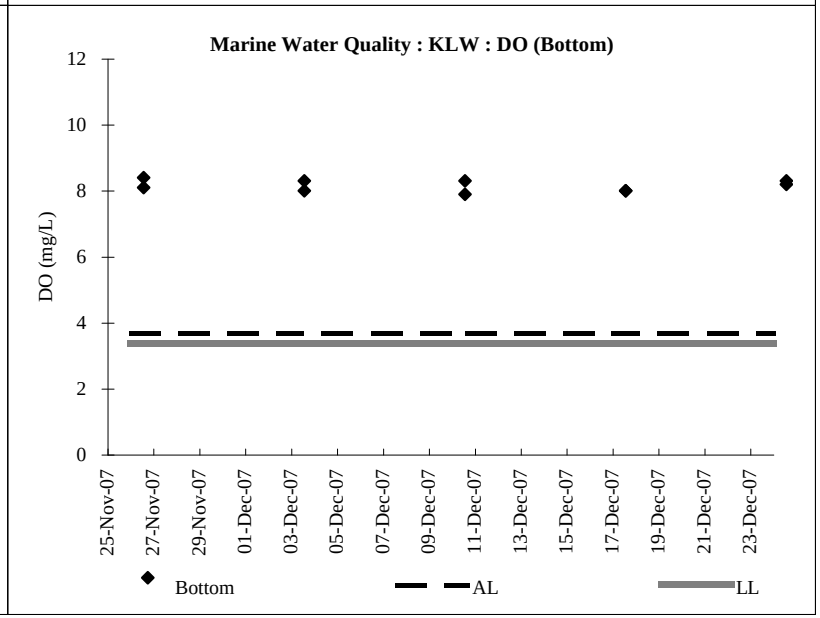
KLW	Bottom								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	26-Nov-07	8:40	13.4	12.4	19.1	31.9	7.8	8.3	1.3
Mid-Flood	03-Dec-07	10:40	14.2	13.2	19.1	31.8	7.7	8.2	1.6
Mid-Flood	10-Dec-07	8:40	13.0	12.0	18.4	31.9	7.6	8.2	1.5
Mid-Flood	17-Dec-07	12:10	12.8	11.8	18.3	31.7	7.7	8.1	1.5
Mid-Flood	24-Dec-07	8:10	12.9	11.9	17.3	30.8	8.0	8.3	1.3

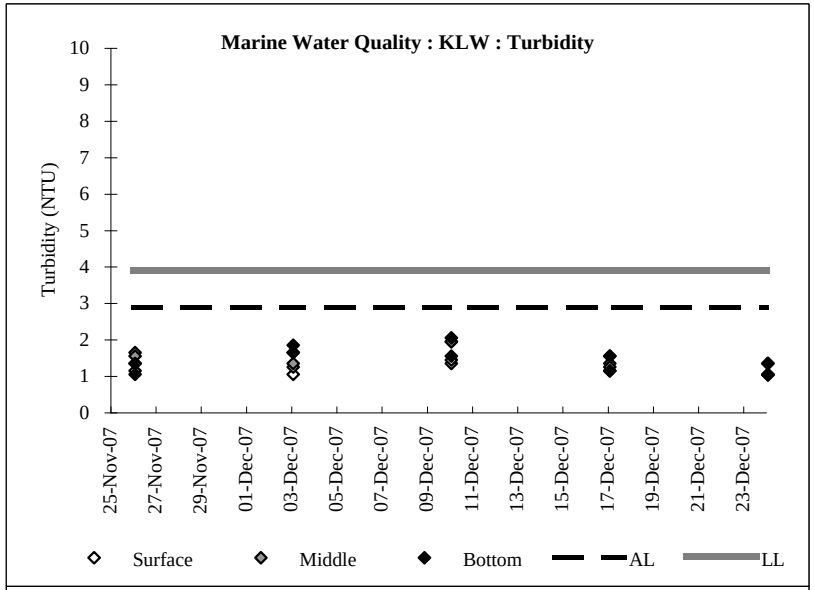
	Mid-Ebb			Mid-Flood			Depth-averaged
KLW	Surface	Midlle	Bottom	Surface	Midlle	Bottom	SS (mg/L)
26-Nov-07	4.0	2.0	5.0	3.0	5.0	4.0	3.8
03-Dec-07	2.0	3.0	4.0	~~2.0~~	4.0	~~2.0~~	2.8
10-Dec-07	2.0	2.0	~~2.0~~	3.0	~~2.0~~	8.0	3.2
17-Dec-07	5.0	~~2.0~~	2.0	2.0	2.0	~~2.0~~	2.5
24-Dec-07	7.0	8.0	4.0	2.0	3.0	3.0	***4.5***

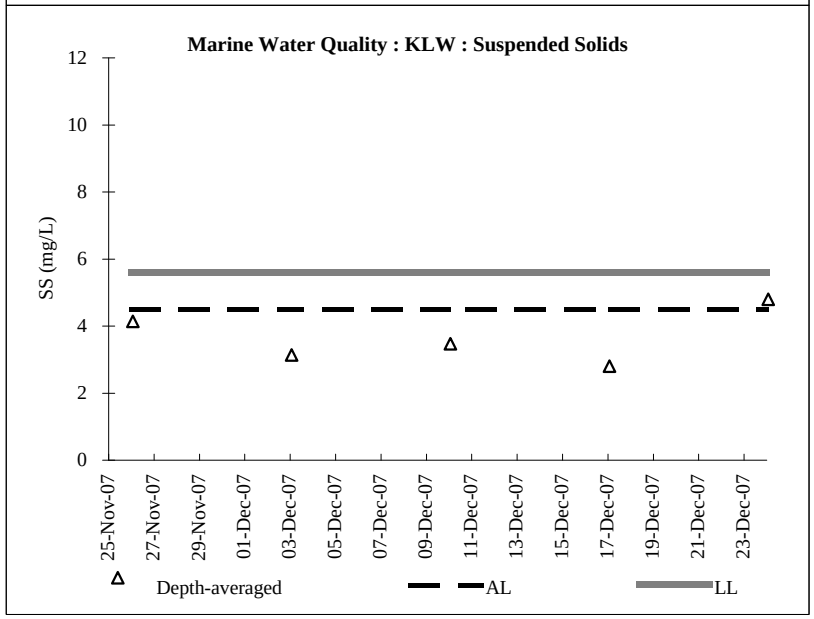

Marine Water Quality : KLW : Salinity
Salinity (ppt)
36
35
34
33
32
31
30
29
28
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle
Bottom


Marine Water Quality : KLW : pH
pH
10
9
8
7
6
5
4
3
2
1
0
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle
Bottom
LL


Marine Water Quality : KLW : DO (Surface)
DO (mg/L)
12
10
8
6
4
2
0
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle
AL
LL


Marine Water Quality : KLW : DO (Bottom)
DO (mg/L)
12
10
8
6
4
2
0
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Bottom
AL
LL


Marine Water Quality : KLW : Turbidity
Turbidity (NTU)
0
1
2
3
4
5
6
7
8
9
10
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle
Bottom
AL
LL


Marine Water Quality : KLW : Suspended Solids
SS (mg/L)
0
2
4
6
8
10
12
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Depth-averaged
AL
LL

M_A	Surface								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	26-Nov-07	13:02	7.8	1.0	18.4	29.7	7.8	8.1	1.9
Mid-Ebb	03-Dec-07	08:32	8.3	1.0	18.4	29.7	7.7	8.2	1.6
Mid-Ebb	10-Dec-07	13:02	8.2	1.0	18.0	29.5	7.7	8.1	1.8
Mid-Ebb	17-Dec-07	08:32	8.5	1.0	18.1	29.3	7.6	8.2	1.1
Mid-Ebb	24-Dec-07	11:02	7.9	1.0	17.5	29.0	8.0	8.1	1.4

M_A	Surface								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	26-Nov-07	09:02	7.7	1.0	20.3	31.3	7.7	8.3	2.2
Mid-Flood	03-Dec-07	11:02	8.3	1.0	19.1	31.6	7.5	8.3	1.9
Mid-Flood	10-Dec-07	09:02	8.5	1.0	18.3	31.8	7.6	8.3	2.1
Mid-Flood	17-Dec-07	12:32	8.6	1.0	18.3	31.9	7.7	8.3	~~1.0~~
Mid-Flood	24-Dec-07	08:32	8.0	1.0	17.1	31.5	7.9	8.4	1.3

Remarks:

Action level	***Bold & Italic***
Limit level	**Bold**
< detection limit	~~Grey~~

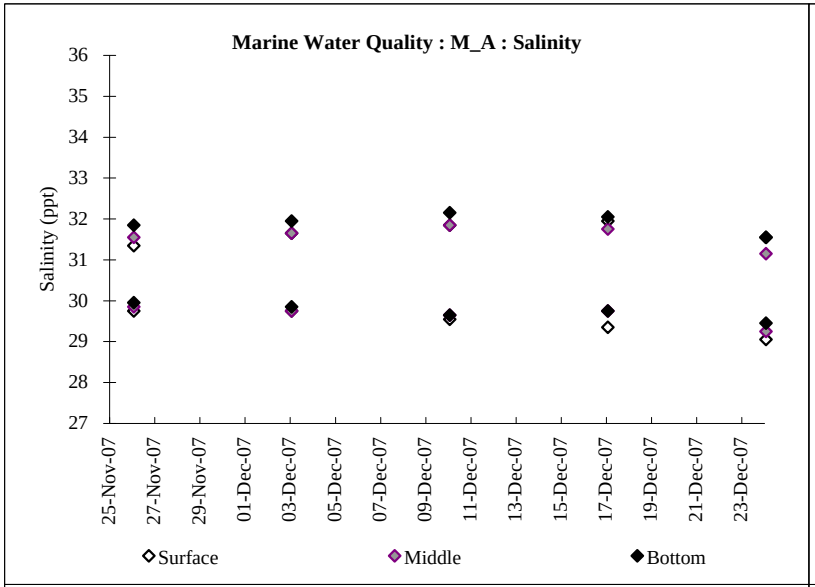
M_A	Middle								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	26-Nov-07	13:01	7.8	3.9	18.5	29.8	7.9	8.1	1.6
Mid-Ebb	03-Dec-07	08:31	8.3	4.2	18.4	29.7	7.6	8.2	1.9
Mid-Ebb	10-Dec-07	13:01	8.2	4.1	18.3	29.6	7.7	8.2	1.8
Mid-Ebb	17-Dec-07	08:31	8.5	4.3	18.1	29.7	7.6	8.2	~~1.0~~
Mid-Ebb	24-Dec-07	11:01	7.9	4.0	17.4	29.2	7.9	8.1	1.1

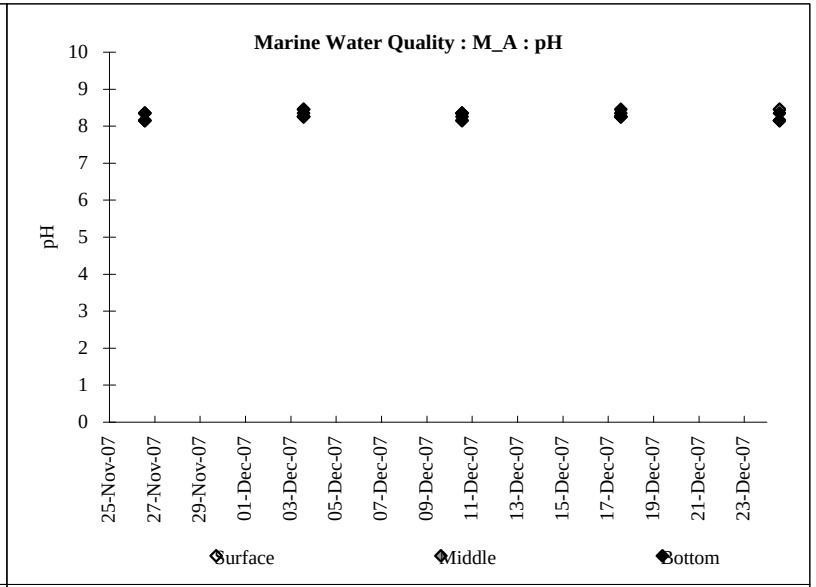
M_A	Middle								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	26-Nov-07	09:01	7.7	3.9	19.3	31.5	7.9	8.3	1.3
Mid-Flood	03-Dec-07	11:01	8.3	4.2	19.1	31.6	7.8	8.4	1.6
Mid-Flood	10-Dec-07	09:01	8.5	4.3	18.5	31.8	7.5	8.3	2.1
Mid-Flood	17-Dec-07	12:31	8.6	4.3	18.3	31.7	7.6	8.2	1.4
Mid-Flood	24-Dec-07	08:31	8.0	4.0	17.0	31.1	8.0	8.4	1.2

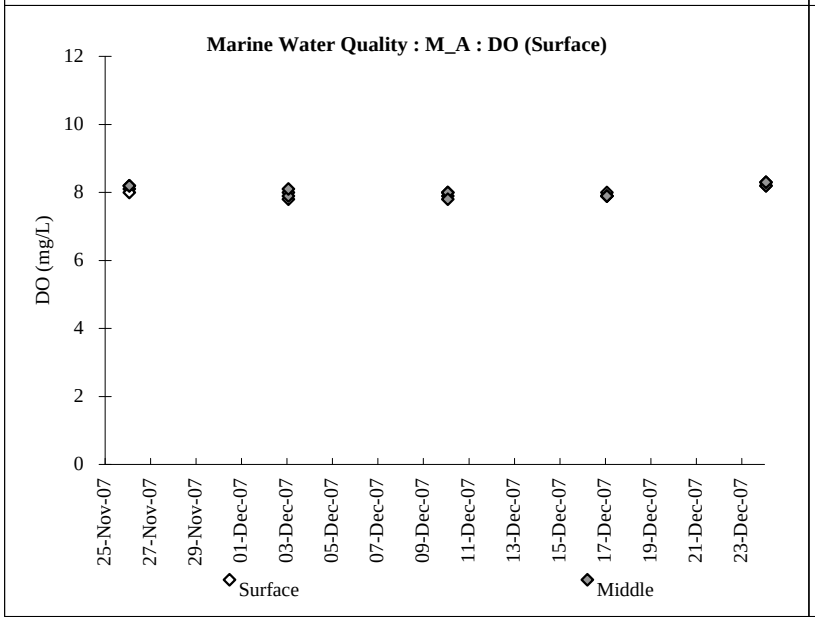
M_A	Bottom								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	26-Nov-07	13:00	7.8	6.8	18.5	29.9	7.8	8.1	1.8
Mid-Ebb	03-Dec-07	8:30	8.3	7.3	18.5	29.8	7.7	8.2	1.7
Mid-Ebb	10-Dec-07	13:00	8.2	7.2	18.3	29.6	7.6	8.1	1.3
Mid-Ebb	17-Dec-07	8:30	8.5	7.5	18.2	29.7	7.5	8.2	1.1
Mid-Ebb	24-Dec-07	11:00	7.9	6.9	17.4	29.4	7.8	8.1	1.5

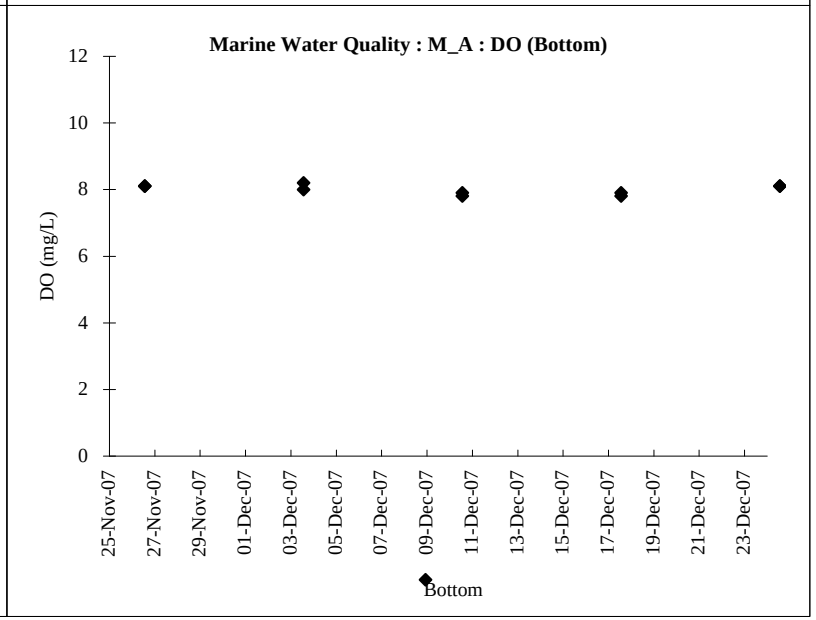
M_A	Bottom								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	26-Nov-07	9:00	7.7	6.7	19.1	31.8	7.8	8.3	1.6
Mid-Flood	03-Dec-07	11:00	8.3	7.3	19.1	31.9	7.9	8.4	1.5
Mid-Flood	10-Dec-07	9:00	8.5	7.5	18.4	32.1	7.5	8.3	2.0
Mid-Flood	17-Dec-07	12:30	8.6	7.6	18.4	32.0	7.6	8.4	1.3
Mid-Flood	24-Dec-07	8:30	8.0	7.0	17.2	31.5	7.8	8.3	1.6

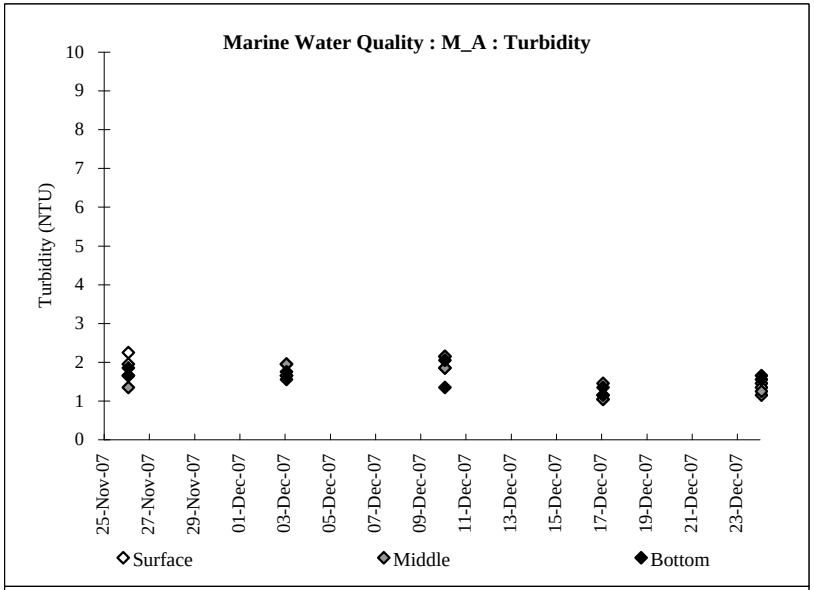
	Mid-Ebb			Mid-Flood			Depth-averaged
M_A	Surface	Midlle	Bottom	Surface	Midlle	Bottom	SS (mg/L)
26-Nov-07	5.0	2.0	4.0	7.0	4.0	5.0	4.5
03-Dec-07	5.0	~~2.0~~	6.0	3.0	~~2.0~~	4.0	3.7
10-Dec-07	3.0	~~2.0~~	~~2.0~~	~~2.0~~	5.0	~~2.0~~	2.7
17-Dec-07	3.0	2.0	3.0	~~2.0~~	~~2.0~~	3.0	2.5
24-Dec-07	4.0	7.0	6.0	3.0	2.0	3.0	4.2

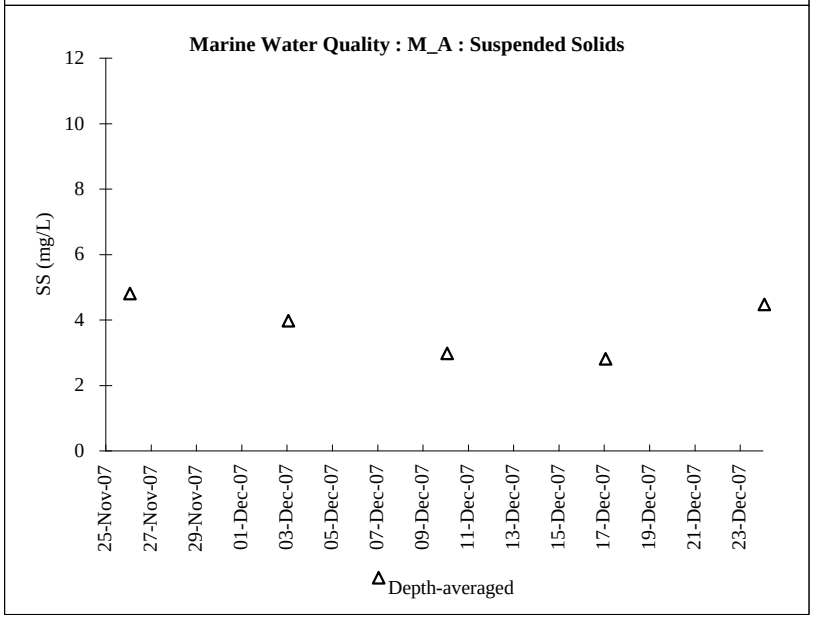

Marine Water Quality : M_A : Salinity
Salinity (ppt)
36
35
34
33
32
31
30
29
28
27
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle
Bottom


Marine Water Quality : M_A : pH
pH
10
9
8
7
6
5
4
3
2
1
0
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle
Bottom


Marine Water Quality : M_A : DO (Surface)
DO (mg/L)
12
10
8
6
4
2
0
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle


Marine Water Quality : M_A : DO (Bottom)
DO (mg/L)
12
10
8
6
4
2
0
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Bottom


Marine Water Quality : M_A : Turbidity
Turbidity (NTU)
0
1
2
3
4
5
6
7
8
9
10
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle
Bottom


Marine Water Quality : M_A : Suspended Solids
SS (mg/L)
0
2
4
6
8
10
12
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Depth-averaged

M_Marsh	Surface								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	26-Nov-07	13:17	8.2	1.0	18.4	29.8	7.5	8.1	1.9
Mid-Ebb	03-Dec-07	08:47	7.9	1.0	18.4	29.7	7.6	8.2	1.6
Mid-Ebb	10-Dec-07	13:17	8.3	1.0	18.3	29.7	7.7	8.1	1.5
Mid-Ebb	17-Dec-07	08:47	8.6	1.0	18.2	29.9	7.7	8.2	1.0
Mid-Ebb	24-Dec-07	11:17	8.5	1.0	17.5	29.3	7.7	8.2	~~1.0~~

M_Marsh	Surface								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	26-Nov-07	09:17	8.6	1.0	19.7	31.6	7.6	8.3	2.3
Mid-Flood	03-Dec-07	11:17	8.4	1.0	19.1	31.4	7.6	8.4	1.9
Mid-Flood	10-Dec-07	09:17	8.1	1.0	18.2	31.9	7.5	8.3	2.1
Mid-Flood	17-Dec-07	12:47	8.0	1.0	18.5	31.7	7.6	8.2	1.2
Mid-Flood	24-Dec-07	08:47	8.6	1.0	17.2	31.1	7.8	8.3	~~1.0~~

Remarks:

Action level	***Bold & Italic***
Limit level	**Bold**
< detection limit	~~Grey~~

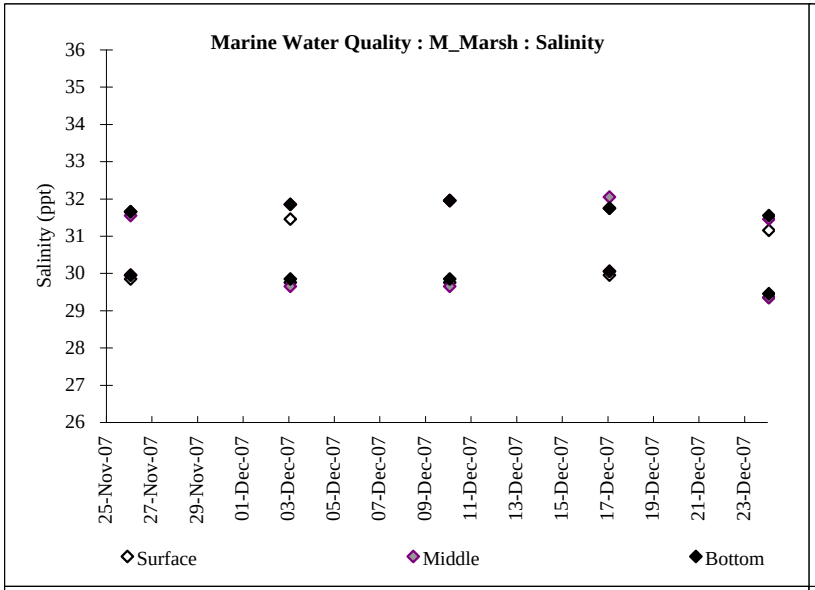
M_Marsh	Middle								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	26-Nov-07	13:16	8.2	4.1	18.4	29.9	7.6	8.1	1.8
Mid-Ebb	03-Dec-07	08:46	7.9	4.0	18.4	29.6	7.7	8.2	1.8
Mid-Ebb	10-Dec-07	13:16	8.3	4.2	18.3	29.6	7.6	8.1	2.1
Mid-Ebb	17-Dec-07	08:46	8.6	4.3	18.2	30.0	7.5	8.1	1.7
Mid-Ebb	24-Dec-07	11:16	8.5	4.3	17.5	29.3	7.8	8.1	1.1

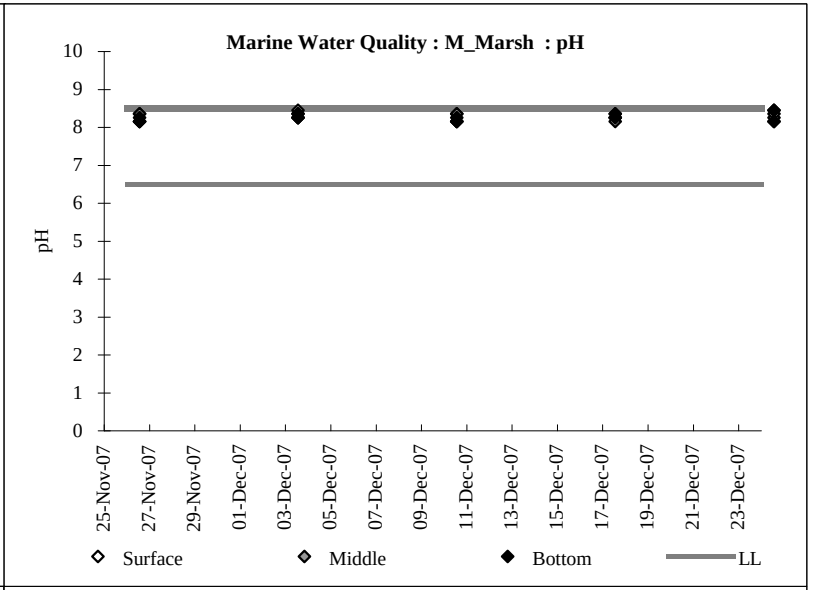
M_Marsh	Middle								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	26-Nov-07	09:16	8.6	4.3	19.3	31.5	7.7	8.3	2.0
Mid-Flood	03-Dec-07	11:16	8.4	4.2	19.1	31.8	7.6	8.3	2.0
Mid-Flood	10-Dec-07	09:16	8.1	4.1	18.4	31.9	7.7	8.3	1.6
Mid-Flood	17-Dec-07	12:46	8.0	4.0	18.5	32.0	7.6	8.3	1.7
Mid-Flood	24-Dec-07	08:46	8.6	4.3	17.2	31.4	7.9	8.4	~~1.0~~

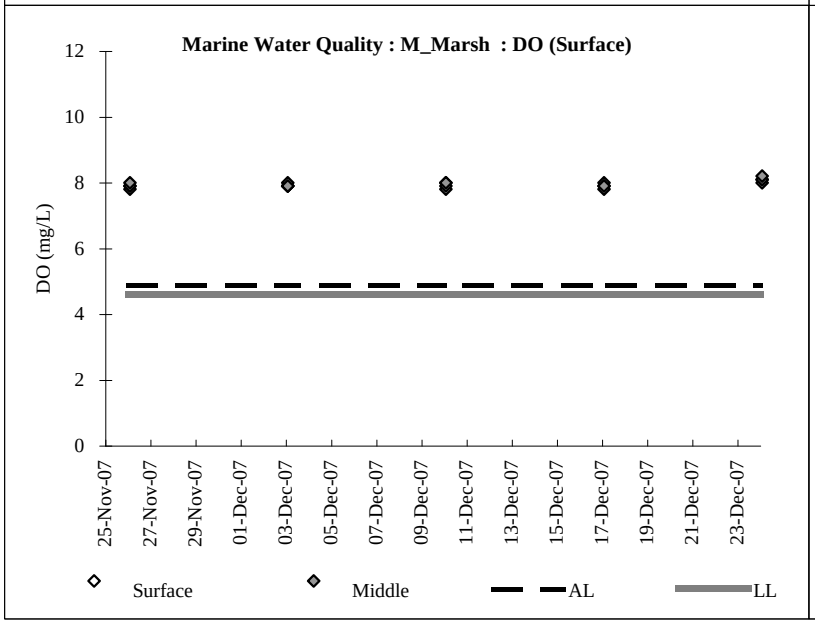
M_Marsh	Bottom								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	26-Nov-07	13:15	8.2	7.2	18.5	29.9	7.6	8.1	2.1
Mid-Ebb	03-Dec-07	8:45	7.9	6.9	18.4	29.8	7.7	8.2	2.2
Mid-Ebb	10-Dec-07	13:15	8.3	7.3	18.3	29.8	7.7	8.1	1.3
Mid-Ebb	17-Dec-07	8:45	8.6	7.6	18.2	30.0	7.6	8.2	1.4
Mid-Ebb	24-Dec-07	11:15	8.5	7.5	17.4	29.4	7.8	8.1	~~1.0~~

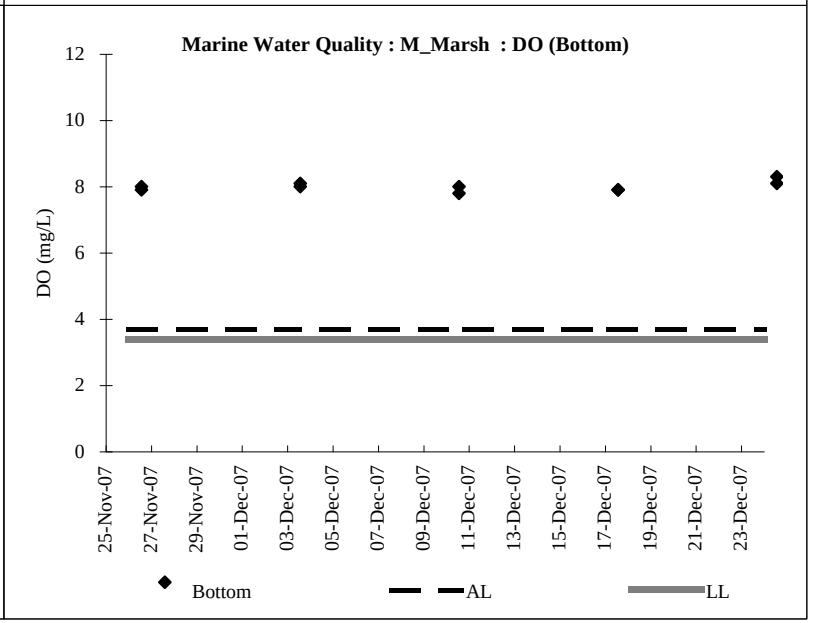
M_Marsh	Bottom								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	26-Nov-07	9:15	8.6	7.6	19.1	31.6	7.7	8.2	2.4
Mid-Flood	03-Dec-07	11:15	8.4	7.4	19.1	31.8	7.8	8.3	1.9
Mid-Flood	10-Dec-07	9:15	8.1	7.1	18.2	31.9	7.5	8.2	2.1
Mid-Flood	17-Dec-07	12:45	8.0	7.0	18.4	31.7	7.6	8.3	1.1
Mid-Flood	24-Dec-07	8:45	8.6	7.6	17.3	31.5	8.0	8.4	~~1.0~~

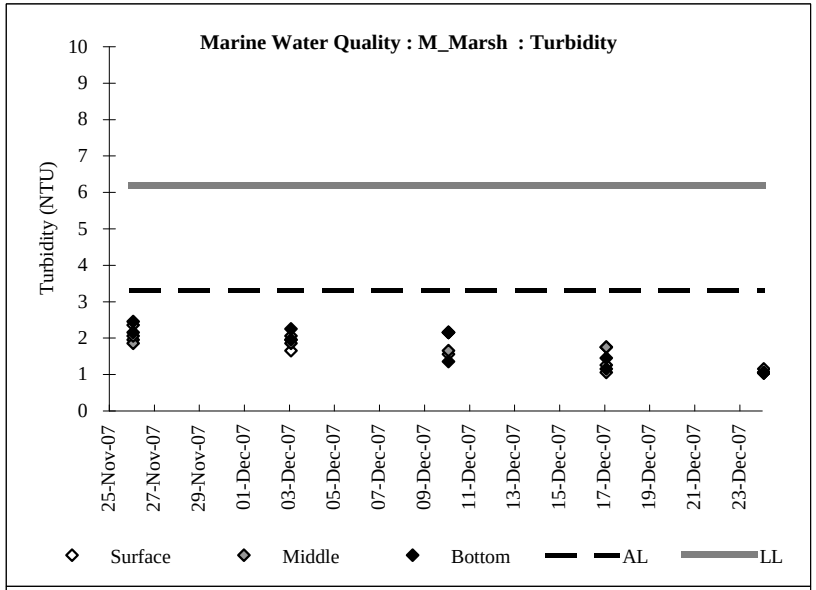
	Mid-Ebb			Mid-Flood			Depth-averaged
M_Marsh	Surface	Midlle	Bottom	Surface	Midlle	Bottom	SS (mg/L)
26-Nov-07	3.0	5.0	6.0	4.0	6.0	3.0	4.5
03-Dec-07	~~2.0~~	4.0	3.0	~~2.0~~	2.0	~~2.0~~	2.5
10-Dec-07	~~2.0~~	2.0	2.0	3.0	~~2.0~~	2.0	2.2
17-Dec-07	~~2.0~~	2.0	2.0	2.0	~~2.0~~	~~2.0~~	2.0
24-Dec-07	8.0	4.0	4.0	5.0	~~2.0~~	2.0	4.2

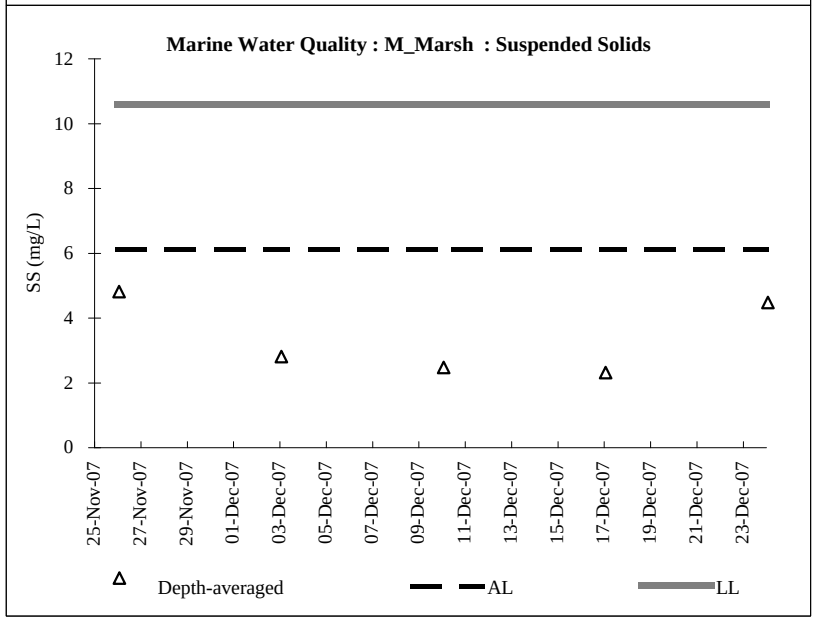

Marine Water Quality : M_Marsh : Salinity
Salinity (ppt)
36
35
34
33
32
31
30
29
28
27
26
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle
Bottom


Marine Water Quality : M_Marsh : pH
pH
10
9
8
7
6
5
4
3
2
1
0
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle
Bottom
LL


Marine Water Quality : M_Marsh : DO (Surface)
DO (mg/L)
12
10
8
6
4
2
0
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle
AL
LL


Marine Water Quality : M_Marsh : DO (Bottom)
DO (mg/L)
12
10
8
6
4
2
0
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Bottom
AL
LL


Marine Water Quality : M_Marsh : Turbidity
Turbidity (NTU)
0
1
2
3
4
5
6
7
8
9
10
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle
Bottom
AL
LL


Marine Water Quality : M_Marsh : Suspended Solids
SS (mg/L)
0
2
4
6
8
10
12
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Depth-averaged
AL
LL

TTC	Surface								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	26-Nov-07	13:07	9.3	1.0	18.5	29.8	7.6	8.0	1.9
Mid-Ebb	03-Dec-07	09:07	9.8	1.0	18.4	29.7	7.7	8.1	2.3
Mid-Ebb	10-Dec-07	13:37	9.7	1.0	18.0	29.6	7.6	8.0	1.6
Mid-Ebb	17-Dec-07	09:07	9.5	1.0	18.2	29.9	7.7	8.2	~~1.0~~
Mid-Ebb	24-Dec-07	11:37	10.0	1.0	17.5	29.4	7.8	8.1	1.1

TTC	Surface								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	26-Nov-07	09:27	10.3	1.0	20.0	31.6	7.6	8.2	2.3
Mid-Flood	03-Dec-07	11:27	9.8	1.0	19.2	31.7	7.8	8.3	1.7
Mid-Flood	10-Dec-07	09:27	9.7	1.0	17.9	31.5	7.5	8.3	1.8
Mid-Flood	17-Dec-07	12:57	9.9	1.0	18.6	31.8	7.6	8.3	1.1
Mid-Flood	24-Dec-07	08:57	10.2	1.0	17.3	31.5	7.9	8.4	1.2

Remarks:

Action level	***Bold & Italic***
Limit level	**Bold**
< detection limit	~~Grey~~

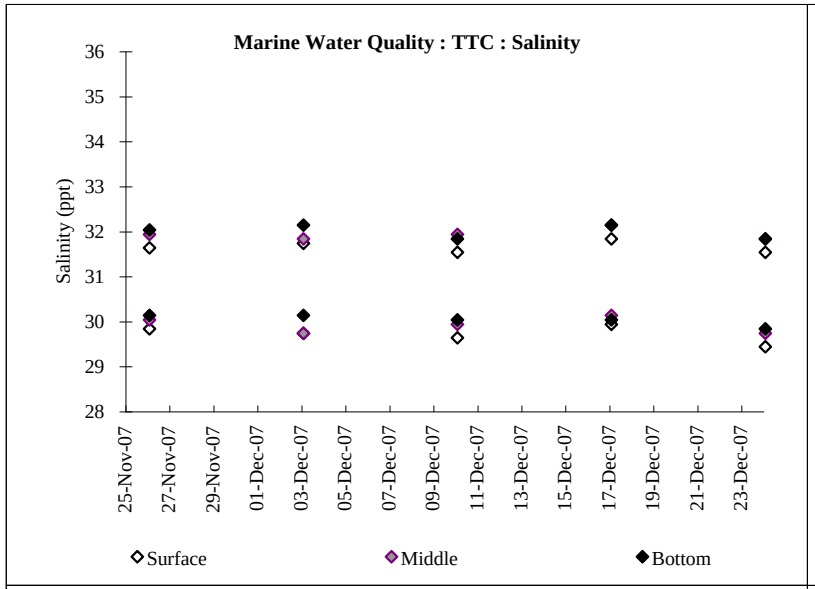
TTC	Middle								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	26-Nov-07	13:06	9.3	4.7	18.7	30.0	7.6	8.1	1.6
Mid-Ebb	03-Dec-07	09:06	9.8	4.9	18.4	29.7	7.7	8.2	1.3
Mid-Ebb	10-Dec-07	13:36	9.7	4.9	18.2	29.9	7.6	8.1	1.8
Mid-Ebb	17-Dec-07	09:06	9.5	4.8	18.2	30.1	7.7	8.2	1.3
Mid-Ebb	24-Dec-07	11:36	10.0	5.0	17.4	29.7	7.8	8.1	1.1

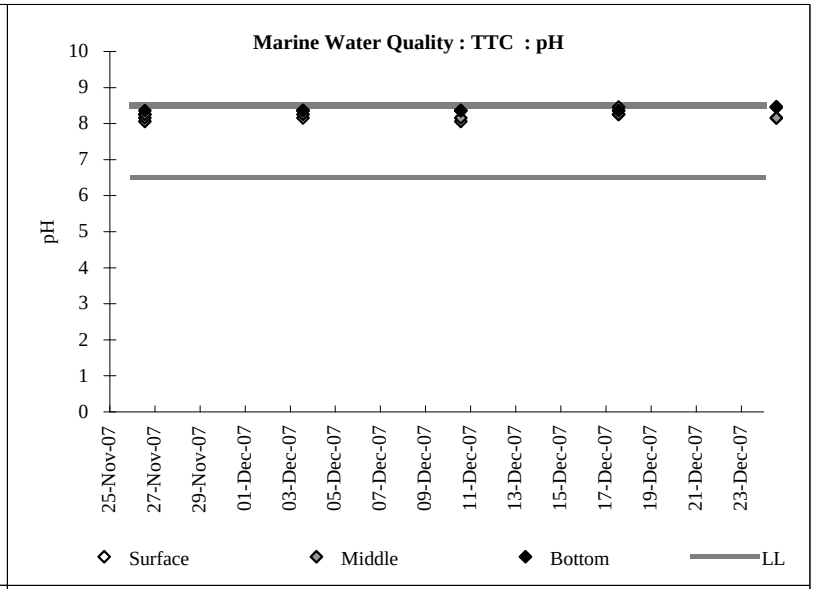
TTC	Middle								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	26-Nov-07	09:26	10.3	5.2	19.0	31.9	7.6	8.2	1.8
Mid-Flood	03-Dec-07	11:26	9.8	4.9	19.1	31.8	7.6	8.3	1.5
Mid-Flood	10-Dec-07	09:26	9.7	4.9	18.1	31.9	7.5	8.3	1.8
Mid-Flood	17-Dec-07	12:56	9.9	5.0	18.4	32.1	7.6	8.4	1.1
Mid-Flood	24-Dec-07	08:56	10.2	5.1	17.3	31.8	7.8	8.4	1.6

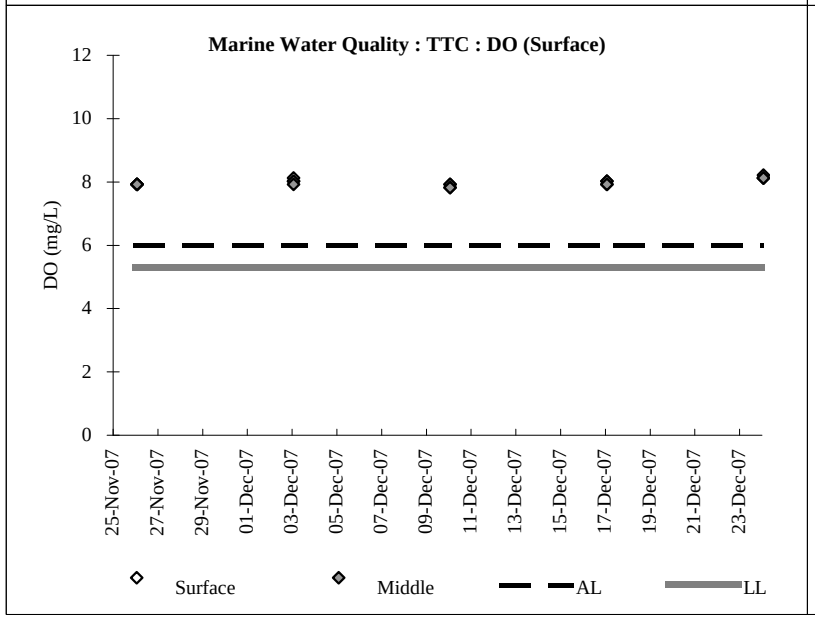
TTC	Bottom								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	26-Nov-07	13:05	9.3	8.3	18.8	30.1	7.6	8.1	1.5
Mid-Ebb	03-Dec-07	9:05	9.8	8.8	18.4	30.1	7.7	8.2	1.6
Mid-Ebb	10-Dec-07	13:35	9.7	8.7	18.2	30.0	7.6	8.1	2.3
Mid-Ebb	17-Dec-07	9:05	9.5	8.5	18.2	30.0	7.7	8.2	1.4
Mid-Ebb	24-Dec-07	11:35	10.0	9.0	17.3	29.8	7.7	8.1	1.1

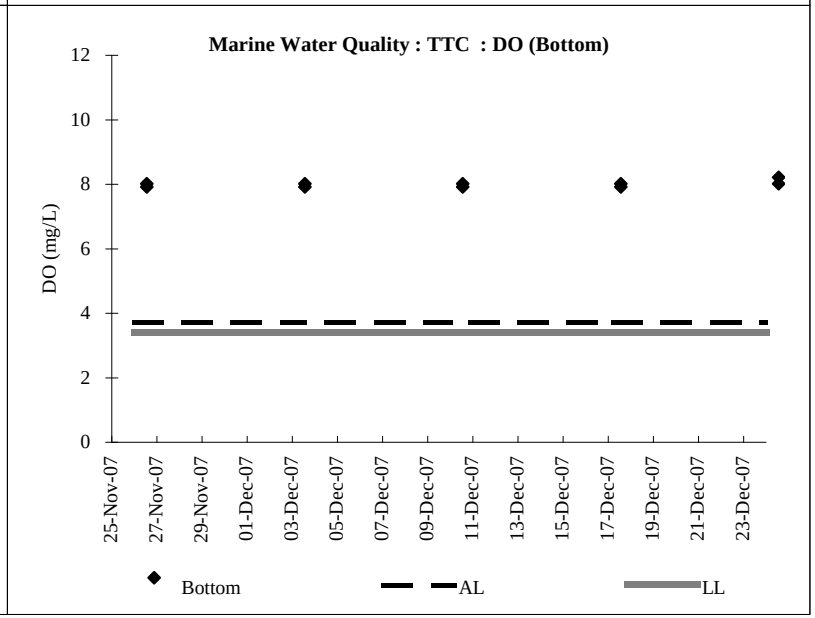
TTC	Bottom								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	26-Nov-07	9:25	10.3	9.3	19.0	32.0	7.7	8.3	1.9
Mid-Flood	03-Dec-07	11:25	9.8	8.8	19.2	32.1	7.6	8.3	2.1
Mid-Flood	10-Dec-07	9:25	9.7	8.7	18.2	31.8	7.7	8.3	1.4
Mid-Flood	17-Dec-07	12:55	9.9	8.9	18.3	32.1	7.6	8.3	1.1
Mid-Flood	24-Dec-07	8:55	10.2	9.2	17.4	31.8	7.9	8.4	1.1

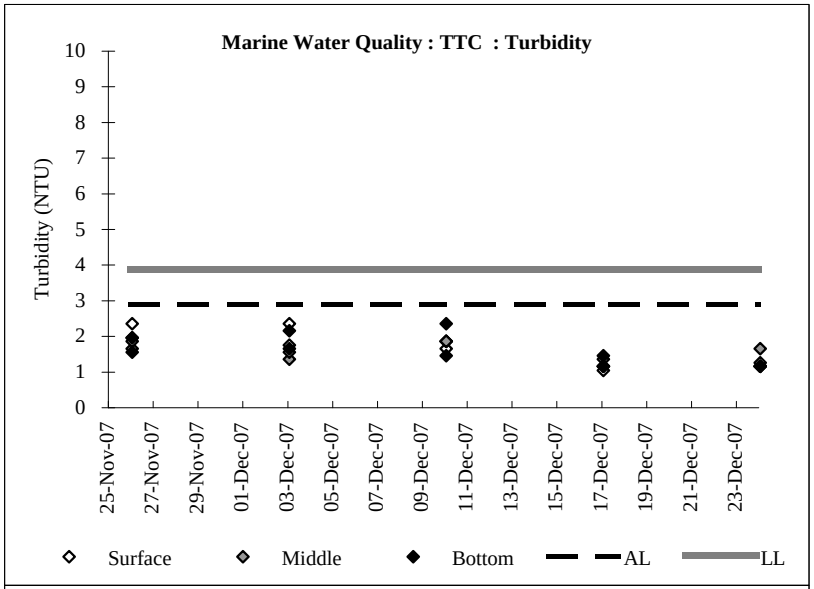
	Mid-Ebb			Mid-Flood			Depth-averaged
TTC	Surface	Midlle	Bottom	Surface	Midlle	Bottom	SS (mg/L)
26-Nov-07	4.0	2.0	6.0	4.0	4.0	5.0	4.2
03-Dec-07	4.0	3.0	5.0	~~2.0~~	~~2.0~~	~~2.0~~	3.0
10-Dec-07	~~2.0~~	2.0	~~2.0~~	~~2.0~~	3.0	3.0	2.3
17-Dec-07	3.0	~~2.0~~	3.0	~~2.0~~	3.0	~~2.0~~	2.5
24-Dec-07	2.0	~~2.0~~	3.0	~~2.0~~	3.0	2.0	2.3

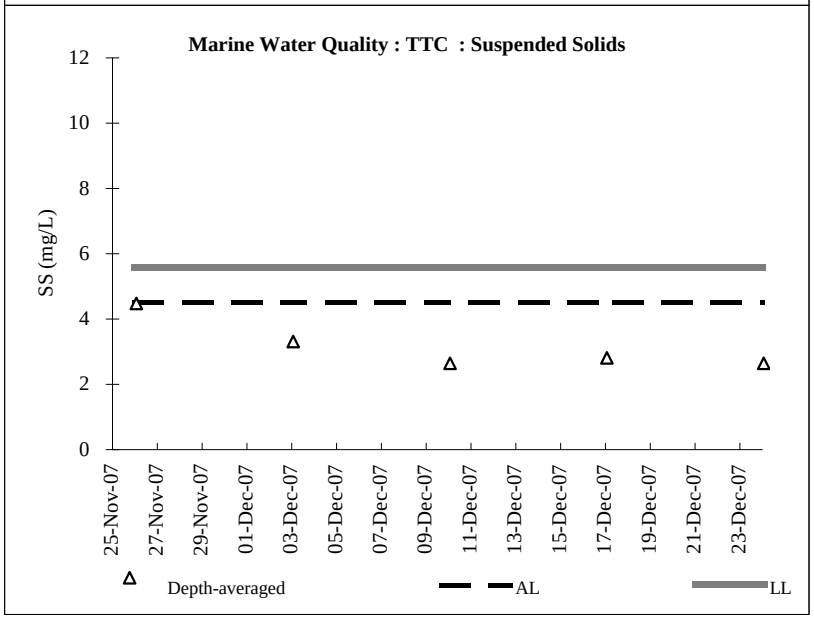

Marine Water Quality : TTC : Salinity
Salinity (ppt)
36
35
34
33
32
31
30
29
28
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle
Bottom


Marine Water Quality : TTC : pH
pH
10
9
8
7
6
5
4
3
2
1
0
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle
Bottom
LL


Marine Water Quality : TTC : DO (Surface)
DO (mg/L)
12
10
8
6
4
2
0
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle
AL
LL


Marine Water Quality : TTC : DO (Bottom)
DO (mg/L)
12
10
8
6
4
2
0
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Bottom
AL
LL


Marine Water Quality : TTC : Turbidity
Turbidity (NTU)
0
1
2
3
4
5
6
7
8
9
10
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle
Bottom
AL
LL


Marine Water Quality : TTC : Suspended Solids
SS (mg/L)
0
2
4
6
8
10
12
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Depth-averaged
AL
LL

M_BP	Surface								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	26-Nov-07	13:17	8.9	1.0	18.7	30.1	7.6	8.1	1.8
Mid-Ebb	03-Dec-07	09:17	8.5	1.0	18.5	30.2	7.7	8.2	1.5
Mid-Ebb	10-Dec-07	13:47	8.9	1.0	18.1	30.0	7.7	8.1	1.4
Mid-Ebb	17-Dec-07	09:17	8.7	1.0	18.2	30.1	7.7	8.2	1.3
Mid-Ebb	24-Dec-07	11:47	8.3	1.0	17.5	30.0	7.9	8.2	~~1.0~~

M_BP	Surface								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	26-Nov-07	09:37	8.9	1.0	20.2	32.0	7.6	8.3	1.5
Mid-Flood	03-Dec-07	11:37	8.9	1.0	19.1	32.2	7.6	8.3	1.9
Mid-Flood	10-Dec-07	09:37	9.2	1.0	17.9	32.1	7.7	8.2	2.0
Mid-Flood	17-Dec-07	13:07	8.7	1.0	18.5	32.1	7.8	8.4	~~1.0~~
Mid-Flood	24-Dec-07	09:07	8.3	1.0	17.3	31.9	7.9	8.4	1.4

Remarks:

Action level	***Bold & Italic***
Limit level	**Bold**
< detection limit	~~Grey~~

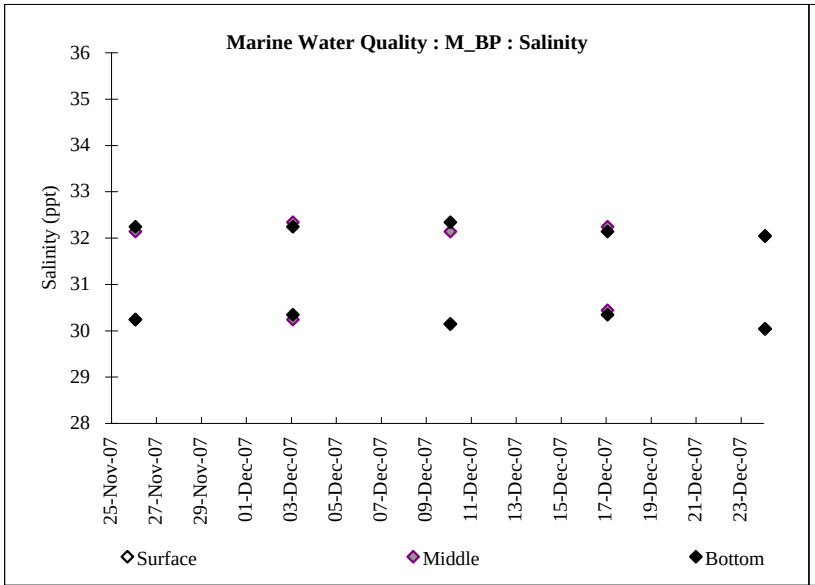
M_BP	Middle								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	26-Nov-07	13:16	8.9	4.5	18.7	30.2	7.7	8.1	1.5
Mid-Ebb	03-Dec-07	09:16	8.5	4.3	18.5	30.2	7.6	8.2	2.1
Mid-Ebb	10-Dec-07	13:46	8.9	4.5	18.2	30.1	7.6	8.1	1.9
Mid-Ebb	17-Dec-07	09:16	8.7	4.4	18.3	30.4	7.5	8.2	~~1.0~~
Mid-Ebb	24-Dec-07	11:46	8.3	4.2	17.5	30.0	7.9	8.2	1.1

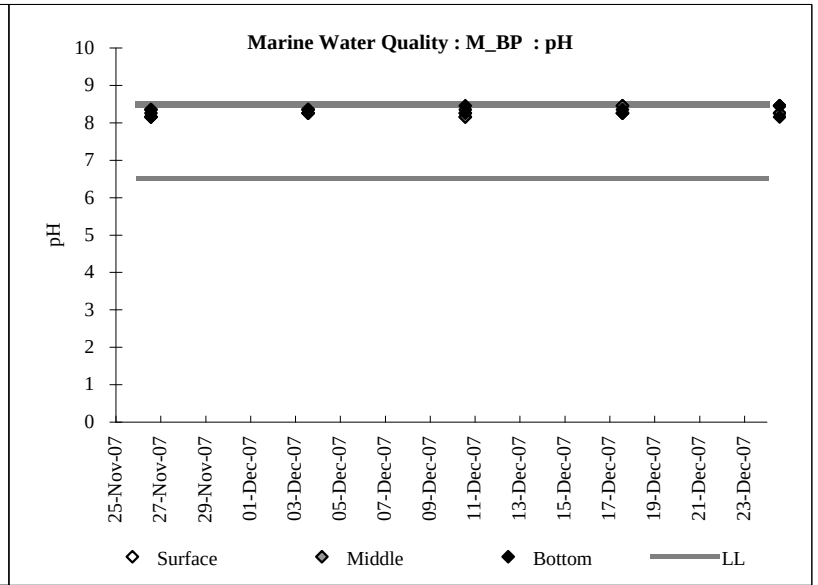
M_BP	Middle								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	26-Nov-07	09:36	8.9	4.5	19.1	32.1	7.6	8.2	1.6
Mid-Flood	03-Dec-07	11:36	8.9	4.5	19.2	32.3	7.6	8.3	1.8
Mid-Flood	10-Dec-07	09:36	9.2	4.6	18.1	32.1	7.7	8.3	1.5
Mid-Flood	17-Dec-07	13:06	8.7	4.4	18.5	32.2	7.4	8.4	1.2
Mid-Flood	24-Dec-07	09:06	8.3	4.2	17.4	32.0	7.8	8.4	1.1

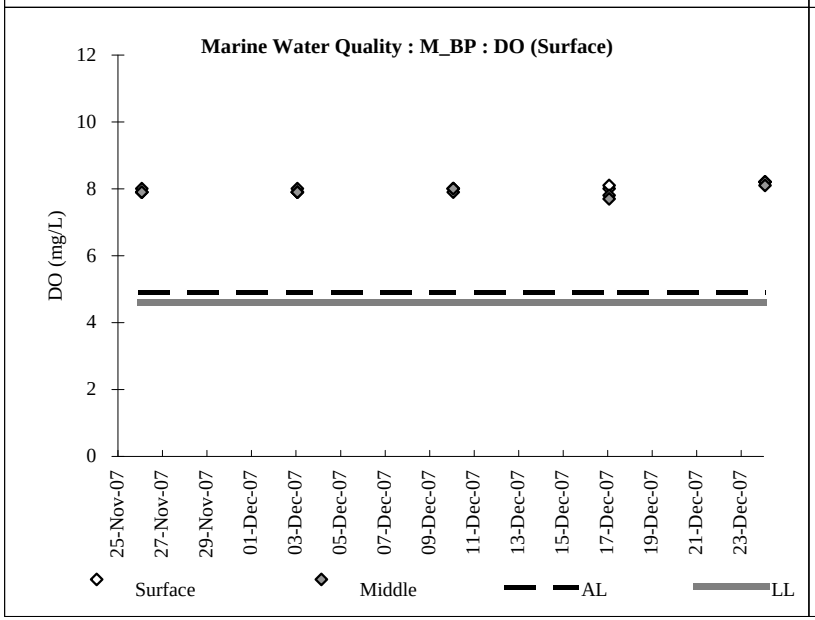
M_BP	Bottom								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	26-Nov-07	13:15	8.9	7.9	18.8	30.2	7.7	8.1	1.8
Mid-Ebb	03-Dec-07	9:15	8.5	7.5	18.5	30.3	7.7	8.2	2.3
Mid-Ebb	10-Dec-07	13:45	8.9	7.9	18.1	30.1	7.8	8.2	1.3
Mid-Ebb	17-Dec-07	9:15	8.7	7.7	18.2	30.3	7.5	8.2	1.0
Mid-Ebb	24-Dec-07	11:45	8.3	7.3	17.5	30.0	7.9	8.1	~~1.0~~

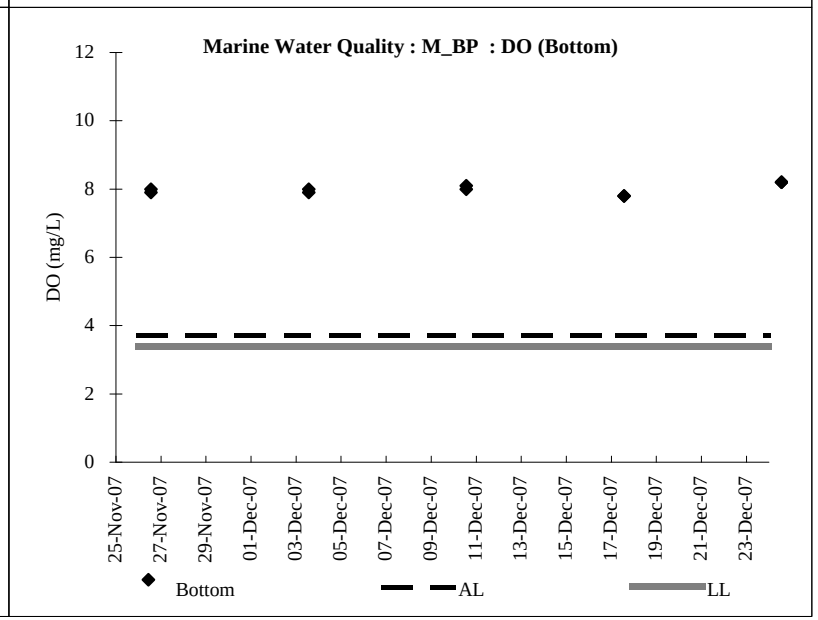
M_BP	Bottom								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	26-Nov-07	9:35	8.9	7.9	19.1	32.2	7.6	8.3	1.5
Mid-Flood	03-Dec-07	11:35	8.9	7.9	19.2	32.2	7.6	8.3	1.7
Mid-Flood	10-Dec-07	9:35	9.2	8.2	18.2	32.3	7.7	8.4	2.1
Mid-Flood	17-Dec-07	13:05	8.7	7.7	18.4	32.1	7.5	8.3	1.3
Mid-Flood	24-Dec-07	9:05	8.3	7.3	17.4	32.0	7.9	8.4	1.1

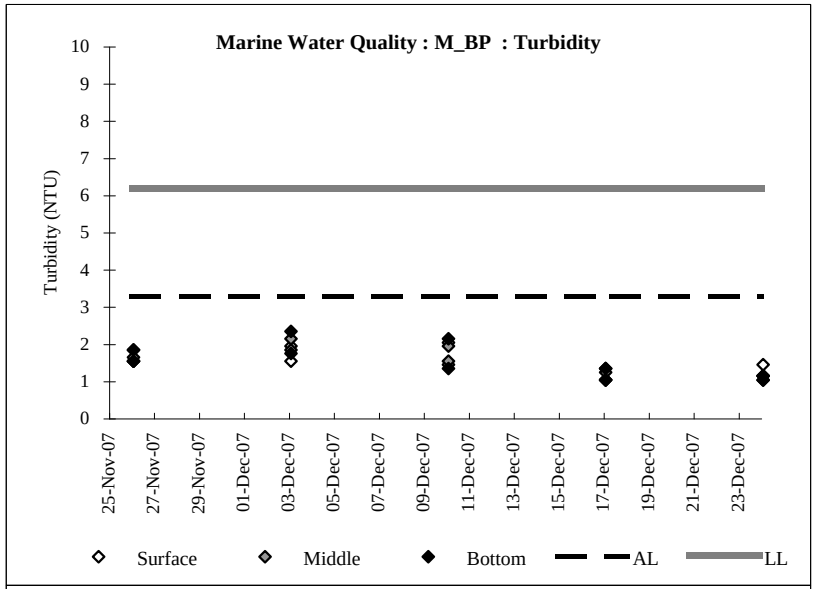
	Mid-Ebb			Mid-Flood			Depth-averaged
M_BP	Surface	Midlle	Bottom	Surface	Midlle	Bottom	SS (mg/L)
26-Nov-07	3.0	7.0	3.0	6.0	3.0	4.0	4.3
03-Dec-07	~~2.0~~	4.0	~~2.0~~	5.0	3.0	~~2.0~~	3.0
10-Dec-07	~~2.0~~	4.0	~~2.0~~	~~2.0~~	5.0	~~2.0~~	2.8
17-Dec-07	~~2.0~~	3.0	~~2.0~~	3.0	~~2.0~~	3.0	2.5
24-Dec-07	3.0	~~2.0~~	2.0	~~2.0~~	~~2.0~~	3.0	2.3

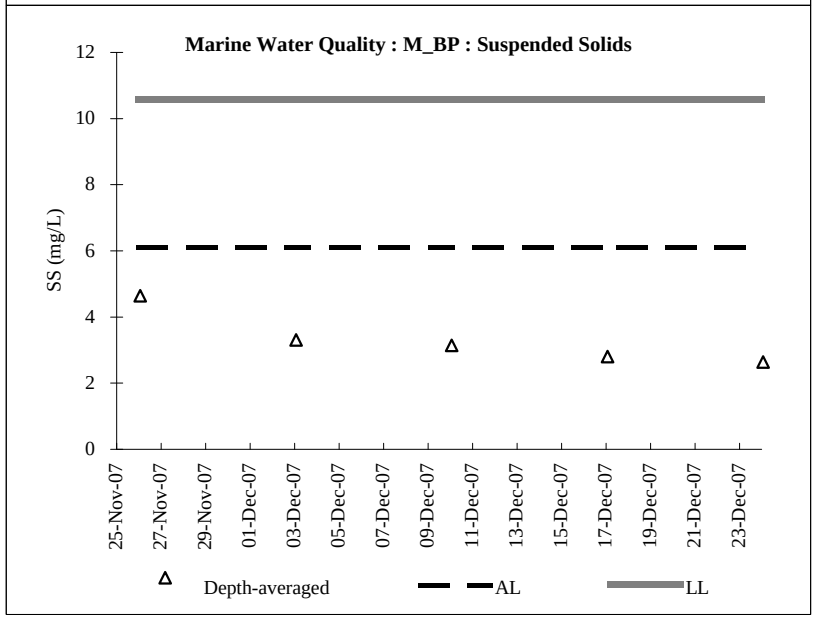

Marine Water Quality : M_BP : Salinity
Salinity (ppt)
36
35
34
33
32
31
30
29
28
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle
Bottom


Marine Water Quality : M_BP : pH
pH
10
9
8
7
6
5
4
3
2
1
0
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle
Bottom
LL


Marine Water Quality : M_BP : DO (Surface)
DO (mg/L)
12
10
8
6
4
2
0
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle
AL
LL


Marine Water Quality : M_BP : DO (Bottom)
DO (mg/L)
12
10
8
6
4
2
0
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Bottom
AL
LL


Marine Water Quality : M_BP : Turbidity
Turbidity (NTU)
0
1
2
3
4
5
6
7
8
9
10
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle
Bottom
AL
LL


Marine Water Quality : M_BP : Suspended Solids
SS (mg/L)
0
2
4
6
8
10
12
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Depth-averaged
AL
LL

M_Coral	Surface								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	26-Nov-07	14:22	8.5	1.0	18.8	30.1	7.7	8.1	1.6
Mid-Ebb	03-Dec-07	10:22	8.6	1.0	18.5	30.2	7.7	8.2	1.9
Mid-Ebb	10-Dec-07	14:52	8.1	1.0	18.2	30.1	7.7	8.1	1.5
Mid-Ebb	17-Dec-07	10:22	8.8	1.0	18.2	30.3	7.6	8.1	1.1
Mid-Ebb	24-Dec-07	12:52	8.8	1.0	17.5	29.9	7.8	8.1	~~1.0~~

M_Coral	Surface								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	26-Nov-07	09:47	8.7	1.0	20.1	32.1	7.6	8.3	1.5
Mid-Flood	03-Dec-07	11:47	8.3	1.0	19.2	32.3	7.8	8.3	2.1
Mid-Flood	10-Dec-07	09:47	8.3	1.0	18.1	32.2	7.5	8.4	1.6
Mid-Flood	17-Dec-07	13:17	8.6	1.0	18.5	32.4	7.8	8.3	1.3
Mid-Flood	24-Dec-07	09:17	8.9	1.0	17.3	32.0	7.9	8.4	1.5

Remarks:

Action level	***Bold & Italic***
Limit level	**Bold**
< detection limit	~~Grey~~

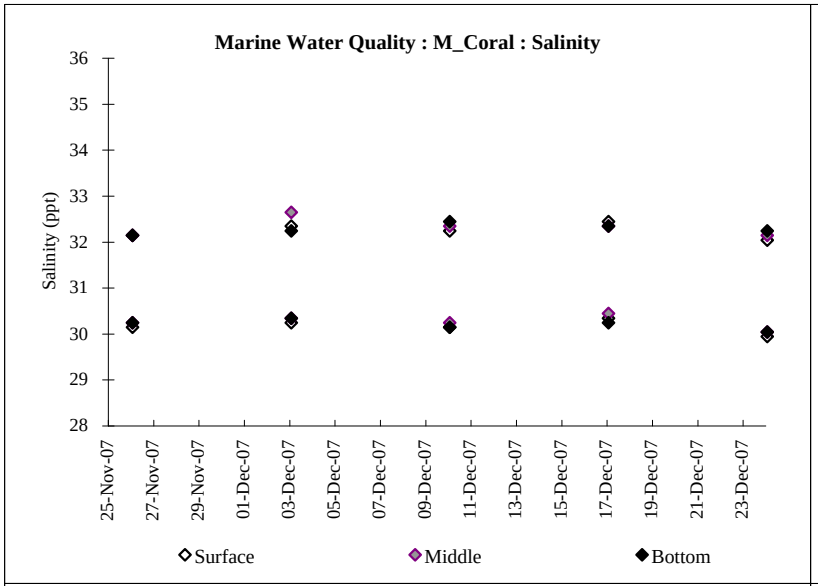
M_Coral	Middle								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	26-Nov-07	14:21	8.5	4.3	18.7	30.2	7.6	8.2	1.9
Mid-Ebb	03-Dec-07	10:21	8.6	4.3	18.5	30.3	7.7	8.2	1.4
Mid-Ebb	10-Dec-07	14:51	8.1	4.1	18.2	30.2	7.6	8.2	1.6
Mid-Ebb	17-Dec-07	10:21	8.8	4.4	18.3	30.4	7.7	8.2	1.6
Mid-Ebb	24-Dec-07	12:51	8.8	4.4	17.5	30.0	8.0	8.1	1.1

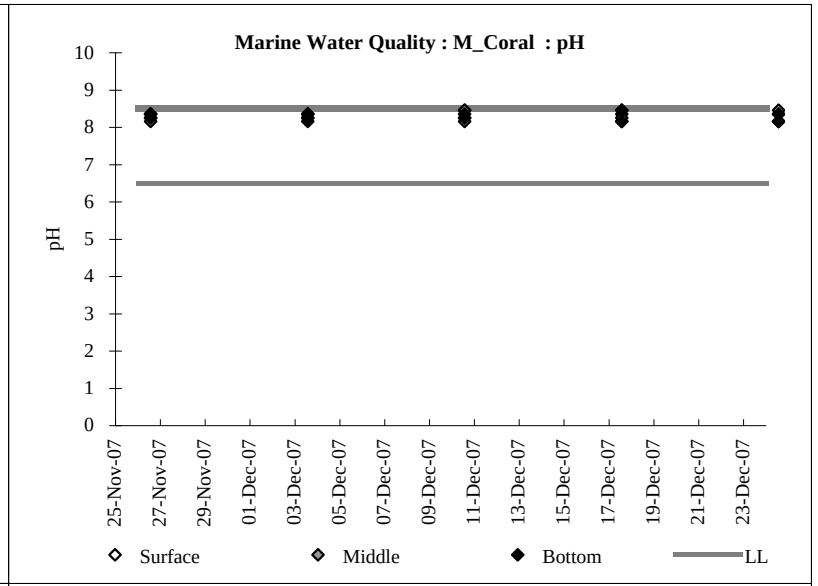
M_Coral	Middle								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	26-Nov-07	09:46	8.7	4.4	19.9	32.1	7.7	8.3	2.1
Mid-Flood	03-Dec-07	11:46	8.3	4.2	19.2	32.6	7.5	8.3	1.7
Mid-Flood	10-Dec-07	09:46	8.3	4.2	18.1	32.3	7.7	8.4	1.9
Mid-Flood	17-Dec-07	13:16	8.6	4.3	18.4	32.3	7.5	8.4	1.2
Mid-Flood	24-Dec-07	09:16	8.9	4.5	17.3	32.1	7.9	8.3	~~1.0~~

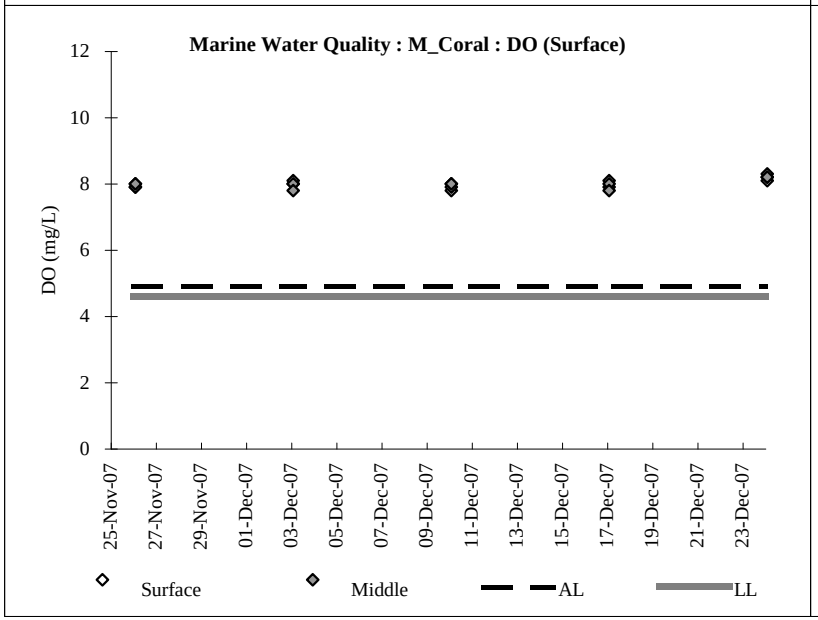
M_Coral	Bottom								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	26-Nov-07	14:20	8.5	7.5	18.7	30.2	7.7	8.2	1.5
Mid-Ebb	03-Dec-07	10:20	8.6	7.6	18.6	30.3	7.6	8.1	1.6
Mid-Ebb	10-Dec-07	14:50	8.1	7.1	18.2	30.1	7.7	8.2	1.8
Mid-Ebb	17-Dec-07	10:20	8.8	7.8	18.3	30.2	7.6	8.1	1.6
Mid-Ebb	24-Dec-07	12:50	8.8	7.8	17.5	30.0	7.9	8.1	1.1

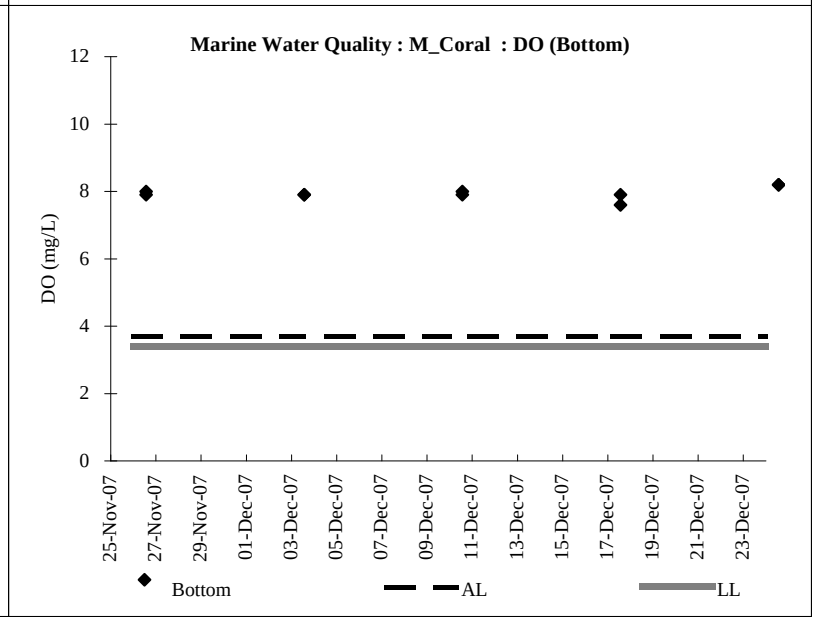
M_Coral	Bottom								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	26-Nov-07	9:45	8.7	7.7	20.0	32.1	7.6	8.3	2.0
Mid-Flood	03-Dec-07	11:45	8.3	7.3	19.3	32.2	7.6	8.3	1.7
Mid-Flood	10-Dec-07	9:45	8.3	7.3	18.1	32.4	7.6	8.3	2.1
Mid-Flood	17-Dec-07	13:15	8.6	7.6	18.5	32.3	7.3	8.4	1.2
Mid-Flood	24-Dec-07	9:15	8.9	7.9	17.3	32.2	7.9	8.3	1.0

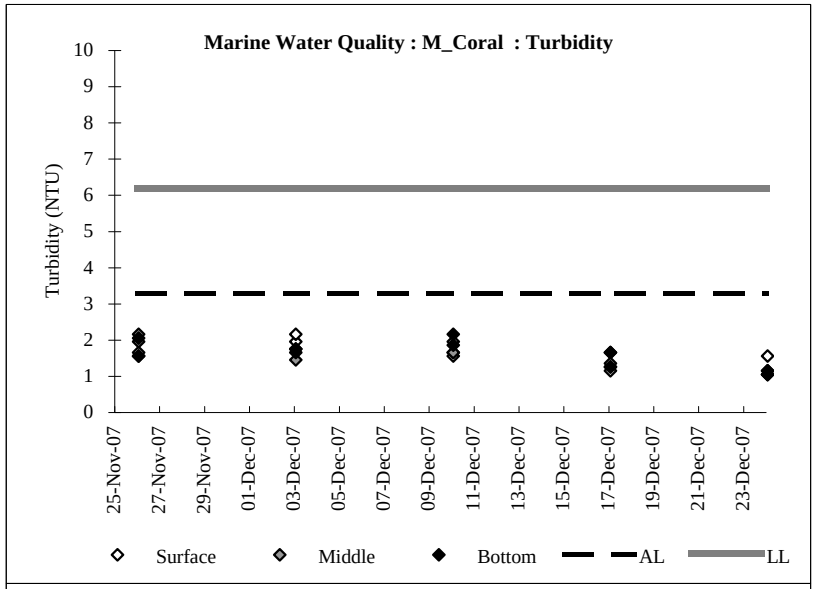
	Mid-Ebb			Mid-Flood			Depth-averaged
M_Coral	Surface	Midlle	Bottom	Surface	Midlle	Bottom	SS (mg/L)
26-Nov-07	7.0	4.0	5.0	6.0	5.0	8.0	5.8
03-Dec-07	5.0	2.0	4.0	2.0	~~2.0~~	~~2.0~~	2.8
10-Dec-07	4.0	~~2.0~~	3.0	2.0	2.0	~~2.0~~	2.5
17-Dec-07	3.0	~~2.0~~	2.0	~~2.0~~	3.0	~~2.0~~	2.3
24-Dec-07	~~2.0~~	3.0	2.0	7.0	7.0	6.0	4.5

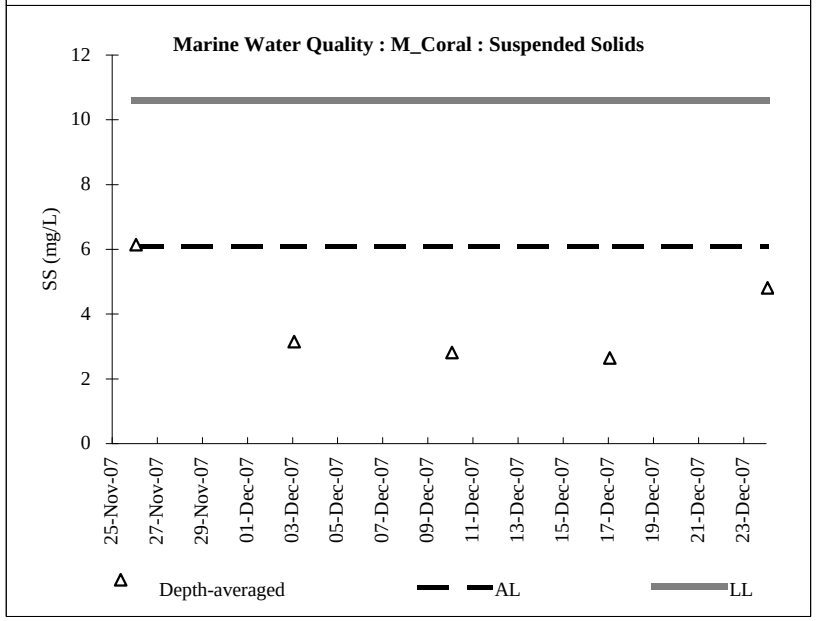

Marine Water Quality : M_Coral : Salinity
Salinity (ppt)
36
35
34
33
32
31
30
29
28
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle
Bottom


Marine Water Quality : M_Coral : pH
pH
10
9
8
7
6
5
4
3
2
1
0
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle
Bottom
LL


Marine Water Quality : M_Coral : DO (Surface)
DO (mg/L)
12
10
8
6
4
2
0
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle
AL
LL


Marine Water Quality : M_Coral : DO (Bottom)
DO (mg/L)
12
10
8
6
4
2
0
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Bottom
AL
LL


Marine Water Quality : M_Coral : Turbidity
Turbidity (NTU)
0
1
2
3
4
5
6
7
8
9
10
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle
Bottom
AL
LL


Marine Water Quality : M_Coral : Suspended Solids
SS (mg/L)
0
2
4
6
8
10
12
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Depth-averaged
AL
LL

M_B	Surface								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	26-Nov-07	14:32	17.3	1.0	18.9	30.2	7.7	8.2	1.3
Mid-Ebb	03-Dec-07	10:32	16.5	1.0	18.5	30.4	7.6	8.2	1.7
Mid-Ebb	10-Dec-07	15:02	16.3	1.0	18.0	30.3	7.8	8.1	1.3
Mid-Ebb	17-Dec-07	10:32	16.8	1.0	18.2	30.1	7.9	8.1	1.0
Mid-Ebb	24-Dec-07	13:02	17.0	1.0	17.6	30.0	7.8	8.1	1.0

M_B	Surface								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	26-Nov-07	09:57	16.9	1.0	19.5	32.2	7.6	8.3	1.6
Mid-Flood	03-Dec-07	11:57	17.5	1.0	19.2	32.3	7.6	8.3	1.9
Mid-Flood	10-Dec-07	09:57	16.8	1.0	17.8	32.0	7.8	8.4	1.2
Mid-Flood	17-Dec-07	13:27	16.5	1.0	18.5	32.4	7.8	8.4	~~1.0~~
Mid-Flood	24-Dec-07	09:27	17.7	1.0	17.3	32.0	7.9	8.4	1.3

Remarks:

Action level	***Bold & Italic***
Limit level	**Bold**
< detection limit	~~Grey~~

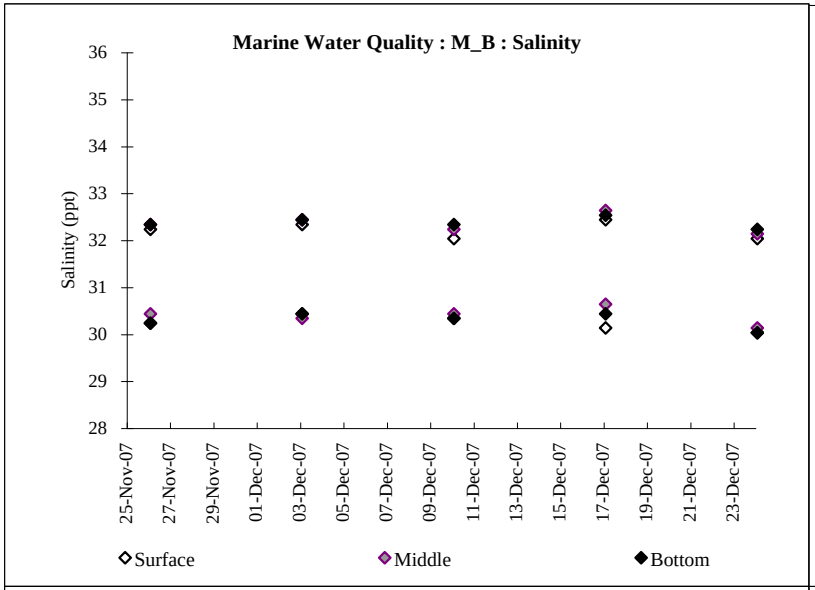
M_B	Middle								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	26-Nov-07	14:31	17.3	8.7	19.2	30.4	7.6	8.2	1.1
Mid-Ebb	03-Dec-07	10:31	16.5	8.3	18.5	30.3	7.7	8.2	1.3
Mid-Ebb	10-Dec-07	15:01	16.3	8.2	18.1	30.4	7.8	8.1	1.1
Mid-Ebb	17-Dec-07	10:31	16.8	8.4	18.3	30.6	7.7	8.1	~~1.0~~
Mid-Ebb	24-Dec-07	13:01	17.0	8.5	17.6	30.1	7.9	8.1	~~1.0~~

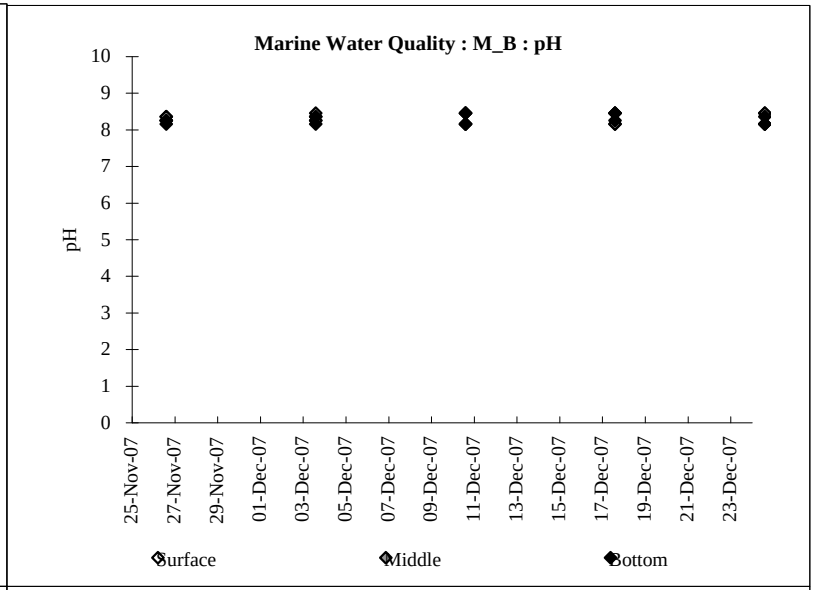
M_B	Middle								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	26-Nov-07	09:56	16.9	8.5	19.7	32.3	7.7	8.3	1.3
Mid-Flood	03-Dec-07	11:56	17.5	8.8	19.3	32.4	7.6	8.4	1.4
Mid-Flood	10-Dec-07	09:56	16.8	8.4	17.9	32.2	7.8	8.4	1.2
Mid-Flood	17-Dec-07	13:26	16.5	8.3	18.5	32.6	7.5	8.4	~~1.0~~
Mid-Flood	24-Dec-07	09:26	17.7	8.9	17.3	32.1	8.0	8.4	1.2

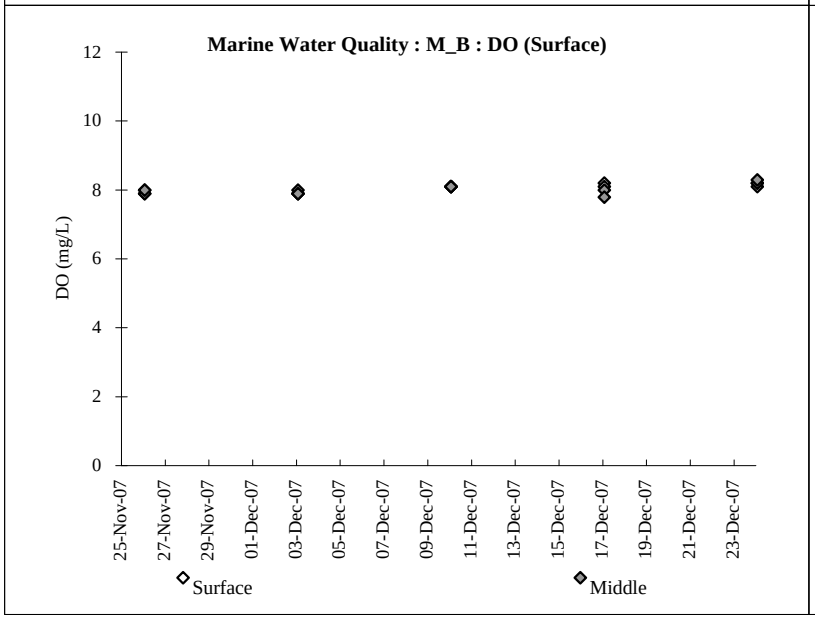
M_B	Bottom								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	26-Nov-07	14:30	17.3	16.3	19.2	30.2	7.6	8.1	1.0
Mid-Ebb	03-Dec-07	10:30	16.5	15.5	18.5	30.4	7.7	8.1	1.3
Mid-Ebb	10-Dec-07	15:00	16.3	15.3	18.2	30.3	7.6	8.1	1.1
Mid-Ebb	17-Dec-07	10:30	16.8	15.8	18.1	30.4	7.5	8.2	1.0
Mid-Ebb	24-Dec-07	13:00	17.0	16.0	17.6	30.0	7.9	8.1	~~1.0~~

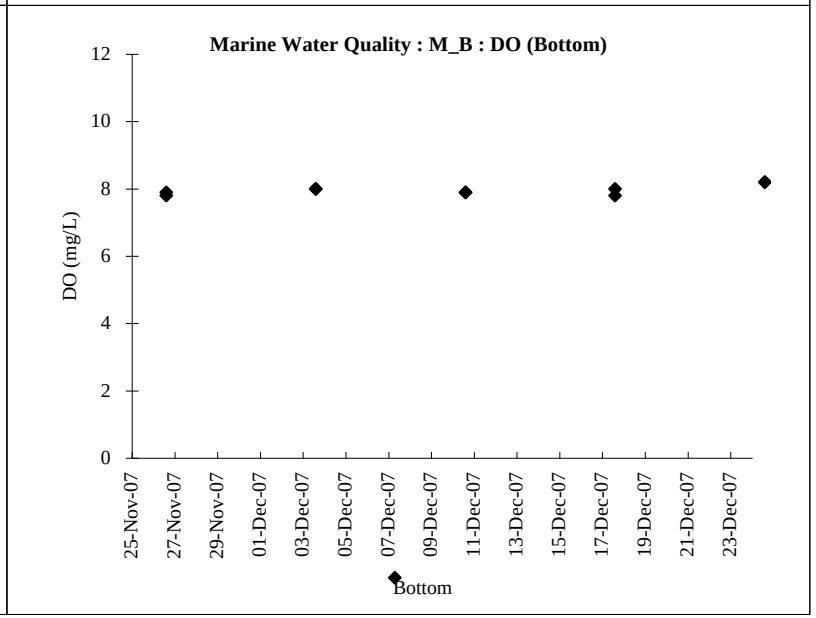
M_B	Bottom								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	26-Nov-07	9:55	16.9	15.9	19.6	32.3	7.5	8.2	1.3
Mid-Flood	03-Dec-07	11:55	17.5	16.5	19.3	32.4	7.7	8.3	1.1
Mid-Flood	10-Dec-07	9:55	16.8	15.8	18.1	32.3	7.6	8.4	1.2
Mid-Flood	17-Dec-07	13:25	16.5	15.5	18.3	32.5	7.7	8.4	~~1.0~~
Mid-Flood	24-Dec-07	9:25	17.7	16.7	17.4	32.2	7.9	8.3	1.1

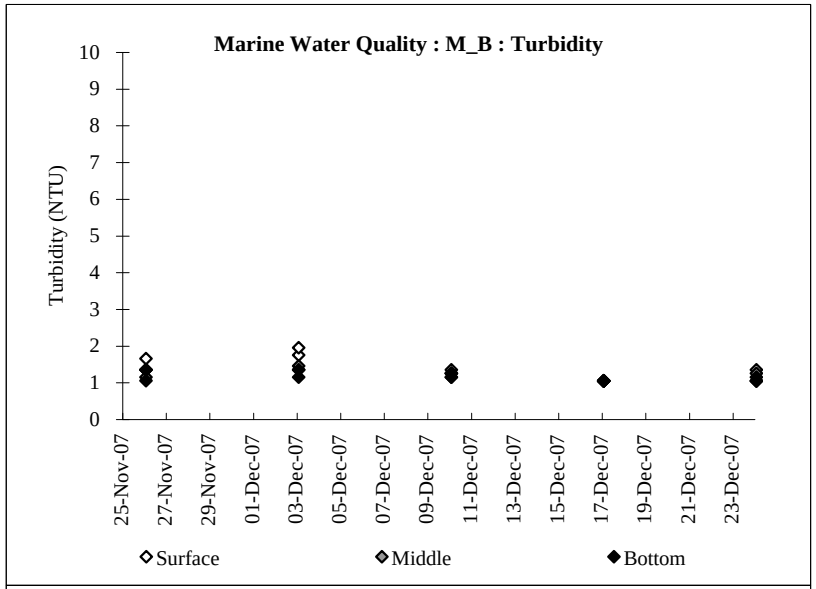
	Mid-Ebb			Mid-Flood			Depth-averaged
M_B	Surface	Midlle	Bottom	Surface	Midlle	Bottom	SS (mg/L)
26-Nov-07	5.0	6.0	6.0	4.0	8.0	5.0	5.7
03-Dec-07	3.0	4.0	2.0	5.0	6.0	6.0	4.3
10-Dec-07	~~2.0~~	3.0	3.0	~~2.0~~	~~2.0~~	7.0	3.2
17-Dec-07	~~2.0~~	2.0	2.0	~~2.0~~	3.0	~~2.0~~	2.2
24-Dec-07	2.0	~~2.0~~	~~2.0~~	4.0	8.0	7.0	4.2

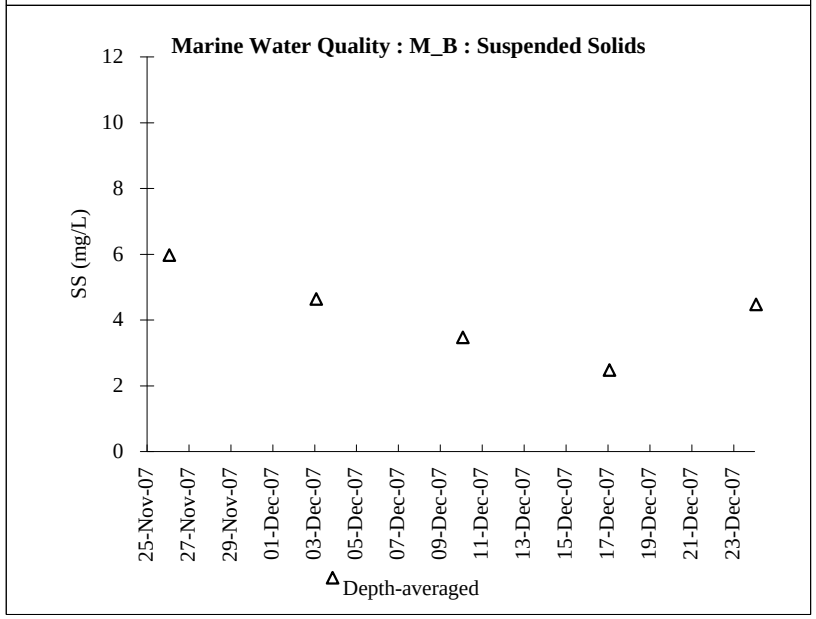

Marine Water Quality : M_B : Salinity
Salinity (ppt)
36
35
34
33
32
31
30
29
28
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle
Bottom


Marine Water Quality : M_B : pH
pH
10
9
8
7
6
5
4
3
2
1
0
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle
Bottom


Marine Water Quality : M_B : DO (Surface)
DO (mg/L)
12
10
8
6
4
2
0
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle


Marine Water Quality : M_B : DO (Bottom)
DO (mg/L)
12
10
8
6
4
2
0
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Bottom


Marine Water Quality : M_B : Turbidity
Turbidity (NTU)
0
1
2
3
4
5
6
7
8
9
10
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle
Bottom


Marine Water Quality : M_B : Suspended Solids
SS (mg/L)
0
2
4
6
8
10
12
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Depth-averaged

KS	Surface								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	26-Nov-07	14:52	12.8	1.0	18.9	30.1	7.6	8.2	1.8
Mid-Ebb	03-Dec-07	10:52	13.1	1.0	18.5	30.3	7.6	8.1	2.1
Mid-Ebb	10-Dec-07	15:22	13.4	1.0	18.1	30.1	7.7	8.2	2.3
Mid-Ebb	17-Dec-07	10:52	13.5	1.0	18.2	30.3	7.5	8.1	1.1
Mid-Ebb	24-Dec-07	13:22	12.9	1.0	17.6	30.2	7.8	8.1	~~1.0~~

KS	Surface								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	26-Nov-07	10:27	13.6	1.0	19.9	32.3	7.7	8.3	1.9
Mid-Flood	03-Dec-07	12:27	13.0	1.0	19.2	32.4	7.7	8.3	1.7
Mid-Flood	10-Dec-07	10:27	13.8	1.0	18.1	32.2	7.6	8.4	1.2
Mid-Flood	17-Dec-07	13:57	13.2	1.0	18.2	32.4	7.6	8.3	1.3
Mid-Flood	24-Dec-07	09:57	14.0	1.0	17.4	32.3	7.9	8.4	~~1.0~~

Remarks:

Action level	***Bold & Italic***
Limit level	**Bold**
< detection limit	~~Grey~~

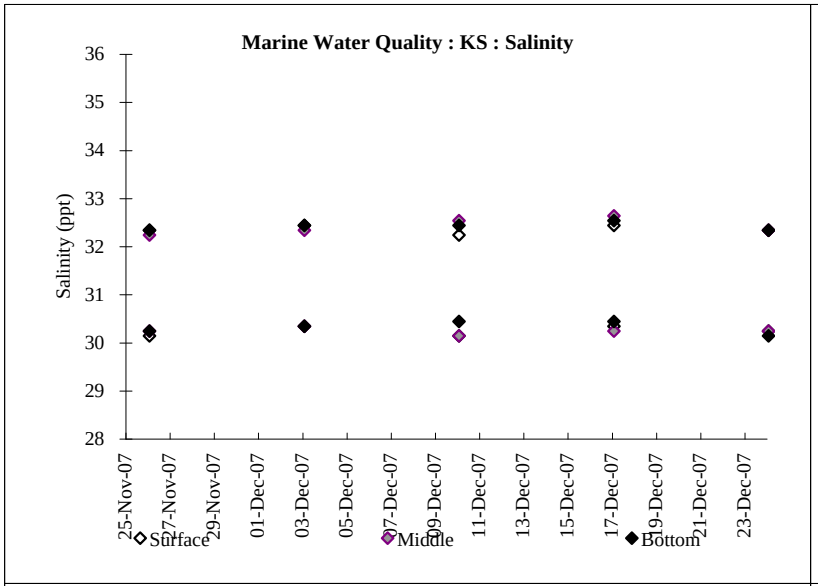
KS	Middle								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	26-Nov-07	14:51	12.8	6.4	18.7	30.2	7.6	8.2	1.6
Mid-Ebb	03-Dec-07	10:51	13.1	6.6	18.6	30.3	7.7	8.2	1.1
Mid-Ebb	10-Dec-07	15:21	13.4	6.7	18.3	30.1	7.6	8.1	1.3
Mid-Ebb	17-Dec-07	10:51	13.5	6.8	18.3	30.2	7.5	8.2	1.1
Mid-Ebb	24-Dec-07	13:21	12.9	6.5	17.6	30.2	7.9	8.1	1.1

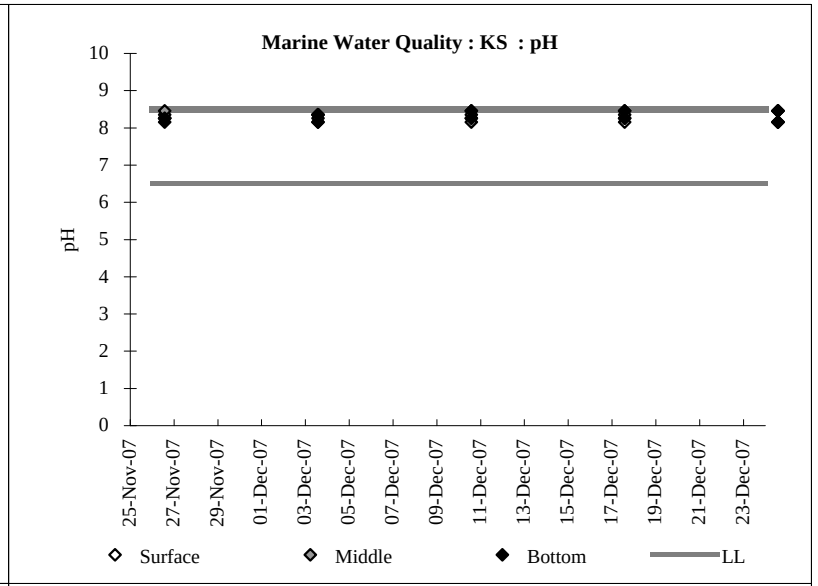
KS	Middle								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	26-Nov-07	10:26	13.6	6.8	19.9	32.2	7.7	8.4	1.5
Mid-Flood	03-Dec-07	12:26	13.0	6.5	19.3	32.3	7.6	8.3	1.9
Mid-Flood	10-Dec-07	10:26	13.8	6.9	18.2	32.5	7.8	8.3	1.4
Mid-Flood	17-Dec-07	13:56	13.2	6.6	18.4	32.6	7.7	8.4	1.0
Mid-Flood	24-Dec-07	09:56	14.0	7.0	17.4	32.3	8.0	8.4	1.0

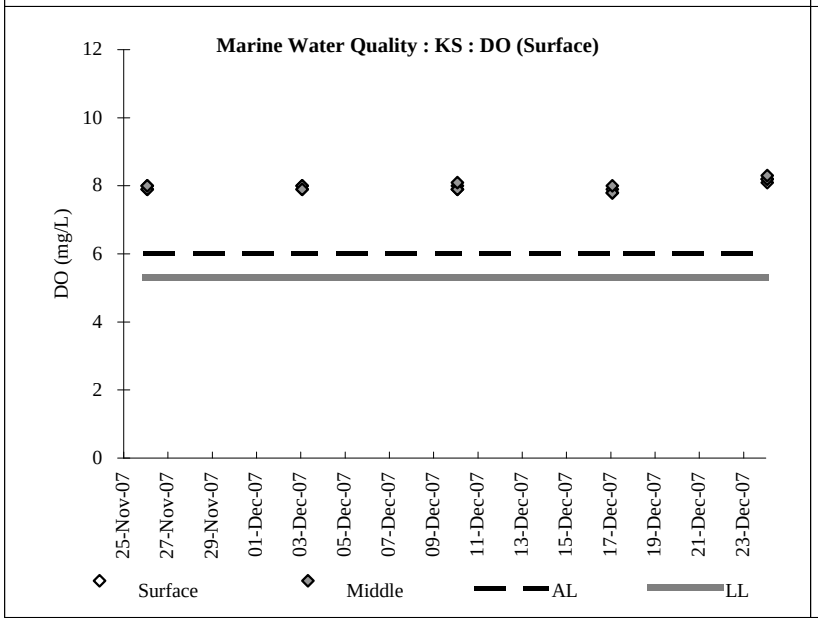
KS	Bottom								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	26-Nov-07	14:50	12.8	11.8	18.8	30.2	7.6	8.1	1.9
Mid-Ebb	03-Dec-07	10:50	13.1	12.1	18.6	30.3	7.7	8.1	1.8
Mid-Ebb	10-Dec-07	15:20	13.4	12.4	18.3	30.4	7.5	8.2	1.5
Mid-Ebb	17-Dec-07	10:50	13.5	12.5	18.3	30.4	7.7	8.2	1.3
Mid-Ebb	24-Dec-07	13:20	12.9	11.9	17.6	30.1	7.9	8.1	1.2

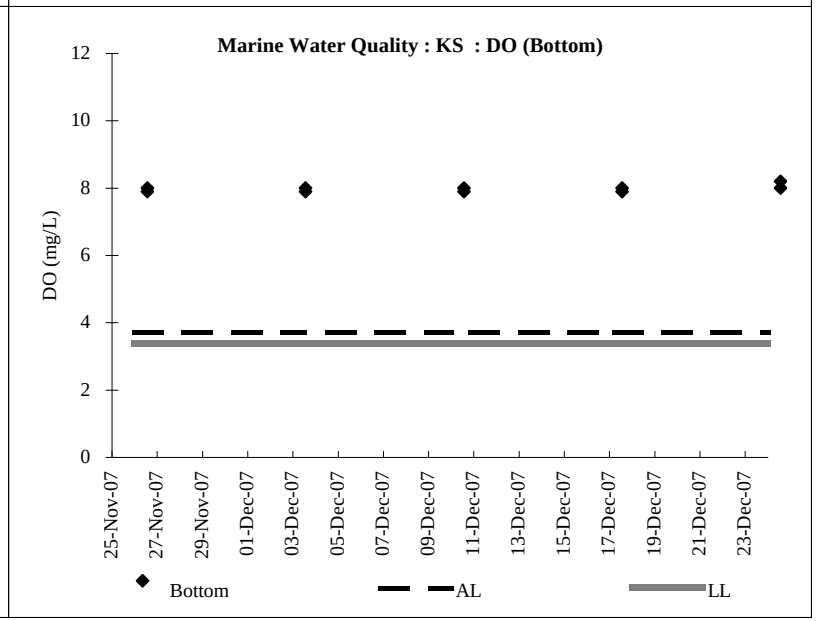
KS	Bottom								
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	26-Nov-07	10:25	13.6	12.6	19.9	32.3	7.7	8.2	2.0
Mid-Flood	03-Dec-07	12:25	13.0	12.0	19.3	32.4	7.8	8.3	2.0
Mid-Flood	10-Dec-07	10:25	13.8	12.8	18.2	32.4	7.5	8.4	1.7
Mid-Flood	17-Dec-07	13:55	13.2	12.2	18.5	32.5	7.7	8.4	1.3
Mid-Flood	24-Dec-07	9:55	14.0	13.0	17.4	32.3	7.9	8.4	1.2

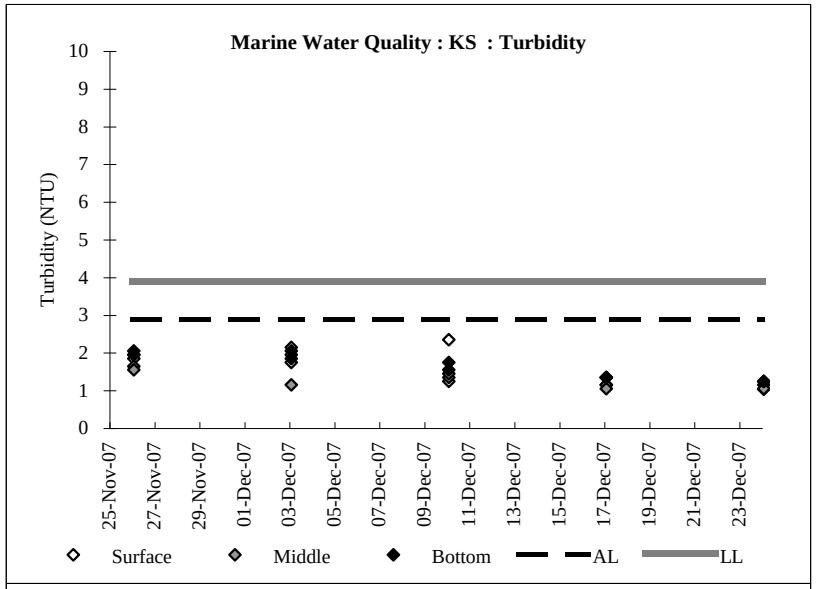
	Mid-Ebb			Mid-Flood			Depth-averaged
KS	Surface	Midlle	Bottom	Surface	Midlle	Bottom	SS (mg/L)
26-Nov-07	4.0	6.0	3.0	5.0	4.0	7.0	***4.8***
03-Dec-07	4.0	4.0	2.0	4.0	2.0	3.0	3.2
10-Dec-07	~~2.0~~	2.0	~~2.0~~	~~2.0~~	3.0	2.0	2.2
17-Dec-07	~~2.0~~	2.0	~~2.0~~	~~2.0~~	~~2.0~~	~~2.0~~	2.0
24-Dec-07	~~2.0~~	~~2.0~~	4.0	10.0	8.0	6.0	***5.3***

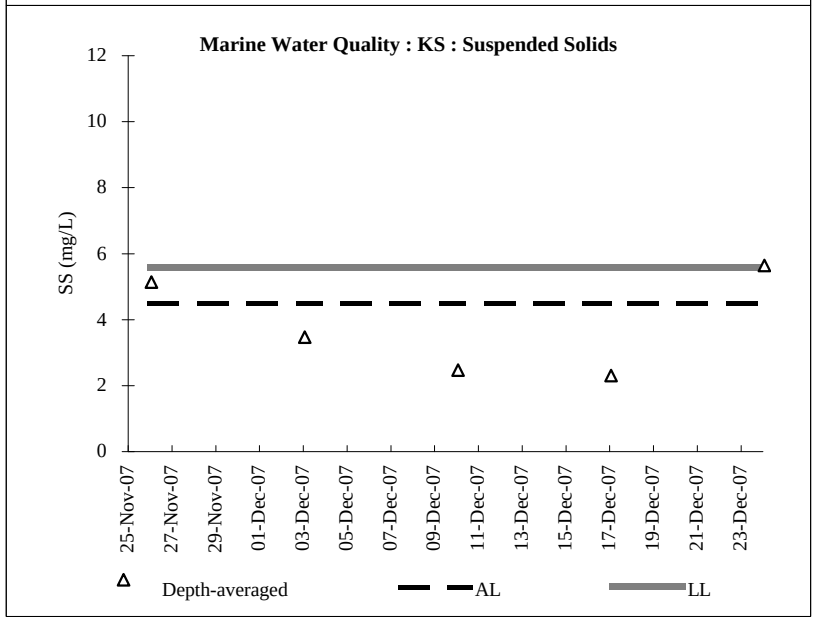

Marine Water Quality : KS : Salinity
Salinity (ppt)
Surface
Middle
Bottom


Marine Water Quality : KS : pH
pH
Surface
Middle
Bottom
LL


Marine Water Quality : KS : DO (Surface)
DO (mg/L)
Surface
Middle
AL
LL


Marine Water Quality : KS : DO (Bottom)
DO (mg/L)
Bottom
AL
LL


Marine Water Quality : KS : Turbidity
Turbidity (NTU)
0
1
2
3
4
5
6
7
8
9
10
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Surface
Middle
Bottom
AL
LL

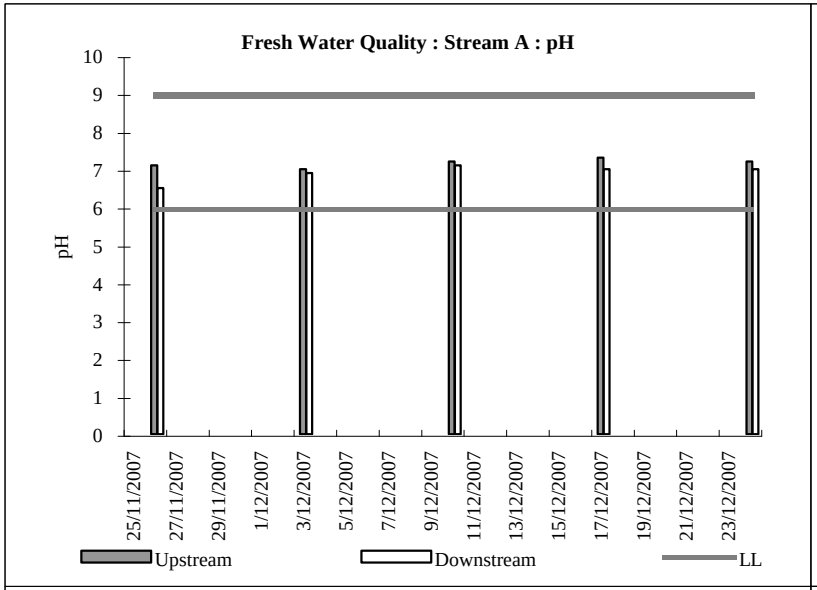

Marine Water Quality : KS : Suspended Solids
SS (mg/L)
0
2
4
6
8
10
12
25-Nov-07
27-Nov-07
29-Nov-07
01-Dec-07
03-Dec-07
05-Dec-07
07-Dec-07
09-Dec-07
11-Dec-07
13-Dec-07
15-Dec-07
17-Dec-07
19-Dec-07
21-Dec-07
23-Dec-07
Depth-averaged
AL
LL

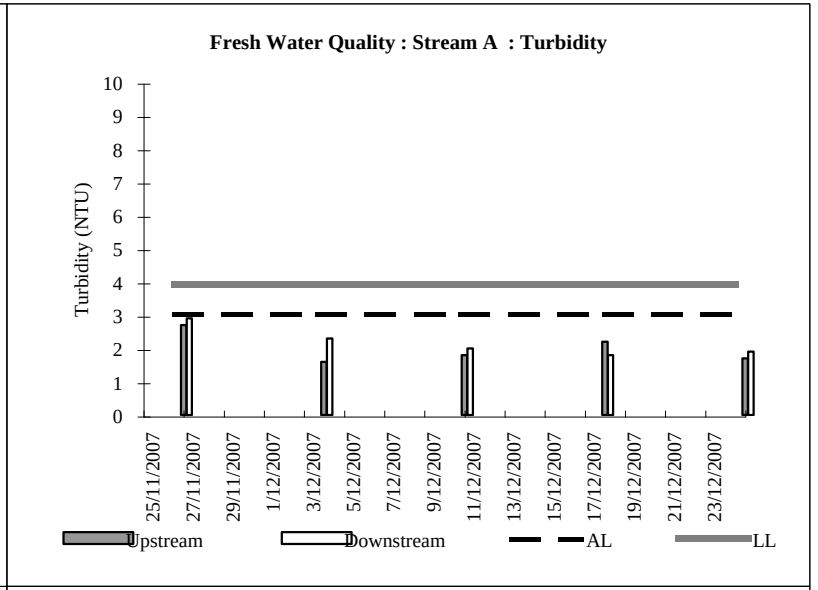
F_UA	Mid depth						
Date	time	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
26-Nov-07	13:35	15.6	<0.1	9.9	7.1	2.7	4.0
03-Dec-07	9:35	15.4	<0.1	9.9	7.0	1.6	2.0
10-Dec-07	14:05	14.1	<0.1	10.1	7.2	1.8	3.0
17-Dec-07	9:35	16.7	<0.1	9.8	7.3	2.2	2.0
24-Dec-07	12:05	15.0	<0.1	10.2	7.2	1.7	4.0

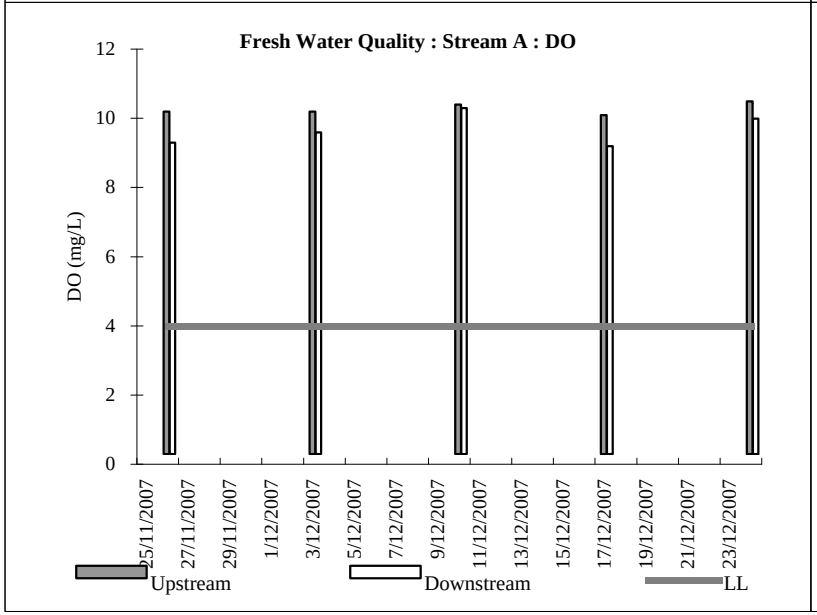
F_DA	Mid depth						
Date	time	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
26-Nov-07	13:40	16.8	<0.1	9.0	6.5	2.9	2.0
03-Dec-07	9:40	15.8	<0.1	9.3	6.9	2.3	2.0
10-Dec-07	14:10	14.4	<0.1	10.0	7.1	2.0	2.0
17-Dec-07	9:40	18.9	<0.1	8.9	7.0	1.8	2.0
24-Dec-07	12:10	15.2	<0.1	9.7	7.0	1.9	***4.0***

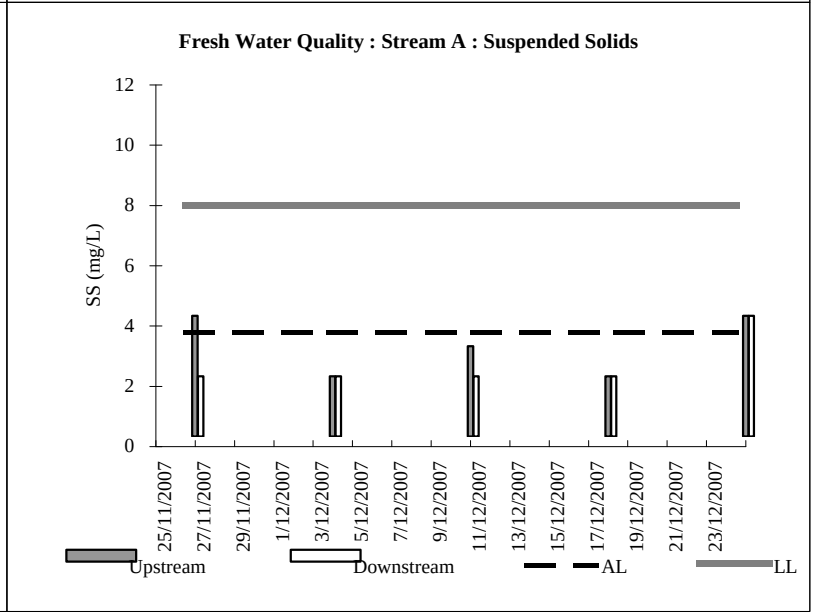
Remarks:

Action level	***Bold & Italic***
Limit level	**Bold**
< detection limit	~~Grey~~


Fresh Water Quality : Stream A : pH
pH
Upstream
Downstream
LL


Fresh Water Quality : Stream A : Turbidity
Turbidity (NTU)
Upstream
Downstream
AL
LL


Fresh Water Quality : Stream A : DO
DO (mg/L)
Upstream
Downstream
LL

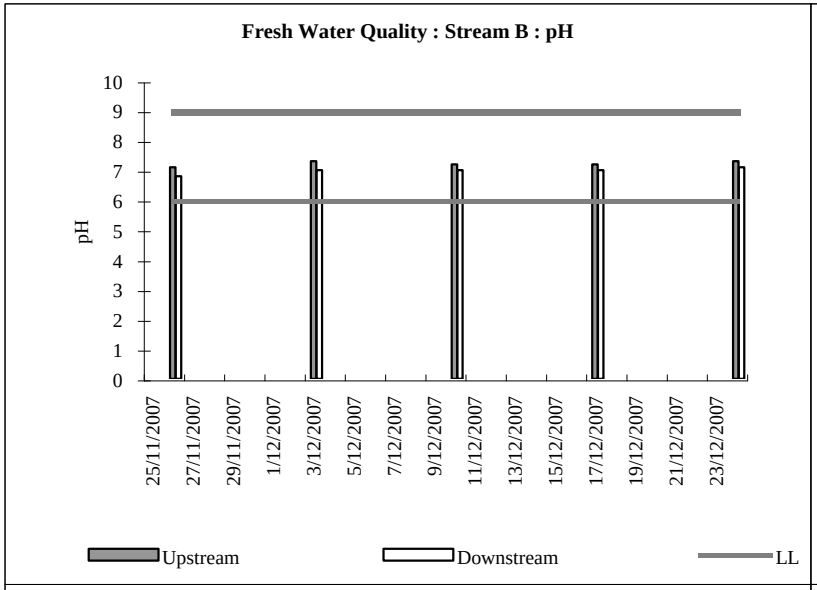

Fresh Water Quality : Stream A : Suspended Solids
SS (mg/L)
Upstream
Downstream
AL
LL

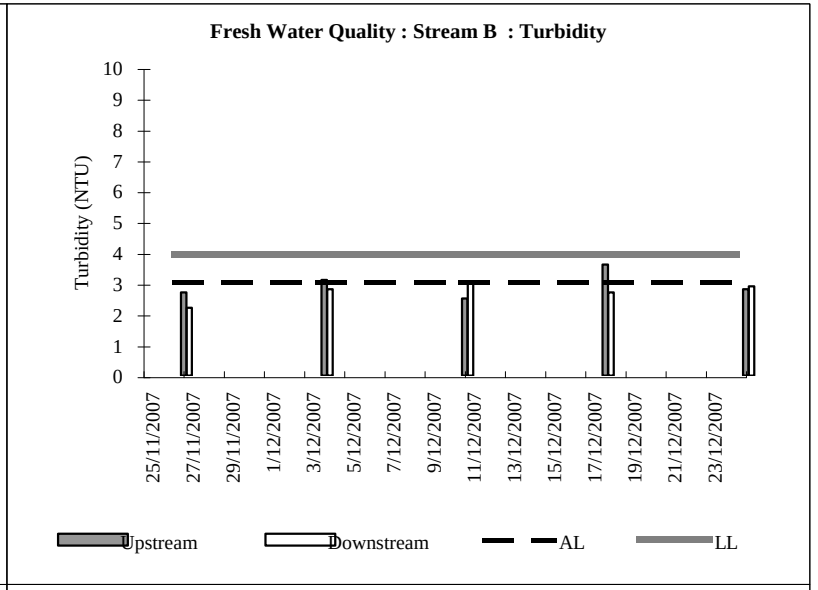
F_UB	Mid depth						
Date	time	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
26-Nov-07	13:50	16.2	<0.1	9.4	7.1	2.7	4.0
03-Dec-07	9:50	16.1	<0.1	9.3	7.3	3.1	2.0
10-Dec-07	14:20	14.6	<0.1	9.6	7.2	2.5	6.0
17-Dec-07	9:50	17.7	<0.1	9.1	7.2	3.6	2.0
24-Dec-07	12:20	15.1	<0.1	9.7	7.3	2.8	4.0

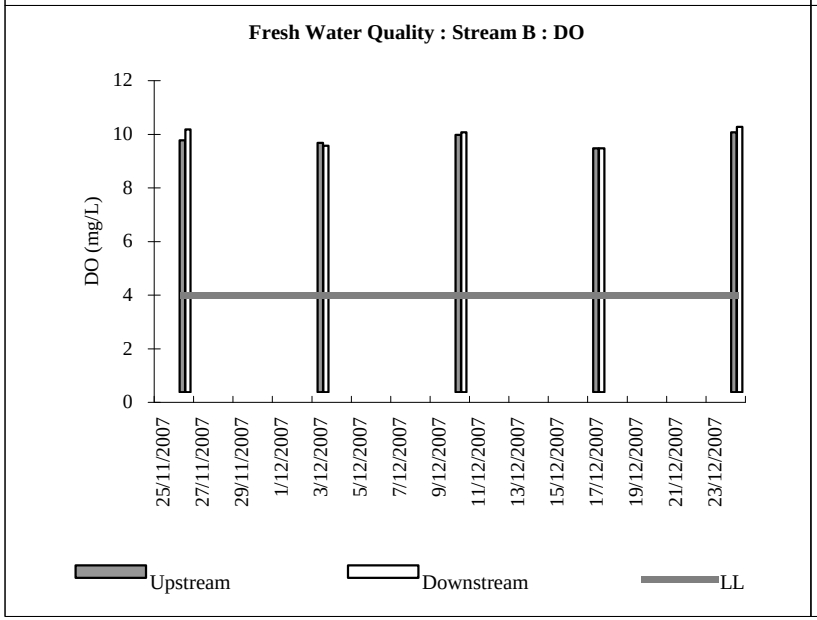
F_DB	Mid depth						
Date	time	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
26-Nov-07	14:00	15.5	<0.1	9.8	6.8	2.2	3.0
03-Dec-07	10:00	16.3	<0.1	9.2	7.0	2.8	2.0
10-Dec-07	14:30	14.3	<0.1	9.7	7.0	3.0	***4.0***
17-Dec-07	10:00	17.6	<0.1	9.1	7.0	2.7	2.0
24-Dec-07	12:30	14.9	<0.1	9.9	7.1	2.9	***5.0***

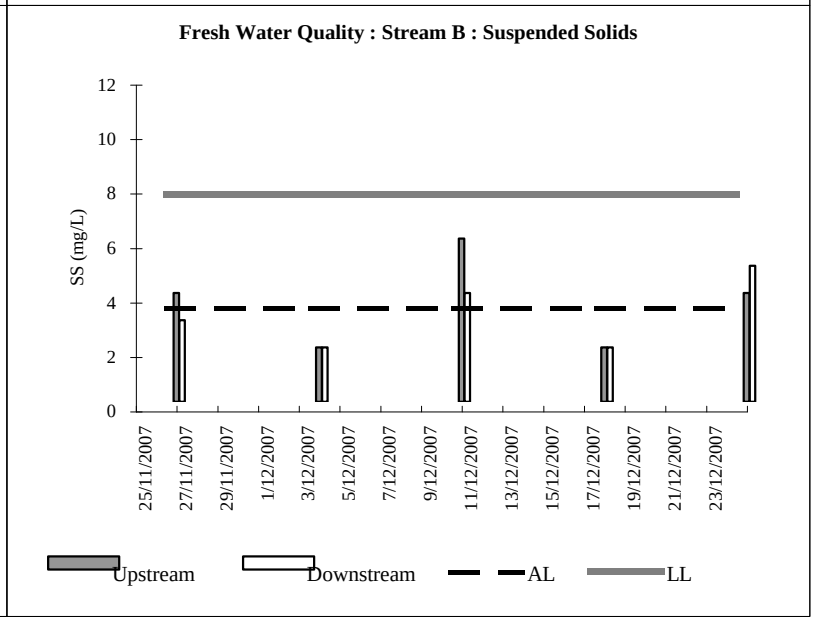
Remarks:

Action level	***Bold & Italic***
Limit level	**Bold**
< detection limit	~~Grey~~


Fresh Water Quality : Stream B : pH
pH
10
9
8
7
6
5
4
3
2
1
0
25/11/2007
27/11/2007
29/11/2007
1/12/2007
3/12/2007
5/12/2007
7/12/2007
9/12/2007
11/12/2007
13/12/2007
15/12/2007
17/12/2007
19/12/2007
21/12/2007
23/12/2007
Upstream
Downstream
LL


Fresh Water Quality : Stream B : Turbidity
Turbidity (NTU)
10
9
8
7
6
5
4
3
2
1
0
25/11/2007
27/11/2007
29/11/2007
1/12/2007
3/12/2007
5/12/2007
7/12/2007
9/12/2007
11/12/2007
13/12/2007
15/12/2007
17/12/2007
19/12/2007
21/12/2007
23/12/2007
Upstream
Downstream
AL
LL


Fresh Water Quality : Stream B : DO
DO (mg/L)
12
10
8
6
4
2
0
25/11/2007
27/11/2007
29/11/2007
1/12/2007
3/12/2007
5/12/2007
7/12/2007
9/12/2007
11/12/2007
13/12/2007
15/12/2007
17/12/2007
19/12/2007
21/12/2007
23/12/2007
Upstream
Downstream
LL

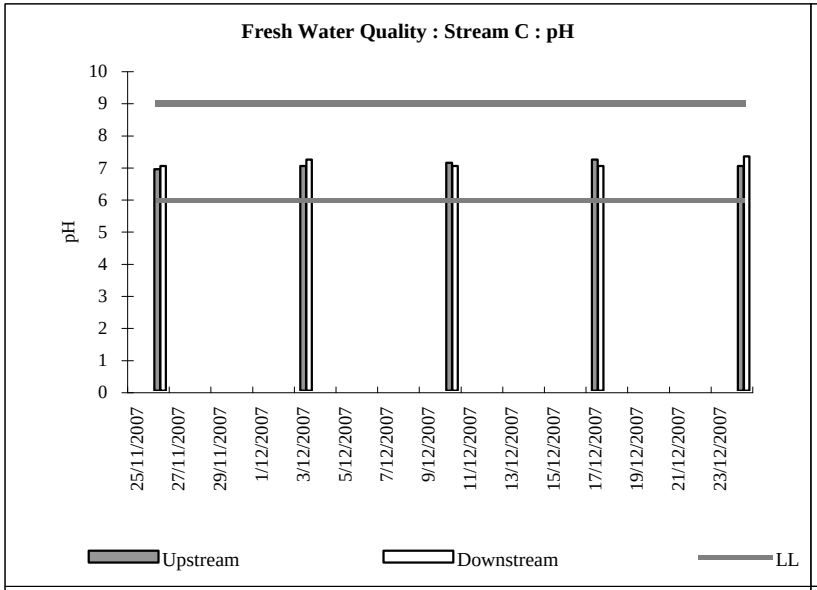

Fresh Water Quality : Stream B : Suspended Solids
SS (mg/L)
12
10
8
6
4
2
0
25/11/2007
27/11/2007
29/11/2007
1/12/2007
3/12/2007
5/12/2007
7/12/2007
9/12/2007
11/12/2007
13/12/2007
15/12/2007
17/12/2007
19/12/2007
21/12/2007
23/12/2007
Upstream
Downstream
AL
LL

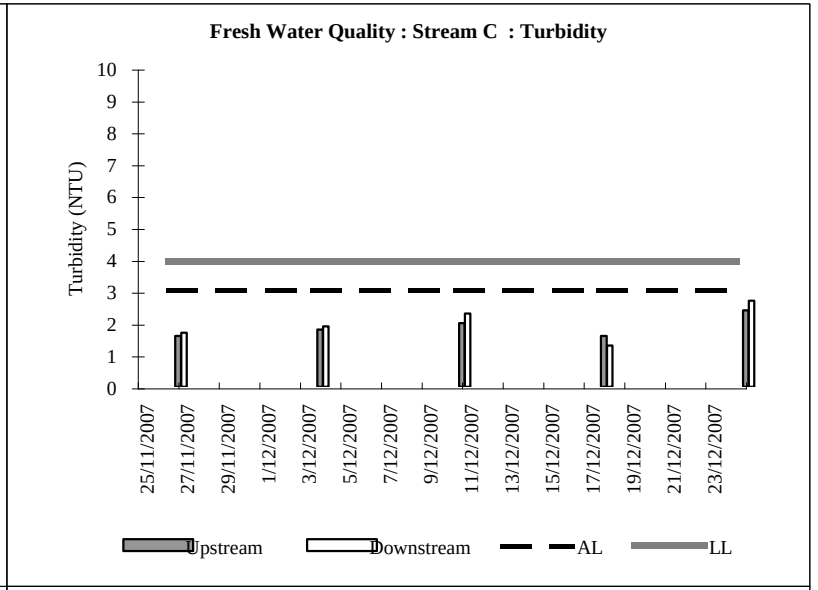
F_UC	Mid depth						
Date	time	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
26-Nov-07	14:05	16.6	<0.1	9.1	6.9	1.6	2.0
03-Dec-07	10:05	15.8	<0.1	9.3	7.0	1.8	2.0
10-Dec-07	14:35	14.1	<0.1	9.6	7.1	2.0	3.0
17-Dec-07	10:05	18.9	<0.1	8.5	7.2	1.6	2.0
24-Dec-07	12:35	15.2	<0.1	10.3	7.0	2.4	4.0

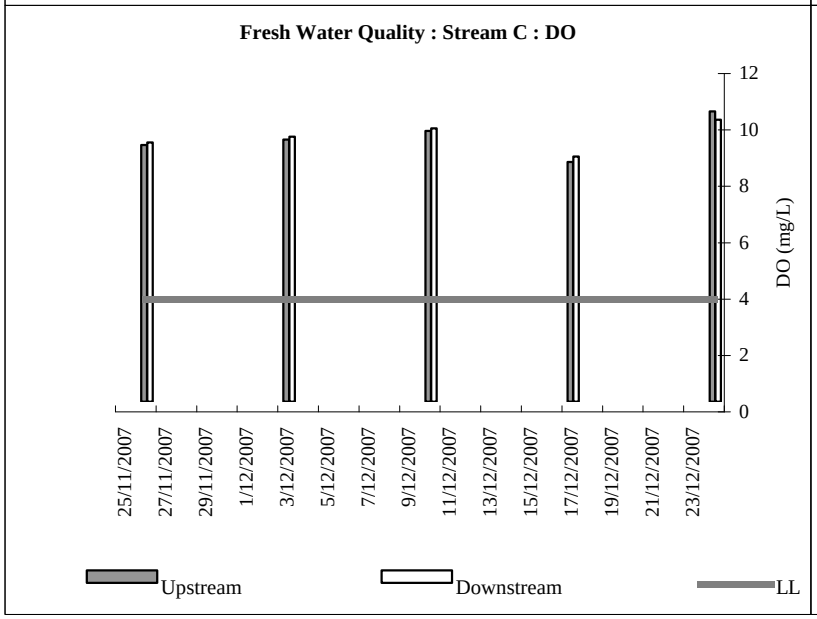
F_DC	Mid depth						
Date	time	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
26-Nov-07	14:15	16.9	<0.1	9.2	7.0	1.7	2.0
03-Dec-07	10:15	15.9	<0.1	9.4	7.2	1.9	2.0
10-Dec-07	14:45	14.2	<0.1	9.7	7.0	2.3	3.0
17-Dec-07	10:15	19.0	<0.1	8.7	7.0	1.3	2.0
24-Dec-07	12:45	15.6	<0.1	10.0	7.3	2.7	***5.0***

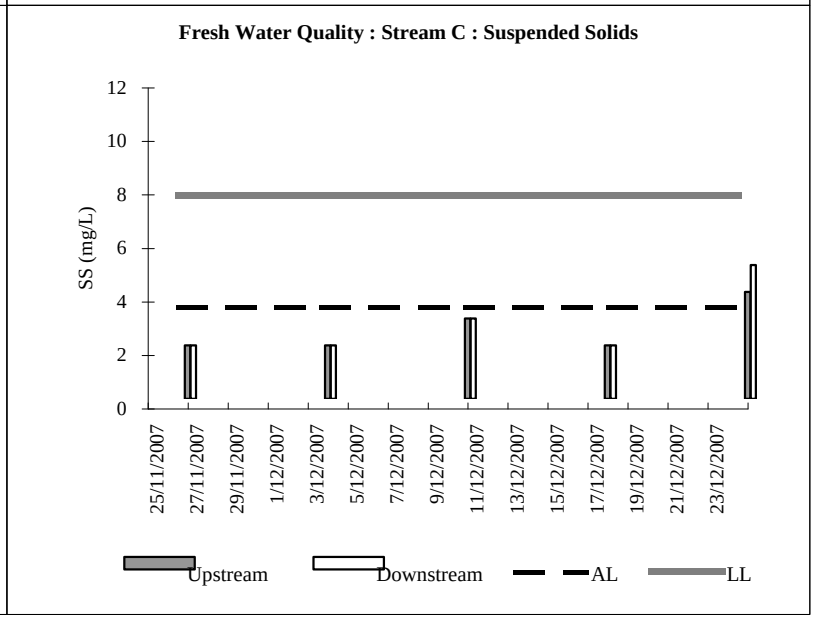
Remarks:

Action level	***Bold & Italic***
Limit level	**Bold**
< detection limit	~~Grey~~


Fresh Water Quality : Stream C : pH
pH
10
9
8
7
6
5
4
3
2
1
0
25/11/2007
27/11/2007
29/11/2007
1/12/2007
3/12/2007
5/12/2007
7/12/2007
9/12/2007
11/12/2007
13/12/2007
15/12/2007
17/12/2007
19/12/2007
21/12/2007
23/12/2007
Upstream
Downstream
LL


Fresh Water Quality : Stream C : Turbidity
Turbidity (NTU)
10
9
8
7
6
5
4
3
2
1
0
25/11/2007
27/11/2007
29/11/2007
1/12/2007
3/12/2007
5/12/2007
7/12/2007
9/12/2007
11/12/2007
13/12/2007
15/12/2007
17/12/2007
19/12/2007
21/12/2007
23/12/2007
Upstream
Downstream
AL
LL

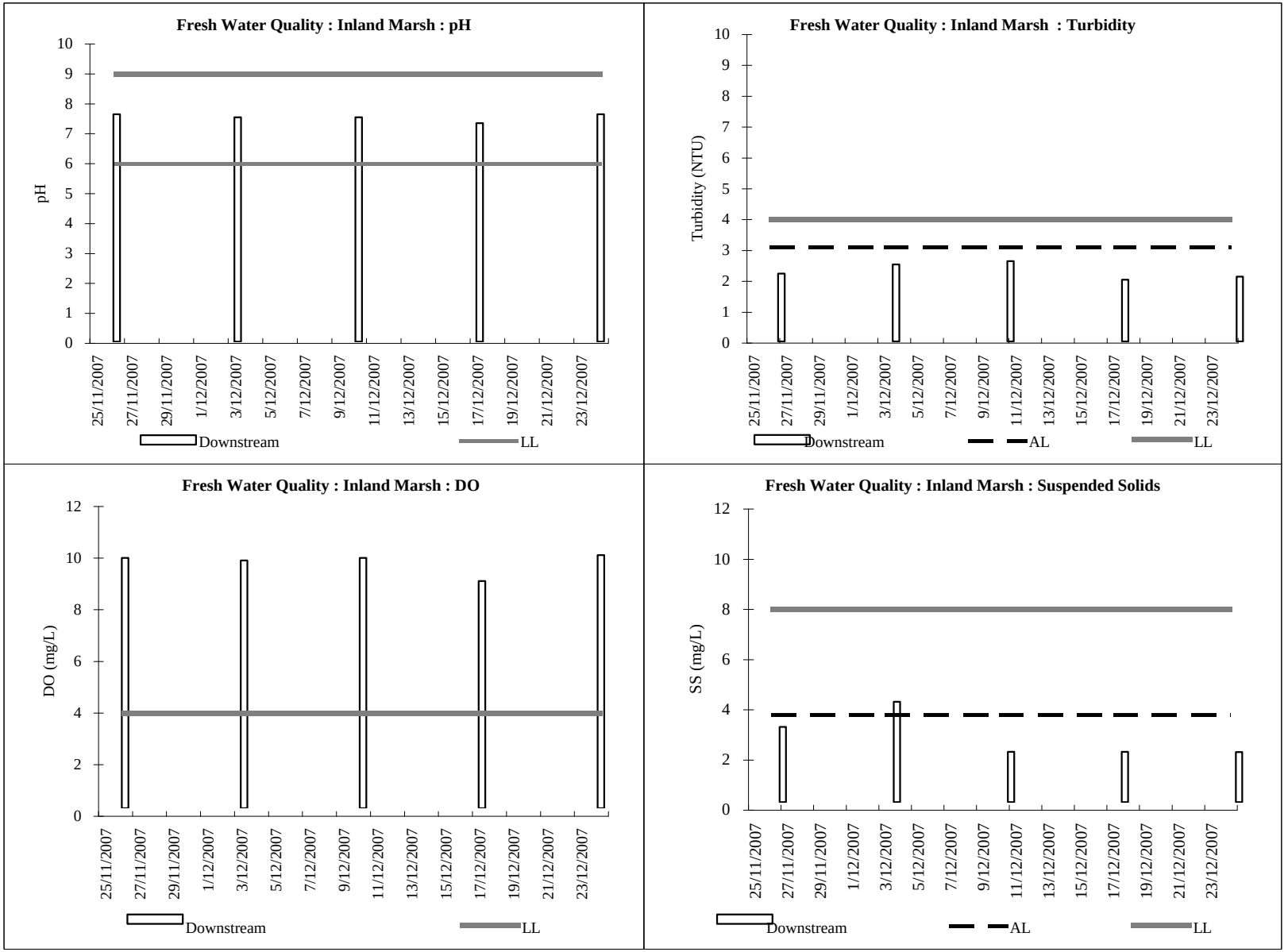

Fresh Water Quality : Stream C : DO
DO (mg/L)
12
10
8
6
4
2
0
25/11/2007
27/11/2007
29/11/2007
1/12/2007
3/12/2007
5/12/2007
7/12/2007
9/12/2007
11/12/2007
13/12/2007
15/12/2007
17/12/2007
19/12/2007
21/12/2007
23/12/2007
Upstream
Downstream
LL


Fresh Water Quality : Stream C : Suspended Solids
SS (mg/L)
12
10
8
6
4
2
0
25/11/2007
27/11/2007
29/11/2007
1/12/2007
3/12/2007
5/12/2007
7/12/2007
9/12/2007
11/12/2007
13/12/2007
15/12/2007
17/12/2007
19/12/2007
21/12/2007
23/12/2007
Upstream
Downstream
AL
LL

F_Inland M	Mid depth						
Date	time	Temp (^{o}C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
26-Nov-07	12:55	15.0	<0.1	9.7	7.6	2.2	3.0
03-Dec-07	8:55	15.2	<0.1	9.6	7.5	2.5	***4.0***
10-Dec-07	13:25	15.1	0.1	9.7	7.5	2.6	2.0
17-Dec-07	8:55	17.3	<0.1	8.8	7.3	2.0	2.0
24-Dec-07	11:25	15.7	<0.1	9.8	7.6	2.1	2.0

Remarks:

Action level	***Bold & Italic***
Limit level	**Bold**
< detection limit	~~Grey~~


Fresh Water Quality : Inland Marsh : pH
pH
Downstream
LL
Fresh Water Quality : Inland Marsh : Turbidity
Turbidity (NTU)
Downstream
AL
LL
Fresh Water Quality : Inland Marsh : DO
DO (mg/L)
Downstream
LL
Fresh Water Quality : Inland Marsh : Suspended Solids
SS (mg/L)
Downstream
AL
LL

M_A	Surface									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Ebb	26-Nov-07	12:57	5.0	0.09	0.06	~~0.01~~	0.16	0.01	6.5	
Mid-Ebb	03-Dec-07	08:27	5.0	~~0.01~~	0.08	0.02	0.11	0.01	2.8	
Mid-Ebb	10-Dec-07	12:57	3.0	0.04	0.09	~~0.01~~	0.14	0.02	1.7	
Mid-Ebb	17-Dec-07	08:27	3.0	0.02	0.01	~~0.01~~	0.04	~~0.01~~	2.3	
Mid-Ebb	24-Dec-07	10:57	4.0	0.10	0.02	~~0.01~~	0.13	~~0.01~~	1.3	

M_A	Surface									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Flood	26-Nov-07	08:57	7.0	~~0.01~~	0.05	~~0.01~~	0.07	0.01	6.5	
Mid-Flood	03-Dec-07	10:57	3.0	~~0.01~~	0.08	0.02	0.11	0.01	2.8	
Mid-Flood	10-Dec-07	08:57	~~2.0~~	0.04	0.09	~~0.01~~	0.14	0.02	1.7	
Mid-Flood	17-Dec-07	12:27	~~2.0~~	0.02	0.02	~~0.01~~	0.05	~~0.01~~	2.1	
Mid-Flood	24-Dec-07	08:27	3.0	0.06	0.02	~~0.01~~	0.09	~~0.01~~	1.3	

Remarks:

Action level	***Bold & Italic***
Limit level	**Bold**
< detection limit	~~Grey~~

M_A	Middle									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Ebb	26-Nov-07	12:56	2.0	~~0.01~~	0.06	~~0.01~~	0.08	0.01	6.6	
Mid-Ebb	03-Dec-07	08:26	~~2.0~~	~~0.01~~	0.08	0.02	0.11	0.01	2.7	
Mid-Ebb	10-Dec-07	12:56	~~2.0~~	0.04	0.09	~~0.01~~	0.14	0.02	1.4	
Mid-Ebb	17-Dec-07	08:26	2.0	~~0.01~~	0.01	~~0.01~~	~~0.01~~	~~0.01~~	2.3	
Mid-Ebb	24-Dec-07	10:56	7.0	0.05	0.02	~~0.01~~	0.08	~~0.01~~	1.3	

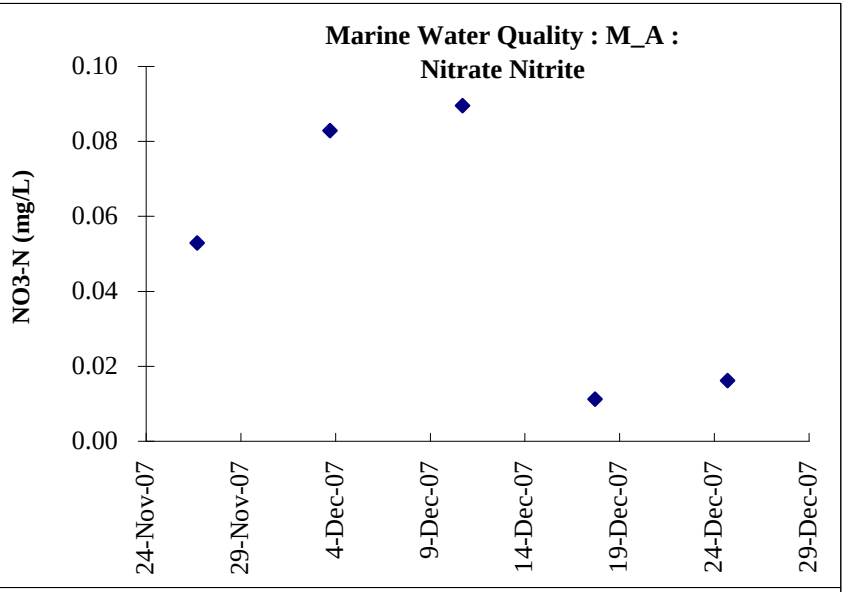
M_A	Middle									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Flood	26-Nov-07	08:56	4.0	0.10	0.05	~~0.01~~	0.16	0.01	6.2	
Mid-Flood	03-Dec-07	10:56	~~2.0~~	~~0.01~~	0.08	0.02	0.11	0.01	2.8	
Mid-Flood	10-Dec-07	08:56	5.0	0.07	0.09	~~0.01~~	0.17	0.02	1.9	
Mid-Flood	17-Dec-07	12:26	~~2.0~~	~~0.01~~	0.01	~~0.01~~	~~0.01~~	~~0.01~~	2.3	
Mid-Flood	24-Dec-07	08:26	2.0	0.05	0.02	~~0.01~~	0.08	~~0.01~~	1.3	

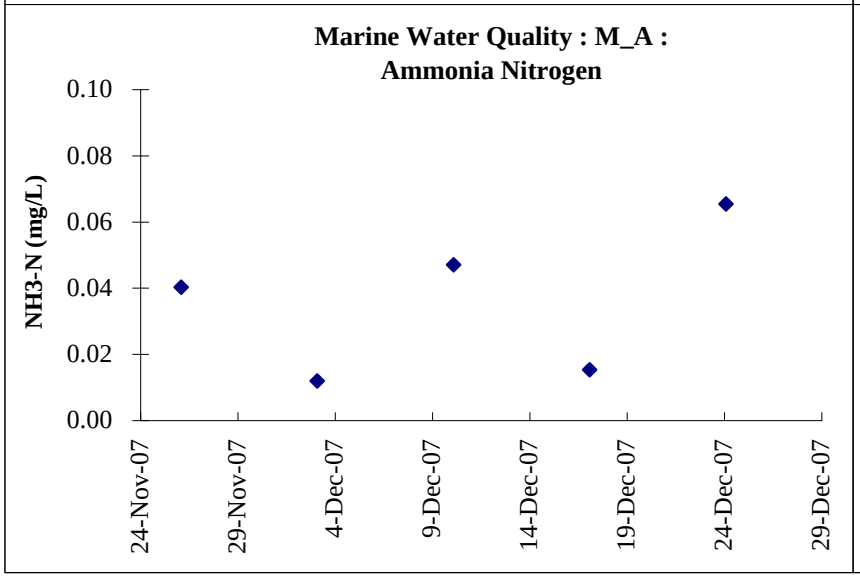
M_A	Bottom									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Ebb	26-Nov-07	12:55	4.0	~~0.01~~	0.05	~~0.01~~	0.07	0.01	5.9	
Mid-Ebb	03-Dec-07	08:25	6.0	~~0.01~~	0.08	0.02	0.11	0.01	2.2	
Mid-Ebb	10-Dec-07	12:55	~~2.0~~	0.04	0.09	~~0.01~~	0.14	0.02	2.1	
Mid-Ebb	17-Dec-07	08:25	3.0	~~0.01~~	0.01	~~0.01~~	~~0.01~~	~~0.01~~	2.2	
Mid-Ebb	24-Dec-07	10:55	6.0	0.08	0.01	~~0.01~~	0.10	~~0.01~~	1.2	

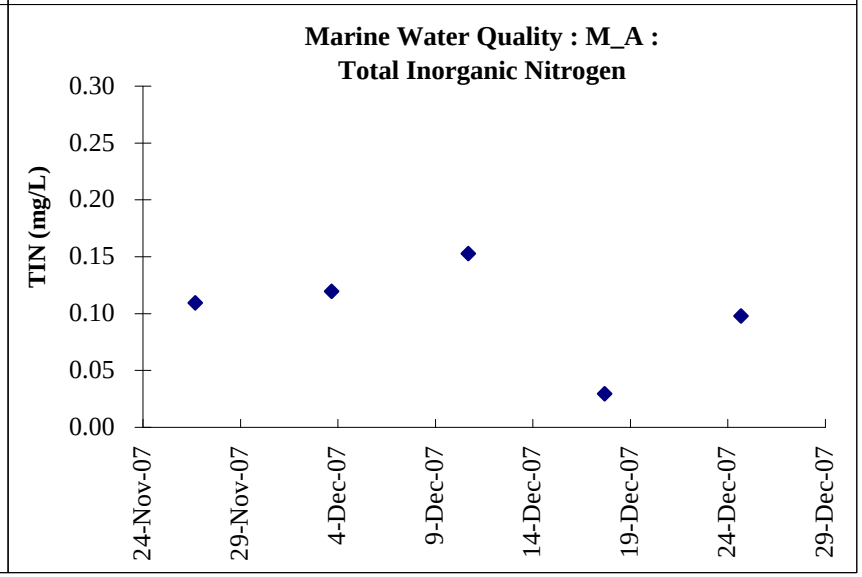
M_A	Bottom									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Flood	26-Nov-07	08:55	5.0	~~0.01~~	0.05	~~0.01~~	0.07	0.01	6.4	
Mid-Flood	03-Dec-07	10:55	4.0	~~0.01~~	0.10	~~0.01~~	0.12	0.01	2.3	
Mid-Flood	10-Dec-07	08:55	~~2.0~~	0.04	0.09	~~0.01~~	0.14	0.02	1.7	
Mid-Flood	17-Dec-07	12:25	3.0	~~0.01~~	0.01	~~0.01~~	~~0.01~~	~~0.01~~	2.1	
Mid-Flood	24-Dec-07	08:25	3.0	0.04	0.01	~~0.01~~	0.06	~~0.01~~	1.4	

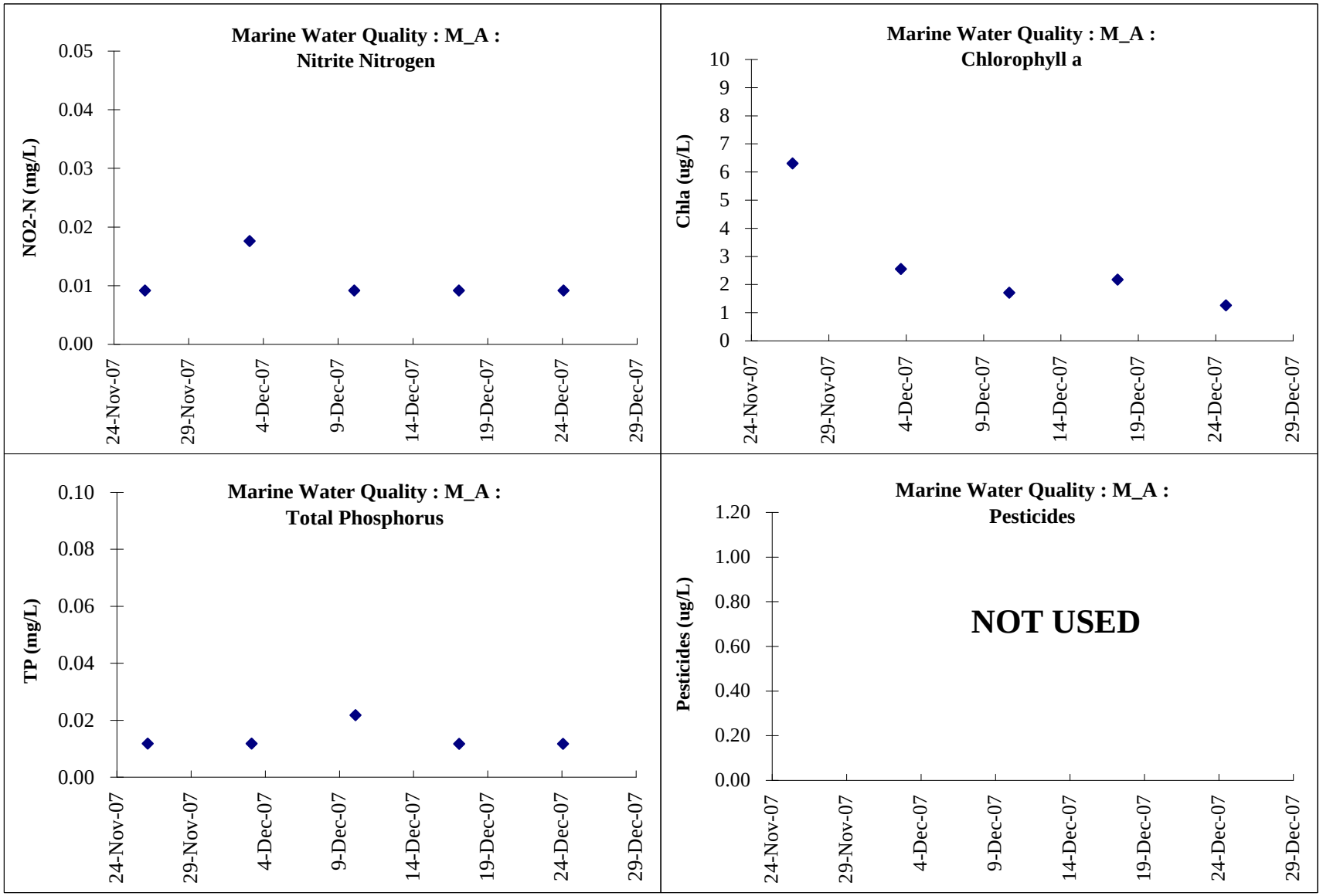
	Depth-averaged							
M_A	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
26-Nov-07	5	0.04	0.05	~~0.01~~	0.10	0.01	6.4	
03-Dec-07	4	~~0.01~~	0.08	0.02	0.11	0.01	2.6	
10-Dec-07	3	0.05	0.09	~~0.01~~	0.14	0.02	1.8	
17-Dec-07	2	0.01	0.01	~~0.01~~	0.02	~~0.01~~	2.2	
24-Dec-07	4	0.06	0.02	~~0.01~~	0.09	~~0.01~~	1.3	

NOT USED


Marine Water Quality : M_A :
Nitrate Nitrite
NO3-N (mg/L)
0.10
0.08
0.06
0.04
0.02
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07


Marine Water Quality : M_A :
Ammonia Nitrogen
NH3-N (mg/L)
0.10
0.08
0.06
0.04
0.02
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07


Marine Water Quality : M_A :
Total Inorganic Nitrogen
TIN (mg/L)
0.30
0.25
0.20
0.15
0.10
0.05
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07


Marine Water Quality : M_A :
Nitrite Nitrogen
NO2-N (mg/L)
0.05
0.04
0.03
0.02
0.01
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
Marine Water Quality : M_A :
Chlorophyll a
Chla (ug/L)
10
9
8
7
6
5
4
3
2
1
0
Marine Water Quality : M_A :
Total Phosphorus
TP (mg/L)
0.10
0.08
0.06
0.04
0.02
0.00
Marine Water Quality : M_A :
Pesticides
Pesticides (ug/L)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
NOT USED

M_Marsh	Surface									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Ebb	26-Nov-07	13:07	3	~~0.01~~	0.05	~~0.01~~	0.07	~~0.01~~	***6.0***	
Mid-Ebb	03-Dec-07	08:37	~~2~~	~~0.01~~	0.08	***0.02***	0.11	0.01	2.9	
Mid-Ebb	10-Dec-07	13:07	~~2~~	0.04	***0.09***	~~0.01~~	0.14	0.02	1.8	
Mid-Ebb	17-Dec-07	08:37	~~2~~	~~0.01~~	0.01	~~0.01~~	~~0.01~~	~~0.01~~	2.3	
Mid-Ebb	24-Dec-07	11:07	***8***	***0.05***	0.01	~~0.01~~	0.07	~~0.01~~	1.3	

M_Marsh	Surface									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Flood	26-Nov-07	09:07	4	~~0.01~~	0.05	~~0.01~~	0.07	0.01	***6.7***	
Mid-Flood	03-Dec-07	11:07	~~2~~	~~0.01~~	0.08	***0.02***	0.11	0.01	3.0	
Mid-Flood	10-Dec-07	09:07	3	**0.11**	***0.09***	~~0.01~~	**0.21**	0.02	1.6	
Mid-Flood	17-Dec-07	12:37	2	~~0.01~~	0.01	~~0.01~~	~~0.01~~	~~0.01~~	2.3	
Mid-Flood	24-Dec-07	08:37	5	***0.05***	0.02	~~0.01~~	0.08	~~0.01~~	1.3	

Remarks:

Action level	***Bold & Italic***
Limit level	**Bold**
< detection limit	~~Grey~~

M_Marsh	Middle									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Ebb	26-Nov-07	13:06	5	~~0.01~~	0.05	~~0.01~~	0.07	0.01	***6.0***	
Mid-Ebb	03-Dec-07	08:36	4	~~0.01~~	0.08	***0.02***	0.11	0.01	3.2	
Mid-Ebb	10-Dec-07	13:06	2	0.04	***0.09***	~~0.01~~	0.14	0.02	1.7	
Mid-Ebb	17-Dec-07	08:36	2	~~0.01~~	0.01	~~0.01~~	~~0.01~~	~~0.01~~	2.6	
Mid-Ebb	24-Dec-07	11:06	4	***0.05***	0.02	~~0.01~~	0.08	~~0.01~~	1.4	

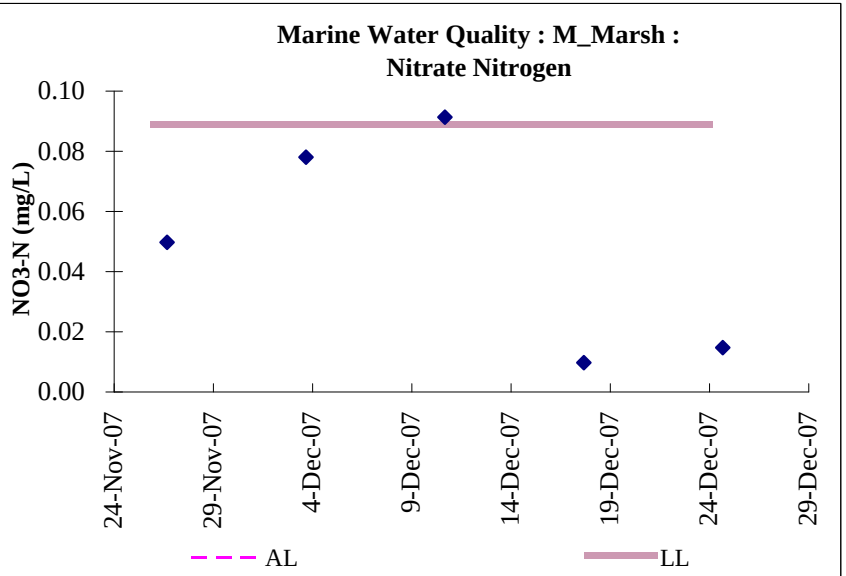
M_Marsh	Middle									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Flood	26-Nov-07	09:06	6	~~0.01~~	0.05	~~0.01~~	0.07	0.01	***6.4***	
Mid-Flood	03-Dec-07	11:06	2	~~0.01~~	0.08	***0.02***	0.11	0.01	2.8	
Mid-Flood	10-Dec-07	09:06	~~2~~	**0.07**	**0.10**	~~0.01~~	0.18	0.02	1.7	
Mid-Flood	17-Dec-07	12:36	~~2~~	~~0.01~~	0.01	~~0.01~~	~~0.01~~	~~0.01~~	2.4	
Mid-Flood	24-Dec-07	08:36	~~2~~	0.04	0.01	~~0.01~~	0.06	~~0.01~~	1.2	

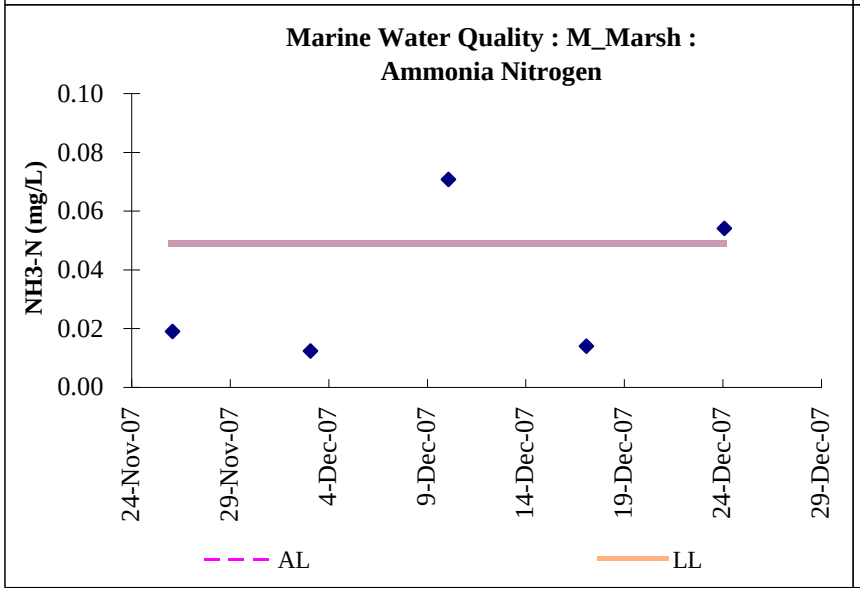
M_Marsh	Bottom									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Ebb	26-Nov-07	13:05	6	~~0.01~~	0.05	~~0.01~~	0.07	~~0.01~~	***6.0***	
Mid-Ebb	03-Dec-07	08:35	3	~~0.01~~	0.08	***0.02***	0.11	0.01	2.5	
Mid-Ebb	10-Dec-07	13:05	2	0.04	***0.09***	~~0.01~~	0.14	0.02	1.7	
Mid-Ebb	17-Dec-07	08:35	2	~~0.01~~	0.01	~~0.01~~	~~0.01~~	~~0.01~~	2.3	
Mid-Ebb	24-Dec-07	11:05	4	**0.06**	0.01	~~0.01~~	0.08	~~0.01~~	1.2	

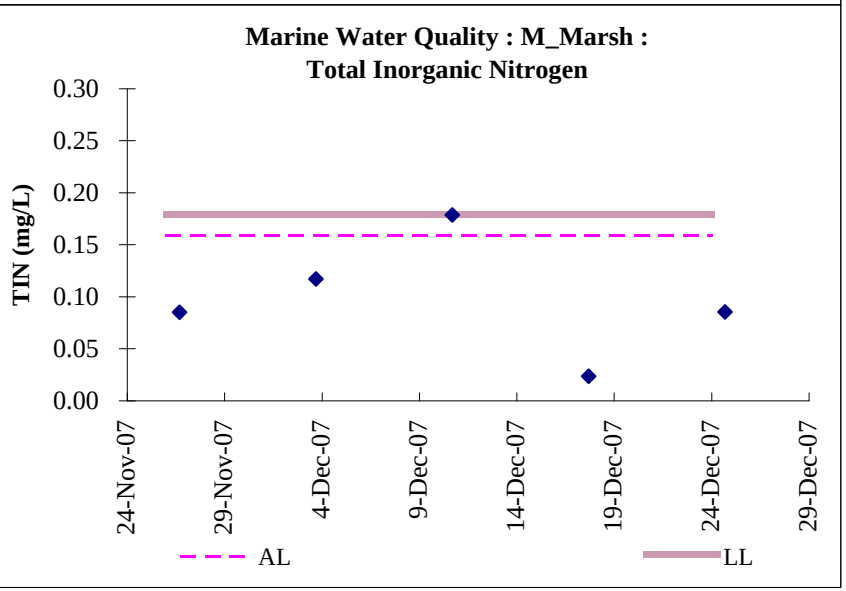
M_Marsh	Bottom									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Flood	26-Nov-07	09:05	3	***0.05***	0.05	~~0.01~~	0.11	0.01	***5.7***	
Mid-Flood	03-Dec-07	11:05	~~2~~	~~0.01~~	0.07	***0.02***	0.10	0.01	2.6	
Mid-Flood	10-Dec-07	09:05	2	**0.11**	***0.09***	~~0.01~~	**0.21**	0.02	1.5	
Mid-Flood	17-Dec-07	12:35	~~2~~	0.02	0.01	~~0.01~~	0.04	~~0.01~~	2.4	
Mid-Flood	24-Dec-07	08:35	2	**0.06**	0.02	~~0.01~~	0.09	~~0.01~~	1.4	

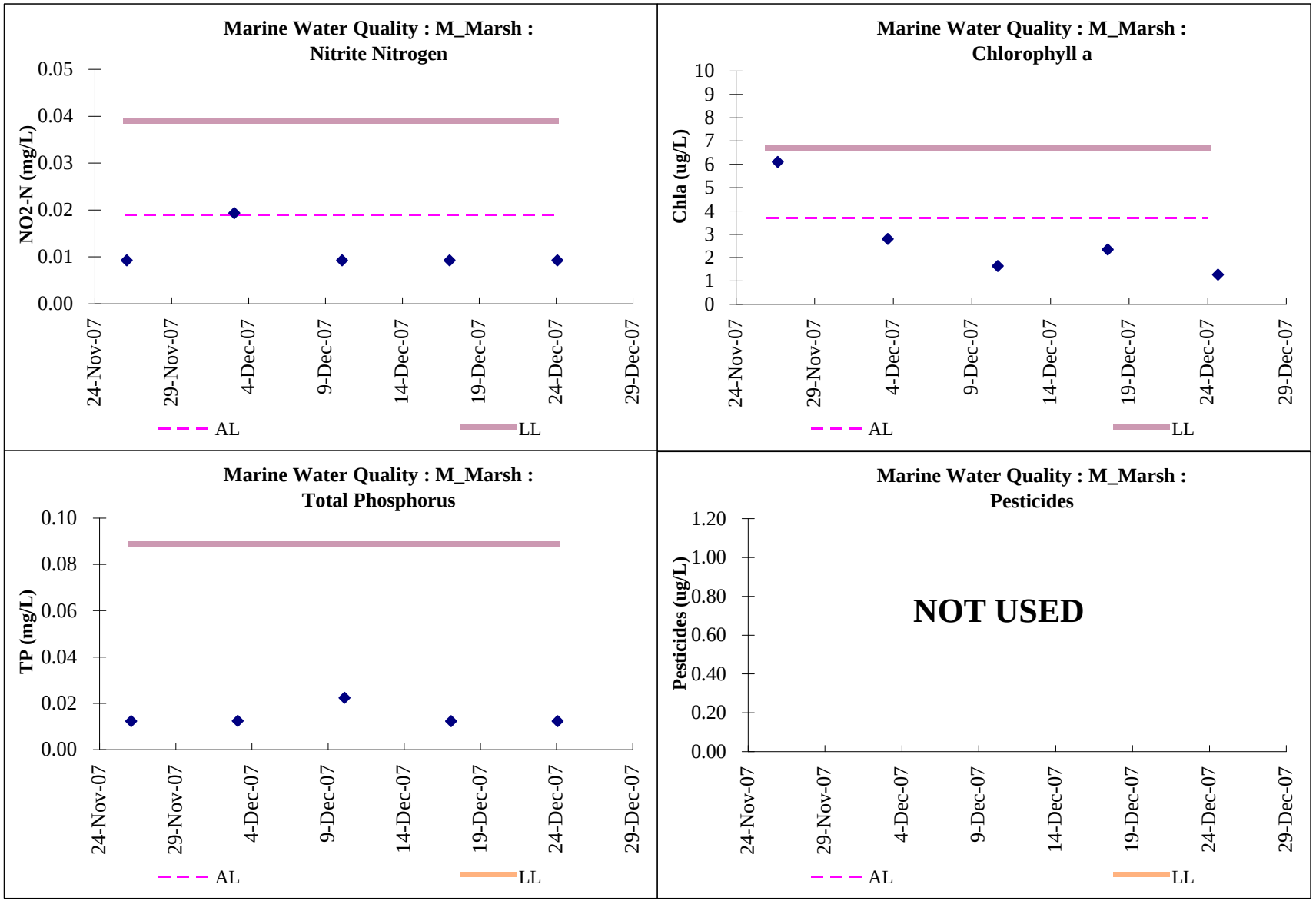
	Depth-averaged							
M_Marsh	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
26-Nov-07	5	0.02	0.05	~~0.01~~	0.08	0.01	***6.1***	
03-Dec-07	2	~~0.01~~	0.08	***0.02***	0.11	0.01	2.8	
10-Dec-07	2	**0.07**	**0.09**	~~0.01~~	***0.17***	0.02	1.7	
17-Dec-07	2	0.01	0.01	~~0.01~~	0.01	~~0.01~~	2.4	
24-Dec-07	4	**0.05**	0.02	~~0.01~~	0.08	~~0.01~~	1.3	

NOT USED


Marine Water Quality : M_Marsh :
Nitrate Nitrogen
NO3-N (mg/L)
0.10
0.08
0.06
0.04
0.02
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
AL
LL


Marine Water Quality : M_Marsh :
Ammonia Nitrogen
NH3-N (mg/L)
0.10
0.08
0.06
0.04
0.02
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
AL
LL


Marine Water Quality : M_Marsh :
Total Inorganic Nitrogen
TIN (mg/L)
0.30
0.25
0.20
0.15
0.10
0.05
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
AL
LL


Marine Water Quality : M_Marsh :
Nitrite Nitrogen
NO2-N (mg/L)
0.05
0.04
0.03
0.02
0.01
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
AL
LL
Marine Water Quality : M_Marsh :
Chlorophyll a
Chla (ug/L)
10
9
8
7
6
5
4
3
2
1
0
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
AL
LL
Marine Water Quality : M_Marsh :
Total Phosphorus
TP (mg/L)
0.10
0.08
0.06
0.04
0.02
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
AL
LL
Marine Water Quality : M_Marsh :
Pesticides
Pesticides (ug/L)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
NOT USED
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
AL
LL

TTC	Surface									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Ebb	26-Nov-07	13:17	4.0	***0.02***	0.04	~~0.01~~	0.07	0.01	**6.2**	
Mid-Ebb	03-Dec-07	08:47	4.0	~~0.01~~	***0.08***	***0.02***	0.11	0.01	**2.8**	
Mid-Ebb	10-Dec-07	13:17	~~2.0~~	**0.03**	**0.09**	~~0.01~~	***0.13***	0.02	***1.9***	
Mid-Ebb	17-Dec-07	12:47	3.0	~~0.01~~	0.01	~~0.01~~	~~0.01~~	~~0.01~~	**2.2**	
Mid-Ebb	24-Dec-07	08:47	2.0	**0.08**	0.02	~~0.01~~	0.11	~~0.01~~	1.1	

TTC	Surface									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Flood	26-Nov-07	09:27	4.0	**0.09**	0.05	~~0.01~~	**0.15**	~~0.01~~	**5.3**	
Mid-Flood	03-Dec-07	11:27	~~2.0~~	~~0.01~~	**0.10**	~~0.01~~	0.12	0.01	**3.1**	
Mid-Flood	10-Dec-07	09:27	~~2.0~~	**0.05**	**0.09**	~~0.01~~	**0.15**	0.02	1.7	
Mid-Flood	17-Dec-07	08:57	~~2.0~~	**0.04**	0.02	~~0.01~~	0.07	~~0.01~~	**2.4**	
Mid-Flood	24-Dec-07	11:27	~~2.0~~	**0.05**	0.02	~~0.01~~	0.08	~~0.01~~	1.2	

Remarks:

Action level	***Bold & Italic***
Limit level	**Bold**
< detection limit	~~Grey~~

TTC	Middle									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Ebb	26-Nov-07	13:16	2.0	~~0.01~~	0.05	~~0.01~~	0.07	0.01	**5.9**	
Mid-Ebb	03-Dec-07	08:46	3.0	~~0.01~~	***0.08***	***0.02***	0.11	0.01	**2.9**	
Mid-Ebb	10-Dec-07	13:16	2.0	**0.04**	**0.09**	~~0.01~~	0.14	0.02	1.7	
Mid-Ebb	17-Dec-07	12:46	~~2.0~~	~~0.01~~	0.01	~~0.01~~	~~0.01~~	~~0.01~~	**2.2**	
Mid-Ebb	24-Dec-07	08:46	~~2.0~~	**0.04**	0.02	~~0.01~~	0.07	~~0.01~~	1.2	

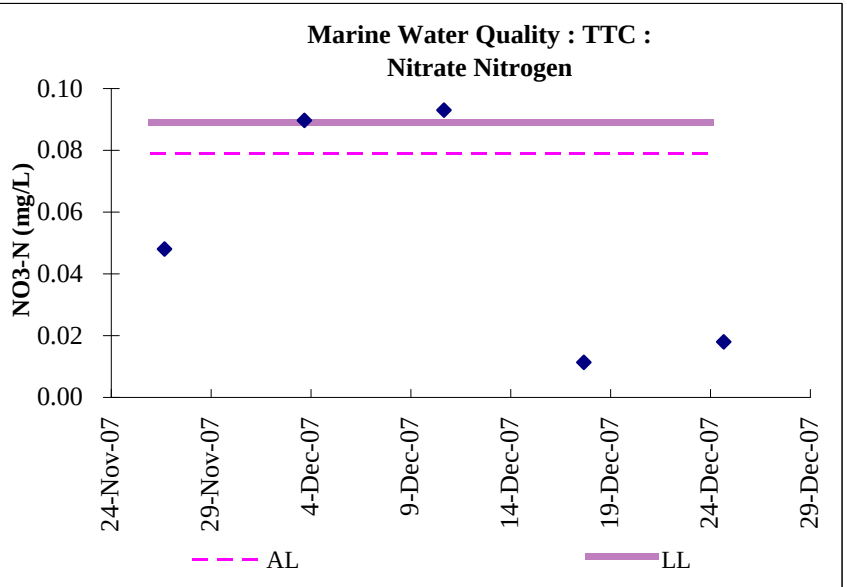
TTC	Middle									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Flood	26-Nov-07	09:26	4.0	**0.03**	0.05	~~0.01~~	0.09	0.01	**6.4**	
Mid-Flood	03-Dec-07	11:26	~~2.0~~	~~0.01~~	**0.10**	~~0.01~~	0.12	0.01	**2.9**	
Mid-Flood	10-Dec-07	09:26	3.0	**0.03**	**0.11**	~~0.01~~	**0.15**	0.02	***2.1***	
Mid-Flood	17-Dec-07	08:56	3.0	**0.03**	0.01	~~0.01~~	0.05	~~0.01~~	**2.4**	
Mid-Flood	24-Dec-07	11:26	3.0	**0.06**	~~0.01~~	~~0.01~~	0.08	~~0.01~~	1.4	

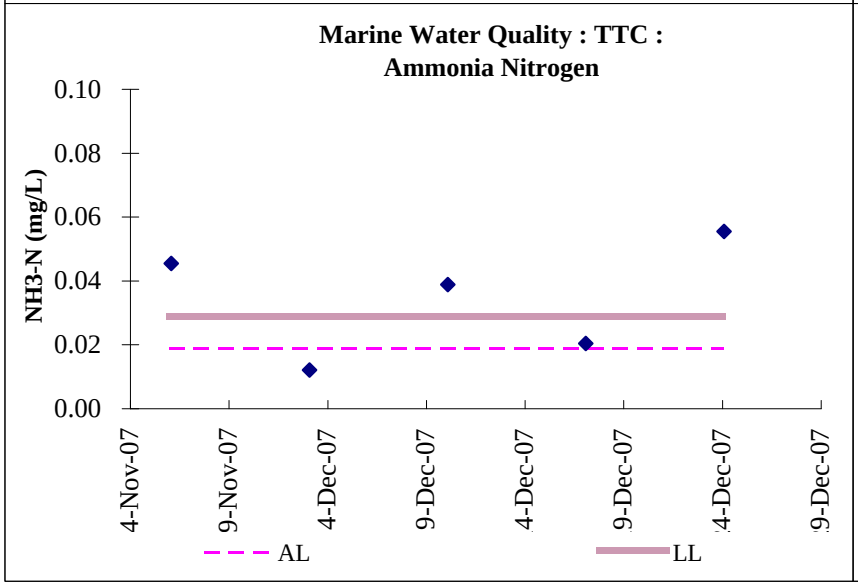
TTC	Bottom									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Ebb	26-Nov-07	13:15	**6.0**	**0.10**	0.05	~~0.01~~	**0.16**	0.01	**6.4**	
Mid-Ebb	03-Dec-07	08:45	***5.0***	~~0.01~~	***0.08***	***0.02***	0.11	0.01	**2.4**	
Mid-Ebb	10-Dec-07	13:15	~~2.0~~	**0.03**	**0.09**	~~0.01~~	***0.13***	0.02	1.7	
Mid-Ebb	17-Dec-07	12:45	3.0	~~0.01~~	0.01	~~0.01~~	~~0.01~~	~~0.01~~	***2.1***	
Mid-Ebb	24-Dec-07	08:45	3.0	**0.04**	0.02	~~0.01~~	0.07	~~0.01~~	1.2	

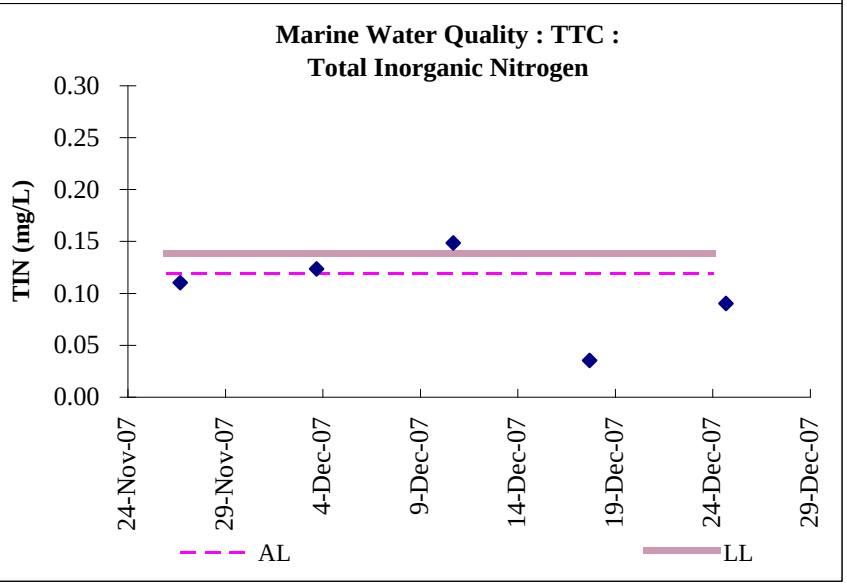
TTC	Bottom									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Flood	26-Nov-07	09:25	***5.0***	~~0.01~~	0.05	~~0.01~~	0.07	0.01	**6.0**	
Mid-Flood	03-Dec-07	11:25	~~2.0~~	~~0.01~~	**0.10**	~~0.01~~	0.12	0.01	**2.6**	
Mid-Flood	10-Dec-07	09:25	3.0	**0.04**	**0.09**	~~0.01~~	0.14	0.02	1.5	
Mid-Flood	17-Dec-07	08:55	~~2.0~~	~~0.01~~	0.01	~~0.01~~	~~0.01~~	~~0.01~~	***1.9***	
Mid-Flood	24-Dec-07	11:25	2.0	**0.05**	0.02	~~0.01~~	0.08	~~0.01~~	1.3	

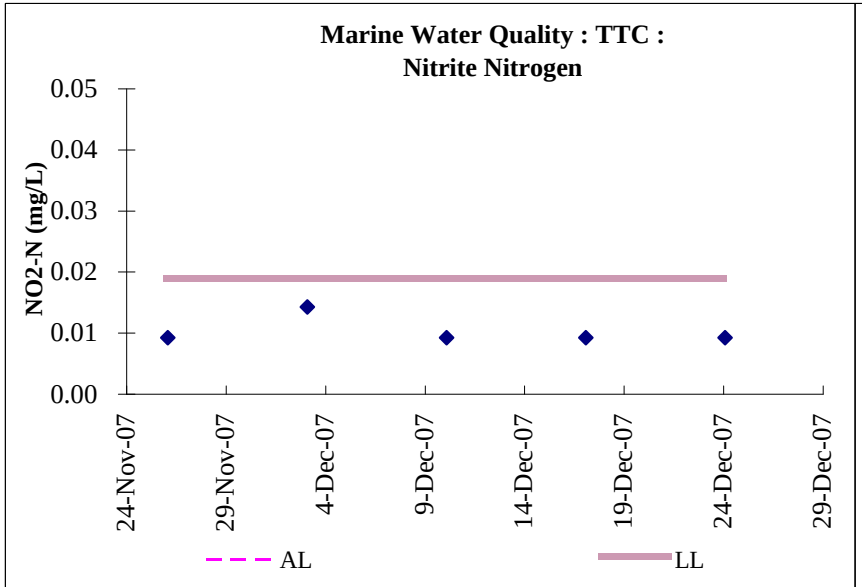
	Depth-averaged							
TTC	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
26-Nov-07	4	**0.04**	0.05	~~0.01~~	0.10	0.01	**6.0**	
03-Dec-07	3	~~0.01~~	**0.09**	0.01	0.11	0.01	**2.8**	
10-Dec-07	2	**0.04**	**0.09**	~~0.01~~	0.14	0.02	1.8	
17-Dec-07	2	0.02	0.01	~~0.01~~	0.03	~~0.01~~	**2.2**	
24-Dec-07	2	**0.05**	0.02	~~0.01~~	0.08	~~0.01~~	1.2	

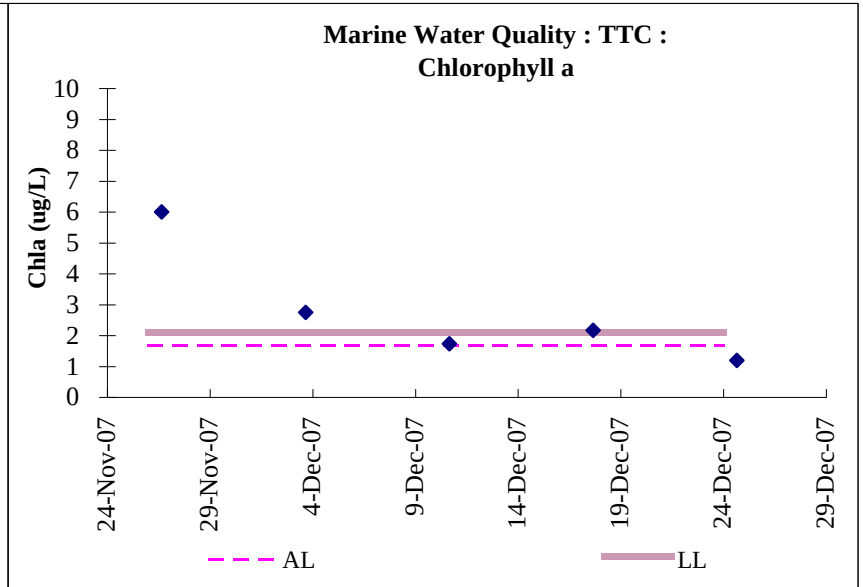
NOT USED

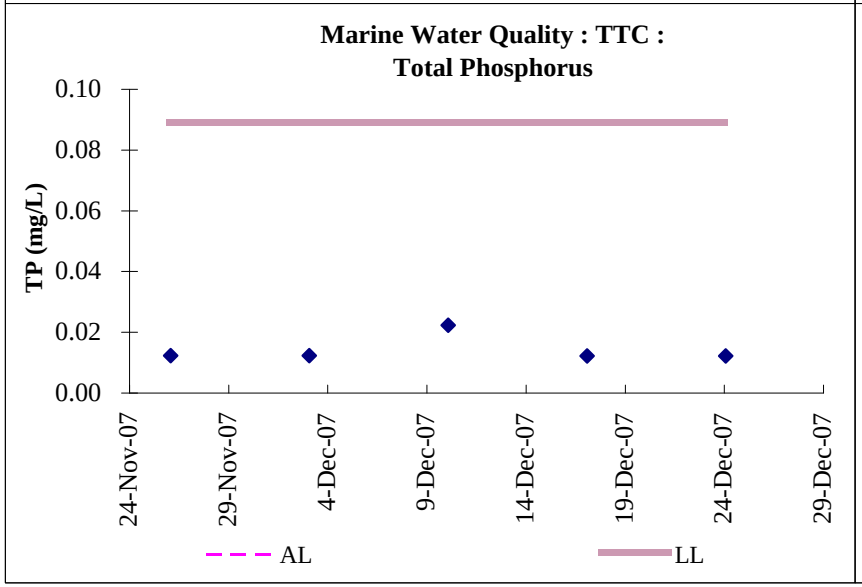

Marine Water Quality : TTC :
Nitrate Nitrogen
NO3-N (mg/L)
0.10
0.08
0.06
0.04
0.02
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
AL
LL

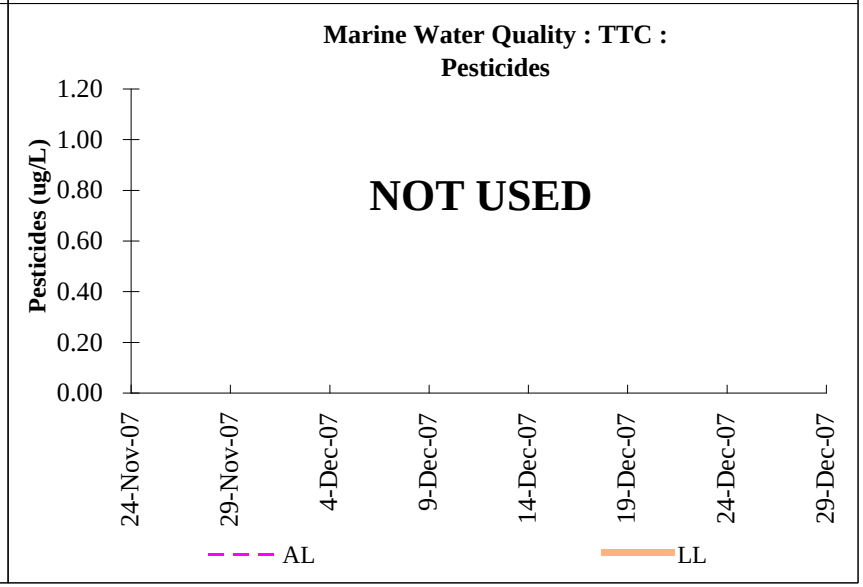

Marine Water Quality : TTC :
Ammonia Nitrogen
NH3-N (mg/L)
0.10
0.08
0.06
0.04
0.02
0.00
4-Nov-07
9-Nov-07
4-Dec-07
9-Dec-07
4-Dec-07
9-Dec-07
4-Dec-07
9-Dec-07
AL
LL


Marine Water Quality : TTC :
Total Inorganic Nitrogen
TIN (mg/L)
0.30
0.25
0.20
0.15
0.10
0.05
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
AL
LL


Marine Water Quality : TTC :
Nitrite Nitrogen
NO2-N (mg/L)
0.05
0.04
0.03
0.02
0.01
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
AL
LL


Marine Water Quality : TTC :
Chlorophyll a
Chla (ug/L)
10
9
8
7
6
5
4
3
2
1
0
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
AL
LL


Marine Water Quality : TTC :
Total Phosphorus
TP (mg/L)
0.10
0.08
0.06
0.04
0.02
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
AL
LL


Marine Water Quality : TTC :
Pesticides
Pesticides (ug/L)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
NOT USED
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
AL
LL

M_BP	Surface									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Ebb	26-Nov-07	13:27	3	0.02	0.05	~~0.01~~	0.08	0.01	***6.5***	
Mid-Ebb	03-Dec-07	08:57	~~2~~	~~0.01~~	0.08	***0.02***	0.11	0.01	2.8	
Mid-Ebb	10-Dec-07	13:27	~~2~~	0.03	***0.09***	~~0.01~~	0.13	0.02	2.3	
Mid-Ebb	17-Dec-07	12:57	~~2~~	~~0.01~~	0.01	~~0.01~~	~~0.01~~	~~0.01~~	2.2	
Mid-Ebb	24-Dec-07	08:57	3	***0.05***	0.01	~~0.01~~	0.07	~~0.01~~	1.3	

M_BP	Surface									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Flood	26-Nov-07	09:37	6	**0.07**	0.05	~~0.01~~	0.13	0.01	***6.0***	
Mid-Flood	03-Dec-07	11:37	5	~~0.01~~	**0.10**	~~0.01~~	0.12	0.01	3.0	
Mid-Flood	10-Dec-07	09:37	~~2~~	0.04	***0.09***	~~0.01~~	0.14	0.02	1.7	
Mid-Flood	17-Dec-07	09:07	3	~~0.01~~	0.01	~~0.01~~	~~0.01~~	~~0.01~~	2.0	
Mid-Flood	24-Dec-07	11:37	~~2~~	0.04	0.02	~~0.01~~	0.07	~~0.01~~	1.3	

Remarks:

Action level	***Bold & Italic***
Limit level	**Bold**
< detection limit	~~Grey~~

M_BP	Middle									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Ebb	26-Nov-07	13:26	***7***	**0.09**	0.05	~~0.01~~	0.15	0.01	***5.3***	
Mid-Ebb	03-Dec-07	08:56	4	~~0.01~~	0.08	***0.02***	0.11	0.01	2.6	
Mid-Ebb	10-Dec-07	13:26	4	0.04	***0.09***	~~0.01~~	0.14	0.02	2.0	
Mid-Ebb	17-Dec-07	12:56	3	***0.05***	0.01	~~0.01~~	0.07	~~0.01~~	2.0	
Mid-Ebb	24-Dec-07	08:56	~~2~~	**0.14**	0.01	~~0.01~~	0.16	~~0.01~~	1.2	

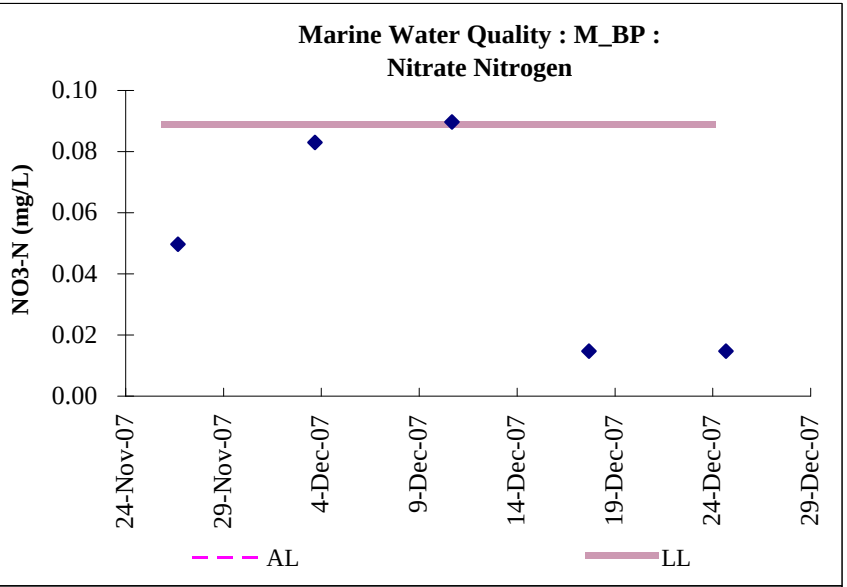
M_BP	Middle									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Flood	26-Nov-07	09:36	3	~~0.01~~	0.05	~~0.01~~	0.07	0.01	**6.8**	
Mid-Flood	03-Dec-07	11:36	3	~~0.01~~	0.08	***0.02***	0.11	0.01	2.9	
Mid-Flood	10-Dec-07	09:36	5	0.04	***0.09***	~~0.01~~	0.14	0.02	1.7	
Mid-Flood	17-Dec-07	09:06	~~2~~	~~0.01~~	0.02	~~0.01~~	0.04	~~0.01~~	2.0	
Mid-Flood	24-Dec-07	11:36	~~2~~	0.04	0.01	~~0.01~~	0.06	~~0.01~~	1.3	

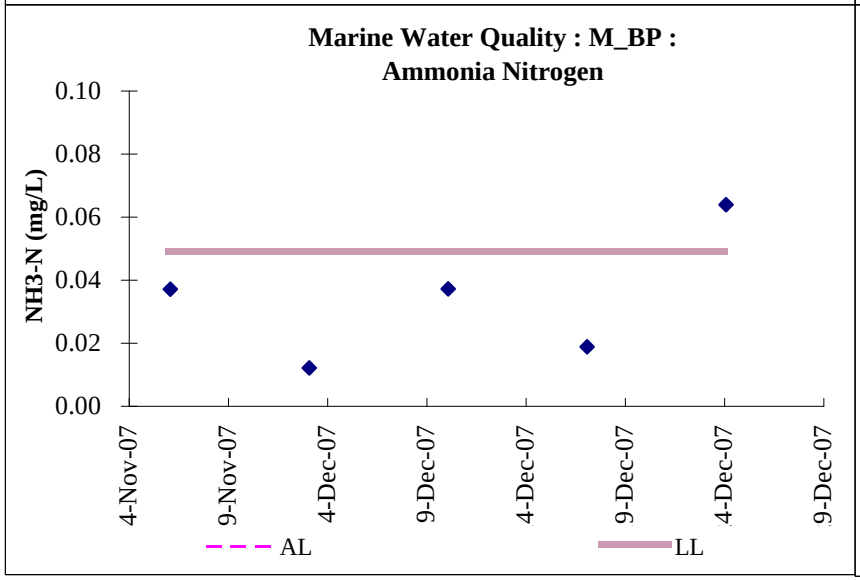
M_BP	Bottom									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Ebb	26-Nov-07	13:25	3	~~0.01~~	0.05	~~0.01~~	0.07	0.01	***4.9***	
Mid-Ebb	03-Dec-07	08:55	~~2~~	~~0.01~~	0.08	***0.02***	0.11	0.01	2.9	
Mid-Ebb	10-Dec-07	13:25	~~2~~	0.04	***0.09***	~~0.01~~	0.14	0.02	2.1	
Mid-Ebb	17-Dec-07	12:55	~~2~~	0.01	0.02	~~0.01~~	0.04	~~0.01~~	2.0	
Mid-Ebb	24-Dec-07	08:55	2	***0.05***	0.02	~~0.01~~	0.08	~~0.01~~	1.3	

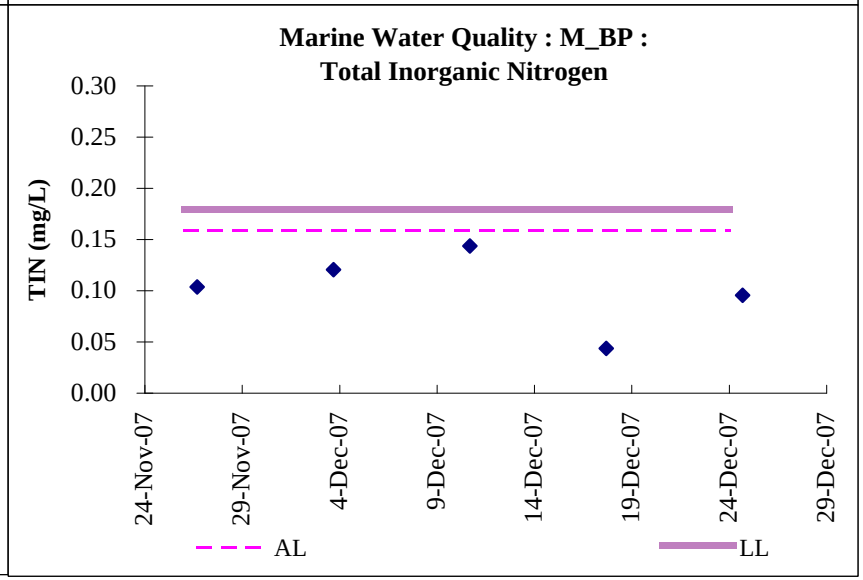
M_BP	Bottom									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Flood	26-Nov-07	09:35	4	~~0.01~~	0.05	~~0.01~~	0.07	0.01	***5.7***	
Mid-Flood	03-Dec-07	11:35	~~2~~	~~0.01~~	0.08	***0.02***	0.11	0.01	2.8	
Mid-Flood	10-Dec-07	09:35	~~2~~	0.02	***0.09***	~~0.01~~	0.12	0.02	1.6	
Mid-Flood	17-Dec-07	09:05	3	~~0.01~~	0.02	~~0.01~~	0.04	~~0.01~~	2.1	
Mid-Flood	24-Dec-07	11:35	3	***0.05***	0.02	~~0.01~~	0.08	~~0.01~~	1.4	

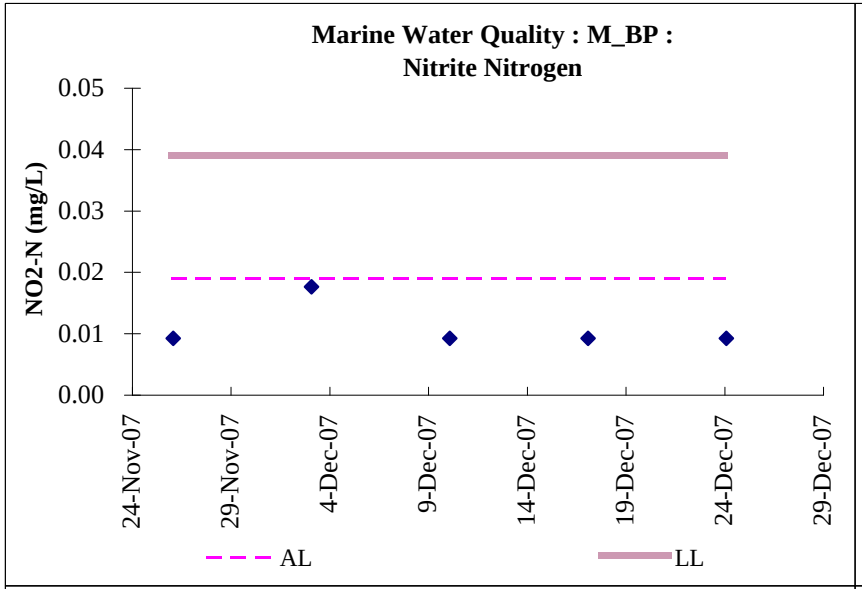
	Depth-averaged							
M_BP	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
26-Nov-07	4	0.03	0.05	~~0.01~~	0.09	0.01	***5.9***	
03-Dec-07	3	~~0.01~~	0.08	0.02	0.11	0.01	2.8	
10-Dec-07	3	0.04	***0.09***	~~0.01~~	0.13	0.02	1.9	
17-Dec-07	2	0.02	0.02	~~0.01~~	0.03	~~0.01~~	2.1	
24-Dec-07	2	**0.06**	0.02	~~0.01~~	0.09	~~0.01~~	1.3	

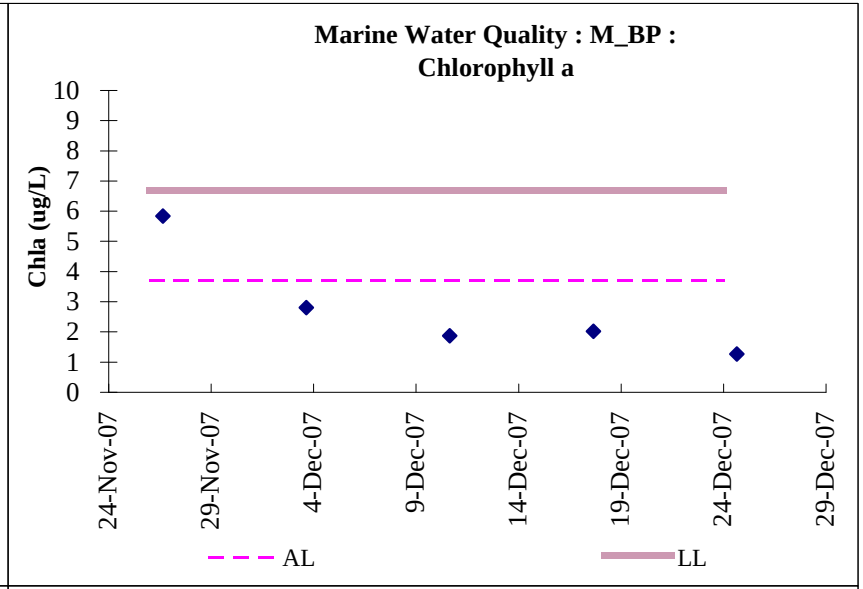
NOT USED

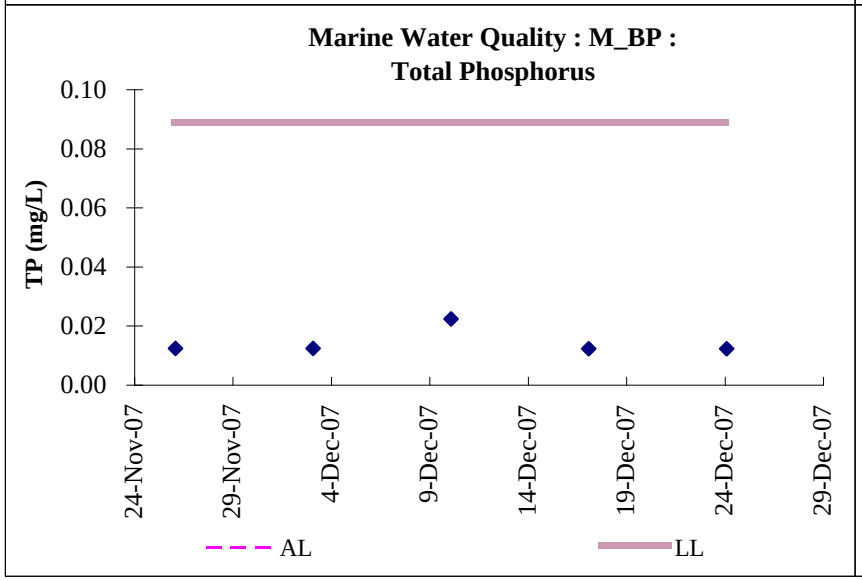

Marine Water Quality : M_BP :
Nitrate Nitrogen
NO3-N (mg/L)
0.10
0.08
0.06
0.04
0.02
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
AL
LL

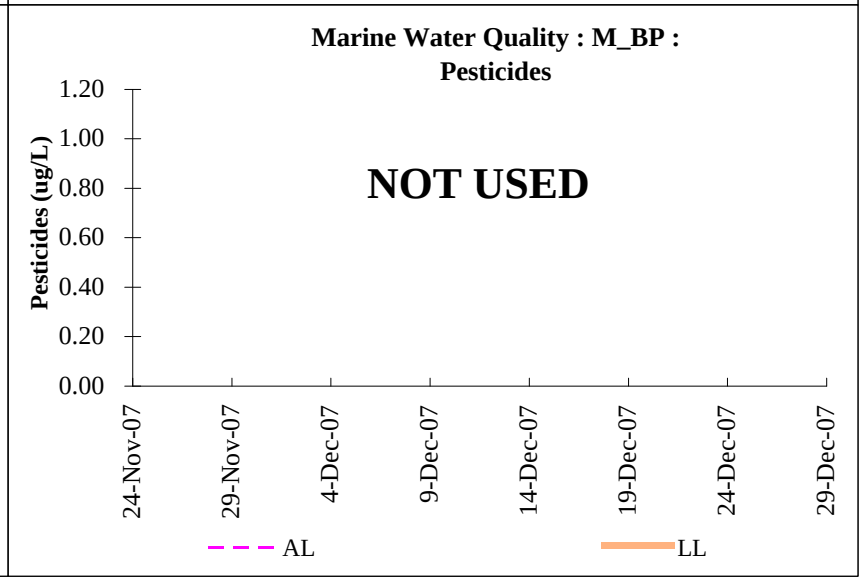

Marine Water Quality : M_BP :
Ammonia Nitrogen
NH3-N (mg/L)
0.10
0.08
0.06
0.04
0.02
0.00
4-Nov-07
9-Nov-07
4-Dec-07
9-Dec-07
4-Dec-07
9-Dec-07
4-Dec-07
9-Dec-07
AL
LL


Marine Water Quality : M_BP :
Total Inorganic Nitrogen
TIN (mg/L)
0.30
0.25
0.20
0.15
0.10
0.05
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
AL
LL


Marine Water Quality : M_BP :
Nitrite Nitrogen
NO2-N (mg/L)
0.05
0.04
0.03
0.02
0.01
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
AL
LL


Marine Water Quality : M_BP :
Chlorophyll a
Chla (ug/L)
10
9
8
7
6
5
4
3
2
1
0
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
AL
LL


Marine Water Quality : M_BP :
Total Phosphorus
TP (mg/L)
0.10
0.08
0.06
0.04
0.02
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
AL
LL


Marine Water Quality : M_BP :
Pesticides
Pesticides (ug/L)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
NOT USED
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
AL
LL

M_Coral	Surface									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Ebb	26-Nov-07	13:42	***7***	0.02	0.04	~~0.01~~	0.07	0.01	***5.9***	
Mid-Ebb	03-Dec-07	09:12	5	~~0.01~~	***0.09***	~~0.01~~	0.11	0.01	2.8	
Mid-Ebb	10-Dec-07	13:42	4	0.04	***0.09***	~~0.01~~	0.14	0.02	1.5	
Mid-Ebb	17-Dec-07	13:12	3	~~0.01~~	0.02	~~0.01~~	0.04	~~0.01~~	2.0	
Mid-Ebb	24-Dec-07	09:12	~~2~~	**0.06**	0.01	~~0.01~~	0.08	~~0.01~~	1.4	

M_Coral	Surface									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Flood	26-Nov-07	11:12	6	0.02	0.04	~~0.01~~	0.07	0.01	***6.6***	
Mid-Flood	03-Dec-07	13:12	2	~~0.01~~	***0.09***	~~0.01~~	0.11	0.01	2.9	
Mid-Flood	10-Dec-07	11:12	2	0.04	***0.09***	~~0.01~~	0.14	0.02	1.8	
Mid-Flood	17-Dec-07	10:42	~~2~~	~~0.01~~	0.01	~~0.01~~	~~0.01~~	~~0.01~~	2.0	
Mid-Flood	24-Dec-07	13:12	***7***	**0.06**	~~0.01~~	~~0.01~~	0.08	~~0.01~~	1.0	

Remarks:

Action level	***Bold & Italic***
Limit level	**Bold**
< detection limit	~~Grey~~

M_Coral	Middle									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Ebb	26-Nov-07	13:41	4	0.02	~~0.01~~	~~0.01~~	0.04	~~0.01~~	***6.2***	
Mid-Ebb	03-Dec-07	09:11	2	~~0.01~~	***0.09***	~~0.01~~	0.11	0.01	2.7	
Mid-Ebb	10-Dec-07	13:41	~~2~~	0.03	***0.09***	~~0.01~~	0.13	0.02	2.1	
Mid-Ebb	17-Dec-07	13:11	~~2~~	~~0.01~~	0.01	~~0.01~~	~~0.01~~	~~0.01~~	1.9	
Mid-Ebb	24-Dec-07	09:11	3	**0.06**	~~0.01~~	~~0.01~~	0.08	~~0.01~~	1.3	

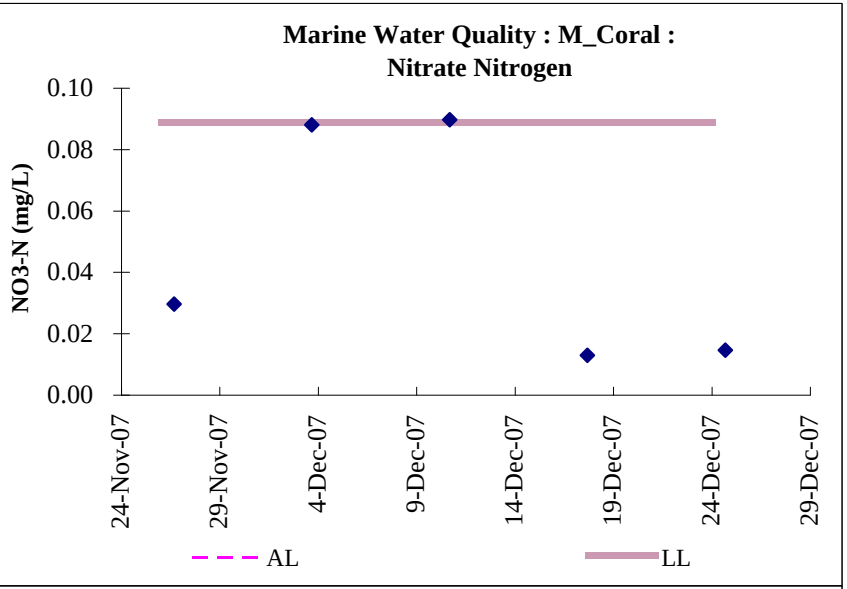
M_Coral	Middle									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Flood	26-Nov-07	11:11	5	0.02	0.04	~~0.01~~	0.07	~~0.01~~	**7.1**	
Mid-Flood	03-Dec-07	13:11	~~2~~	~~0.01~~	***0.09***	~~0.01~~	0.11	0.01	3.0	
Mid-Flood	10-Dec-07	11:11	2	**0.06**	***0.09***	~~0.01~~	0.16	0.02	2.1	
Mid-Flood	17-Dec-07	10:41	3	~~0.01~~	0.01	~~0.01~~	~~0.01~~	~~0.01~~	2.3	
Mid-Flood	24-Dec-07	13:11	***7***	**0.15**	0.02	~~0.01~~	0.18	~~0.01~~	1.3	

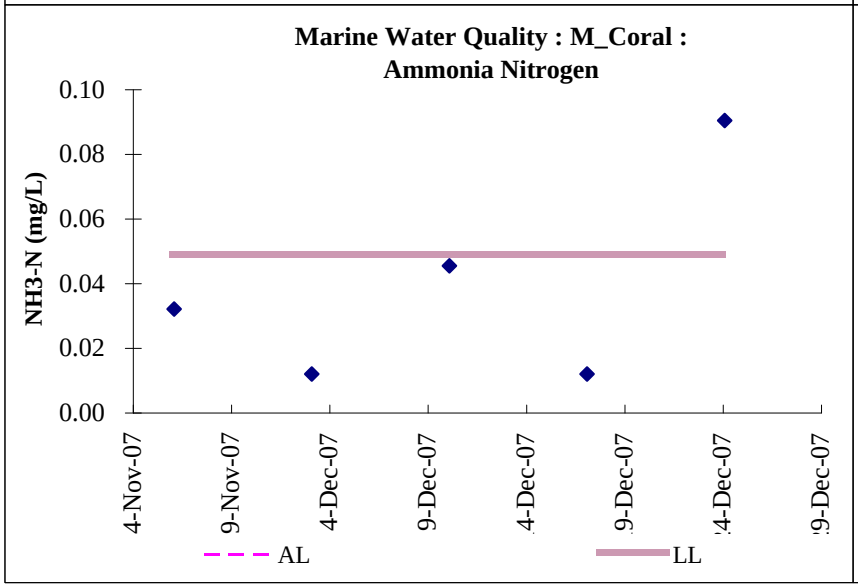
M_Coral	Bottom									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Ebb	26-Nov-07	13:40	5	0.02	~~0.01~~	~~0.01~~	0.04	~~0.01~~	***6.4***	
Mid-Ebb	03-Dec-07	09:10	4	~~0.01~~	0.08	~~0.01~~	0.10	0.01	2.7	
Mid-Ebb	10-Dec-07	13:40	3	***0.05***	***0.09***	~~0.01~~	0.15	0.02	1.8	
Mid-Ebb	17-Dec-07	13:10	2	~~0.01~~	0.01	~~0.01~~	~~0.01~~	~~0.01~~	2.0	
Mid-Ebb	24-Dec-07	09:10	2	**0.13**	0.02	~~0.01~~	0.16	~~0.01~~	1.4	

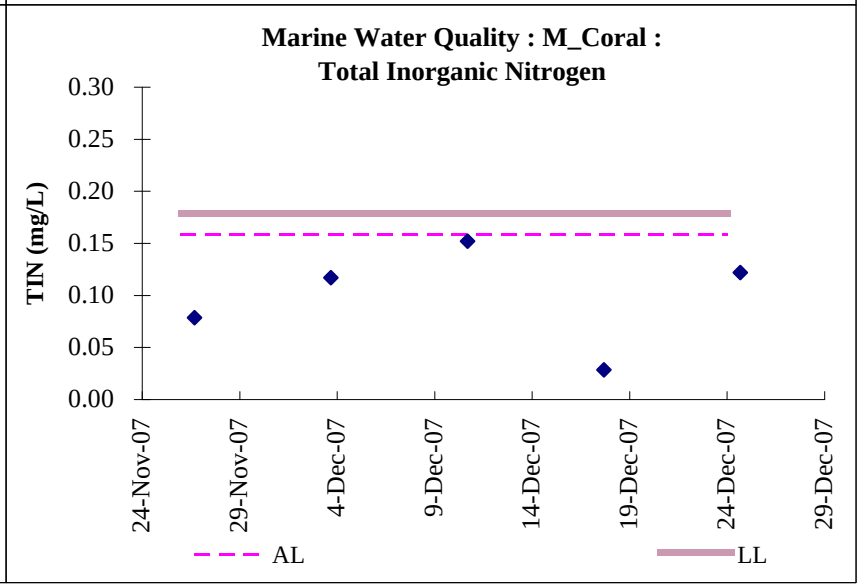
M_Coral	Bottom									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Flood	26-Nov-07	11:10	***8***	**0.08**	0.04	~~0.01~~	0.13	~~0.01~~	***6.6***	
Mid-Flood	03-Dec-07	13:10	~~2~~	0.01	***0.09***	~~0.01~~	0.11	0.01	3.2	
Mid-Flood	10-Dec-07	11:10	~~2~~	0.04	***0.09***	~~0.01~~	0.14	0.02	2.0	
Mid-Flood	17-Dec-07	10:40	~~2~~	~~0.01~~	0.02	~~0.01~~	0.04	~~0.01~~	2.1	
Mid-Flood	24-Dec-07	13:10	6	**0.07**	0.02	~~0.01~~	0.10	~~0.01~~	1.4	

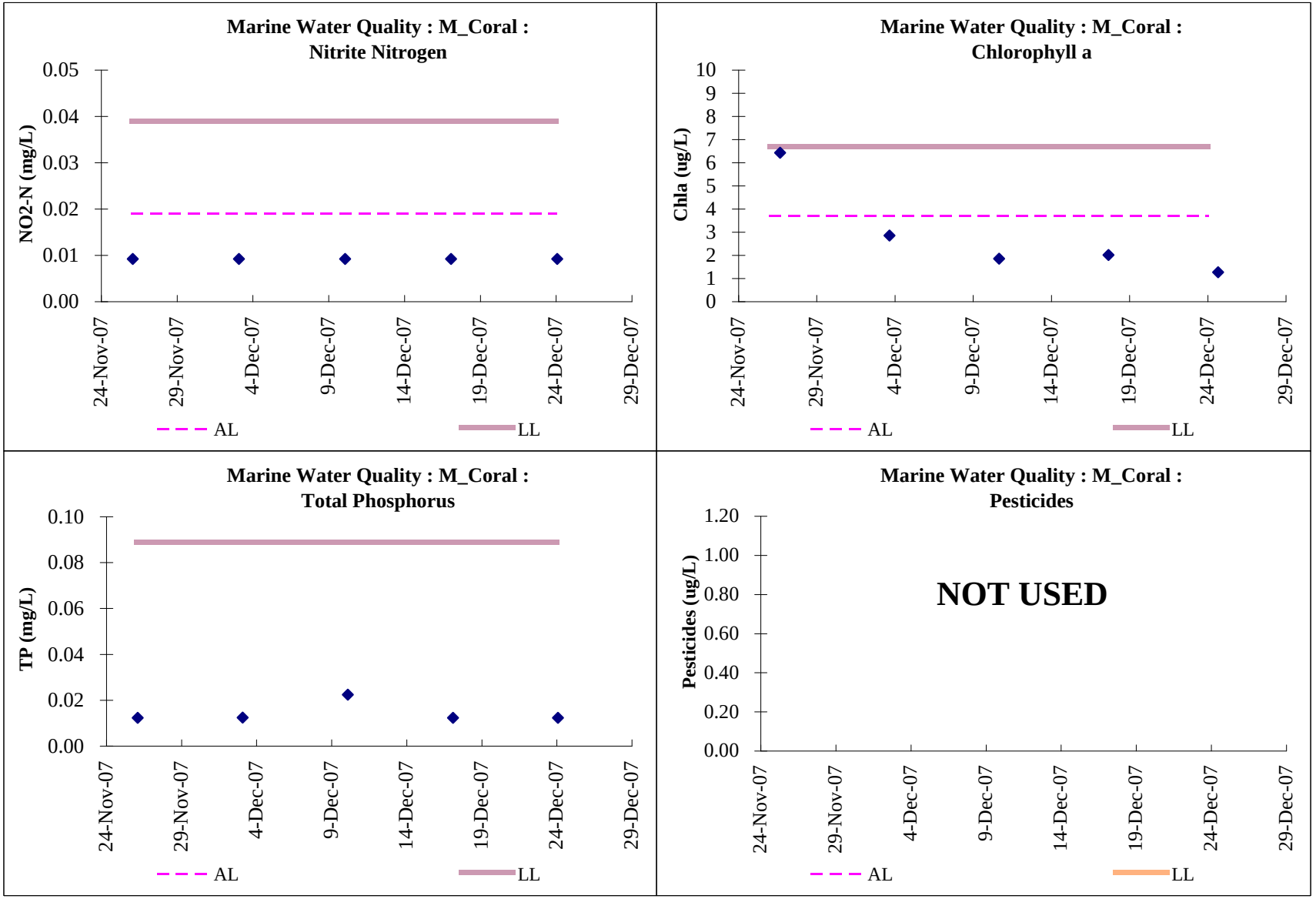
	Depth-averaged							
M_Coral	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
26-Nov-07	6	0.03	0.03	~~0.01~~	0.07	0.01	***6.5***	
03-Dec-07	3	0.01	0.09	~~0.01~~	0.11	0.01	2.9	
10-Dec-07	2	0.04	***0.09***	~~0.01~~	0.14	0.02	1.9	
17-Dec-07	2	~~0.01~~	0.01	~~0.01~~	0.02	~~0.01~~	2.1	
24-Dec-07	4	**0.09**	0.01	~~0.01~~	0.11	~~0.01~~	1.3	

NOT USED


Marine Water Quality : M_Coral :
Nitrate Nitrogen
NO3-N (mg/L)
0.10
0.08
0.06
0.04
0.02
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
AL
LL


Marine Water Quality : M_Coral :
Ammonia Nitrogen
NH3-N (mg/L)
0.10
0.08
0.06
0.04
0.02
0.00
4-Nov-07
9-Nov-07
4-Dec-07
9-Dec-07
4-Dec-07
9-Dec-07
AL
LL


Marine Water Quality : M_Coral :
Total Inorganic Nitrogen
TIN (mg/L)
0.30
0.25
0.20
0.15
0.10
0.05
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
AL
LL


Marine Water Quality : M_Coral :
Nitrite Nitrogen
NO2-N (mg/L)
0.05
0.04
0.03
0.02
0.01
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
AL
LL
Marine Water Quality : M_Coral :
Chlorophyll a
Chla (ug/L)
10
9
8
7
6
5
4
3
2
1
0
AL
LL
Marine Water Quality : M_Coral :
Total Phosphorus
TP (mg/L)
0.10
0.08
0.06
0.04
0.02
0.00
AL
LL
Marine Water Quality : M_Coral :
Pesticides
Pesticides (ug/L)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
NOT USED
AL
LL

M_B	Surface									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Ebb	26-Nov-07	13:52	5.0	0.02	~~0.01~~	~~0.01~~	0.04	~~0.01~~	5.7	
Mid-Ebb	03-Dec-07	09:22	3.0	~~0.01~~	0.09	~~0.01~~	0.11	0.01	2.3	
Mid-Ebb	10-Dec-07	13:52	~~2.0~~	0.09	0.09	~~0.01~~	0.19	0.02	2.0	
Mid-Ebb	17-Dec-07	13:22	~~2.0~~	~~0.01~~	0.01	~~0.01~~	~~0.01~~	~~0.01~~	2.2	
Mid-Ebb	24-Dec-07	09:22	2.0	0.11	0.01	~~0.01~~	0.13	~~0.01~~	1.2	

M_B	Surface									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Flood	26-Nov-07	11:22	4.0	0.01	~~0.01~~	~~0.01~~	~~0.01~~	~~0.01~~	5.2	
Mid-Flood	03-Dec-07	13:22	5.0	~~0.01~~	0.08	~~0.01~~	0.10	0.01	2.3	
Mid-Flood	10-Dec-07	11:22	~~2.0~~	0.02	0.08	~~0.01~~	0.11	0.02	1.6	
Mid-Flood	17-Dec-07	10:52	~~2.0~~	~~0.01~~	0.01	~~0.01~~	~~0.01~~	~~0.01~~	2.3	
Mid-Flood	24-Dec-07	13:22	4.0	0.06	0.01	~~0.01~~	0.08	~~0.01~~	1.2	

Remarks:

Action level	***Bold & Italic***
Limit level	**Bold**
< detection limit	~~Grey~~

M_B	Middle									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Ebb	26-Nov-07	13:51	6.0	~~0.01~~	~~0.01~~	~~0.01~~	~~0.01~~	~~0.01~~	5.7	
Mid-Ebb	03-Dec-07	09:21	4.0	~~0.01~~	0.09	~~0.01~~	0.11	0.01	2.5	
Mid-Ebb	10-Dec-07	13:51	3.0	0.04	0.09	~~0.01~~	0.14	0.02	2.4	
Mid-Ebb	17-Dec-07	13:21	2.0	0.01	0.01	~~0.01~~	~~0.01~~	~~0.01~~	1.9	
Mid-Ebb	24-Dec-07	09:21	~~2.0~~	0.04	0.02	~~0.01~~	0.07	~~0.01~~	1.4	

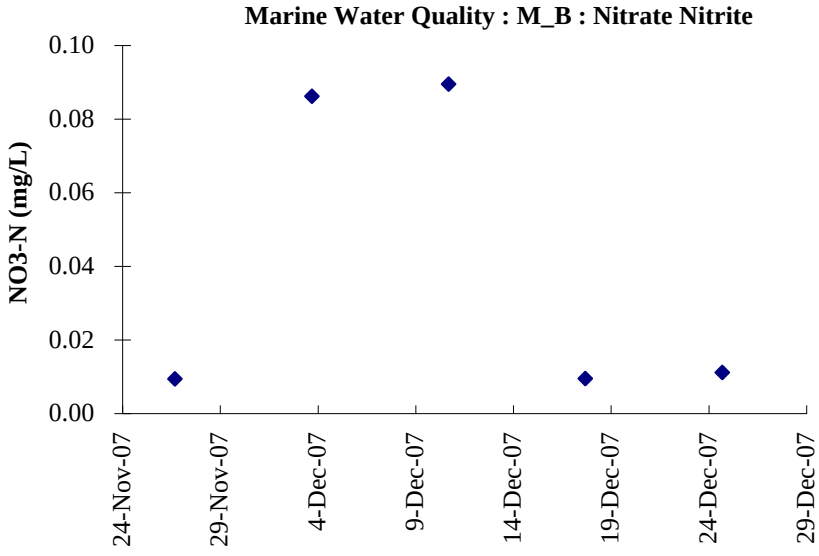
M_B	Middle									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Flood	26-Nov-07	11:21	8.0	0.01	~~0.01~~	~~0.01~~	~~0.01~~	~~0.01~~	6.0	
Mid-Flood	03-Dec-07	13:21	6.0	~~0.01~~	0.08	~~0.01~~	0.10	0.01	2.3	
Mid-Flood	10-Dec-07	11:21	~~2.0~~	0.04	0.09	~~0.01~~	0.14	0.02	2.0	
Mid-Flood	17-Dec-07	10:51	3.0	0.01	~~0.01~~	~~0.01~~	~~0.01~~	~~0.01~~	2.1	
Mid-Flood	24-Dec-07	13:21	8.0	0.05	0.01	~~0.01~~	0.07	~~0.01~~	1.2	

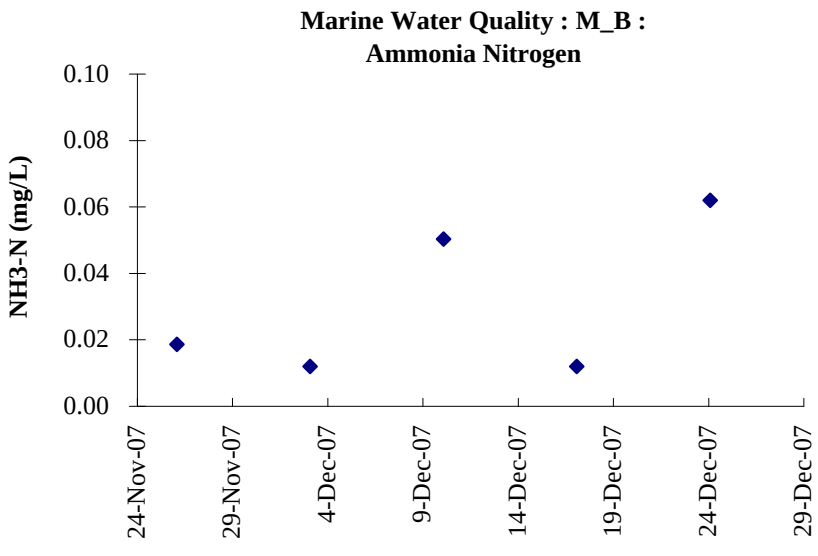
M_B	Bottom									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Ebb	26-Nov-07	13:50	6.0	~~0.01~~	~~0.01~~	~~0.01~~	~~0.01~~	~~0.01~~	6.7	
Mid-Ebb	03-Dec-07	09:20	2.0	~~0.01~~	0.09	~~0.01~~	0.11	0.01	2.7	
Mid-Ebb	10-Dec-07	13:50	3.0	0.06	0.09	~~0.01~~	0.16	0.02	1.8	
Mid-Ebb	17-Dec-07	13:20	2.0	~~0.01~~	0.01	~~0.01~~	~~0.01~~	~~0.01~~	2.0	
Mid-Ebb	24-Dec-07	09:20	~~2.0~~	0.06	~~0.01~~	~~0.01~~	0.08	~~0.01~~	1.1	

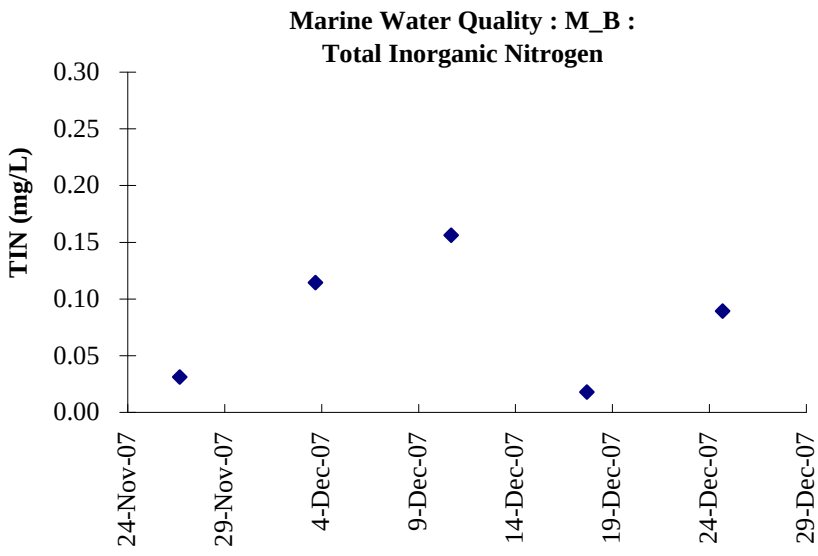
M_B	Bottom									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Flood	26-Nov-07	11:20	5.0	0.04	~~0.01~~	~~0.01~~	0.06	~~0.01~~	6.3	
Mid-Flood	03-Dec-07	13:20	6.0	0.01	0.09	~~0.01~~	0.11	0.01	2.6	
Mid-Flood	10-Dec-07	11:20	7.0	0.04	0.10	~~0.01~~	0.15	0.02	2.0	
Mid-Flood	17-Dec-07	10:50	~~2.0~~	~~0.01~~	0.01	~~0.01~~	~~0.01~~	~~0.01~~	2.1	
Mid-Flood	24-Dec-07	13:20	7.0	0.04	~~0.01~~	~~0.01~~	0.06	~~0.01~~	1.3	

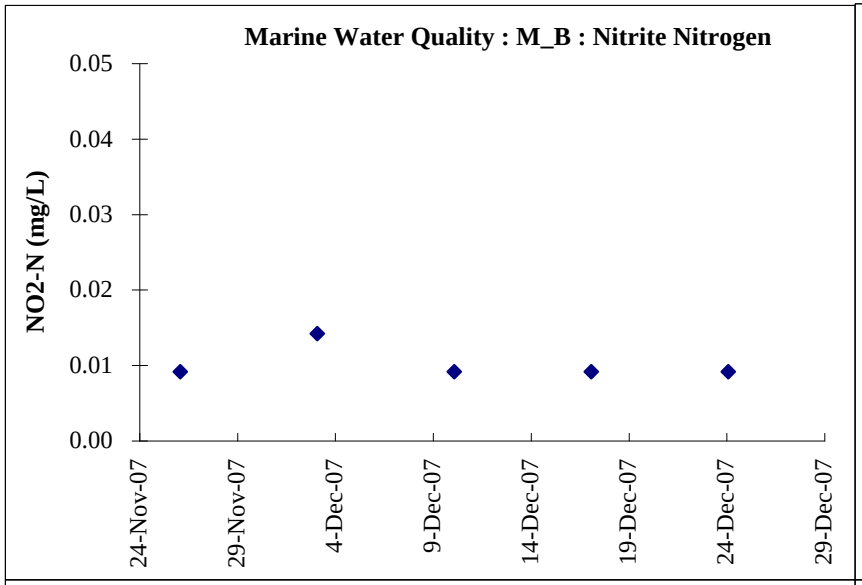
	Depth-averaged							
M_B	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
26-Nov-07	6	0.02	~~0.01~~	~~0.01~~	0.02	~~0.01~~	5.9	
03-Dec-07	4	0.01	0.09	~~0.01~~	0.11	0.01	2.5	
10-Dec-07	3	0.05	0.09	~~0.01~~	0.15	0.02	2.0	
17-Dec-07	2	0.01	0.01	~~0.01~~	~~0.01~~	~~0.01~~	2.1	
24-Dec-07	4	0.06	0.01	~~0.01~~	0.08	~~0.01~~	1.2	

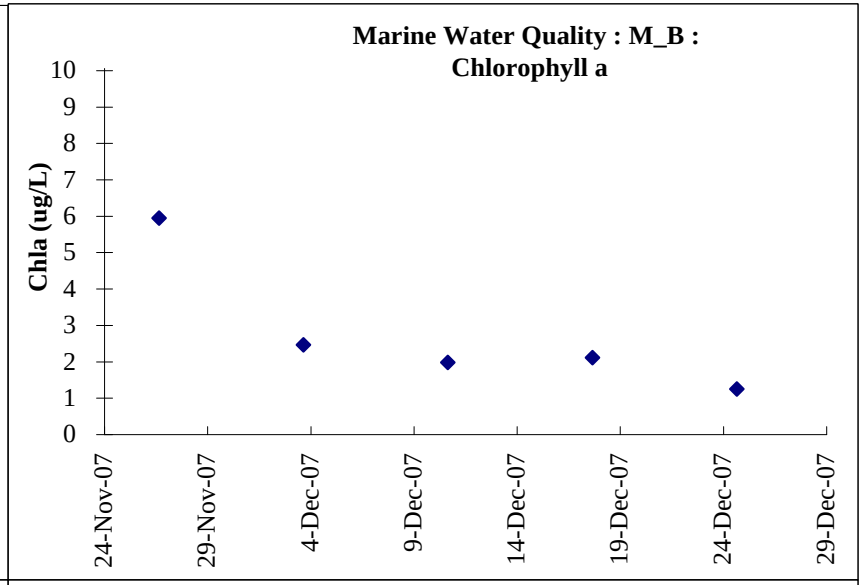
NOT USED

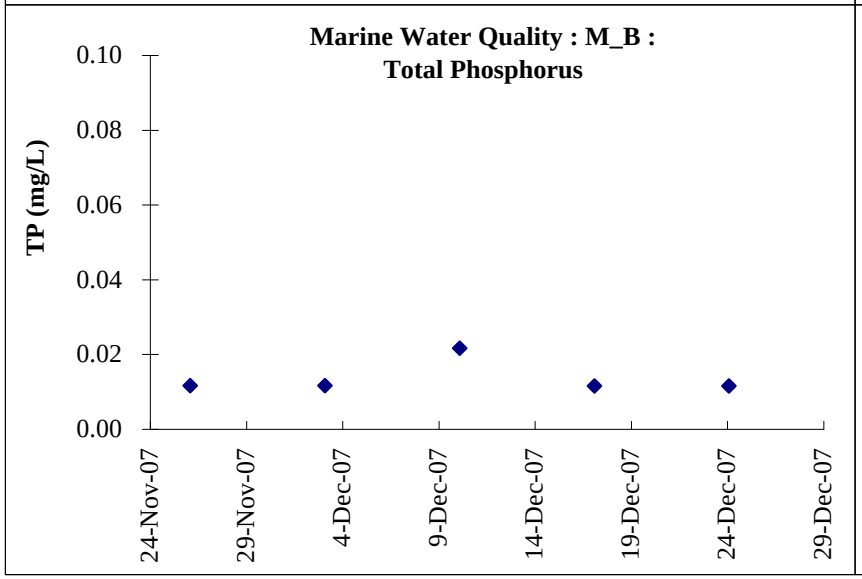

Marine Water Quality : M_B : Nitrate Nitrite
NO3-N (mg/L)
0.10
0.08
0.06
0.04
0.02
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07

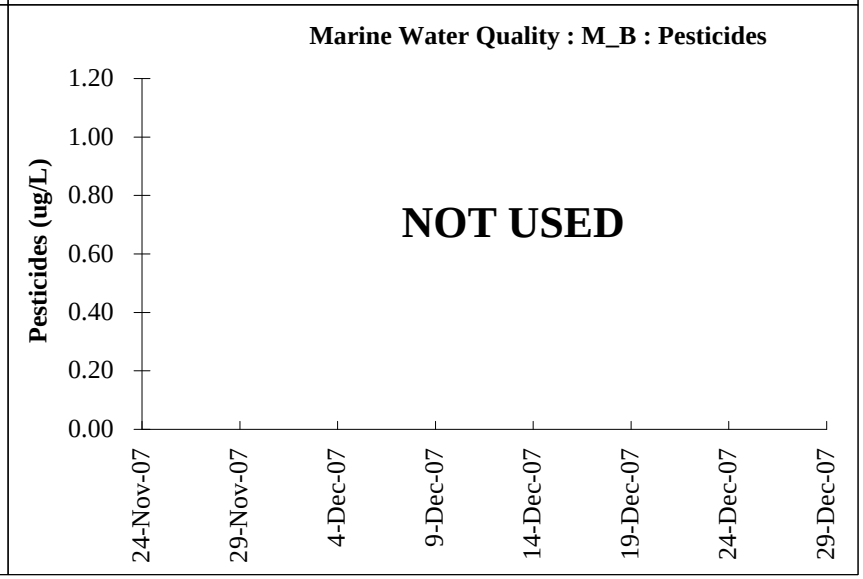

Marine Water Quality : M_B :
Ammonia Nitrogen
NH3-N (mg/L)
0.10
0.08
0.06
0.04
0.02
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07


Marine Water Quality : M_B :
Total Inorganic Nitrogen
TIN (mg/L)
0.30
0.25
0.20
0.15
0.10
0.05
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07


Marine Water Quality : M_B : Nitrite Nitrogen
NO2-N (mg/L)
0.05
0.04
0.03
0.02
0.01
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07


Marine Water Quality : M_B :
Chlorophyll a
Chla (ug/L)
10
9
8
7
6
5
4
3
2
1
0
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07


Marine Water Quality : M_B :
Total Phosphorus
TP (mg/L)
0.10
0.08
0.06
0.04
0.02
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07


Marine Water Quality : M_B : Pesticides
Pesticides (ug/L)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
NOT USED
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07

KS	Surface									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Ebb	26-Nov-07	14:22	4.0	0.01	0.03	~~0.01~~	0.05	~~0.01~~	**5.9**	
Mid-Ebb	03-Dec-07	09:52	4.0	~~0.01~~	**0.09**	~~0.01~~	0.11	0.01	**3.1**	
Mid-Ebb	10-Dec-07	14:22	~~2.0~~	**0.05**	***0.08***	~~0.01~~	0.14	0.02	1.5	
Mid-Ebb	17-Dec-07	13:52	~~2.0~~	~~0.01~~	0.01	~~0.01~~	~~0.01~~	~~0.01~~	***2.0***	
Mid-Ebb	24-Dec-07	09:52	~~2.0~~	**0.08**	0.01	~~0.01~~	0.10	~~0.01~~	1.3	

KS	Surface									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Flood	26-Nov-07	11:52	***5.0***	**0.06**	~~0.01~~	~~0.01~~	0.08	~~0.01~~	**6.6**	
Mid-Flood	03-Dec-07	13:52	4.0	***0.02***	***0.08***	~~0.01~~	0.11	0.01	**2.9**	
Mid-Flood	10-Dec-07	11:52	~~2.0~~	**0.04**	**0.09**	~~0.01~~	0.14	0.02	1.6	
Mid-Flood	17-Dec-07	11:22	~~2.0~~	~~0.01~~	0.02	~~0.01~~	0.04	~~0.01~~	***2.1***	
Mid-Flood	24-Dec-07	13:52	**10.0**	**0.08**	0.02	~~0.01~~	0.11	~~0.01~~	1.4	

Remarks:

Action level	***Bold & Italic***
Limit level	**Bold**
< detection limit	~~Grey~~

KS	Middle									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Ebb	26-Nov-07	14:21	**6.0**	**0.09**	~~0.01~~	~~0.01~~	0.11	~~0.01~~	**6.0**	
Mid-Ebb	03-Dec-07	09:51	4.0	~~0.01~~	**0.09**	~~0.01~~	0.11	0.01	**2.4**	
Mid-Ebb	10-Dec-07	14:21	2.0	**0.06**	**0.09**	~~0.01~~	**0.16**	0.02	***2.1***	
Mid-Ebb	17-Dec-07	13:51	2.0	~~0.01~~	0.02	~~0.01~~	0.04	~~0.01~~	***2.0***	
Mid-Ebb	24-Dec-07	09:51	~~2.0~~	**0.06**	0.01	~~0.01~~	0.08	~~0.01~~	1.5	

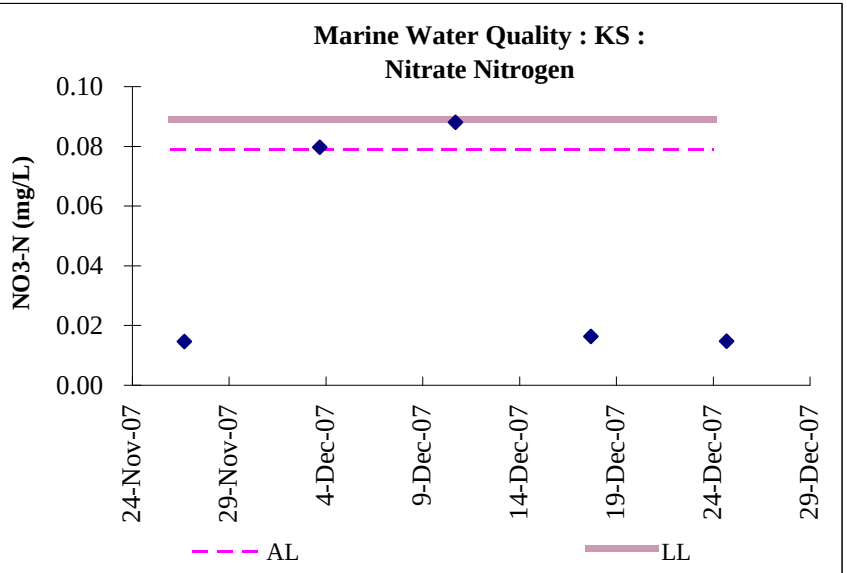
KS	Middle									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Flood	26-Nov-07	11:51	4.0	**0.05**	~~0.01~~	~~0.01~~	0.07	~~0.01~~	**5.9**	
Mid-Flood	03-Dec-07	13:51	2.0	~~0.01~~	0.07	~~0.01~~	0.09	~~0.01~~	**2.9**	
Mid-Flood	10-Dec-07	11:51	3.0	**0.05**	**0.09**	~~0.01~~	**0.15**	0.02	**2.2**	
Mid-Flood	17-Dec-07	11:21	~~2.0~~	~~0.01~~	0.02	~~0.01~~	0.04	~~0.01~~	***1.9***	
Mid-Flood	24-Dec-07	13:51	**8.0**	**0.05**	0.02	~~0.01~~	0.08	~~0.01~~	1.3	

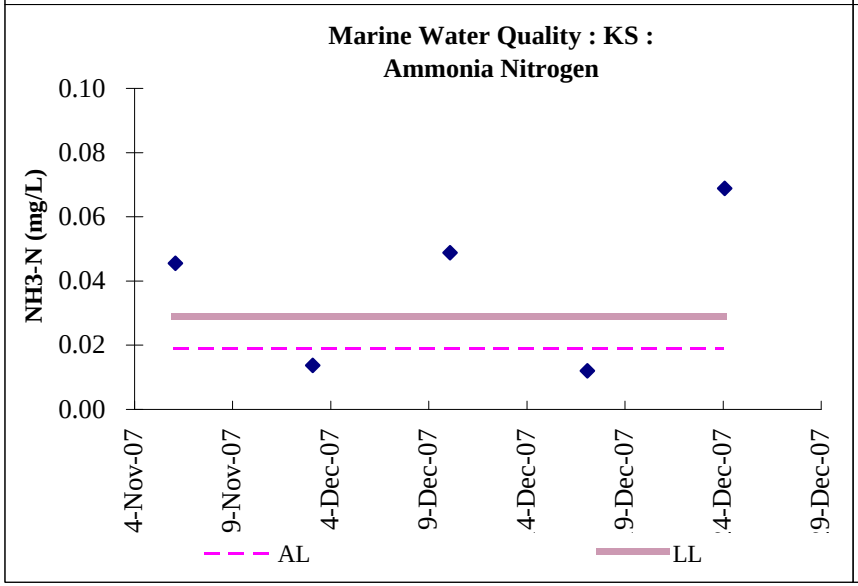
KS	Bottom									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Ebb	26-Nov-07	14:20	3.0	**0.03**	~~0.01~~	~~0.01~~	0.05	~~0.01~~	**6.2**	
Mid-Ebb	03-Dec-07	09:50	2.0	~~0.01~~	***0.08***	~~0.01~~	0.10	~~0.01~~	**3.2**	
Mid-Ebb	10-Dec-07	14:20	~~2.0~~	**0.04**	**0.09**	~~0.01~~	0.14	0.02	***1.8***	
Mid-Ebb	17-Dec-07	13:50	~~2.0~~	~~0.01~~	0.01	~~0.01~~	~~0.01~~	~~0.01~~	***2.1***	
Mid-Ebb	24-Dec-07	09:50	4.0	**0.07**	0.02	~~0.01~~	0.10	~~0.01~~	1.2	

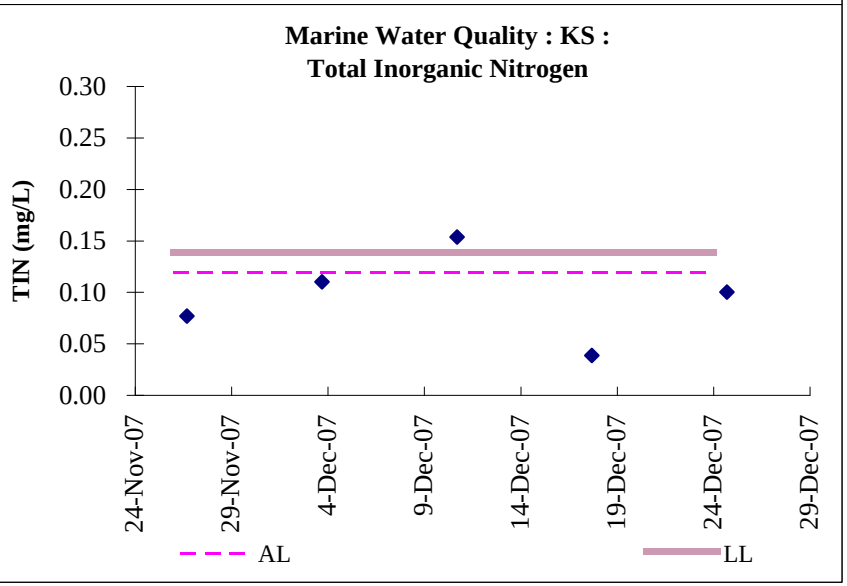
KS	Bottom									
tide condition	Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
Mid-Flood	26-Nov-07	11:50	**7.0**	***0.02***	0.02	~~0.01~~	0.05	~~0.01~~	**6.6**	
Mid-Flood	03-Dec-07	13:50	3.0	~~0.01~~	0.07	~~0.01~~	0.09	~~0.01~~	**3.1**	
Mid-Flood	10-Dec-07	11:50	2.0	**0.04**	**0.09**	~~0.01~~	0.14	0.02	1.6	
Mid-Flood	17-Dec-07	11:20	~~2.0~~	~~0.01~~	0.02	~~0.01~~	0.04	~~0.01~~	***1.9***	
Mid-Flood	24-Dec-07	13:50	**6.0**	**0.06**	0.01	~~0.01~~	0.08	~~0.01~~	1.1	

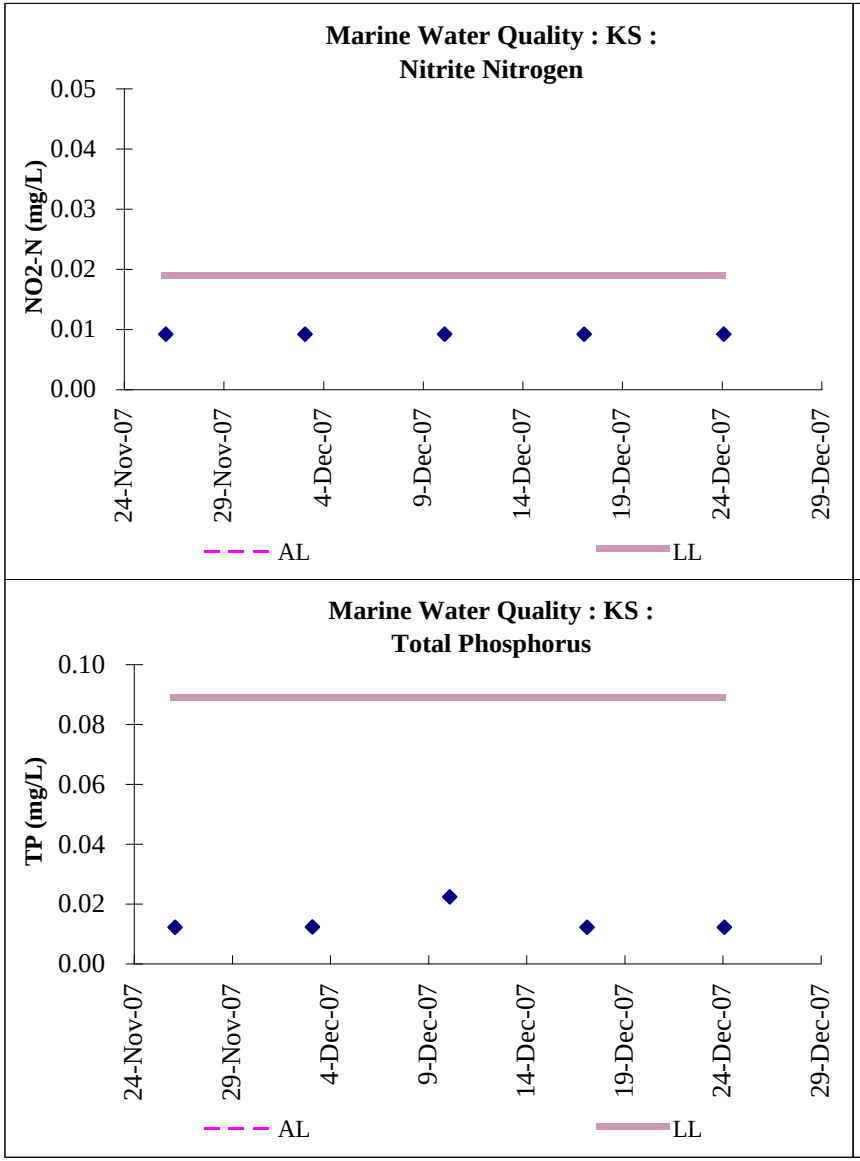
	Depth-averaged							
KS	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
26-Nov-07	***5***	**0.04**	0.01	~~0.01~~	0.07	~~0.01~~	**6.2**	
03-Dec-07	3	0.01	***0.08***	~~0.01~~	0.10	0.01	**2.9**	
10-Dec-07	2	**0.05**	***0.09***	~~0.01~~	**0.14**	0.02	***1.8***	
17-Dec-07	2	~~0.01~~	0.02	~~0.01~~	0.03	~~0.01~~	***2.0***	
24-Dec-07	***5***	**0.07**	0.02	~~0.01~~	0.09	~~0.01~~	1.3	

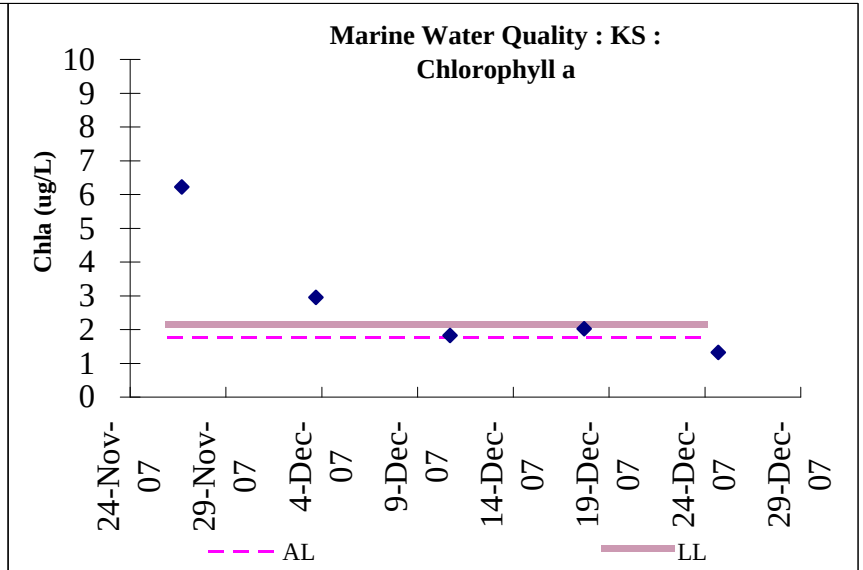
NOT USED


Marine Water Quality : KS :
Nitrate Nitrogen
NO3-N (mg/L)
0.10
0.08
0.06
0.04
0.02
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
AL
LL

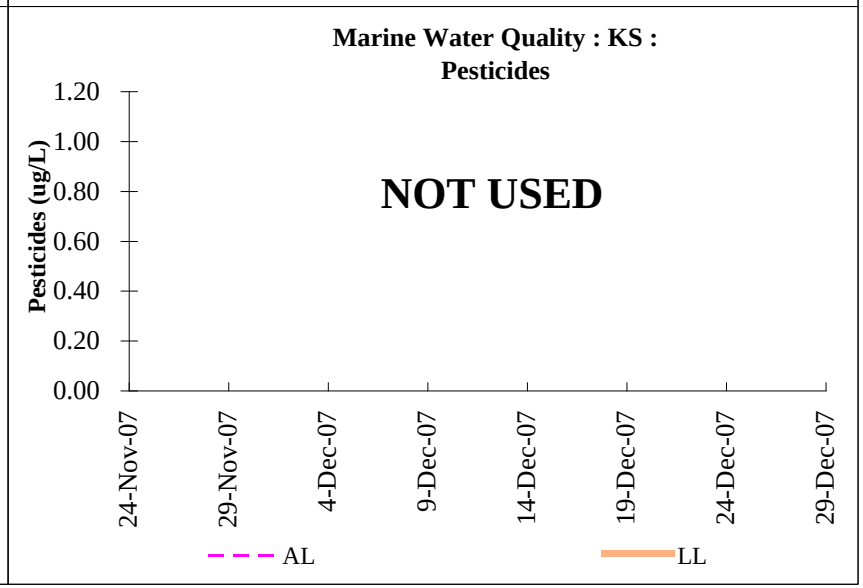

Marine Water Quality : KS :
Ammonia Nitrogen
NH3-N (mg/L)
0.10
0.08
0.06
0.04
0.02
0.00
4-Nov-07
9-Nov-07
4-Dec-07
9-Dec-07
4-Dec-07
9-Dec-07
4-Dec-07
9-Dec-07
AL
LL


Marine Water Quality : KS :
Total Inorganic Nitrogen
TIN (mg/L)
0.30
0.25
0.20
0.15
0.10
0.05
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
AL
LL


Marine Water Quality : KS :
Nitrite Nitrogen
NO2-N (mg/L)
0.05
0.04
0.03
0.02
0.01
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
AL
LL


Marine Water Quality : KS :
Chlorophyll a
Chla (ug/L)
10
9
8
7
6
5
4
3
2
1
0
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
AL
LL

Marine Water Quality : KS :
Total Phosphorus
TP (mg/L)
0.10
0.08
0.06
0.04
0.02
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
AL
LL

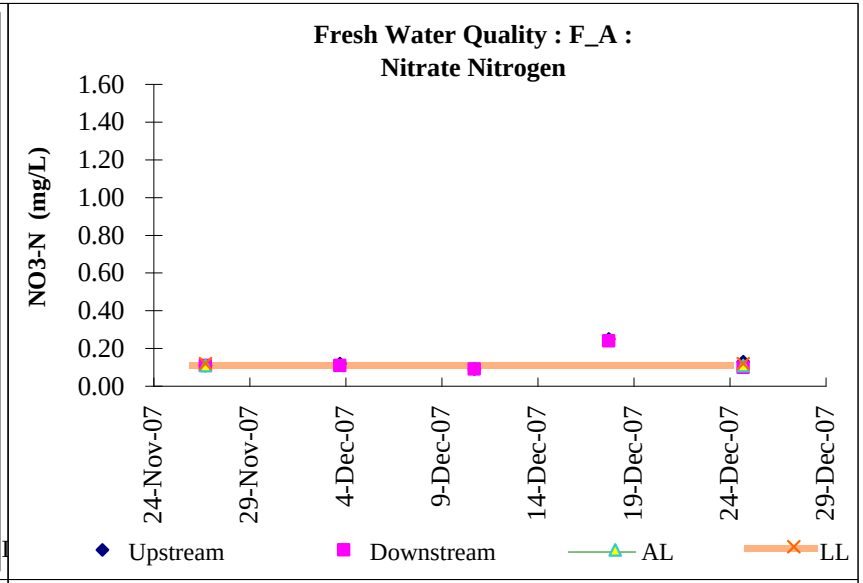

Marine Water Quality : KS :
Pesticides
Pesticides (ug/L)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
NOT USED
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
AL
LL

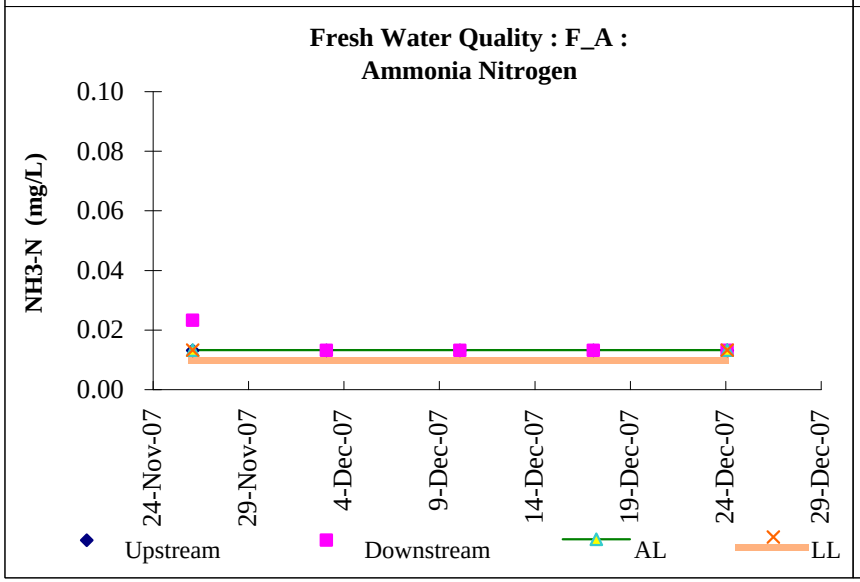
F_UA	Mid depth								
Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
26-Nov-07	09:55	***4***	0.01	0.10	0.01	0.12	0.01	0.7	
03-Dec-07	11:55	~~2~~	0.01	0.11	0.01	0.13	0.01	0.5	
10-Dec-07	09:55	3	0.01	0.08	0.01	0.10	0.01	0.5	
17-Dec-07	09:25	~~2~~	0.01	0.24	0.01	0.26	0.01	~~0.5~~	
24-Dec-07	11:55	***4***	0.01	0.12	0.01	0.14	0.01	~~0.5~~	

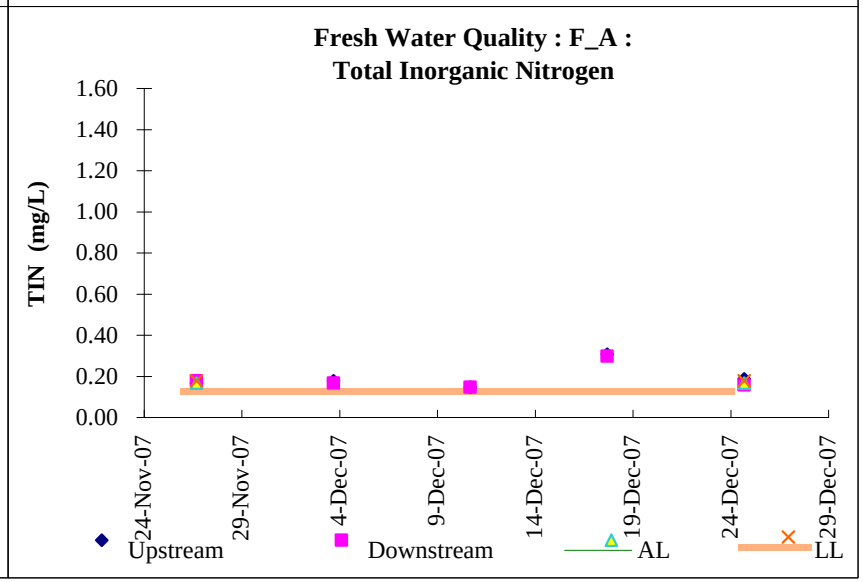
F_DA	Mid depth								
Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
26-Nov-07	10:05	2	**0.02**	***0.10***	0.01	**0.13**	0.01	***0.5***	
03-Dec-07	12:05	2	~~0.01~~	***0.10***	0.01	0.12	0.01	~~0.5~~	
10-Dec-07	10:05	2	~~0.01~~	0.08	0.01	0.10	0.01	**0.6**	
17-Dec-07	09:35	~~2~~	~~0.01~~	**0.23**	0.01	**0.25**	0.01	~~0.5~~	
24-Dec-07	12:05	***4***	~~0.01~~	0.09	0.01	0.11	0.01	***0.5***	

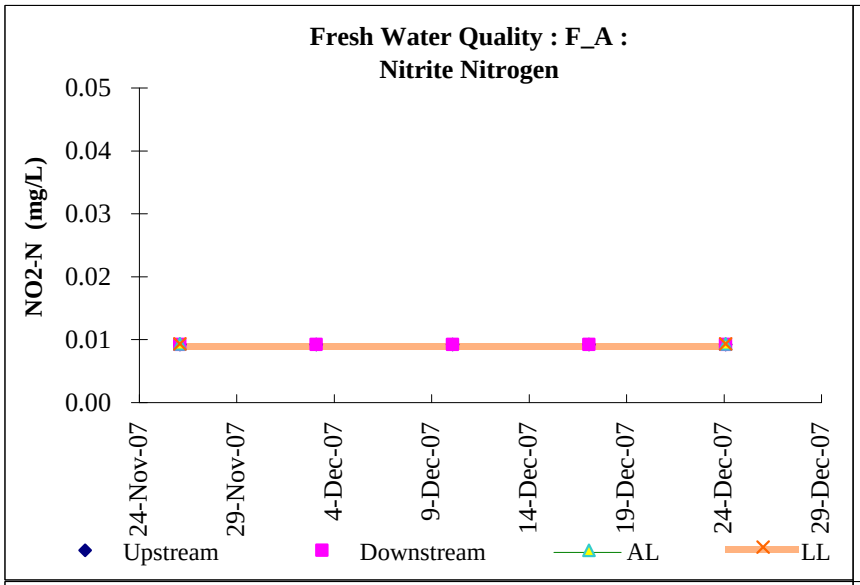
Action level	***Bold & Italic***
Limit level	**Bold**
< detection limit	~~Grey~~

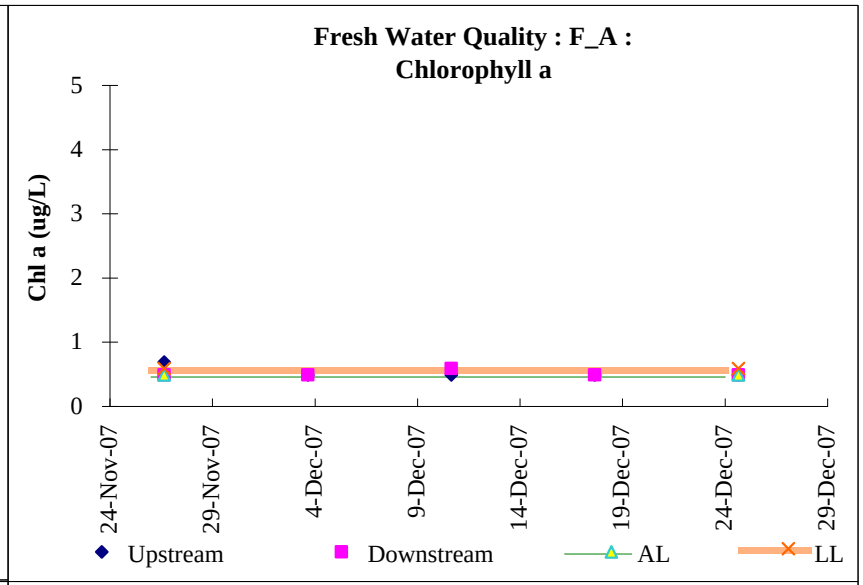
NOT USED

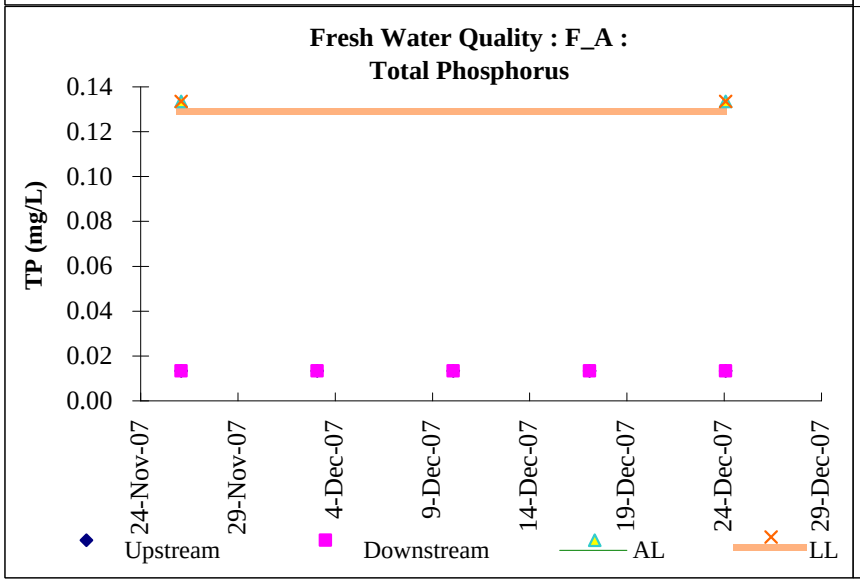

Fresh Water Quality : F_A :
Nitrate Nitrogen
NO3-N (mg/L)
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
Upstream
Downstream
AL
LL

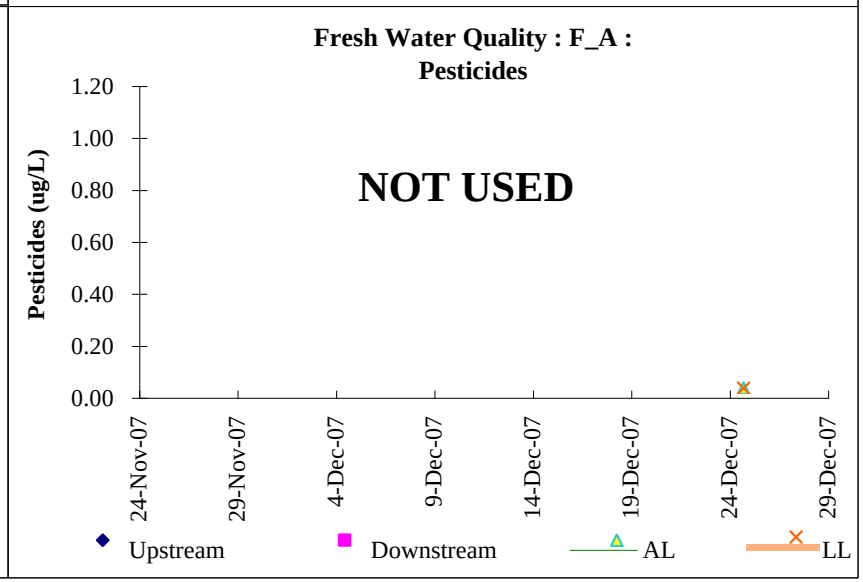

Fresh Water Quality : F_A :
Ammonia Nitrogen
NH3-N (mg/L)
0.10
0.08
0.06
0.04
0.02
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
Upstream
Downstream
AL
LL


Fresh Water Quality : F_A :
Total Inorganic Nitrogen
TIN (mg/L)
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
Upstream
Downstream
AL
LL


Fresh Water Quality : F_A :
Nitrite Nitrogen
NO2-N (mg/L)
0.05
0.04
0.03
0.02
0.01
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
Upstream
Downstream
AL
LL


Fresh Water Quality : F_A :
Chlorophyll a
Chl a (ug/L)
5
4
3
2
1
0
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
Upstream
Downstream
AL
LL


Fresh Water Quality : F_A :
Total Phosphorus
TP (mg/L)
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
Upstream
Downstream
AL
LL

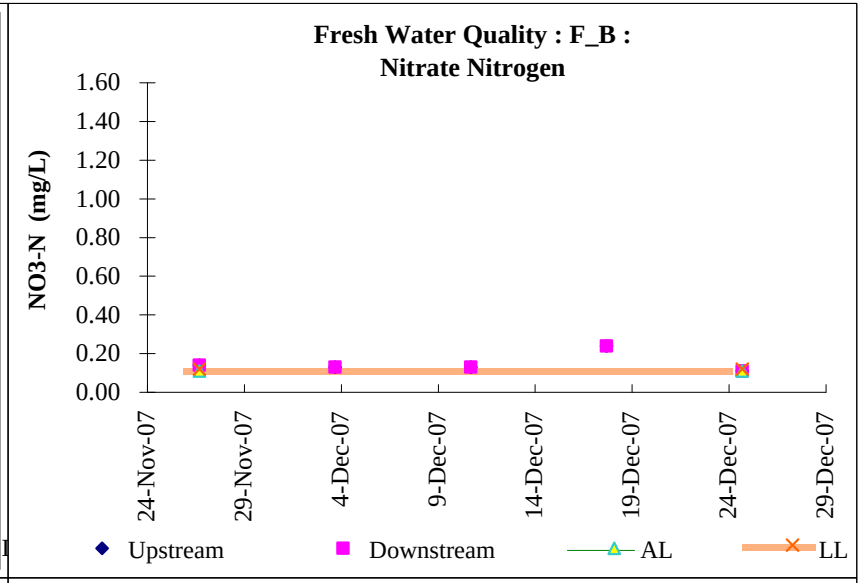

Fresh Water Quality : F_A :
Pesticides
Pesticides (ug/L)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
NOT USED
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
Upstream
Downstream
AL
LL

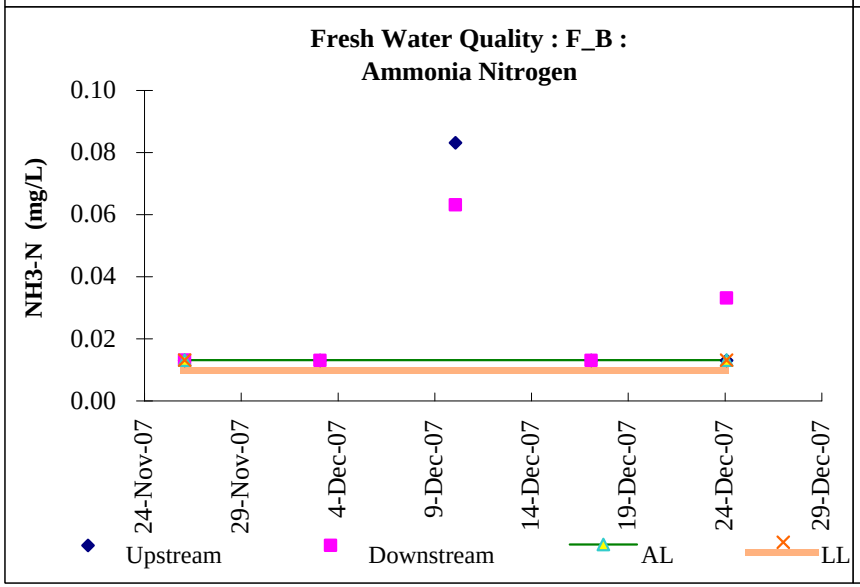
F_UB	Mid depth								
Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
26-Nov-07	10:20	***4***	0.01	0.13	0.01	0.15	0.01	~~0.5~~	
03-Dec-07	12:20	~~2~~	0.01	0.12	0.01	0.14	0.01	~~0.5~~	
10-Dec-07	10:20	***6***	0.08	0.12	0.01	0.21	0.01	~~0.5~~	
17-Dec-07	09:50	~~2~~	0.01	0.23	0.01	0.25	0.01	0.6	
24-Dec-07	12:20	***4***	0.01	0.10	0.01	0.12	0.01	~~0.5~~	

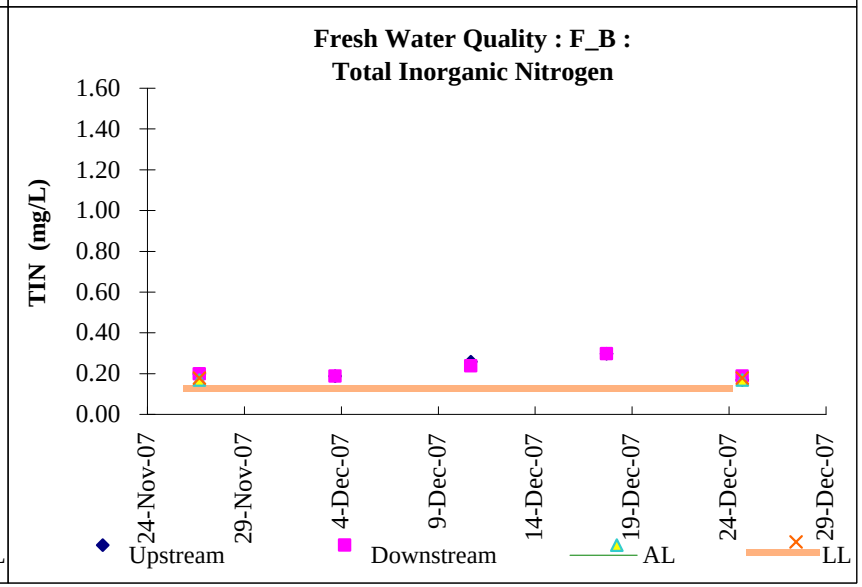
F_DB	Mid depth								
Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
26-Nov-07	10:30	3	***0.01***	**0.13**	0.01	**0.15**	0.01	~~0.5~~	
03-Dec-07	12:30	~~2~~	~~0.01~~	**0.12**	0.01	**0.14**	0.01	~~0.5~~	
10-Dec-07	10:30	***4***	**0.06**	**0.12**	0.01	**0.19**	0.01	~~0.5~~	
17-Dec-07	10:00	~~2~~	~~0.01~~	**0.23**	0.01	**0.25**	0.01	~~0.5~~	
24-Dec-07	12:30	***5***	**0.03**	***0.10***	0.01	**0.14**	0.01	~~0.5~~	

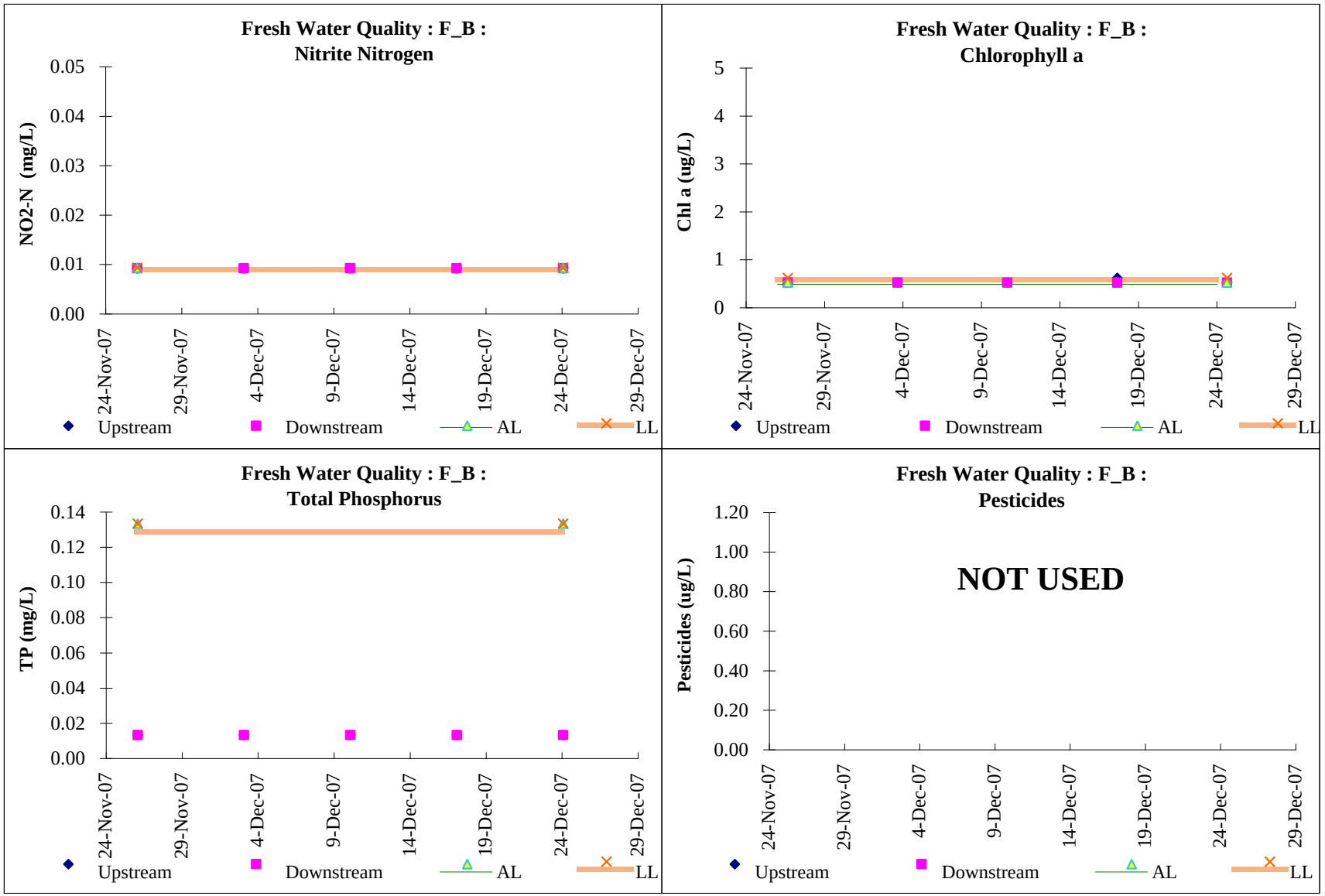
Action level	***Bold & Italic***
Limit level	**Bold**
< detection limit	~~Grey~~

NOT USED


Fresh Water Quality : F_B :
Nitrate Nitrogen
NO3-N (mg/L)
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
Upstream
Downstream
AL
LL


Fresh Water Quality : F_B :
Ammonia Nitrogen
NH3-N (mg/L)
0.10
0.08
0.06
0.04
0.02
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
Upstream
Downstream
AL
LL


Fresh Water Quality : F_B :
Total Inorganic Nitrogen
TIN (mg/L)
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
Upstream
Downstream
AL
LL

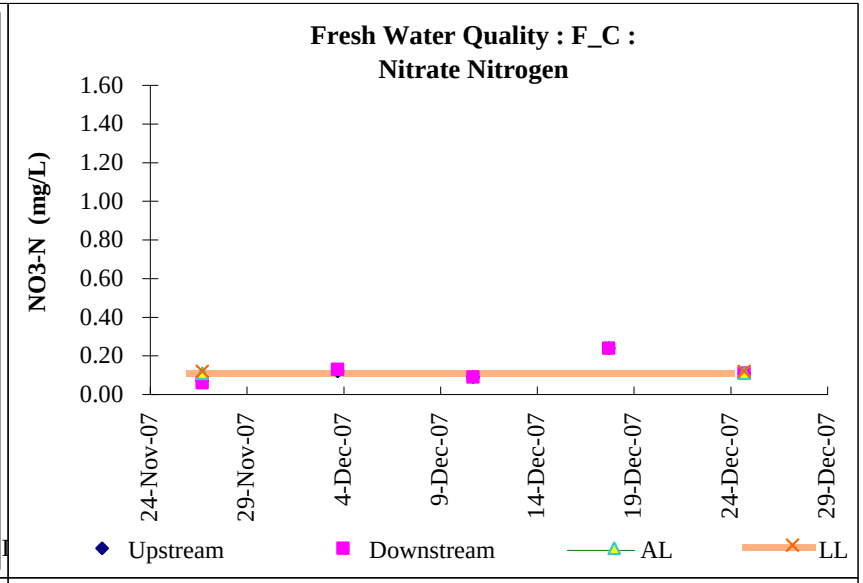

Fresh Water Quality : F_B :
Nitrite Nitrogen
NO2-N (mg/L)
0.05
0.04
0.03
0.02
0.01
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
Upstream
Downstream
AL
LL
Fresh Water Quality : F_B :
Chlorophyll a
Chl a (ug/L)
5
4
3
2
1
0
Fresh Water Quality : F_B :
Total Phosphorus
TP (mg/L)
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
Fresh Water Quality : F_B :
Pesticides
Pesticides (ug/L)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
NOT USED

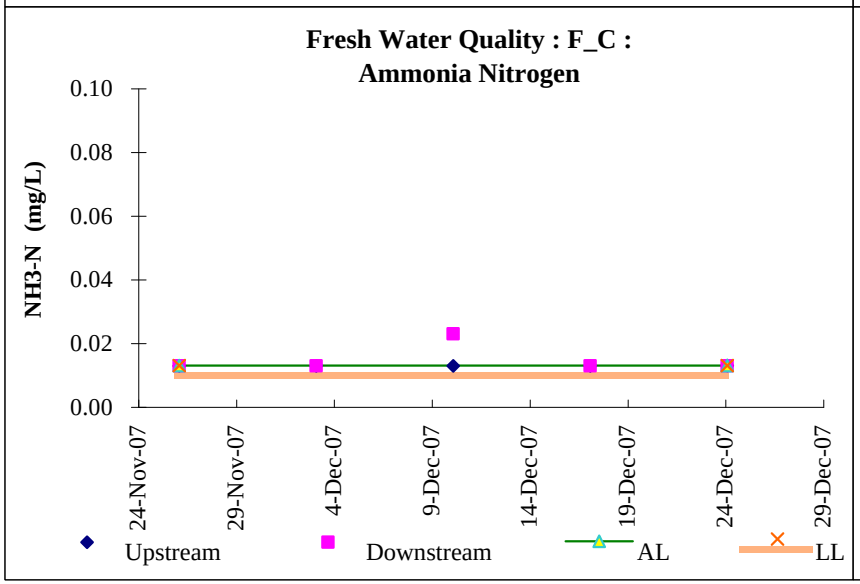
F_UC	Mid depth								
Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
26-Nov-07	10:45	~~2~~	~~0.01~~	0.06	0.01	0.08	0.01	~~0.5~~	
03-Dec-07	12:45	~~2~~	~~0.01~~	0.11	0.01	0.13	0.01	0.5	
10-Dec-07	10:45	3	~~0.01~~	0.08	0.01	0.10	0.01	0.5	
17-Dec-07	10:15	~~2~~	~~0.01~~	0.23	0.01	0.25	0.01	~~0.5~~	
24-Dec-07	12:45	***4***	***0.01***	0.10	0.01	0.12	0.01	~~0.5~~	

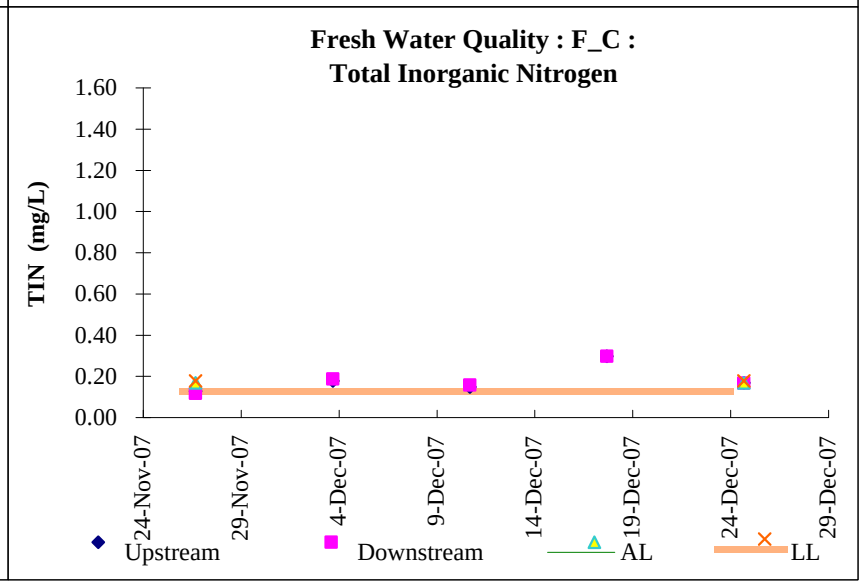
F_DC	Mid depth								
Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
26-Nov-07	10:55	~~2~~	~~0.01~~	0.05	0.01	0.07	0.01	**0.7**	
03-Dec-07	12:55	~~2~~	~~0.01~~	**0.12**	0.01	**0.14**	0.01	***0.5***	
10-Dec-07	10:55	3	**0.02**	0.08	0.01	0.11	0.01	**0.7**	
17-Dec-07	10:25	~~2~~	~~0.01~~	**0.23**	0.01	**0.25**	0.01	~~0.5~~	
24-Dec-07	12:55	***5***	~~0.01~~	***0.10***	0.01	0.12	0.01	~~0.5~~	

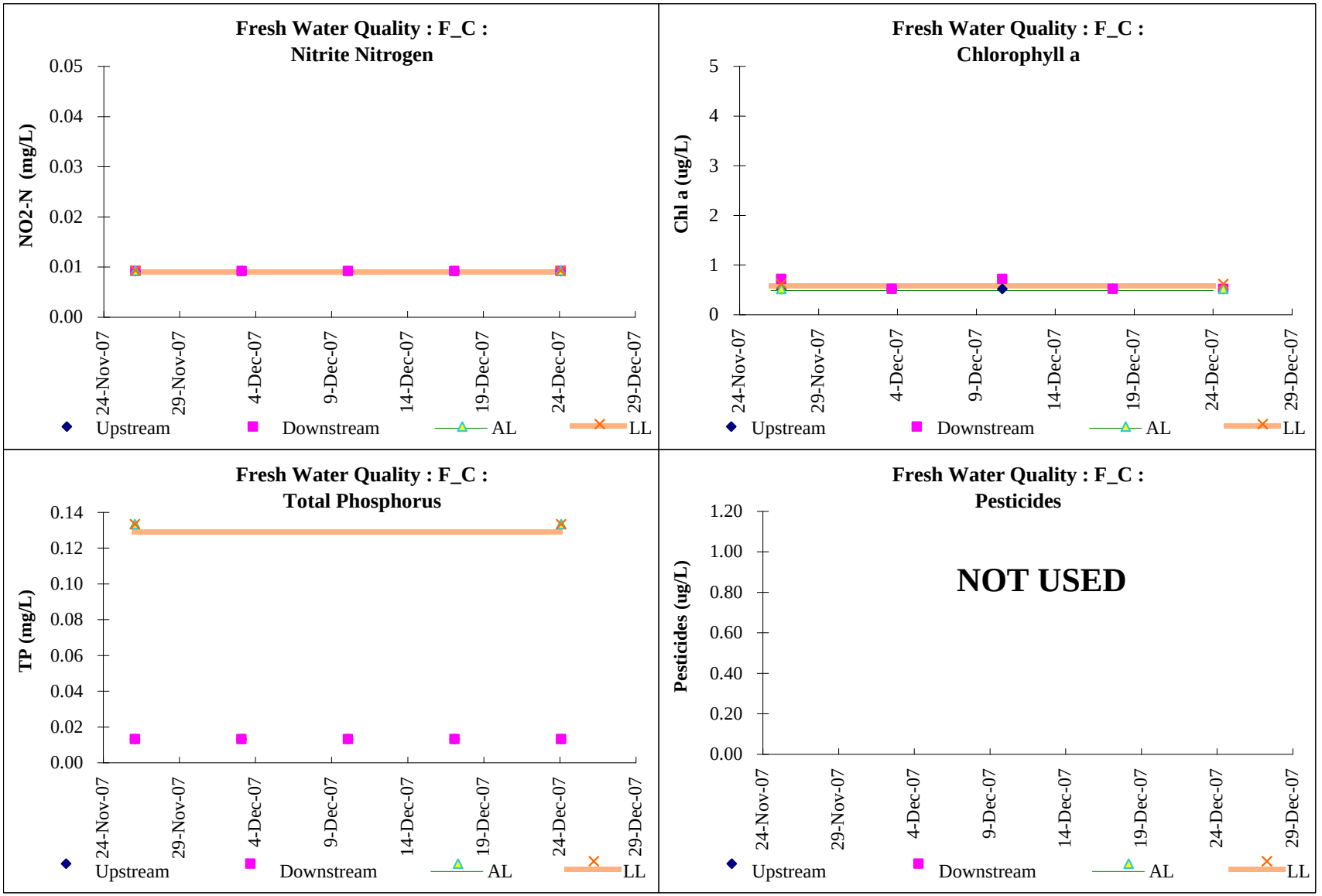
Action level	***Bold & Italic***
Limit level	**Bold**
< detection limit	~~Grey~~

NOT USED


Fresh Water Quality : F_C :
Nitrate Nitrogen
NO3-N (mg/L)
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
Upstream
Downstream
AL
LL


Fresh Water Quality : F_C :
Ammonia Nitrogen
NH3-N (mg/L)
0.10
0.08
0.06
0.04
0.02
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
Upstream
Downstream
AL
LL

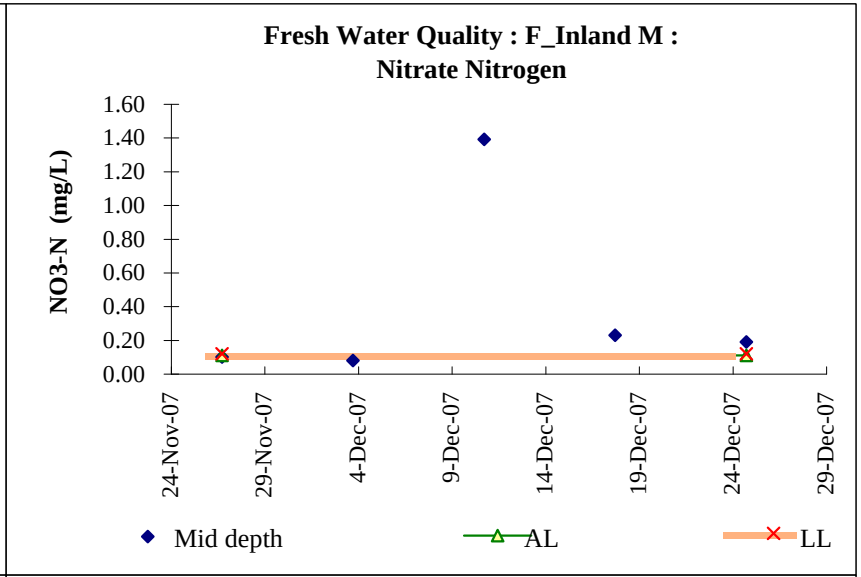

Fresh Water Quality : F_C :
Total Inorganic Nitrogen
TIN (mg/L)
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
Upstream
Downstream
AL
LL

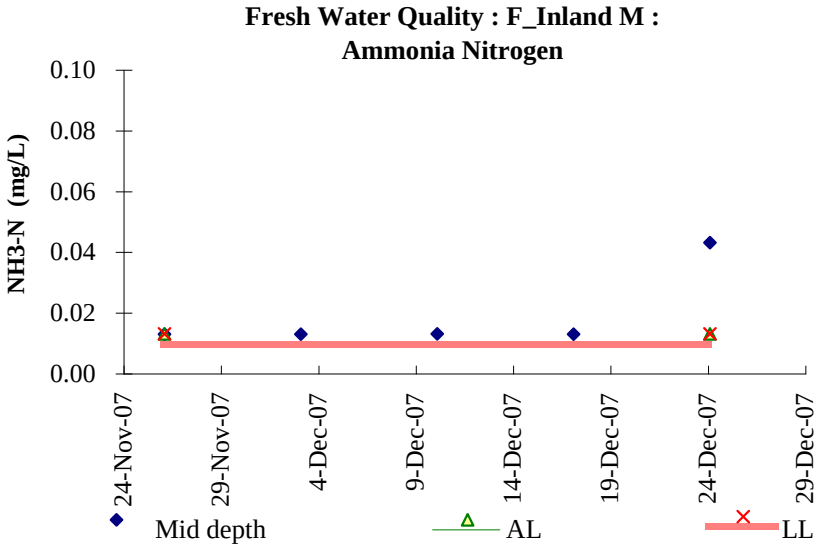

Fresh Water Quality : F_C :
Nitrite Nitrogen
NO2-N (mg/L)
0.05
0.04
0.03
0.02
0.01
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
Upstream
Downstream
AL
LL
Fresh Water Quality : F_C :
Chlorophyll a
Chl a (ug/L)
5
4
3
2
1
0
Fresh Water Quality : F_C :
Total Phosphorus
TP (mg/L)
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
Fresh Water Quality : F_C :
Pesticides
Pesticides (ug/L)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
NOT USED

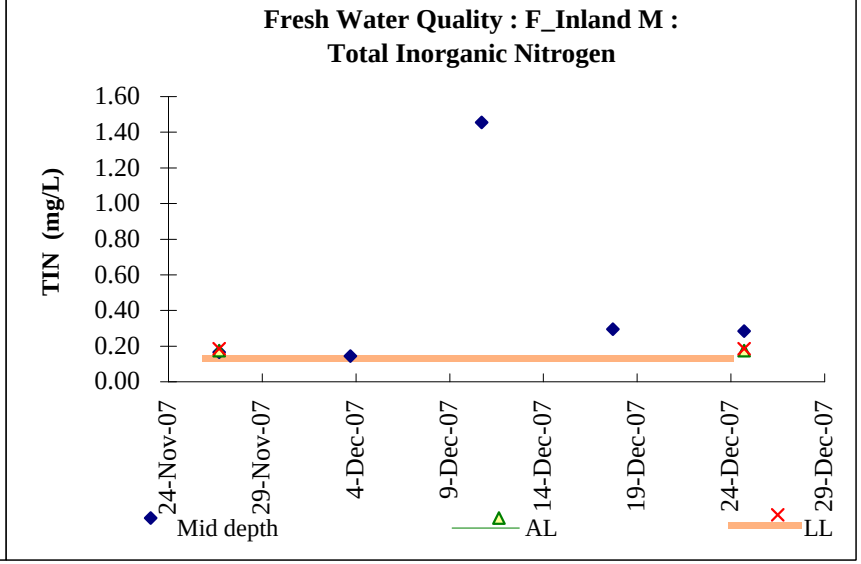
F_Inland M	Mid depth								
Date	time	SS (mg/L)	NH_3-N (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TIN (mg/L)	TP (mg/L)	Chlorophyll a (ug/L)	Pesticides (ug/L)
26-Nov-07	09:15	3	~~0.01~~	0.09	~~0.01~~	0.11	~~0.01~~	~~0.5~~	
03-Dec-07	11:15	***4***	~~0.01~~	0.07	~~0.01~~	0.09	~~0.01~~	~~0.5~~	
10-Dec-07	09:15	~~2~~	***0.01***	**1.38**	~~0.01~~	**1.40**	~~0.01~~	~~0.5~~	
17-Dec-07	08:45	~~2~~	~~0.01~~	**0.22**	~~0.01~~	**0.24**	~~0.01~~	~~0.5~~	
24-Dec-07	11:15	2	**0.04**	**0.18**	~~0.01~~	**0.23**	~~0.01~~	~~0.5~~	

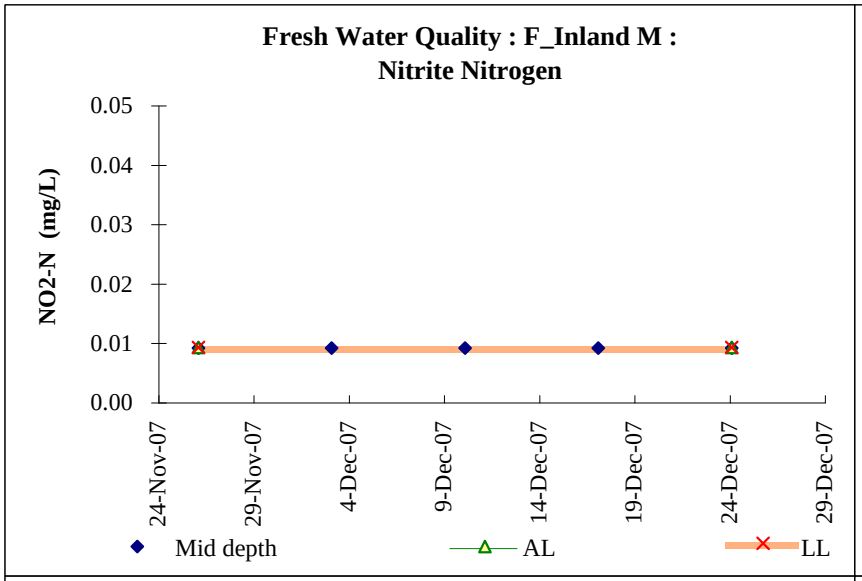
24-Dec-07	***Bold & Italic***
	Bold
< detection limit	~~Grey~~

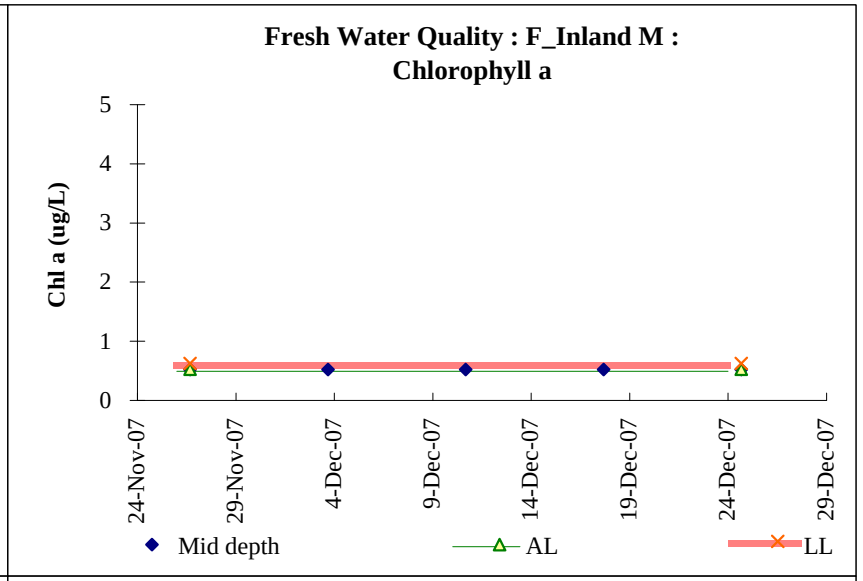
NOT USED

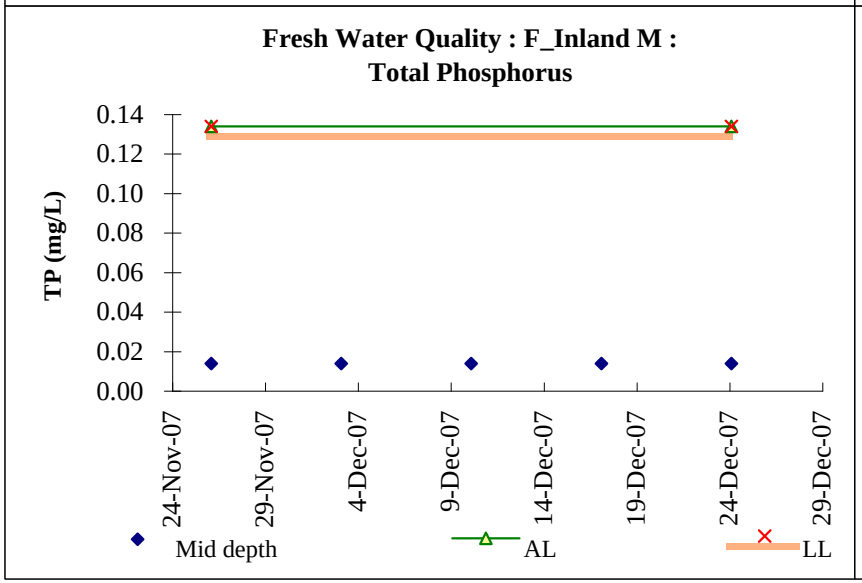

Fresh Water Quality : F_Inland M :
Nitrate Nitrogen
NO3-N (mg/L)
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
Mid depth
AL
LL

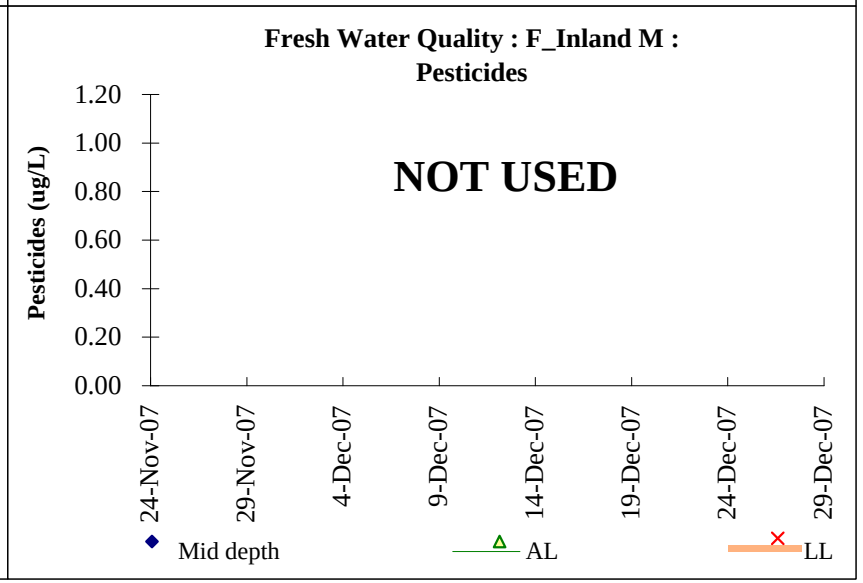

Fresh Water Quality : F_Inland M :
Ammonia Nitrogen
NH3-N (mg/L)
0.10
0.08
0.06
0.04
0.02
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
Mid depth
AL
LL


Fresh Water Quality : F_Inland M :
Total Inorganic Nitrogen
TIN (mg/L)
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
Mid depth
AL
LL


Fresh Water Quality : F_Inland M :
Nitrite Nitrogen
NO2-N (mg/L)
0.05
0.04
0.03
0.02
0.01
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
Mid depth
AL
LL


Fresh Water Quality : F_Inland M :
Chlorophyll a
Chl a (ug/L)
5
4
3
2
1
0
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
Mid depth
AL
LL


Fresh Water Quality : F_Inland M :
Total Phosphorus
TP (mg/L)
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
Mid depth
AL
LL


Fresh Water Quality : F_Inland M :
Pesticides
Pesticides (ug/L)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
NOT USED
24-Nov-07
29-Nov-07
4-Dec-07
9-Dec-07
14-Dec-07
19-Dec-07
24-Dec-07
29-Dec-07
Mid depth
AL
LL

Ecology

Plate 5.3-1 Photos of Stream Habitat

Stream A and the buffer zone

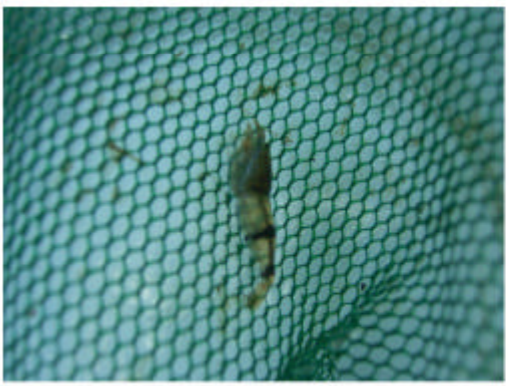
Stream A channel restored by planting & hydroseeding

Buffer zone in Stream B2

Stream B2 course

Stream C buffer zone

Stream C course

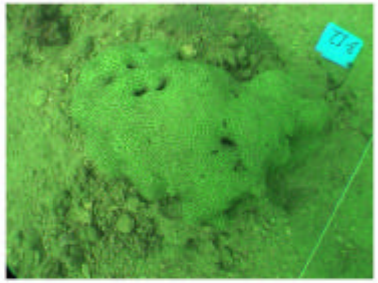
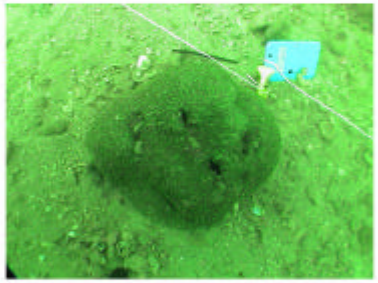
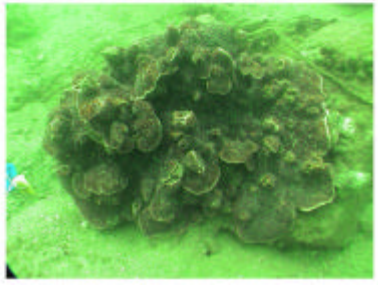


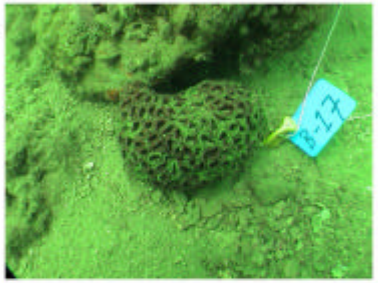
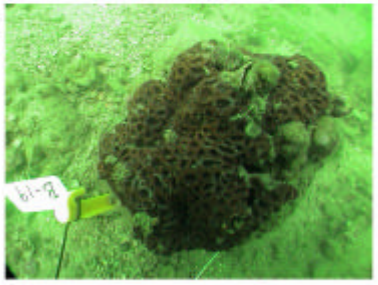
C. fasciata in Stream C

Area to be reinstated in Stream C

C. fasciata in Stream D

Stream D

	Baseline in Dec 05	Month 24 (Dec 07)
B-11		
B-12		
B-13		
B-14		
B-15		

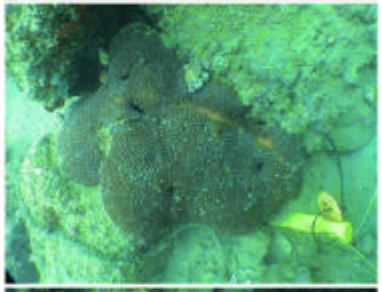
	Baseline in Dec 05	Month 24 (Dec 07)
B-16		
B-17		Missing
B-18		
B-19		Missing
B-20		

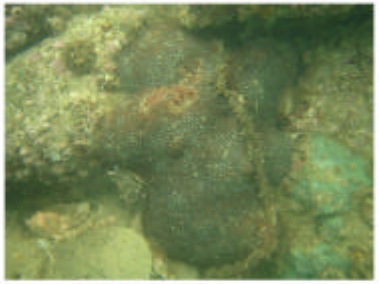
Baseline in April 06

Month 24 (Dec 07)

B-21

B-22





B-23

B-24

B-25

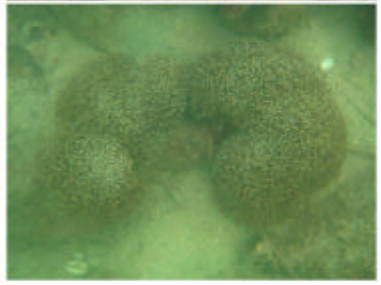
Baseline in April 06

Month 24 (Dec 07)

B-26

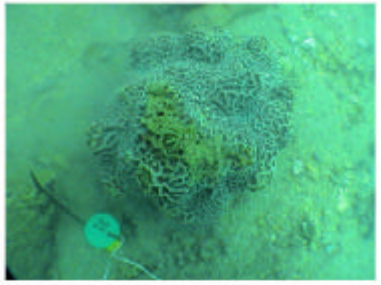
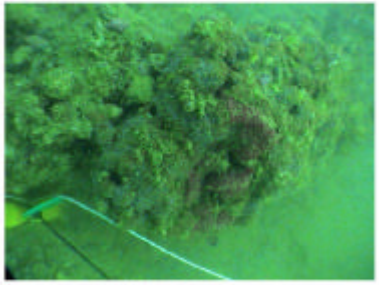
B-27

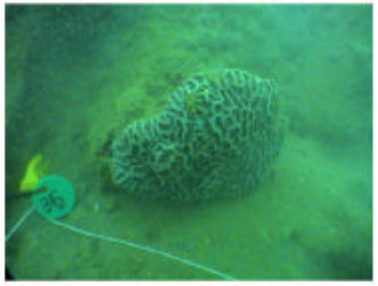
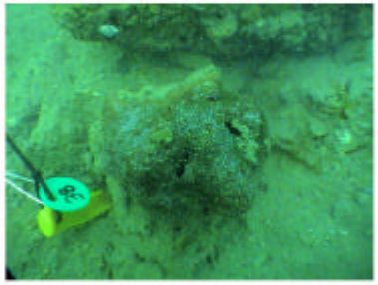
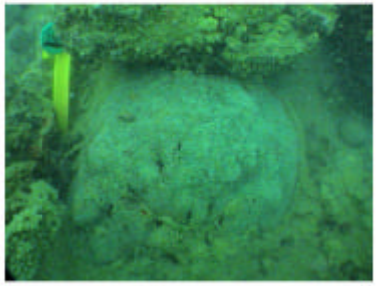
B-28



B-29

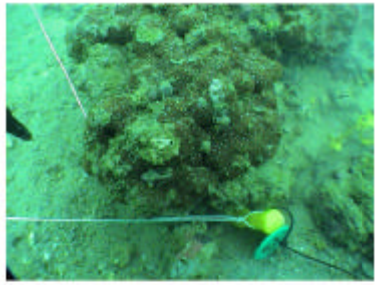
B-30

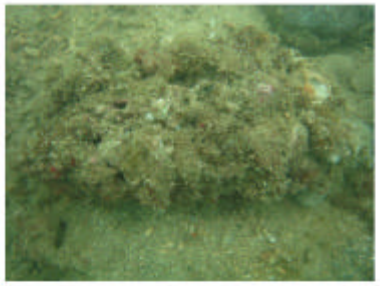
	Baseline in April 06	Month 24 (Dec 07)
B-31		
B-32		
B-33		
B-34		
B-35		

	Baseline in April 06	Month 24 (Dec 07)
B-36		
B-37		
B-38		
B-39		
B-40		

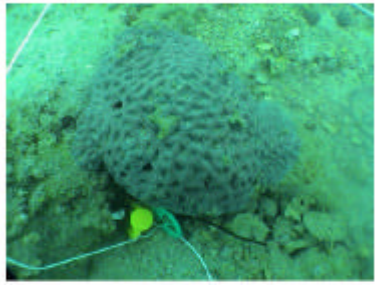
Baseline in April 06 | Month 24 (Dec 07)

B-41

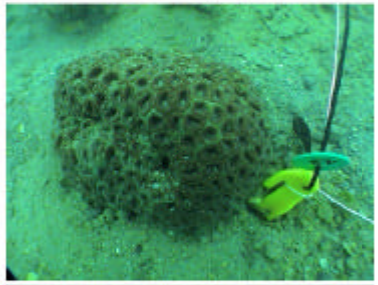




B-42



B-43



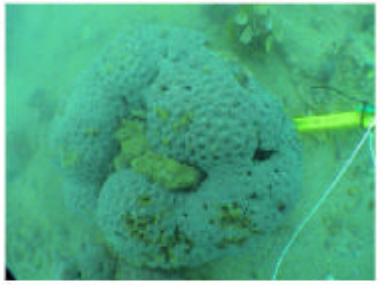
B-44

B-45

Baseline in April 06 | Month 24 (Dec 07)

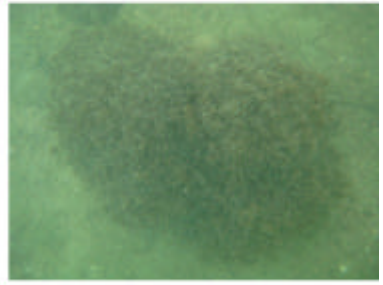
B-46

B-47

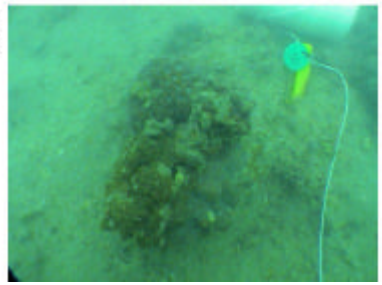


B-48

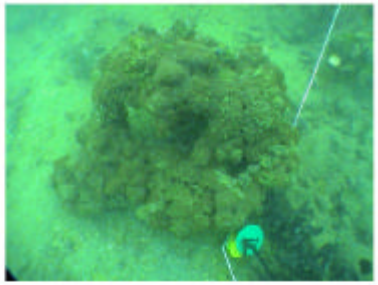
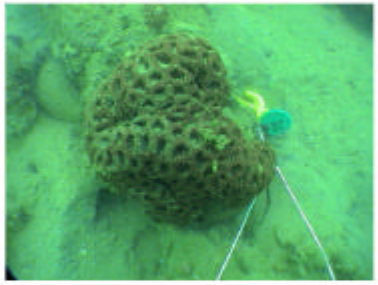
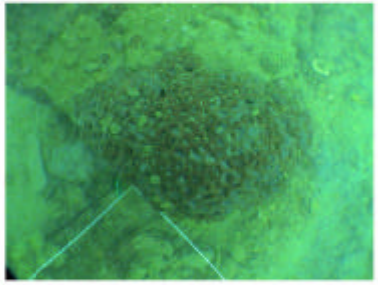
B-49

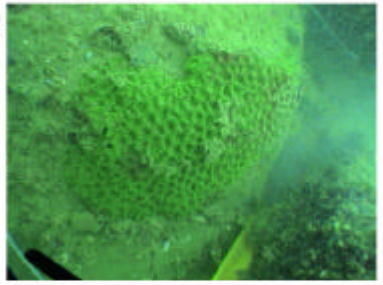


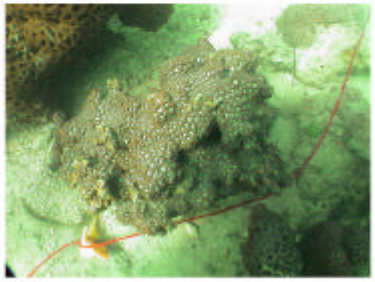
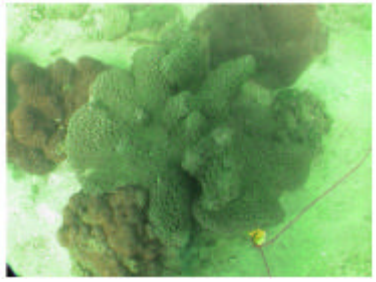
B-50

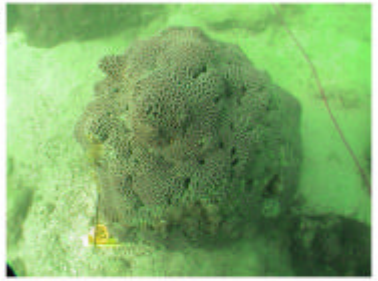
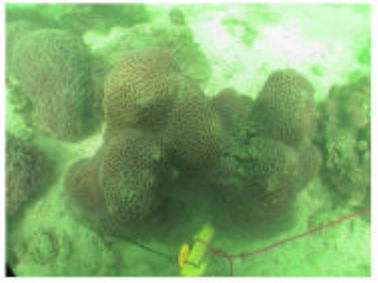


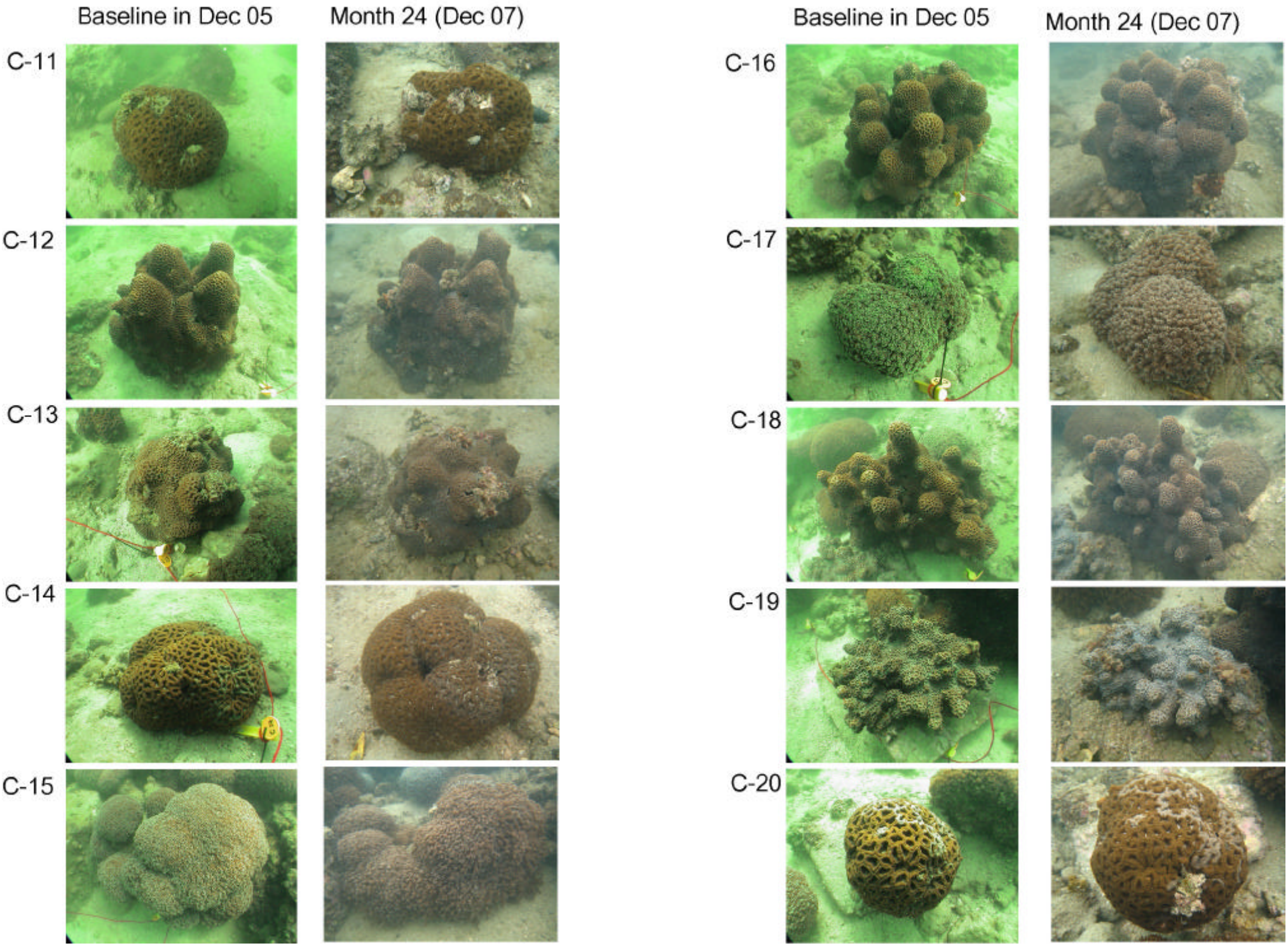
Missing

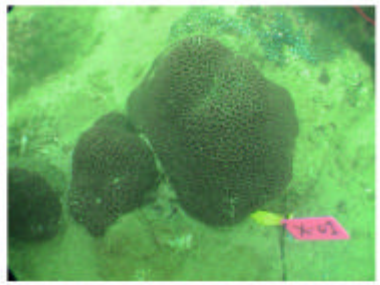
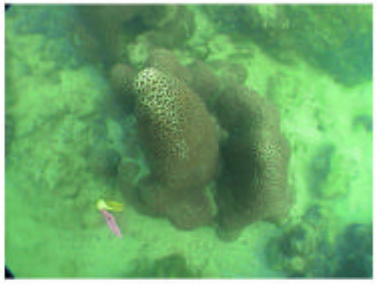
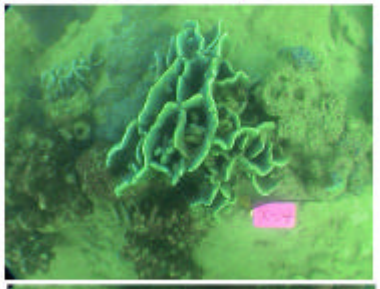
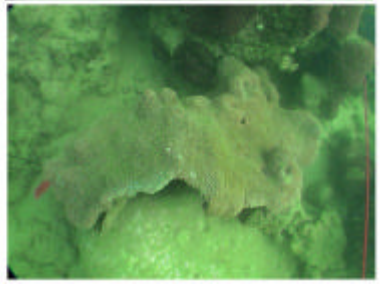
	Baseline in April 06	Month 24 (Dec 07)
B-51		Missing
B-52		
B-53		
B-54		
B-55		

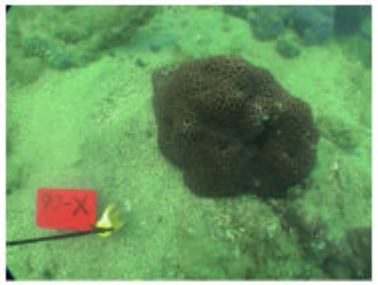
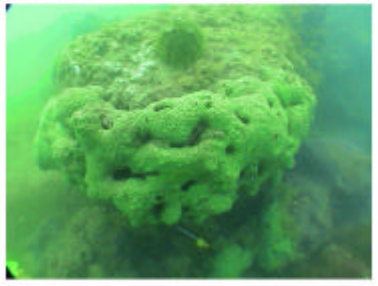
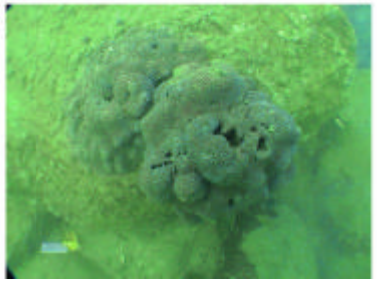
	Baseline in April 06	Month 24 (Dec 07)
B-56		
B-57		
B-58		
B-59		Missing
B-60		Missing

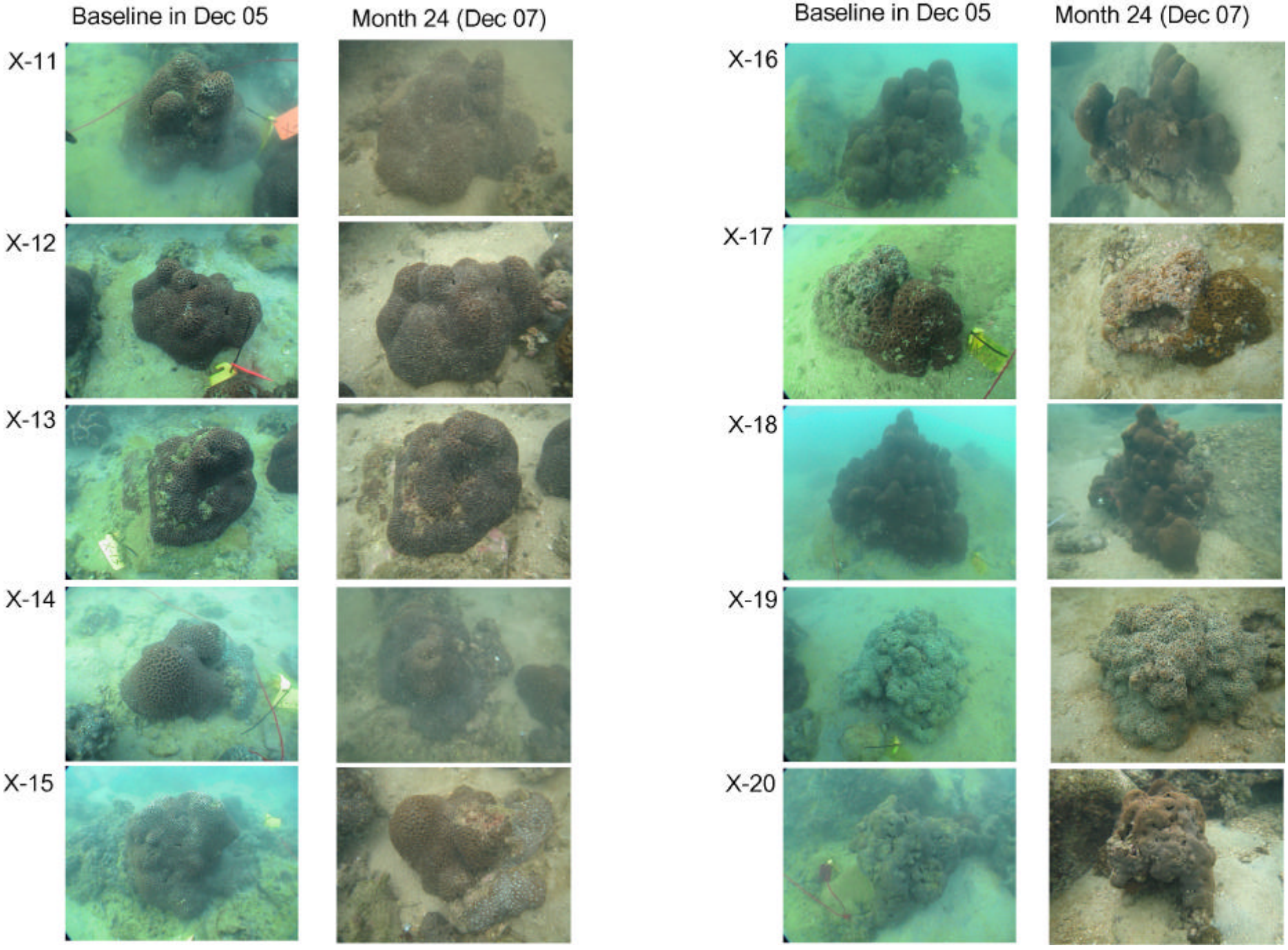
	Baseline in Dec 05	Month 24 (Dec 07)
C-01		
C-02		
C-03		
C-04		
C-05		

	Baseline in Dec 05	Month 24 (Dec 07)
C-06		
C-07		
C-08		
C-09		
C-10		


Baseline in Dec 05
Month 24 (Dec 07)
C-11
C-12
C-13
C-14
C-15
Baseline in Dec 05
Month 24 (Dec 07)
C-16
C-17
C-18
C-19
C-20

	Baseline in Dec 05	Month 24 (Dec 07)
X-01		
X-02		
X-03		
X-04		
X-05		Missing

	Baseline in Dec 05	Month 24 (Dec 07)
X-06		
X-07		
X-08		
X-09		
X-10		


Baseline in Dec 05
Month 24 (Dec 07)
X-11
X-12
X-13
X-14
X-15
Baseline in Dec 05
Month 24 (Dec 07)
X-16
X-17
X-18
X-19
X-20

Annex F
Calibration Certificates

ENSR ASIA (HK) LTD
TSP High Volume Sampler
Field Calibration Report

Station	KSC Public Golf Course Bungalow A (GCA B1)	Operator:	Shum Kam Yuen
Cal. Date:	17-Dec-07	Due Date	17-Feb-08
Equipment No.:	A-001-47T	Serial No.	9469

Ambient Condition			
Temperature, Ta (K)	299	Pressure, Pa (mmHg)	766.5

Orifice Transfer Standard Information					
Serial No:	843	Slope, mc	2.02026	Intercept, bc	-0.03609
Last Calibration Date:	22-Oct-07	$mc \times Qstd + bc = [DH \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	21-Oct-08	$Qstd = \{[DH \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Resistance Plate No.	Orifice			HVS Flow Recorder	
	DH (orifice), in. of water	$[DH \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (m^3/min) X - axis	Flow Recorder Reading (CFM)	Continuous Flow Recorder Reading IC (CFM) Y-axis
18	11.7	3.43	1.72	52.0	52.13
13	9.8	3.14	1.57	46.0	46.12
10	7.6	2.76	1.39	42.0	42.11
7	5.5	2.35	1.18	34.0	34.09
5	3.2	1.79	0.91	24.0	24.06

By Linear Regression of Y on X

Slope , mw = **34.0456** **Intercept, bw =** **-6.3278**

Correlation Coefficient* = **0.9939**

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 1.30m^3/min

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = IC \times [(Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $IC = (mw \times Qstd + bw) \times [(760 / Pa) \times (Ta / 298)]^{1/2} =$ **37.83**

Remarks:

QC Reviewer: Mike Shek Signature: Mike Date: 20 Dec 07

CERTIFICATE OF ANALYSIS

CONTACT:	MR WONG SIU HO	**Batch:**	HK83117
CLIENT:	ENOVATIVE ENV TECHNOLOGY CO	**Sub Batch:**	0
ADDRESS:	RM 3704 SIK MAN HOUSE HOMANTIN ESTATE KOWLOON	**LABORATORY:**	HONG KONG
		DATE RECEIVED:	25/10/2007
		DATE OF ISSUE:	31/10/2007
ORDER No.:		**SAMPLE TYPE:**	EQUIPMENT
PROJECT:		**No. of SAMPLES:**	1

COMMENTS

The calibration procedure used for the analysis has been applied for the calibration of the above instrument.

NOTES

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

ISSUING LABORATORY: HONG KONG

Address

ALS Technichem (HK) Pty Ltd

11/F
Chung Shun Knitting Centre
1-3 Wing Yip Street
Kwai Chung
HONG KONG

Phone: 852-2610 1044
Fax: 852-2610 2021
Email: hongkong@alsenviro.com

pp

Ms Wong Wai Man, Alice
Laboratory Manager - Hong Kong

CERTIFICATE OF ANALYSIS

Batch: HK83117
Sub Batch : 0
Date of Issue: 31/10/2007
Client: ENOVATIVE ENV TECHNOLOGY CO
Client Reference:

Calibration of Tubidimeter

Item : YSI SONDE Environmental Monitoring System

Model No. : 6920

Serial No. : 000109DF

Calibration Method : This meter was calibrated in accordance with standard method APHA (19th Ed.) 2130B

Date of Calibration : 25 October, 2007

Testing Results :

Expected Reading	Recording Reading
0.00 NTU	0.1 NTU
4.00 NTU	3.83 NTU
16.0 NTU	16.3 NTU
80.0 NTU	80.2 NTU
160 NTU	159 NTU
Allowing Deviation	±10%

Ms Wong Wai Man, Alice
Laboratory Manager - Hong Kong

CERTIFICATE OF ANALYSIS

Batch: HK83117
Sub Batch : 0
Date of Issue: 31/10/2007
Client: ENOVATIVE ENV TECHNOLOGY CO
Client Reference:

Calibration of Conductivity System

Item : YSI SONDE Environmental Monitoring System

Model No. : 6920

Serial No. : 000109DF

Calibration Method : This meter was calibrated in accordance with standard method APHA (19th Ed.) 2510B

Date of Calibration : 25 October 2007

Testing Results :

Expected Reading	Recording Reading
1412 uS/cm	1431 uS/cm
6667 uS/cm	6693 uS/cm
58670 uS/cm	58417 uS/cm
Allowing Deviation	±10%

pp

Ms Wong Wai Man, Alice
Laboratory Manager - Hong Kong

CERTIFICATE OF ANALYSIS

Batch: HK83117
Sub Batch : 0
Date of Issue: 31/10/2007
Client: ENOVATIVE ENV TECHNOLOGY CO
Client Reference:

Calibration of Salinity System

Item : YSI SONDE Environmental Monitoring System

Model No. : 6920

Serial No. : 000109DF

Calibration Method : This meter was calibrated in accordance with standard method APHA (19th Ed.) 2520 A and B

Date of Calibration : 25 October, 2007

Testing Results :

Expected Reading	Recording Reading
10.0 g/L 20.0 g/L 30.0 g/L	10.0 g/L 20.1 g/L 30.0 g/L
Allowing Deviation	±10%

Ms Wong Wai Man, Alice
Laboratory Manager - Hong Kong

CERTIFICATE OF ANALYSIS

Batch: HK83117
Sub Batch : 0
Date of Issue: 31/10/2007
Client: ENOVATIVE ENV TECHNOLOGY CO
Client Reference:

Calibration of Thermometer

Item : YSI SONDE Environmental Monitoring System

Model No. : 6920

Serial No. : 000109DF

Calibration Method : In-house Method

Date of Calibration : 25 October, 2007

Testing Results :

Reference Temperature (^{0}C)	Recorded Temperature (^{0}C)
3.5 ^{0}C 20.3 ^{0}C	3.5 ^{0}C 20.2 ^{0}C
Allowing Deviation	±2.0^{0}C

pp

Ms Wong Wai Man, Alice
Laboratory Manager - Hong Kong

CERTIFICATE OF ANALYSIS

Batch: HK83117
Sub Batch : 0
Date of Issue: 31/10/2007
Client: ENOVATIVE ENV TECHNOLOGY CO
Client Reference:

Calibration of DO System

Item : YSI SONDE Environmental Monitoring System

Model No. : 6920

Serial No. : 000109DF

Calibration Method : This meter was calibrated in accordance with standard method APHA (18th Ed.) 4500-0C & G

Date of Calibration : 25 October, 2007

Testing Results :

Expected Reading	Recording Reading
0.00 mg/L	0.10 mg/L
2.11 mg/L	2.16 mg/L
4.02 mg/L	4.10 mg/L
7.99 mg/L	7.87 mg/L
Allowing Deviation	±0.2 mg/L

Alice W M Wong
Laboratory Manager - Hong Kong

CERTIFICATE OF ANALYSIS

Batch: HK83117
Sub Batch : 0
Date of Issue: 31/10/2007
Client: ENOVATIVE ENV TECHNOLOGY CO
Client Reference:

Calibration of pH System

Item : YSI SONDE Environmental Monitoring System

Model No. : 6920

Serial No. : 000109DF

Calibration Method : This meter was calibrated in accordance with standard method APHA (19th Ed.) 4500 H:B

Date of Calibration : 25 October, 2007

Testing Results :

Expected Reading	Recording Reading
4.00 7.00 10.0	4.00 7.01 9.99
Allowing Deviation	±0.2 unit

Ms Wong Wai Man, Alice
Laboratory Manager - Hong Kong

ENOVATIVE
ENVIRONMENTAL TECHNOLOGY

Project: **Proposed Extension of Public Golf Course at Kau Sai Chau Island**

Instrument: **Daily checking and calibration record**
YSI 6920 (ENO 003)

Date	pH checking			DO wet bulb calibration	Turbidity checking		Staff	Remark
	4.0	7.0	10.0		5 NTU	20 NTU		
26/11	3.9	7.0	10.0	100%	4.79	19.3		
3/12	3.9	7.0	9.9	100%	4.92	18.9		
10/12	3.9	7.0	10.0	100%	5.10	20.2		
17/12	4.0	7.1	9.9	100%	5.13	21.3		
24/12	4.0	7.0	9.9	100%	4.88	19.3		

Annex G
Monitoring Programme
for next post-monitoring month

January 2008						
Sun	**Mon**	**Tue**	**Wed**	**Thu**	**Fri**	**Sat**
		1	2 WQ	3	4 WQ	5
6	7 WQ	8	9 WQ	10	11 WQ	12
13	14 WQ	15	16 WQ	17	18 WQ	19
20	21 WQ	22	23 WQ	24	25 WQ	26
27	28 WQ	29	30	31		

Remarks: AQ = TSP, WQ = Freshwater and Marine water quality, TE = Terrestrial Ecology, ME = Marine Ecology, LV = Landscape & Visual.

No exceedance was found during the three months of coral monitoring (Apr – Jun 06) at the temporary barging point after the coral incident (23rd Mar 06), the monitoring frequency will be changed on quarterly basis (start from Sept 2006) till the end of the construction phase (Dec 06, Mar 07, Jun 07 and Sept 07 and Dec 07).

No dredging was carried out for the desalination plant pipeline construction. However, corals at Site D2 were transplanted in the Dec 2006. Transplanted coral monitoring on quarterly basis for one year was commenced after the completion of coral transplanted in Dec 2006 and was completed in Sept 2007.

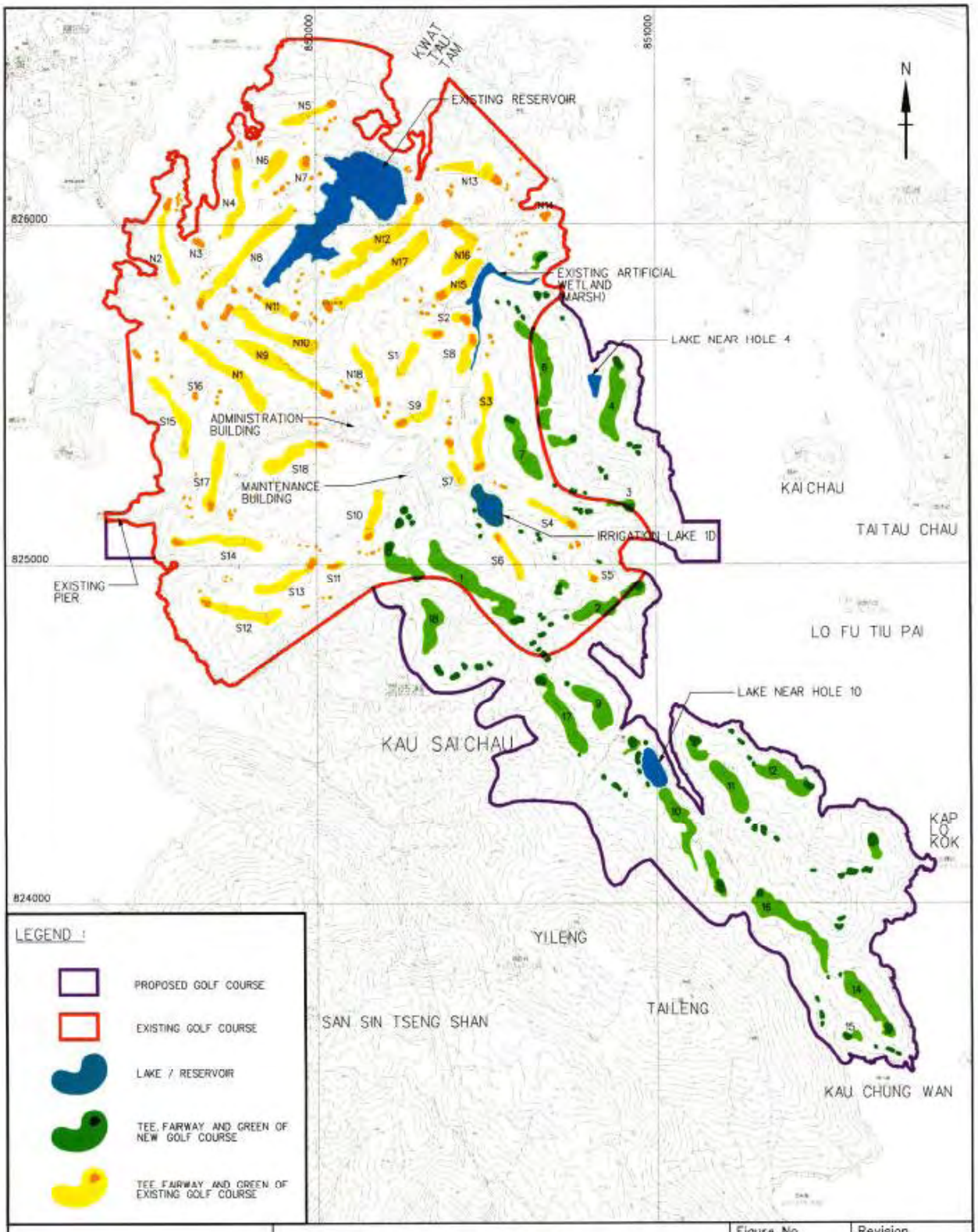
Planting turf was commenced in mid-February 2007. Water quality monitoring and frequency will increase to three times a week for the first three months (mid-February to mid-May 2007), then decrease to weekly basis if no exceedance was recorded. The monitoring parameter will include nutrients and pesticides (only measured when actual application on site).

The construction work was completed in December 2007. Removal of temporary barging point will commence in mid-January 2007. Additional coral monitoring at the temporary barging point is required during the period of removal. Post monitoring will be carried out in January 2008.

Annex H
Construction Programme for next month

Not Used

FIGURES



The Hong Kong Jockey Club

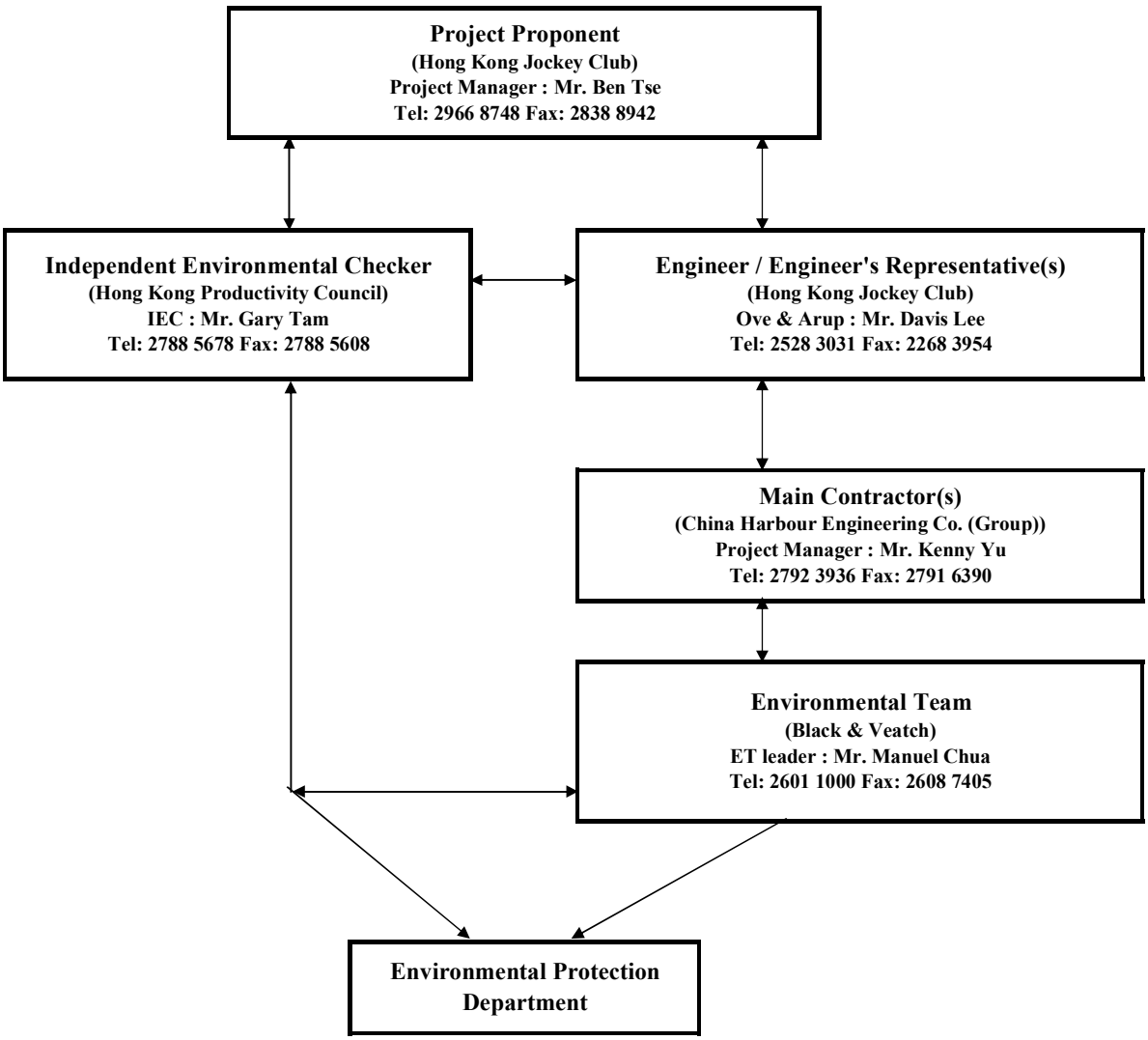
BLACK & VEATCH HONG KONG LIMITED
博威工程顧問有限公司

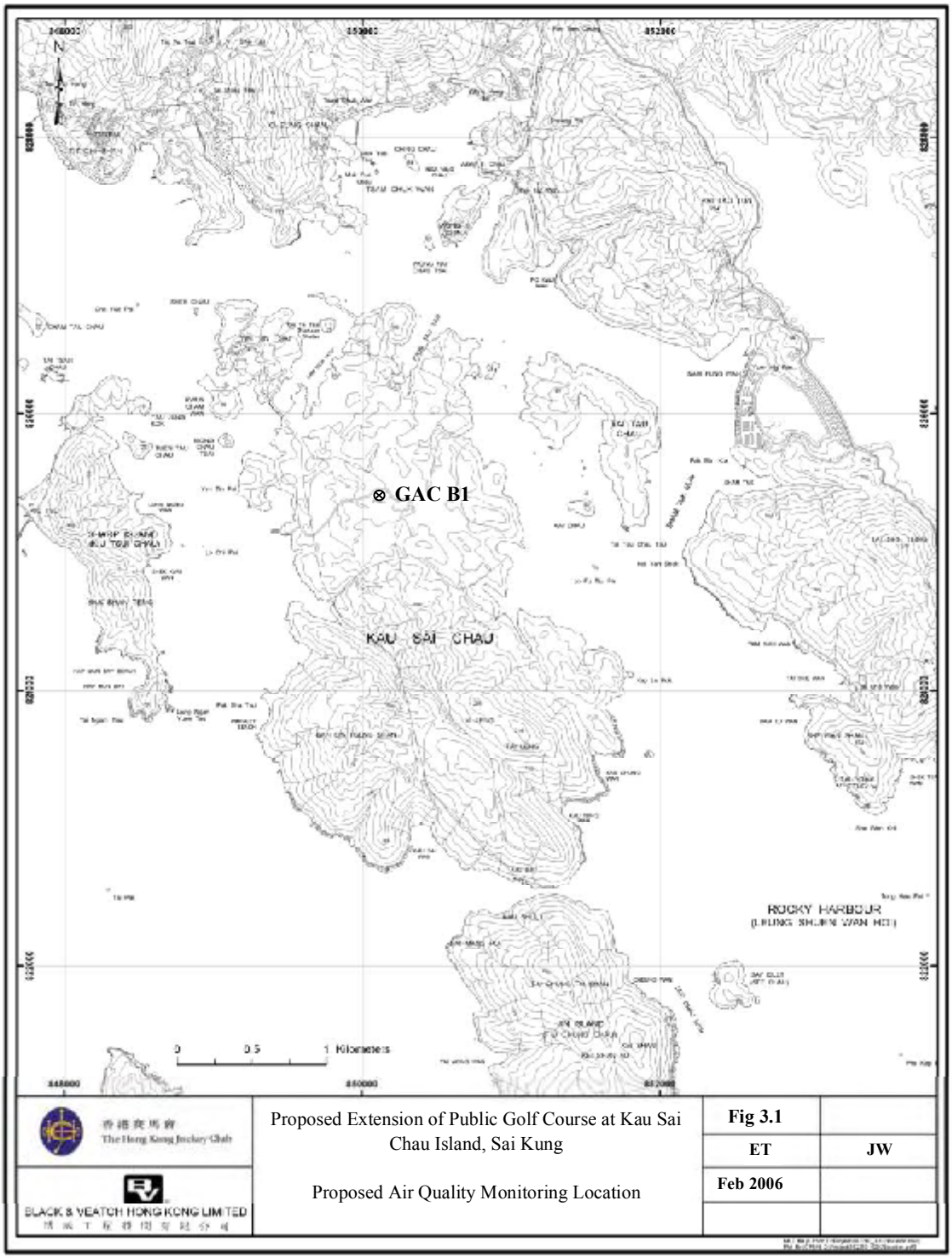
PROPOSED EXTENSION OF PUBLIC GOLF COURSE AT KAU SAI CHAU, SAI KUNG

PROPOSED 18-HOLE THIRD GOLF COURSE (MASTER LAYOUT PLAN)

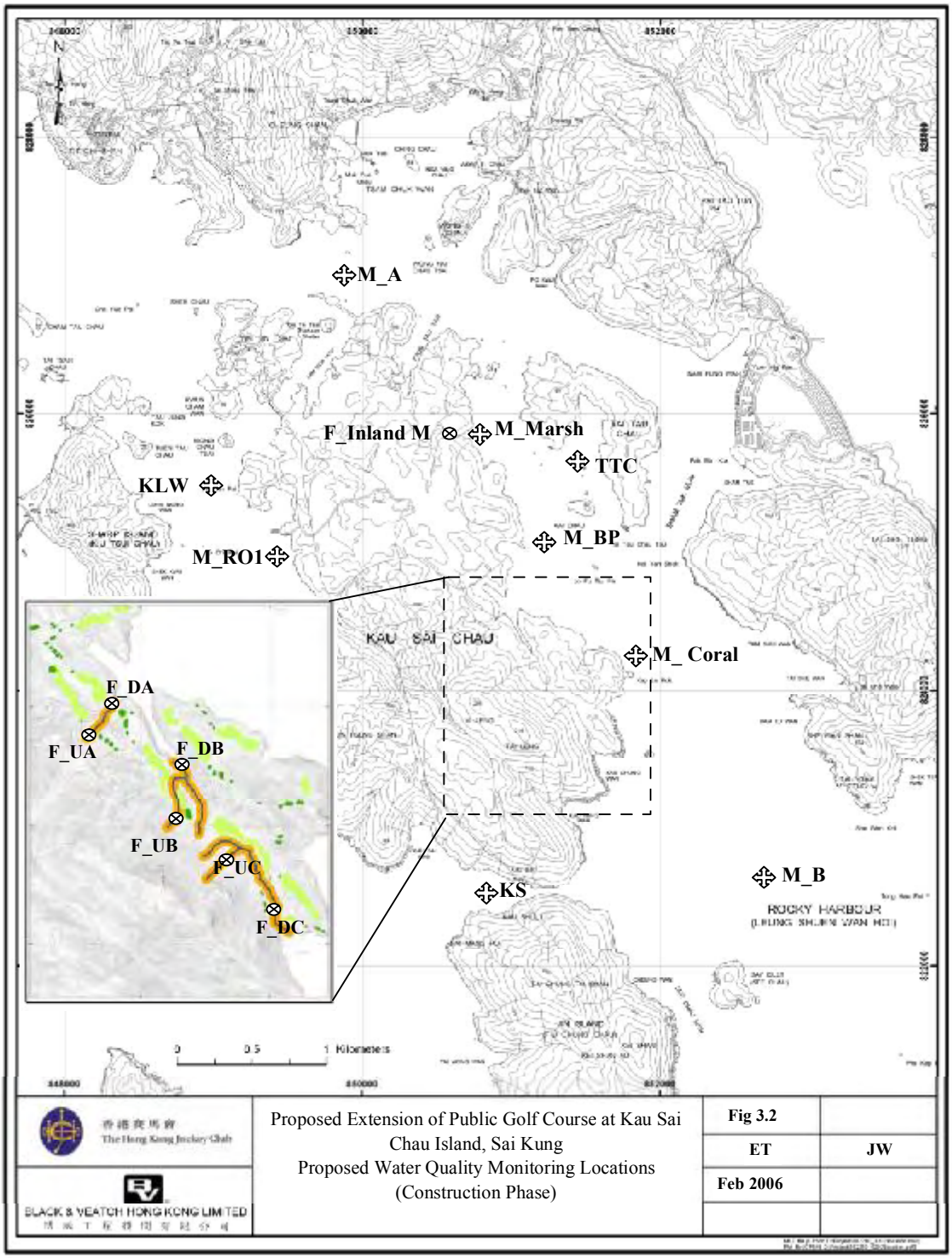
Figure No.	Revision
1.1	-
Reference	File Name
-	3822100201-2.1.DGN
Prepared	Checked
ET	JW
Date	Scale
MAY 2005	1 : 15000 (A4)

Figure 1.2
Project Organisation and Lines of Communication

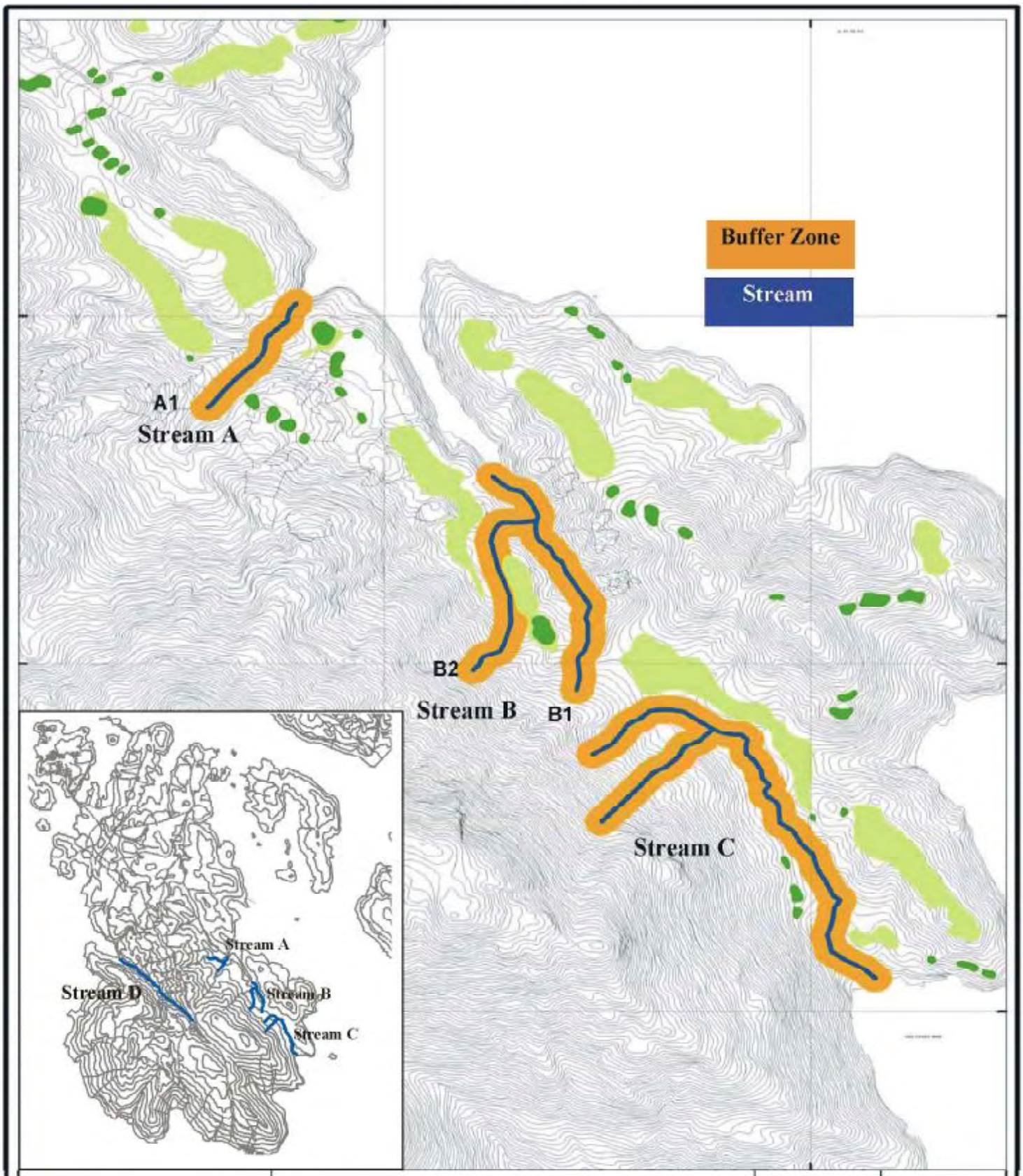




香港賽馬會 The Hong Kong Jockey Club	Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung	**Fig 3.1**	
		ET	**JW**
BLACK & VEATCH HONG KONG LIMITED 博威工程顧問有限公司	Proposed Air Quality Monitoring Location	**Feb 2006**	



香港賽馬會 The Hong Kong Jockey Club	Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung Proposed Water Quality Monitoring Locations (Construction Phase)	Fig 3.2
		ET JW
BLACK & VEATCH HONG KONG LIMITED		Feb 2006



香港賽馬會
The Hong Kong Jockey Club

BLACK & VEATCH HONG KONG LIMITED
博威工程顧問有限公司

Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung
Proposed Ecological Monitoring Location
(Streams Buffer Zone)

Fig 3.3	
ET	JW
July 2005	

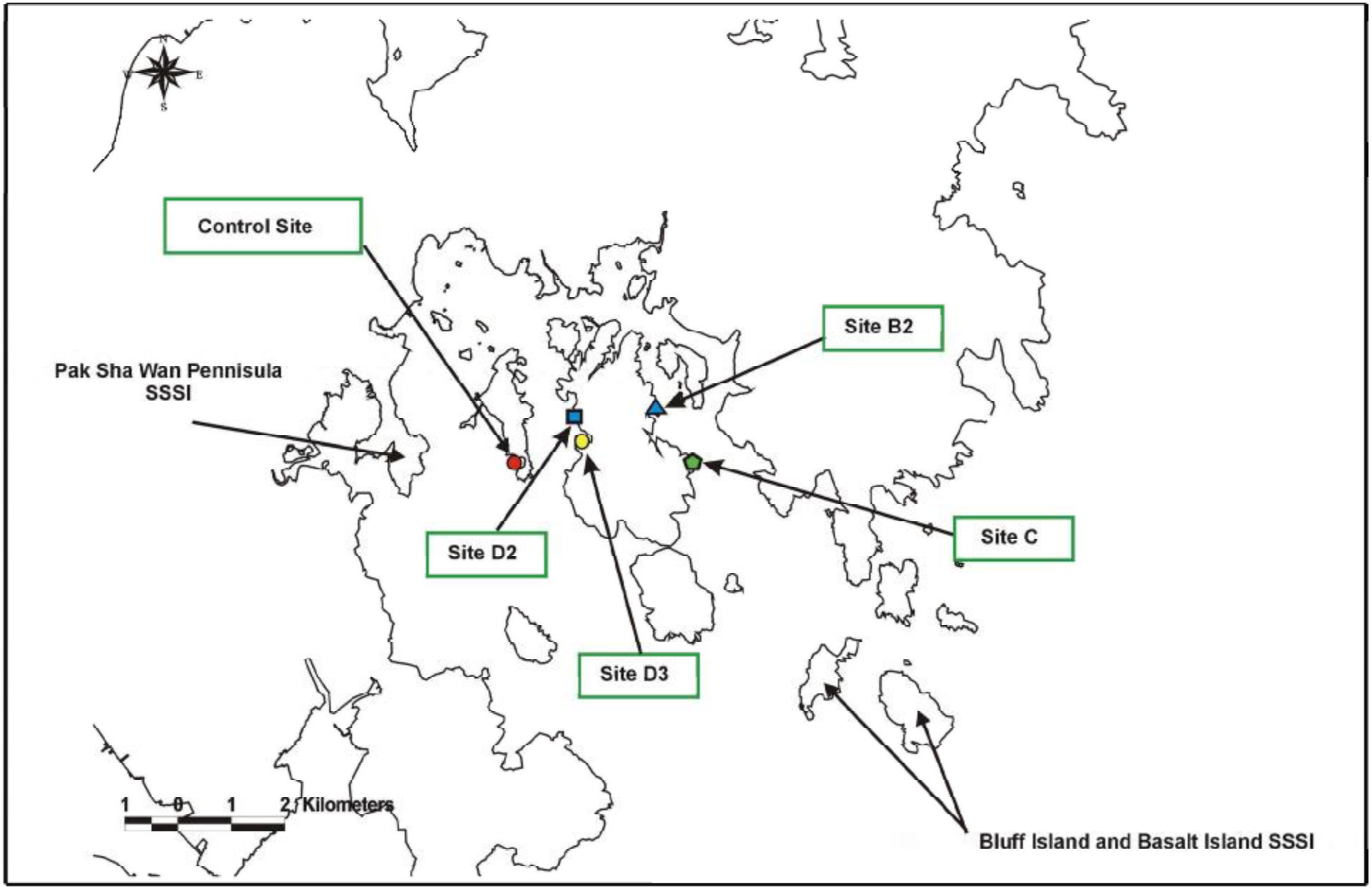


Figure 3.4a **Site C, Site B2, Site D2 and a Control Site near the AFCD's Coral Buoy at Sharp Island**

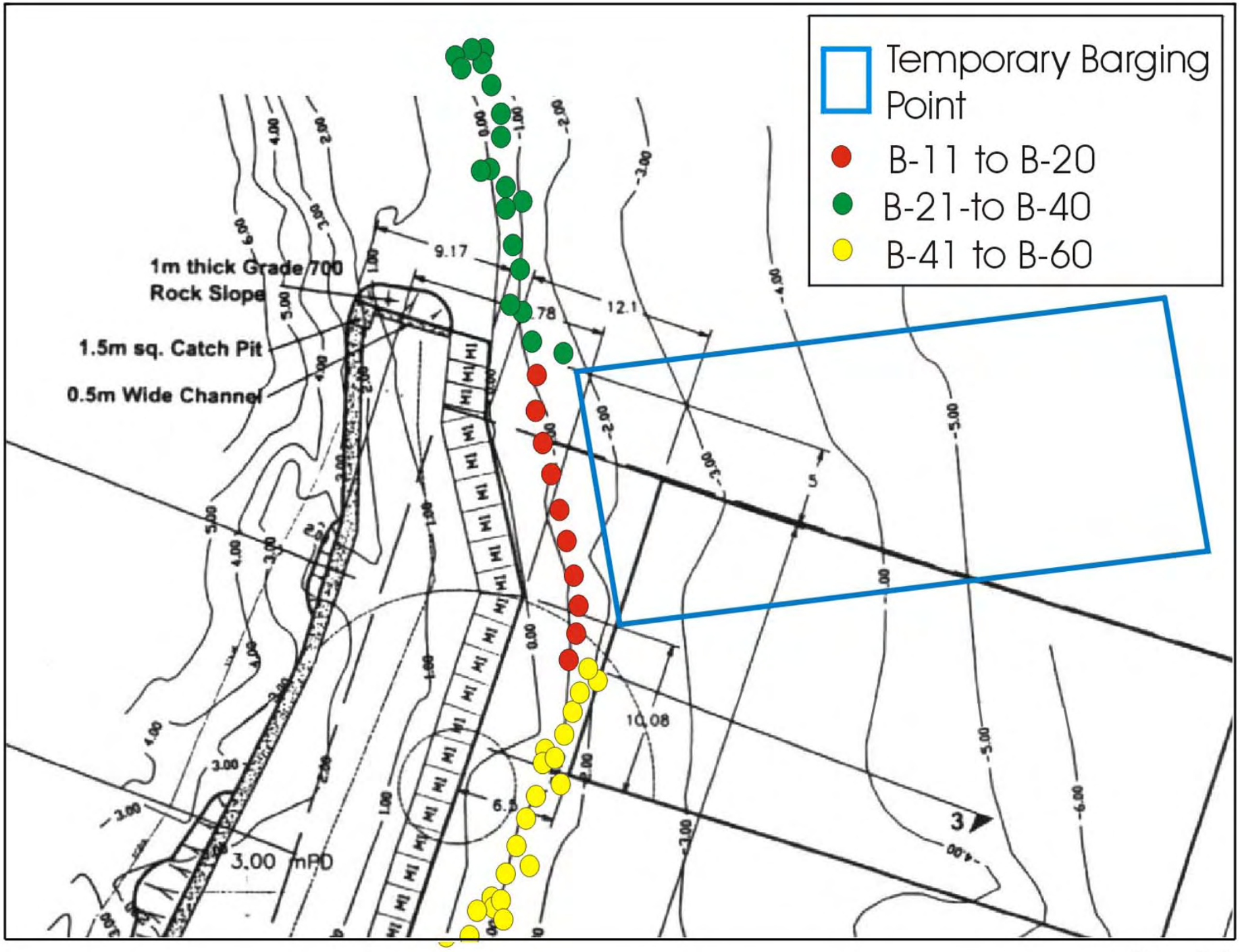
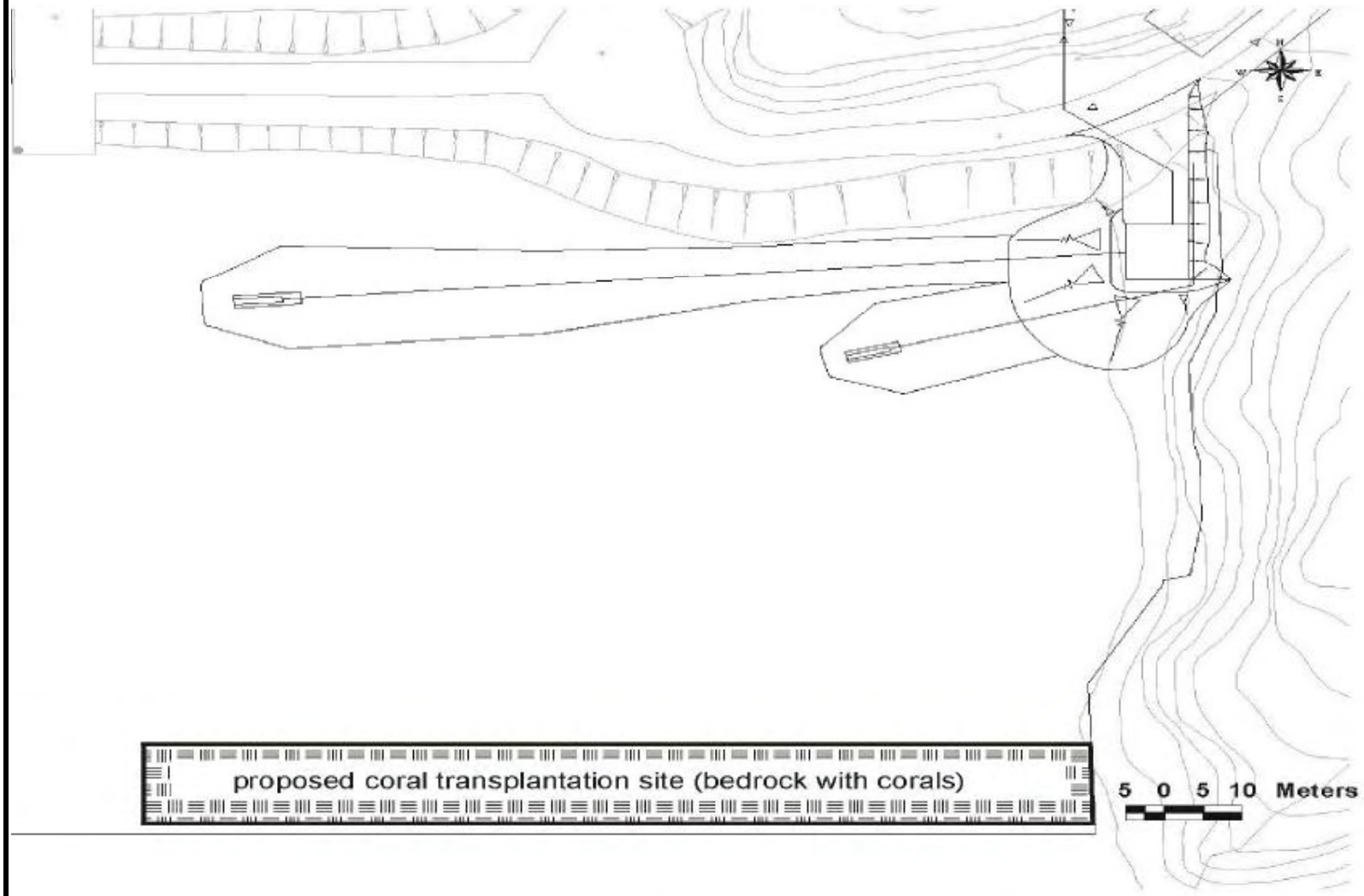


Figure 3.4b
Indicative map of additional tagged corals at Site B2



香港賽馬會
The Hong Kong Jockey Club

BLACK & VEATCH HONG KONG LIMITED
博威工程顧問有限公司

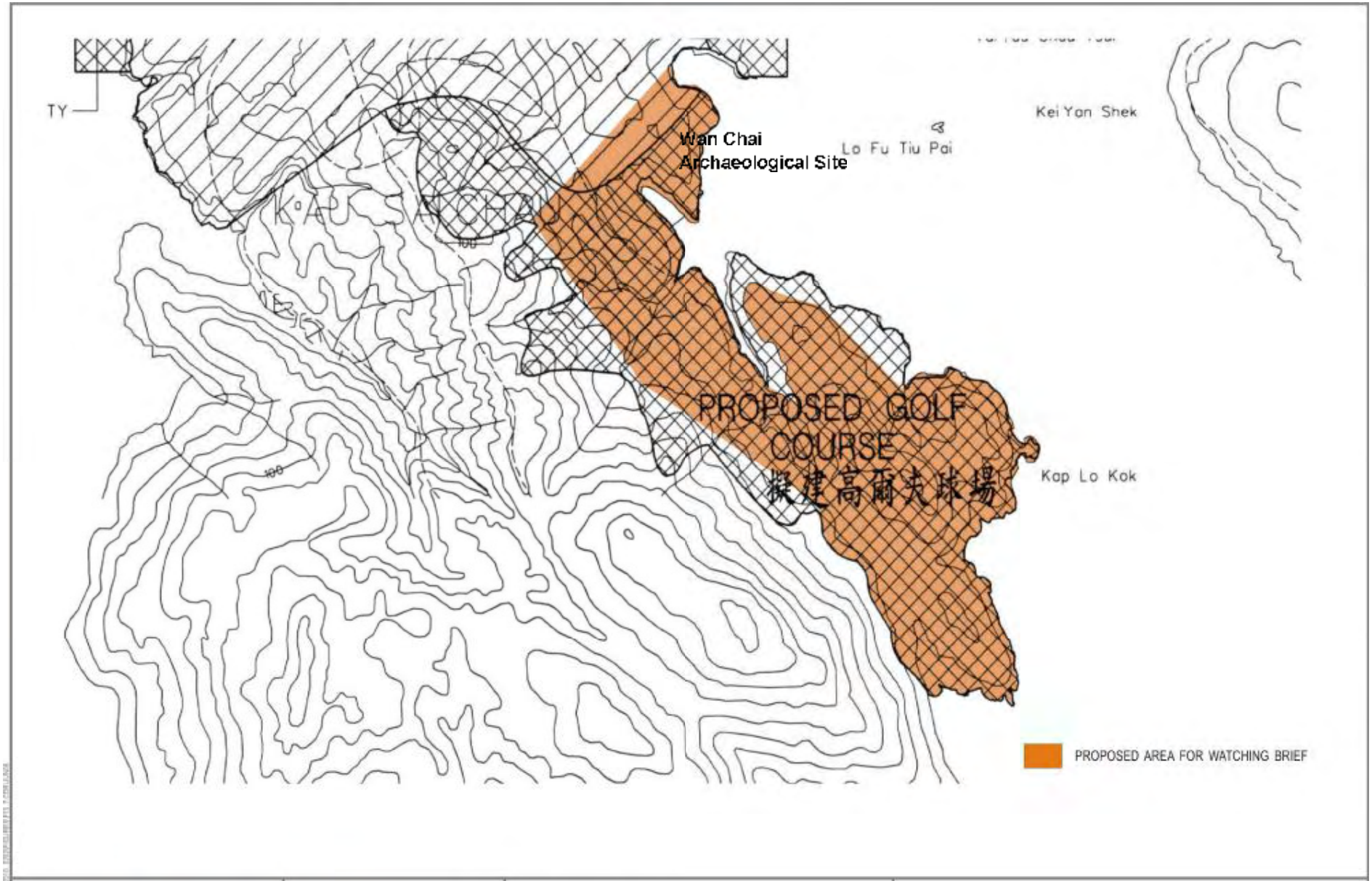
Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung

Location of proposed coral transplantation site (Bedrock with corals)

Fig 3.5

Prepared	Checked
ET	JW

Date
Jun-05

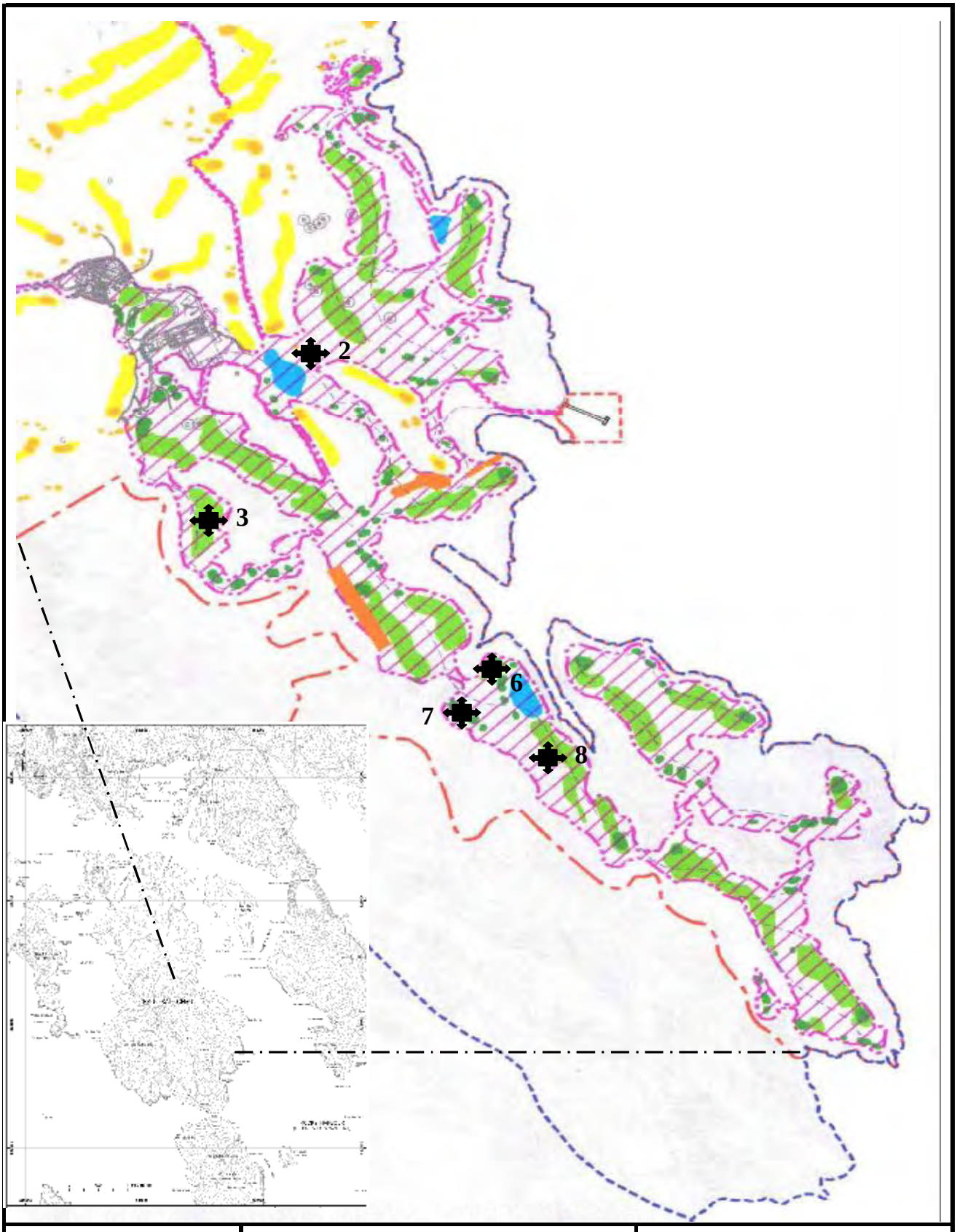


BLACK & VEATCH HONG KONG LIMITED
博威工程顧問有限公司

Archaeological Assessments
A2, 1/F, Po Shan Mansions, 14-16 Po Shan Rd., HK
Tel: (852) 2521 4718

Hong Kong Jockey Club
Kau Sai Chau Public Golf Course New Development

Figure 3.6
Map Showing the Extent of the Area to monitored under the Watching Brief



香港賽馬會
The Hong Kong Jockey Club

BLACK & VEATCH HONG KONG LIMITED
博威工程顧問有限公司

Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung

Sampling location for land contamination

Fig 3.7

Prepared	Checked
ET	JW

Date
Jun-05