Hong Kong International Theme Parks Limited MAUNSELL | AECOM

EP-01/097/2001/C

Provision of EM&A Services at Water Recreation Centre

Monthly EM&A Report No.6 (16 February to 15 March 2006)

March 2006

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Hong Kong Disneyland Theme Park
Water Recreation Centre (Monthly EM&A Report No.7)

Submitted by Maunsell Environmental Management Consultant Ltd on 29 March 2006

This is to verify that:

The Water Recreation Centre Monthly EM&A Report No. 7

Submitted by: Maunsell Environmental Management Consultant Ltd

On: 29 March 2006

Has been verified by the undersigned.

Signed _____

Ir Dr Anne Watker-Zeris
Independent Environmental Checker (IECK)
Retained by Hong Kong International Theme Parks Ltd
pursuant to FEP No. EP-138/2002/A

Date 29th March 2006

Company Chop _____

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EXECUTIVE SUMMARY

This is the seventh monthly Environmental Monitoring and Audit (EM&A) report prepared by Maunsell Environmental Management Consultant Ltd. (MEMCL), the designated Environmental Team (ET), for the project "Provision of EM&A Services at Water Recreation Centre". The Water Recreation Centre (WRC) commenced operation on 16 August 2005.

This report presents the results of EM&A works conducted between 16 February and 15 March 2006.

Environmental Monitoring Works

Water Quality
For water quality monitoring, no exceedance was recorded for all parameters during the reporting period.

Environmental Licensing and Permitting
Environmental permit no. EP-01/097/2001/C was issued to the Hongkong International Theme Parks Limited (HKITP) for the operation of WRC. HKITP has been registered as chemical waste producer (Waste Producer No. 9499-973-H3095-01). Information on these permits is provided in Table 3.1.

Implementation Status of Environmental Mitigation Measures

Monthly environmental site inspection was carried out on 17 February 2006. Environmental mitigation measures as recommended in the EIA report, Operational EM&A Plan and EP-01/097/2001/C were properly implemented.

Environmental Complaints and Prosecution

No complaint, summon or prosecution related to environmental issues was made against the Project in the reporting period.

Future Key Issues

The operator of WRC is reminded to continue to implement measures as recommended in the EIA report, Operational EM&A Plan and EP-01/097/2001/C.

1. INTRODUCTION

Background

1.1 Maunsell Environmental Management Consultants Ltd. (MEMCL) (hereinafter referred as the "ET") was appointed by Hongkong International Theme Park Ltd. (HKITP) (hereinafter referred as the "Operator") to carry out operational Environmental Monitoring and Audit at the Water Recreation Centre since its operation on 16 August 2005. Under the requirements of Section 4 of the Further Environmental Permits EP-01/097/2001/C, EM&A programme is required to be implemented in accordance with the Operational EM&A Plan approved by the Environmental Protection Department (EPD) on 31 August 2005.

1.2 The WRC is a portion of the Contract for "Theme Park and Associated Infrastructures at Penny's Bay", which encompasses an area of approximately 12 ha and contains a multi-function artificial lake, water-based and land-based recreational facilities and ancillary facilities. Apart from recreation purpose, the lake water is a source of irrigation water for the entire Penny's Bay. The location of the WRC is given in Figure 1.1.

1.3 Following approval of the EIA, an Environmental Permit (EP) was issued to the Civil Engineering Department (CED) (now Civil and Engineering Development Department (CEDD) and the subsequent variation of the permit no. EP-097/2001/B and EP-138/2002/C contain the requirements and obligations on the Environmental Monitoring and Audit (EM&A) during the operation of the WRC. Under the Contract for "Theme Park and Associated Infrastructures at Penny's Bay", the WRC and ancillary facilities were designed and constructed under the supervision of CEDD and the WRC would be turned over from CEDD to HKITP for operation upon completion of construction. Environmental permit no. EP-01/097/2001/C was issued to the HKITP for the operation of WRC.

1.4 This report summarises the environmental monitoring and audit works for the Project between 16 February and 15 March 2006.

Project Organisation

1.5 The structure of the environmental management team is shown in Figure 1.2. Contacts of key environmental staff of the Project are shown in Appendix A.

Summary of the EM&A Requirements

1.6 The EM&A programme requires environmental monitoring for water quality within the WRC. The EM&A requirements for each item are described in subsequent sections, including:

- Monitoring parameters;
- Action and Limit Levels;
- Event-Action Plans;
- Environmental mitigation measures, as recommended in the EIA report, Operational EM&A Plan and EP-01/097/2001/C.

1.7 Site audits and the status of environmental licensing and permits are described in Section 3.

1.8 Summary of the advise on the implementation status of environmental protection and pollution control/mitigation measures is summarised in Section 3 of the Report.

2. WATER QUALITY

Monitoring Requirements

2.1 Water quality monitoring was conducted at five monitoring stations. Appendix B shows the established Action and Limit Levels (AL Levels) for water quality parameters.

Monitoring Equipment

2.2 Water samples were collected at three depths at all sampling locations: (1) 1m below the water surface, (2) mid depth, and (3) 1m above the bottom of the lake. The parameters of water depth, dissolved oxygen (as % saturation), turbidity, temperature, and pH were measured in-situ. Water samples were collected for analysis by a HOKLAS accredited laboratory. The water quality monitoring equipment deployed is described in Table 2.1.

Table 2.1 Water Quality Monitoring Equipment

Equipment	Model and Make
Dissolved Oxygen Measuring Meter	YSI 85D
Turbidmeter	HACH 2100P
pH Meter	Hanna HI9023
Water Sampler	Wildco Alpha Water Bottle (Vertical)
Differential Global Positioning System (DGPS)	MLR FX412
Water depth echo sounder	Cuda 168

Monitoring Parameters, Frequency and Duration

2.3 Table 2.2 summarised the monitoring parameters, frequencies and duration of the water quality monitoring.

Table 2.2 Water Quality Monitoring Parameters, Period and Frequency

Monitoring Station	Parameters, unit	Frequency	No. of Depths
WM1-WM5	[1]Dissolved Oxygen Saturation, % [1]Water depth, m [1]pH value [1]Temperature, °C [1]Turbidity, NTU Dissolved Oxygen, mg/L Conductivity, μS/cm Salinity, g/L Copper (Cu), μg/L Chromium (Cr), μg/L Lead (Pb), μg/L Zinc (Zn), μg/L Tributyl Tin (TBT), ng Sn/L Suspended Solids, mg/L Total Nitrogen, mg/L Total Phosphorous, mg/L Total Silica, mg/L 5-day BOD, mg/L COD, mg/L Ammonia, mg/L	Once per week	3 (Surface, Mid-Depth, Bottom)

Monitoring Station	Parameters, unit	Frequency	No. of Depths
	Chlorophyll a, mg/L *E. Coli*, cfu/100mL		

Note:
1. Parameters to be measured i*n-situ.*

Monitoring Locations

2.4 Five stations were designated for water quality monitoring. The locations of these monitoring stations are summarized in Table 2.3 and depicted in Figure 2.1.

Table 2.3 Water Quality Monitoring Locations

Location	HK Metric Grid E	HK Metric Grid N
WM1	821 821.66	820 493.99
WM2	822 034.44	820 369.10
WM3	821 839.52	820 377.60
WM4	821 932.82	820 278.32
WM5	821 915.76	820 184.51

Monitoring Methodology

2.5 Dissolved Oxygen saturation, water depth, pH value, temperature and turbidity 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 a field record sheet.

2.6 Water samples were taken from each monitoring station with a water sampler for laboratory analysis. The sample was then poured into a pre-labelled bottle. The label contained the sample identification number, sample location, date, time, project name and analyses required.

2.7 The samples were placed in a cooler with ice (to 4ºC without being frozen) and kept away from sunlight. Samples were submitted to a Hong Kong Accreditation Scheme (HOKLAS) laboratory for analysis within 24 hours of sampling.

Operating/Analytical Procedures

2.8 A Differential Global Positioning System (DGPS) was used to ensure that the correct location was selected prior to sample collection.

2.9 A portable, battery-operated echo sounder was used for the determination of water depth at each designated monitoring station.

2.10 All in-situ measurements and samples for analysis were taken at three water depths, namely 1m below water surface, mid-depth and 1m above lake bottom.

2.11 At each measurement/sampling depth, two consecutive measurements for each in-situ parameters were taken. Where the difference in the value between the first and second readings of each set was more than 25% of the value of the first reading, the reading was discarded and further readings were taken.

2.12 Water samples were collected using the water sampler and the samples were stored in pre-labelled bottles. Water samples collected were well-mixed in the water sampler prior to transferring to sample bottles. The sample bottles were then packed in cool-boxes (cooled at 4°C without being frozen), and delivered to ALS Technichem (HK) Pty Ltd. for the laboratory analysis.

Maintenance and Calibration

2.13 The dissolved oxygen meter, which also measures temperature, was calibrated by the wet bulb method before each monitoring day. Before the routine calibration, the sensor for dissolved oxygen was thermally equilibrated in water-saturated air. The calibration cup served as a calibration chamber and it was loosened from airtight condition before it was used for the calibration. Calibration was also carried out in a water sample with a known concentration of dissolved oxygen at 3-month intervals. The sensor was immersed in the water and after thermal equilibration, the known mg/L value was keyed in and the calibration was carried out automatically.

2.14 The turbidimeter has already been calibrated at 3-month intervals. Before the measurement, a zero check in distilled water was performed with the turbidimeter. The turbidimeter was calibrated with a solution of known NTU.

2.15 The pH meter was calibrated at 3-month intervals. Before the measurement, a zero check in distilled water was performed with the meter. The probe was calibrated with a solution of known salinity. A similar procedure was carried out for pH value calibration.

2.16 Calibration records are presented in Appendix C.

Laboratory Analysis

2.17 All laboratory work was carried out by ALS Technichem Pty. Ltd. The determination work started within 24 hours after collection of the water samples. The analyses followed the standard methods according to Table 2.4 and as described in APHA Standard Methods for the Examination of Water and Wastewater.

Table 2.4 Analytical Methods to be applied to Water Quality Samples

Determinant, unit	**Reference Method Used[1] (APHA 20th ed)**	**Reporting Limits**
Dissolved Oxygen, mg/L	4500O: G	0.1 mg/L
Conductivity, μS/cm	2510B	1 μS/cm
Salinity, g/L	2520B	0.1 g/L
Copper, μg/L	3125 / ICPMS	1 μg/L
Chromium, μg/L		1 μg/L
Lead, μg/L		1 μg/L
Zinc, μg/L		10 μg/L
Tributyl Tin, ng Sn/L	UNEP/ICO/IAEA	5 ng Sn/L
Suspended Solids, mg/L	2540D	2 mg/L
Total Nitrogen, mg/L	4500Norg: B 4500NO_3: F	0.1 mg/L
Total Phosphorus, mg/L	4500P: B4, F	0.1 mg/L
Total Silica, mg/L	4500Si: F	0.01 mg/L
5-day BOD, mg/L	5210B	2 mg/L
COD, mg/L	5220B	2 mg/L
Ammonia Nitrogen, mg/L	4500NH_3: G	0.01 mg/L
Chlorophyll-a, mg/L	10200H2	5 mg/L
E. Coli. cfu/100mL	DoE Section 7.9.4.2 & 4	1 cfu/100mL

Note:
1. All testing conducted by the laboratory are In-House methods based on the method stated in the "*Standard Methods for the Testing of Water and Wastewater, 19th & 20th ed*" (*APHA*) or the *USEPA SW846*.

QA/QC Procedure

2.18 *ALS Technichem* has comprehensive quality assurance and quality control programmes. The QA/QC

procedures for each analytical batch:

- At least 1 reagent blank solution was prepared and analyzed;
- At least 1 duplicate sample analysis was performed in every 10 samples;
- At least 1 in every 10 samples was spiked with a known concentration of the analyte to determine the matrix effect of the sample.

Results and Observations

2.19 Monitoring of water quality was carried out at the 5 designated monitoring stations on 4 occasions during the reporting period (18 February 2006, 22 February 2006, 28 February 2006 and 6 March 2006). The monitoring schedule is presented in Appendix D. All monitoring data and graphical presentation of the monitoring results are provided in Appendix E and summarised in Table 2.5.

Table 2.5 Summary of Water Quality Monitoring Results

Parameters	Monitoring Data (Depth Averaged Data)				
	WM1	WM2	WM3	WM4	WM5
Temperature, ^{O}C	17.2 – 21.0 (17.3 – 21.0)	17.3 – 21.2 (17.4 – 21.2)	17.3 – 21.1 (17.3 – 21.1)	17.2 – 21.0 (17.3 –21.0)	17.4 – 21.1 (17.5 – 21.1)
Daily Temperature Difference[1], ^{O}C	0.2 – 0.5				
Turbidity, NTU	1.1 – 3.0	1.2 – 2.9	1.2 – 2.7	1.1 – 2.4	1.1 – 2.2
pH	6.5 – 8.4 (6.5 – 8.4)	6.5 – 8.4 (6.5 – 8.4)	6.4 – 8.4 (6.4 – 8.4)	6.5 – 8.4 (6.5 – 8.4)	6.5 – 8.4 (6.5 – 8.4)
Dissolved Oxygen, mg/L	7.5 – 9.8 (8.5 – 9.7)	6.7 – 9.9 (8.0 – 9.6)	8.0 – 10.0 (8.9 – 9.9)	8.2 – 11.2 (8.9 – 9.8)	9.0 – 10.8 (9.4 – 10.2)
Conductivity, μS/cm	91 – 102	92 – 100	94 – 100	94 – 98	93 – 133
Salinity, g/L	all <0.1	all <0.1	all <0.1	all <0.1	all <0.1
Copper, μg/L	<1 – 2	<1 – 3	<1 – 2	<1 – 2	<1 – 2
Chromium, μg/L	all <1	all <1	all <1	all <1	all <1
Lead, μg/L	all <1	all <1	all <1	all <1	all <1
Zinc, μg/L	all <10	all <10	all <10	all <10	all <10
Tributyl Tin, ng Sn/L	all <5	all <5	all <5	all <5	all <5
Suspended Solids [2], mg/L	all <2	all <2	all <2	all <2	all <2
Total Nitrogen, mg/L	0.6 – 0.9 (0.6.– 0.8)	0.6 – 0.8 (0.6 – 0.8)	0.6 – 0.8 (0.6 – 0.8)	0.6 – 0.8 (0.6 – 0.8)	0.6 – 0.9 (0.6 – 0.9)
Total Phosphorous[1], mg/L	all <0.02	all <0.02	all <0.02	all <0.02	all <0.02
Silicate, mg/L	6.2 – 6.9 (6.3 – 6.7)	6.1 – 7.8 (6.3 – 7.2)	6.1 – 7.1 (6.2 – 6.9)	6.1 – 7.3 (6.3 – 7.0)	5.7 – 6.9 (5.9 – 6.8)
Ammonia Nitrogen, mg/L	<0.01 – 0.02	all <0.01	all <0.01	all <0.01	<0.01 – 0.02
Unionised Ammonia[3], mg/L	<0.00035 - <0.00038	<0.00021 – <0.00024	<0.00018 – <0.00022	<0.00018 – <0.00021	<0.00015 – <0.00019
BOD_5, mg/L	<2 - 2	<2 - 8	all <2	all <2	all <2
COD, mg/L	4 – 8	4 – 10	4 – 8	3 – 10	2 – 7
Chlorophyll-a, mg/L	8.3 – 36.5	7.8 – 33.0	6.8 – 36.0	8.2 – 37.7	6.8 – 39.0
E. Coli[4], cfu/100mL	all <1	all <1	all <1	all <1	all <1

Note: 1. Present as depth average 2. Present as annual median
3. Present as annual median 4. Present as geometric mean for last 5 measurements

2.20 The QA/QC results for laboratory testing in the reporting period were acceptable. The QA/QC results are summarised in Appendix F.

2.21 All recorded levels during the reporting period were below the AL Levels. Table 2.6 summarises water quality exceedances in the reporting period.

Table 2.6 Summary of Water Quality Exceedances

Parameters	WM1		WM2		WM3		WM4		WM5		Total	
	Action	Limit	Action	Limit	Action	Limit	Action	Limit	Action	Limit	Action	Limit
Dissolved Oxygen	0	0	0	0	0	0	0	0	0	0	**0**	**0**
pH	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Temperature	-	0	-	0	-	0	-	0	-	0	**-**	**0**
Suspended Solids	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Ammonia Nitrogen	0	0	0	0	0	0	0	0	0	0	**0**	**0**
E. Coli	0	0	0	0	0	0	0	0	0	0	**0**	**0**
BOD_5	0	0	0	0	0	0	0	0	0	0	**0**	**0**
COD	0	0	0	0	0	0	0	0	0	0	**0**	**0**

Note: Assessment criteria applied to depth averaged results at each location.

2.22 Water temperatures measured ranged from 17.3 – 21.2 ^{O}C. The maximum daily variation between each station was 0.5 ^{O}C on 28 February 2006. The variation was within the AL Levels. Salinity measurements at all stations were below detection limit, indicating no intrusion of saline water was present in WRC. DO level at all stations were above the *Theme Park EIA* proposed standard of 4.2 mg/L.

2.23 BOD_5 levels ranged from <2 – 8 mg/L., while COD levels measured from 2 – 10 mg/L. Depth averaged results of both parameters complied with the standards proposed in the *Theme Park EIA* (5 and 30 mg/L respectively). The medians of SS measurements during the same period also observed to comply with the proposed standards (25 mg/L). Low levels of SS measurements (annual median all <2 mg/L) correlate with the low in-situ turbidity measurements (1.1 – 3.0 NTU).

2.24 Conductivity measured ranged from 91 to 133 μS/cm, while minor variations in silicate concentration ranged from 5.7 to 7.8 was measured. The relatively constant range of conductivity indicated that a discharge or some other source of pollution was not present.

2.25 The unionised ammonia levels, derived from Ammonia Nitrogen, temperature, pH and salinity levels, were substantially lower than the proposed standard of 0.021 mg/L. Together with other measurements in terms of Total Nitrogen and Total Phosphorus, nutrient levels within the WRC were relatively low.

2.26 For heavy metals (Cu, Cr, Pb, Zn), majority of the readings were below the detection limit. All TBT readings were below the detection limit and AL Levels.

2.27 For chlorophyll-a, measurements recorded in the reporting period were higher than those recorded in the previous months. The increasing trend of chlorophyll-a was likely due to increase in temperature and humidity in the reporting period when compared with the previous months.

2.28 For *E.Coli,* majority of measurements were below the detection limit of 1 cfu/100mL. The geometric mean of last five readings at all monitoring locations were below the AL Levels.

3. ENVIRONMENTAL AUDIT

Implementation Status of Environmental Mitigation Measures

3.1 Site audit was carried out on a monthly basis to monitor environmental issues to ensure that all mitigation measures were implemented timely and properly.

3.2 Monthly site inspection was carried out on 17 February 2006. Environmental mitigation measures for water quality, waste management, landscape and visual, as recommended in the EIA report, Operational EM&A Plan and EP-01/097/2001/C were properly implemented. The findings of the site audit include:

- No floating refuse was observed.
- Further Environmental Permit was posted at vehicle site entrance.

3.3 A summary of the Environmental Mitigation Implementation Schedule (EMIS) is presented in Appendix G.

Status of Environmental Licensing and permitting

3.4 All permits/licences/notifications obtained as of the reporting period are summarised in Table 3.1

Table 3.1 Summary of Environmental Notification, Licensing and Permit Status

Permit No.	Valid Period		Description	Status
	From	To		
Environmental Permit				
EP-01/097/2001/C	19 Oct. 05	-	Operation of an approximately 32 ha water recreation centre with a 12 ha multi-function artificial lake, water-based and land-based recreational facilities and ancillary facilities.	Valid
Chemical Waste Registration				
9499-973-H3095-01	29 Jul. 05	-	Theme Park at Penny's Bay	Valid

Implementation Status of Event and Action Plans

3.5 The Event and Action Plans for water quality are presented in Appendix H.

3.6 No exceedance of AL Levels for water quality was recorded.

Waste Management

3.7 Waste management of WRC was implemented as stipulated in the Waste Management Plan.

3.8 As Waste Management of WRC was undertaken as part of the overall Theme Park Resort waste management scheme, records of waste handling and disposal would be reported in the Theme Park EM&A report.

Implementation Status of Environmental Complaint Handling Procedures

3.9 Appendix I presents the environmental complaint flow diagram of the Project.

3.10 No complaint, summon or prosecution related to environmental issues was received or made against the Project in the reporting period.

4. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

4.1 Environmental monitoring was performed between 16 February and 15 March 2006. All monitoring results in the reporting period were checked and reviewed.

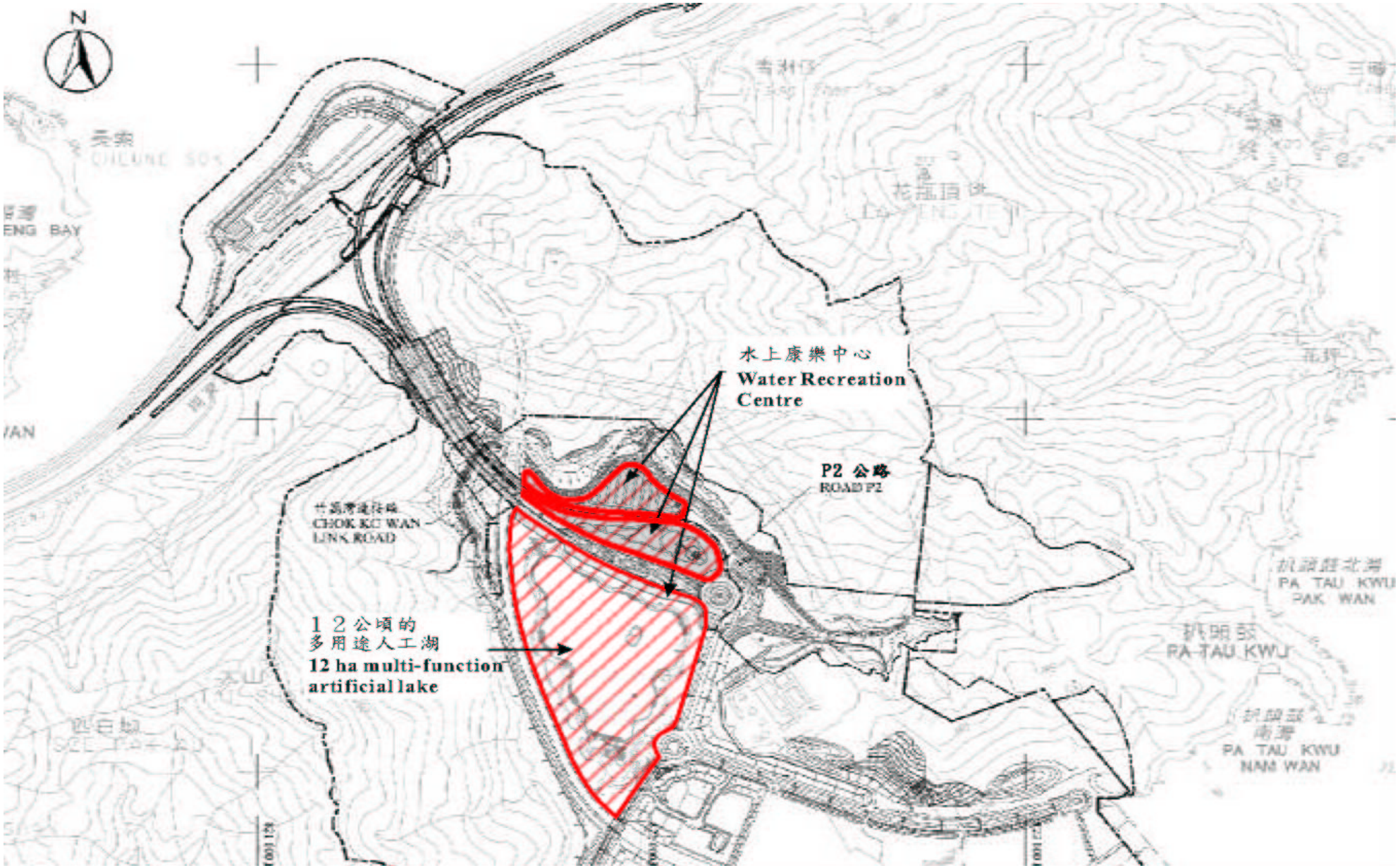
4.2 All water quality measurements in the reporting period were below the Action and Limit (AL) Levels.

4.3 Environmental mitigation measures as recommended in the EIA report, Operational EM&A Plan and EP-01/097/2001/C were properly implemented.

4.4 No complaint, summon or prosecution related to environmental issues was made against the Project in the reporting period.

Recommendations

4.5 The operator of WRC is reminded to continue to implement measures as recommended in EIA Report and EP.



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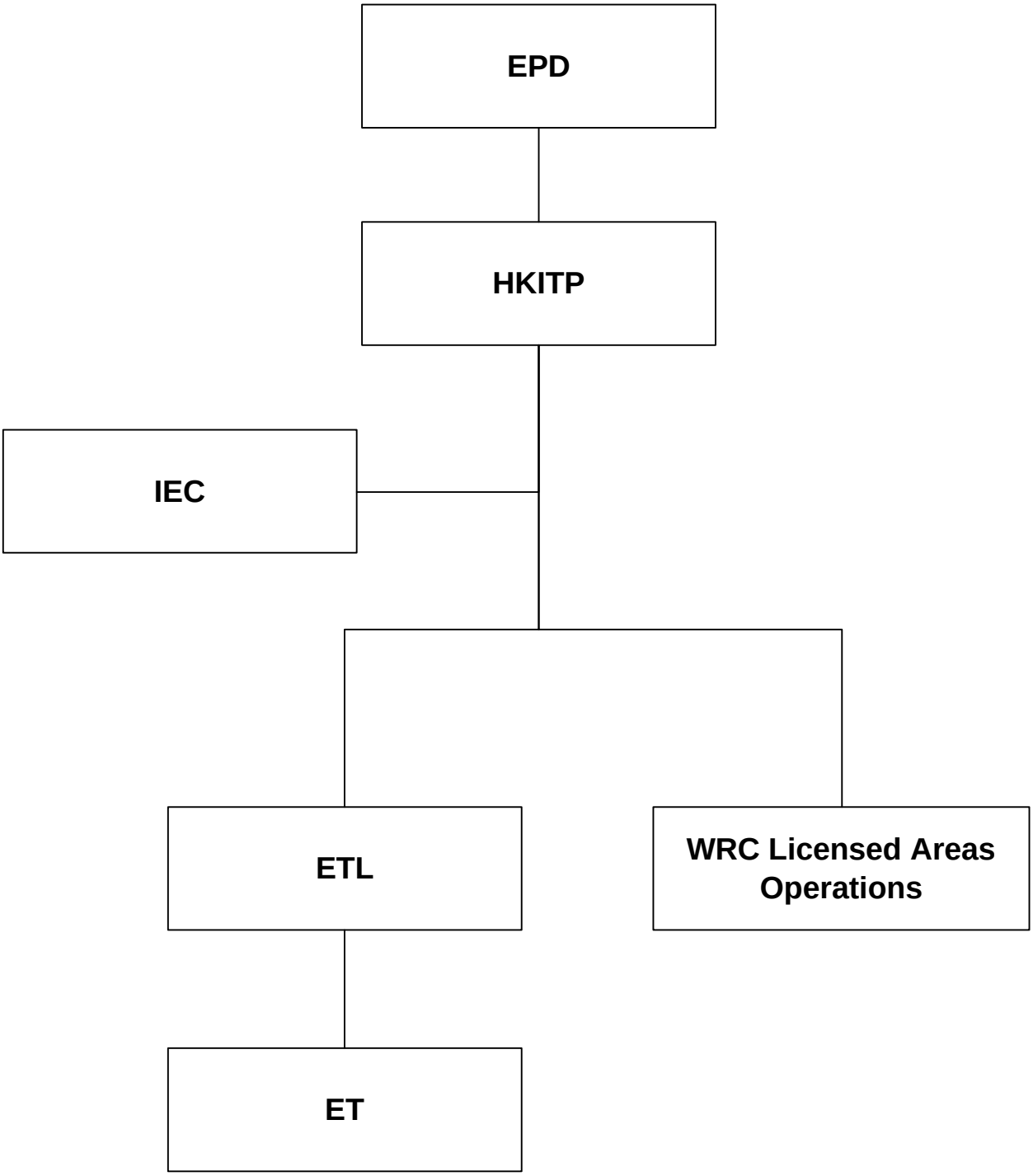
FEP-01/097/2001/B

Provision of EM&A Services at Water Recreation Centre

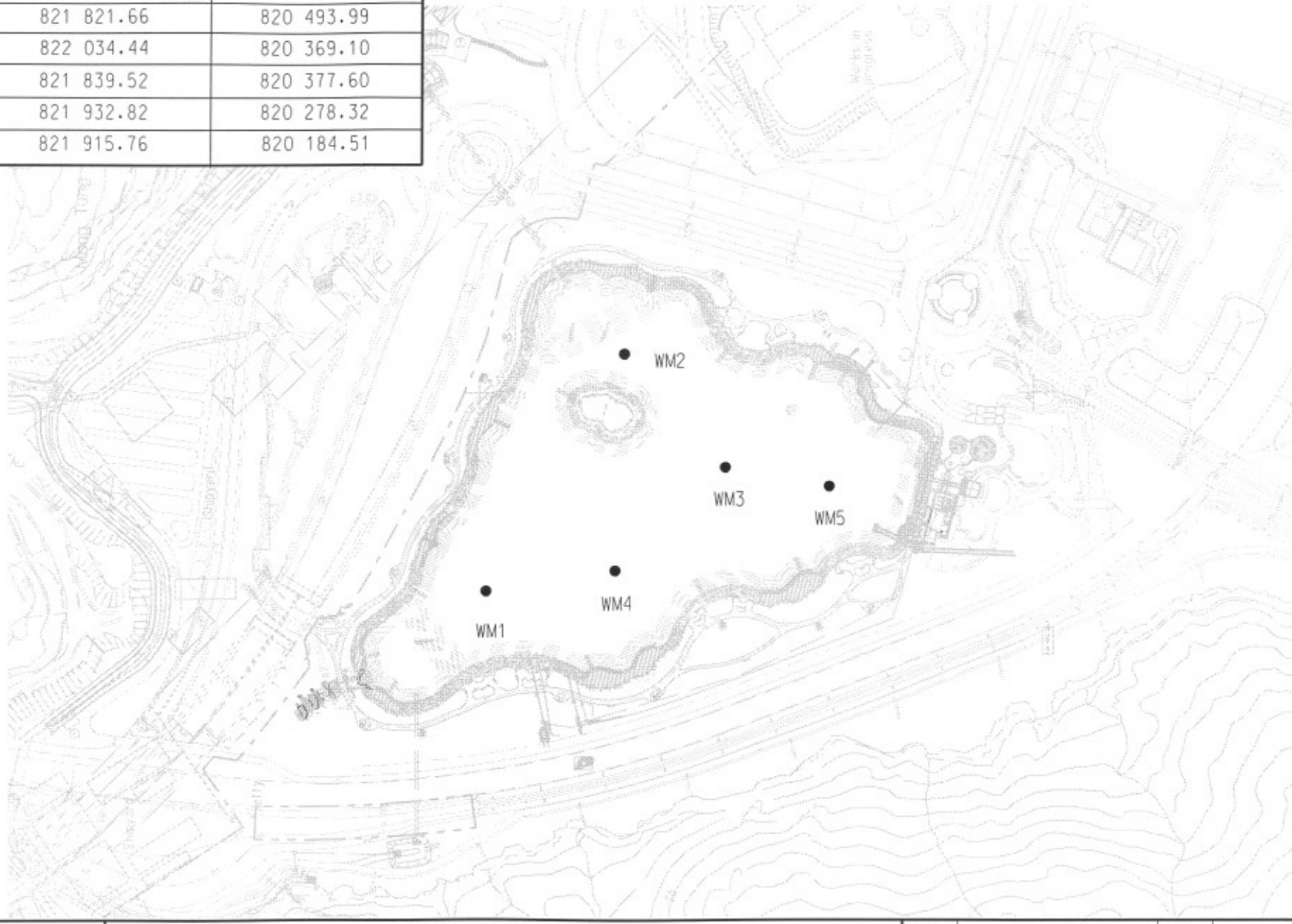
Location of Water Recreation Centre

SCALE	N.T.S.	DATE	2005
CHECK	KCHC	DRAWN	LLMC
JOB NO.	S07105	FIGURE NO. 1.1	Rev -



MAUNSELL AECOM Maunsell Environmental Management Consultants Ltd	FEP-01/097/2001/B Provision of EM&A Services at Water Recreation Centre **Project Organisation**	SCALE	N.T.S.	DATE	2005
		CHECK	KCHC	DRAWN	LLMC
		JOB NO.	S07105	Figure No. 1.2	Rev -

Location	HK Metric Grid E	HK Metric Grid N
WM1	821 821.66	820 493.99
WM2	822 034.44	820 369.10
WM3	821 839.52	820 377.60
WM4	821 932.82	820 278.32
WM5	821 915.76	820 184.51



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FEP-01/097/2001/B

PROVISION OF ENVIRONMENTAL MONITORING & AUDIT SERVICES FOR WATER RECREATION CENTRE

LOCATIONS OF WATER QUALITY MONITORING STATIONS

SCALE	A4 1:5000	DATE	2005
CHECK	KCHC	DRAWN	YPK
JOB No.	S07105	DRAWING No.	2.1
		REV	–

K:/S07105/DRAWINGS/INLET_OUTLET.DGN

Appendix A: Contacts of Key Environmental Staff

	Name	Telephone	Fax
IEC			
Mott MacDonald			
Independent Environmental Checker	Dr. Anne Watker-Zeris	2828 5757	2827 1823
ET			
Maunsell Environmental Management Consultants Limited			
Environmental Team Leader	Mr. Alan Kwok	2893 1551	2891 0305
Environmental Scientist	Ms. Florence Yuen	2893 1551	2891 0305

Appendix B – Action and Limit Levels

Action and Limit Levels for Water Quality Monitoring

Parameter, unit	Action	Limit
Dissolved Oxygen	<4.2 mg/L	<2.0 mg/L
pH	<6.3 or >8.5	<6 or >9
Temperature	Not applicable	Within a daily range of 2^{o}C
Suspended Solids	>23.75 mg/L, measured as annual median	>25 mg/L, measured as annual median
Ammonia Nitrogen	>0.01995 mg/L for unionized form, as annual average	>0.021 mg/L for unionized form, as annual average
E. coli	>171 cfu per 100mL, geometric mean for last 5 measurements	>180 cfu per 100mL, geometric mean for last 5 measurements
5-day BOD	>4.75 mg/L	>5 mg/L
COD	>28.5 mg/L	>30 mg/L

Appendix C Calibration Details

Equipment Type	Equipment No.	Calibration Date	Next Calibration Date
HANNA pH Meter HI9023	W.003.05A	22 Nov. 2005	21 Feb. 2006
		21 Feb. 2006	21 May 2006
Turbiditmeter HACH 2100P	W.001.05	16 Dec. 2005	15 Mar. 2006
YSI Multimeter YSI 85D	W.015.04	16 Dec. 2005	15 Mar. 2006

EM&A Services for Water Recreation Centre
Environmental Monitoring and Audit Schedule for February/March 2006

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
12-Feb	13-Feb	14-Feb	15-Feb	16-Feb	17-Feb	18-Feb
				Weekly Water Quality Monitoring	Monthly Site Inspection	
19-Feb	20-Feb	21-Feb	22-Feb	23-Feb	24-Feb	25-Feb
			Weekly Water Quality Monitoring			
26-Feb	27-Feb	28-Feb	1-Mar	2-Mar	3-Mar	4-Mar
		Weekly Water Quality Monitoring				
5-Mar	6-Mar	7-Mar	8-Mar	9-Mar	10-Mar	11-Mar
	Weekly Water Quality Monitoring					

Water Quality Monitoring Results at WM1

Date	Weather Conidtion	Lake Conidtion	Samplng Time	Depth (m)		In-situ Monitoring										Laboratory Analysis													
						Temperature (^{o}C)		DO Saturation (%)		Turbidity (NTU)			pH			Dissolved Oxygen (mg/L)		Conductivity (mS/cm)		Salinity (g/L)		Copper (mg/L)		Chromium (mg/L)		Lead (mg/L)		Zinc (mg/L)	
						Value	Average	Value	Average	Value	Average	DA	Value	Average	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA
16-Feb-06	Fine	Moderate	8:50	Surface	1	21.0 20.9	21.0	67.2 67.0	67.1	1.1 1.4	1.3		6.5 6.5	6.5		9		95.0		<0.1		1		<1		<1		<10	
				Middle	2.2	21.0 21.0	21.0	68.0 67.8	67.9	1.3 1.3	1.3	1.3	6.5 6.5	6.5	6.5	9	9.3	94.0	93.0	<0.1	<0.1	<1	<1	<1	<1	<1	<1	<10	<10
				Bottom	3.4	21.0 21.0	21.0	65.5 65.8	65.7	1.4 1.3	1.4		6.5 6.5	6.5		9		91.0		<0.1		<1		<1		<1		<10	
22-Feb-06	Fine	Calm	8:54	Surface	1	19.5 19.4	19.5	71.5 71.2	71.4	2.3 2.2	2.3		8.4 8.4	8.4		10		102.0		<0.1		2		<1		<1		<10	
				Middle	2.2	19.5 19.6	19.6	69.6 69.5	69.6	2.8 3.0	2.9	2.7	8.4 8.4	8.4	8.4	10	9.7	95.0	97.0	<0.1	<0.1	1	1.0	<1	<1	<1	<1	<10	<10
				Bottom	3.4	19.5 19.5	19.5	69.9 69.5	69.7	2.8 2.8	2.8		8.4 8.4	8.4		10		93.0		<0.1		1		<1		<1		<10	
28-Feb-06	Rainy	Calm	8:43	Surface	1	18.5 18.5	18.5	91.6 90.8	91.2	1.2 1.2	1.2		6.8 6.8	6.8		9		98.0		<0.1		1		<1		<1		<10	
				Middle	2.1	18.4 18.5	18.5	91.7 91.6	91.7	1.4 1.5	1.5	1.3	6.8 6.7	6.8	6.7	9	9.3	98.0	97.0	<0.1	<0.1	1	1.0	<1	<1	<1	<1	<10	<10
				Bottom	3.3	18.3 18.1	18.2	86.4 87.3	86.9	1.2 1.2	1.2		6.5 6.6	6.6		9		96.0		<0.1		1		<1		<1		<10	
6-Mar-06	Sunny	Calm	10:10	Surface	1	17.5 17.6	17.6	86.5 86.7	86.6	1.3 1.2	1.3		6.8 6.8	6.8		10		95.0		<0.1		<1		<1		<1		<10	
				Middle	2.2	17.5 17.5	17.5	86.0 85.8	85.9	1.2 1.2	1.2	1.3	6.8 6.8	6.8	6.8	8	8.5	97.0	97.0	<0.1	<0.1	<1	<1	<1	<1	<1	<1	<10	<10
				Bottom	3.4	17.2 17.4	17.3	86.2 85.5	85.9	1.3 1.3	1.3		6.8 6.8	6.8		9		99.0		<0.1		<1		<1		<1		<10	

Note:
Lake Condition - Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher
DA - Depth Average
AA - Annual Average
AM - Annual Median
GM - Geometric Mean for last 5 measurements

Remarks: * Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Water Quality Monitoring Results at WM1

Date	Weather Conidtion	Lake Conidtion	Samplng Time	Depth (m)		Laboratory Analysis																				
						Tributyltin (ng Sn/L)		Suspended Solid (mg/L)			Total Nitrogen (mg/L)		Total Phosphorous (mg/L)		Silica (mg/L)		5-day BOD (mg/L)		COD (mg/L)		Ammonia Nitrogen (mg/L)		Unionised Ammonia (mg/L)	chlorophyll-a (mg/L)		*E.Coli* (cfu/100mL)		
						Value	DA	Value	DA	AM	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	AA	Value	DA	Value	DA	GM
16-Feb-06	Fine	Moderate	8:50	Surface	1	<5		3.0			0.6		<0.02		6.9		<2		5.000		<0.01000			11		<1		
				Middle	2.2	<5	<5	3.0	3.0	<2.00	0.6	0.6	<0.02	<0.02	6.2	6.6	<2	<2	4.000	4.0	<0.01000	<0.01333	<0.00035	8	10.4	<1	<1	<1
				Bottom	3.4	<5		2.0			0.7		<0.02		6.8		2.0		4.000		0.02			12		<1		
22-Feb-06	Fine	Calm	8:54	Surface	1	<5		3.0			0.7		<0.02		6.6		<2		6.000		<0.01000			17		<1		
				Middle	2.2	<5	<5	2.0	<2	<2.00	0.7	0.7	<0.02	<0.02	6.7	6.7	2.0	<2	8.000	7.0	<0.01000	<0.01000	<0.00038	15	15.4	<1	<1	<1
				Bottom	3.4	<5		<2			0.7		<0.02		6.6		2.0		6.000		<0.01000			14		<1		
28-Feb-06	Rainy	Calm	8:43	Surface	1	<5		3.0			0.8		<0.02		6.4		<2		7.000		<0.01000			26		<1		
				Middle	2.1	<5	<5	3.0	3.0	<2.00	0.9	0.8	<0.02	<0.02	6.5	6.4	<2	<2	6.000	6.0	<0.01000	<0.01000	<0.00037	23	24.5	<1	<1	<1
				Bottom	3.3	<5		3.0			0.8		<0.02		6.4		<2		6.000		<0.01000			25		<1		
6-Mar-06	Sunny	Calm	10:10	Surface	1	<5		5.0			0.7		<0.02		6.3		<2		7.000		<0.01000			37		<1		
				Middle	2.2	<5	<5	4.0	4.0	<2.00	0.7	0.7	<0.02	<0.02	6.2	6.3	<2	<2	5.000	5.0	<0.01000	<0.01000	<0.00036	34	34.3	<1	<1	<1
				Bottom	3.4	<5		3.0			0.8		<0.02		6.3		<2		4.000		<0.01000			32		<1		

Note:
Lake Condition - Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher
DA - Depth Average
AA - Annual Average
AM - Annual Median
GM - Geometric Mean for last 5 measurements

Remarks: * Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Water Quality Monitoring Results at WM2

Date	Weather Conidtion	Lake Conidtion	Samplng Time	Depth (m)		In-situ Monitoring										Laboratory Analysis													
						Temperature (°C)		DO Saturation (%)		Turbidity (NTU)			pH			Dissolved Oxygen (mg/L)		Conductivity (mS/cm)		Salinity (g/L)		Copper (mg/L)		Chromium (mg/L)		Lead (mg/L)		Zinc (mg/L)	
						Value	Average	Value	Average	Value	Average	DA	Value	Average	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA
16-Feb-06	Fine	Moderate	9:12	Surface	1	21.2	21.2	65.2	65.4	1.4	1.4	1.4	6.5	6.5	6.5	8	9.2	93.0	93.0	<0.1	<0.1	<1	<1	<1	<1	<1	<1	<10	<10
						21.2		65.5		1.4			6.5																
				Middle	2.3	21.0	21.0	66.9	66.9	1.4	1.4		6.5	6.5		9		92.0		<0.1		<1	<1	<1	<1	<1	<1	<10	
						21.0		66.8		1.3			6.5																
				Bottom	3.6	20.9	20.9	64.2	64.6	1.5	1.4		6.5	6.5		10		94.0		<0.1		1		<1		<1		<10	
						20.8		64.9		1.3			6.5																
22-Feb-06	Fine	Calm	9:09	Surface	1	19.4	19.4	68.2	68.1	2.8	2.9	2.7	8.4	8.4	8.4	9	9.4	97.0	97.0	<0.1	<0.1	3	2.0	<1	<1	<1	<1	<10	<10
						19.4		68.0		2.9			8.4																
				Middle	2.2	19.6	19.6	71.2	71.2	2.6	2.5		8.4	8.4		9		95.0		<0.1		2		<1		<1		<10	
						19.5		71.1		2.4			8.4																
				Bottom	3.5	19.5	19.5	69.3	69.2	2.8	2.7		8.4	8.4		10		98.0		<0.1		1		<1		<1		<10	
						19.5		69.0		2.6			8.4																
28-Feb-06	Rainy	Calm	9:02	Surface	1	18.2	18.3	94.5	95.7	1.2	1.3	1.4	6.7	6.7	6.7	10	9.6	94.0	95.0	<0.1	<0.1	1	1.0	<1	<1	<1	<1	<10	<10
						18.3		96.8		1.4			6.7																
				Middle	2.2	18.4	18.4	92.3	93.0	1.4	1.4		6.6	6.7		10		94.0		<0.1		1		<1		<1		<10	
						18.4		93.7		1.3			6.7																
				Bottom	3.5	18.3	18.3	90.4	90.3	1.4	1.4		6.8	6.8		10		98.0		<0.1		1		<1		<1		<10	
						18.3		90.1		1.4			6.8																
6-Mar-06	Sunny	Calm	10:20	Surface	1	17.4	17.4	85.5	85.3	1.4	1.4	1.4	6.8	6.8	6.8	9	8.0	100.0	98.0	<0.1	<0.1	<1	<1	<1	<1	<1	<1	<10	<10
						17.4		85.0		1.4			6.8																
				Middle	2.2	17.3	17.4	85.6	85.8	1.4	1.4		6.8	6.8		7		98.0		<0.1		<1		<1		<1		<10	
						17.4		85.9		1.4			6.8																
				Bottom	3.5	17.5	17.5	86.0	86.0	1.4	1.4		6.8	6.8		8		97.0		<0.1		<1		<1		<1		<10	
						17.5		86.0		1.4			6.8																

Note:
Lake Condition - Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher
DA - Depth Average
AA - Annual Average
AM - Annual Median
GM - Geometric Mean for last 5 measurements

Remarks: * Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Water Quality Monitoring Results at WM2

Date	Weather Conidtion	Lake Conidtion	Samplng Time	Depth (m)		Laboratory Analysis																				
						Tributyltin (ng Sn/L)		Suspended Solid (mg/L)			Total Nitrogen (mg/L)		Total Phosphorous (mg/L)		Silica (mg/L)		5-day BOD (mg/L)		COD (mg/L)		Ammonia Nitrogen (mg/L)		Unionised Ammonia (mg/L)	chlorophyll-a (mg/L)		*E.Coli* (cfu/100mL)		
						Value	DA	Value	DA	AM	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	AA	Value	DA	Value	DA	GM
16-Feb-06	Fine	Moderate	9:12	Surface	1	<5		2.0			0.6		<0.02		7.0		<2		5.000		<0.01000			11		<1		
				Middle	2.3	<5	<5	2.0	2.0	<2.00	0.7	0.6	<0.02	<0.02	6.7	7.2	<2	<2	5.000	5.0	<0.01000	<0.01000	<0.00021	11	9.8	<1	<1	<1
				Bottom	3.6	<5		2.0			0.6		<0.02		7.8		<2		5.000		<0.01000			8		<1		
22-Feb-06	Fine	Calm	9:09	Surface	1	<5		3.0			0.7		<0.02		6.7		<2		7.000		<0.01000			15		<1		
				Middle	2.2	<5	<5	3.0	3.0	<2.00	0.7	0.7	<0.02	<0.02	6.7	6.7	<2	<2	6.000	6.0	<0.01000	<0.01000	<0.00024	12	14.1	<1	<1	<1
				Bottom	3.5	<5		3.0			0.6		<0.02		6.7		3.0		6.000		<0.01000			15		<1		
28-Feb-06	Rainy	Calm	9:02	Surface	1	<5		4.0			0.8		<0.02		6.1		<2		6.000		<0.01000			27		<1		
				Middle	2.2	<5	<5	3.0	4.0	<2.00	0.7	0.7	<0.02	<0.02	6.3	6.3	<2	<2	7.000	6.0	<0.01000	<0.01000	<0.00024	24	25.2	<1	<1	<1
				Bottom	3.5	<5		5.0			0.7		<0.02		6.4		2.0		6.000		<0.01000			25		<1		
6-Mar-06	Sunny	Calm	10:20	Surface	1	<5		4.0			0.8		<0.02		6.3		<2		5.000		<0.01000			32		<1		
				Middle	2.2	<5	<5	5.0	4.0	<2.00	0.8	0.8	<0.02	<0.02	6.3	6.4	<2	<4	4.000	6.0	<0.01000	<0.01000	<0.00023	33	32.7	<1	<1	<1
				Bottom	3.5	<5		3.0			0.8		<0.02		6.6		8.0		10.000		<0.01000			33		<1		

Note:
Lake Condition - Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher
DA - Depth Average
AA - Annual Average
AM - Annual Median
GM - Geometric Mean for last 5 measurements

Remarks: * Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Water Quality Monitoring Results at WM3

Date	Weather Conidtion	Lake Conidtion	Samplng Time	Depth (m)		In-situ Monitoring										Laboratory Analysis													
						Temperature (^{o}C)		DO Saturation (%)		Turbidity (NTU)			pH			Dissolved Oxygen (mg/L)		Conductivity (mS/cm)		Salinity (g/L)		Copper (mg/L)		Chromium (mg/L)		Lead (mg/L)		Zinc (mg/L)	
						Value	Average	Value	Average	Value	Average	DA	Value	Average	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA
16-Feb-06	Fine	Moderate	9:25	Surface	1	21.0	21.1	63.9	63.9	1.5	1.5		6.4	6.4		9		94.0		<0.1		1		<1		<1		<10	
						21.1		63.8		1.4			6.4																
				Middle	2.3	21.0	21.0	65.3	65.5	1.3	1.3	1.3	6.4	6.4	6.4	9	9.2	94.0	94.0	<0.1	<0.1	1	1.0	<1	<1	<1	<1	<10	<10
						20.9		65.7		1.3			6.4																
				Bottom	3.6	21.0	21.0	65.2	65.6	1.2	1.2		6.4	6.4		9		95.0		<0.1		1		<1		<1		<10	
						21.0		66.0		1.2			6.4																
22-Feb-06	Fine	Calm	9:25	Surface	1	19.6	19.6	67.2	67.4	2.2	2.4		8.4	8.4		10		95.0		<0.1		2		<1		<1		<10	
						19.5		67.5		2.5			8.4																
				Middle	2.2	19.5	19.5	68.7	68.8	2.1	2.3	2.4	8.4	8.4	8.4	10	9.9	97.0	96.0	<0.1	<0.1	2	2.0	<1	<1	<1	<1	<10	<10
						19.5		68.9		2.4			8.4																
				Bottom	3.5	19.6	19.6	70.9	70.5	2.1	2.4		8.4	8.4		10		96.0		<0.1		2		<1		<1		<10	
						19.5		70.0		2.7			8.4																
28-Feb-06	Rainy	Calm	9:19	Surface	1	18.6	18.6	89.7	89.3	1.3	1.3		6.7	6.7		10		100.0		<0.1		<1		<1		<1		<10	
						18.6		88.8		1.3			6.7																
				Middle	2.2	18.4	18.4	85.6	85.8	1.3	1.3	1.3	6.7	6.7	6.7	10	9.6	100.0	99.0	<0.1	<0.1	<1	<1	<1	<1	<1	<1	<10	<10
						18.3		85.9		1.3			6.7																
				Bottom	3.5	18.2	18.2	84.1	84.3	1.3	1.3		6.7	6.7		10		96.0		<0.1		1		<1		<1		<10	
						18.2		84.4		1.2			6.7																
6-Mar-06	Sunny	Calm	10:30	Surface	1	17.3	17.3	84.2	84.0	1.4	1.5		6.8	6.8		10		98.0		<0.1		<1		<1		<1		<10	
						17.3		83.8		1.5			6.8																
				Middle	2.2	17.5	17.5	84.0	83.3	1.5	1.4	1.4	6.8	6.8	6.8	9	8.9	98.0	98.0	<0.1	<0.1	<1	<1	<1	<1	<1	<1	<10	<10
						17.5		82.5		1.3			6.8																
				Bottom	3.5	17.4	17.4	82.4	83.1	1.3	1.3		6.8	6.8		8		98.0		<0.1		<1		<1		<1		<10	
						17.3		83.8		1.2			6.8																

Note:
Lake Condition - Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher
DA - Depth Average
AA - Annual Average
AM - Annual Median
GM - Geometric Mean for last 5 measurements

Remarks: * Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Water Quality Monitoring Results at WM3

Date	Weather Conidtion	Lake Conidtion	Samplng Time	Depth (m)		Laboratory Analysis																						
						Tributyltin (ng Sn/L)		Suspended Solid (mg/L)			Total Nitrogen (mg/L)		Total Phosphorous (mg/L)		Silica (mg/L)		5-day BOD (mg/L)		COD (mg/L)		Ammonia Nitrogen (mg/L)		Unionised Ammonia (mg/L)	chlorophyll-a (mg/L)		*E.Coli* (cfu/100mL)		
						Value	DA	Value	DA	AM	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	AA	Value	DA	Value	DA	GM
16-Feb-06	Fine	Moderate	9:25	Surface	1	<5		2.0			0.7		<0.02		7.1		<2		4.000		<0.01000			8		<1		
				Middle	2.3	<5	<5	3.0	3.0	<2.00	0.6	0.6	<0.02	<0.02	6.7	6.9	<2	<2	4.000	4.0	<0.01000	<0.01000	<0.00018	7	7.9	1	<1	<1
				Bottom	3.6	<5		3.0			0.6		<0.02		6.9		<2		5.000		<0.01000			9		<1		
22-Feb-06	Fine	Calm	9:25	Surface	1	<5		3.0			0.7		<0.02		6.8		<2		6.000		<0.01000			17		<1		
				Middle	2.2	<5	<5	3.0	3.0	<2.00	0.7	0.7	<0.02	<0.02	6.8	6.8	<2	<2	4.000	5.0	<0.01000	<0.01000	<0.00022	17	16.7	<1	<1	<1
				Bottom	3.5	<5		3.0			0.7		<0.02		6.8		<2		6.000		<0.01000			17		<1		
28-Feb-06	Rainy	Calm	9:19	Surface	1	<5		4.0			0.7		<0.02		6.1		<2		7.000		<0.01000			23		<1		
				Middle	2.2	<5	<5	3.0	4.0	<2.00	0.7	0.7	<0.02	<0.02	6.2	6.2	<2	<2	7.000	7.0	<0.01000	<0.01000	<0.00021	26	24.9	<1	<1	<1
				Bottom	3.5	<5		4.0			0.7		<0.02		6.3		<2		7.000		<0.01000			26		<1		
6-Mar-06	Sunny	Calm	10:30	Surface	1	<5		4.0			0.8		<0.02		6.2		<2		7.000		<0.01000			35		<1		
				Middle	2.2	<5	<5	3.0	4.0	<2.00	0.8	0.8	<0.02	<0.02	6.3	6.3	<2	<2	8.000	7.0	<0.01000	<0.01000	<0.00020	34	35.0	<1	<1	<1
				Bottom	3.5	<5		4.0			0.8		<0.02		6.3		<2		6.000		<0.01000			36		<1		

Note:
Lake Condition - Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher
DA - Depth Average
AA - Annual Average
AM - Annual Median
GM - Geometric Mean for last 5 measurements

Remarks: * Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Water Quality Monitoring Results at WM4

Date	Weather Conidtion	Lake Conidtion	Samplng Time	Depth (m)		In-situ Monitoring										Laboratory Analysis													
						Temperature (^{o}C)		DO Saturation (%)		Turbidity (NTU)			pH			Dissolved Oxygen (mg/L)		Conductivity (mS/cm)		Salinity (g/L)		Copper (mg/L)		Chromium (mg/L)		Lead (mg/L)		Zinc (mg/L)	
						Value	Average	Value	Average	Value	Average	DA	Value	Average	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA
16-Feb-06	Fine	Moderate	9:40	Surface	1	21.0 21.0	21.0	66.5 66.3	66.4	1.4 1.4	1.4		6.5 6.5	6.5		10		96.0		<0.1		<1		<1		<1		<10	
				Middle	2.2	20.8 20.9	20.9	66.2 66.0	66.1	1.1 1.2	1.2	1.3	6.5 6.5	6.5	6.5	10	9.8	94.0	95.0	<0.1	<0.1	1	<1	<1	<1	<1	<1	<10	<10
				Bottom	3.5	20.9 20.8	20.9	64.8 65.0	64.9	1.2 1.1	1.2		6.5 6.5	6.5		9		94.0		<0.1		1		<1		<1		<10	
22-Feb-06	Fine	Calm	9:41	Surface	1	19.5 19.4	19.5	69.0 69.5	69.3	2.3 2.0	2.2		8.4 8.4	8.4		10		96.0		<0.1		1		<1		<1		<10	
				Middle	2.3	19.4 19.5	19.5	67.8 67.4	67.6	2.2 2.4	2.3	2.3	8.4 8.4	8.4	8.4	8	8.9	95.0	96.0	<0.1	<0.1	2	2.0	<1	<1	<1	<1	<10	<10
				Bottom	3.6	19.5 19.6	19.6	70.8 70.3	70.6	2.2 2.4	2.3		8.4 8.4	8.4		9		96.0		<0.1		2		<1		<1		<10	
28-Feb-06	Rainy	Calm	9:36	Surface	1	18.5 18.6	18.6	90.2 90.1	90.2	1.2 1.2	1.2		6.7 6.7	6.7		10		94.0		<0.1		1		<1		<1		<10	
				Middle	2.3	18.4 18.4	18.4	88.3 88.5	88.4	1.2 1.2	1.2	1.2	6.7 6.8	6.8	6.8	10	9.7	96.0	95.0	<0.1	<0.1	1	<1	<1	<1	<1	<1	<10	<10
				Bottom	3.6	18.4 18.2	18.3	89.1 88.6	88.9	1.2 1.2	1.2		6.8 6.8	6.8		10		95.0		<0.1		<1		<1		<1		<10	
6-Mar-06	Sunny	Calm	10:40	Surface	1	17.2 17.3	17.3	80.6 80.0	80.3	1.2 1.3	1.3		6.8 6.8	6.8		9		97.0		<0.1		<1		<1		<1		<10	
				Middle	2.3	17.3 17.3	17.3	80.0 80.8	80.4	1.3 1.2	1.3	1.3	6.8 6.8	6.8	6.8	9	9.8	98.0	98.0	<0.1	<0.1	<1	<1	<1	<1	<1	<1	<10	<10
				Bottom	3.6	17.3 17.3	17.3	81.2 80.6	80.9	1.3 1.5	1.4		6.9 6.9	6.9		11		98.0		<0.1		<1		<1		<1		<10	

Note:
Lake Condition - Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher
DA - Depth Average
AA - Annual Average
AM - Annual Median
GM - Geometric Mean for last 5 measurements

Remarks: * Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Water Quality Monitoring Results at WM4

Date	Weather Conidtion	Lake Conidtion	Samplng Time	Depth (m)		Laboratory Analysis																				
						Tributyltin (ng Sn/L)		Suspended Solid (mg/L)			Total Nitrogen (mg/L)		Total Phosphorous (mg/L)		Silica (mg/L)		5-day BOD (mg/L)		COD (mg/L)		Ammonia Nitrogen (mg/L)		Unionised Ammonia (mg/L)	chlorophyll-a (mg/L)		*E.Coli* (cfu/100mL)		
						Value	DA	Value	DA	AM	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	AA	Value	DA	Value	DA	GM
16-Feb-06	Fine	Moderate	9:40	Surface	1	<5		2.0			0.6		<0.02		6.7		<2		6.000		<0.01000			8		<1		
				Middle	2.2	<5	<5	3.0	3.0	<2.00	0.7	0.6	<0.02	<0.02	7.3	7.0	<2	<2	5.000	5.0	<0.01000	<0.01000	<0.00018	9	8.3	<1	<1	<1
				Bottom	3.5	<5		3.0			0.6		<0.02		7.1		<2		3.000		<0.01000			8		<1		
22-Feb-06	Fine	Calm	9:41	Surface	1	<5		2.0			0.7		<0.02		6.7		<2		6.000		<0.01000			18		<1		
				Middle	2.3	<5	<5	3.0	3.0	<2.00	0.7	0.7	<0.02	<0.02	6.8	6.8	<2	<2	7.000	6.0	<0.01000	<0.01000	<0.00021	20	18.8	<1	<1	<1
				Bottom	3.6	<5		3.0			0.7		<0.02		7.0		<2		6.000		<0.01000			18		<1		
28-Feb-06	Rainy	Calm	9:36	Surface	1	<5		4.0			0.7		<0.02		6.6		<2		8.000		<0.01000			25		1		
				Middle	2.3	<5	<5	3.0	4.0	<2.00	0.8	0.7	<0.02	<0.02	6.1	6.4	<2	<2	10.000	9.0	<0.01000	<0.01000	<0.00020	26	24.9	<1	<1	<1
				Bottom	3.6	<5		4.0			0.7		<0.02		6.4		<2		8.000		<0.01000			25		1		
6-Mar-06	Sunny	Calm	10:40	Surface	1	<5		4.0			0.8		<0.02		6.3		<2		7.000		<0.01000			34		<1		
				Middle	2.3	<5	<5	4.0	4.0	<2.00	0.8	0.8	<0.02	<0.02	6.4	6.3	<2	<2	7.000	8.0	<0.01000	<0.01000	<0.00019	31	34.3	1	<1	<1
				Bottom	3.6	<5		5.0			0.7		<0.02		6.3		<2		9.000		<0.01000			38		<1		

Note:
Lake Condition - Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher
DA - Depth Average
AA - Annual Average
AM - Annual Median
GM - Geometric Mean for last 5 measurements

Remarks: * Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Water Quality Monitoring Results at WM5

Date	Weather Conidtion	Lake Conidtion	Samplng Time	Depth (m)		In-situ Monitoring										Laboratory Analysis													
						Temperature (°C)		DO Saturation (%)		Turbidity (NTU)			pH			Dissolved Oxygen (mg/L)		Conductivity (mS/cm)		Salinity (g/L)		Copper (mg/L)		Chromium (mg/L)		Lead (mg/L)		Zinc (mg/L)	
						Value	Average	Value	Average	Value	Average	DA	Value	Average	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA
16-Feb-06	Fine	Moderate	9:55	Surface	1	21.1 21.0	21.1	66.3 66.5	66.4	1.4 1.3	1.4		6.5 6.5	6.5		10		96.0		<0.1		1		<1		<1		<10	
				Middle	2.3	21.0 21.1	21.1	66.5 66.3	66.4	1.3 1.3	1.3	1.4	6.5 6.5	6.5	6.5	10	9.9	93.0	94.0	<0.1	<0.1	<1	<1	<1	<1	<1	<1	<10	<10
				Bottom	3.6	21.1 21.0	21.1	66.4 66.7	66.6	1.4 1.3	1.4		6.5 6.5	6.5		10		93.0		<0.1		<1		<1		<1		<10	
22-Feb-06	Fine	Calm	9:56	Surface	1	19.6 19.6	19.6	67.5 67.7	67.6	2.0 2.2	2.1		8.4 8.4	8.4		9		93.0		<0.1		1		<1		<1		<10	
				Middle	2.3	19.6 19.5	19.6	70.6 70.5	70.6	2.0 2.1	2.1	2.1	8.4 8.4	8.4	8.4	9	9.4	97.0	108.0	<0.1	<0.1	2	1.0	<1	<1	<1	<1	<10	<10
				Bottom	3.6	19.5 19.6	19.6	70.3 70.0	70.2	2.0 2.0	2.0		8.4 8.4	8.4		10		133.0		<0.1		1		<1		<1		<10	
28-Feb-06	Rainy	Calm	9:51	Surface	1	18.3 18.6	18.5	90.6 90.8	90.7	1.2 1.2	1.2		6.8 6.8	6.8		10		96.0		<0.1		<1		<1		<1		<10	
				Middle	2.3	18.5 18.5	18.5	90.5 90.6	90.6	1.3 1.2	1.3	1.2	6.8 6.8	6.8	6.8	10	9.6	96.0	96.0	<0.1	<0.1	1	<1	<1	<1	<1	<1	<10	<10
				Bottom	3.6	18.5 18.4	18.5	90.0 90.4	90.2	1.2 1.2	1.2		6.8 6.8	6.8		10		96.0		<0.1		1		<1		<1		<10	
6-Mar-06	Sunny	Calm	10:51	Surface	1	17.4 17.5	17.5	79.6 79.9	79.8	1.3 1.4	1.4		6.8 6.8	6.8		10		99.0		<0.1		<1		<1		<1		<10	
				Middle	2.2	17.5 17.5	17.5	78.6 78.0	78.3	1.4 1.5	1.5	1.4	6.8 6.8	6.8	6.8	10	10.2	98.0	98.0	<0.1	<0.1	<1	<1	<1	<1	<1	<1	<10	<10
				Bottom	3.5	17.4 17.5	17.5	78.5 78.7	78.6	1.2 1.1	1.2		6.8 6.8	6.8		11		98.0		<0.1		<1		<1		<1		<10	

Note:
Lake Condition - Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher
DA - Depth Average
AA - Annual Average
AM - Annual Median
GM - Geometric Mean for last 5 measurements

Remarks: * Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

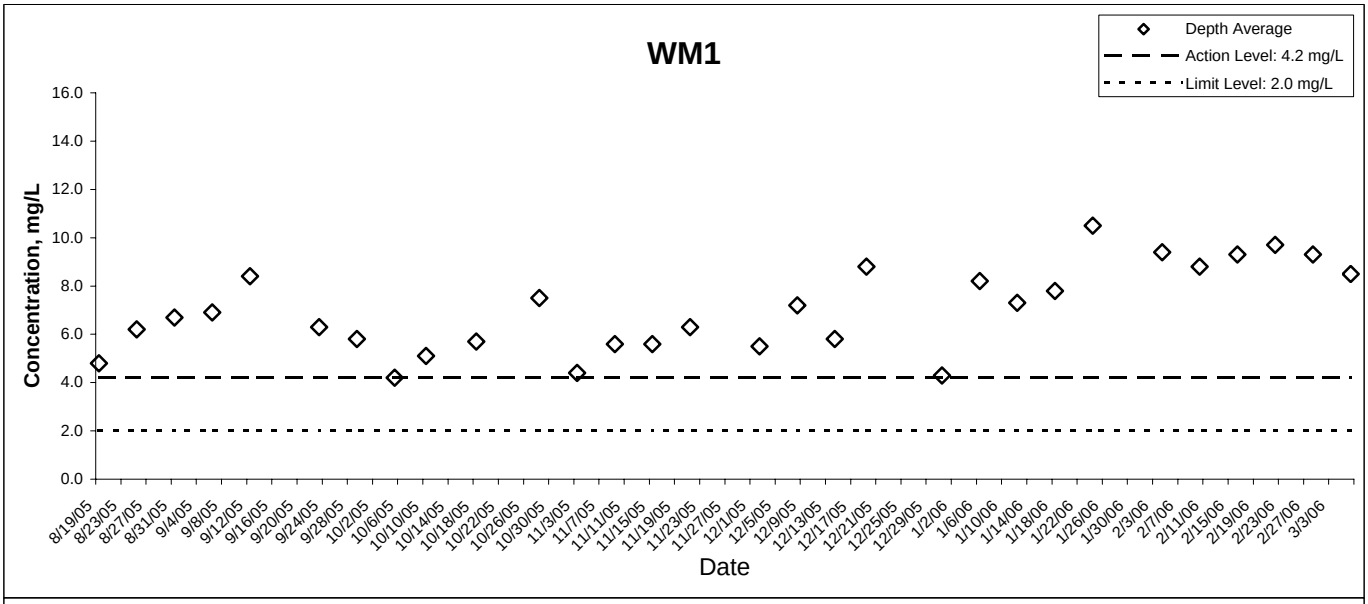
Water Quality Monitoring Results at WM5

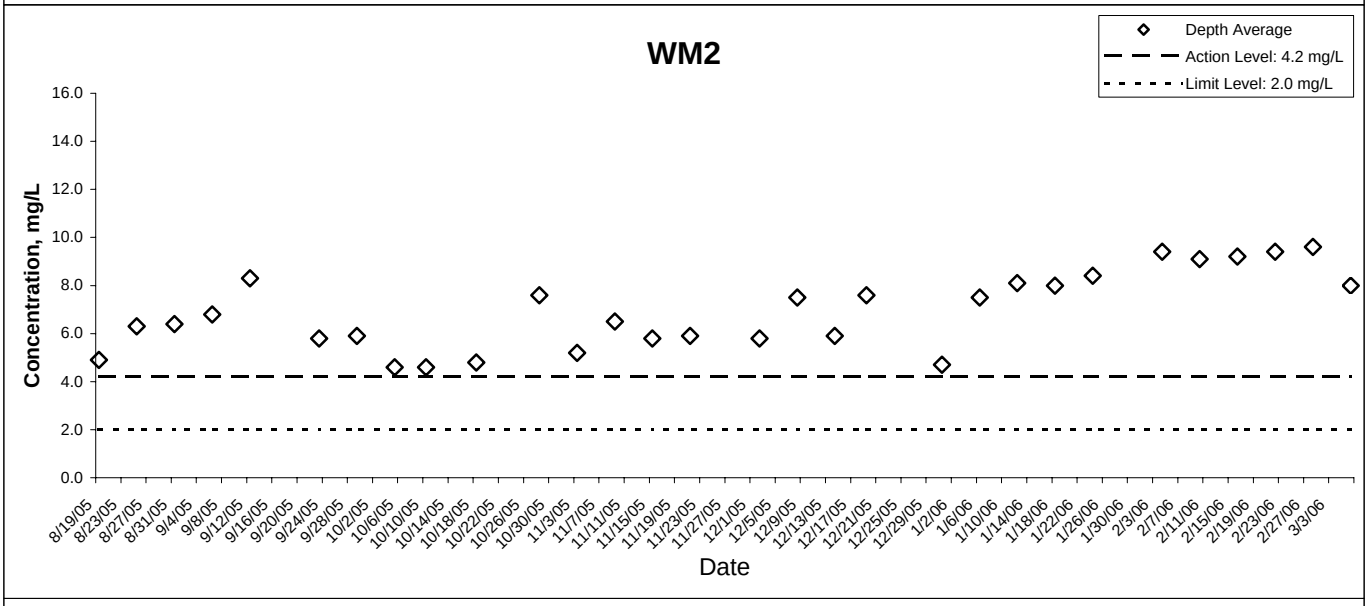
Date	Weather Conidtion	Lake Conidtion	Samplng Time	Depth (m)		Laboratory Analysis																				
						Tributyltin (ng Sn/L)		Suspended Solid (mg/L)			Total Nitrogen (mg/L)		Total Phosphorous (mg/L)		Silica (mg/L)		5-day BOD (mg/L)		COD (mg/L)		Ammonia Nitrogen (mg/L)		Unionised Ammonia (mg/L)	chlorophyll-a (mg/L)		*E.Coli* (cfu/100mL)		
						Value	DA	Value	DA	AM	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	Value	DA	AA	Value	DA	Value	DA	GM
16-Feb-06	Fine	Moderate	9:55	Surface	1	<5		2.0			0.6		<0.02		6.8		<2		2.000		<0.01000			8		<1		
				Middle	2.3	<5	<5	2.0	2.0	<2.00	0.6	0.6	<0.02	<0.02	6.7	6.8	<2	<2	3.000	3.0	<0.01000	<0.01000	<0.00015	7	7.7	<1	<1	<1
				Bottom	3.6	<5		3.0			0.6		<0.02		6.8		<2		5.000		<0.01000			8		<1		
22-Feb-06	Fine	Calm	9:56	Surface	1	<5		3.0			0.6		<0.02		6.9		<2		6.000		0.02			17		<1		
				Middle	2.3	<5	<5	3.0	3.0	<2.00	0.7	0.6	<0.02	<0.02	6.9	6.8	<2	<2	6.000	6.0	<0.01000	<0.01333	<0.00019	16	16.7	<1	<1	<1
				Bottom	3.6	<5		3.0			0.6		<0.02		6.7		<2		6.000		<0.01000			17		<1		
28-Feb-06	Rainy	Calm	9:51	Surface	1	<5		4.0			0.7		<0.02		6.2		<2		7.000		<0.01000			23		1		
				Middle	2.3	<5	<5	4.0	4.0	<2.00	0.7	0.7	<0.02	<0.02	5.9	5.9	<2	<2	6.000	6.0	<0.01000	<0.01000	<0.00019	25	24.8	<1	<1	<1
				Bottom	3.6	<5		4.0			0.7		<0.02		5.7		<2		5.000		<0.01000			27		<1		
6-Mar-06	Sunny	Calm	10:51	Surface	1	<5		5.0			0.8		<0.02		6.3		<2		5.000		<0.01000			39		<1		
				Middle	2.2	<5	<5	5.0	4.0	<2.00	0.9	0.9	<0.02	<0.02	6.4	6.3	<2	<2	5.000	6.0	<0.01000	<0.01000	<0.00018	32	34.3	<1	<21	<1
				Bottom	3.5	<5		3.0			0.9		<0.02		6.2		<2		7.000		<0.01000			32		60		

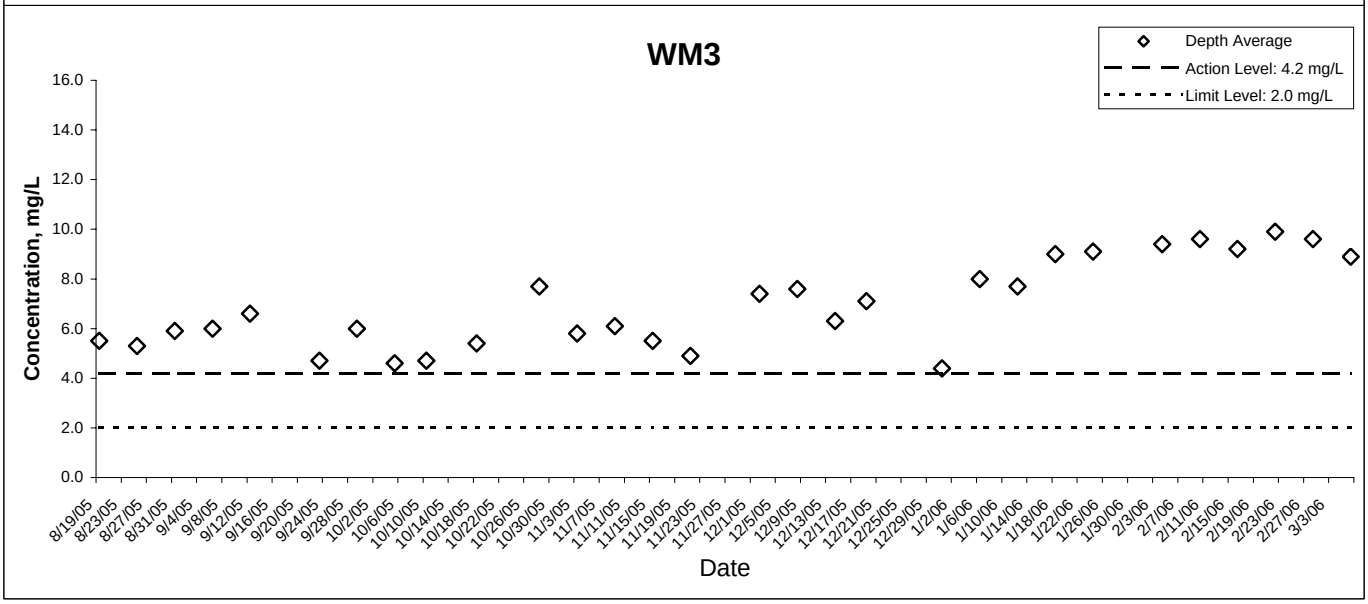
Note:
Lake Condition - Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher
DA - Depth Average
AA - Annual Average
AM - Annual Median
GM - Geometric Mean for last 5 measurements

Remarks: * Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Dissovled Oxygen







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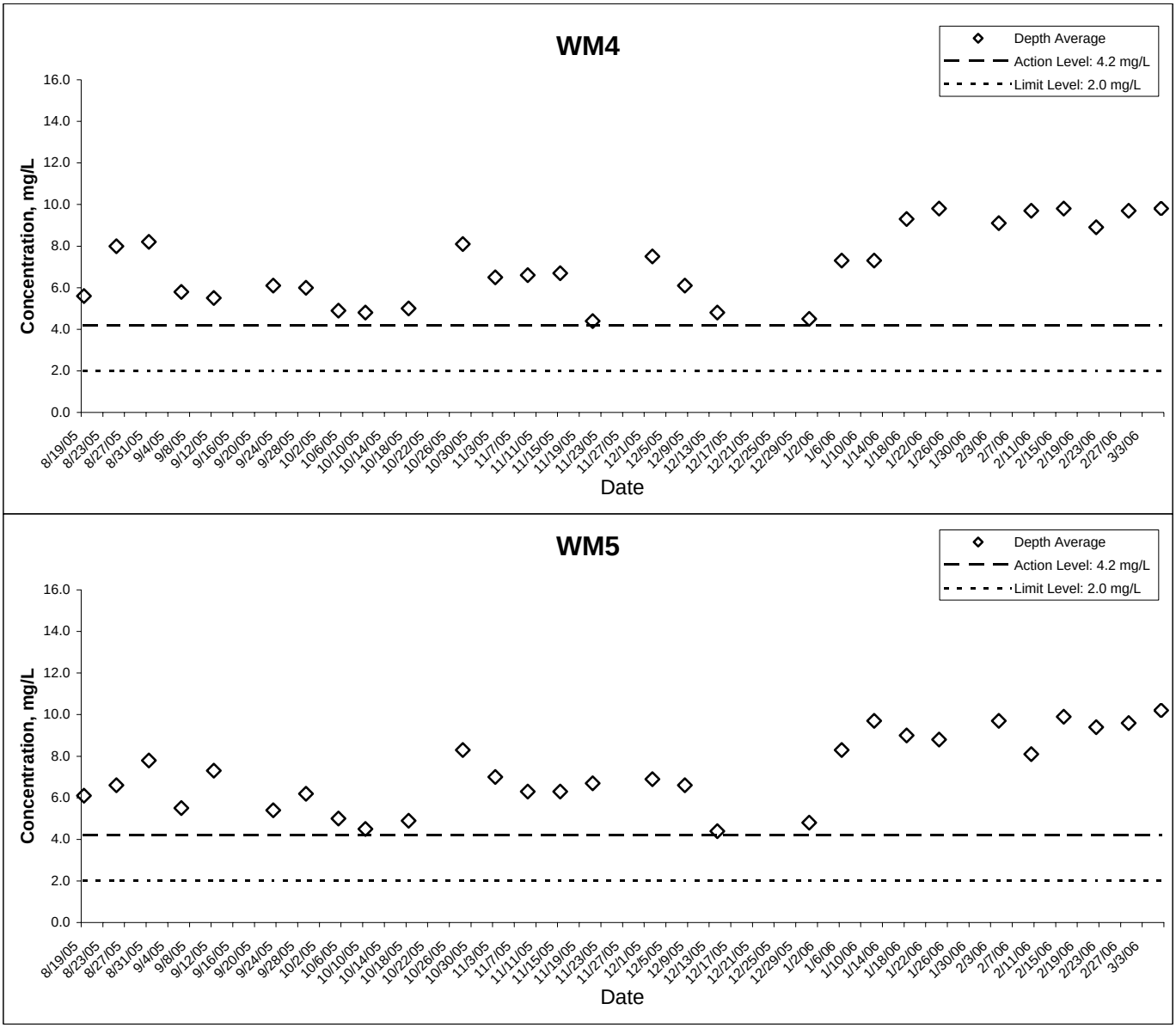
		CHECK	FSYY	DRAWN	LLMC
		JOB NO.	S07105	APPENDIX E	Rev -

Dissovled Oxygen



MAUNSELL AECOM Maunsell Environmental Management Consultants Ltd	FEP-01/097/2001/B Provision of EM&A Services at Water Recreation Centre **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	Mar 06
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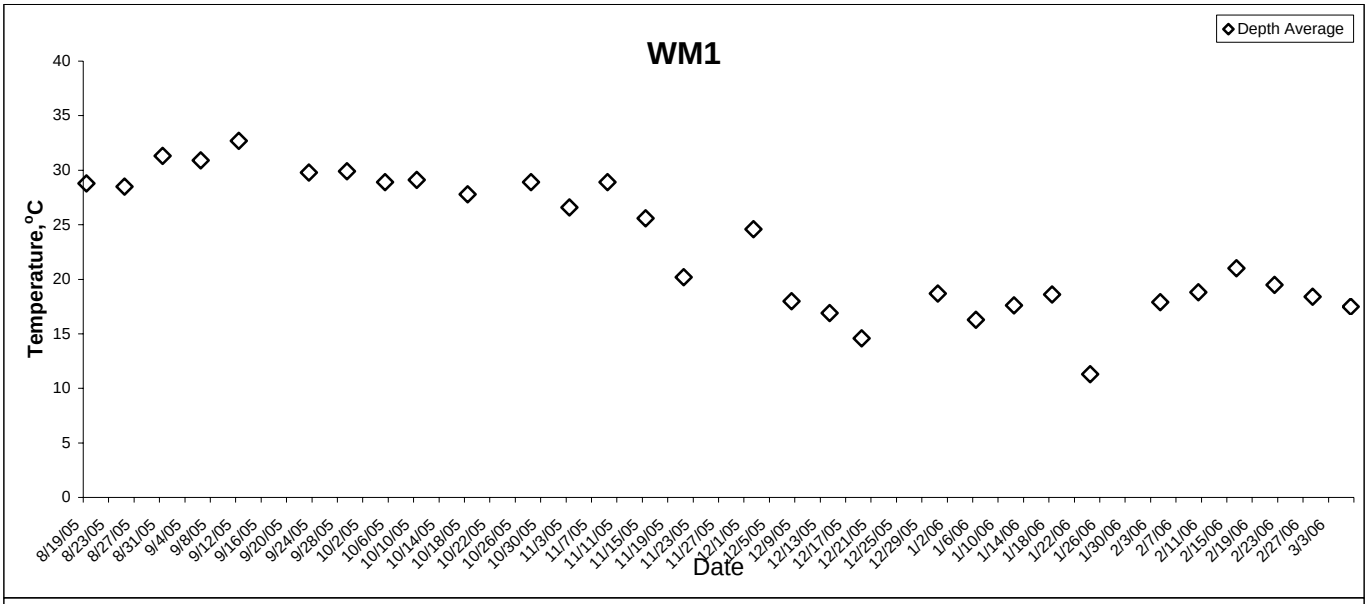
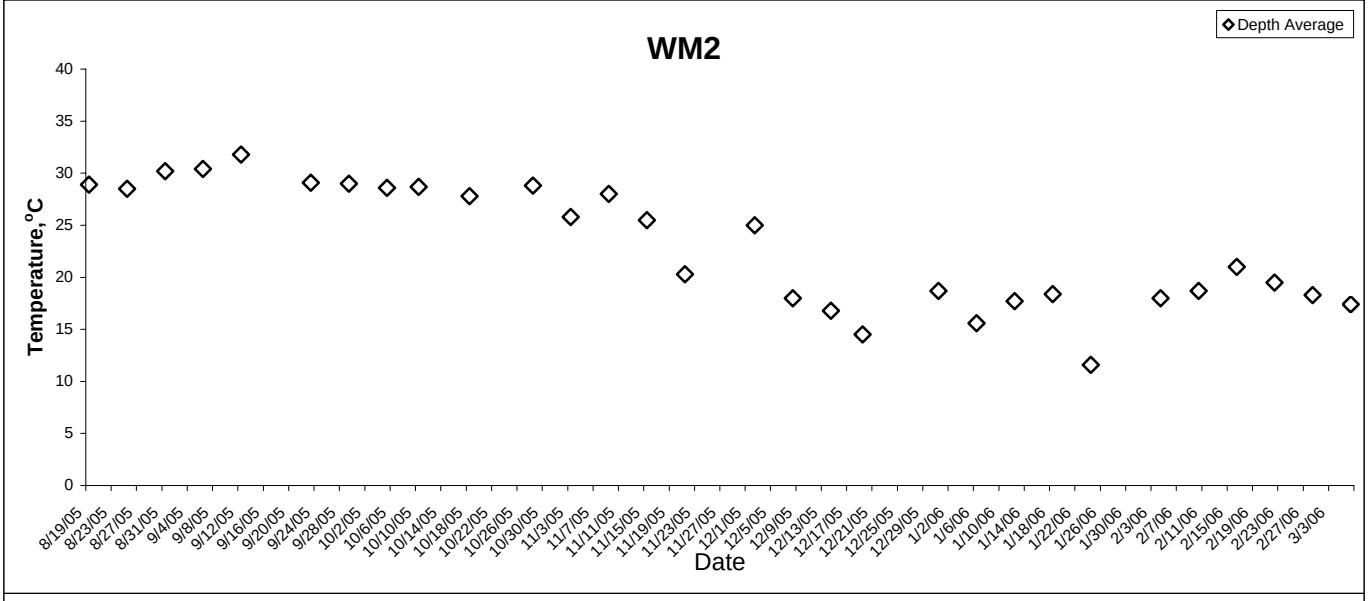
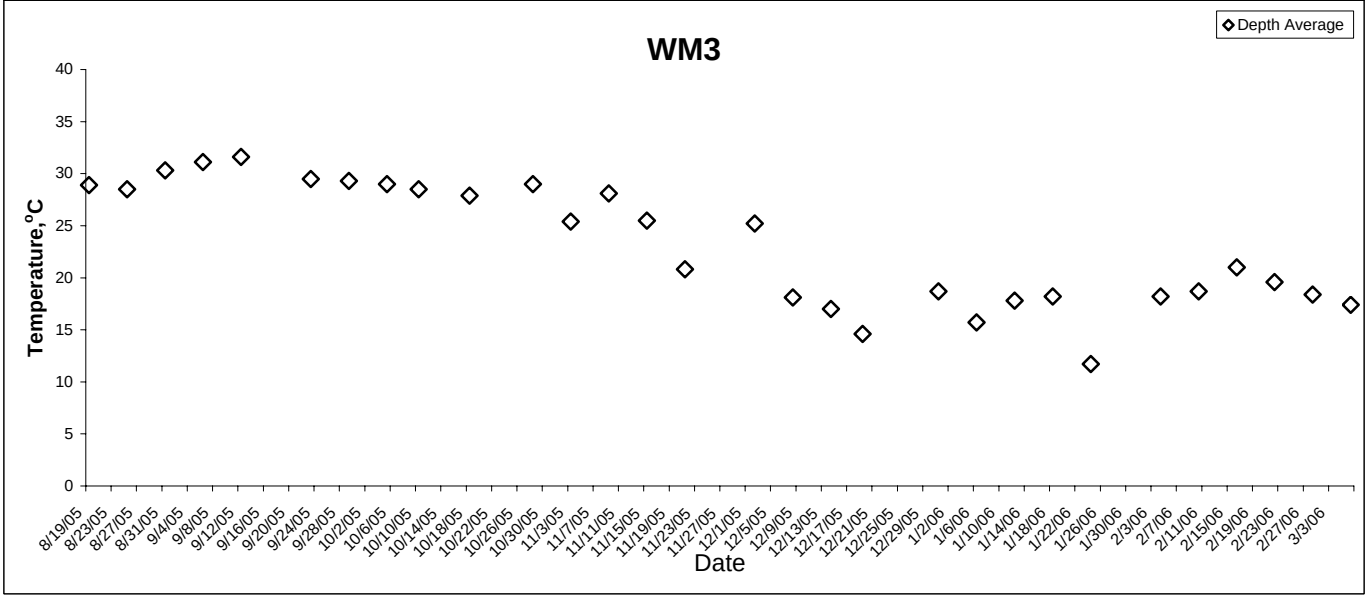
Temperature







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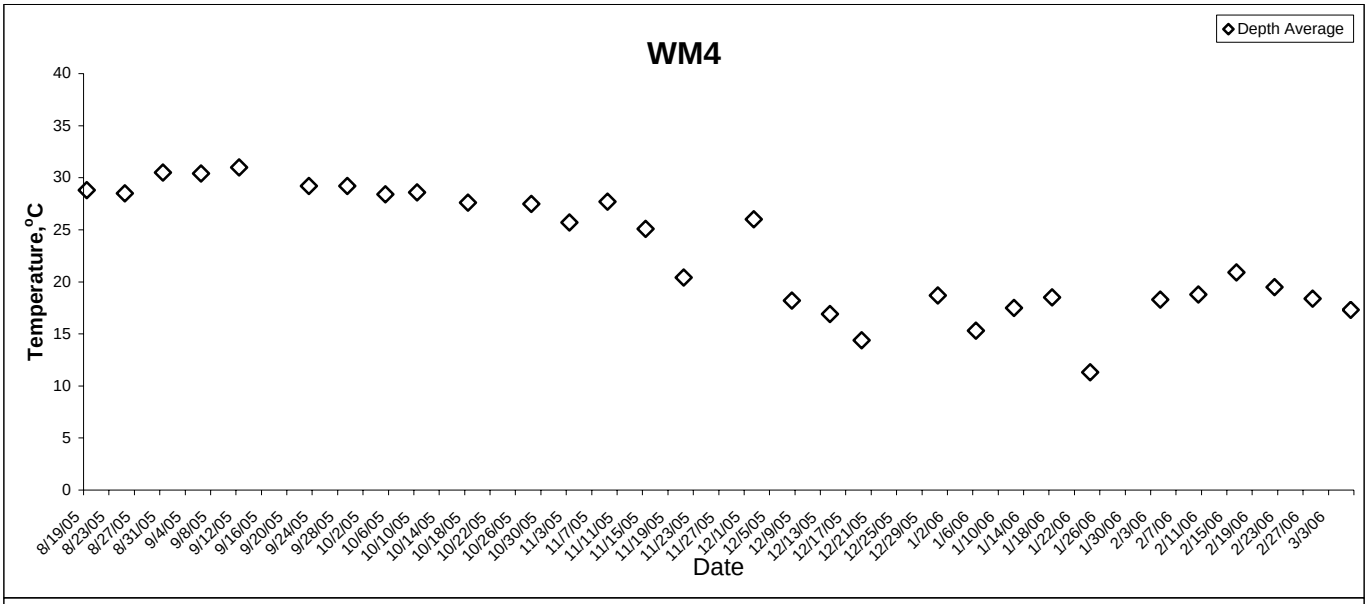
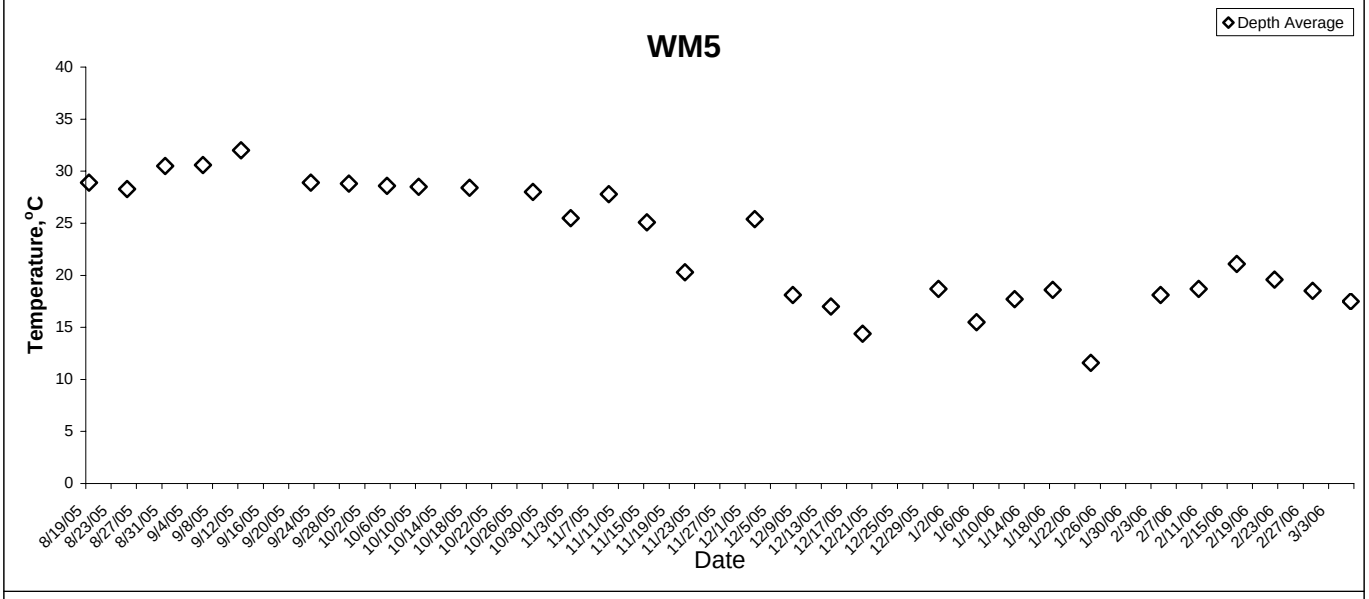
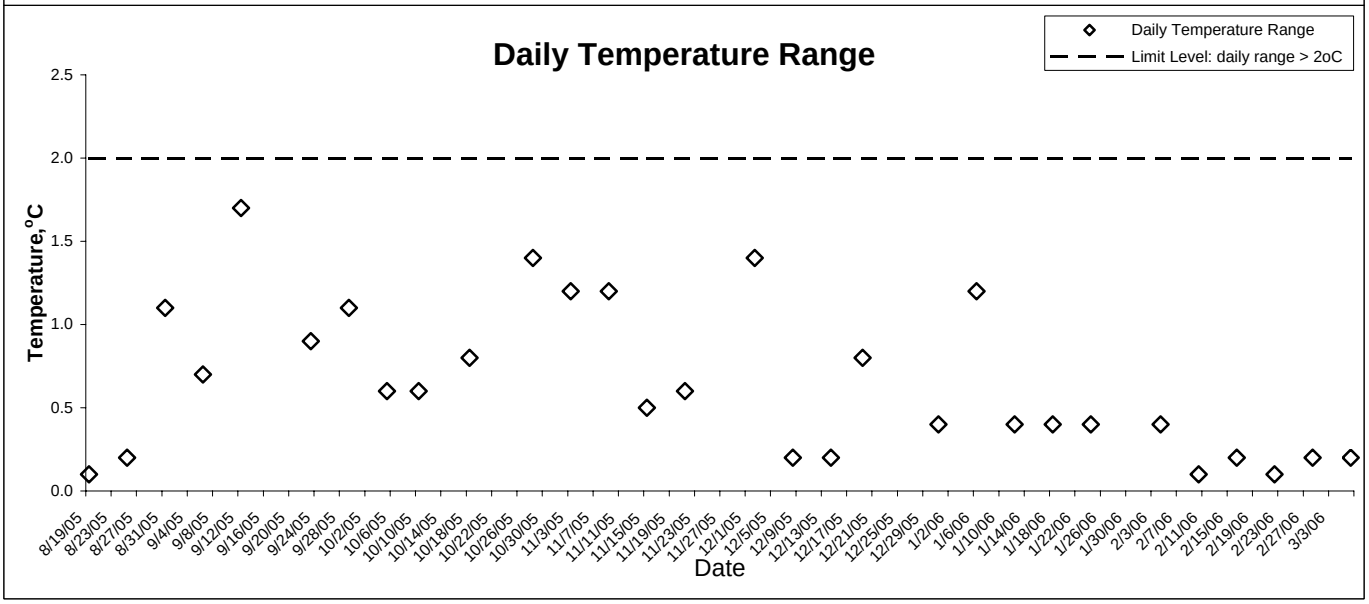
Temperature







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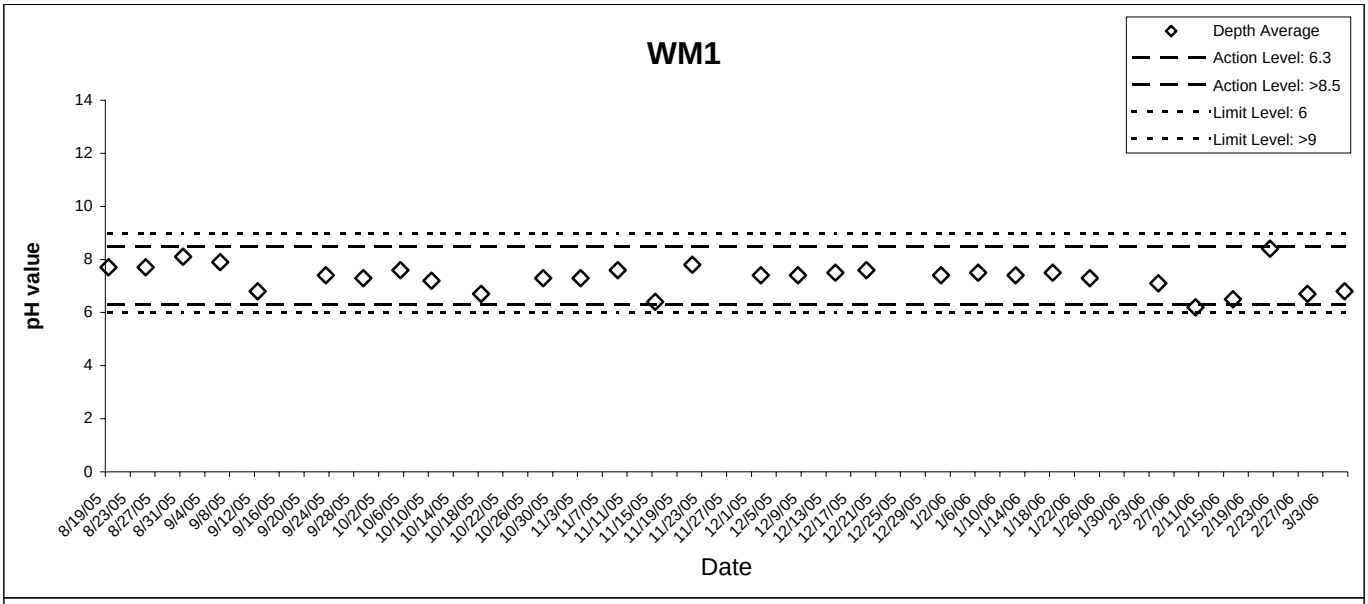
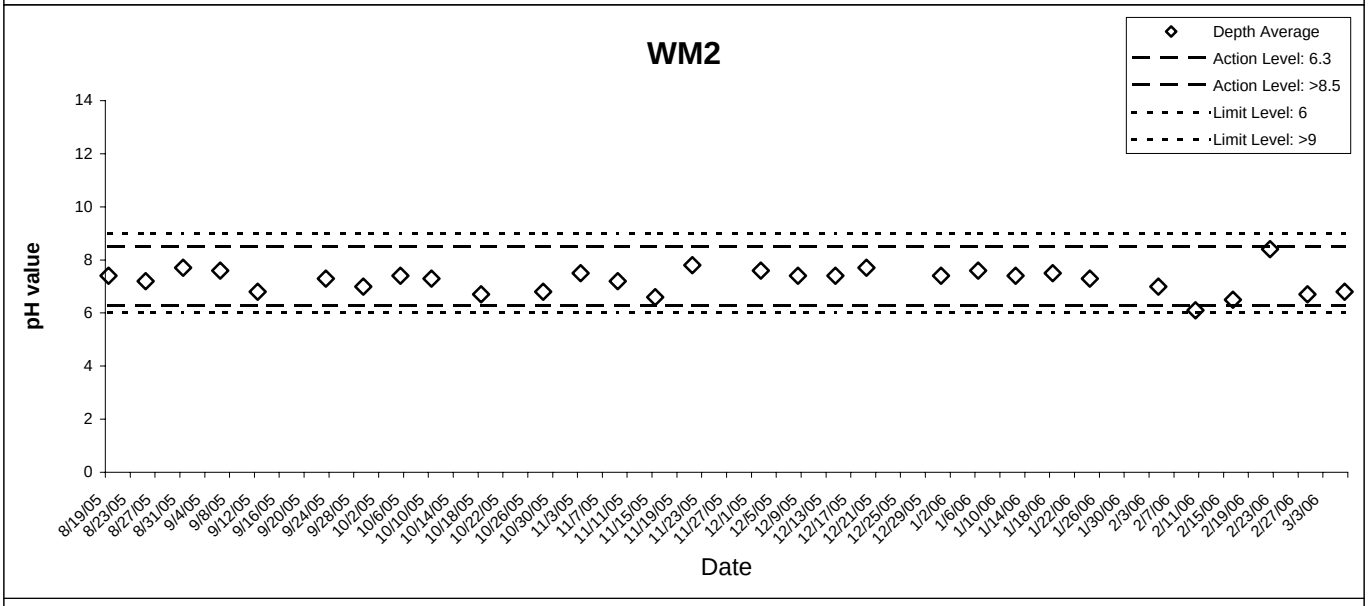
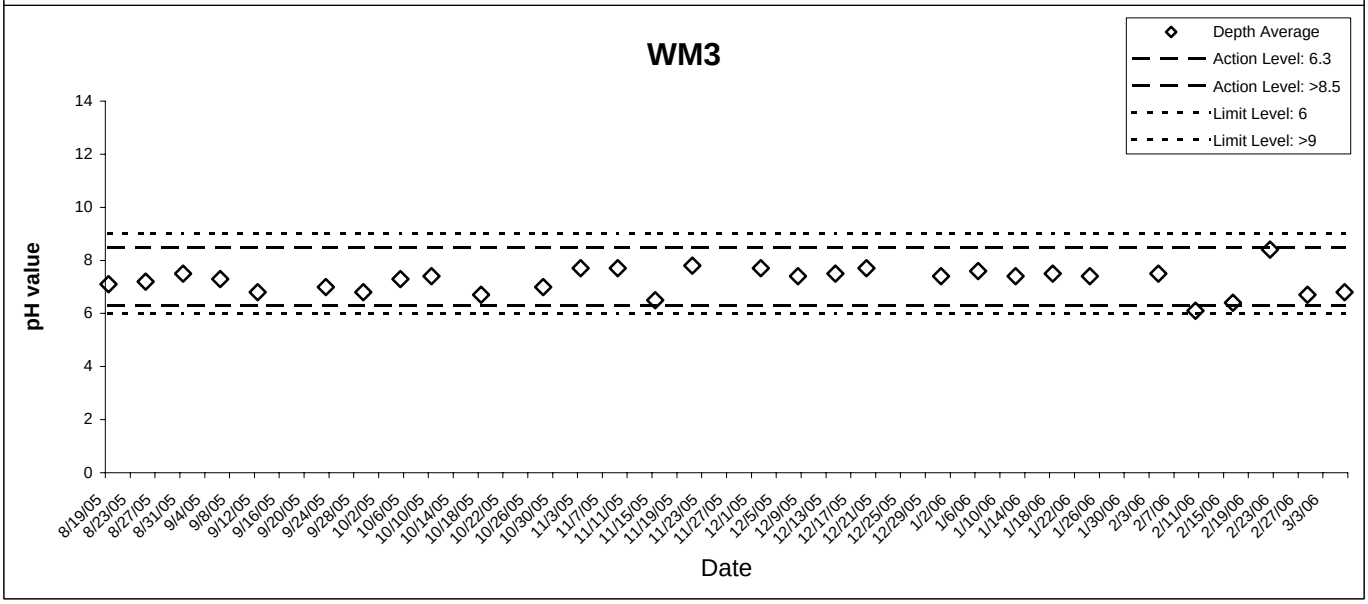
pH

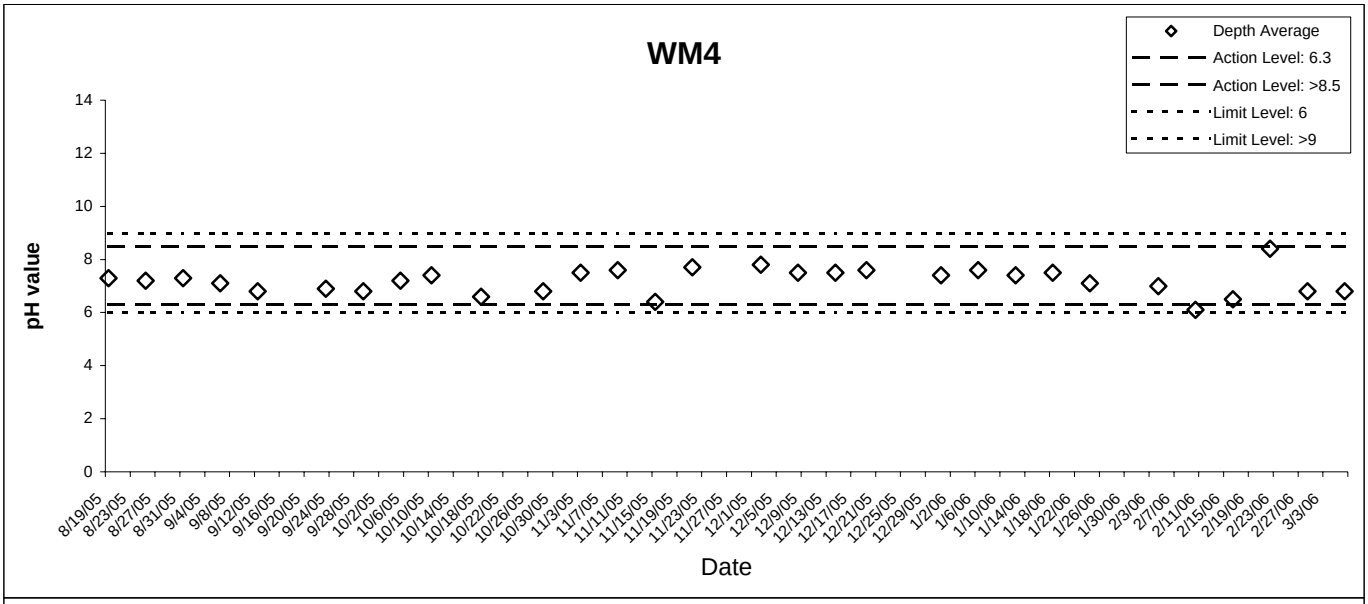


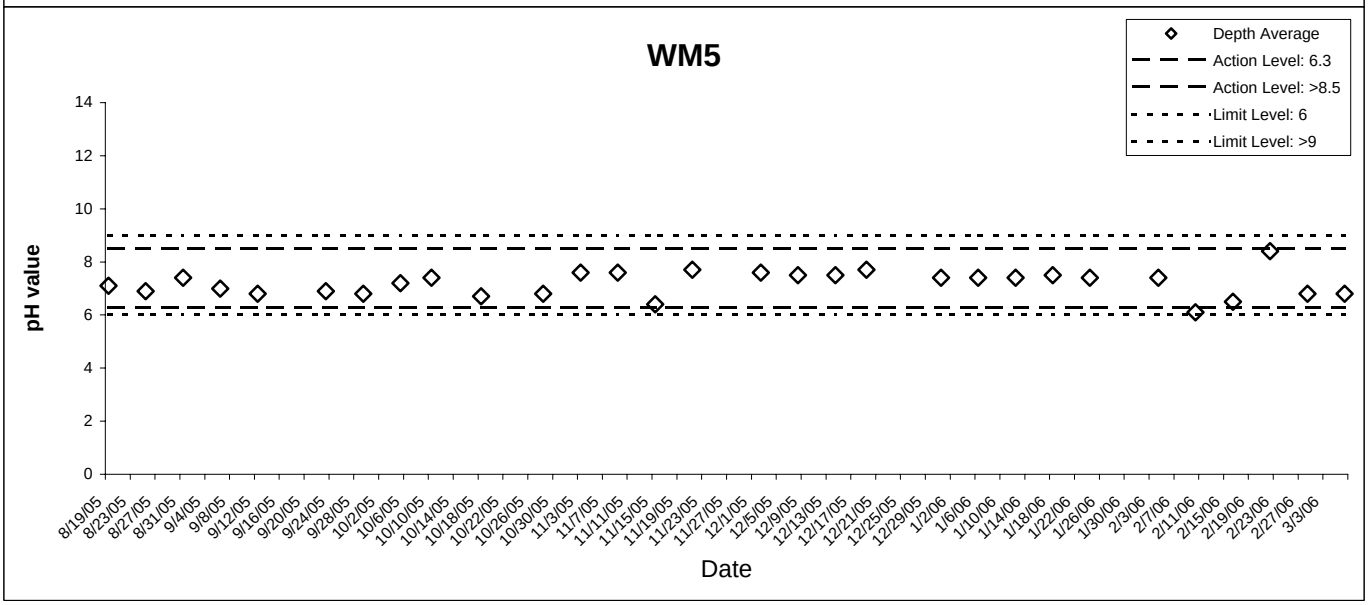




MAUNSELL AECOM Maunsell Environmental Management Consultants Ltd	FEP-01/097/2001/B Provision of EM&A Services at Water Recreation Centre **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	Mar 06
		CHECK	FSYY	DRAWN	LLMC
		JOB NO.	S07105	APPENDIX E	Rev -

pH





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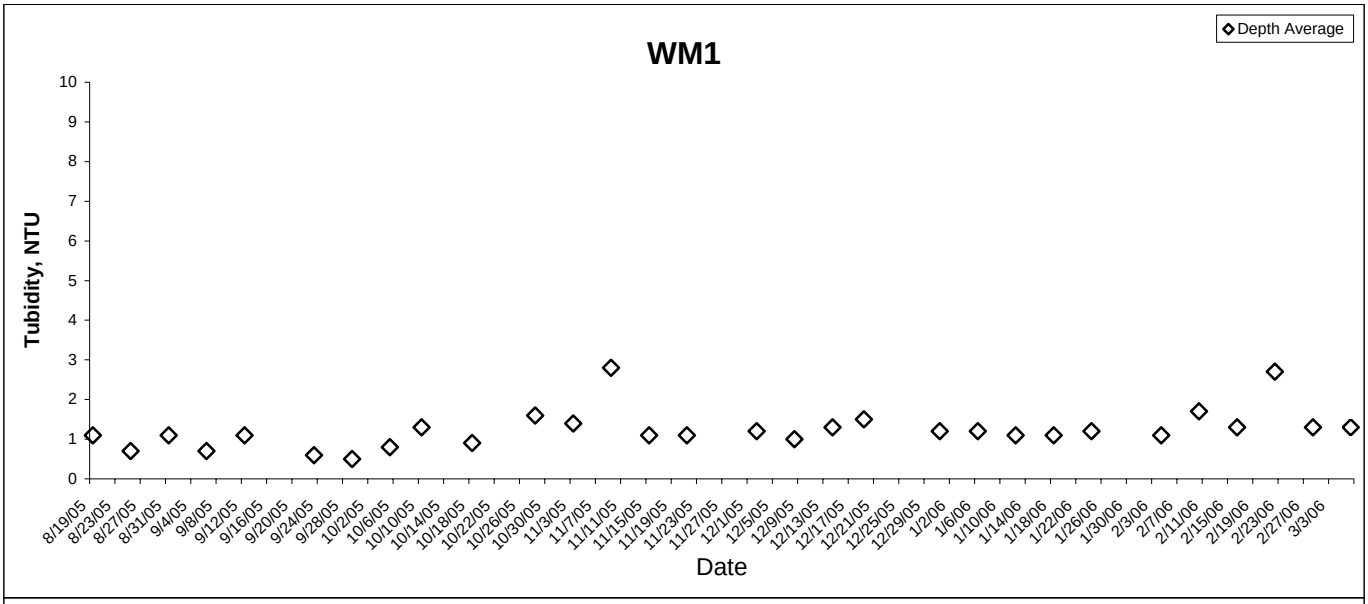
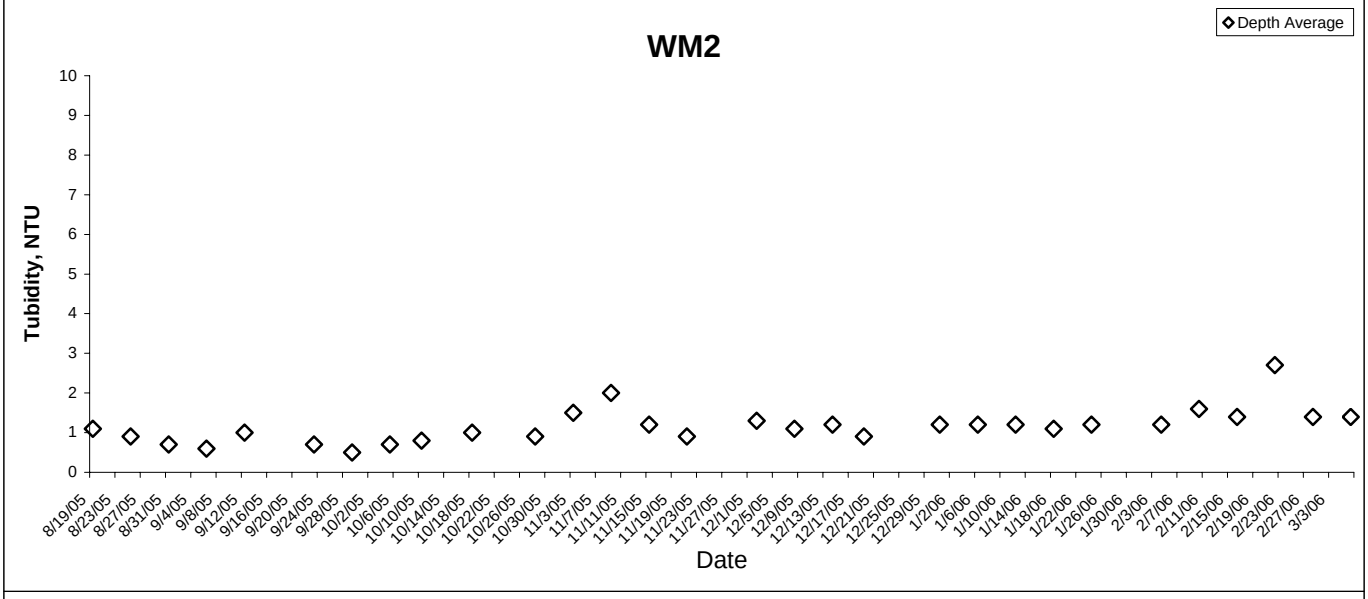
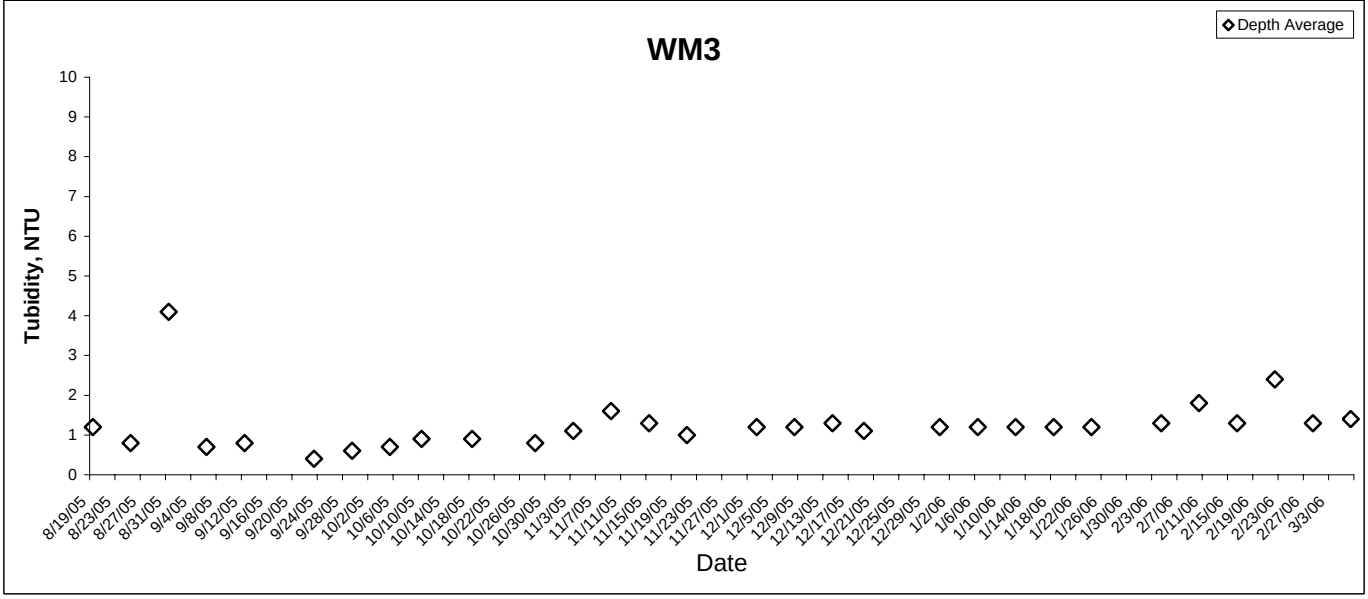
Turbidity







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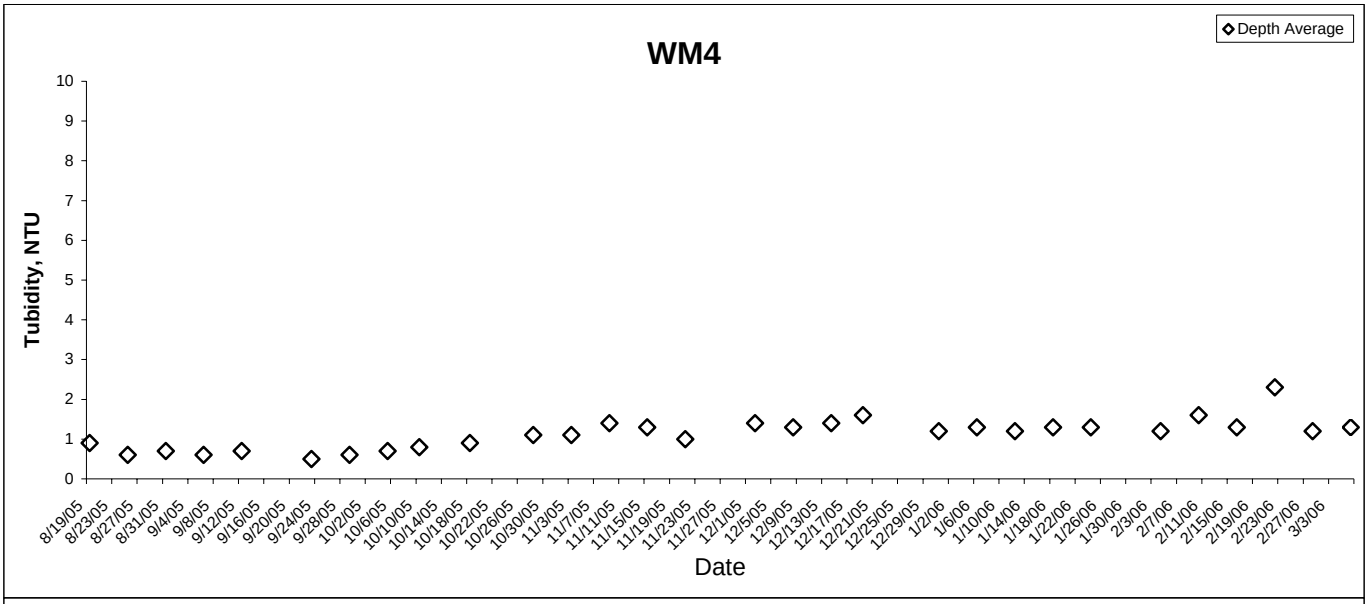
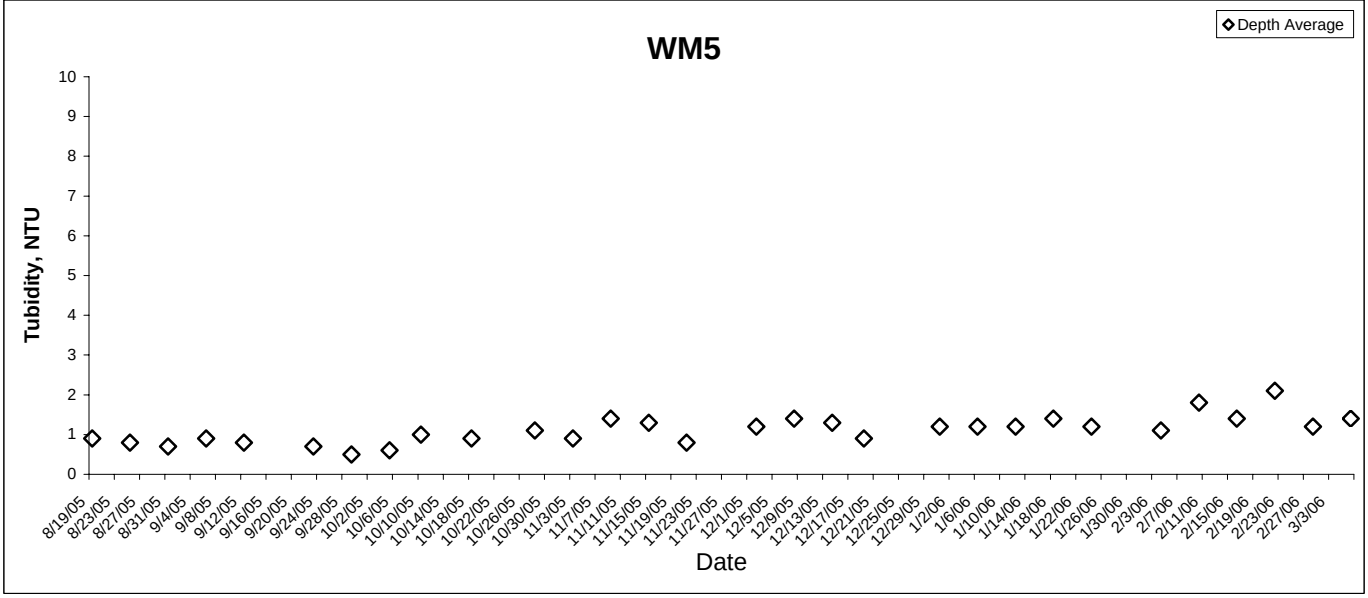
Turbidity





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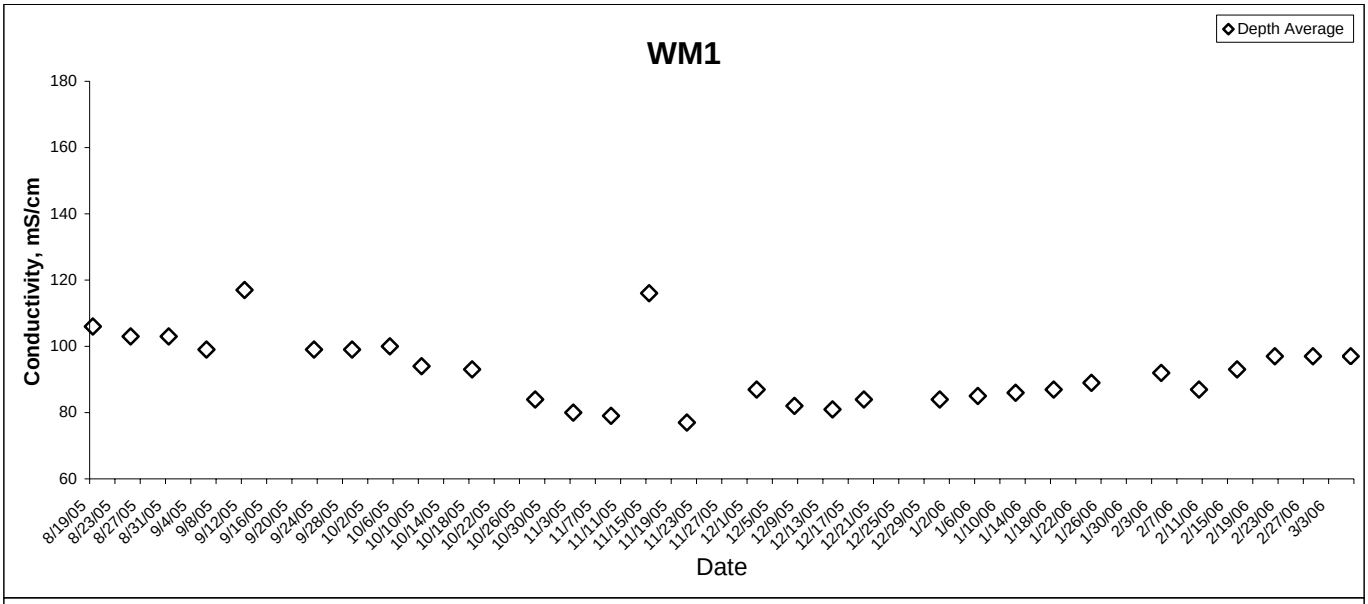
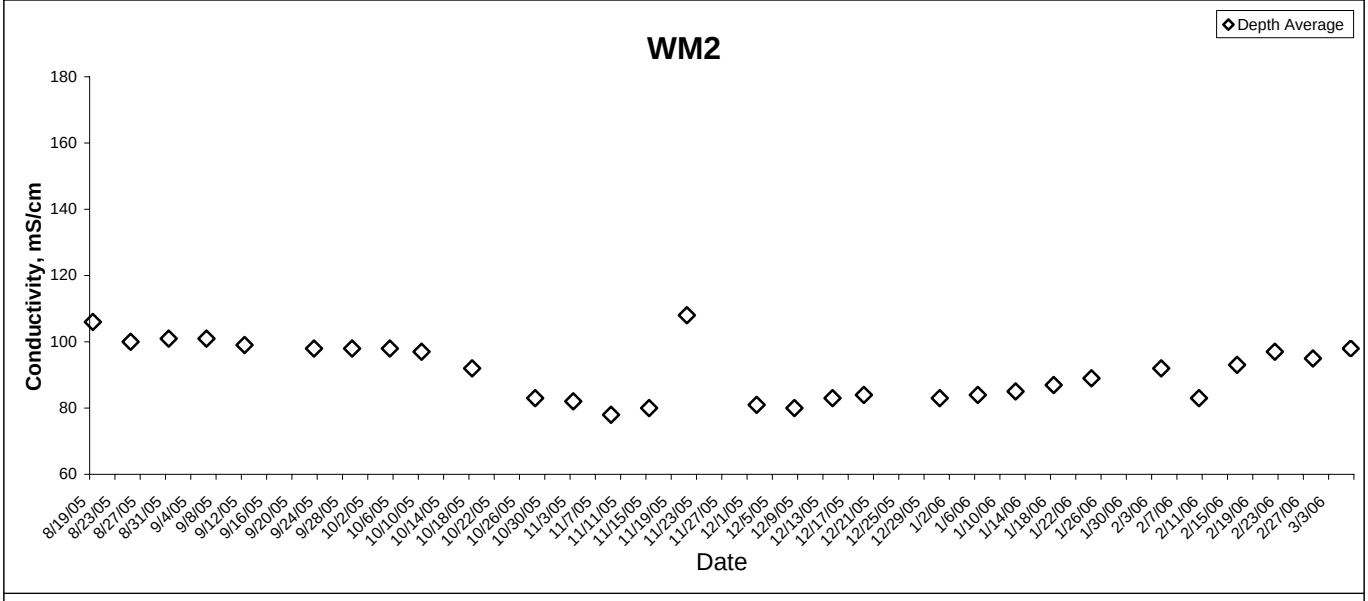
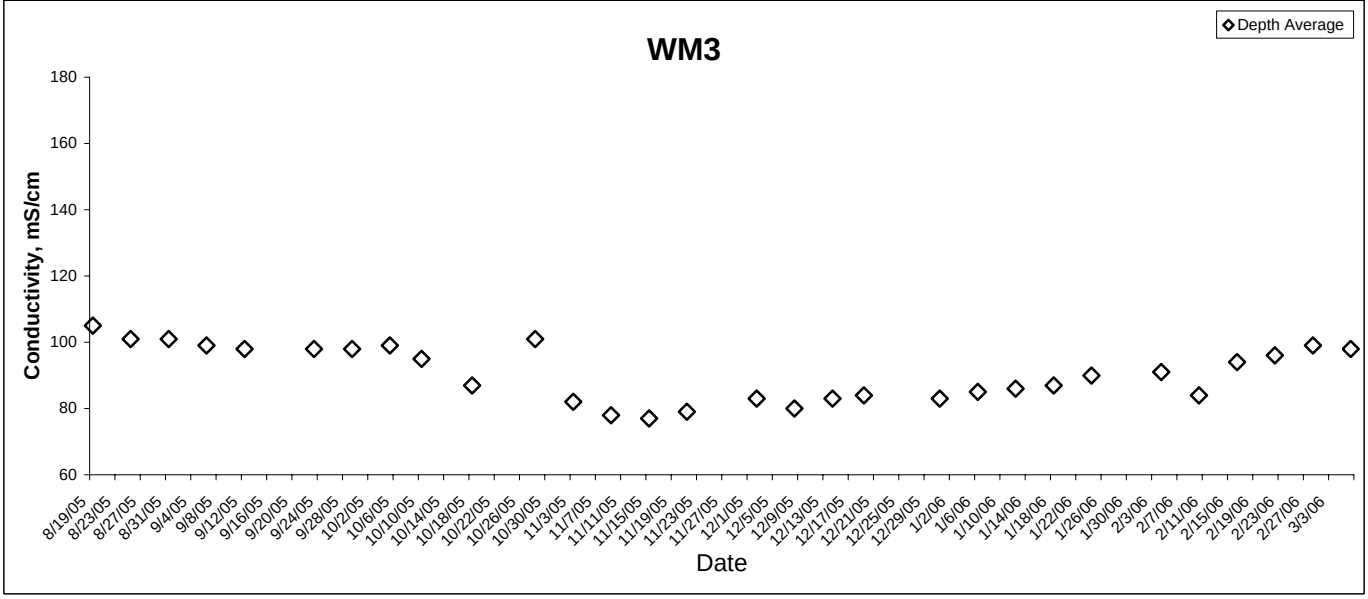
Conductivity







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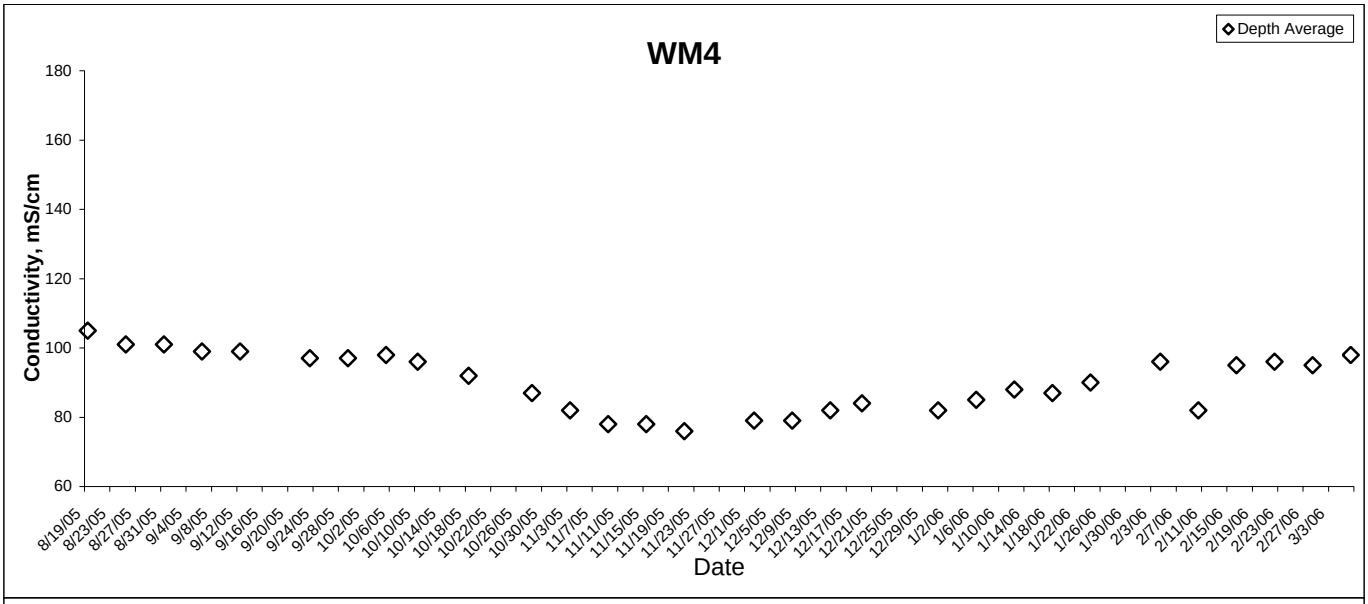
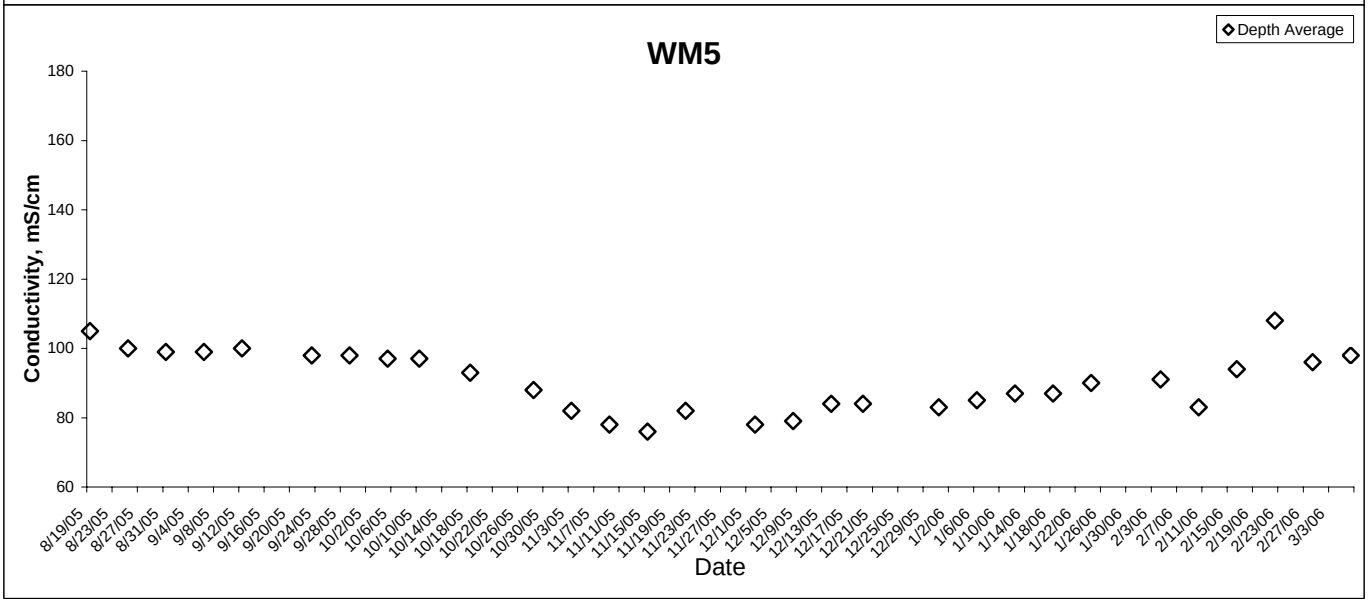
Conductivity





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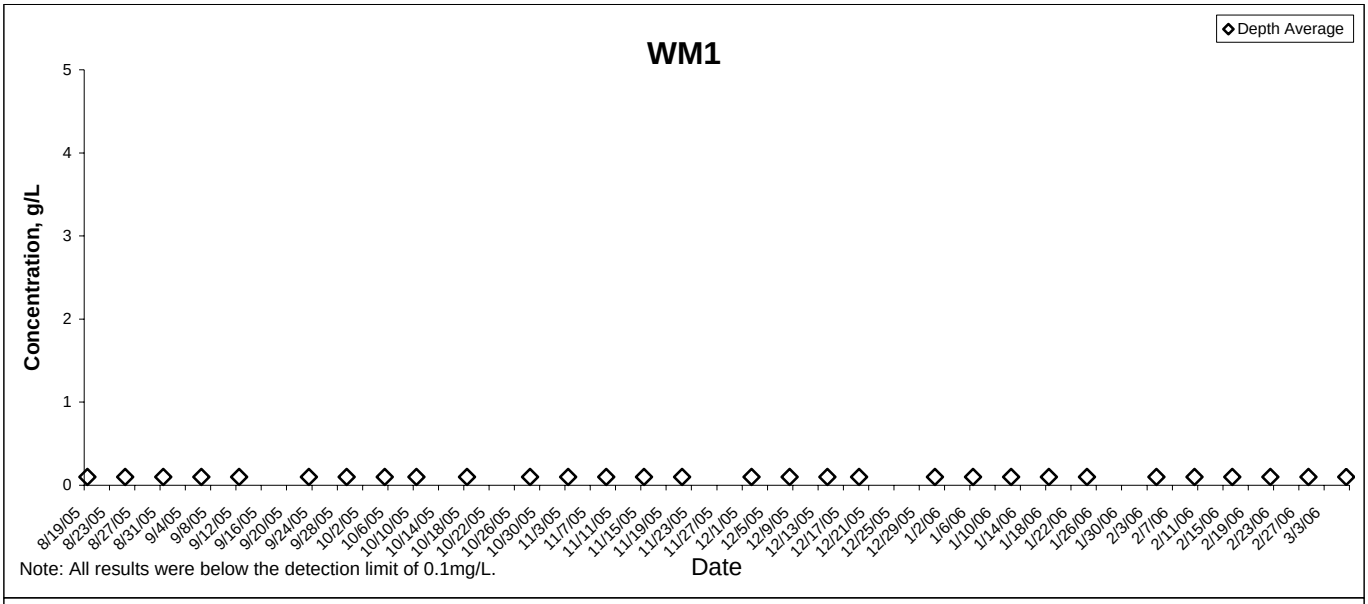
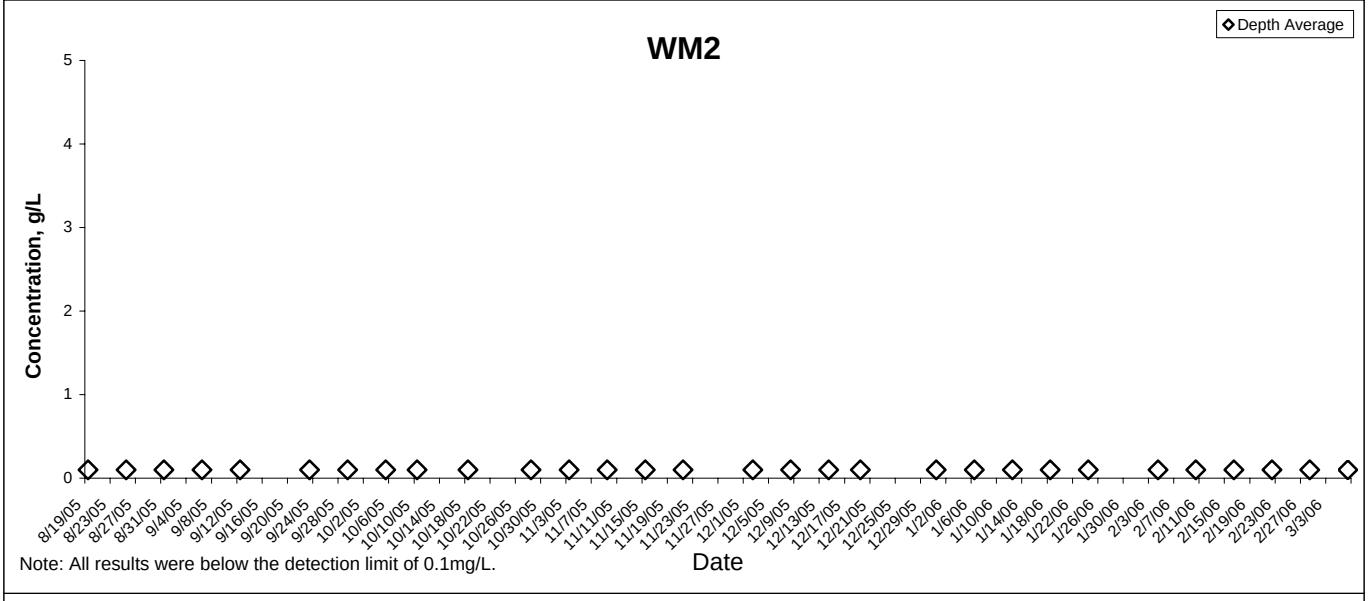
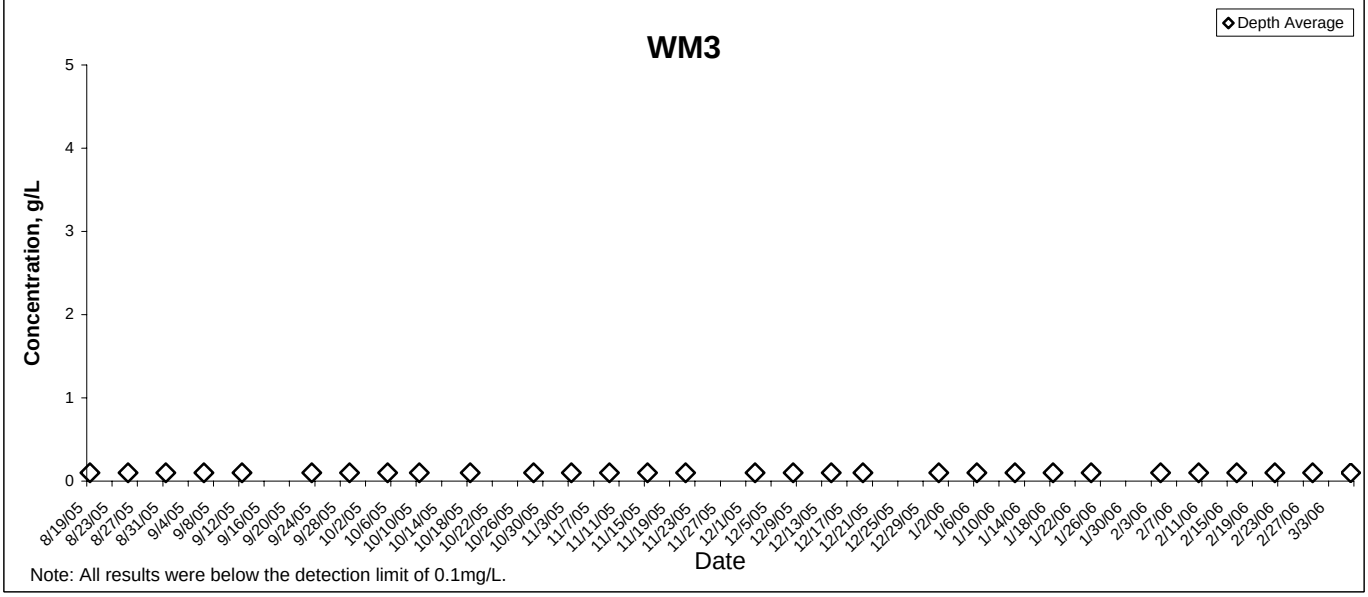
Salinity



Note: All results were below the detection limit of 0.1mg/L.



Note: All results were below the detection limit of 0.1mg/L.



Note: All results were below the detection limit of 0.1mg/L.

MAUNSELL AECOM Maunsell Environmental Management Consultants Ltd	FEP-01/097/2001/B Provision of EM&A Services at Water Recreation Centre **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	Mar 06
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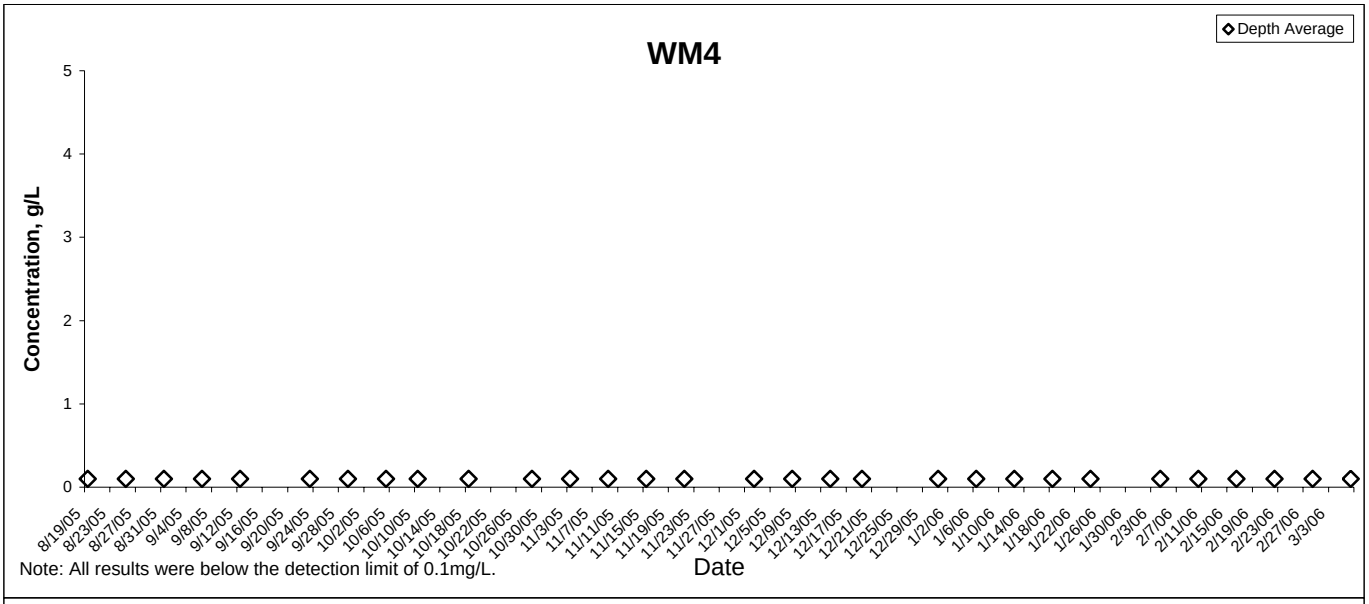
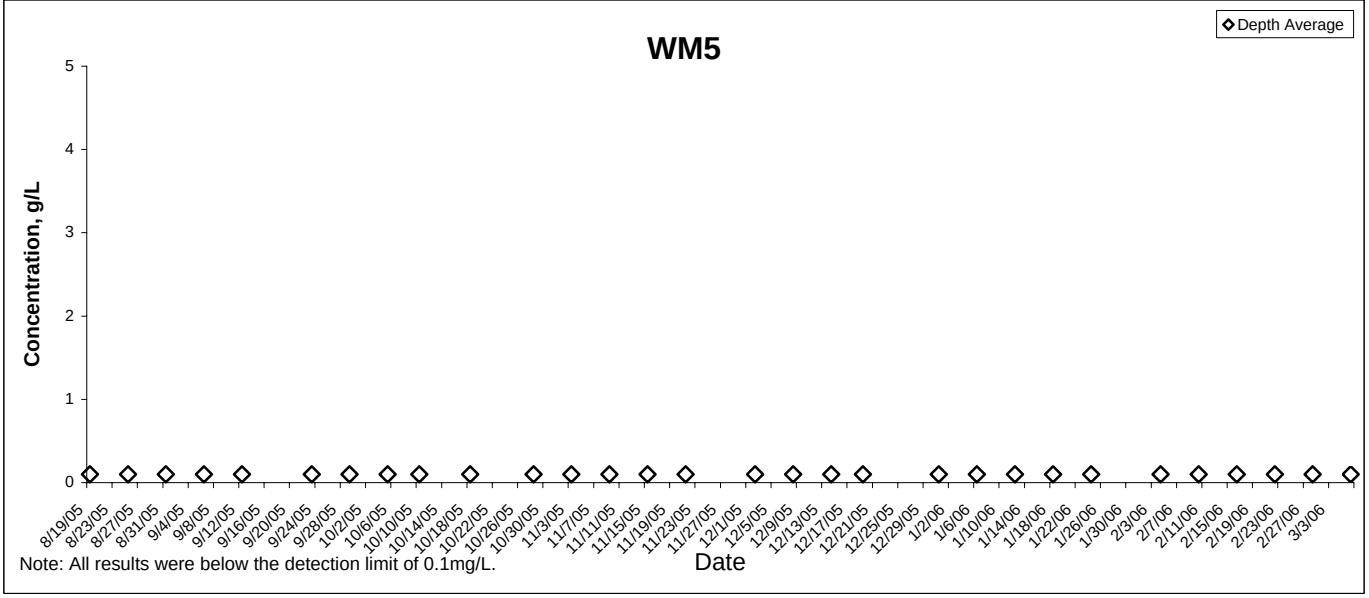
Salinity



Note: All results were below the detection limit of 0.1mg/L.



Note: All results were below the detection limit of 0.1mg/L.

MAUNSELL AECOM Maunsell Environmental Management Consultants Ltd	FEP-01/097/2001/B Provision of EM&A Services at Water Recreation Centre **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	Mar 06
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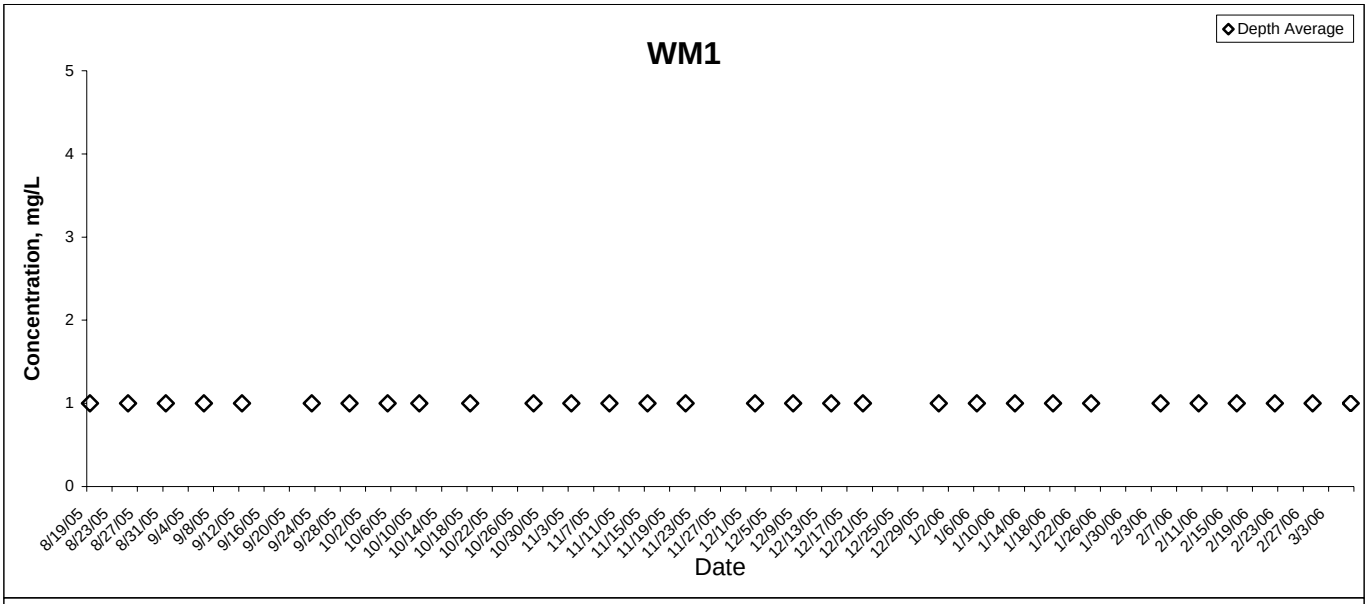
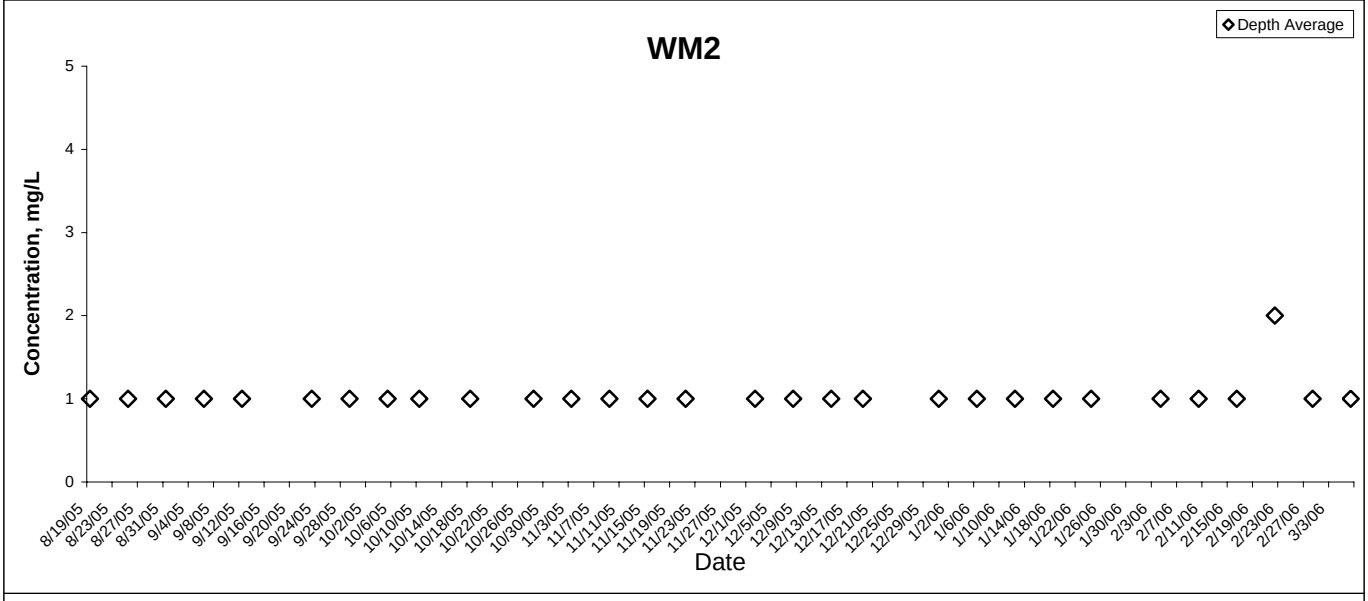
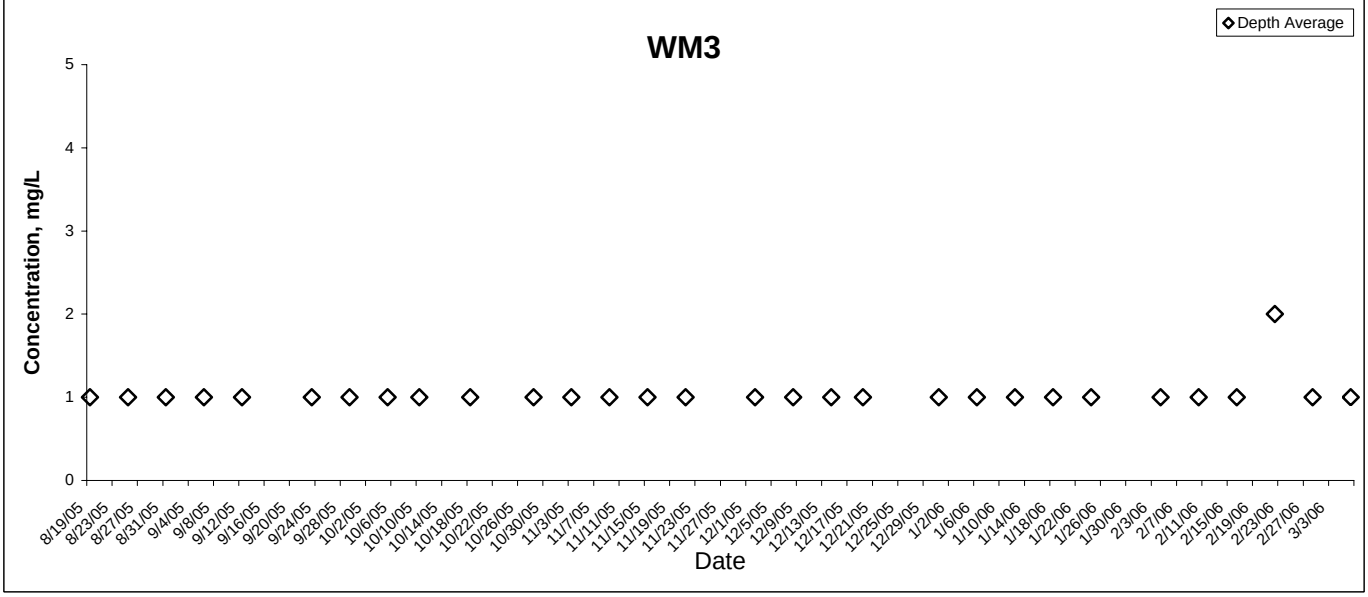
Copper







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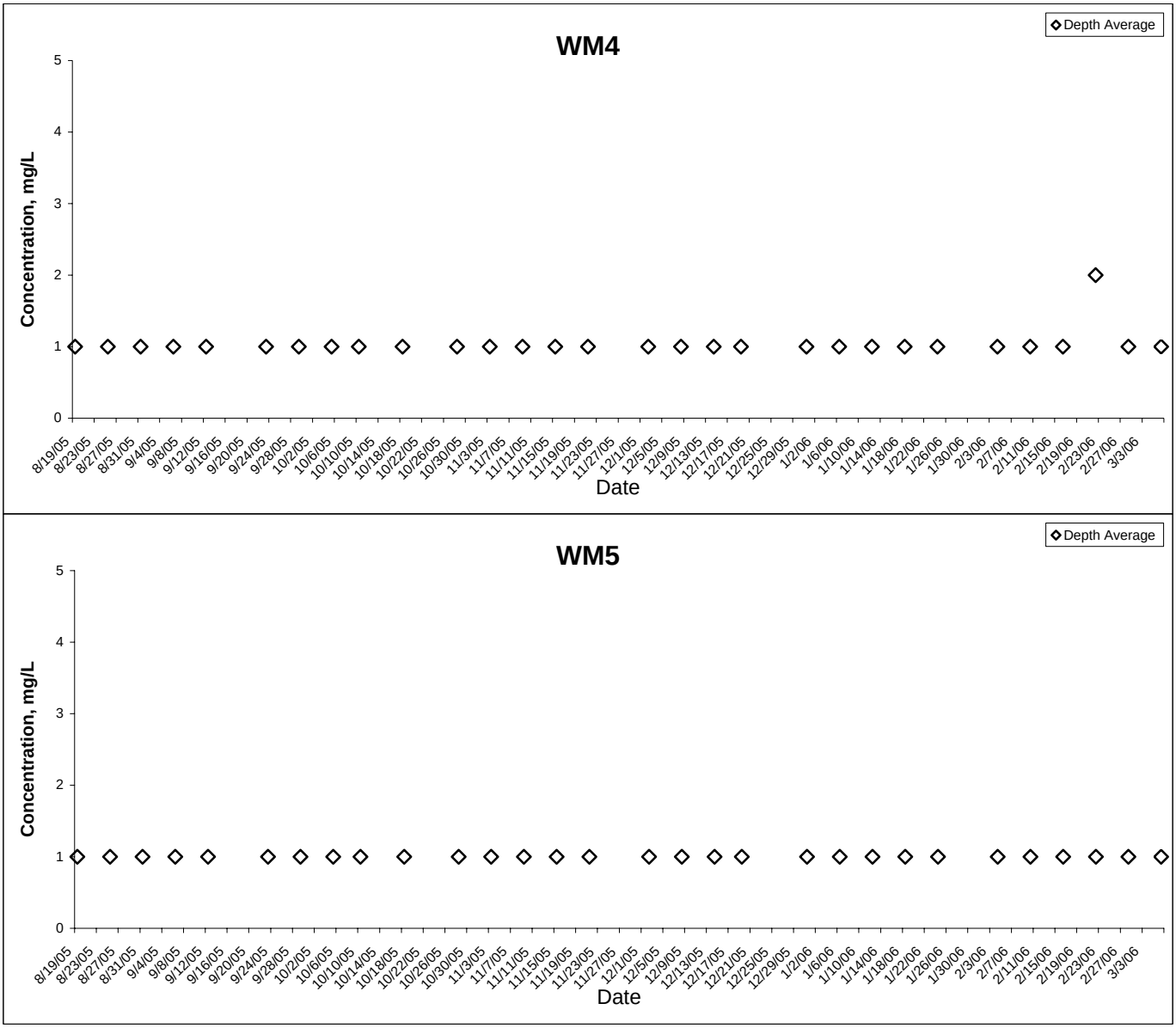
Copper



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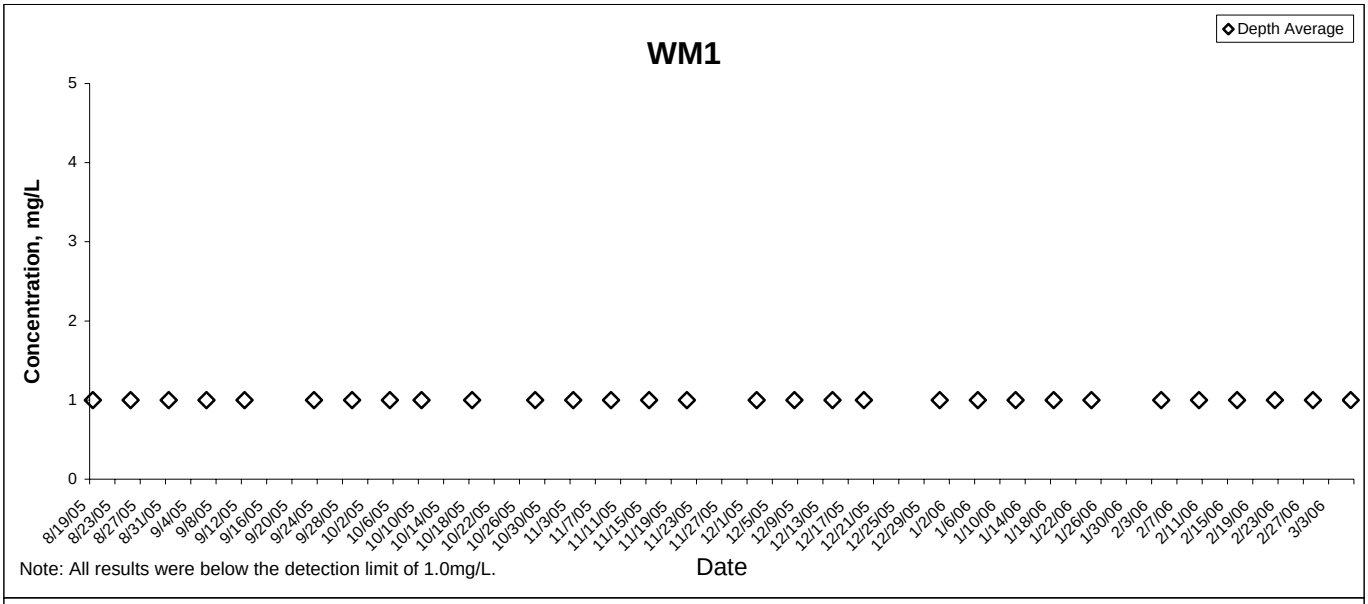
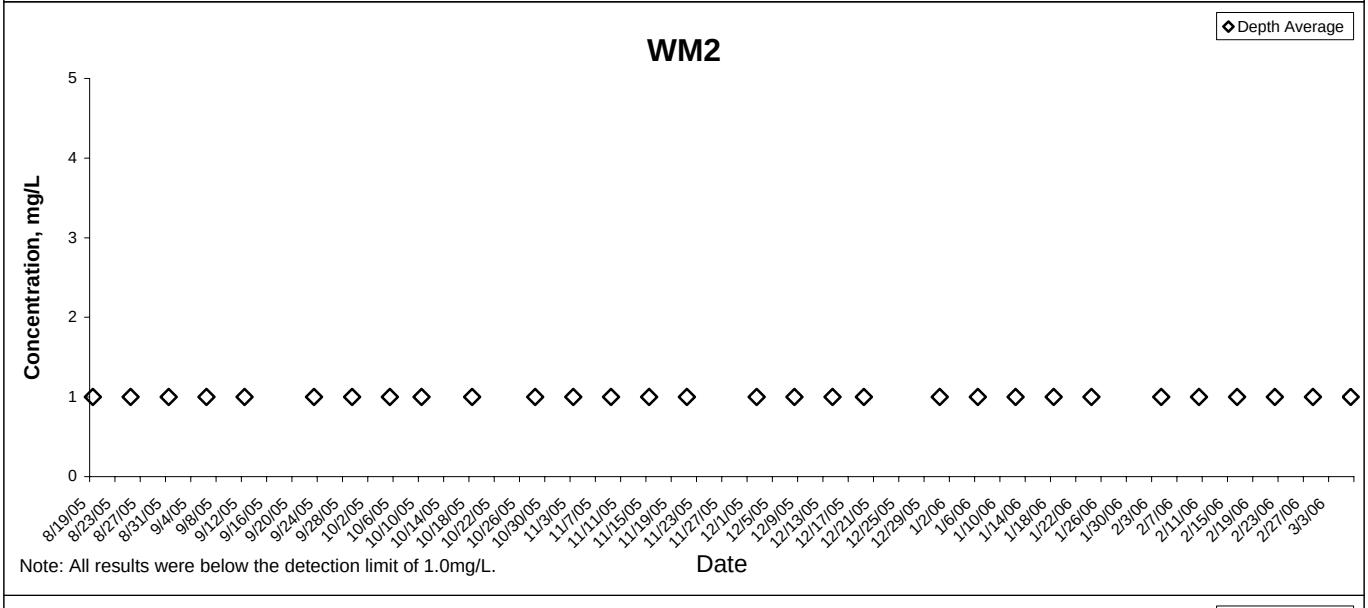
Chromium



Note: All results were below the detection limit of 1.0mg/L.



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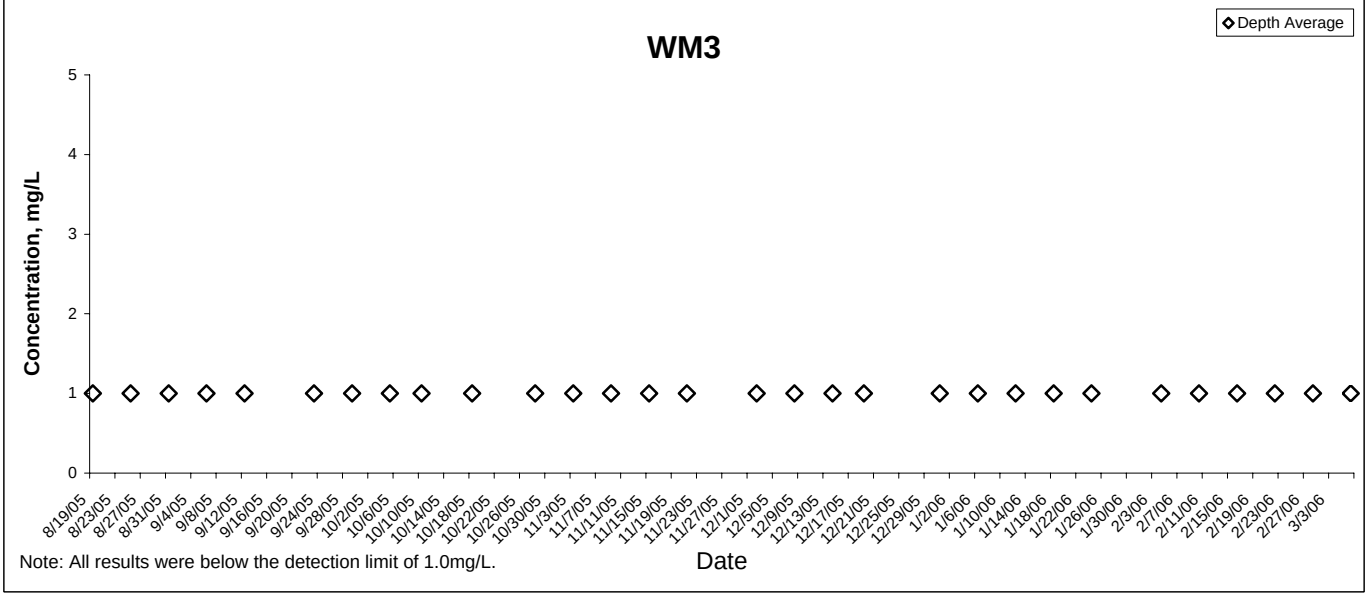

Note: All results were below the detection limit of 1.0mg/L.

MAUNSELL AECOM Maunsell Environmental Management Consultants Ltd	FEP-01/097/2001/B Provision of EM&A Services at Water Recreation Centre **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	Mar 06
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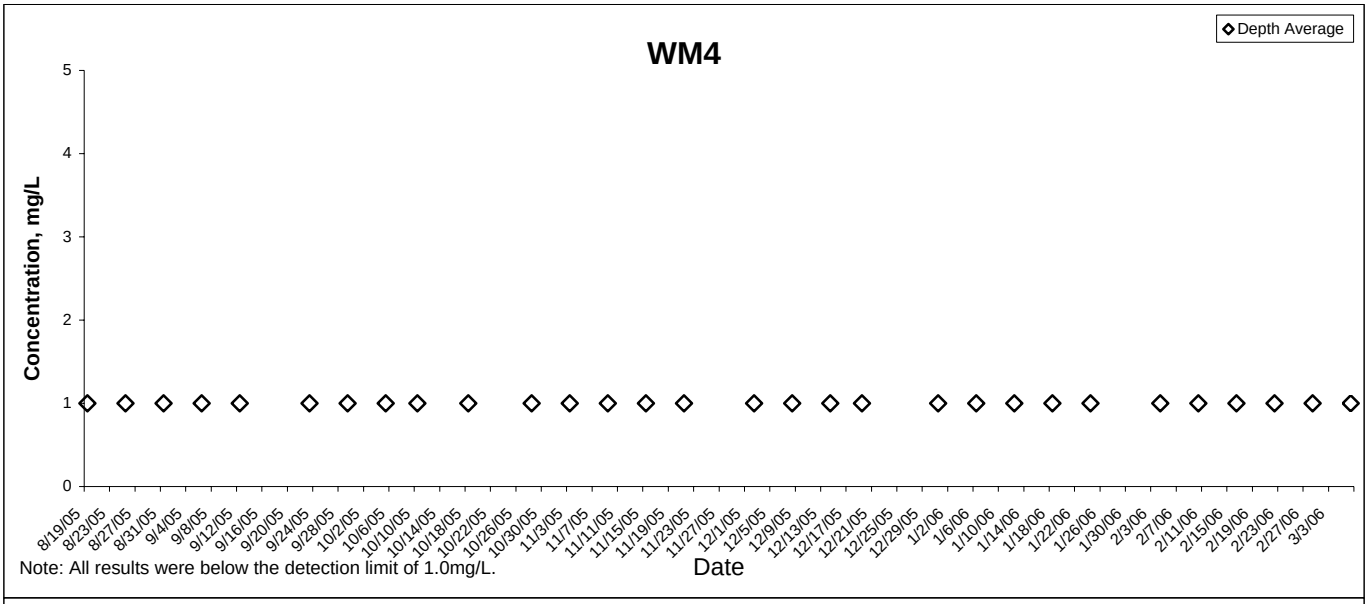
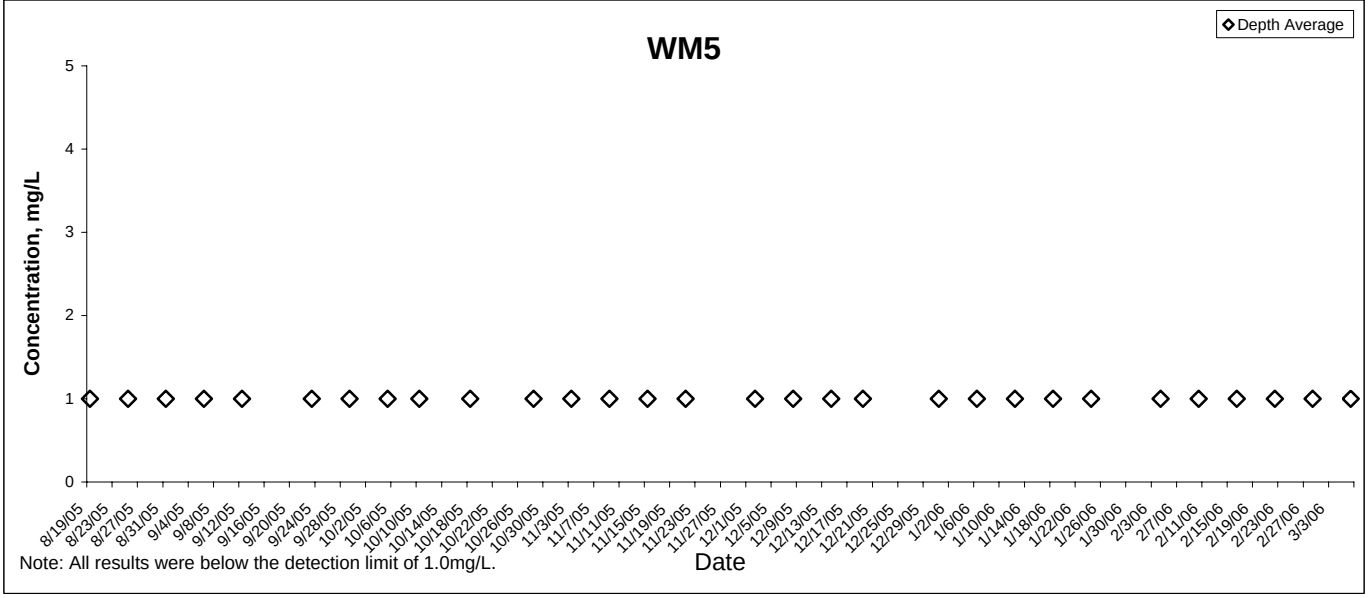
Chromium



Note: All results were below the detection limit of 1.0mg/L.



Note: All results were below the detection limit of 1.0mg/L.

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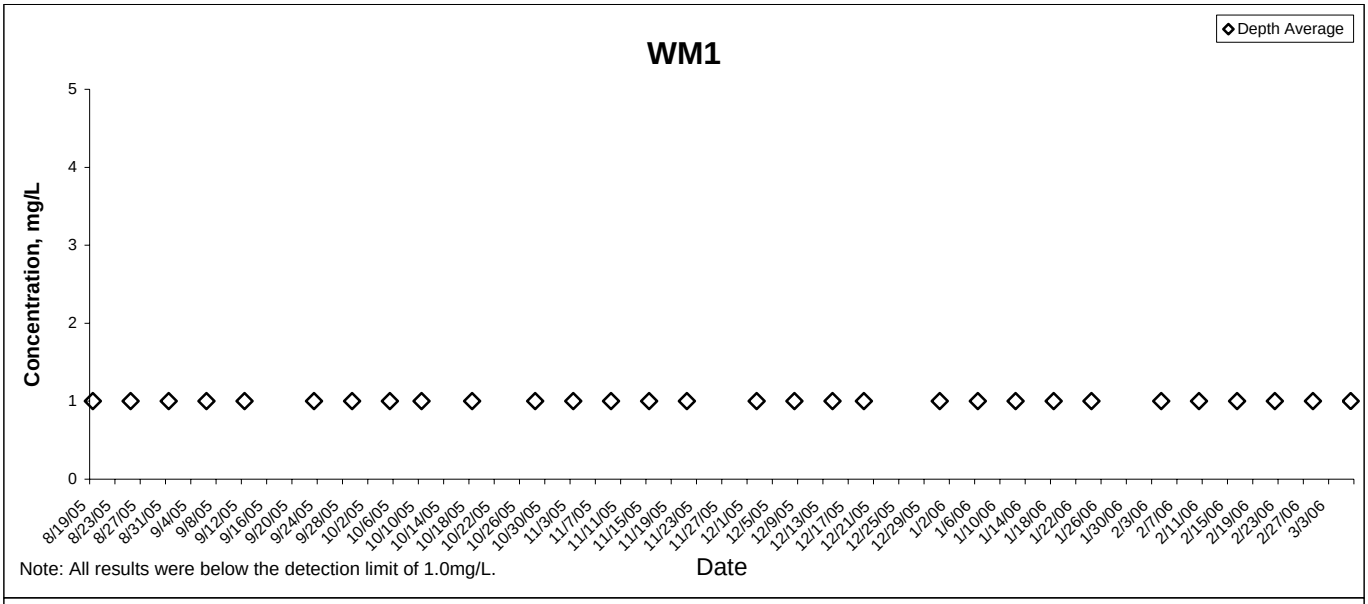
Lead



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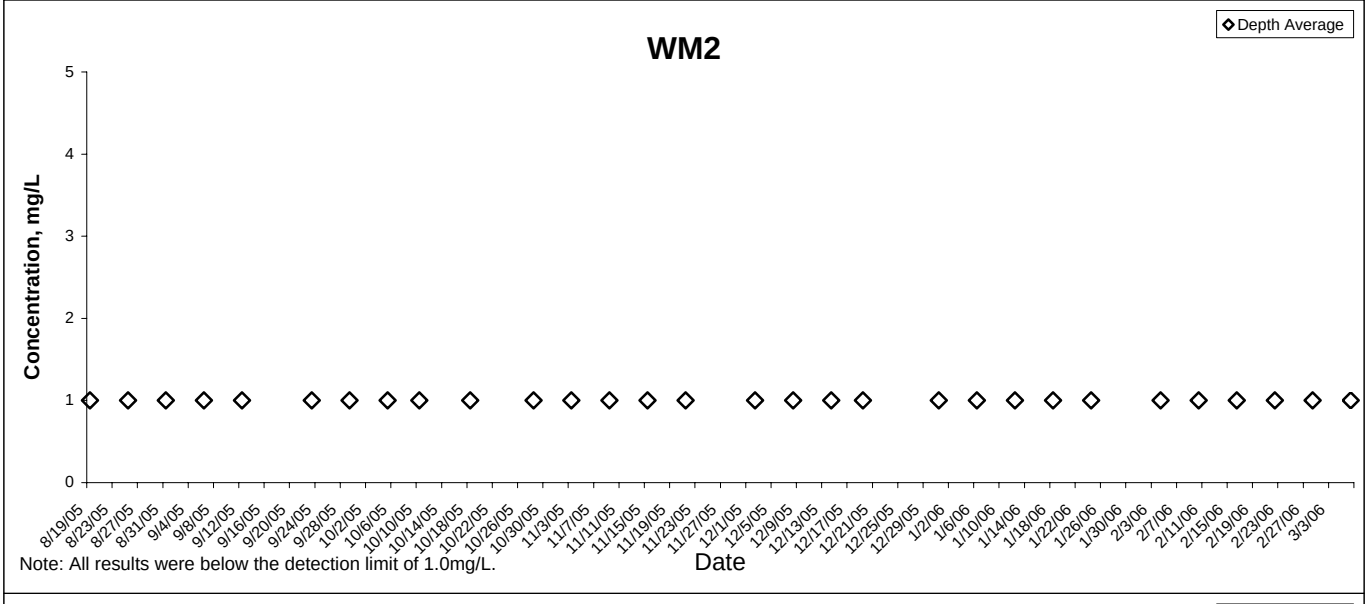

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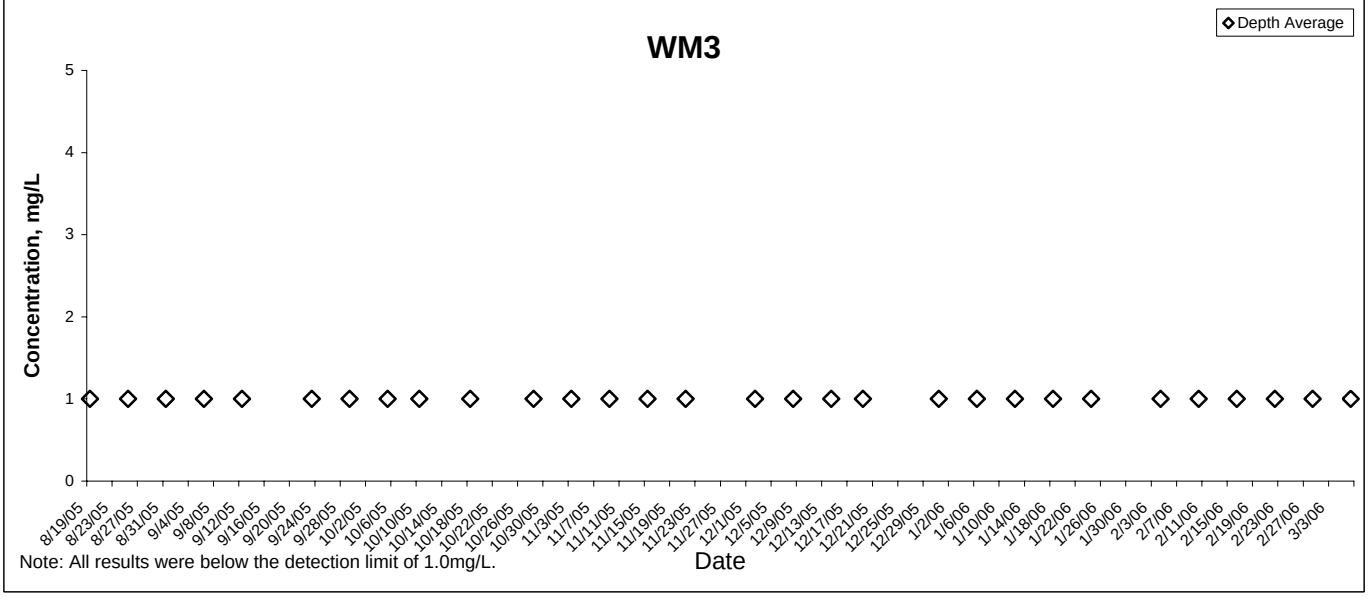

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MAUNSELL AECOM Maunsell Environmental Management Consultants Ltd	FEP-01/097/2001/B Provision of EM&A Services at Water Recreation Centre **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	Mar 06
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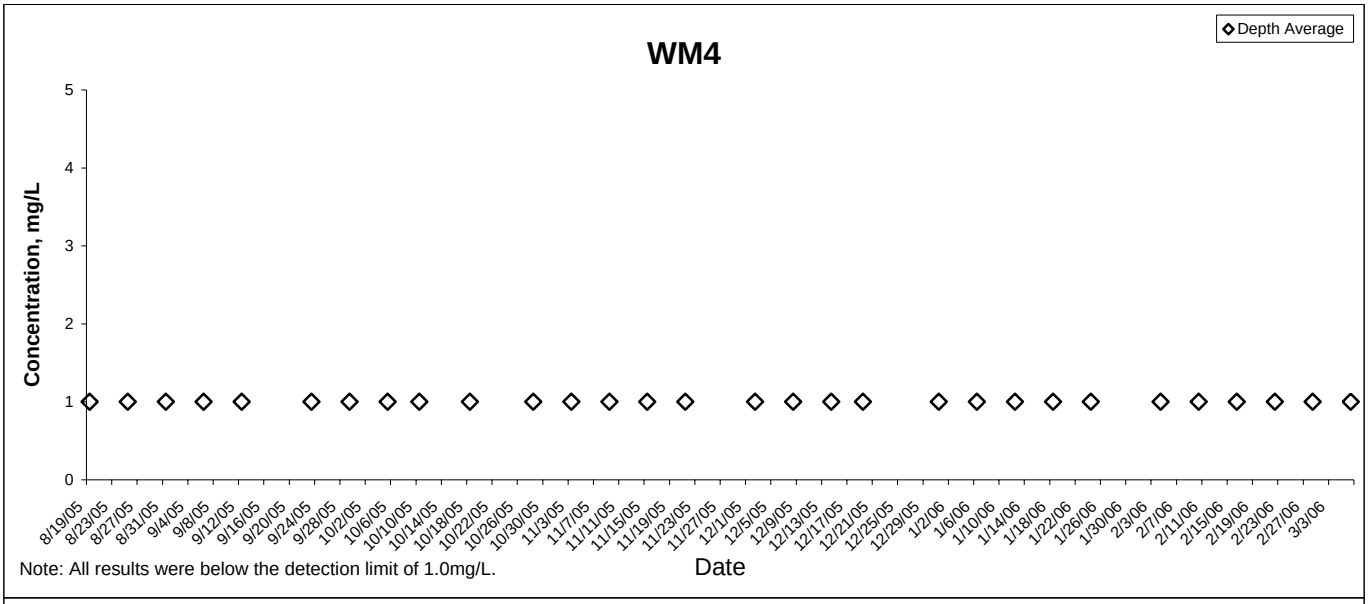
Lead



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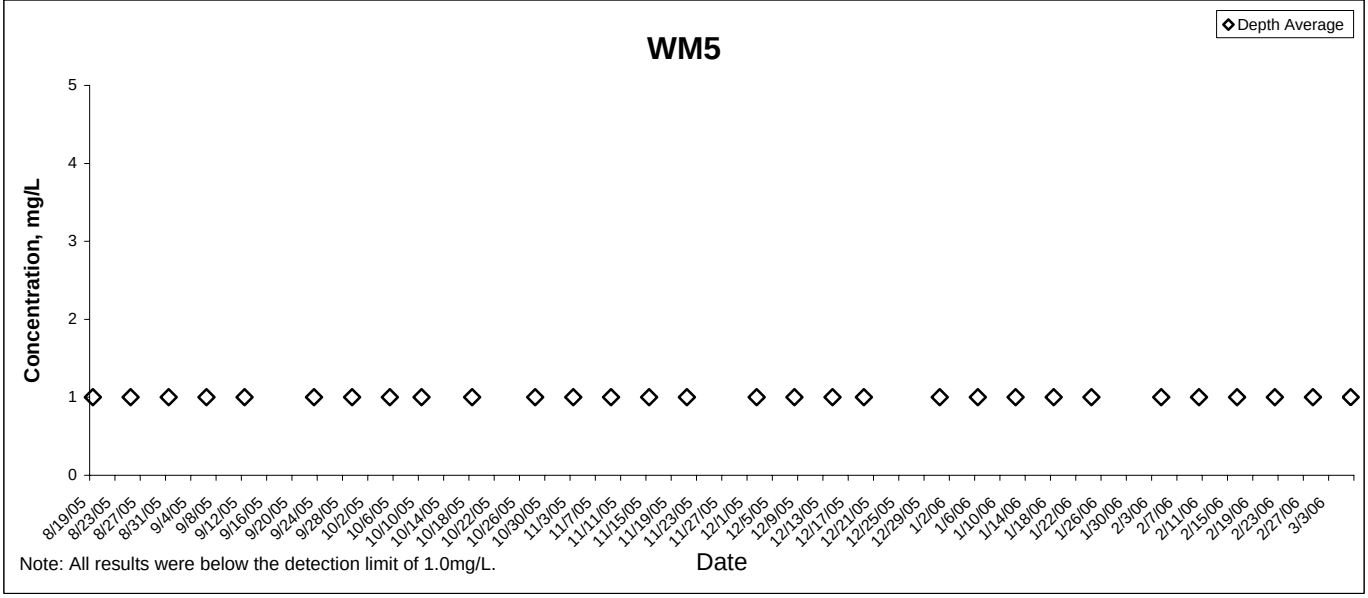

Note: All results were below the detection limit of 1.0mg/L.

MAUNSELL AECOM Maunsell Environmental Management Consultants Ltd	FEP-01/097/2001/B Provision of EM&A Services at Water Recreation Centre **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	Mar 06
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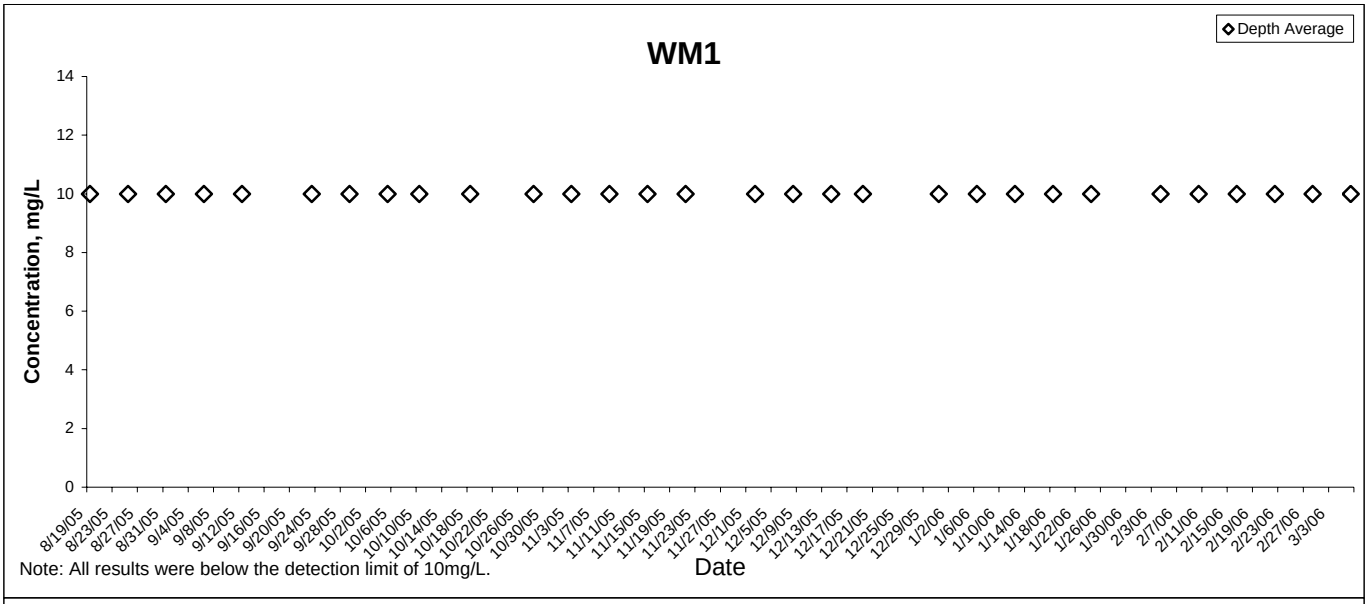
Zinc



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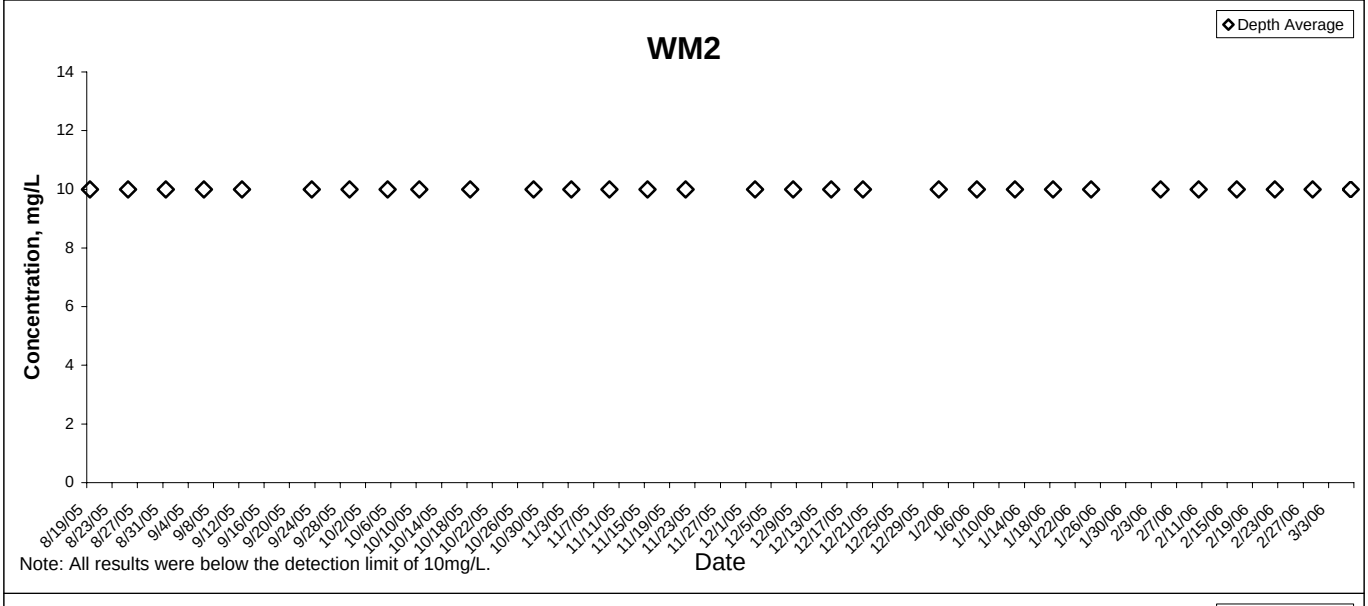

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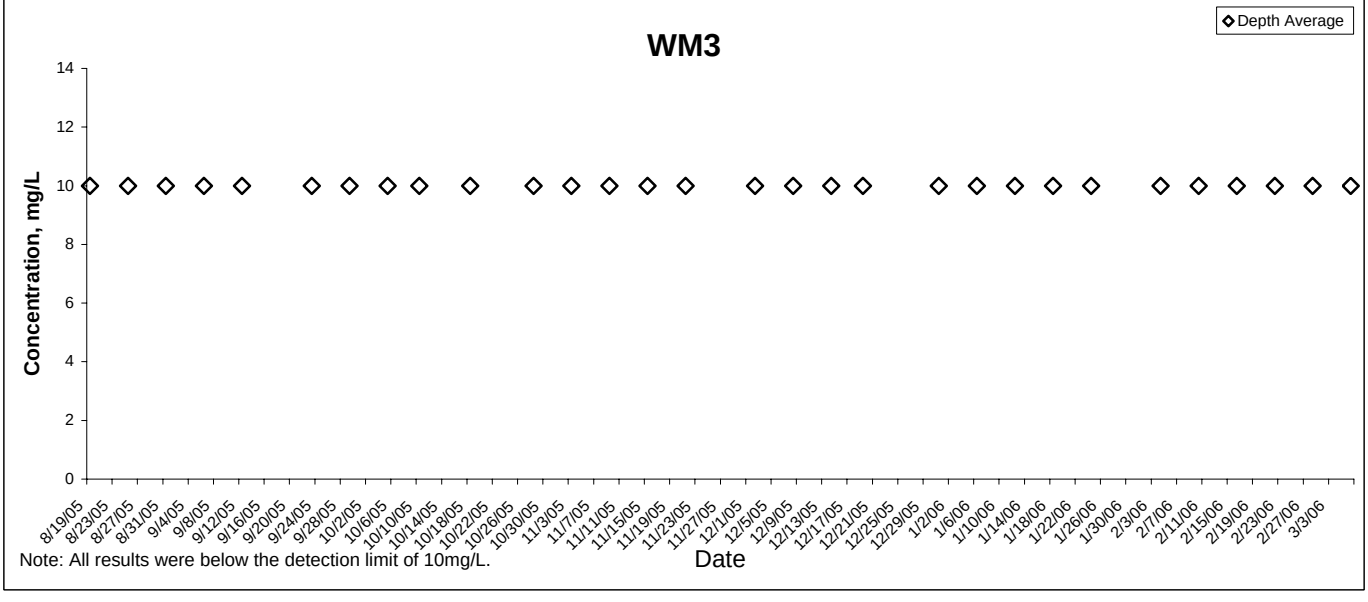

Note: All results were below the detection limit of 10mg/L.

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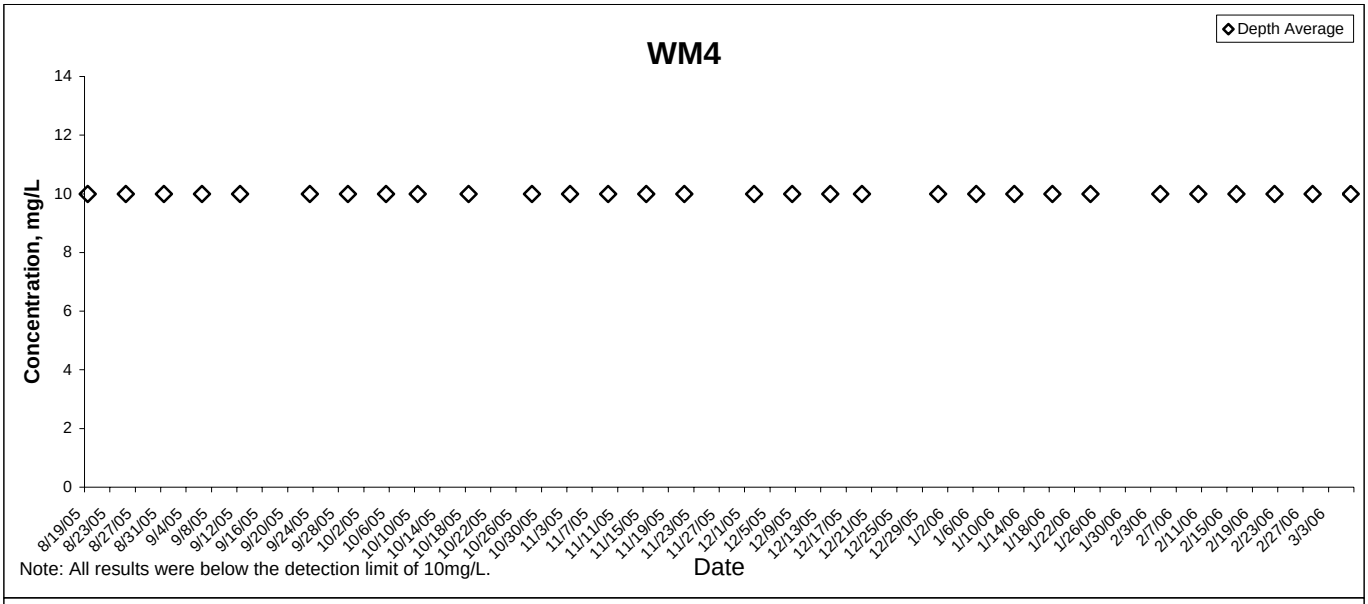
Zinc



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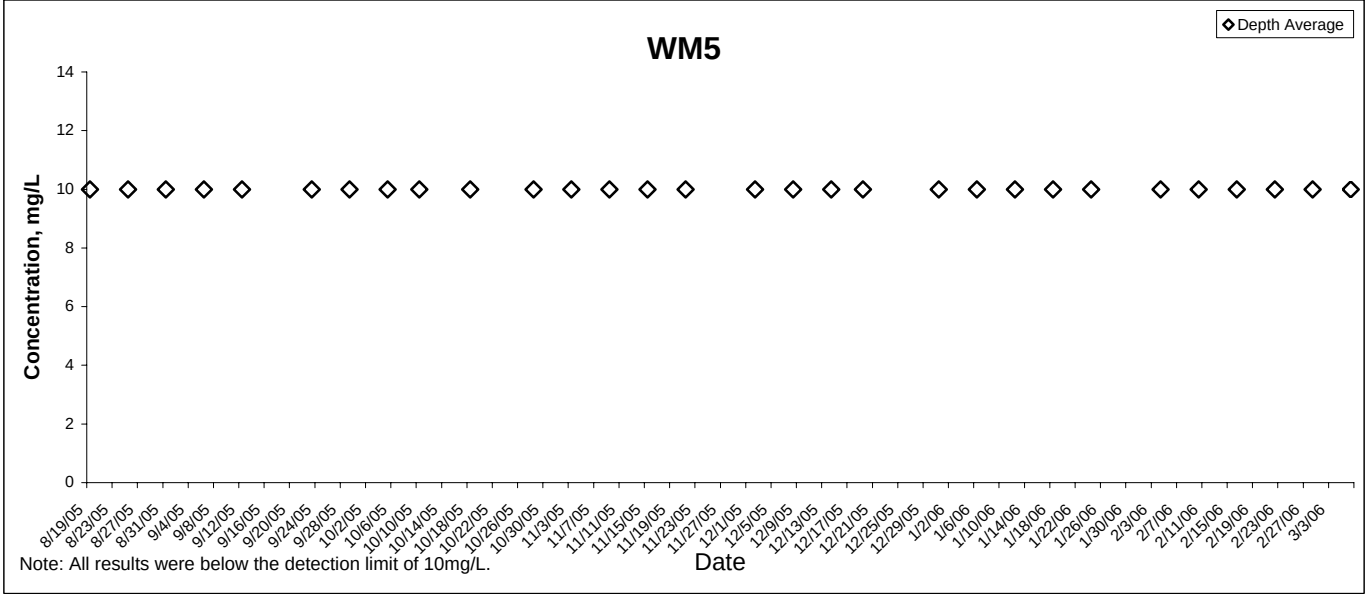

Note: All results were below the detection limit of 10mg/L.

MAUNSELL AECOM Maunsell Environmental Management Consultants Ltd	FEP-01/097/2001/B Provision of EM&A Services at Water Recreation Centre **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	Mar 06
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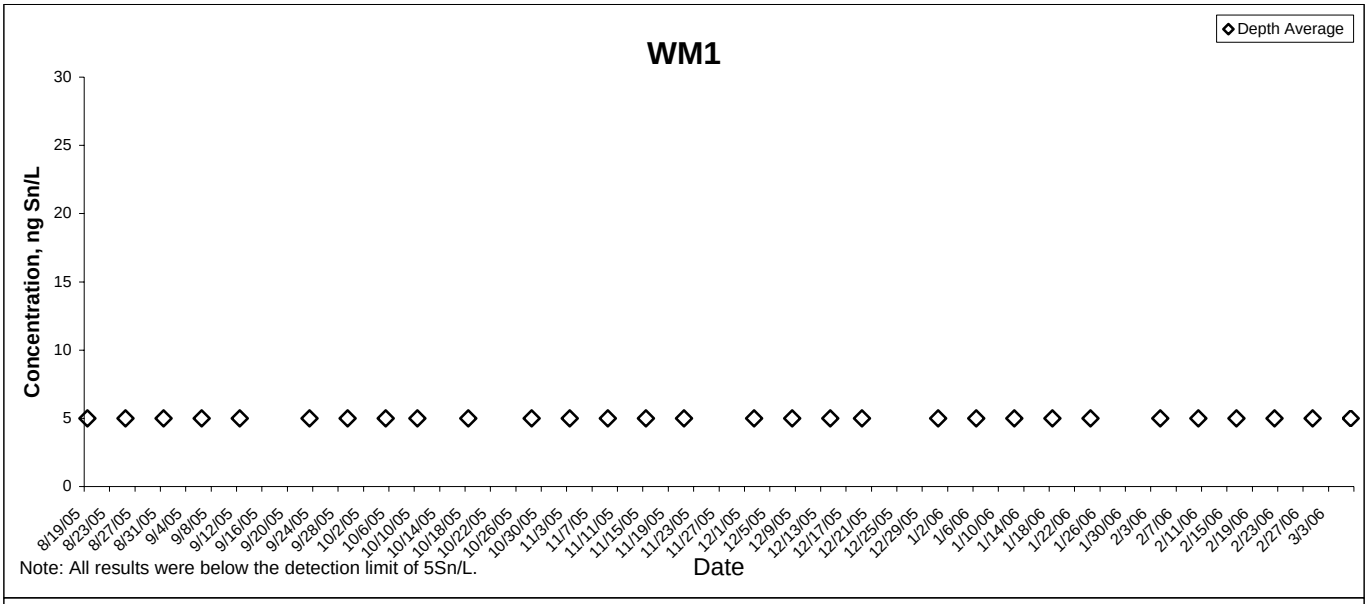
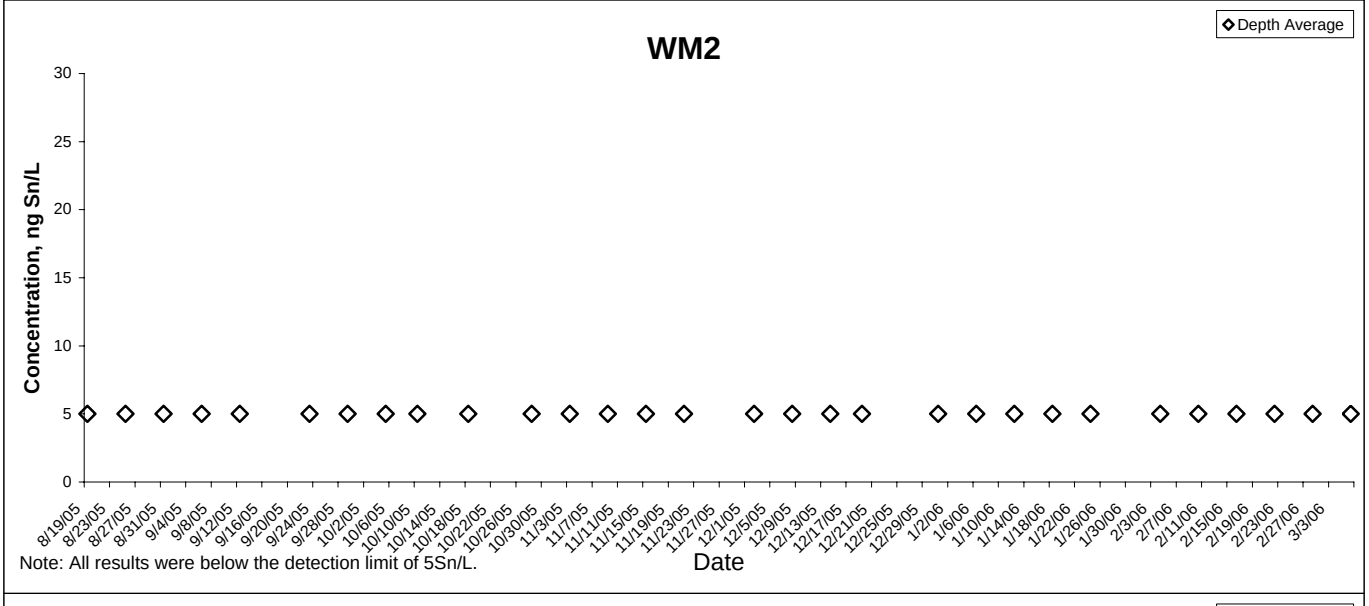
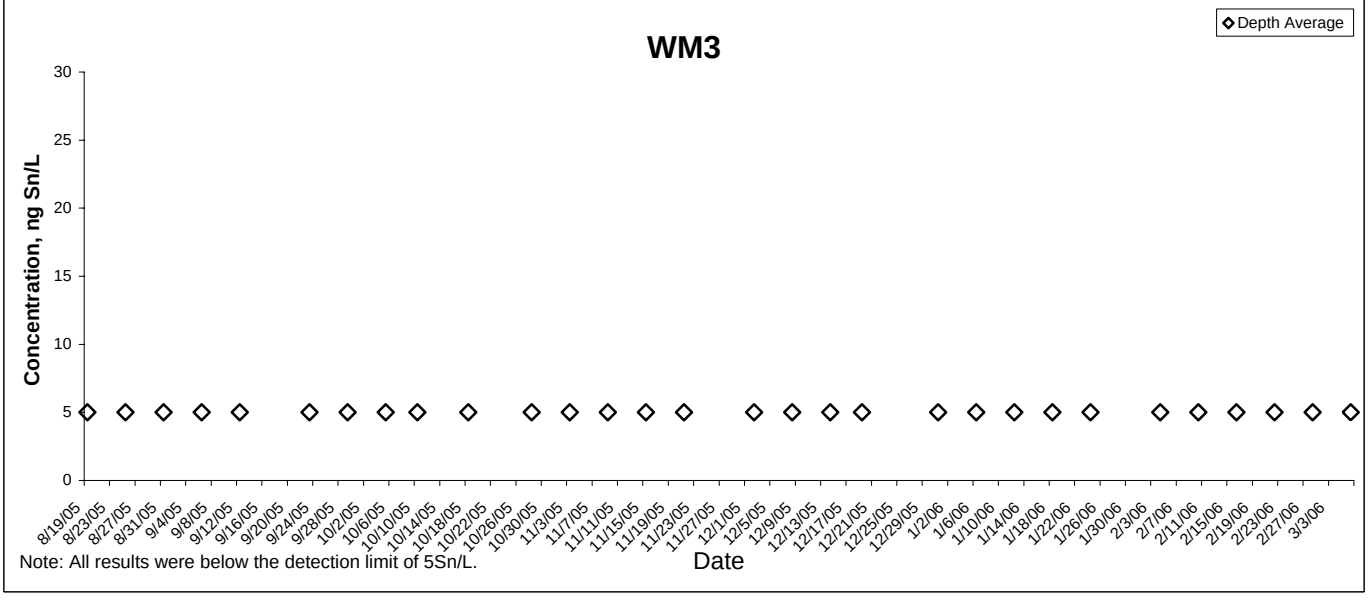
TBT



Note: All results were below the detection limit of 5Sn/L.



Note: All results were below the detection limit of 5Sn/L.



Note: All results were below the detection limit of 5Sn/L.

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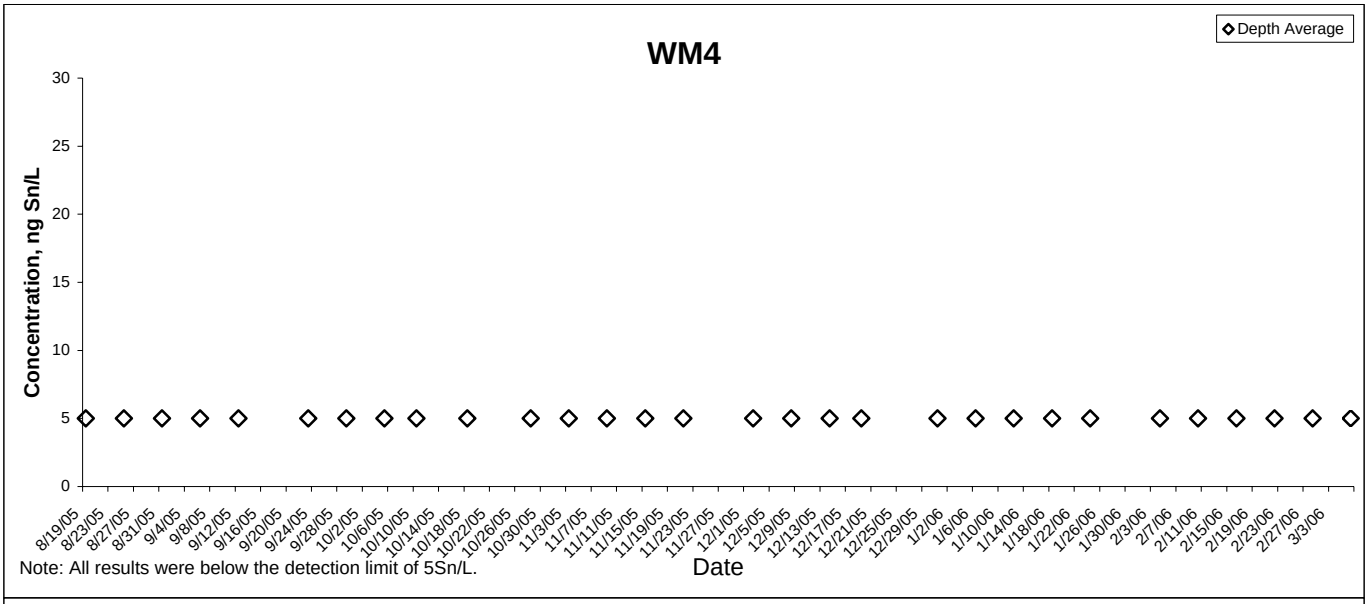

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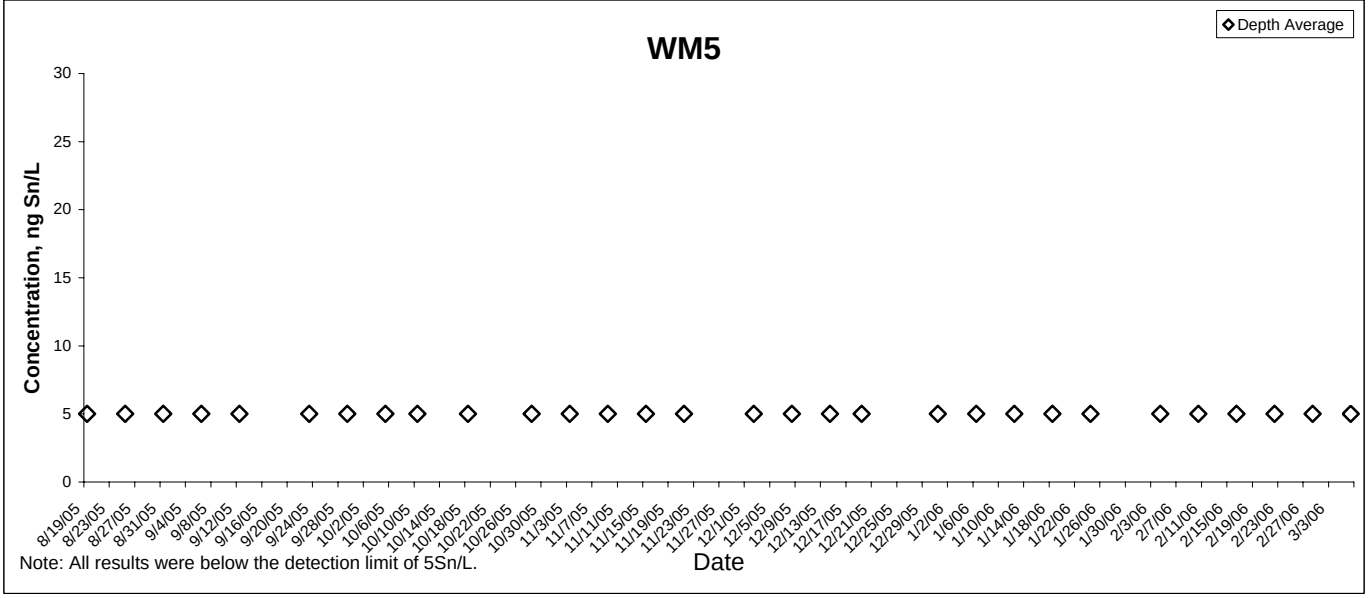

Note: All results were below the detection limit of 5Sn/L.

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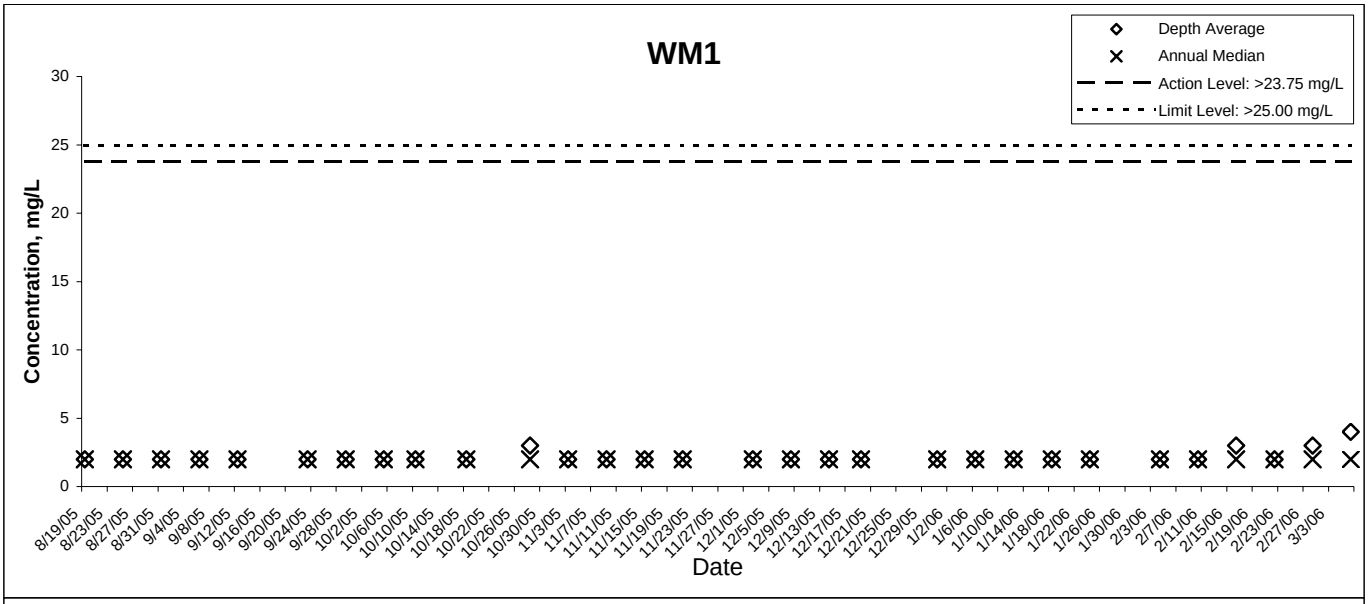
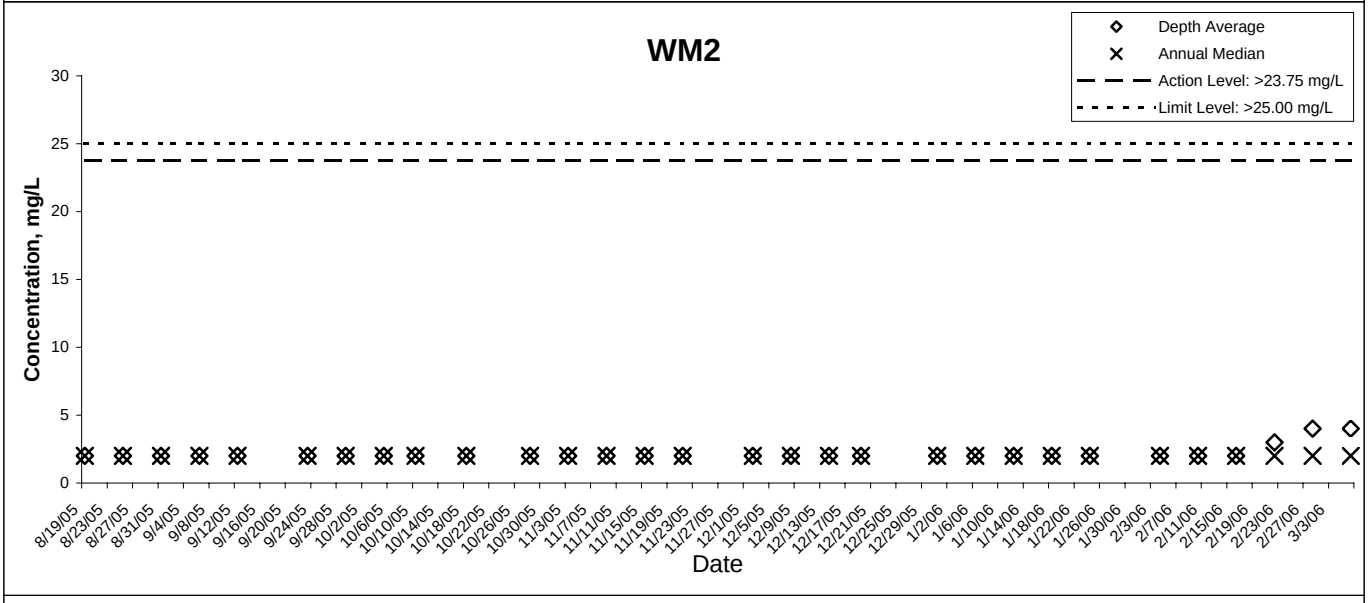
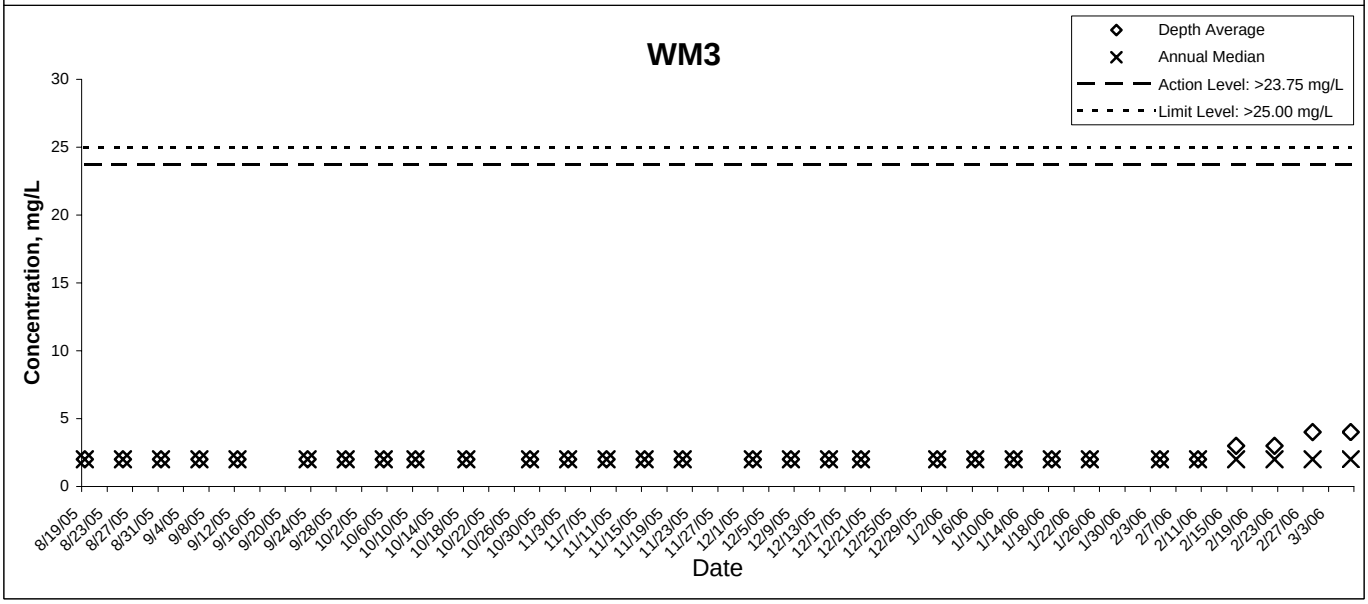
Suspended Solids







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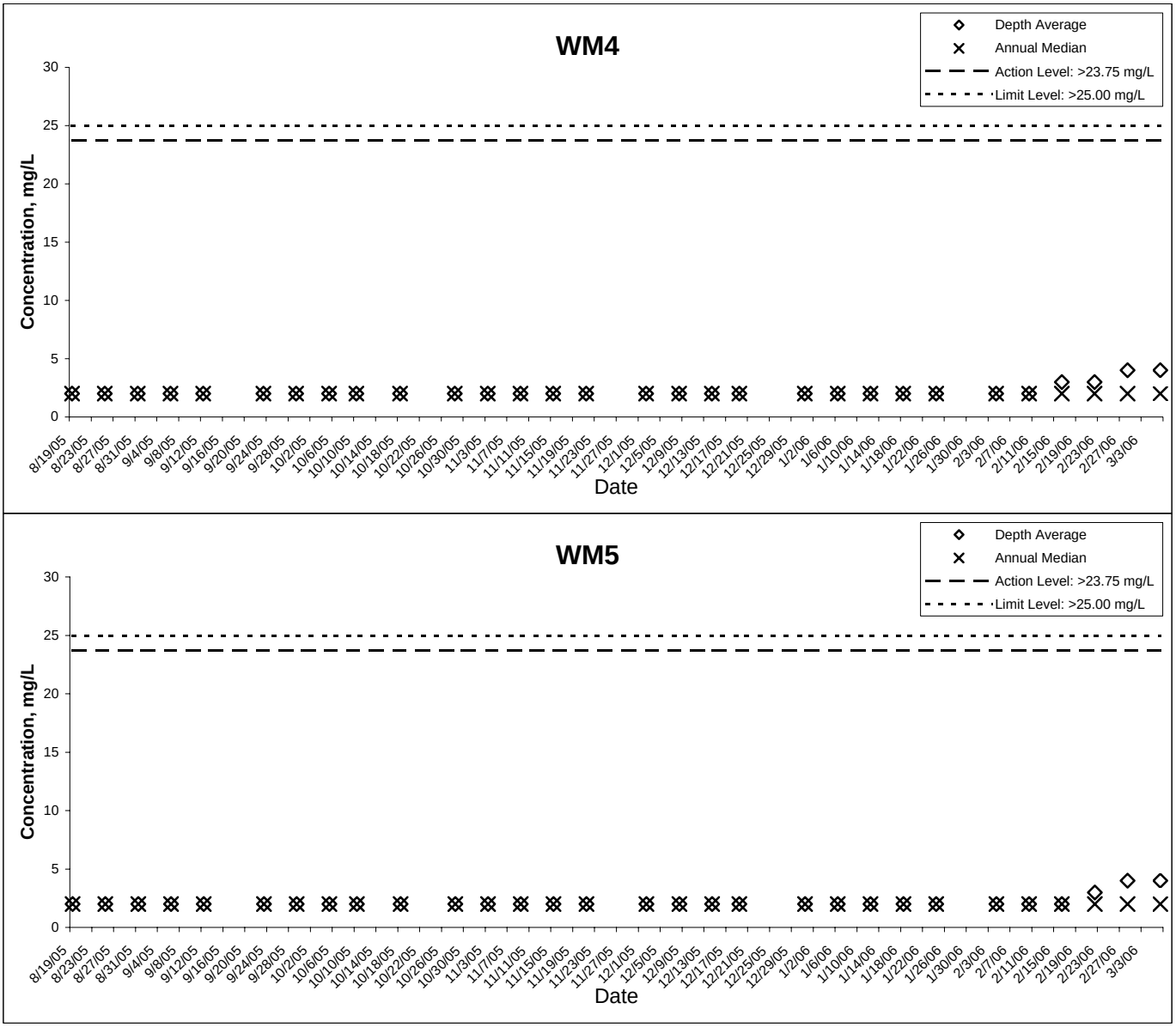
Suspended Solids



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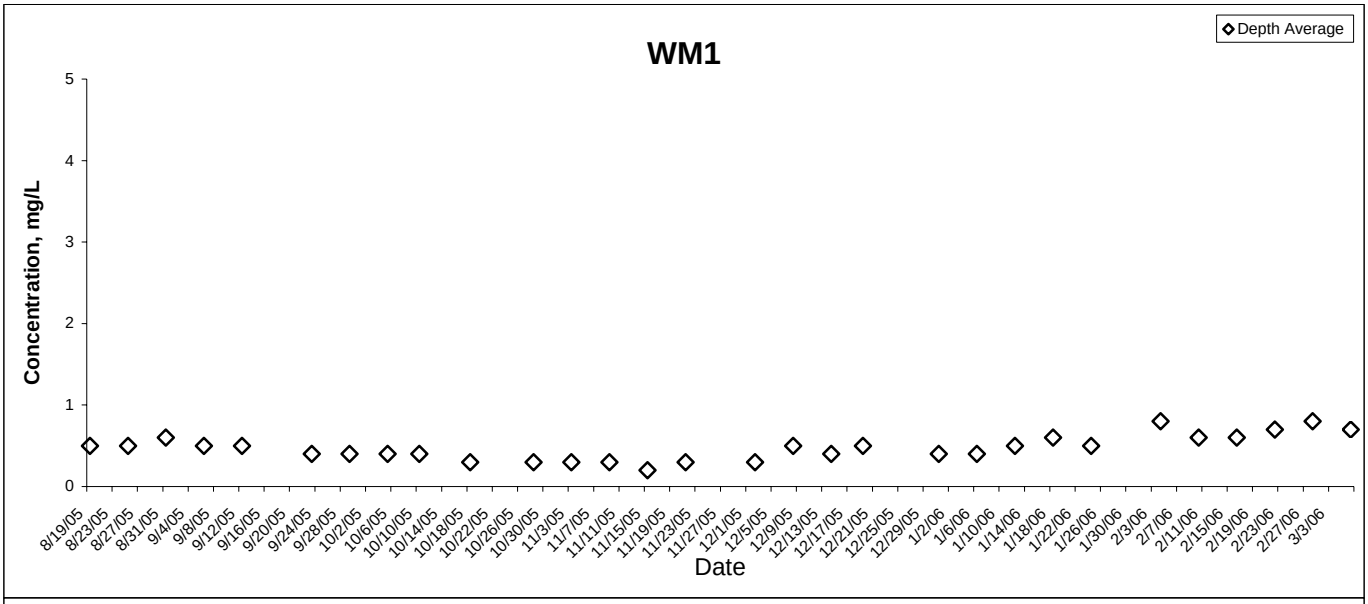
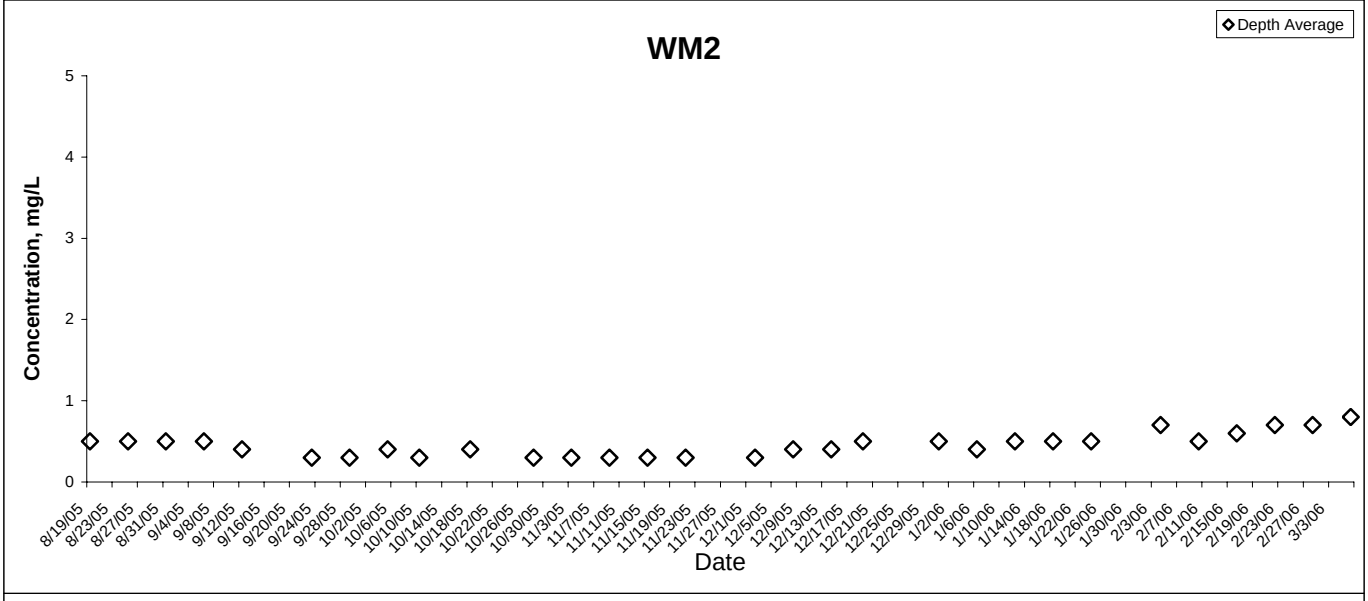
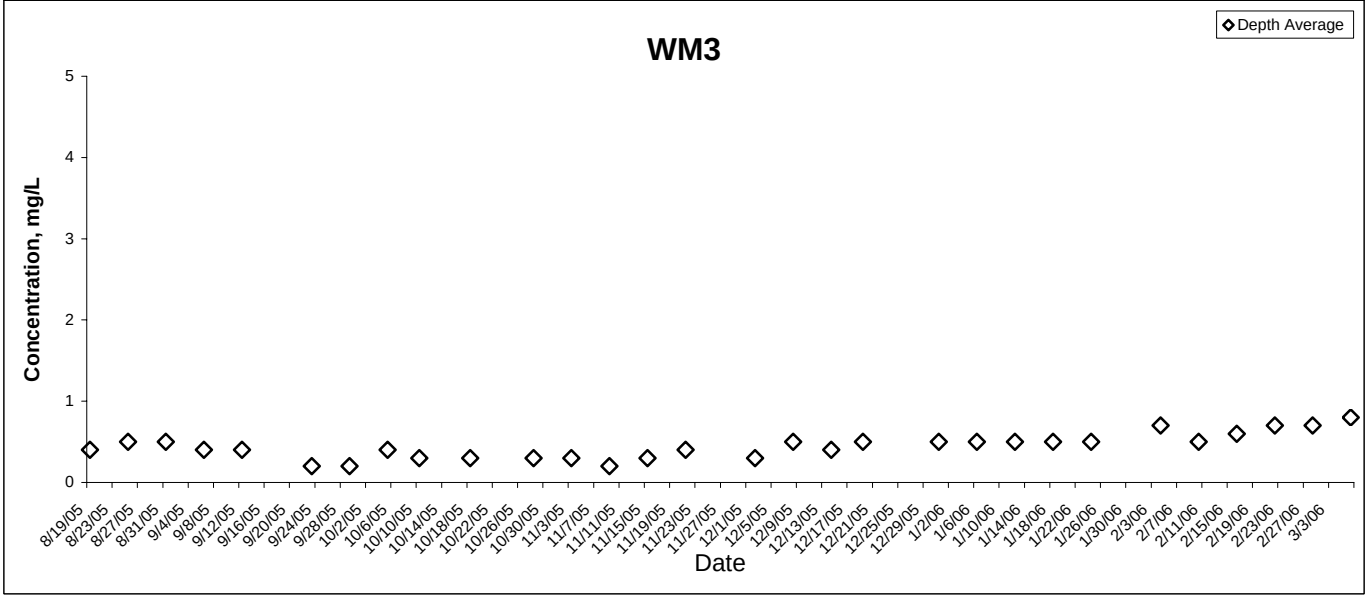
Total Nitrogen







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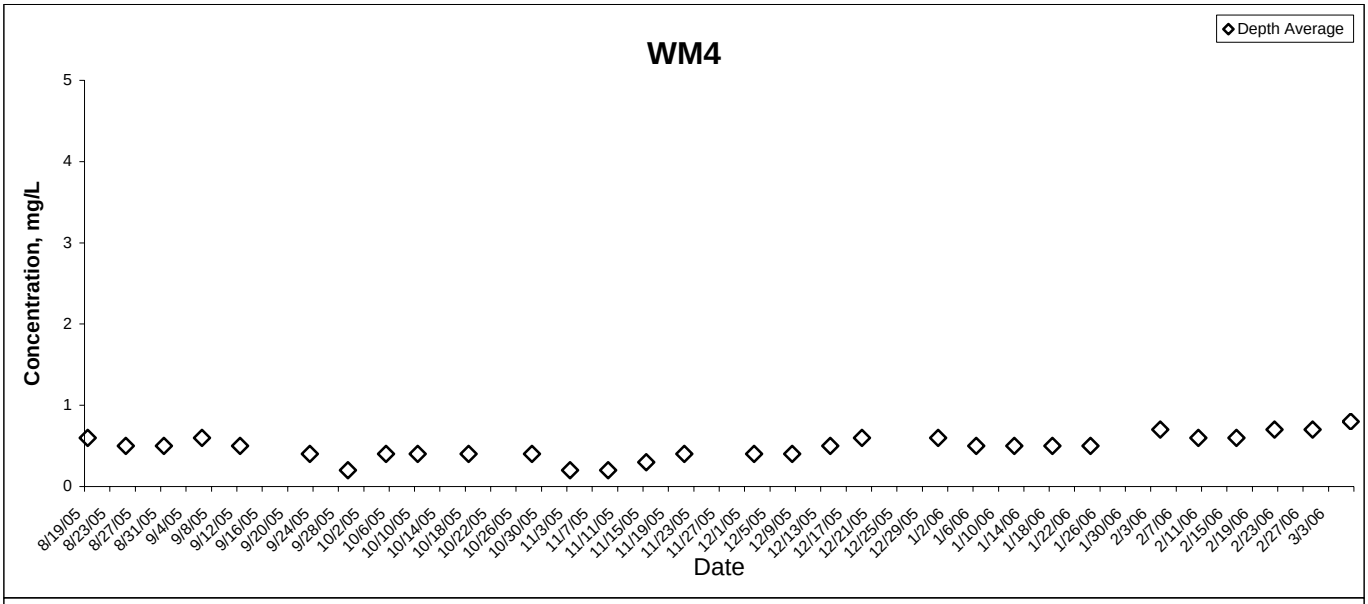
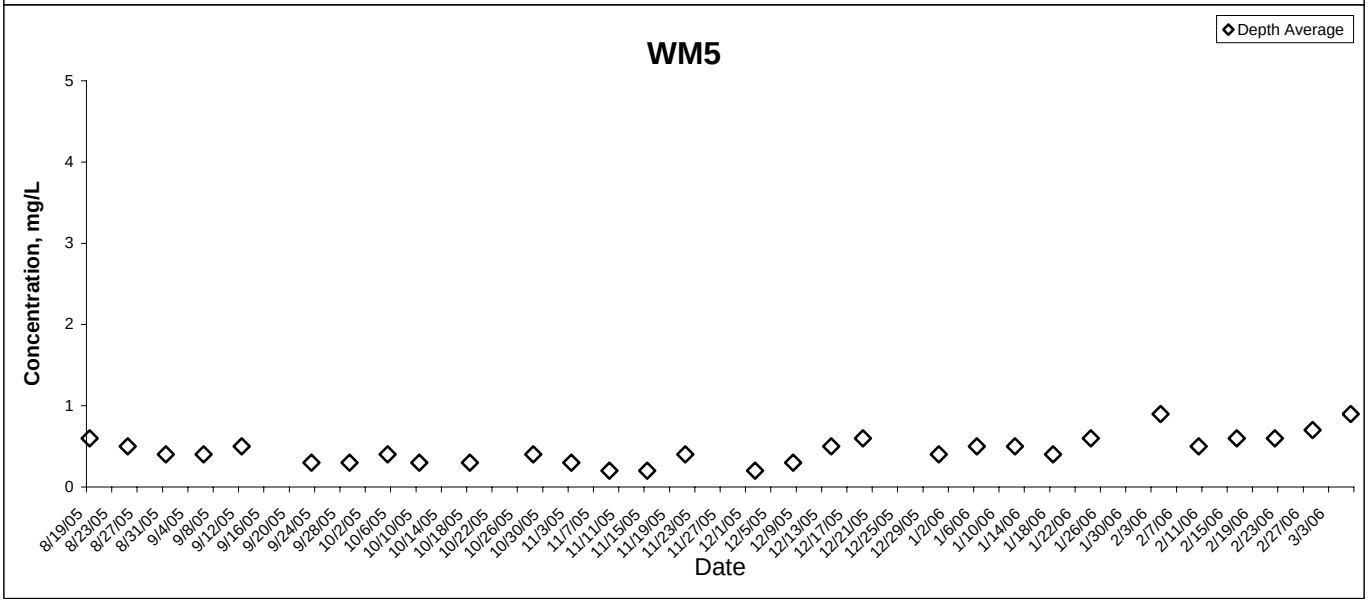
Total Nitrogen





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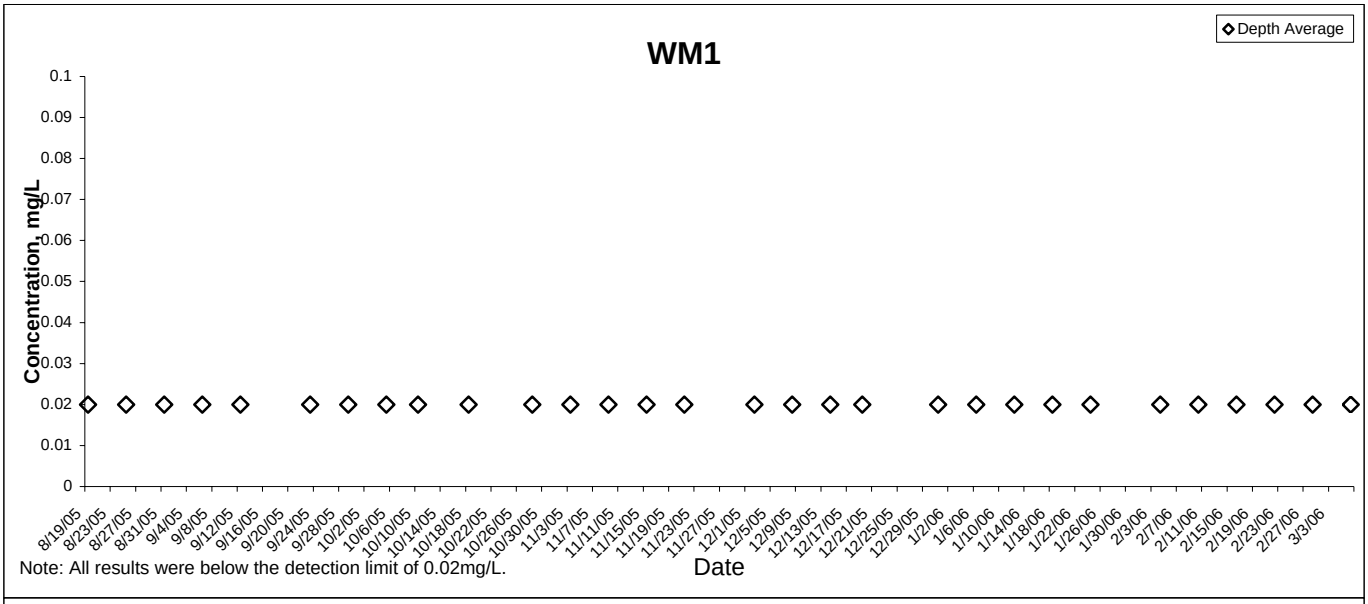
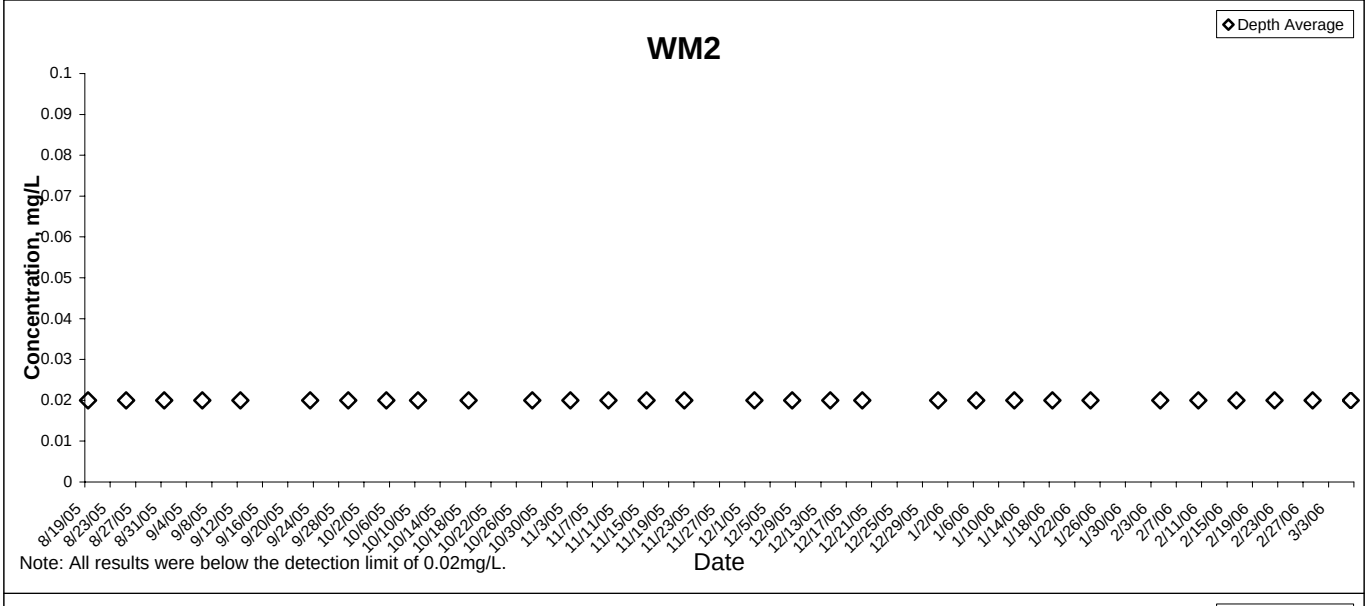
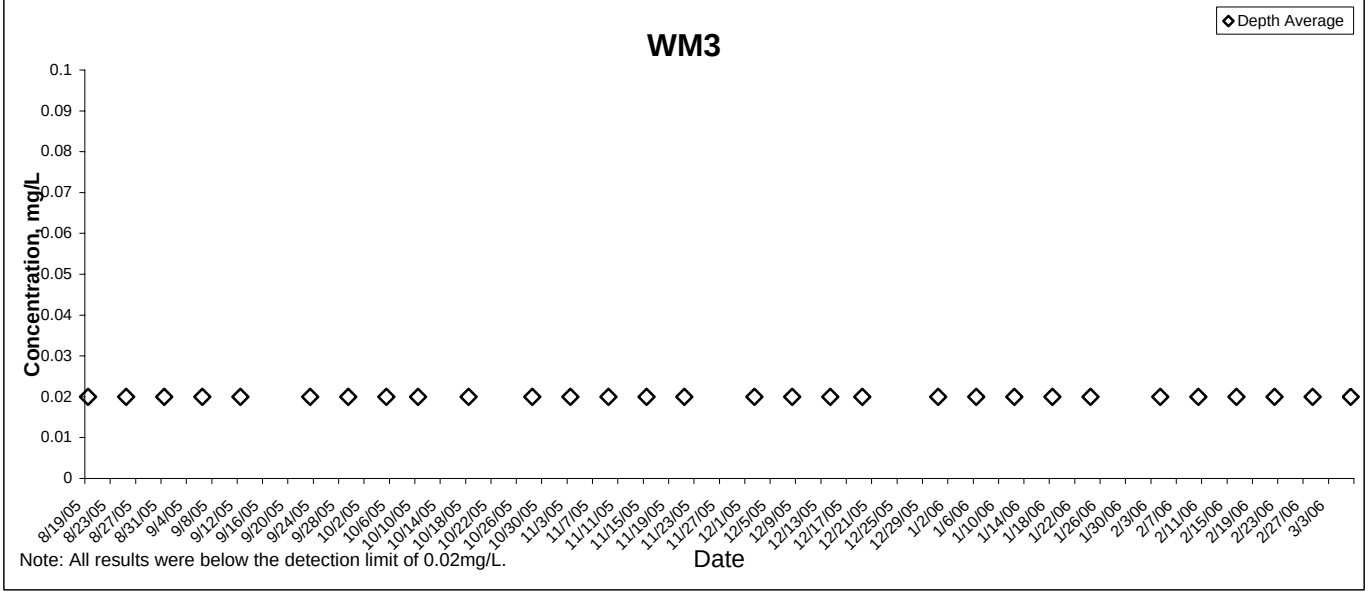
Total Phosphorous



Note: All results were below the detection limit of 0.02mg/L.



Note: All results were below the detection limit of 0.02mg/L.



Note: All results were below the detection limit of 0.02mg/L.

MAUNSELL AECOM Maunsell Environmental Management Consultants Ltd	FEP-01/097/2001/B Provision of EM&A Services at Water Recreation Centre **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	Mar 06
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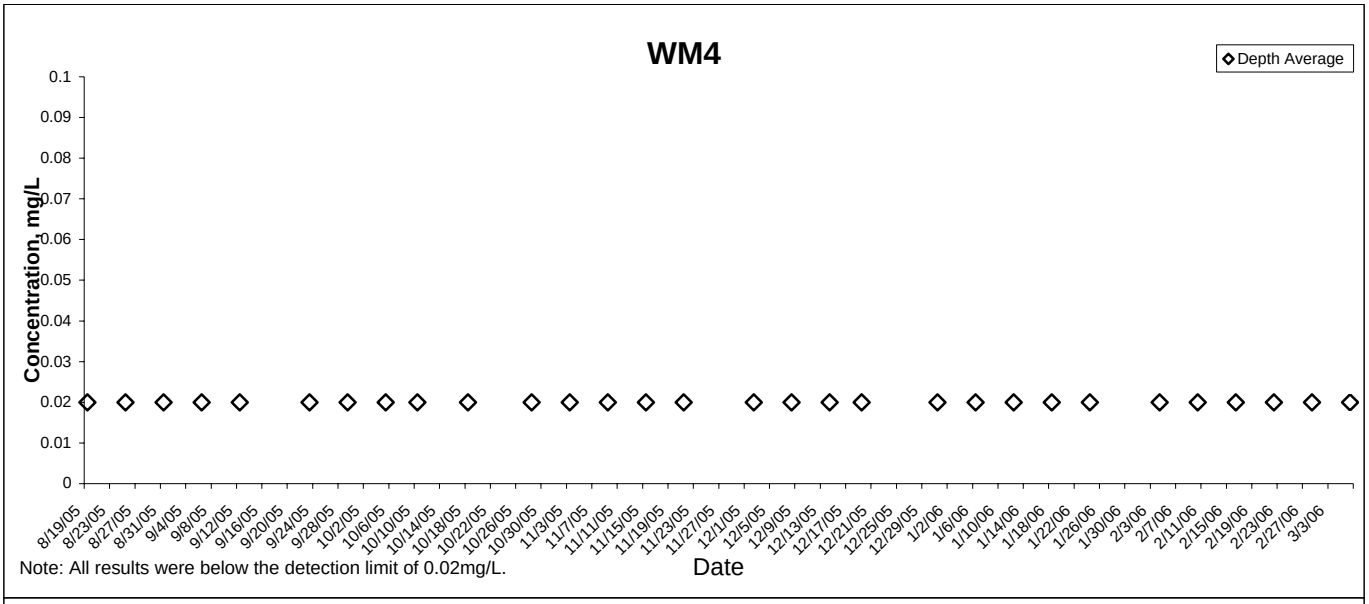
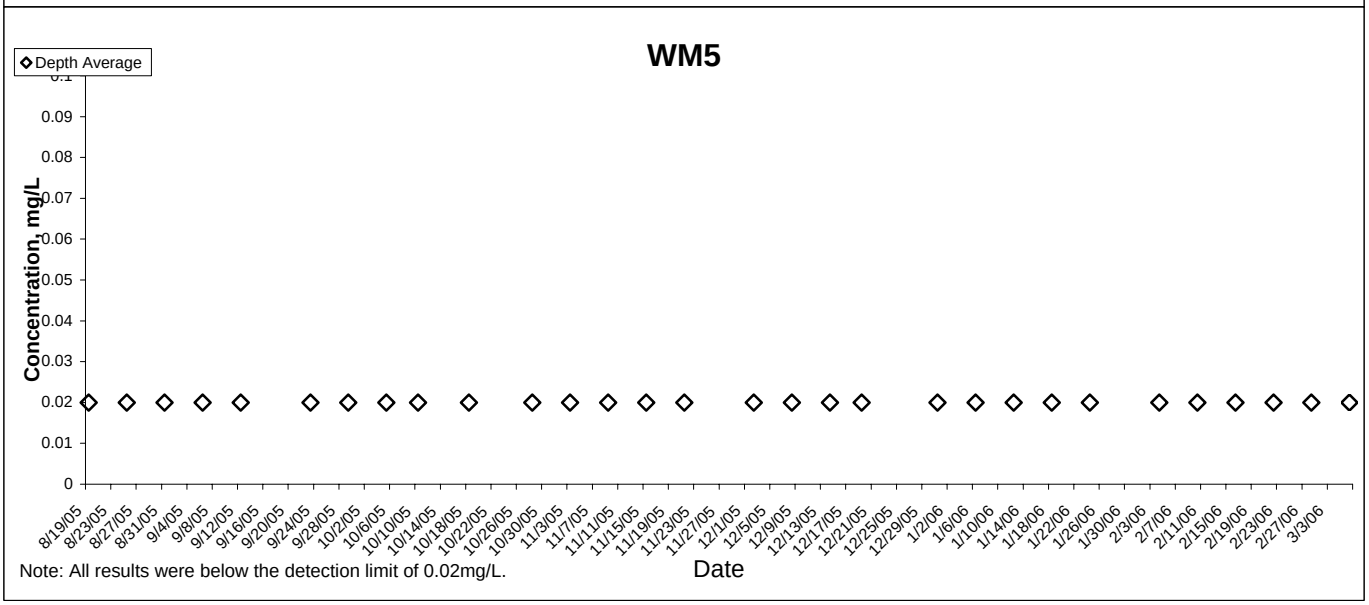
Total Phosphorous



Note: All results were below the detection limit of 0.02mg/L.



Note: All results were below the detection limit of 0.02mg/L.

MAUNSELL AECOM Maunsell Environmental Management Consultants Ltd	FEP-01/097/2001/B Provision of EM&A Services at Water Recreation Centre **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	Mar 06
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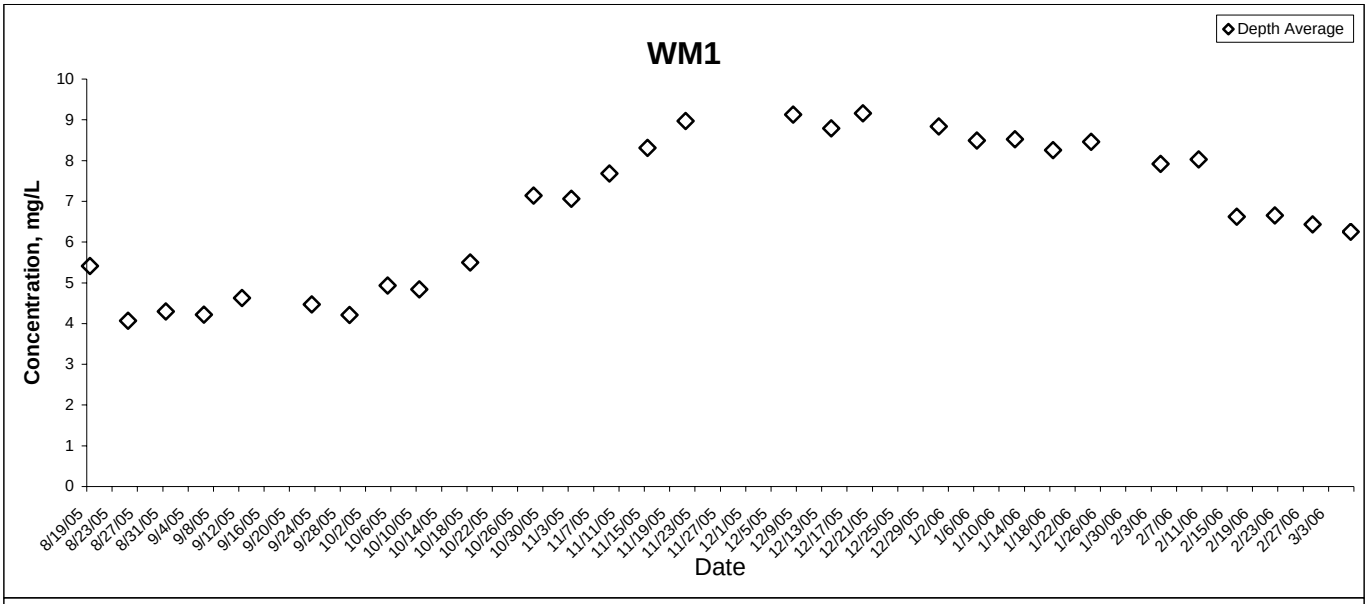
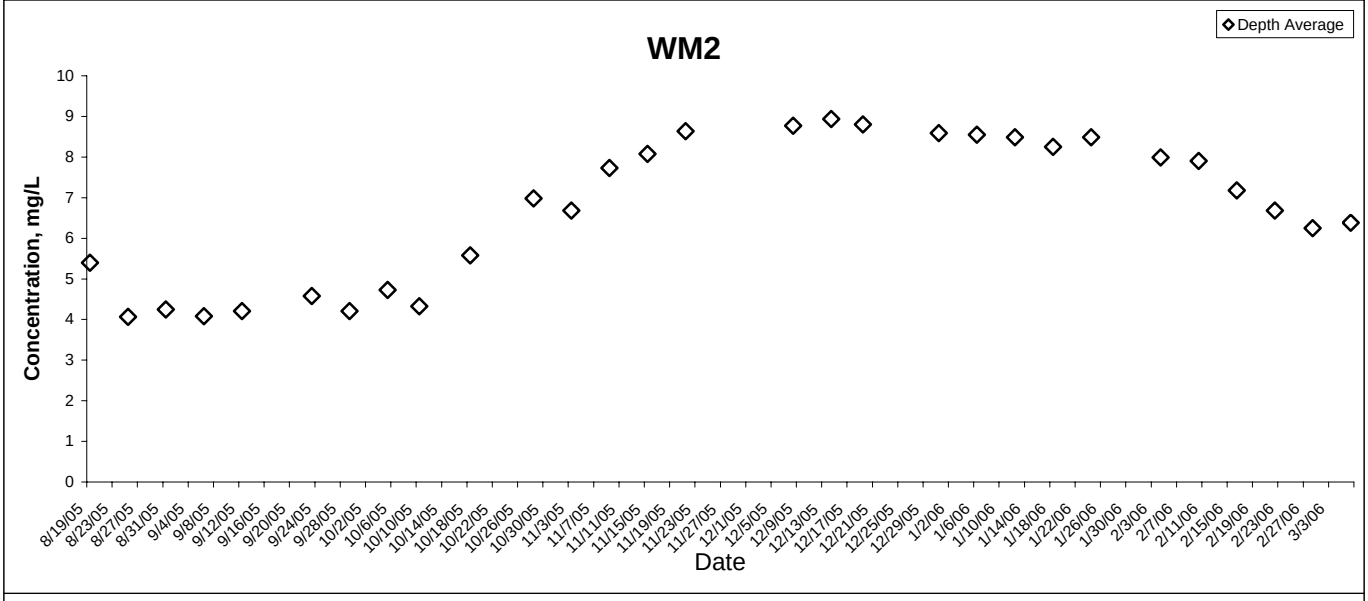
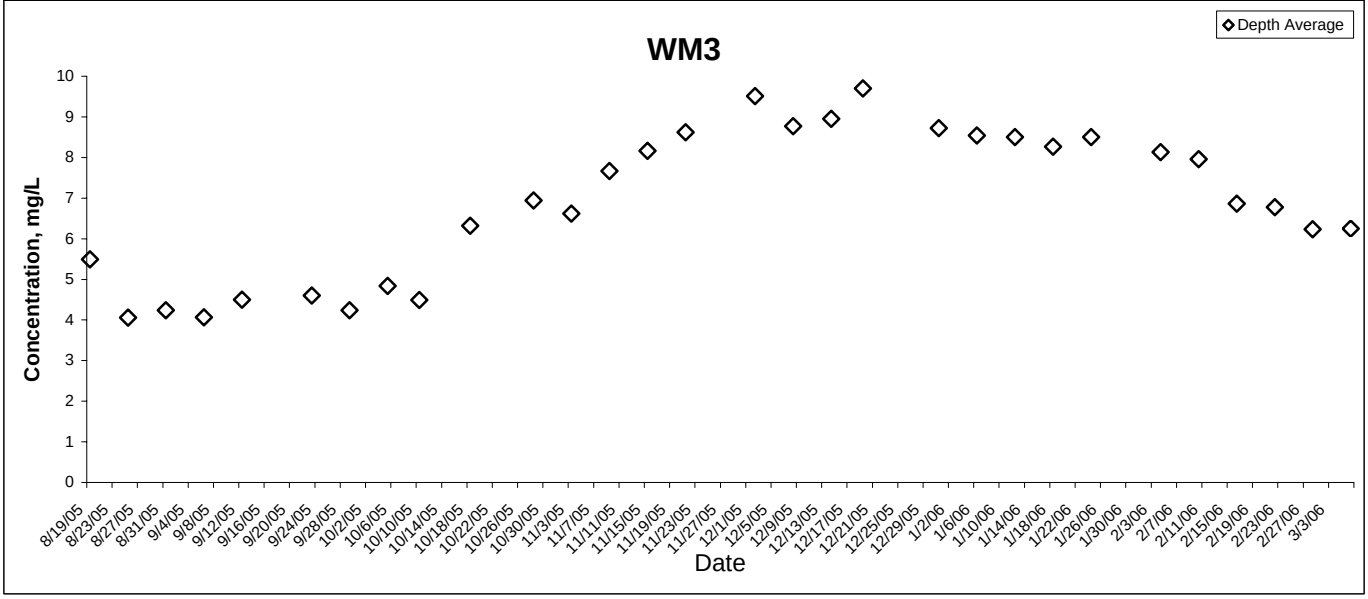
Silica







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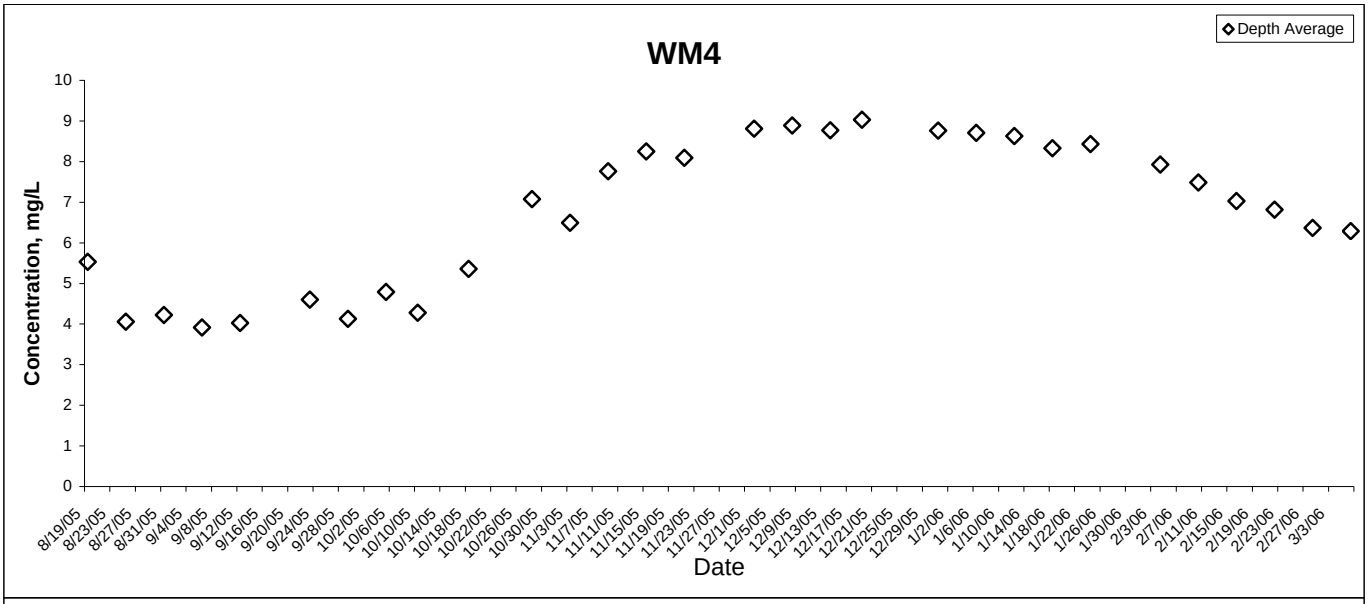
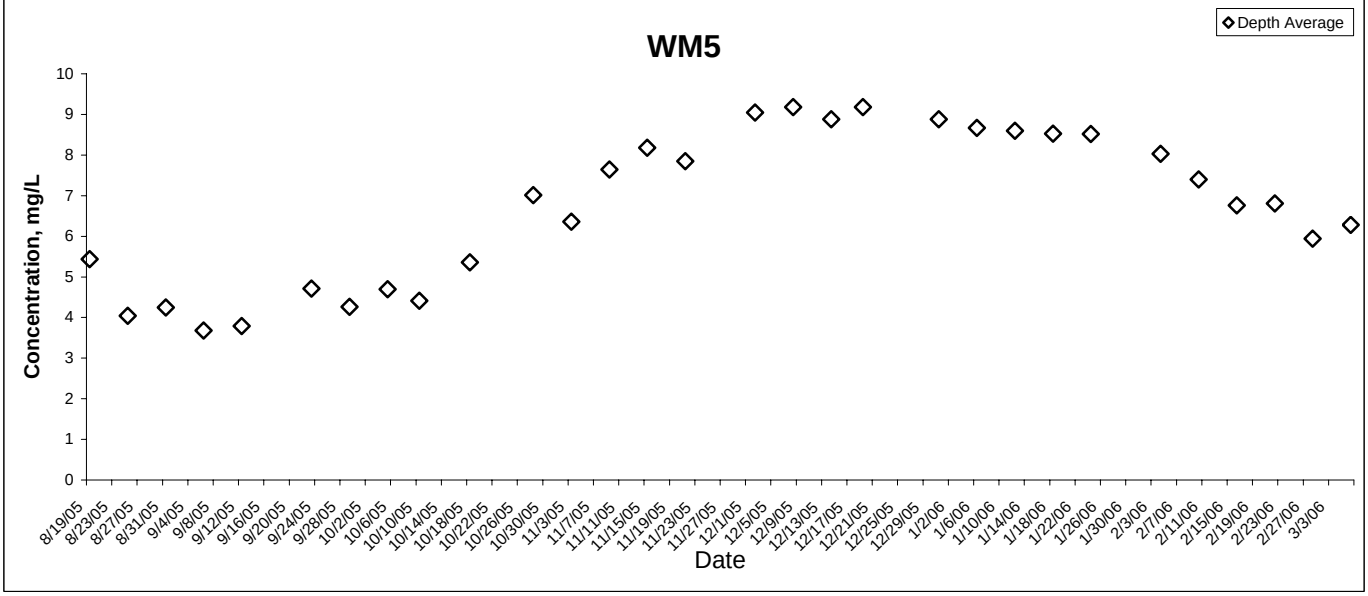
Silica





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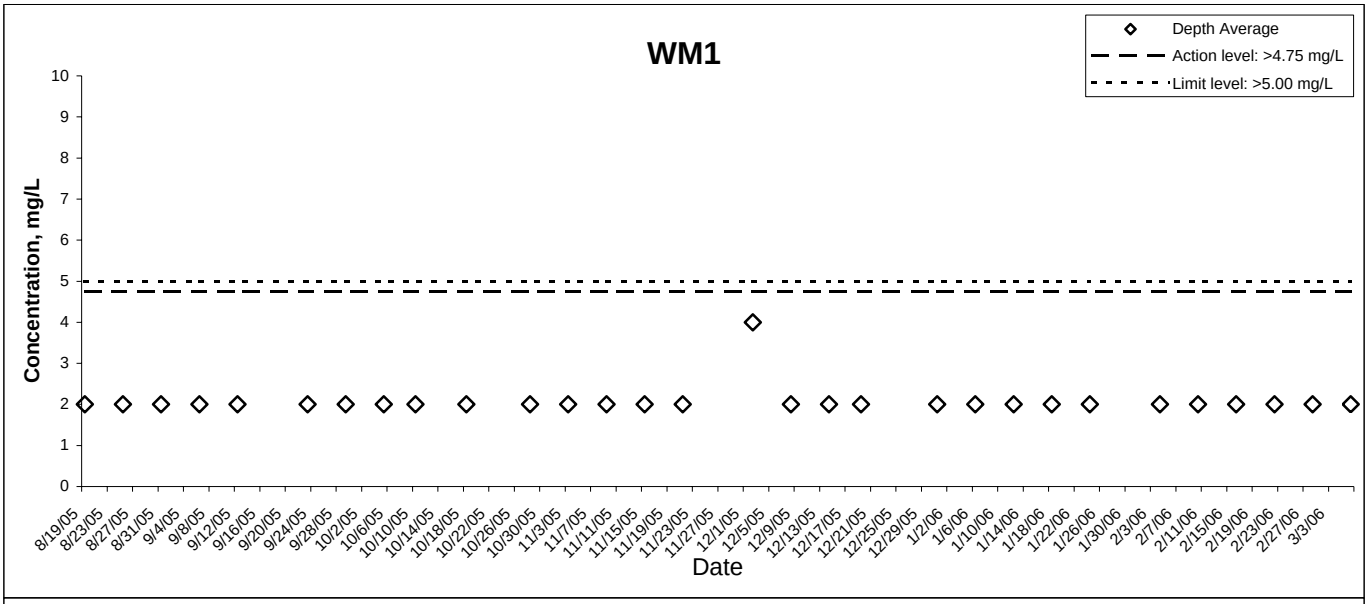
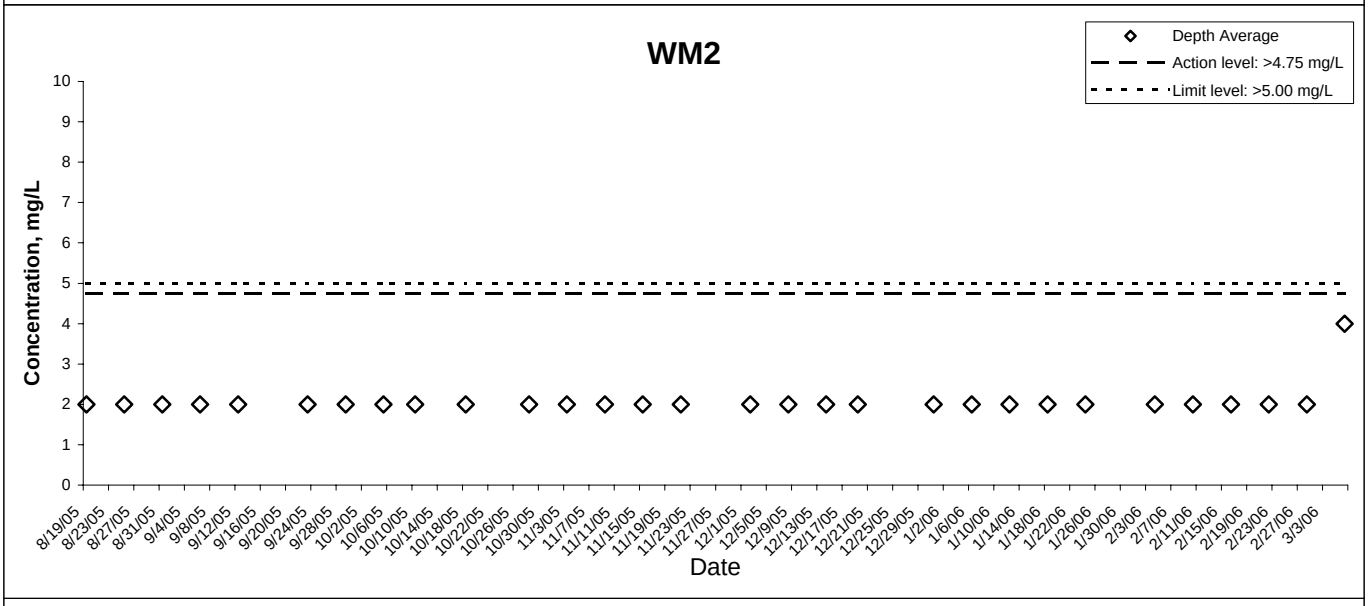
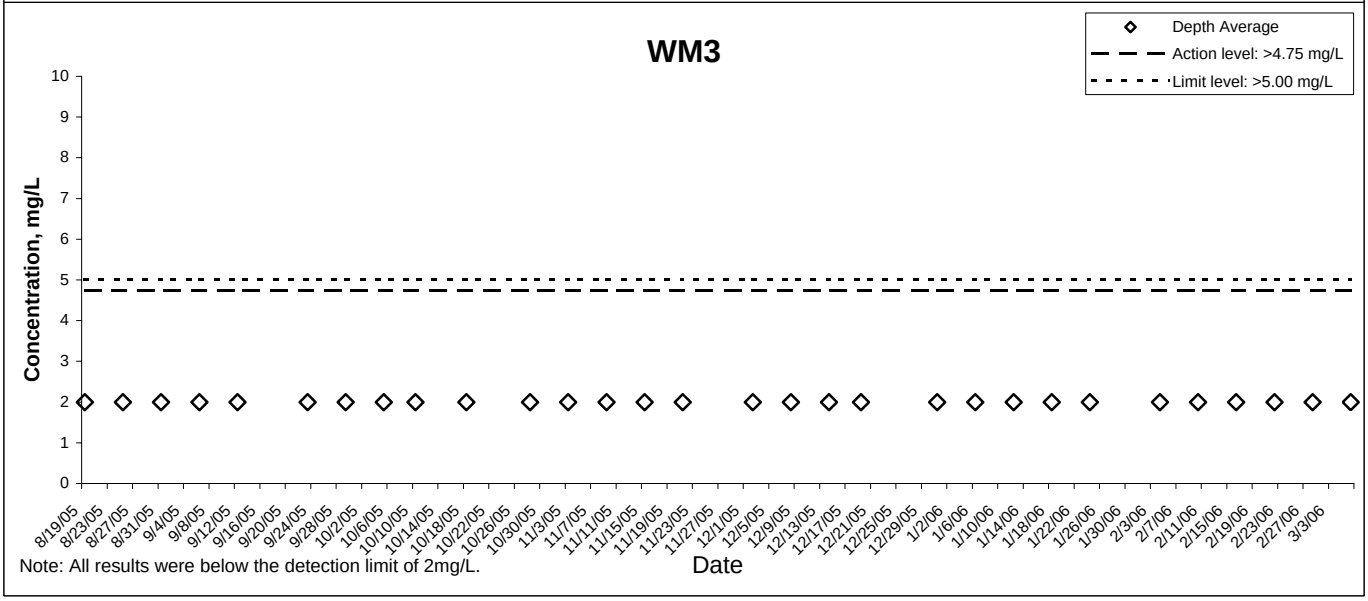
5-day BOD







Note: All results were below the detection limit of 2mg/L.

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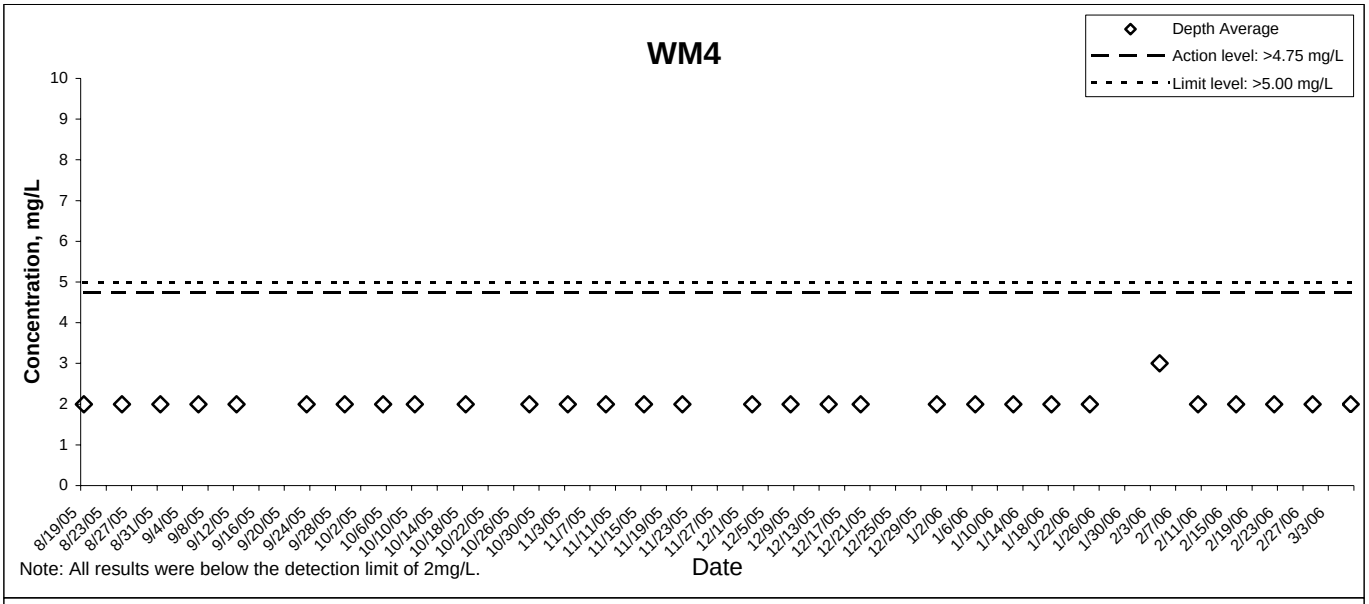
5-day BOD



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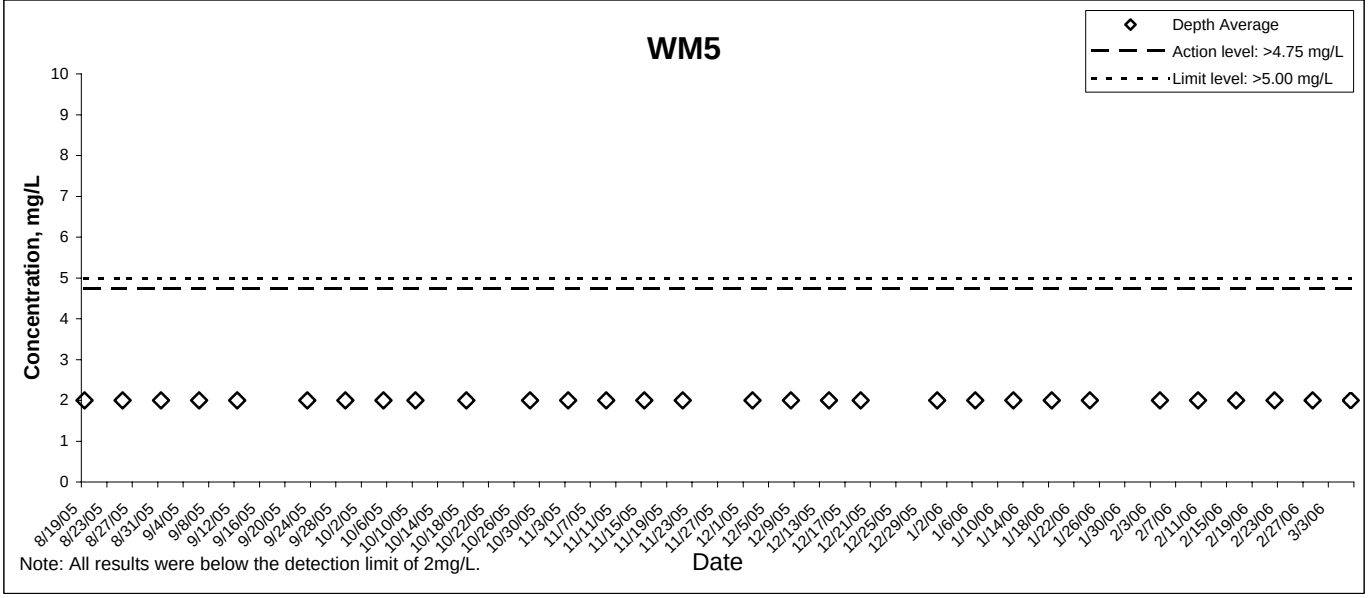

Note: All results were below the detection limit of 2mg/L.

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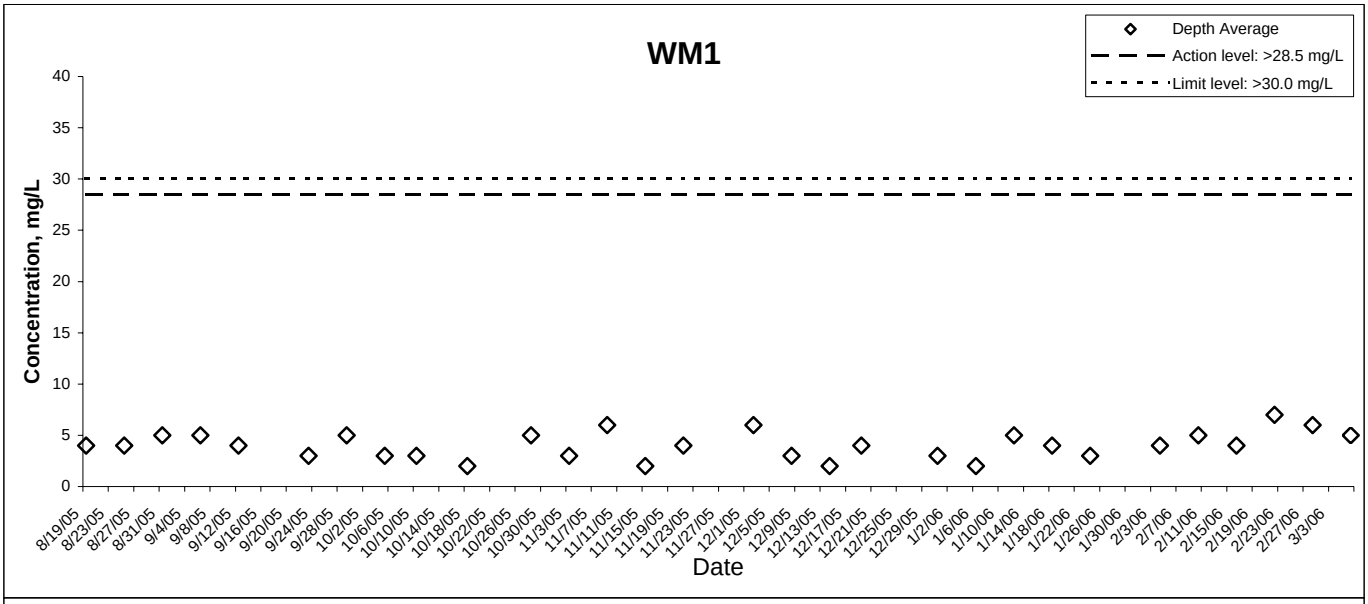
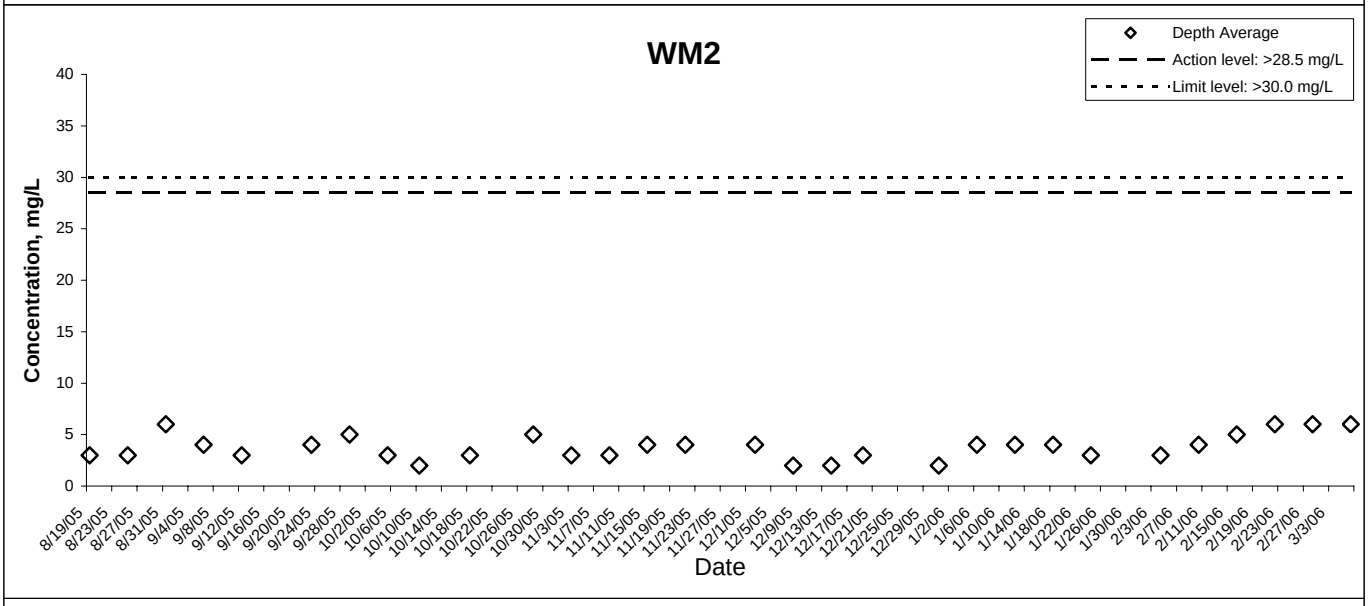
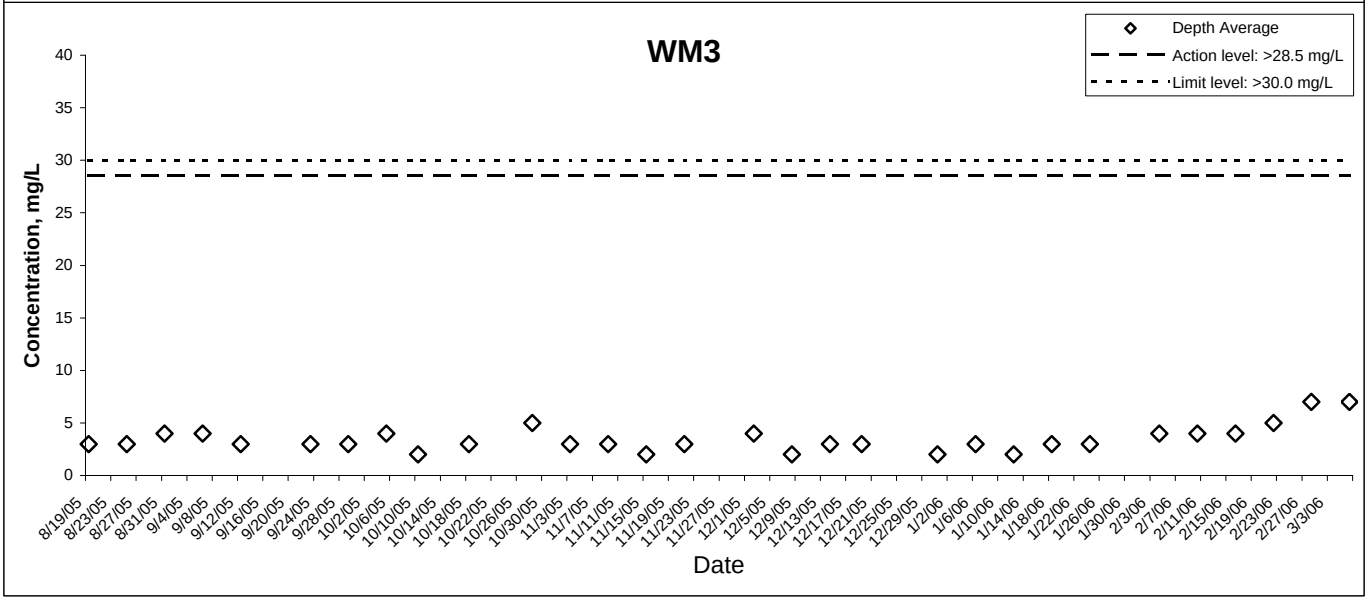
Chemical Oxygen Demand







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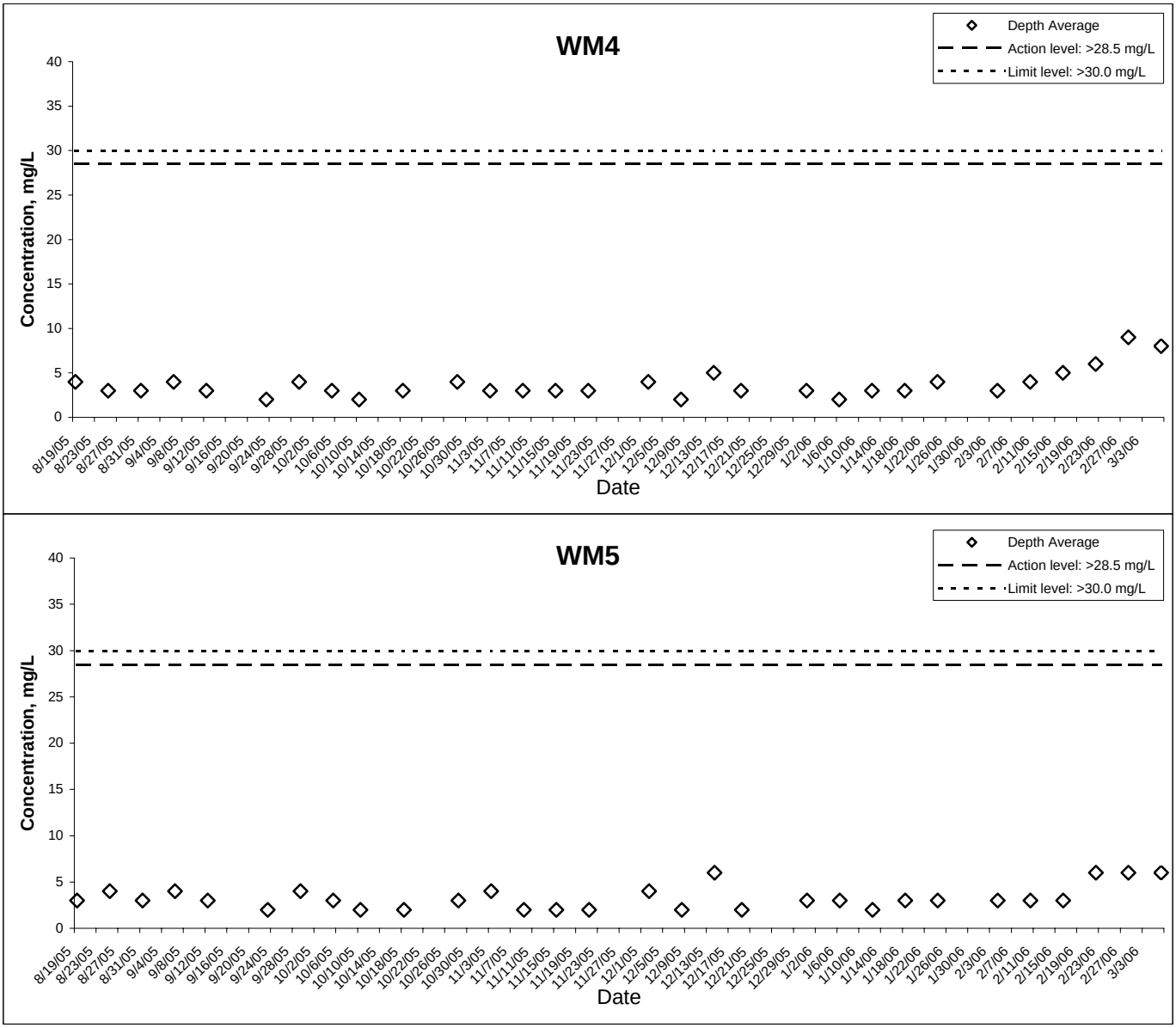
Chemical Oxygen Demand



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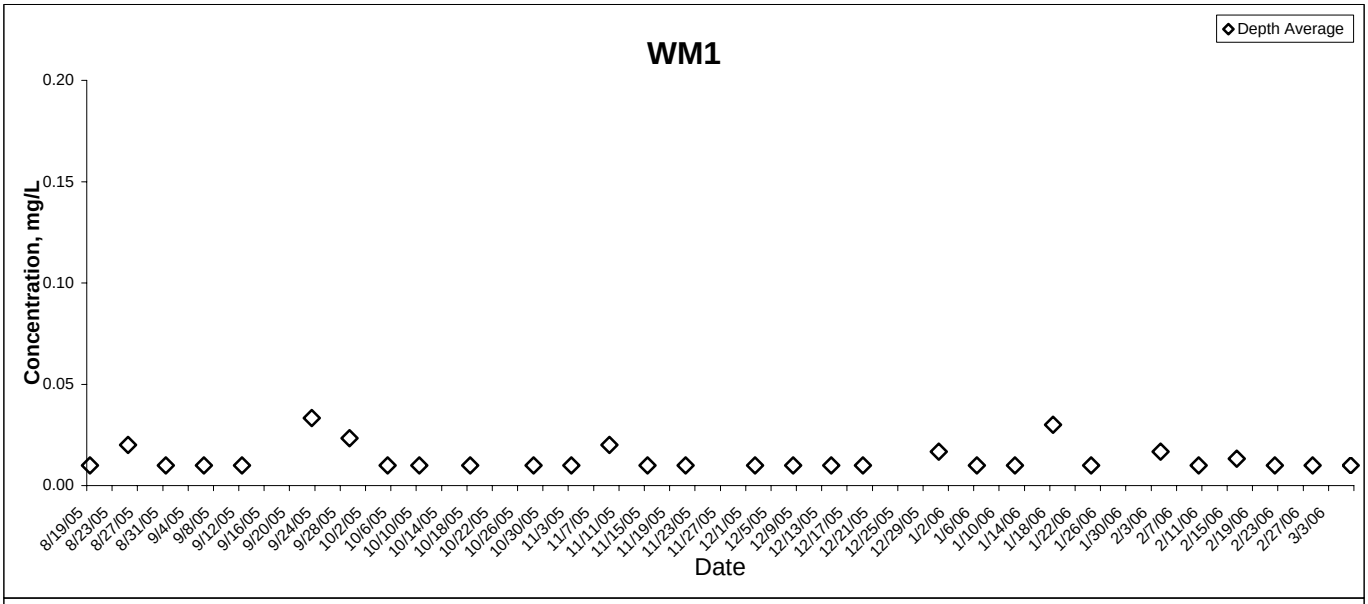
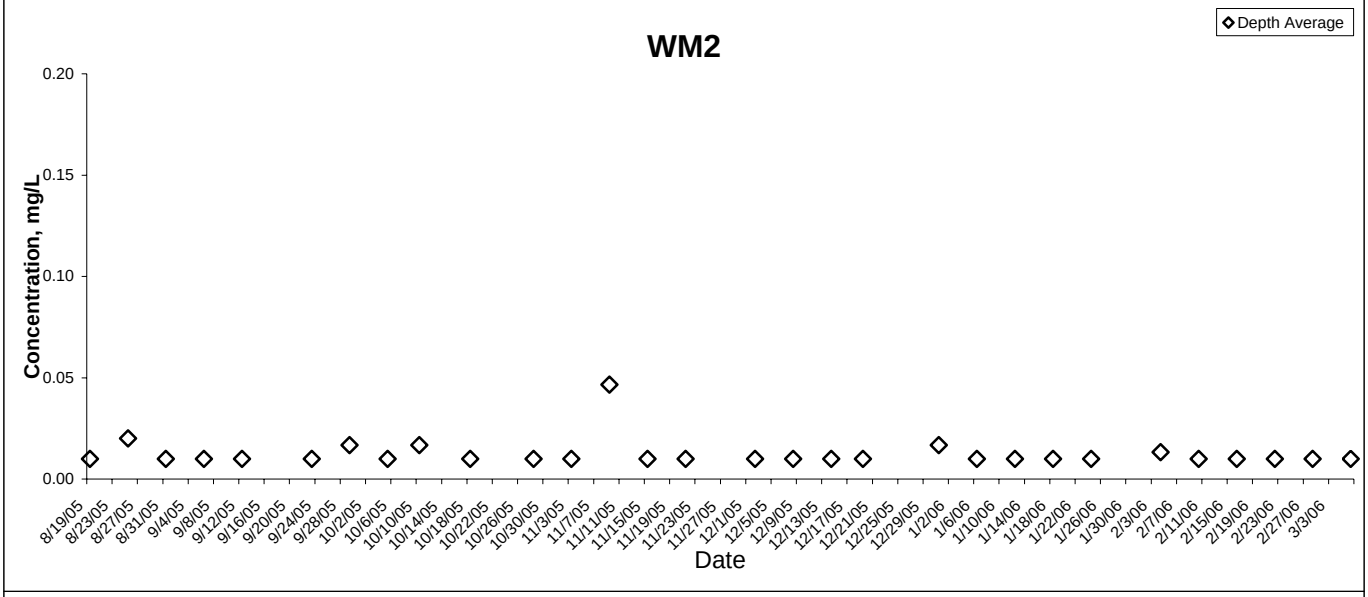
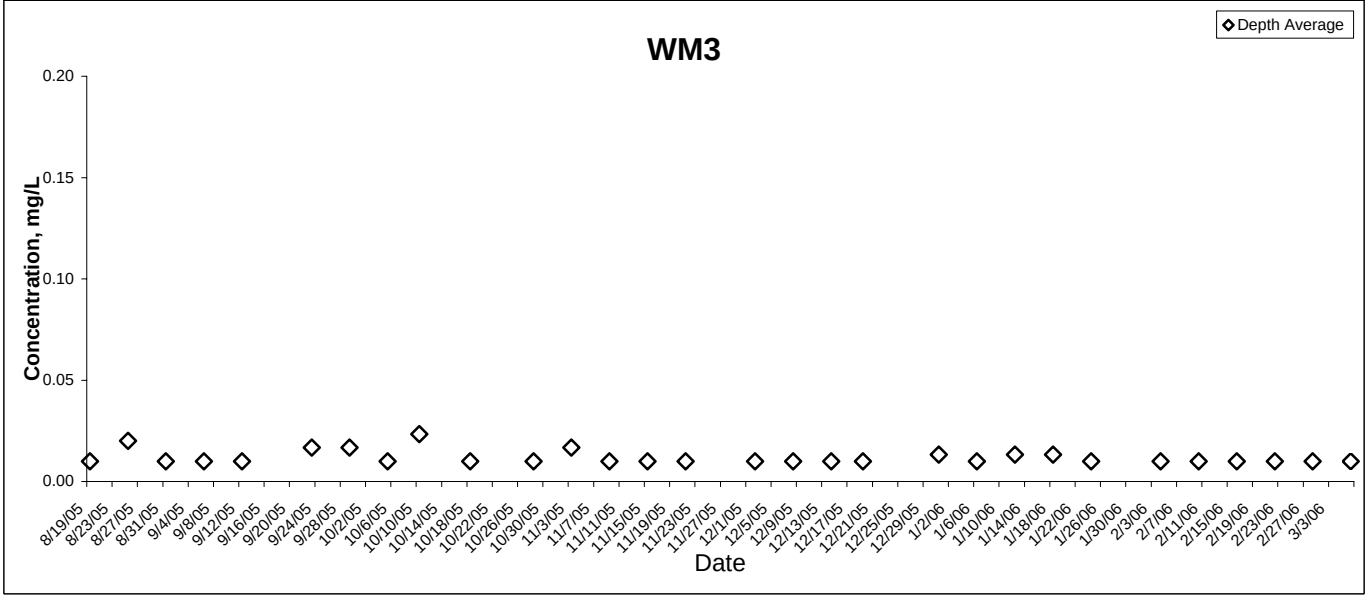
Ammonia Nitrogen







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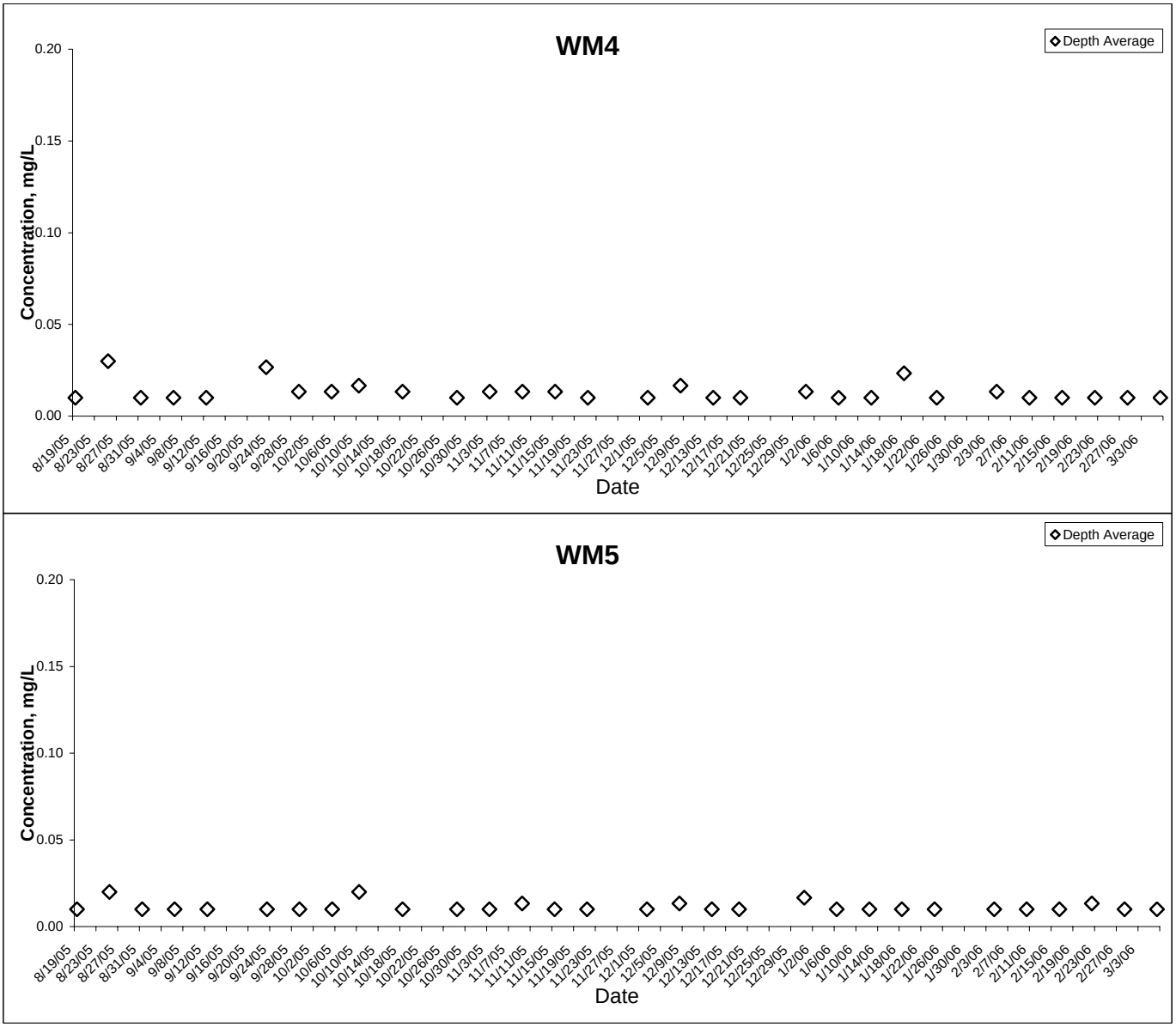
Ammonia Nitrogen



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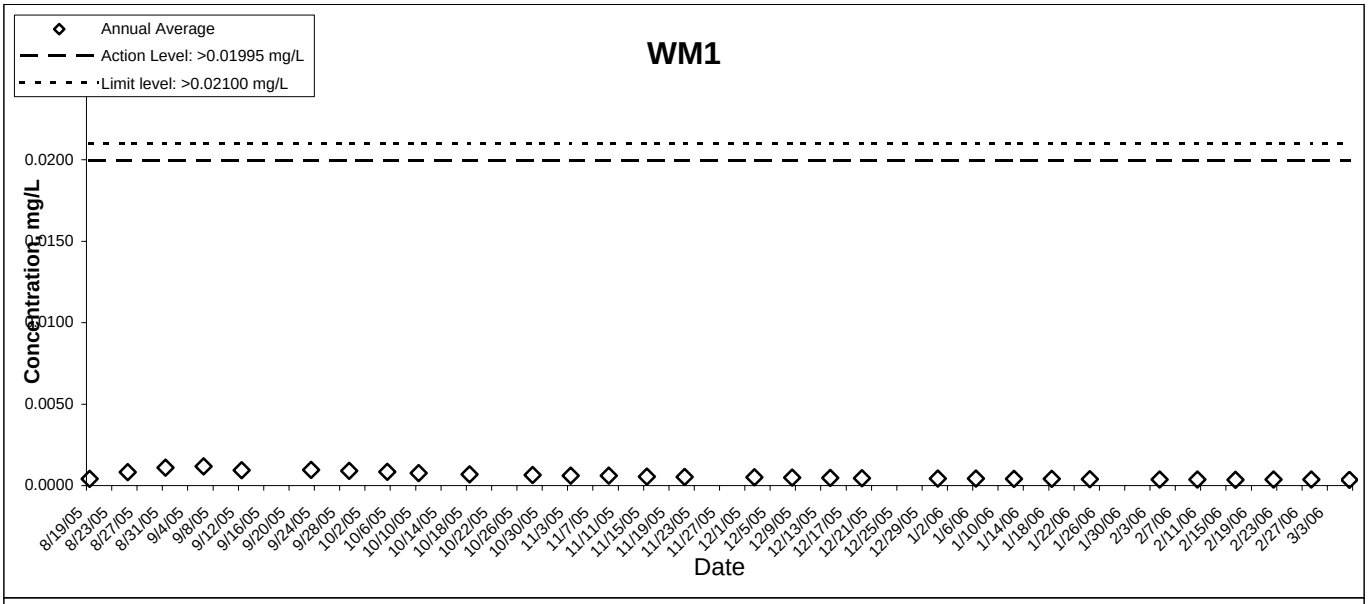
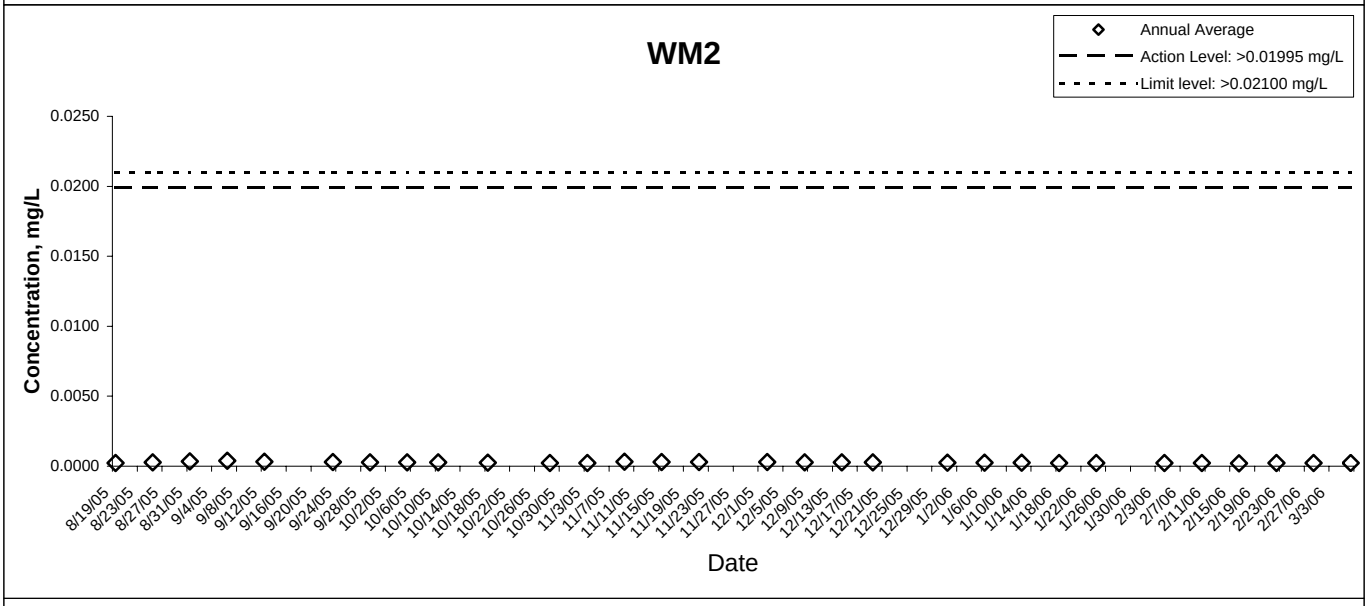
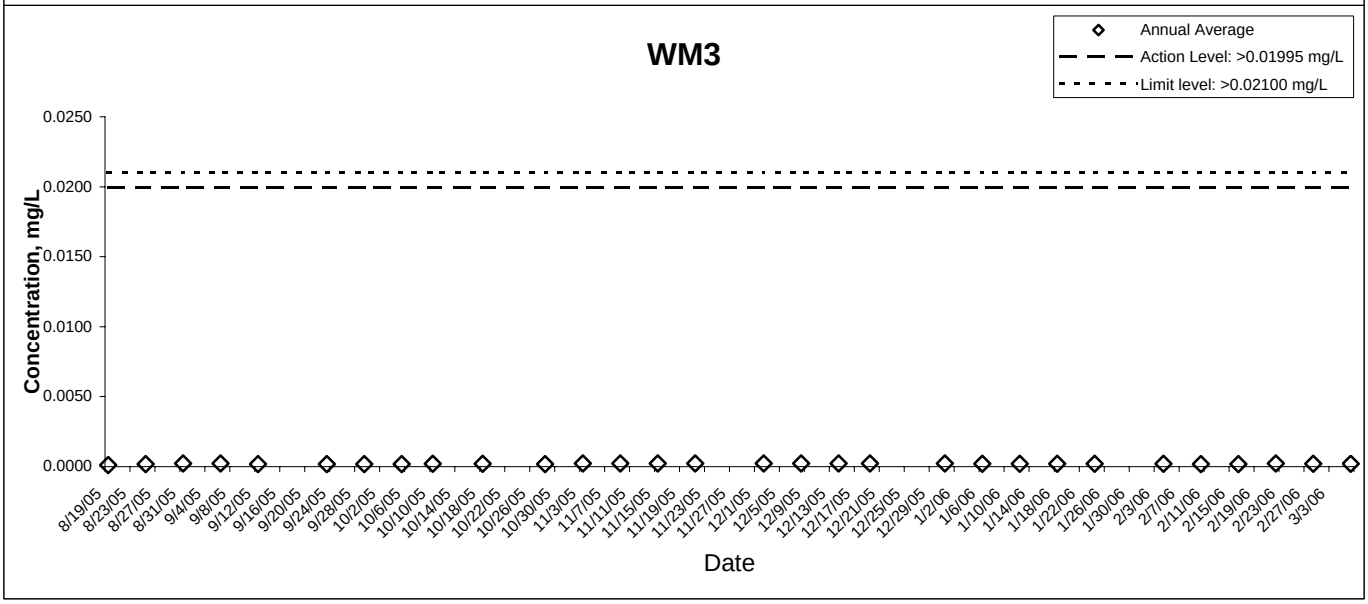
Unionised Nitrogen (Annual Average)







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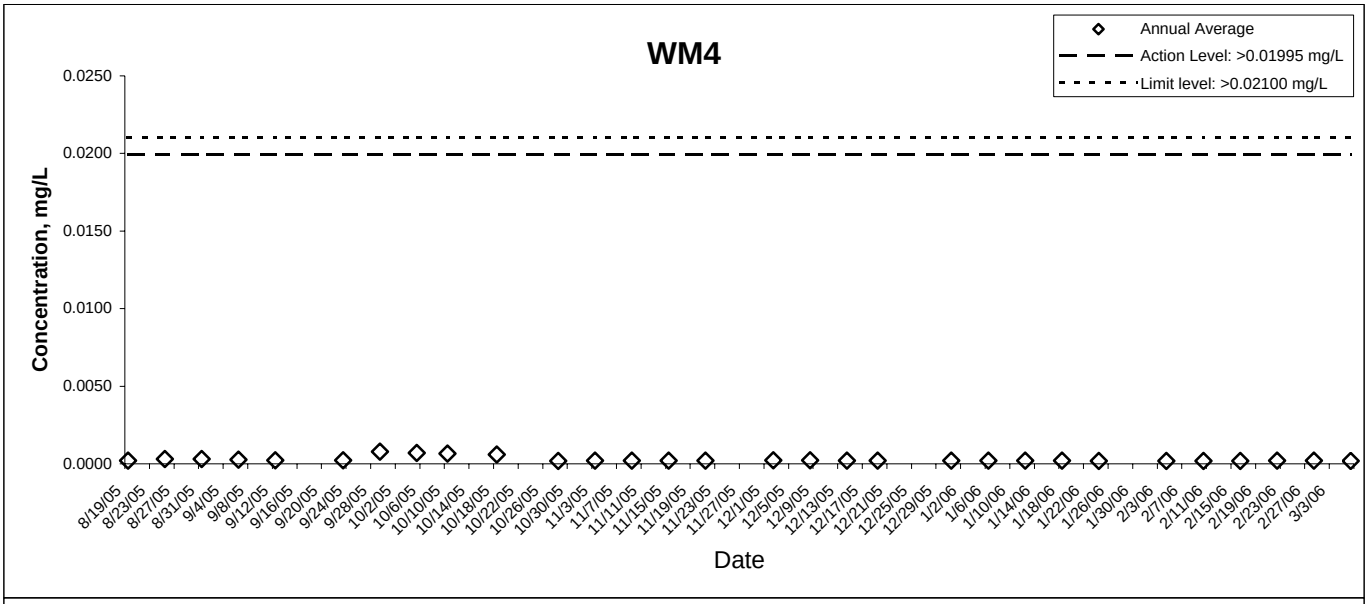
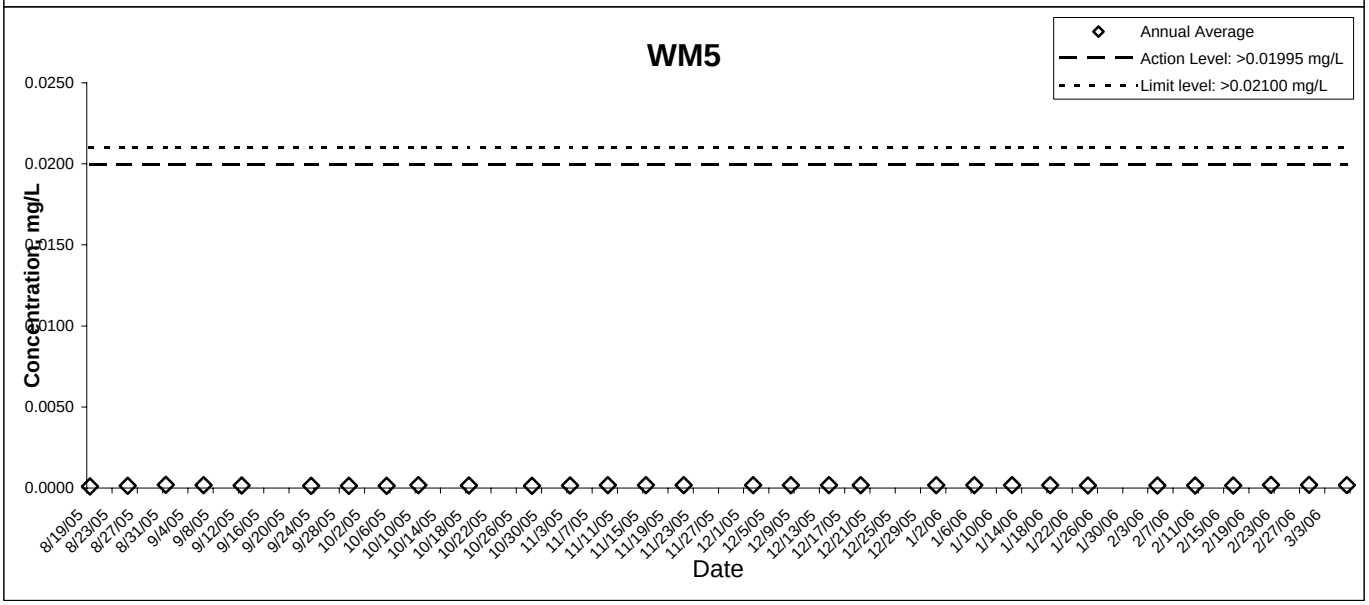
Unionised Nitrogen (Annual Average)





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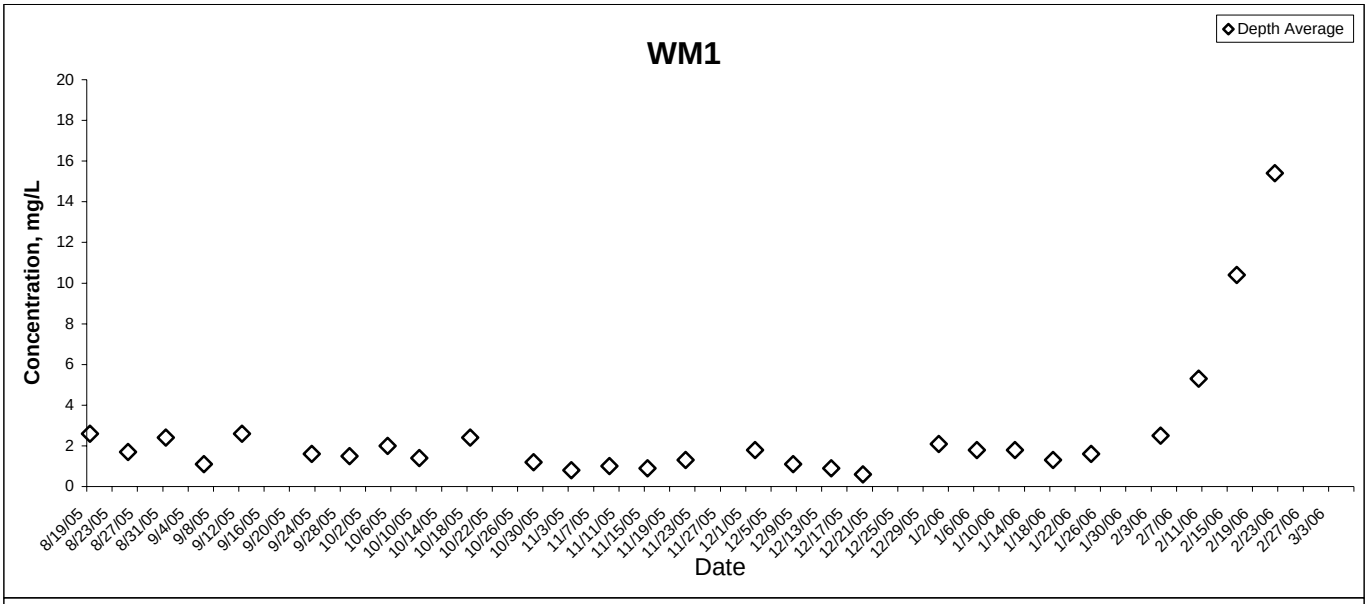
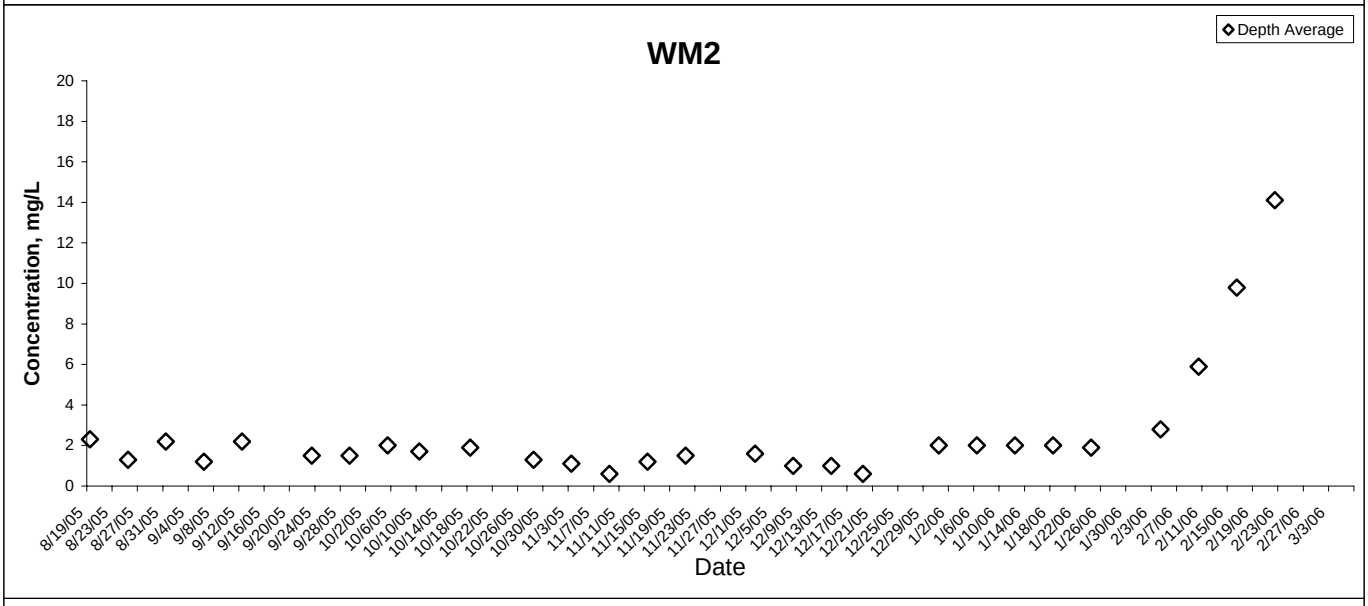
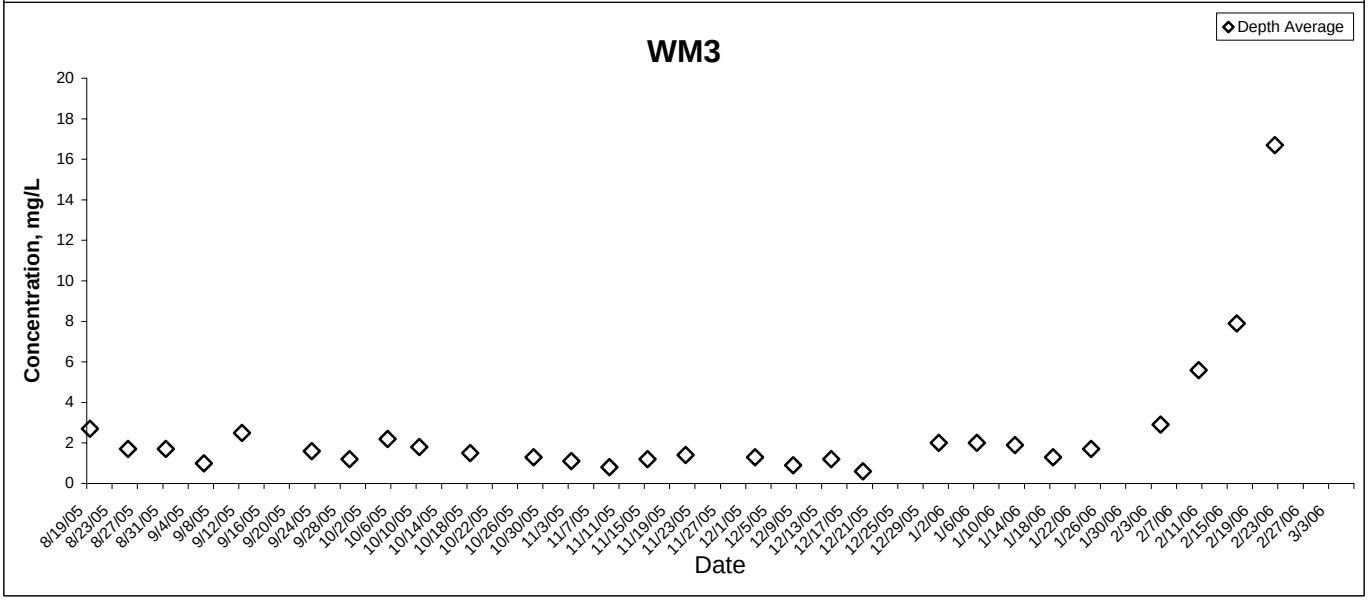
Chlorophyll-a







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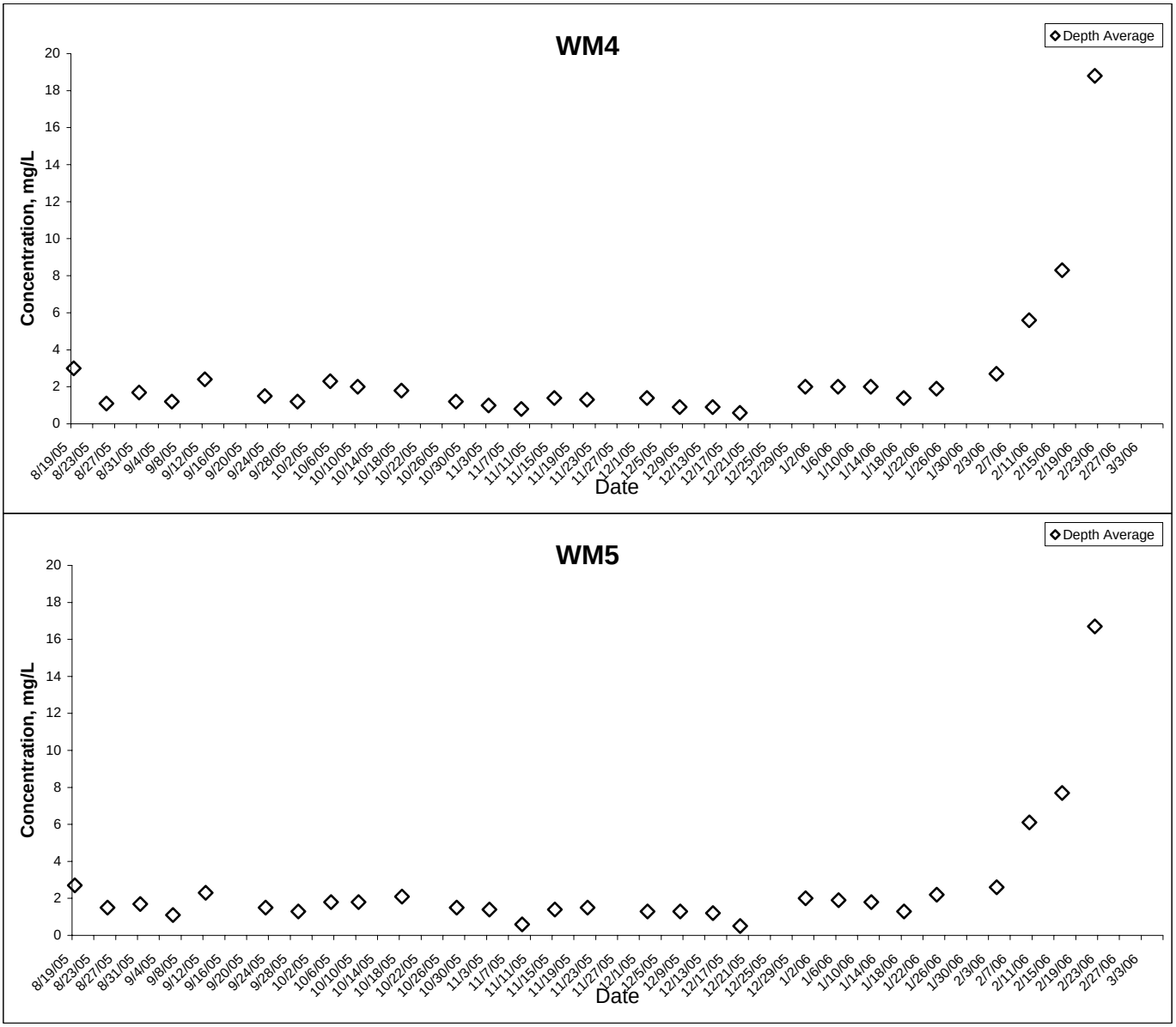
Chlorophyll-a



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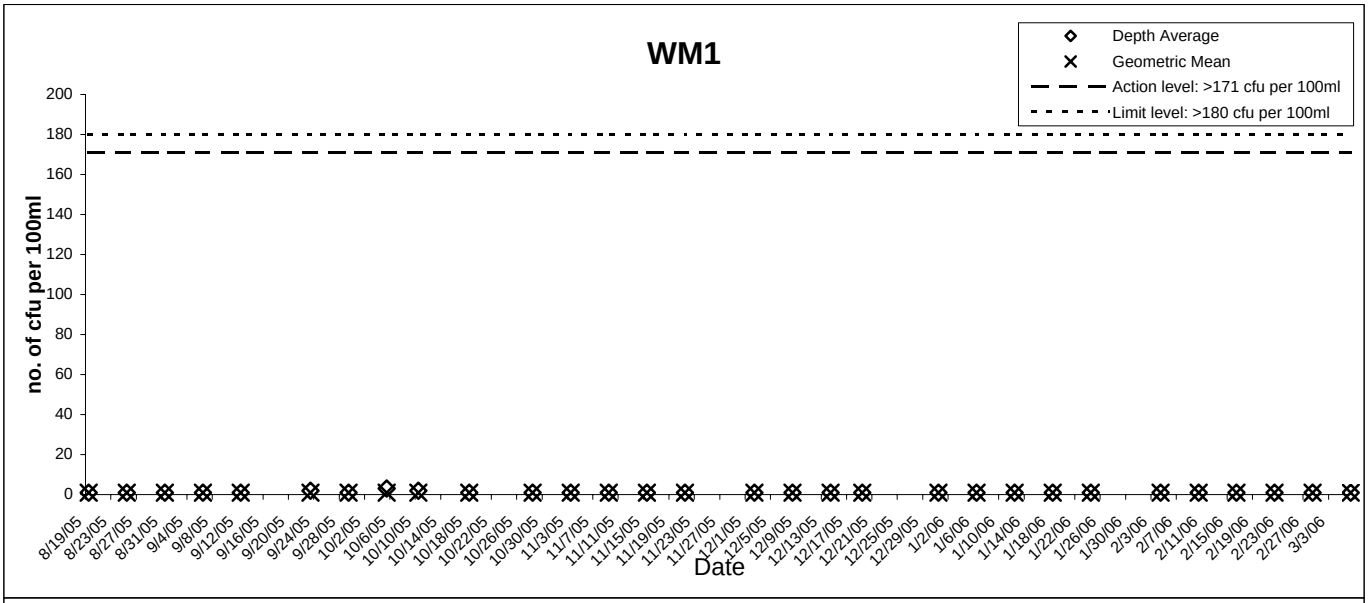
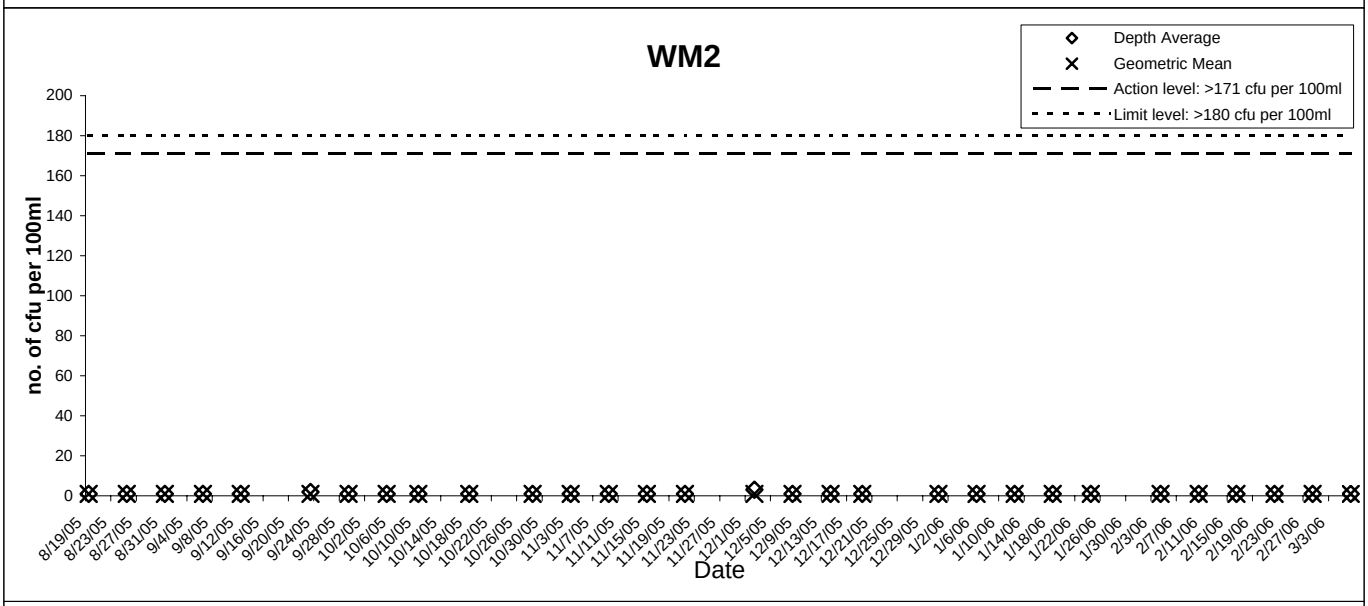
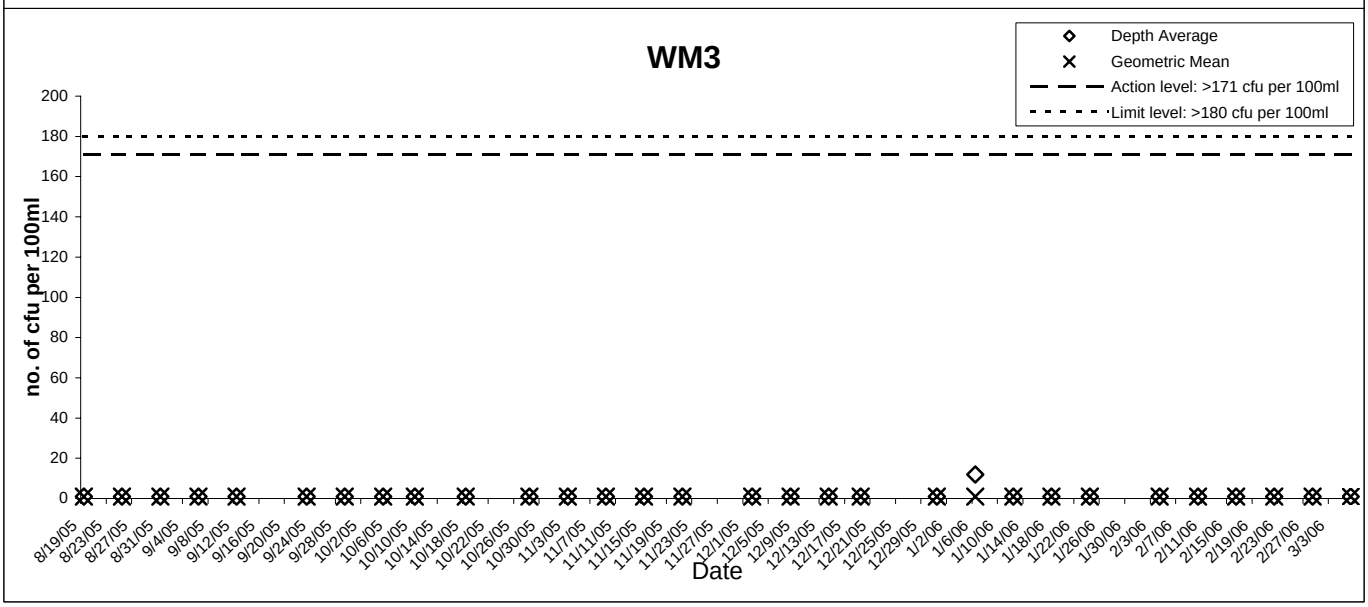
E.coli







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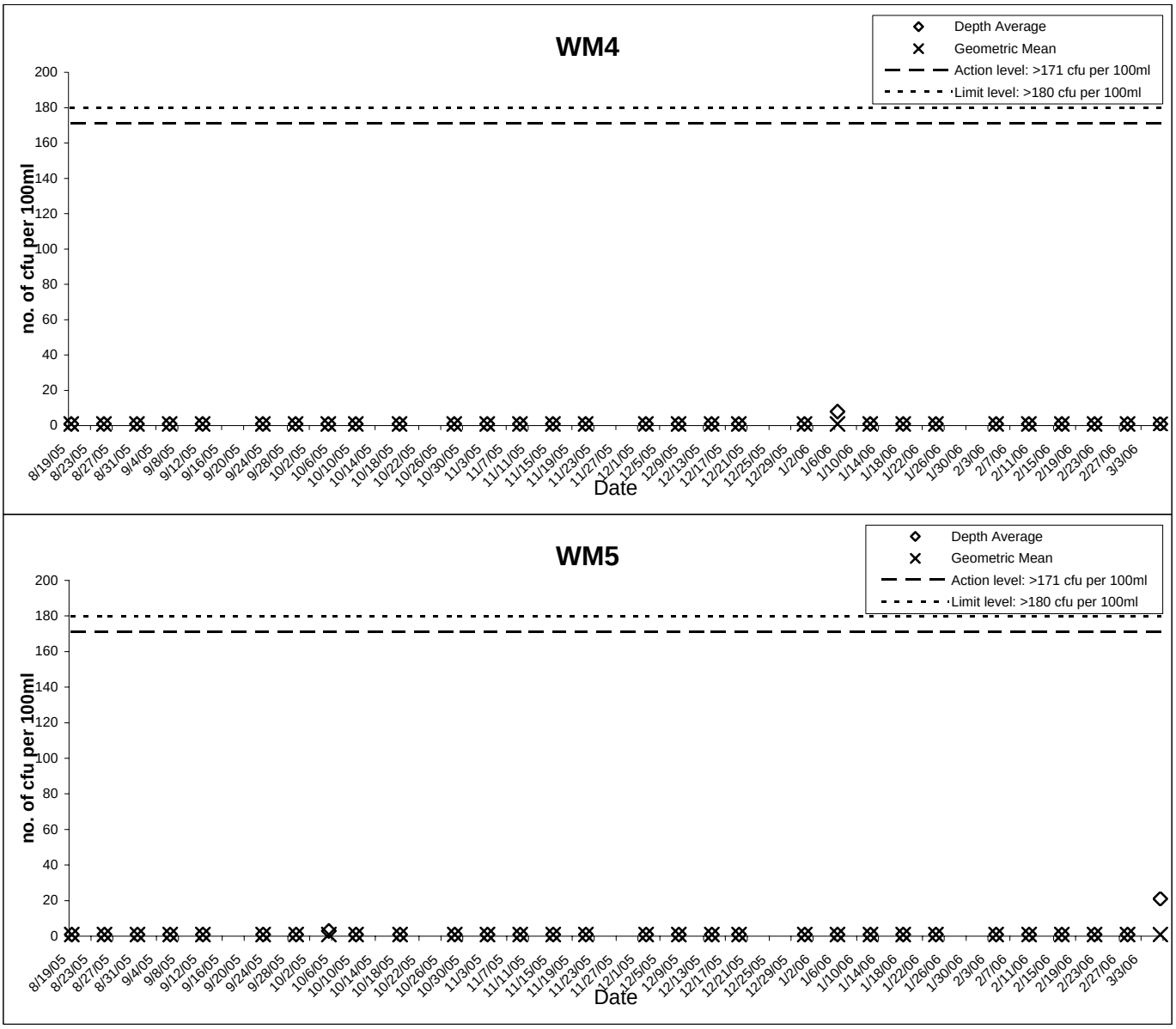
E.coli



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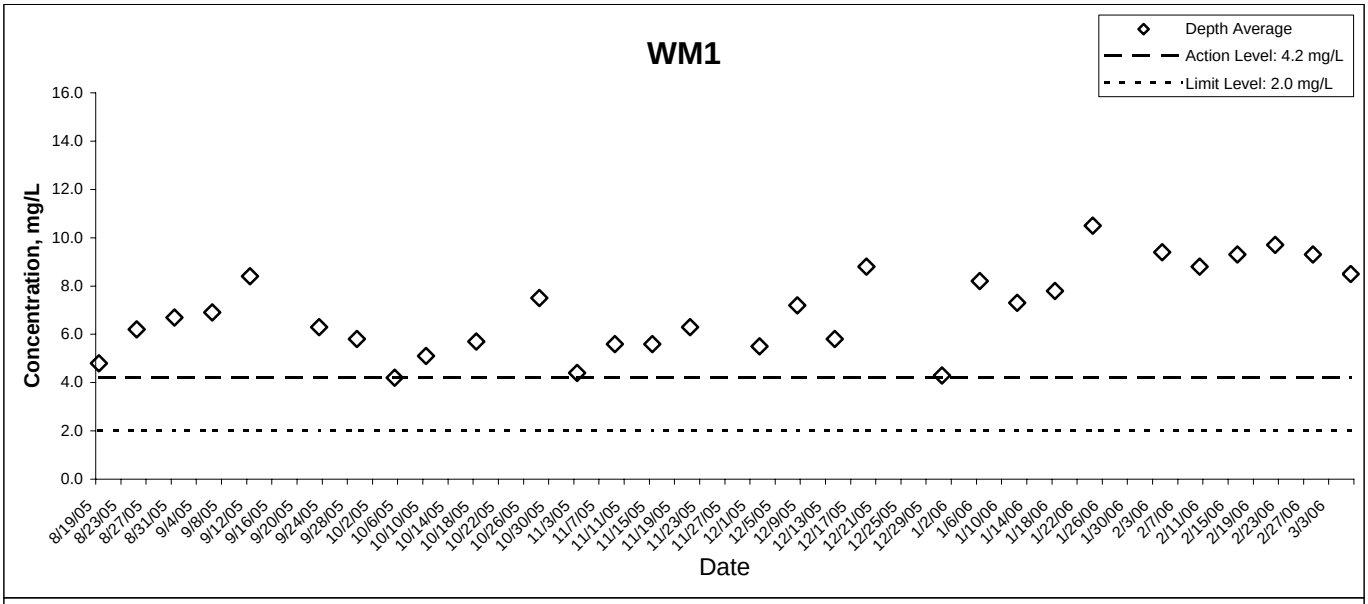
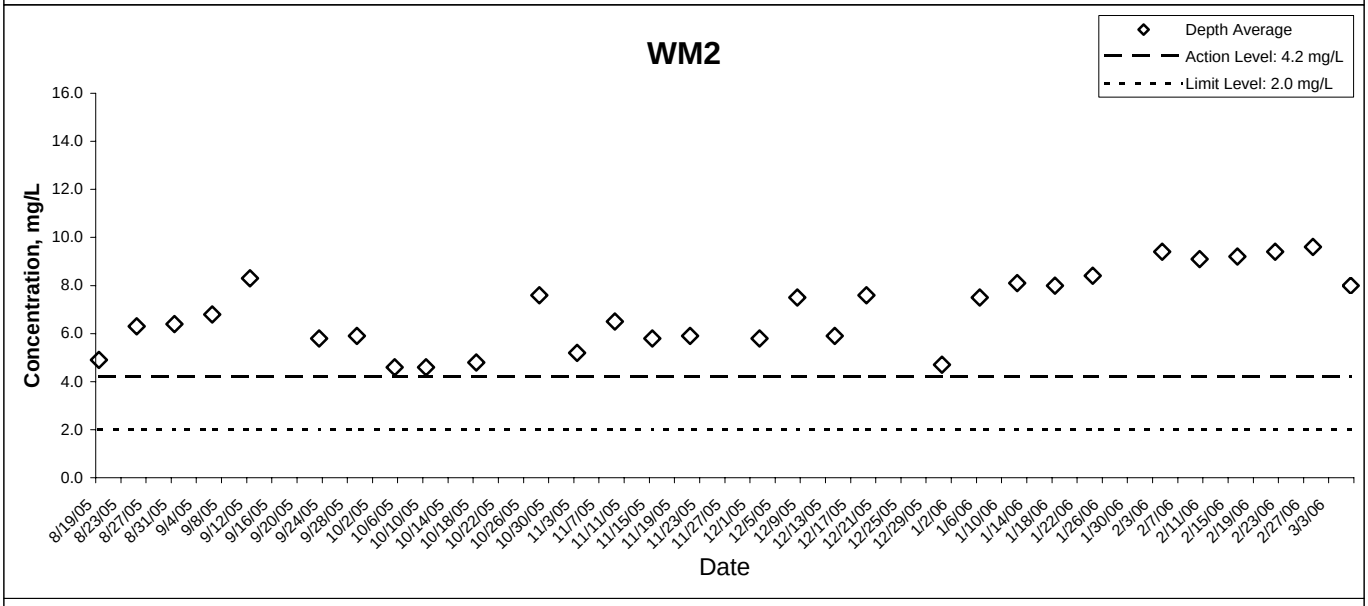
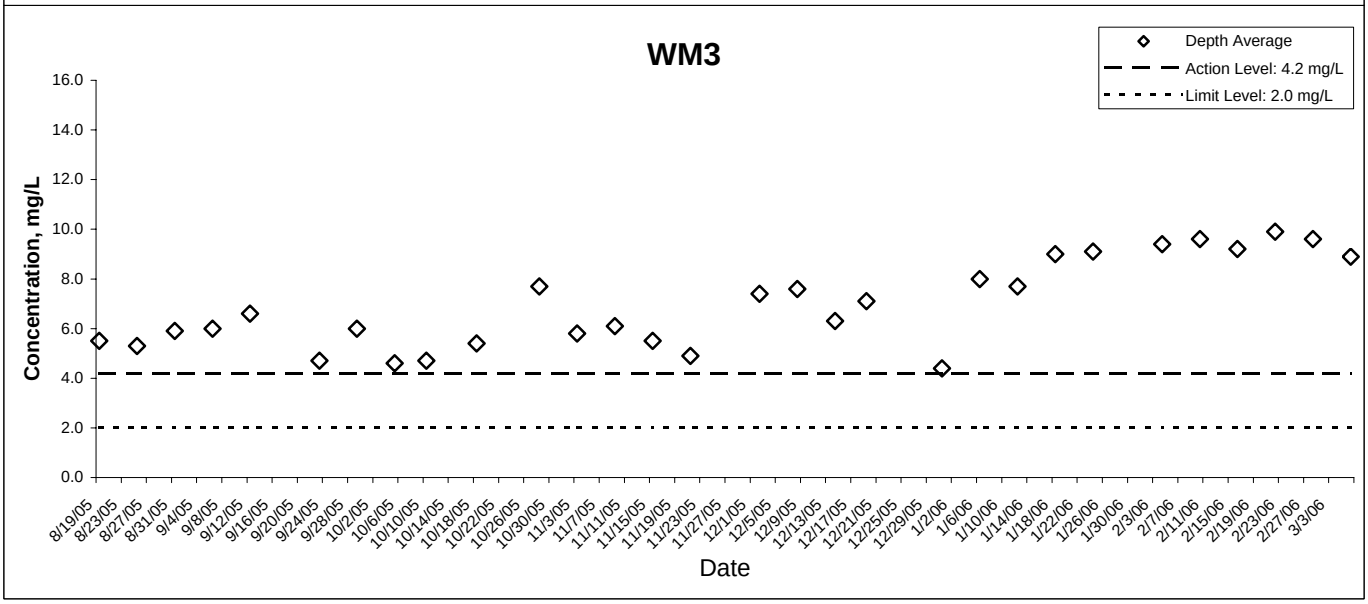
Dissovled Oxygen







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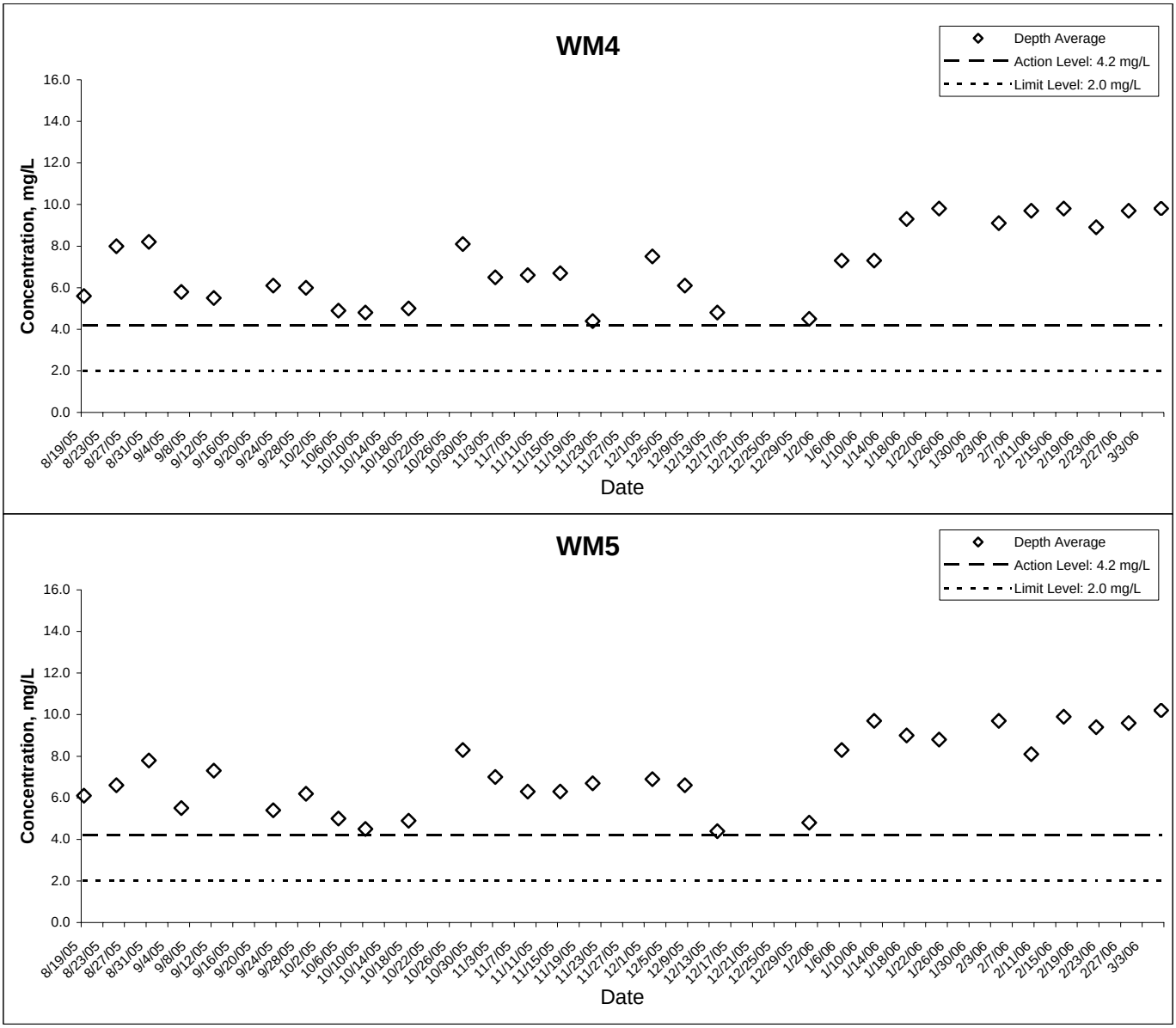
Dissovled Oxygen



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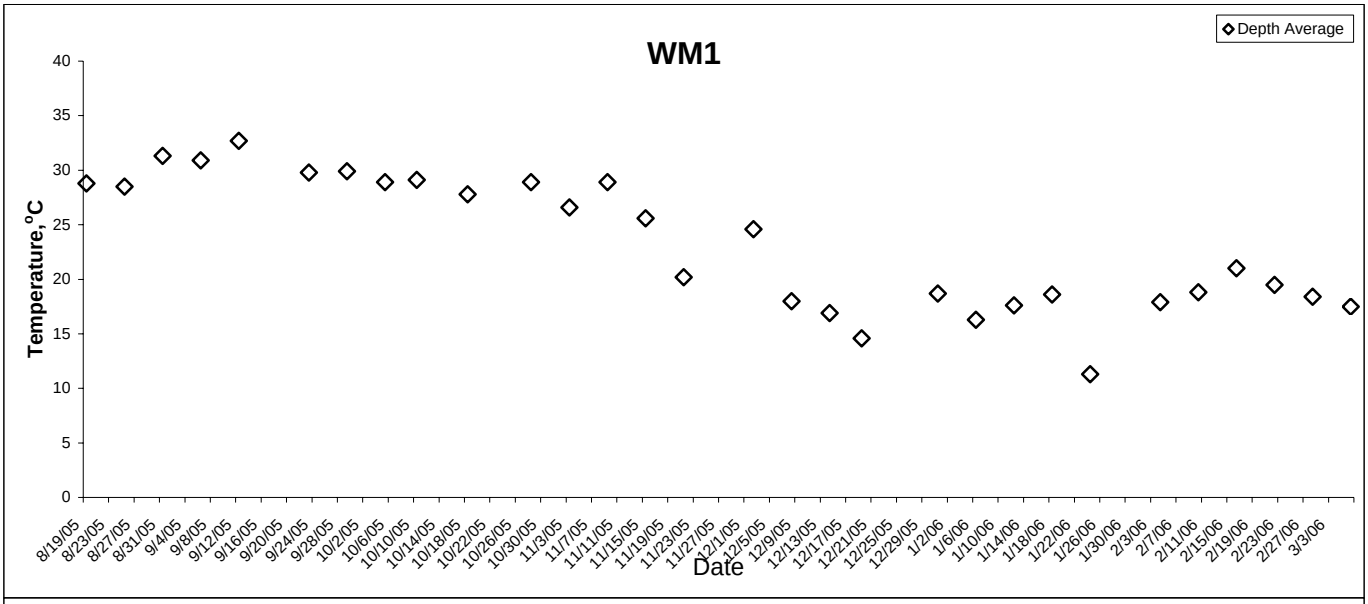
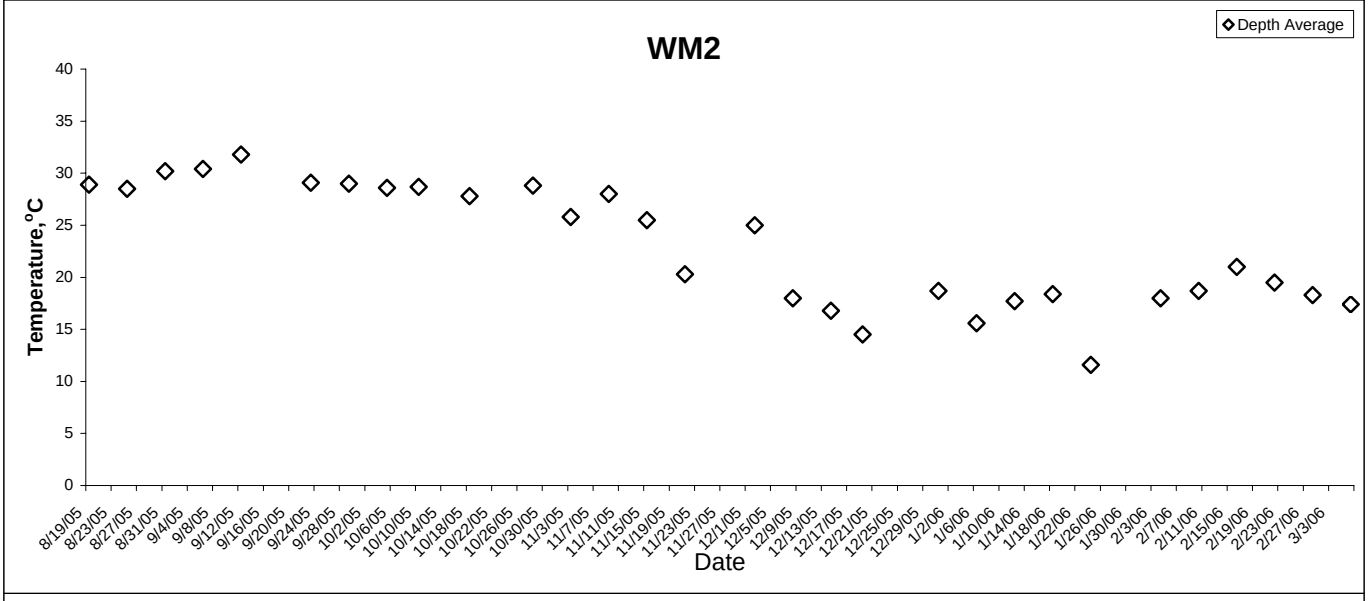
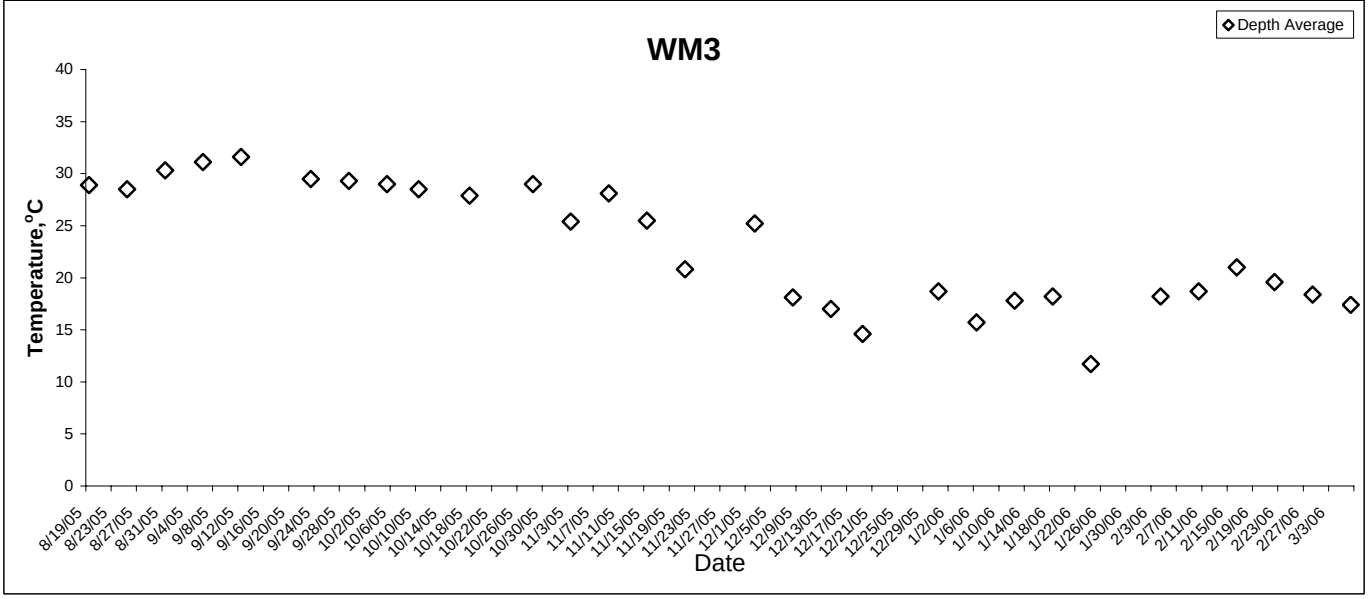
Temperature







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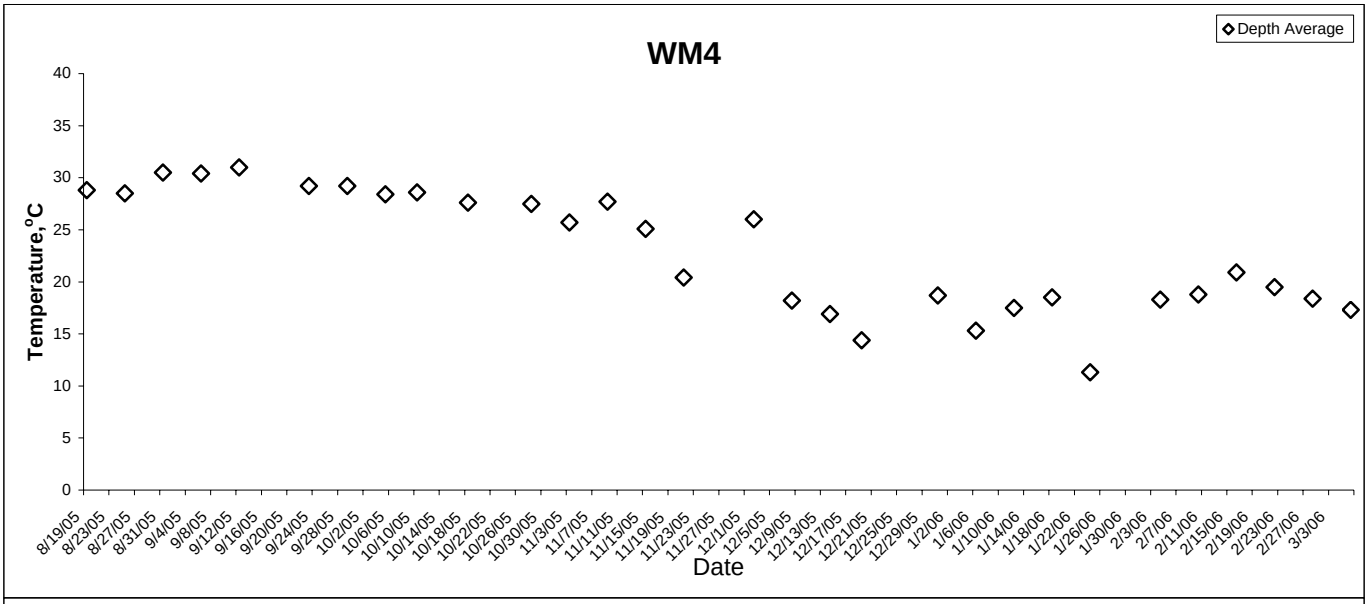
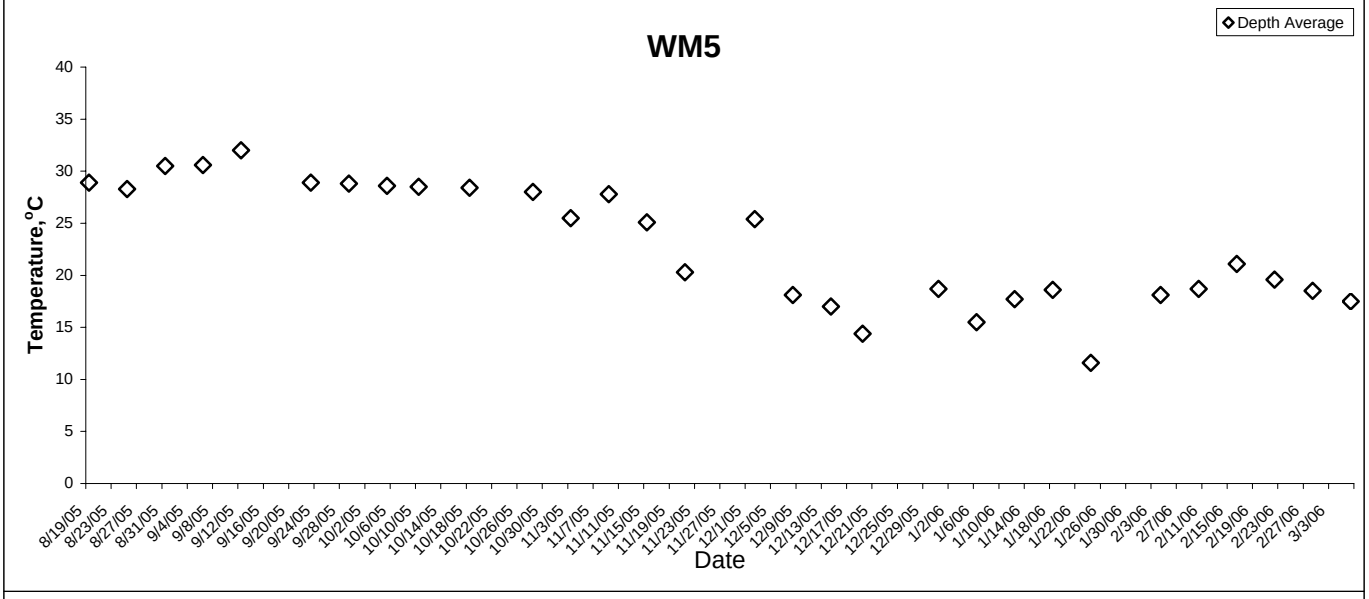
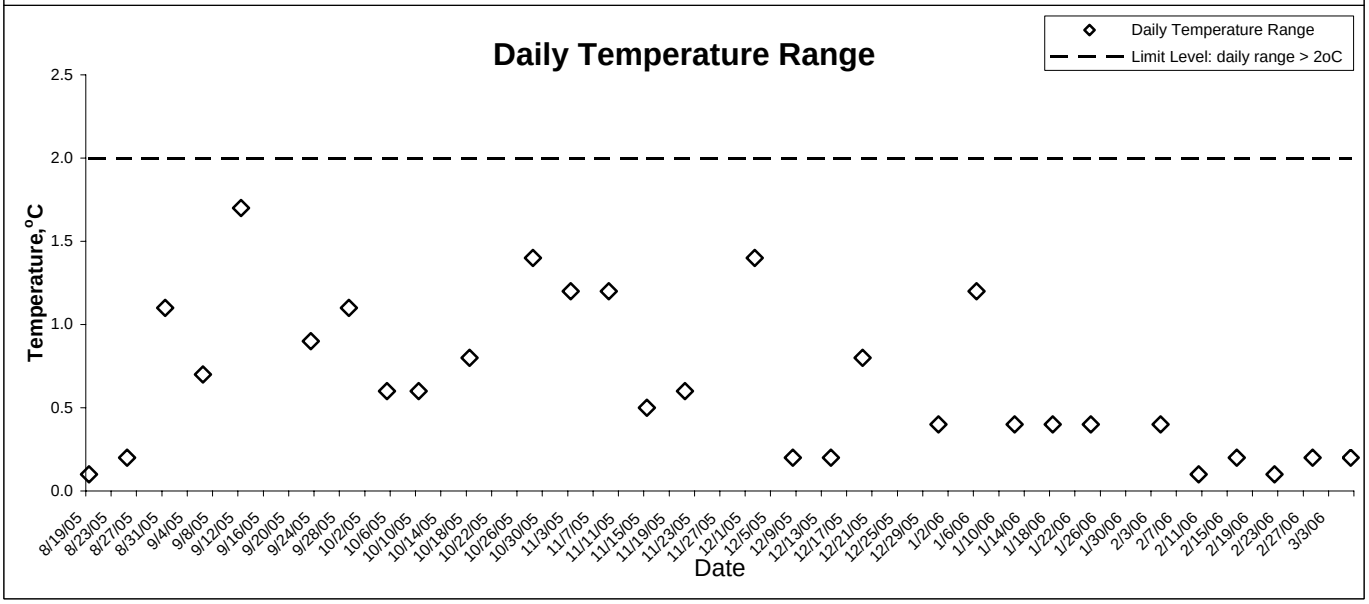
Temperature







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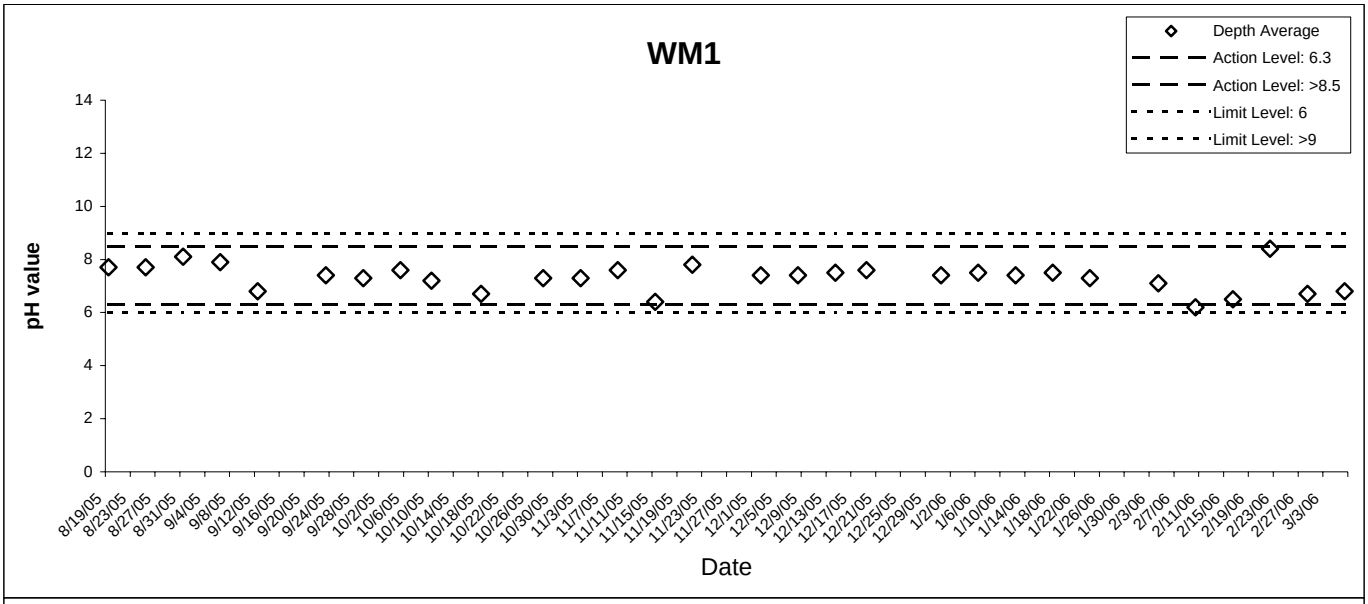
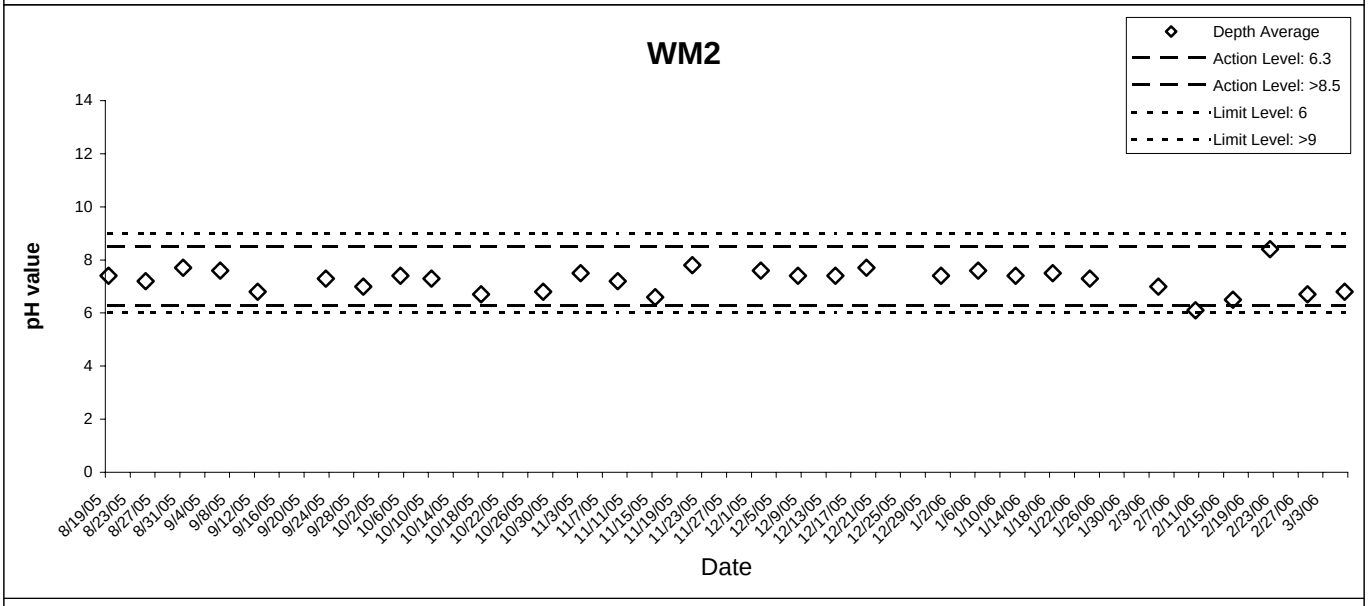
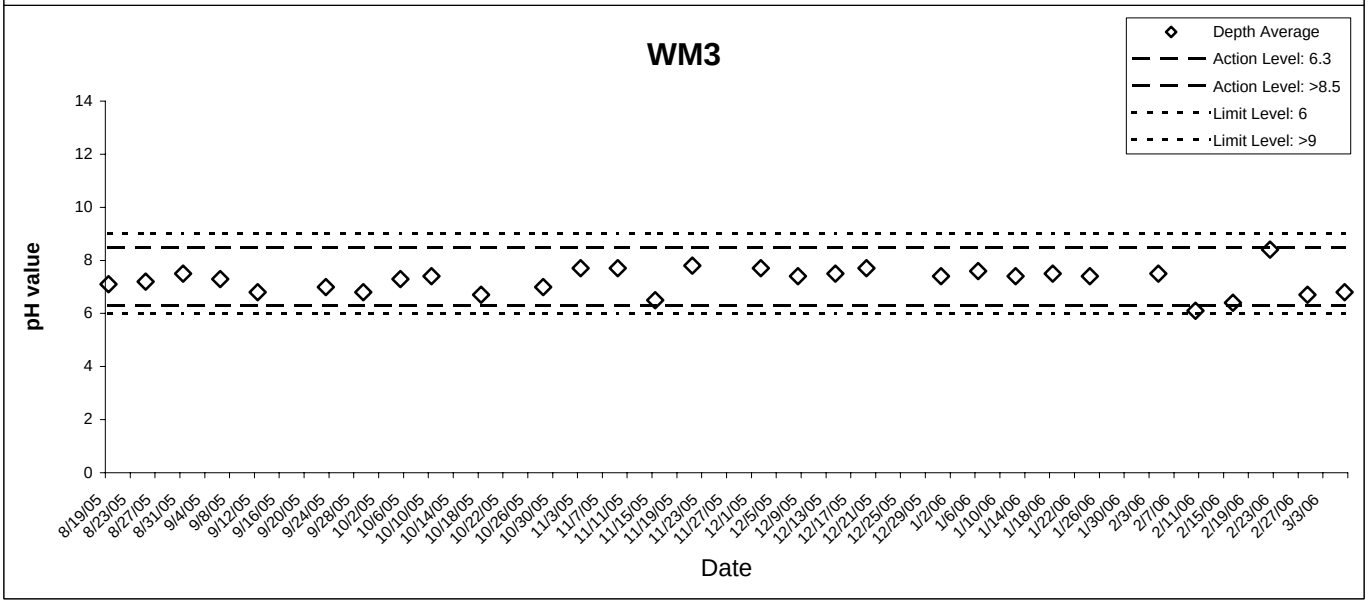
pH







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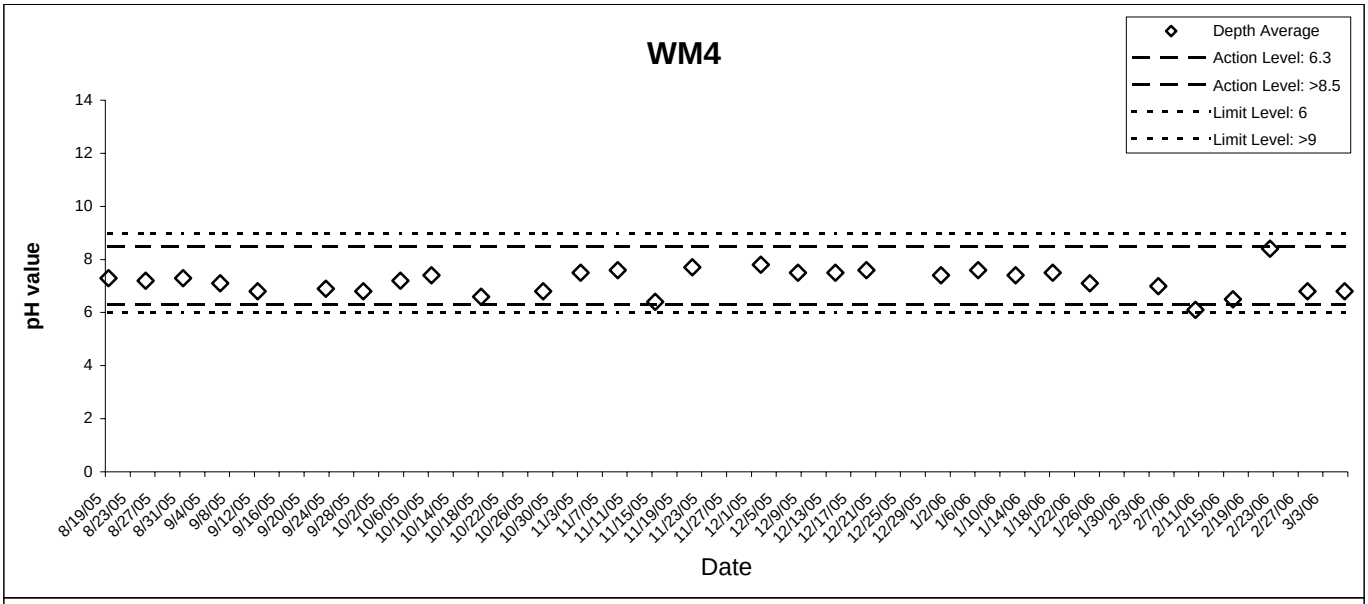
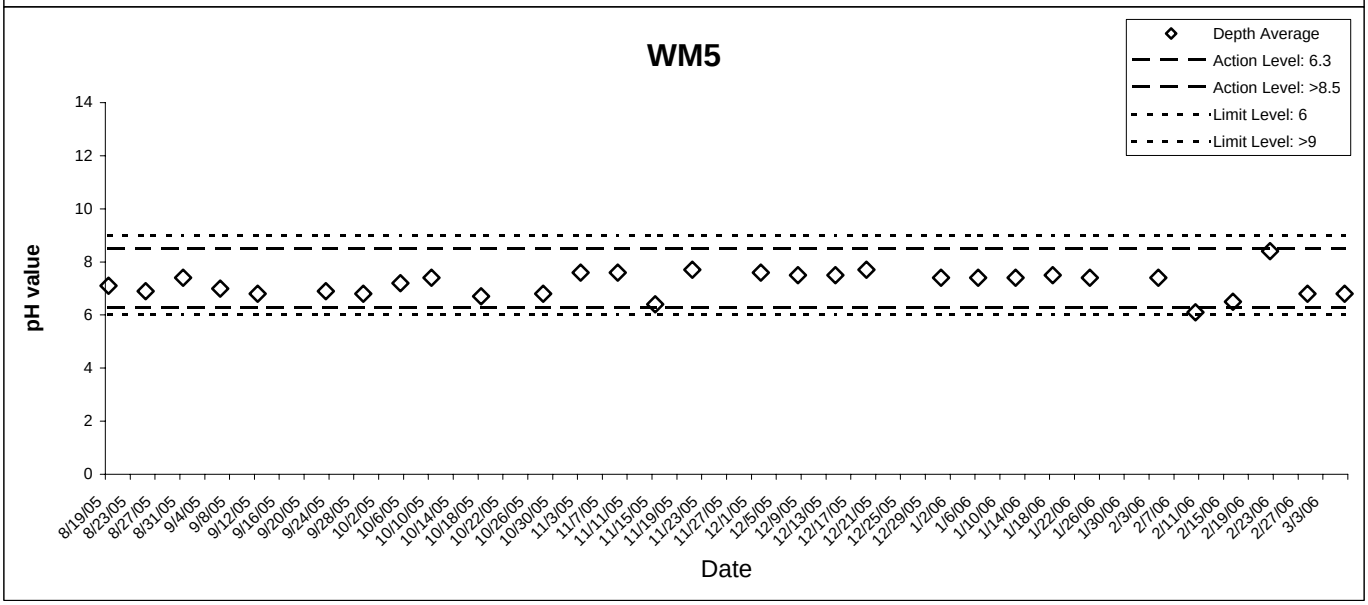
pH





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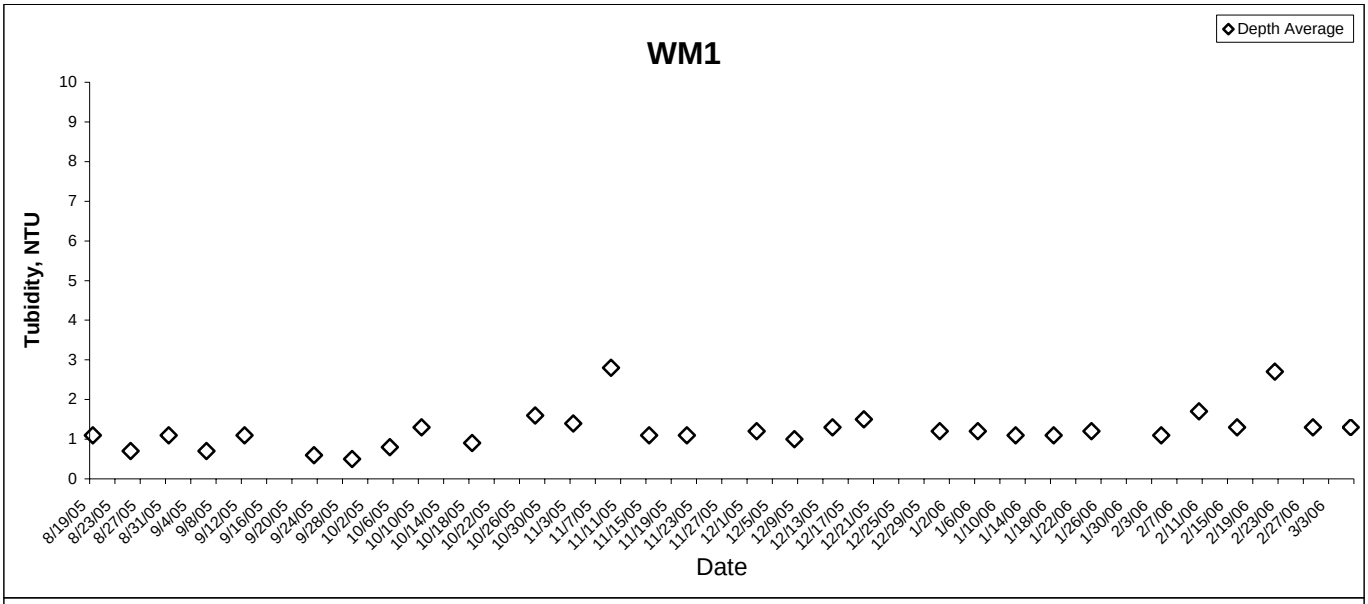
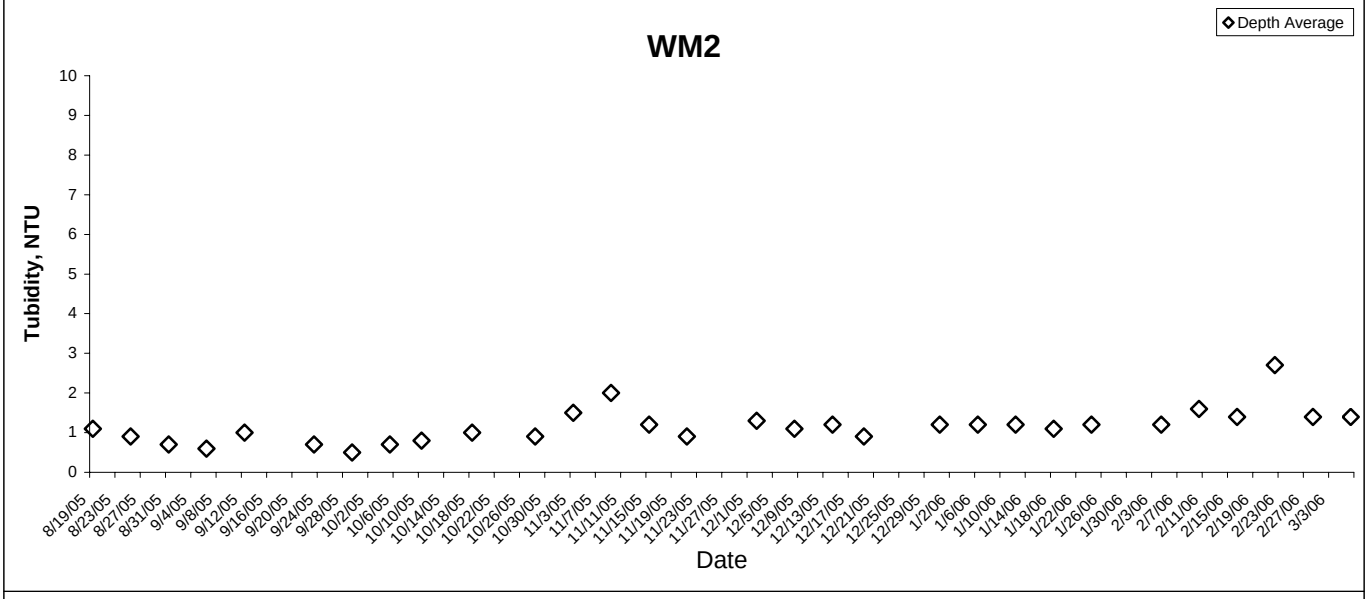
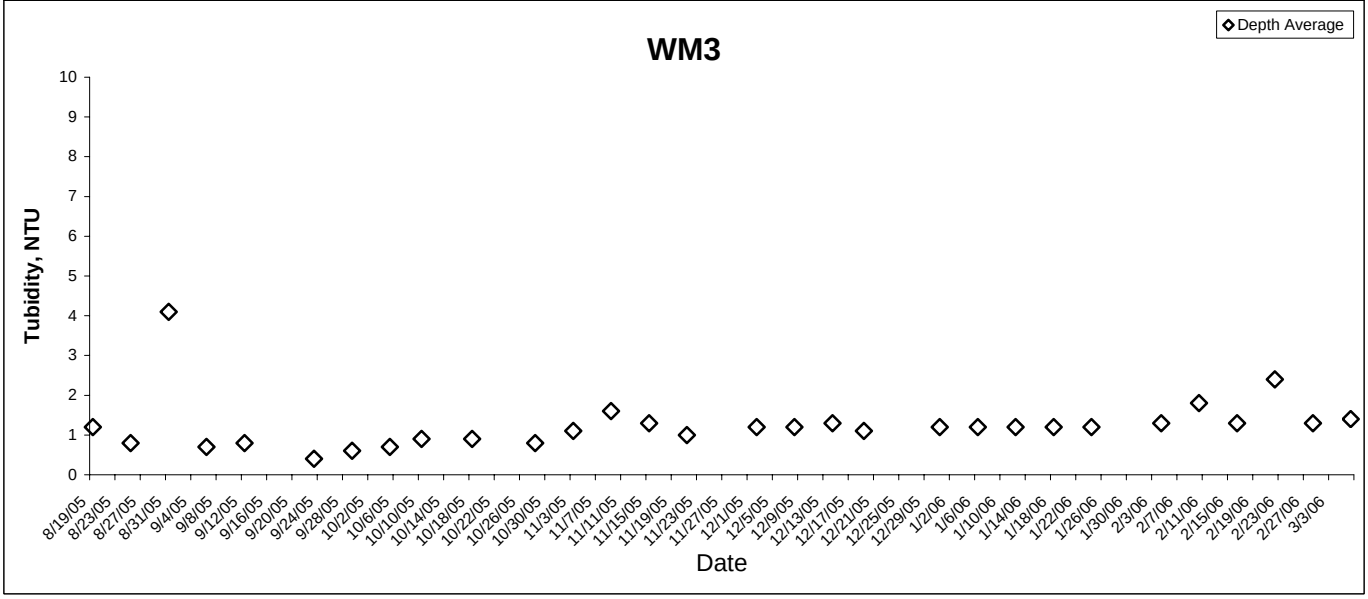
Turbidity







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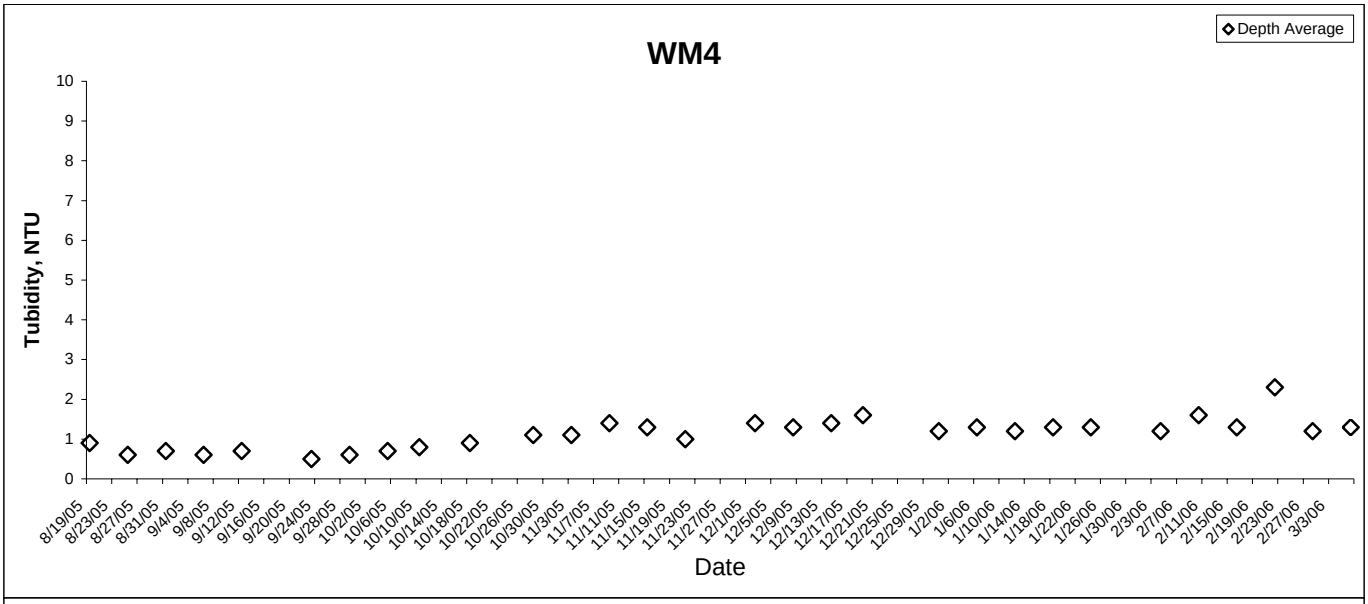
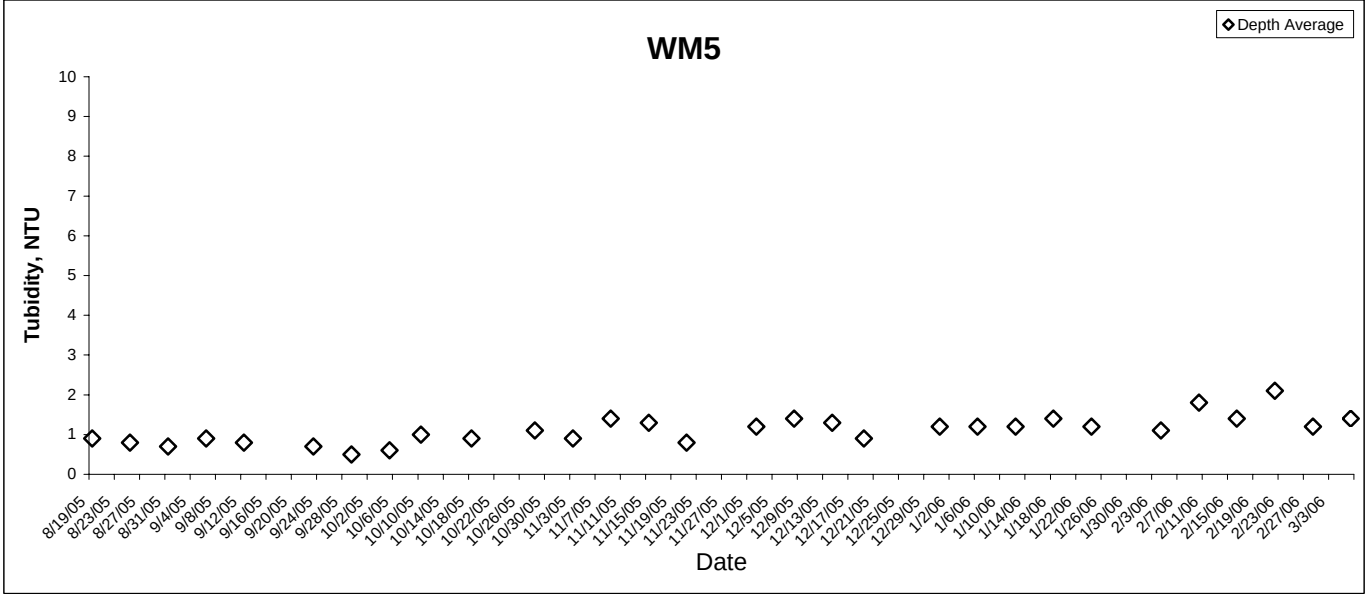
Turbidity





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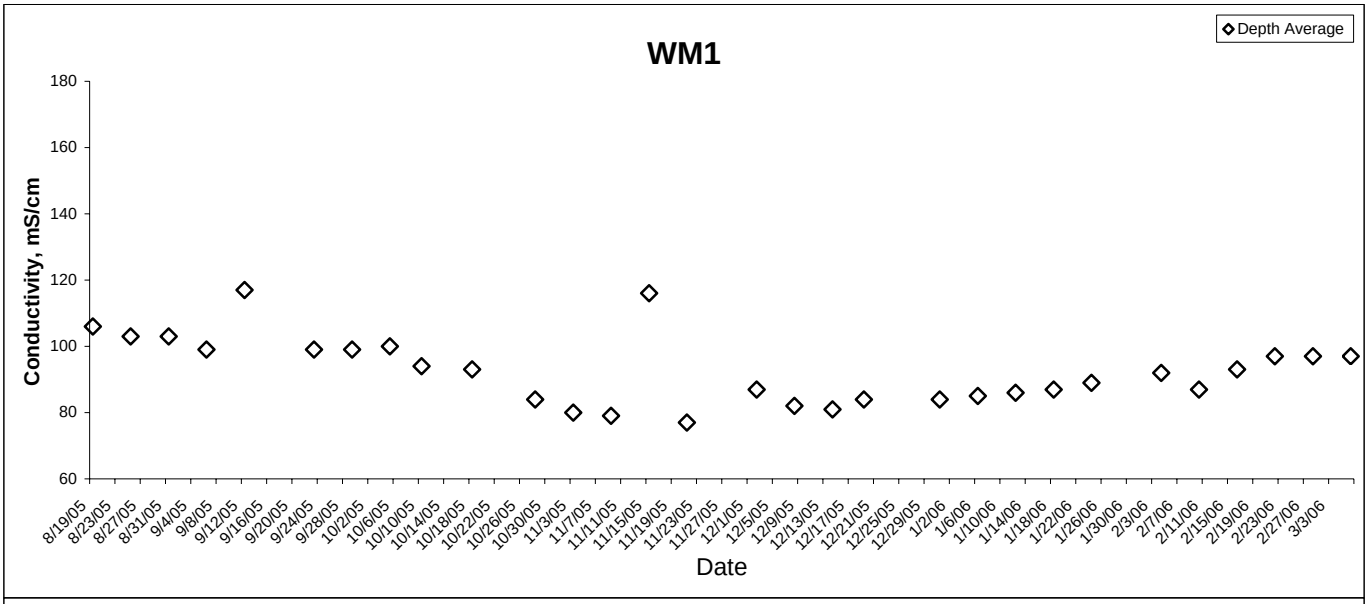
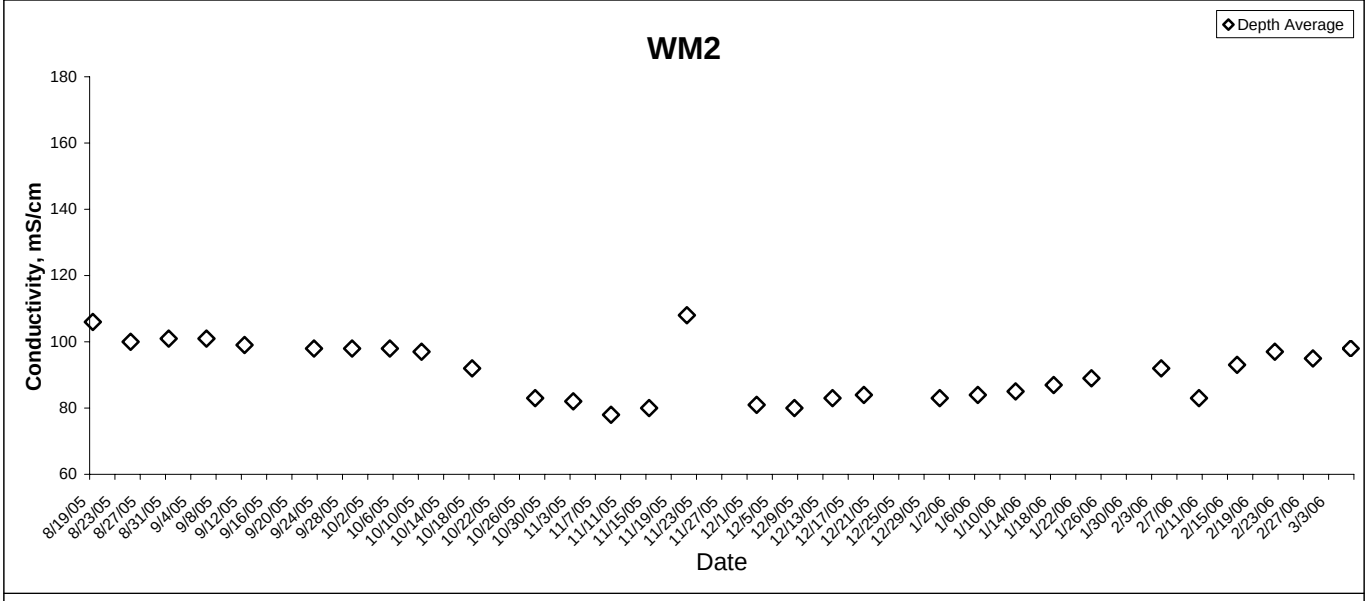
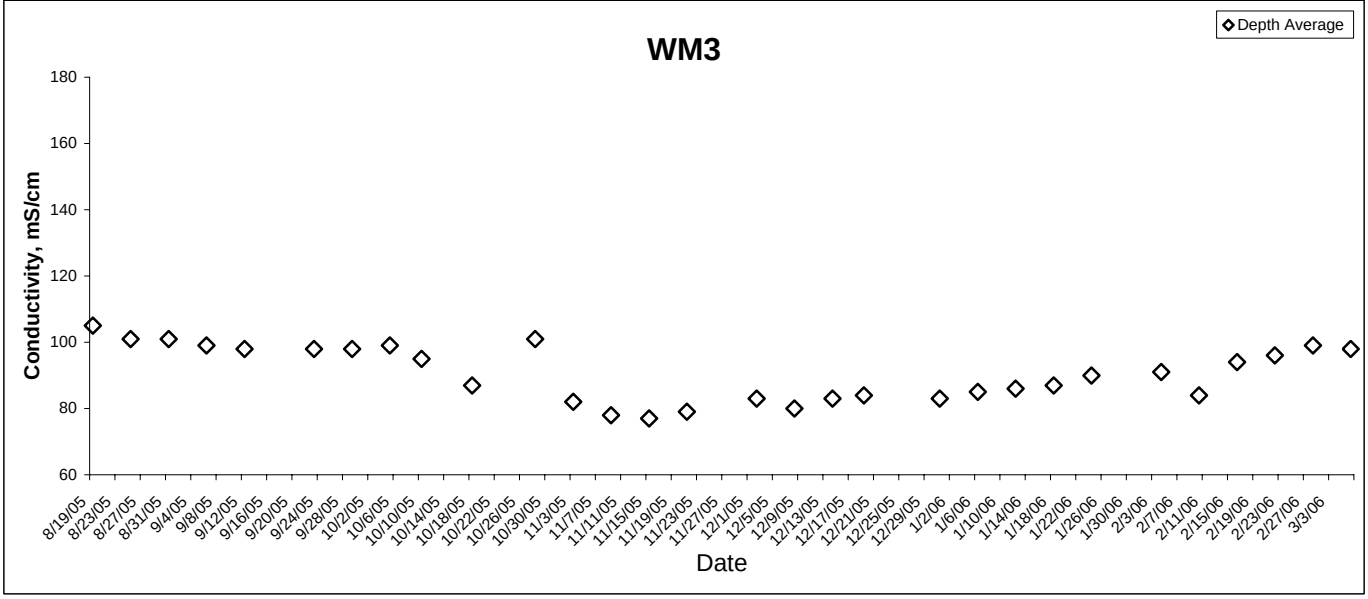
Conductivity







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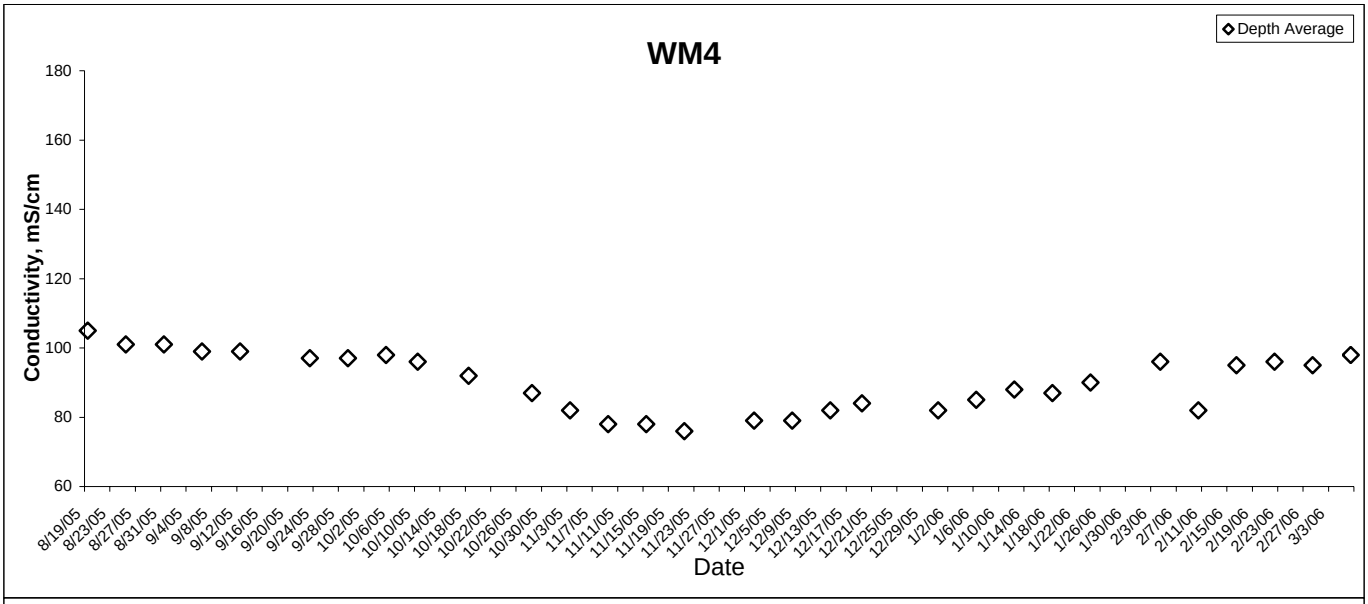
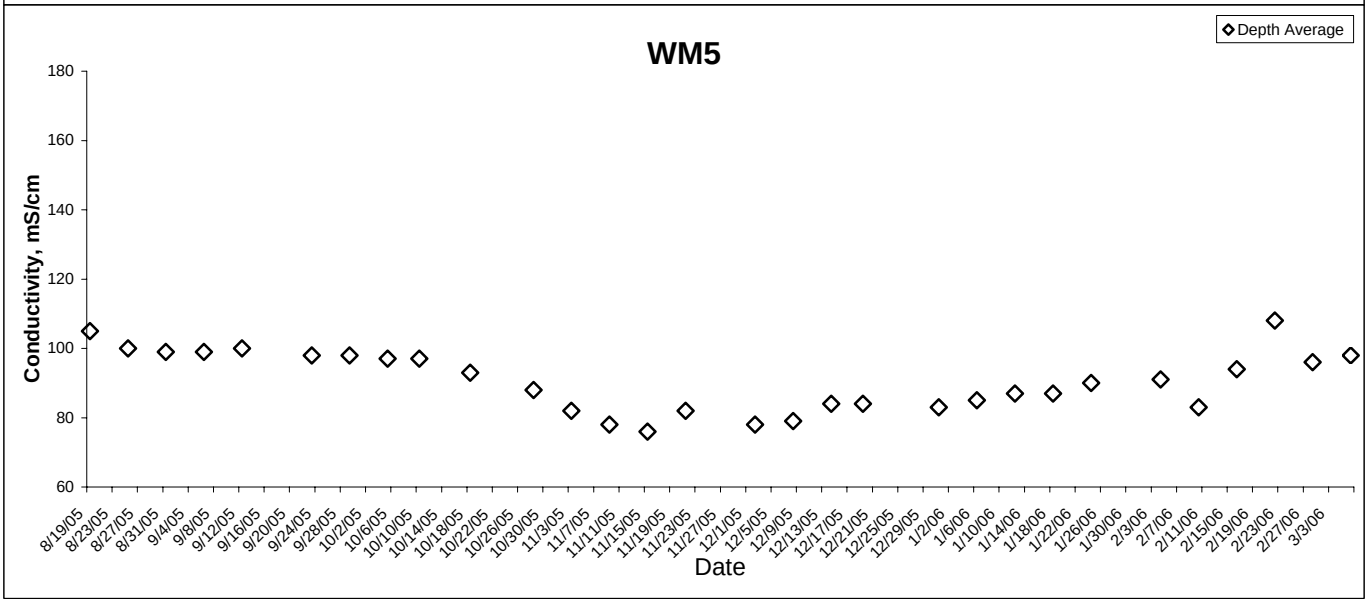
Conductivity





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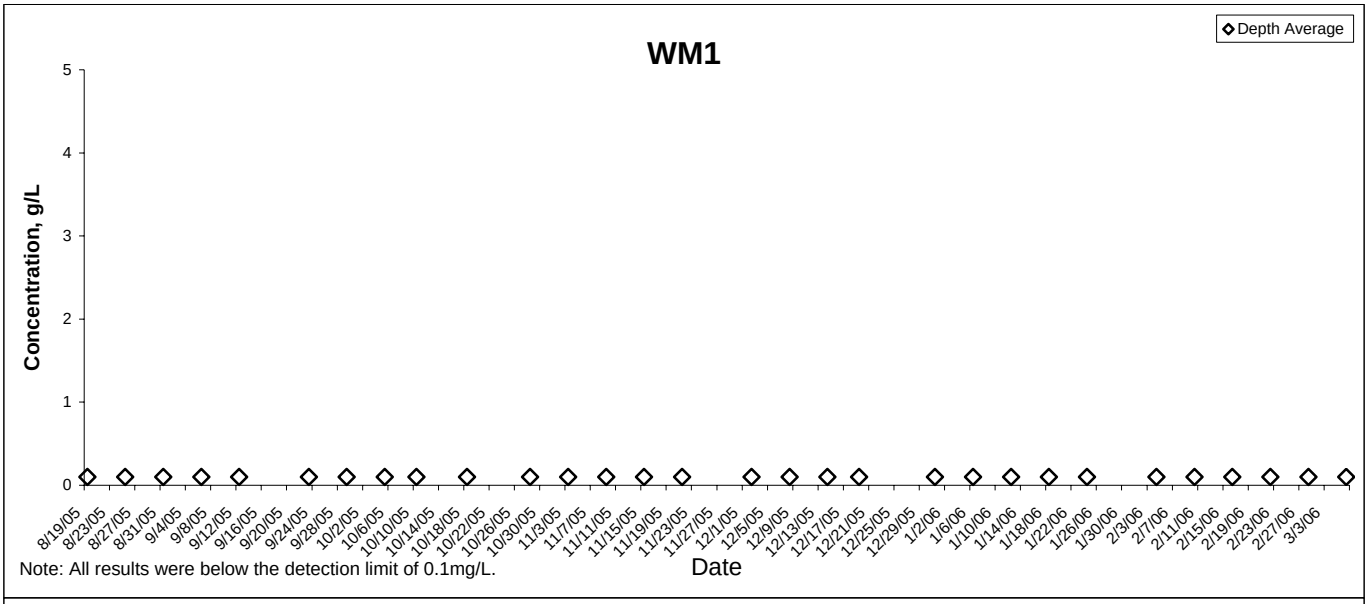
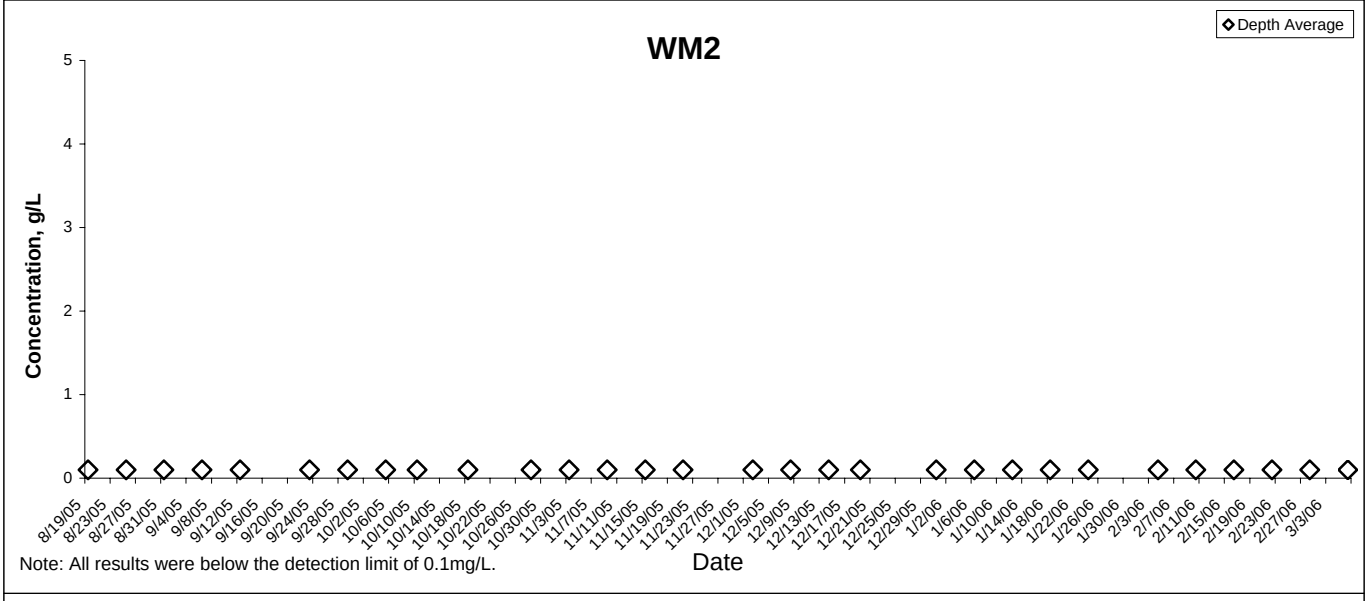
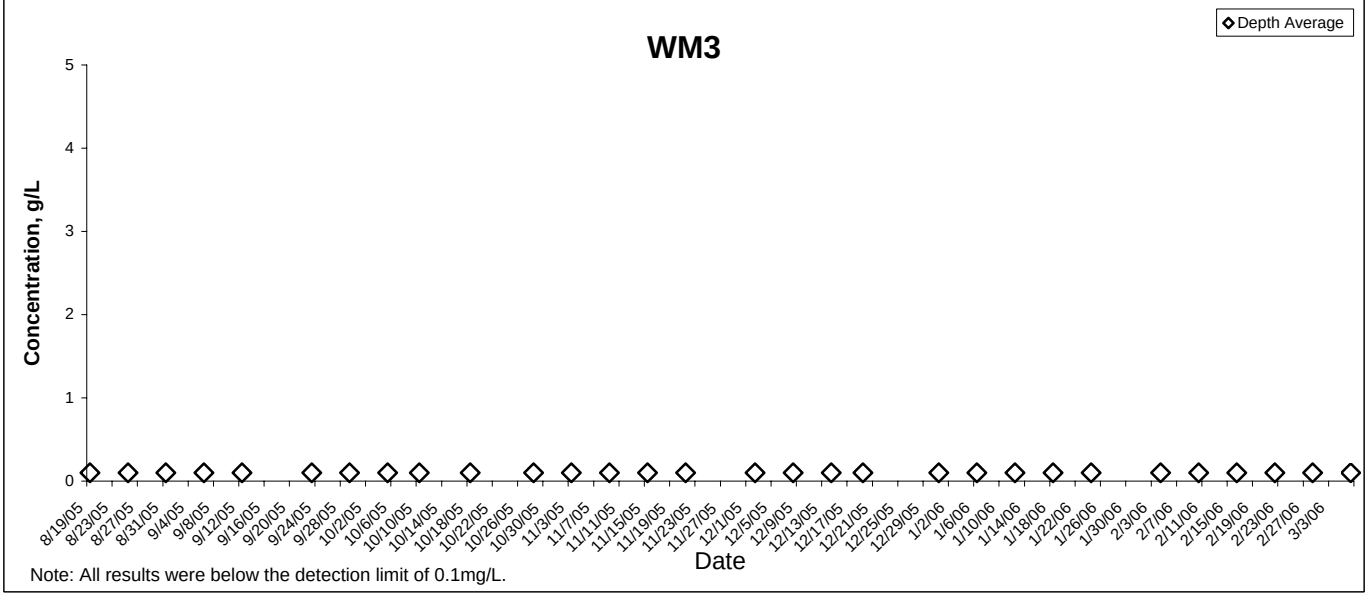
Salinity



Note: All results were below the detection limit of 0.1mg/L.



Note: All results were below the detection limit of 0.1mg/L.



Note: All results were below the detection limit of 0.1mg/L.

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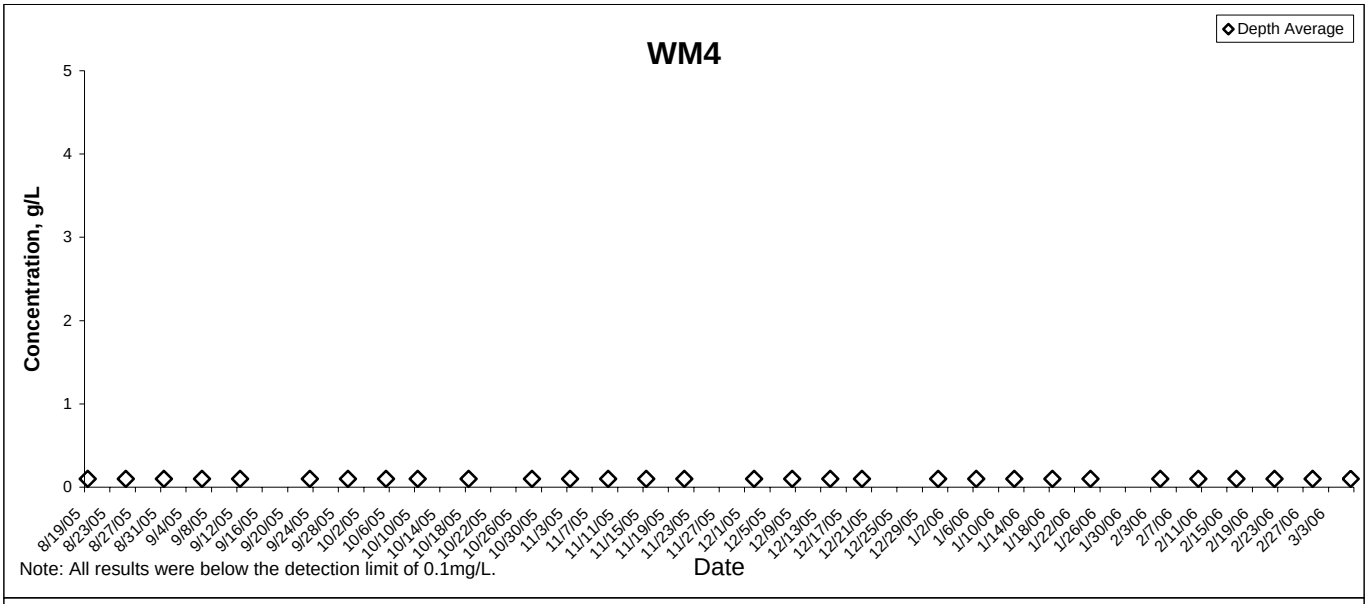
Salinity



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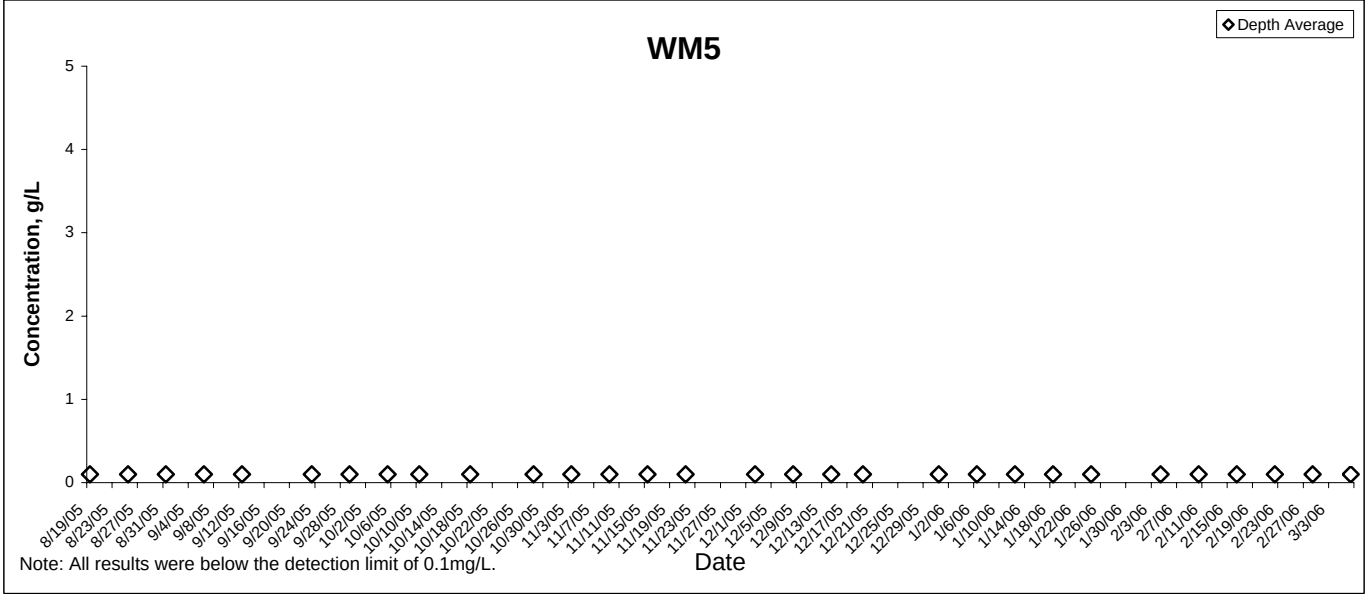

Note: All results were below the detection limit of 0.1mg/L.

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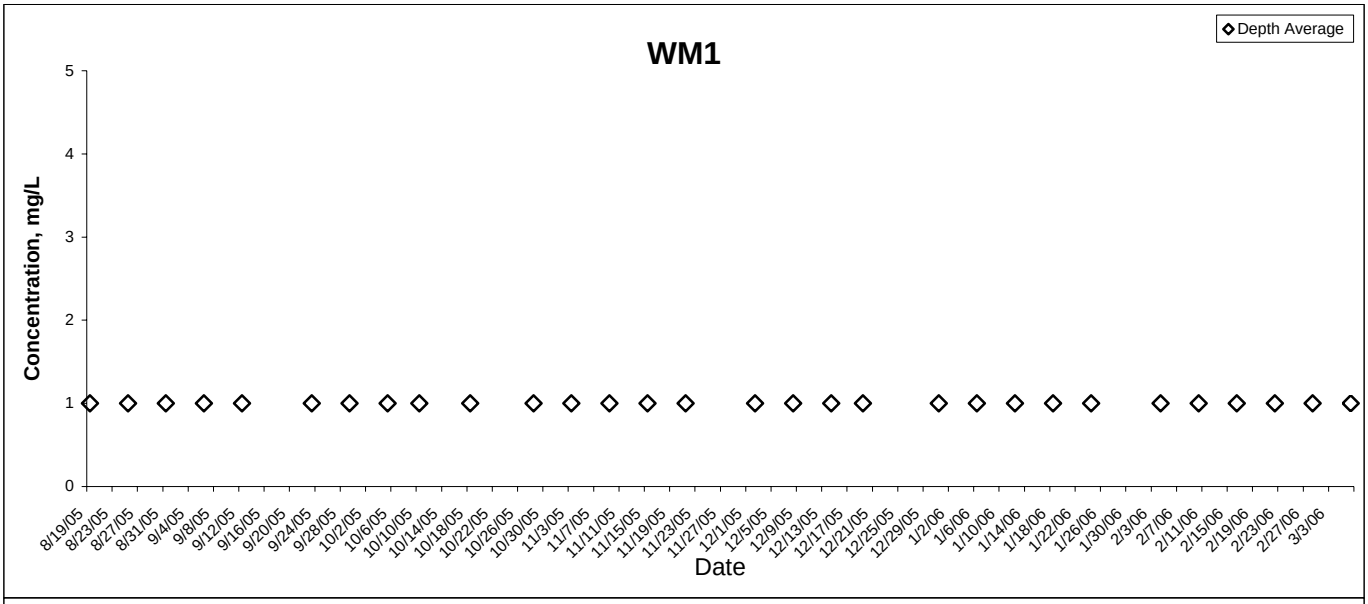
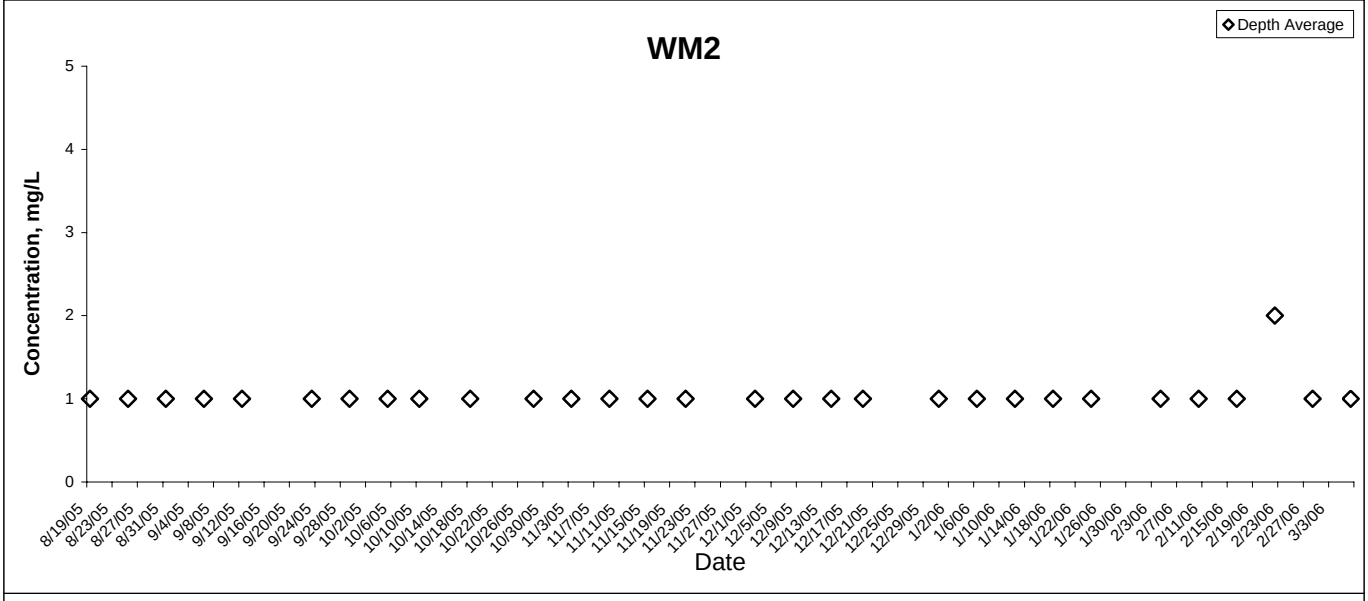
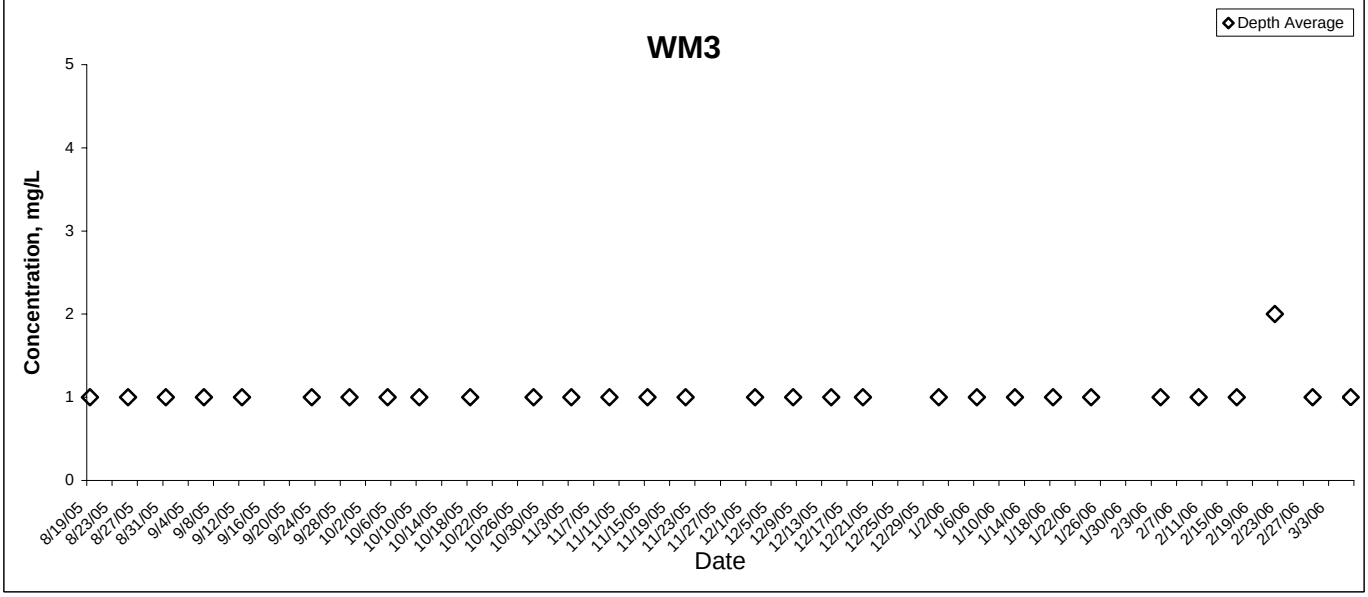
Copper







MAUNSELL AECOM Maunsell Environmental Management Consultants Ltd	FEP-01/097/2001/B Provision of EM&A Services at Water Recreation Centre **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	Mar 06
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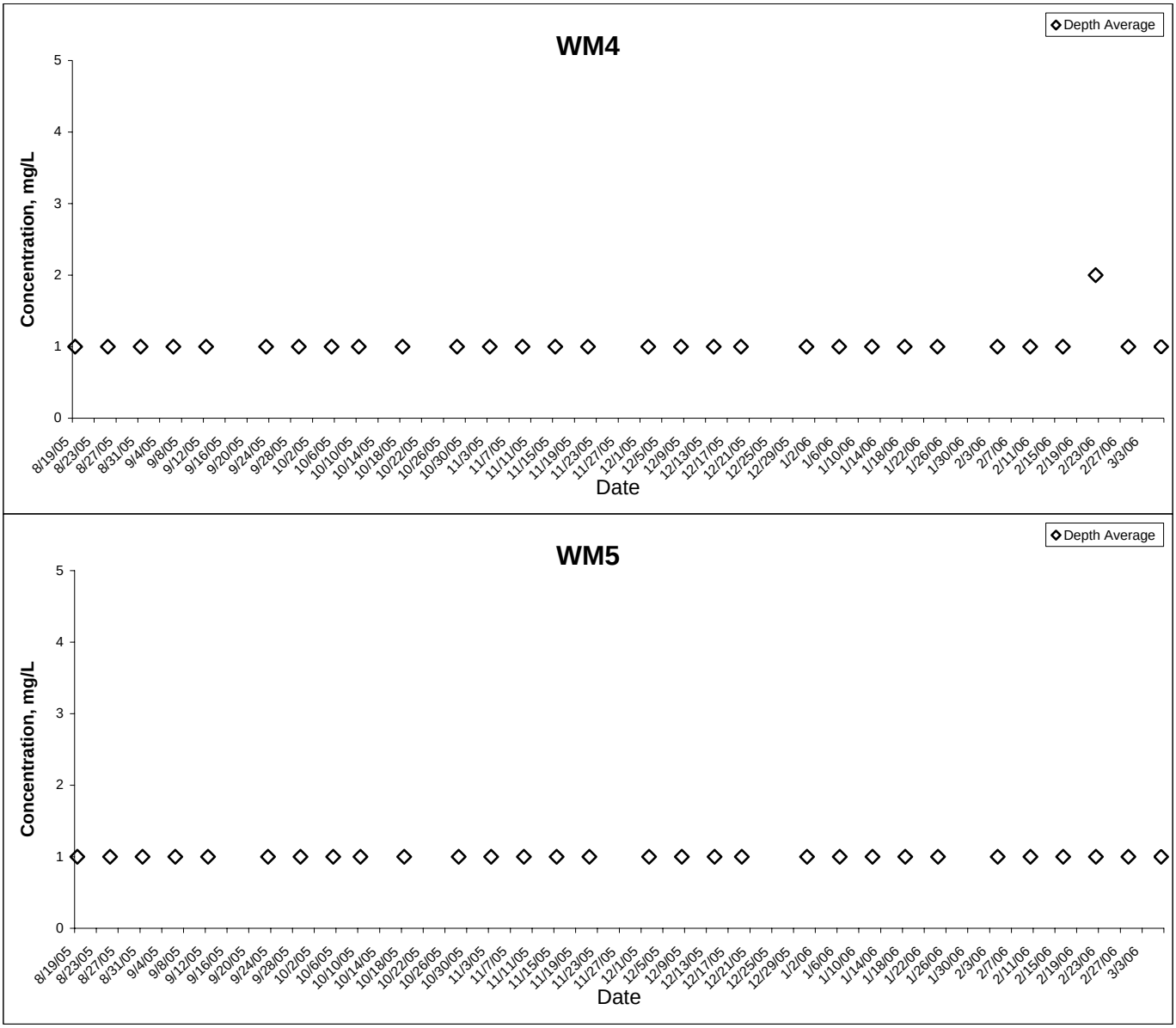
Copper



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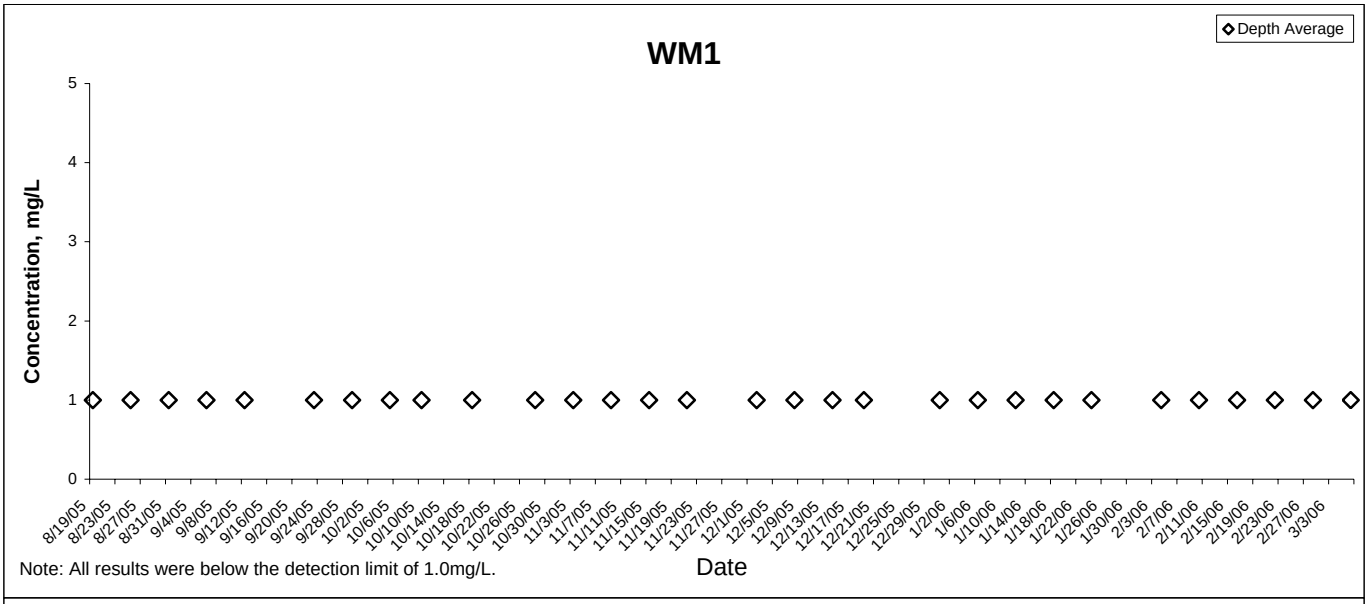
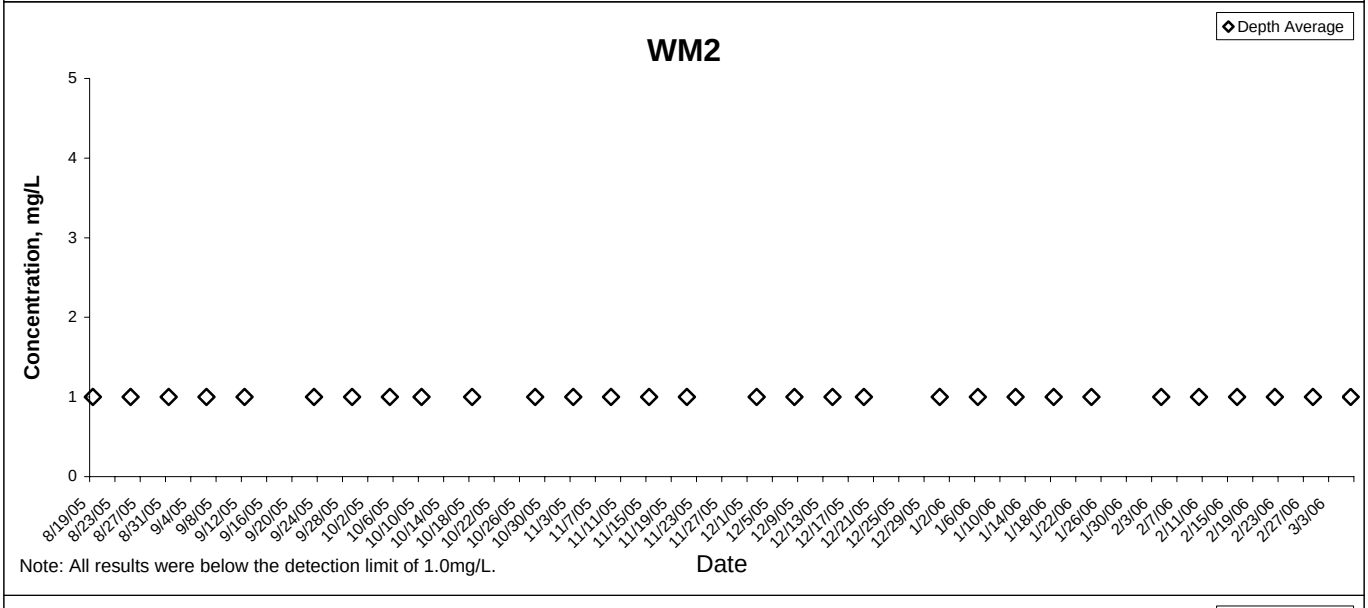
Chromium



Note: All results were below the detection limit of 1.0mg/L.



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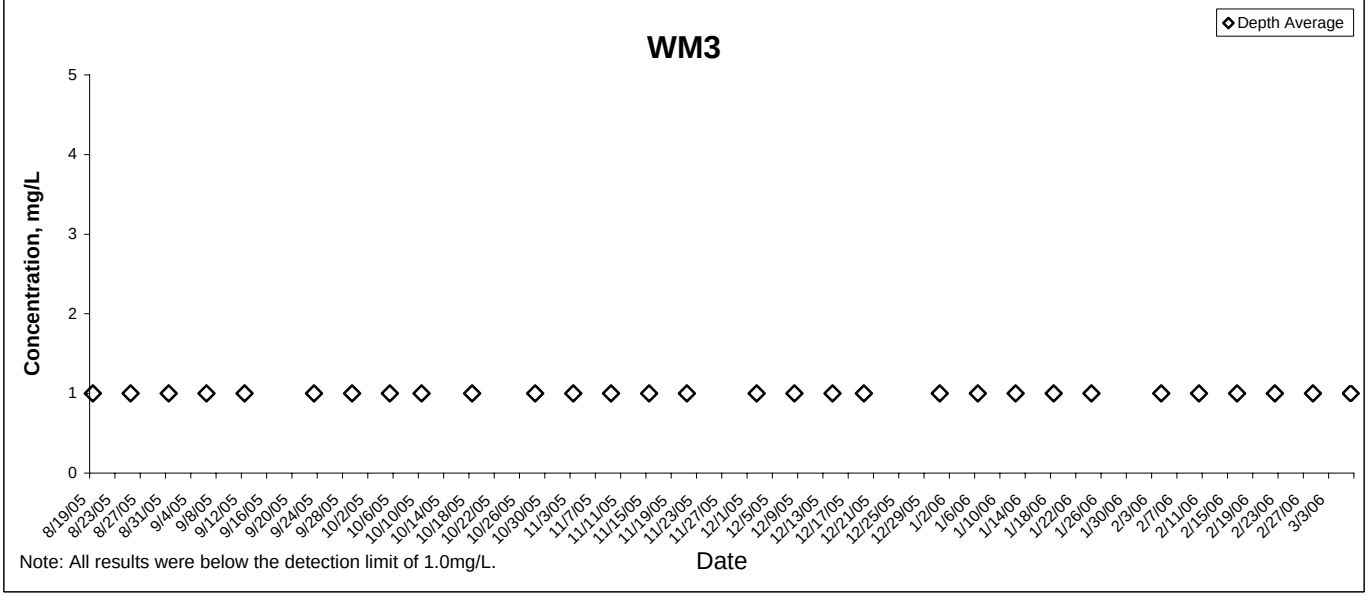

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MAUNSELL AECOM Maunsell Environmental Management Consultants Ltd	FEP-01/097/2001/B Provision of EM&A Services at Water Recreation Centre **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	Mar 06
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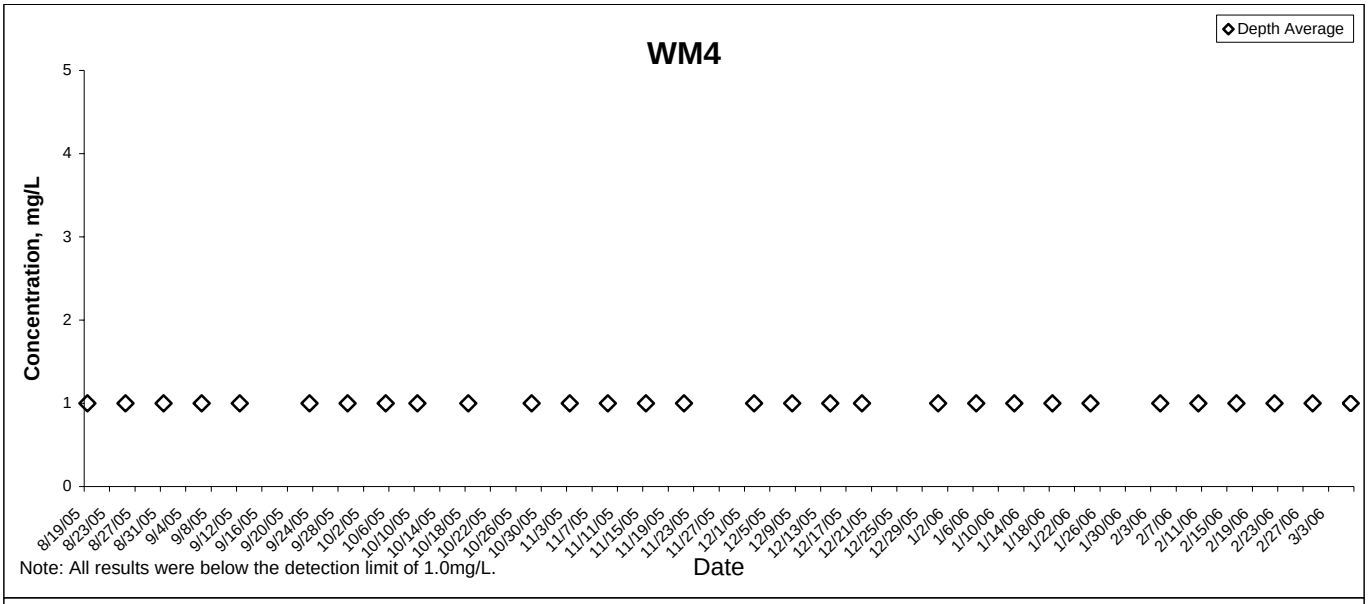
Chromium



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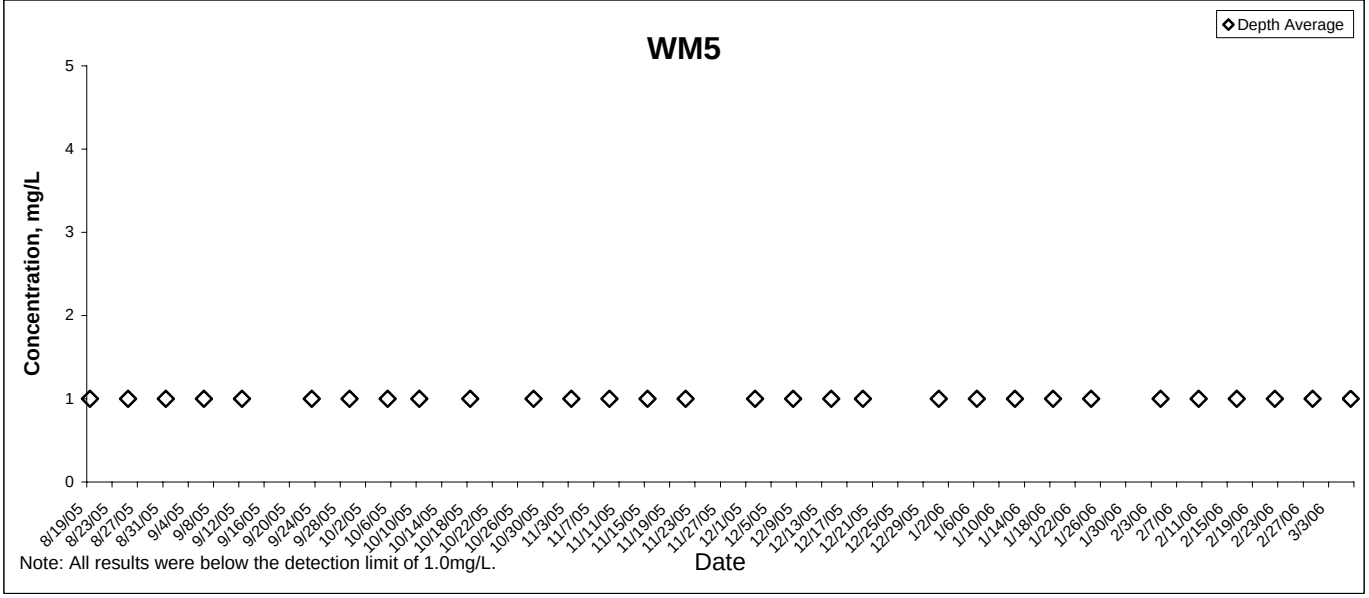

Note: All results were below the detection limit of 1.0mg/L.

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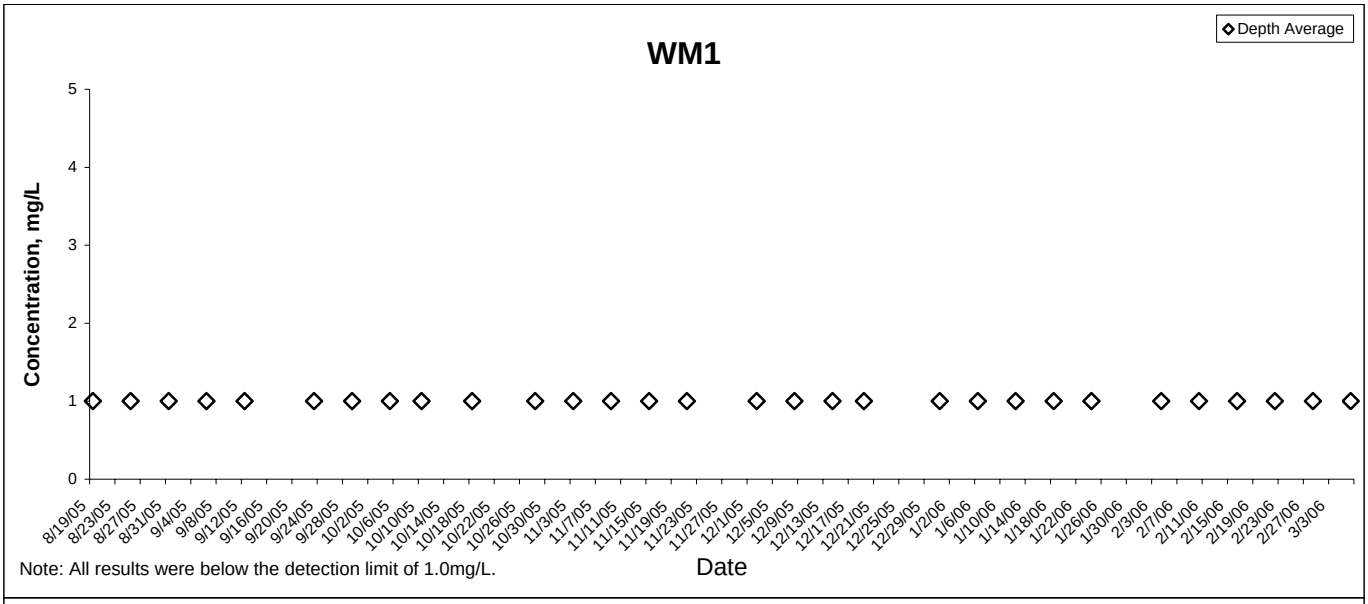
Lead



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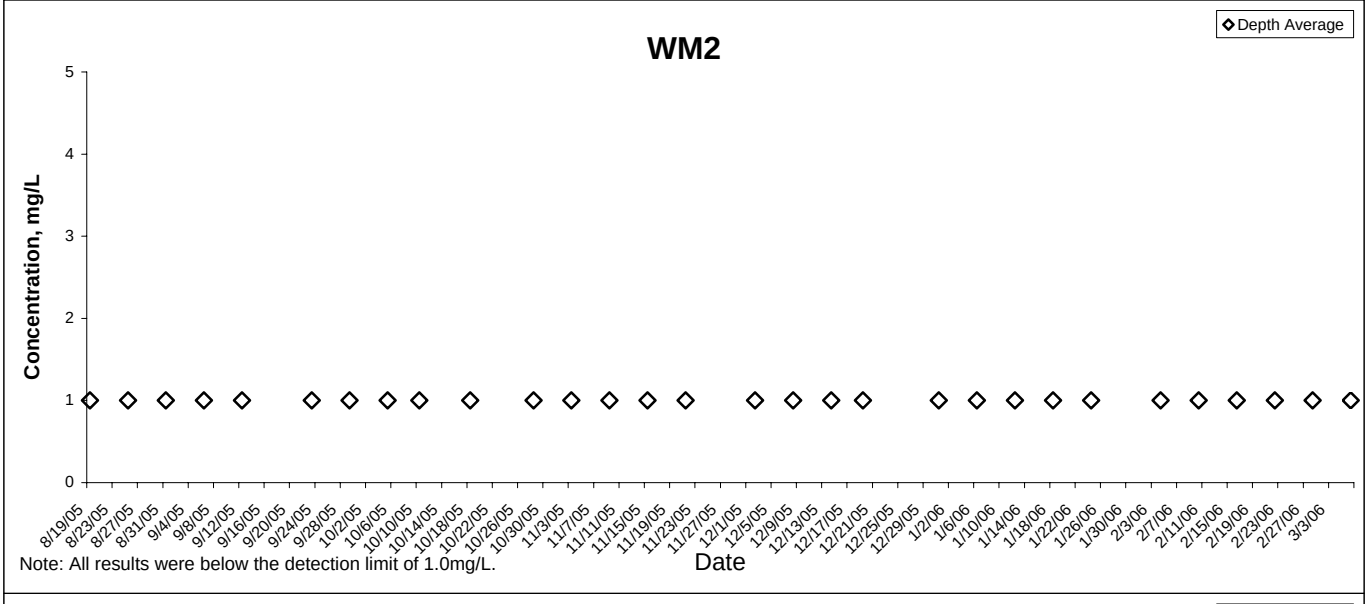

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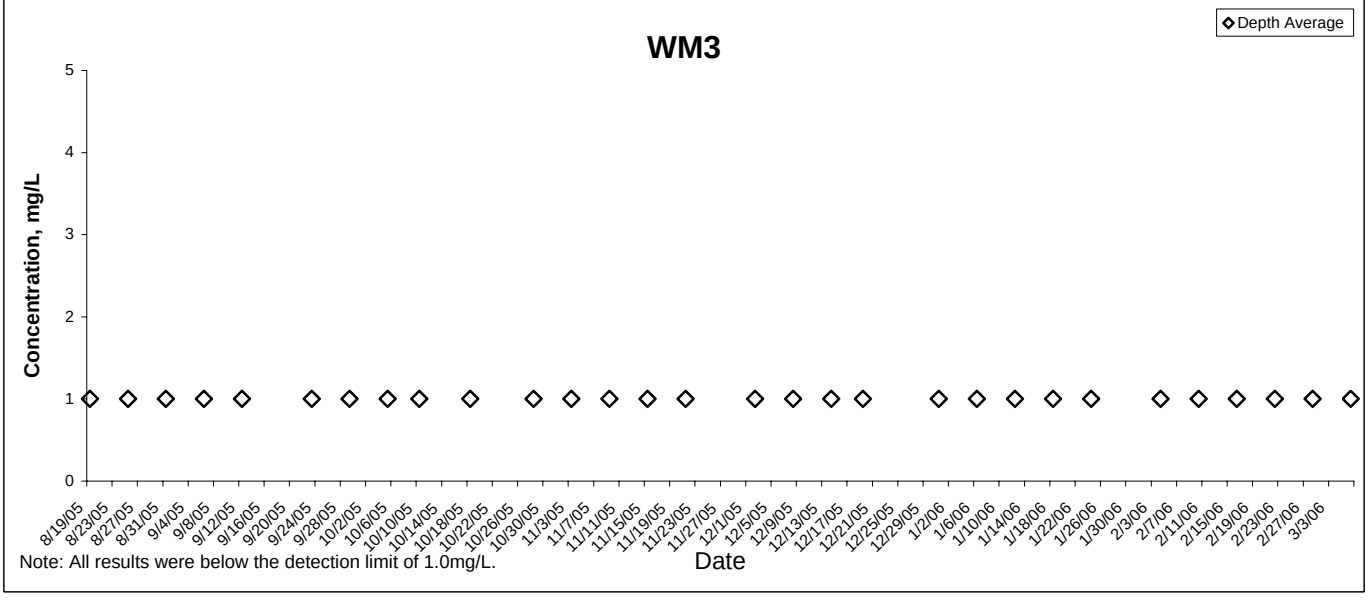

Note: All results were below the detection limit of 1.0mg/L.

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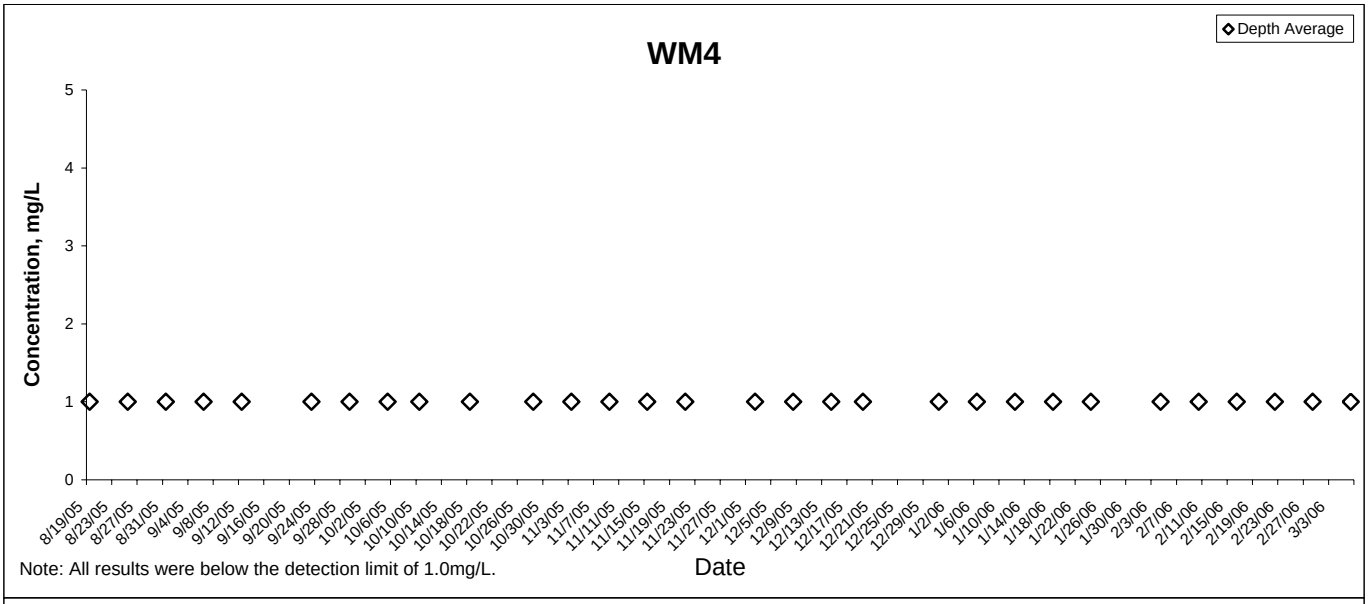
Lead



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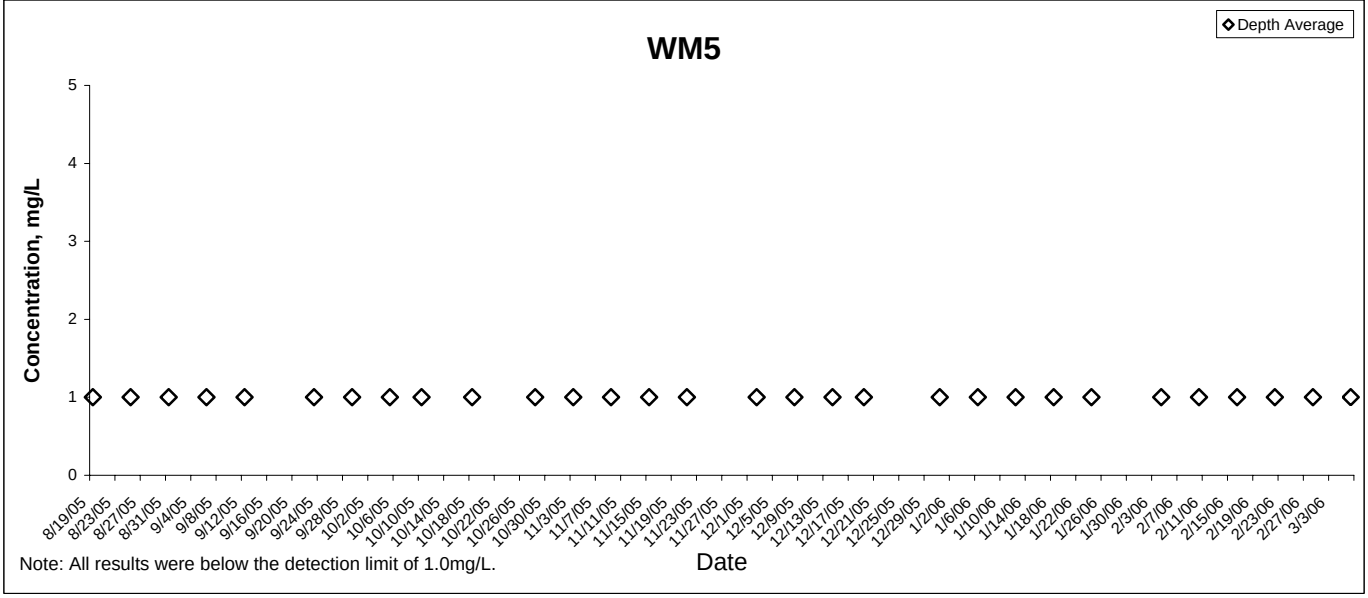

Note: All results were below the detection limit of 1.0mg/L.

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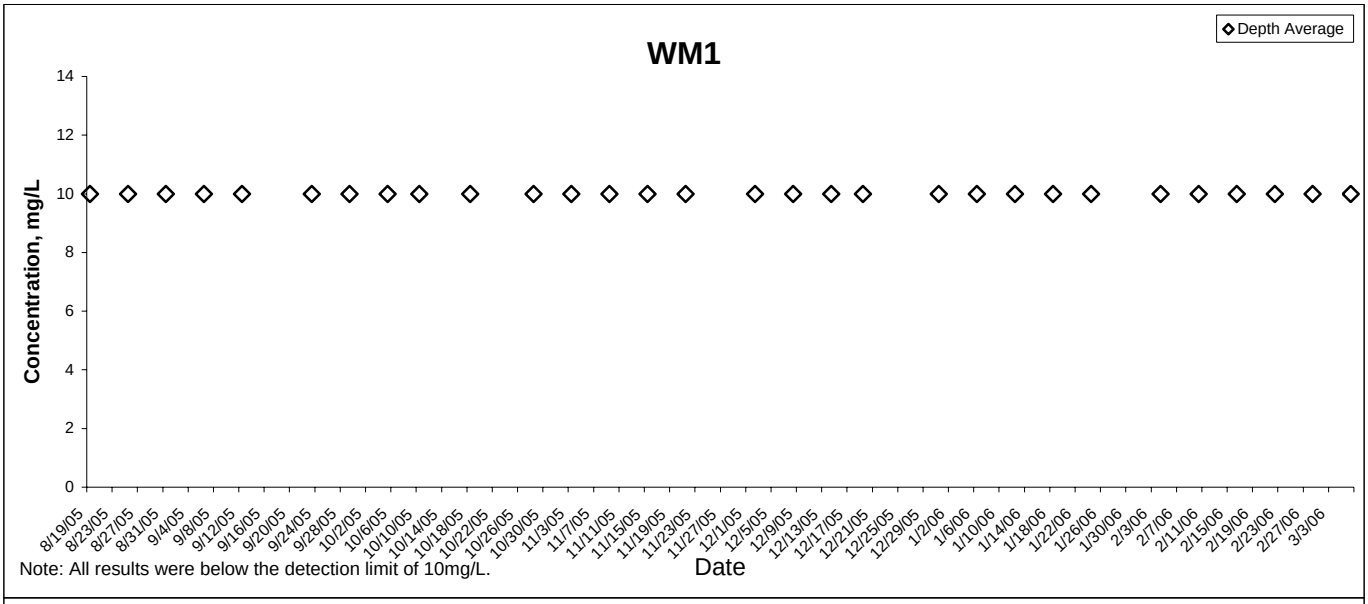
Zinc



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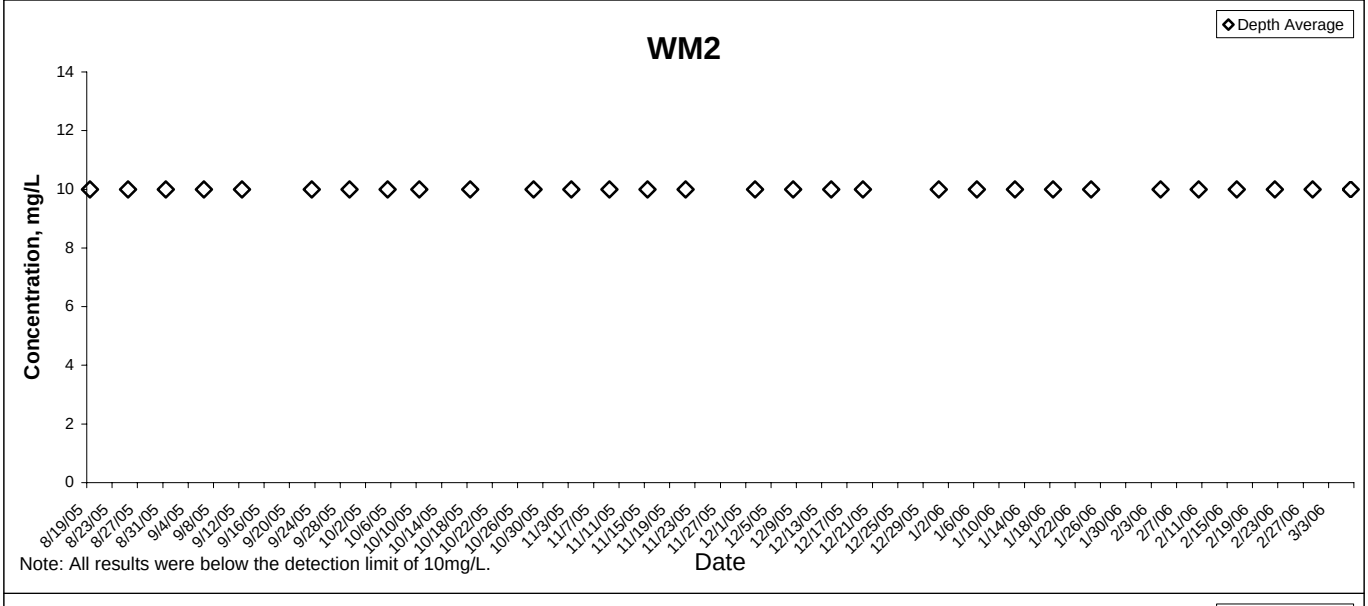

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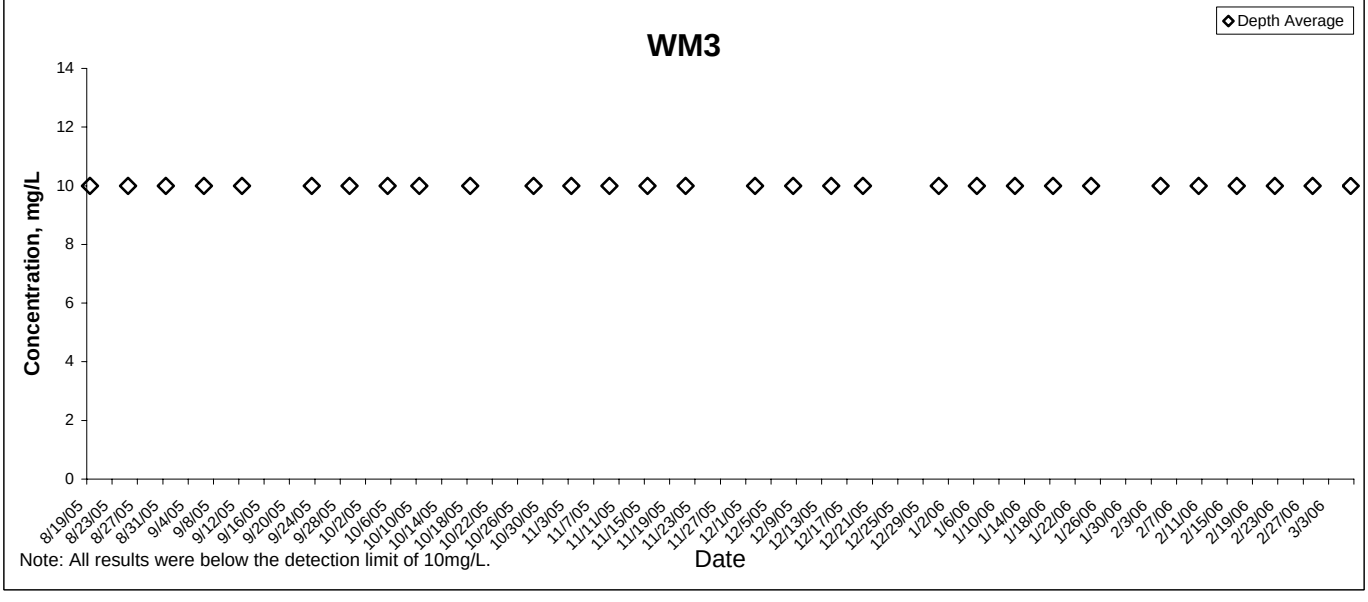

Note: All results were below the detection limit of 10mg/L.

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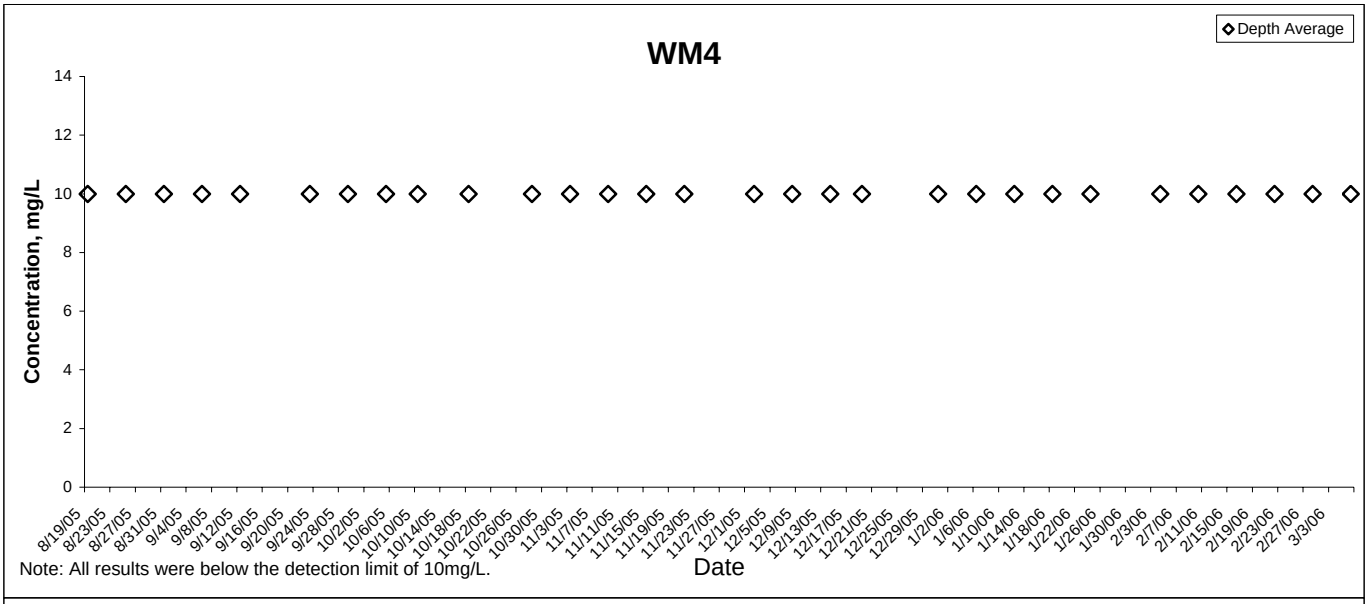
Zinc



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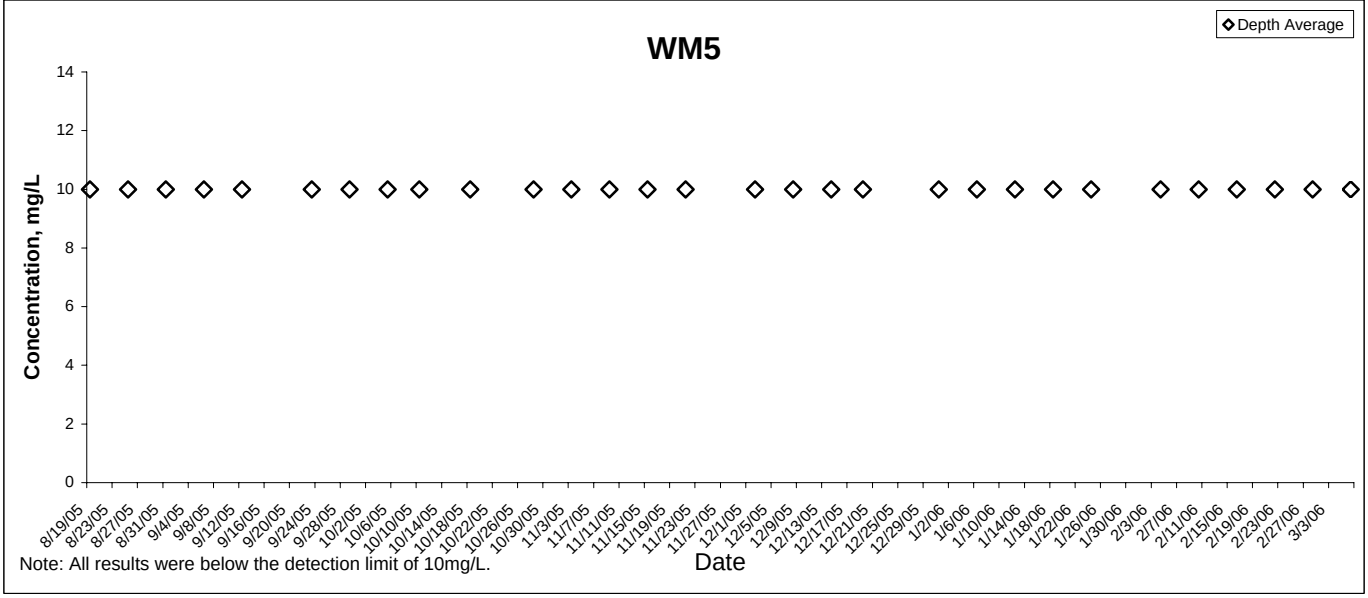

Note: All results were below the detection limit of 10mg/L.

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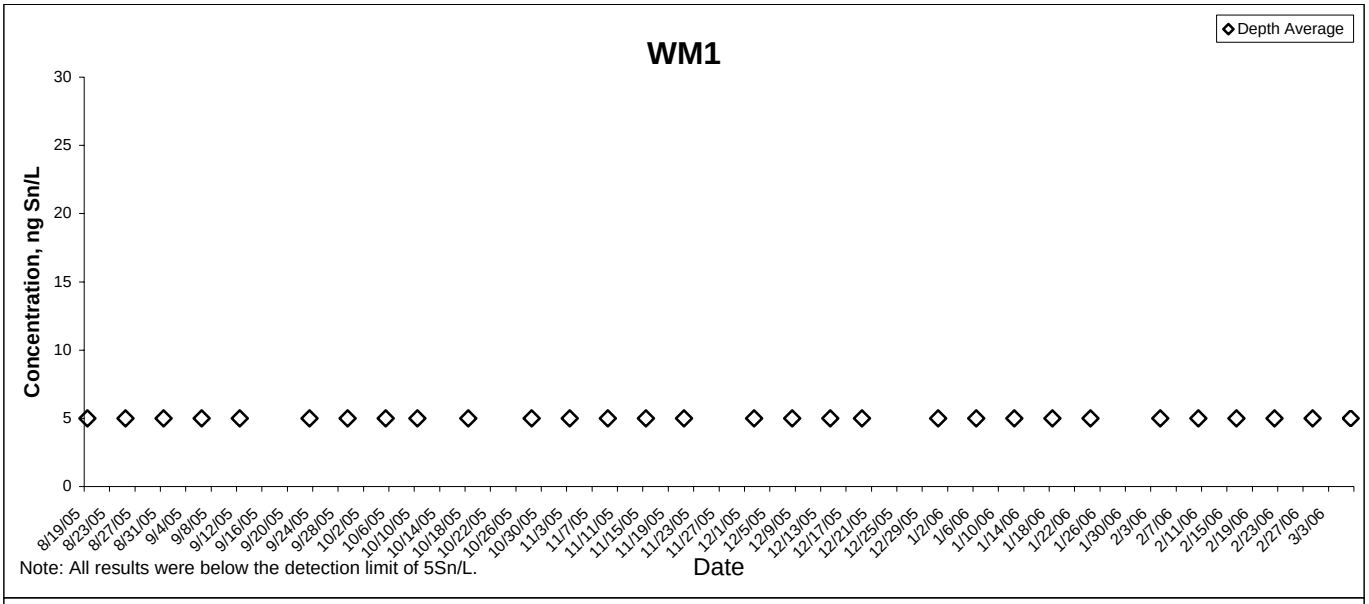
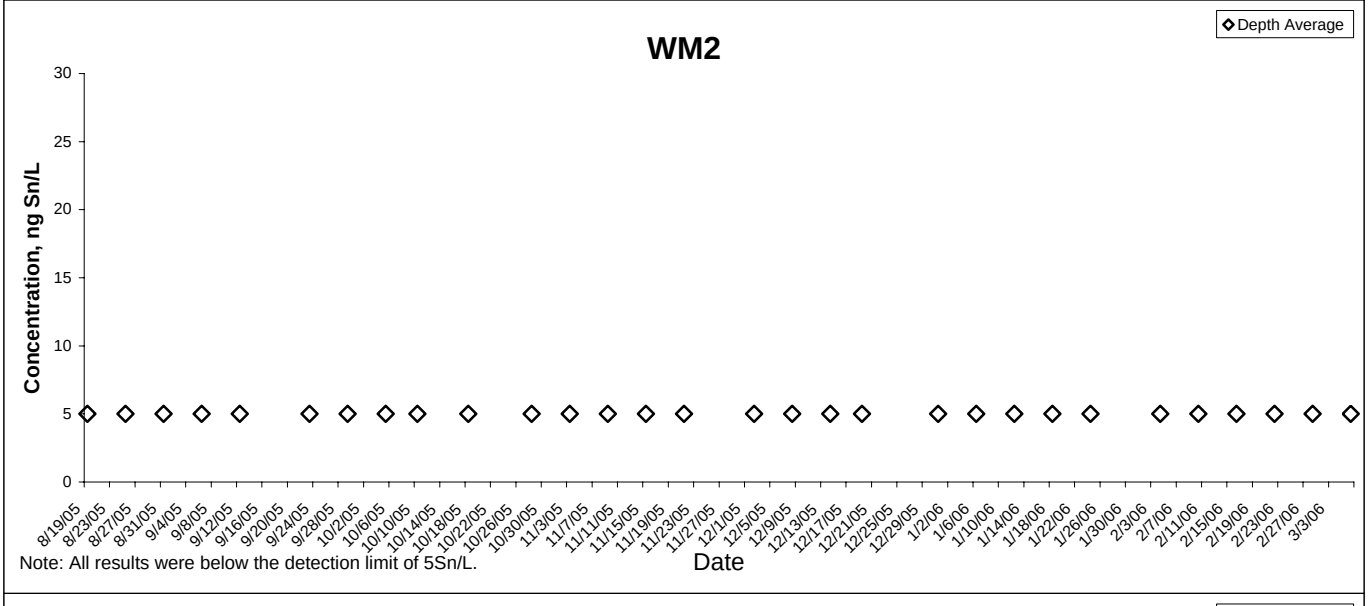
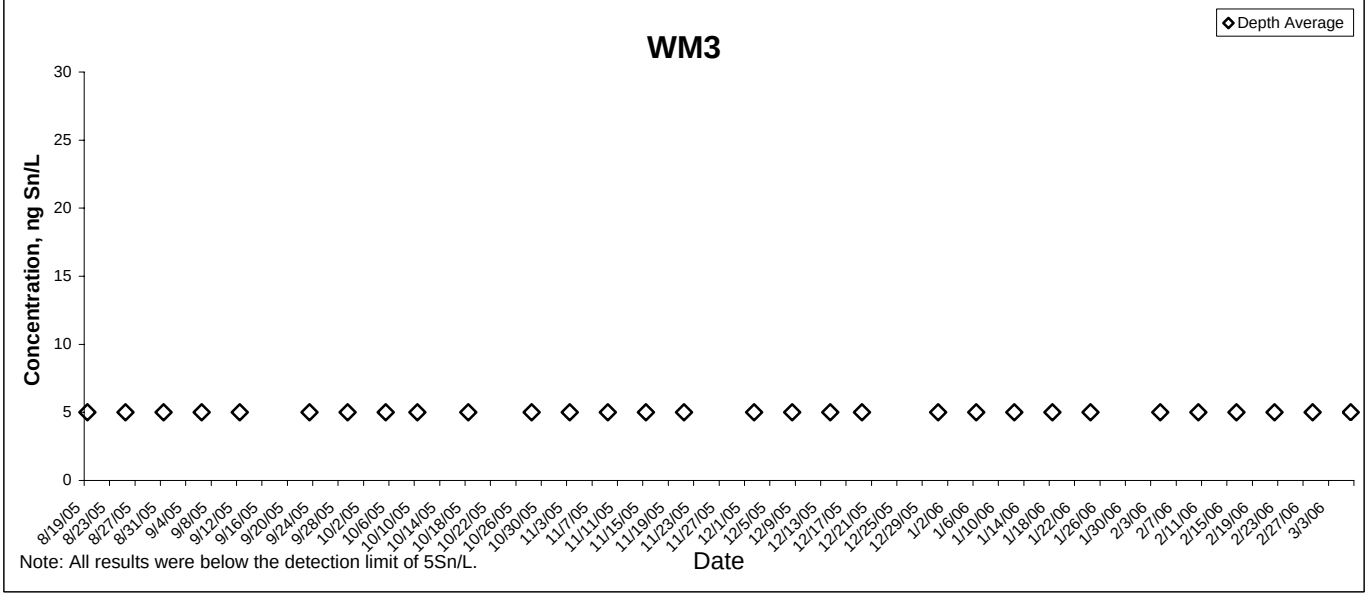
TBT



Note: All results were below the detection limit of 5Sn/L.



Note: All results were below the detection limit of 5Sn/L.



Note: All results were below the detection limit of 5Sn/L.

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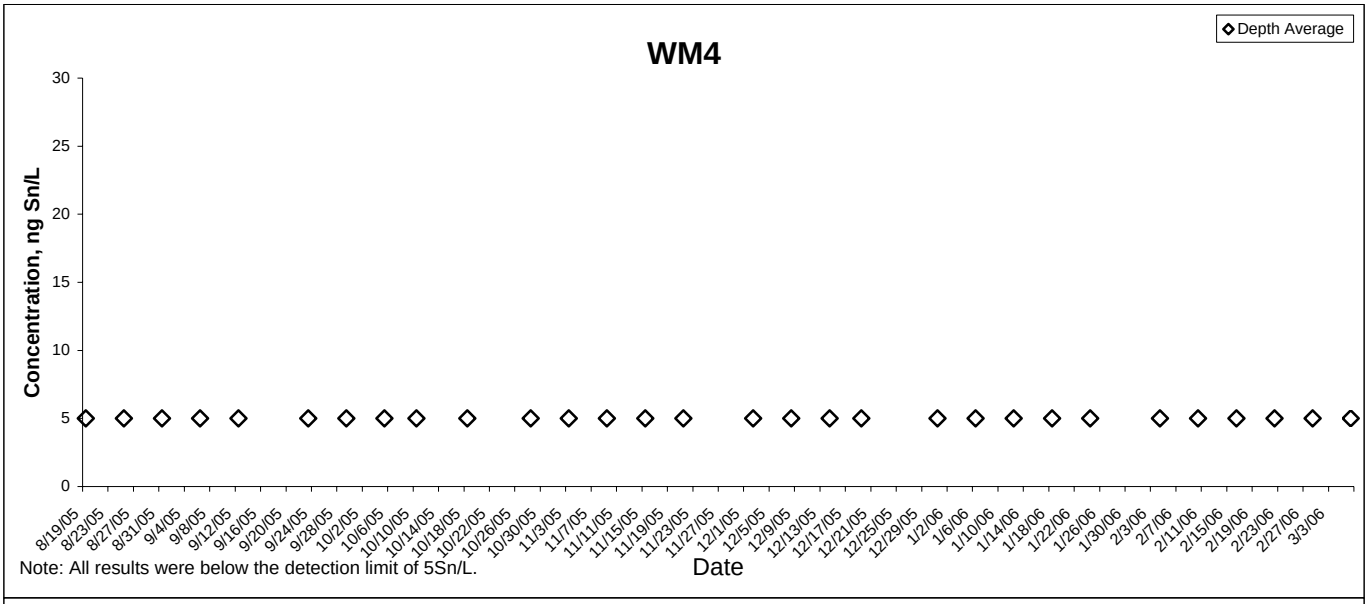
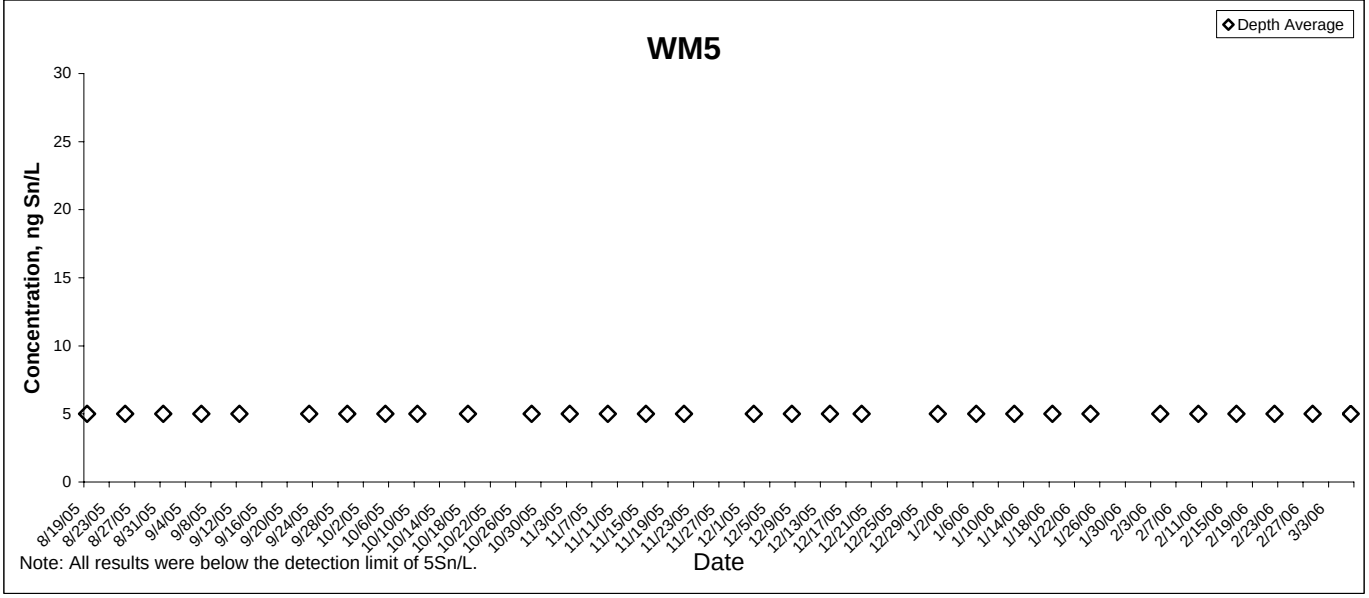
TBT



Note: All results were below the detection limit of 5Sn/L.



Note: All results were below the detection limit of 5Sn/L.

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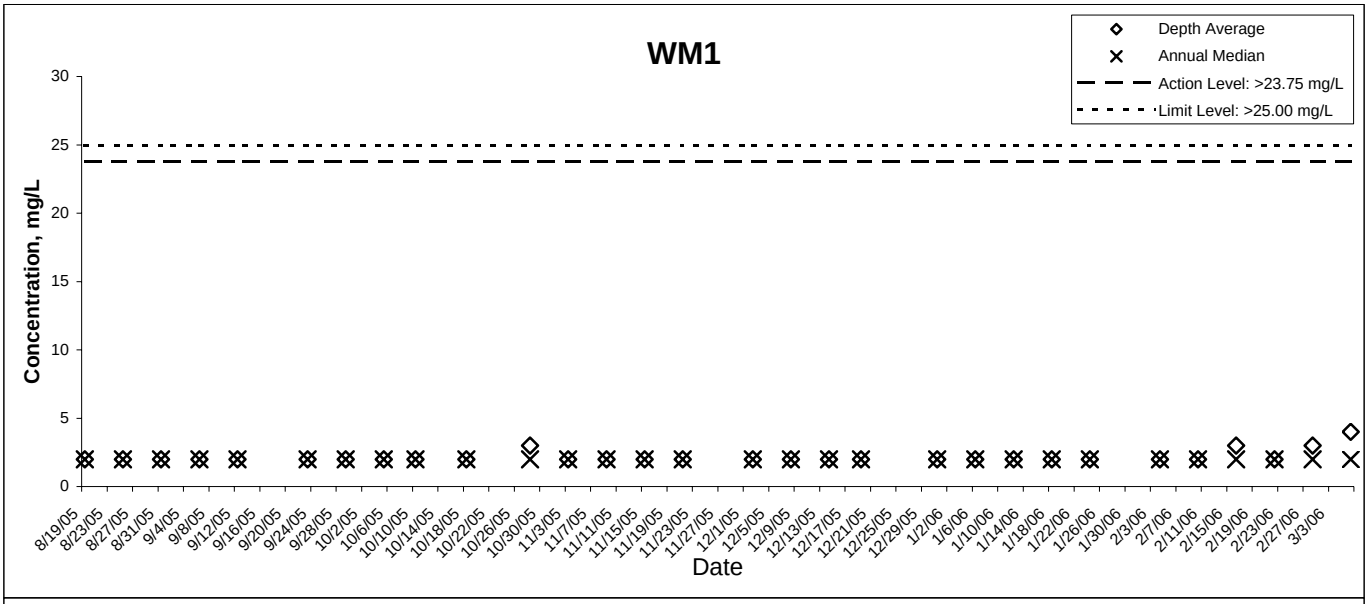
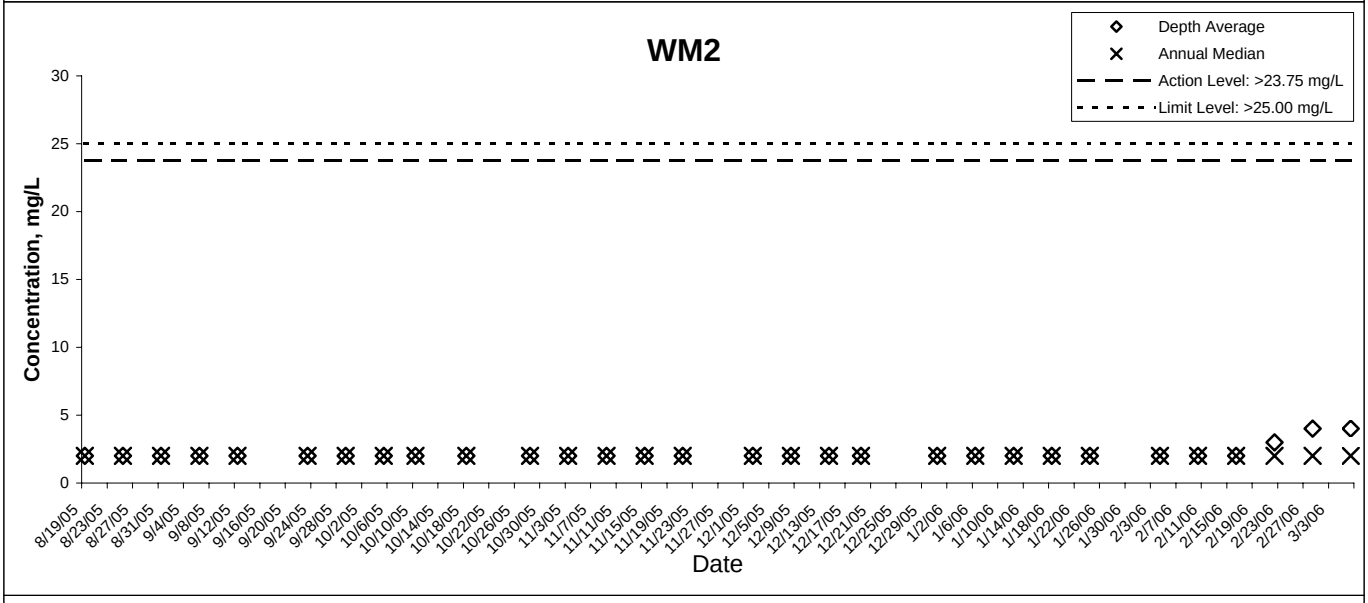
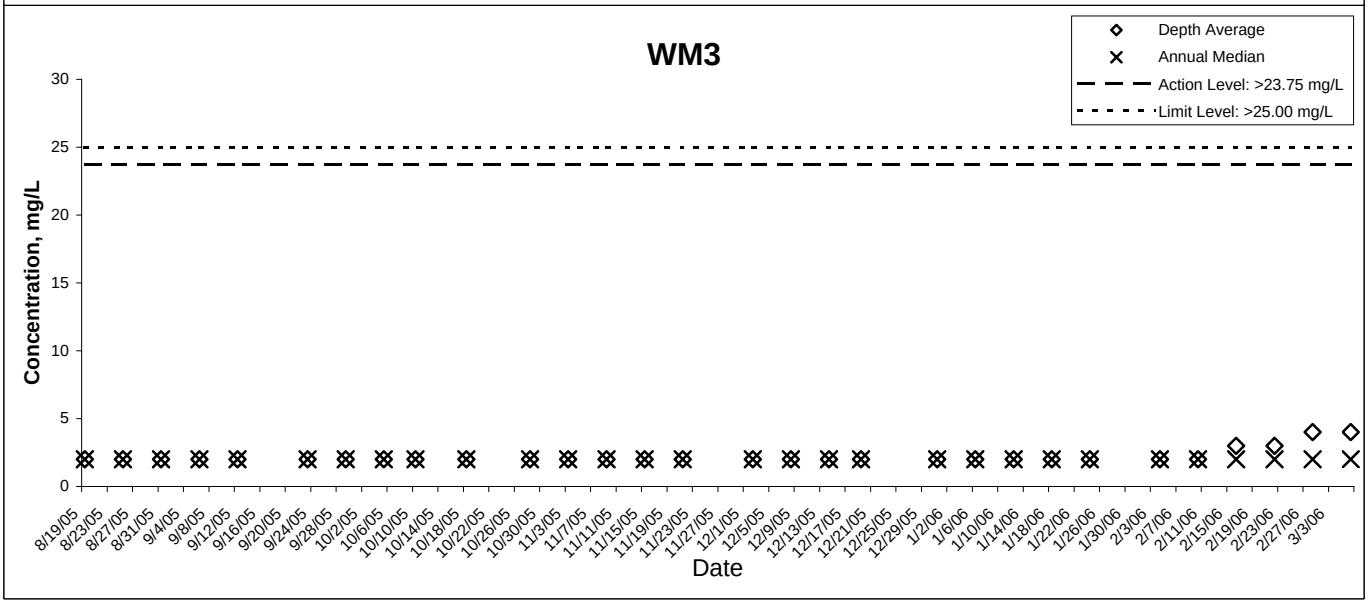
Suspended Solids







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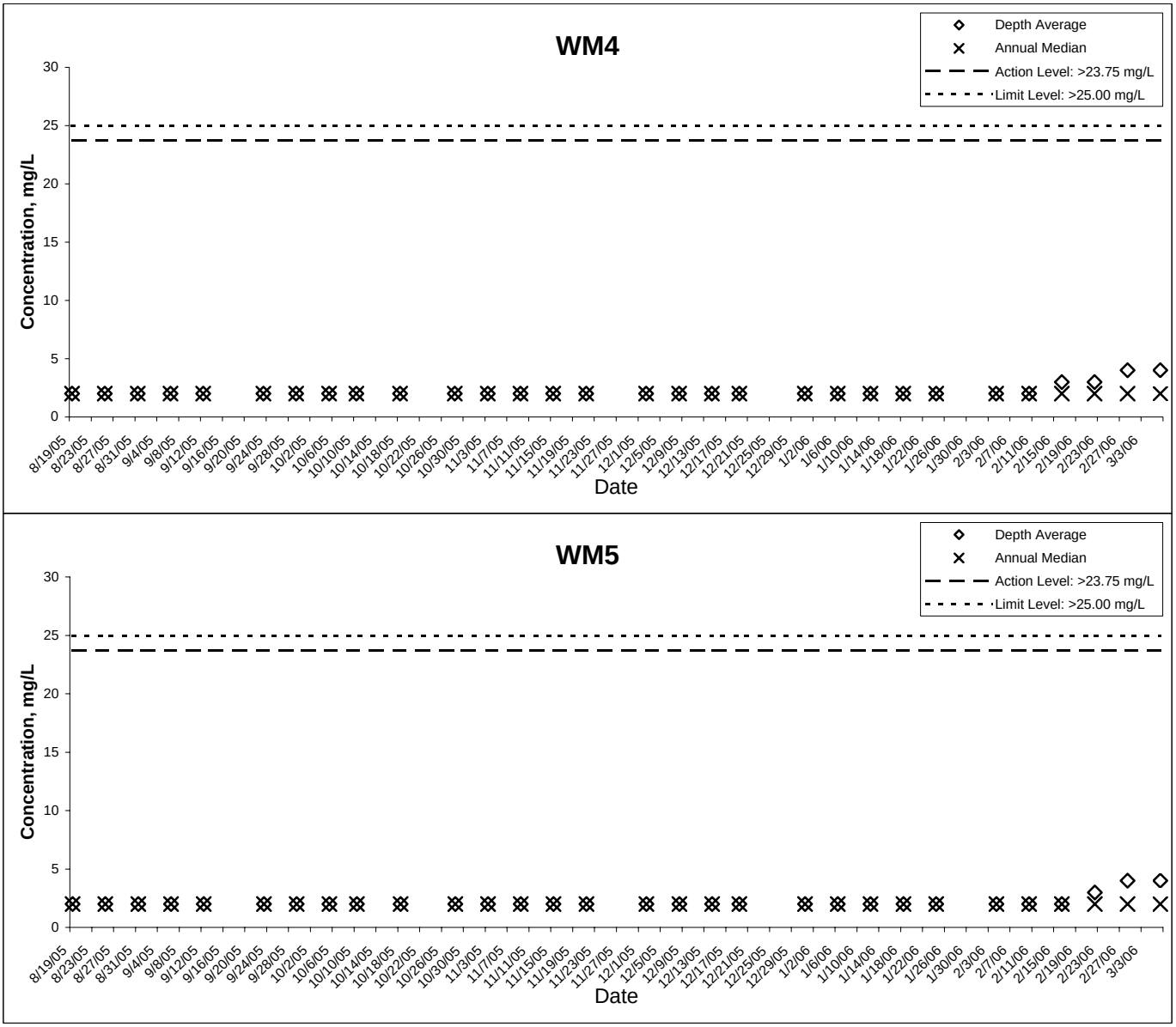
Suspended Solids



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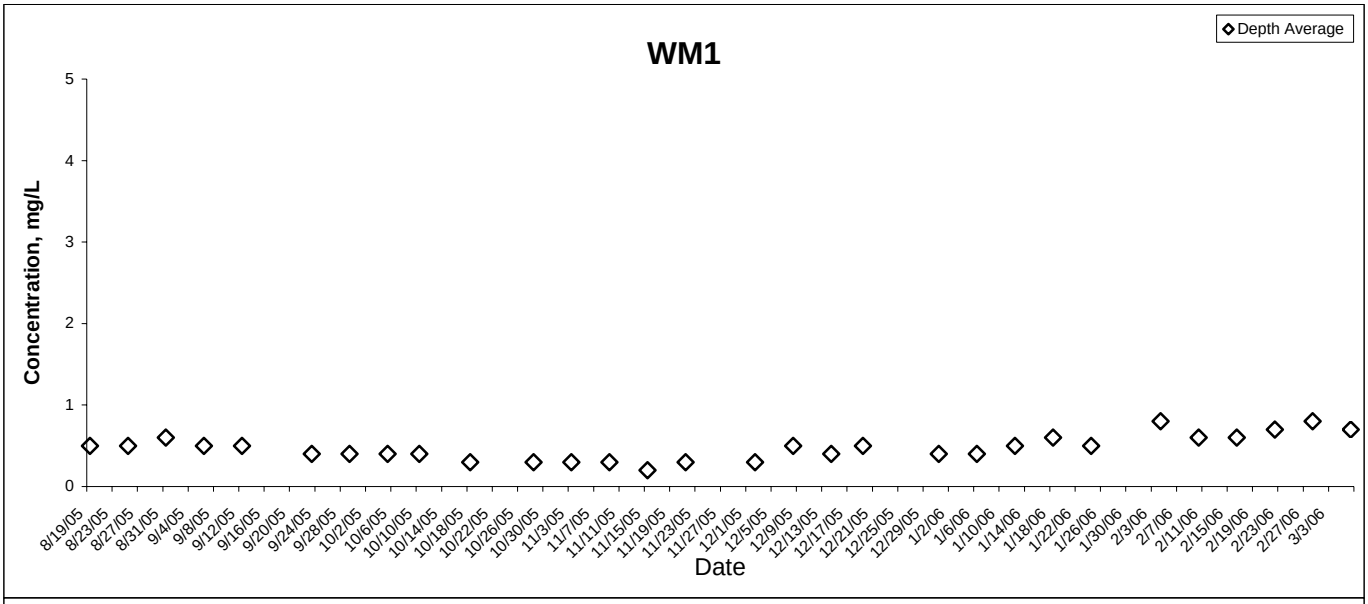
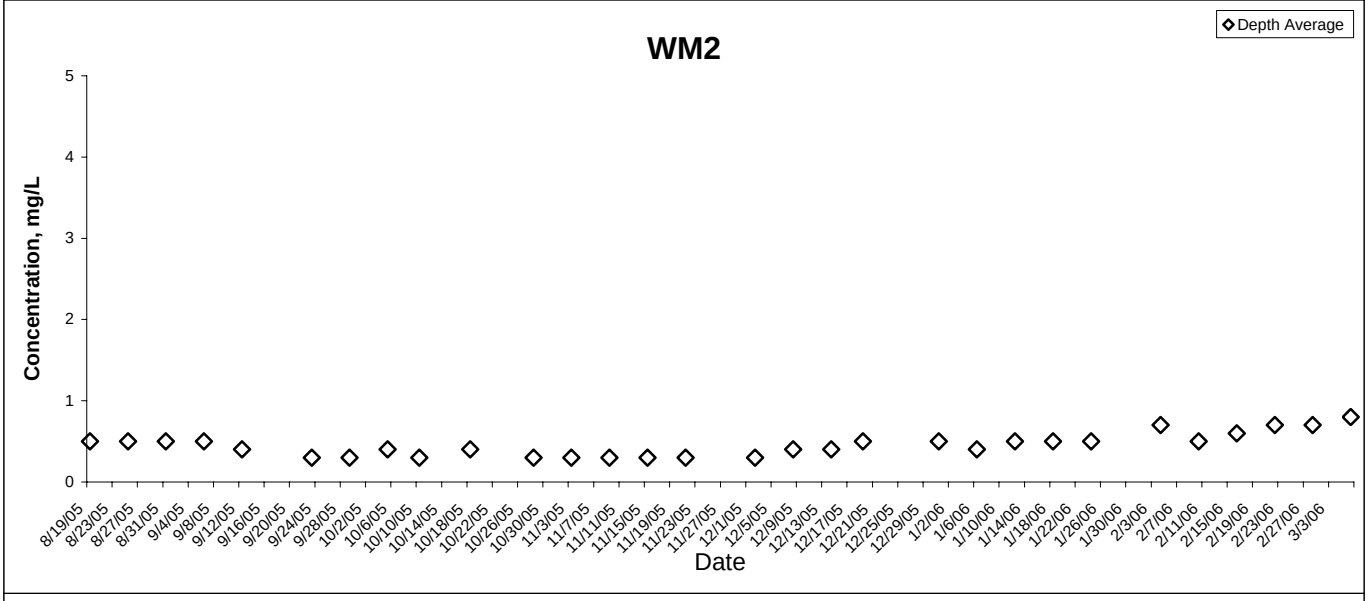
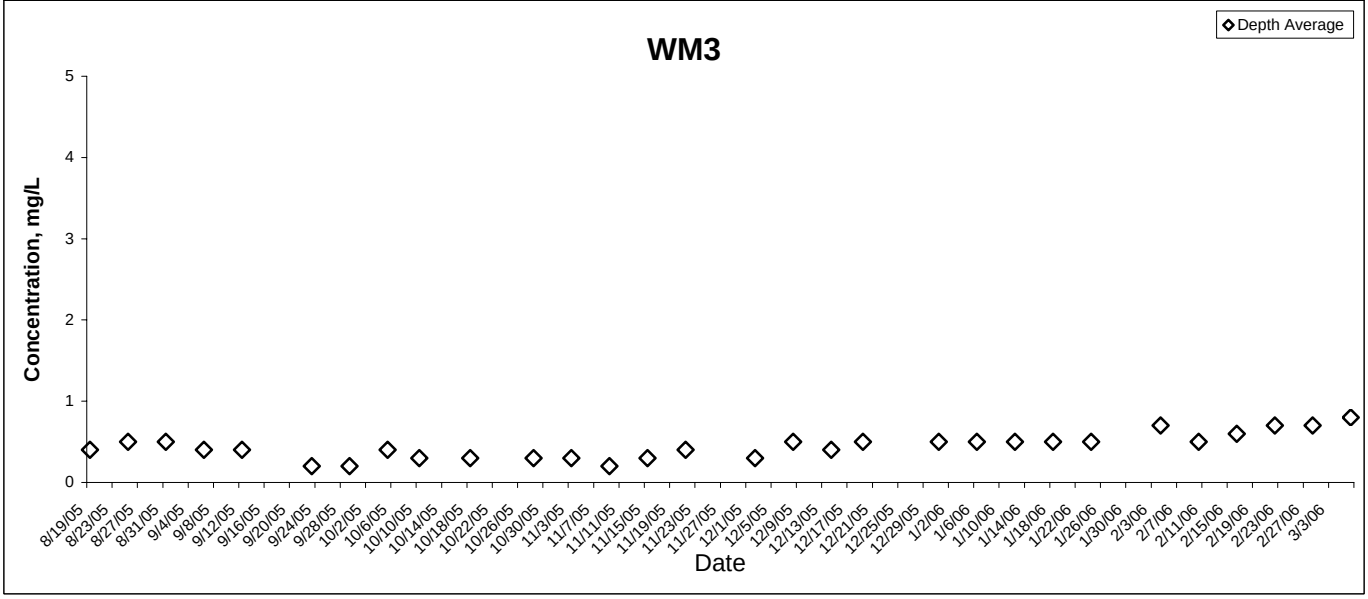
Total Nitrogen







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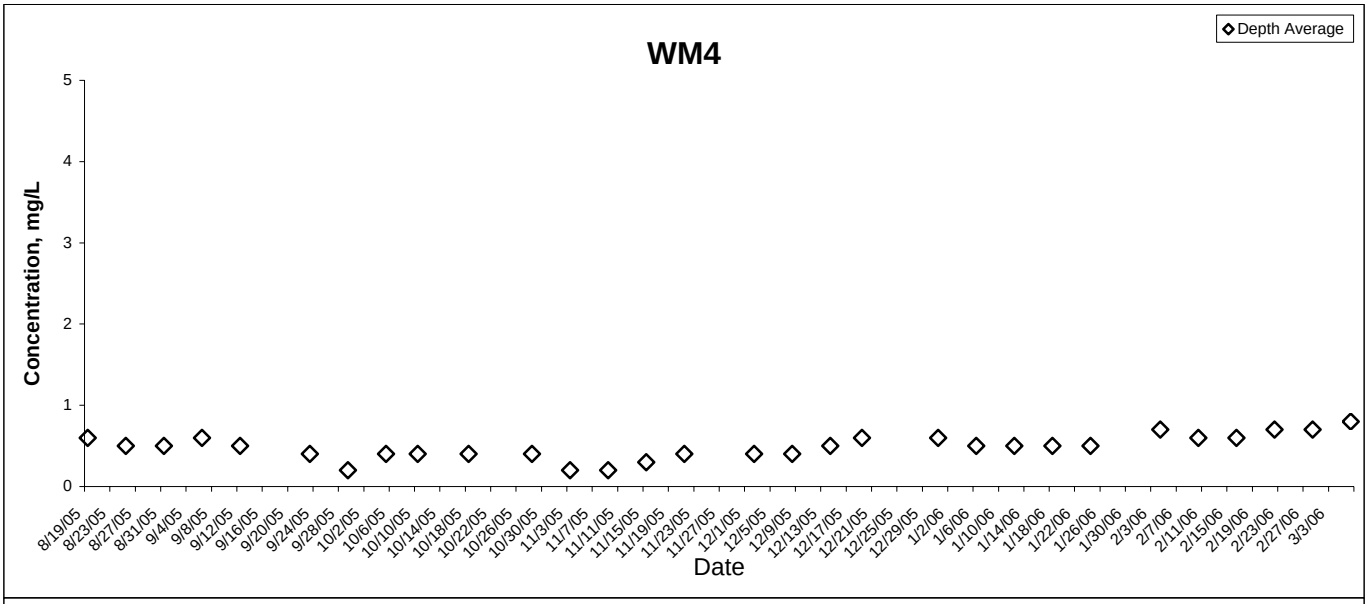
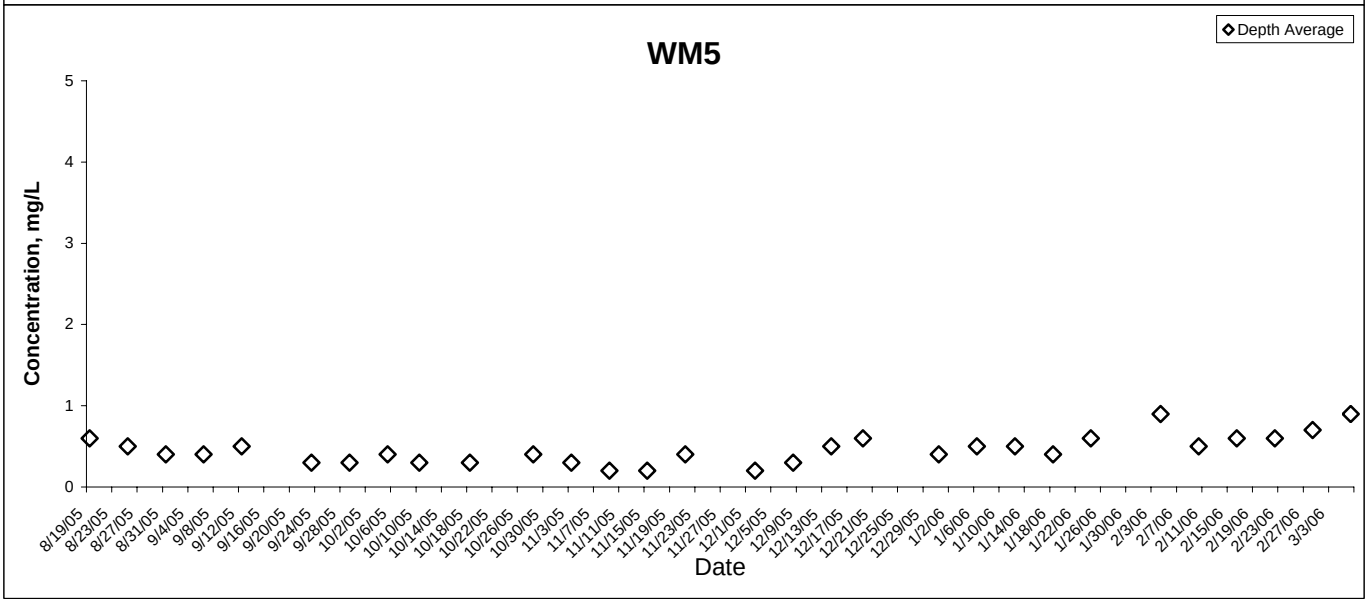
Total Nitrogen





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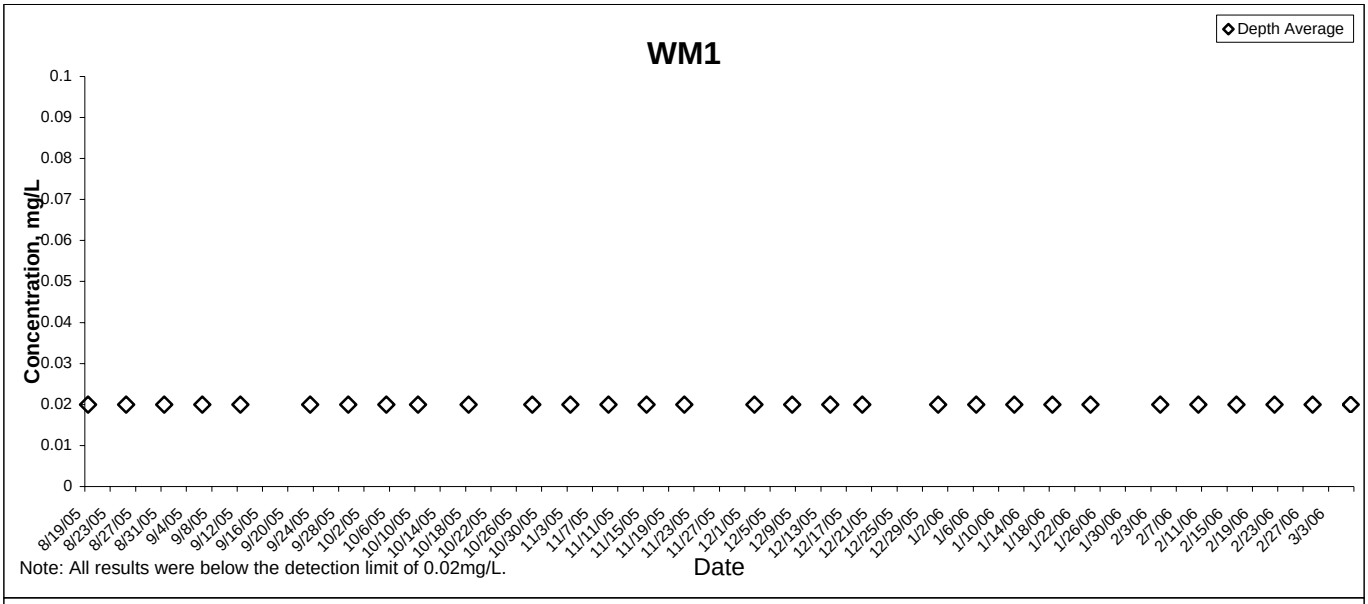
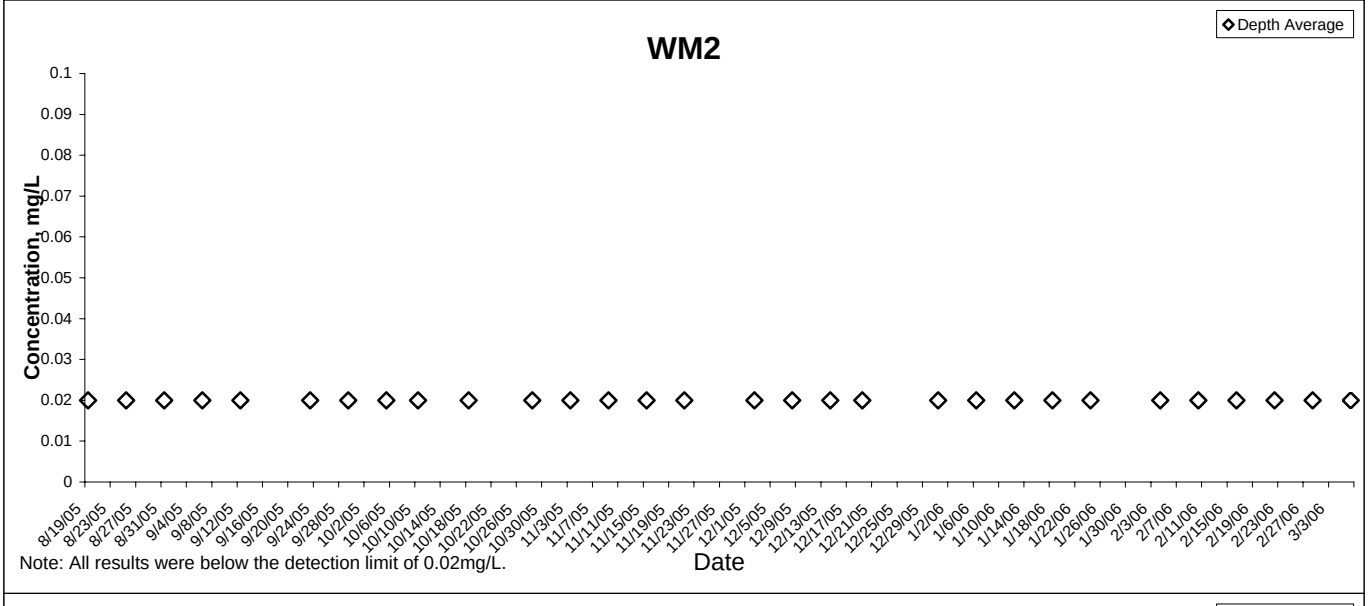
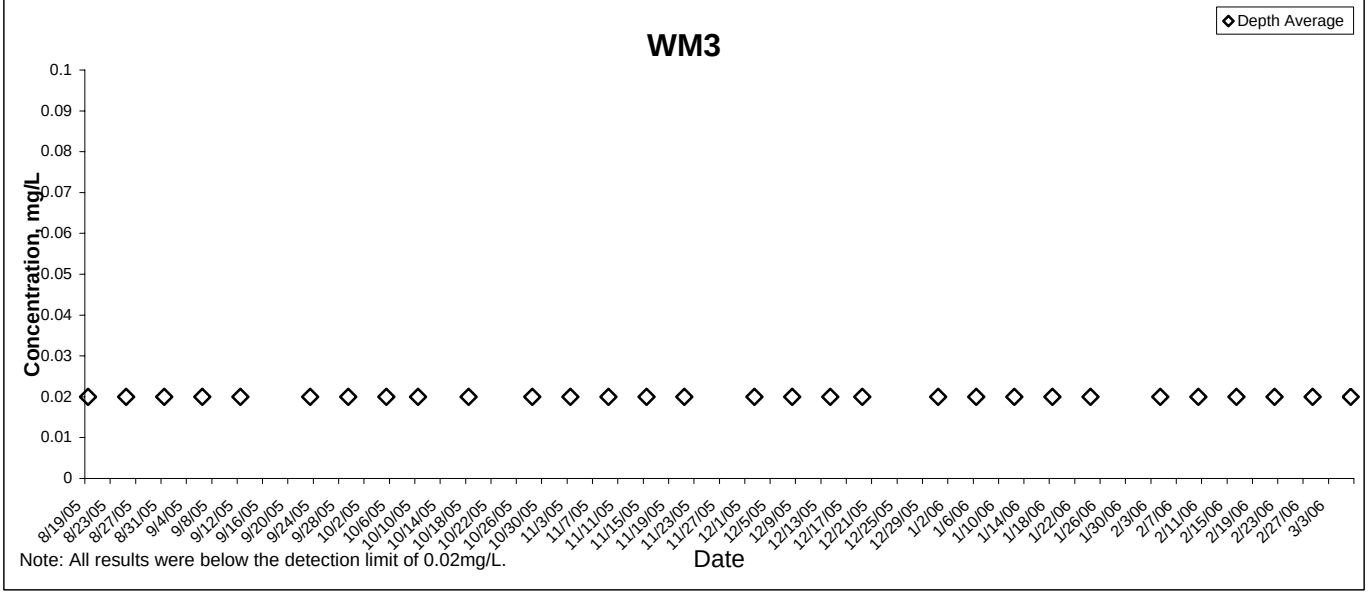
Total Phosphorous



Note: All results were below the detection limit of 0.02mg/L.



Note: All results were below the detection limit of 0.02mg/L.



Note: All results were below the detection limit of 0.02mg/L.

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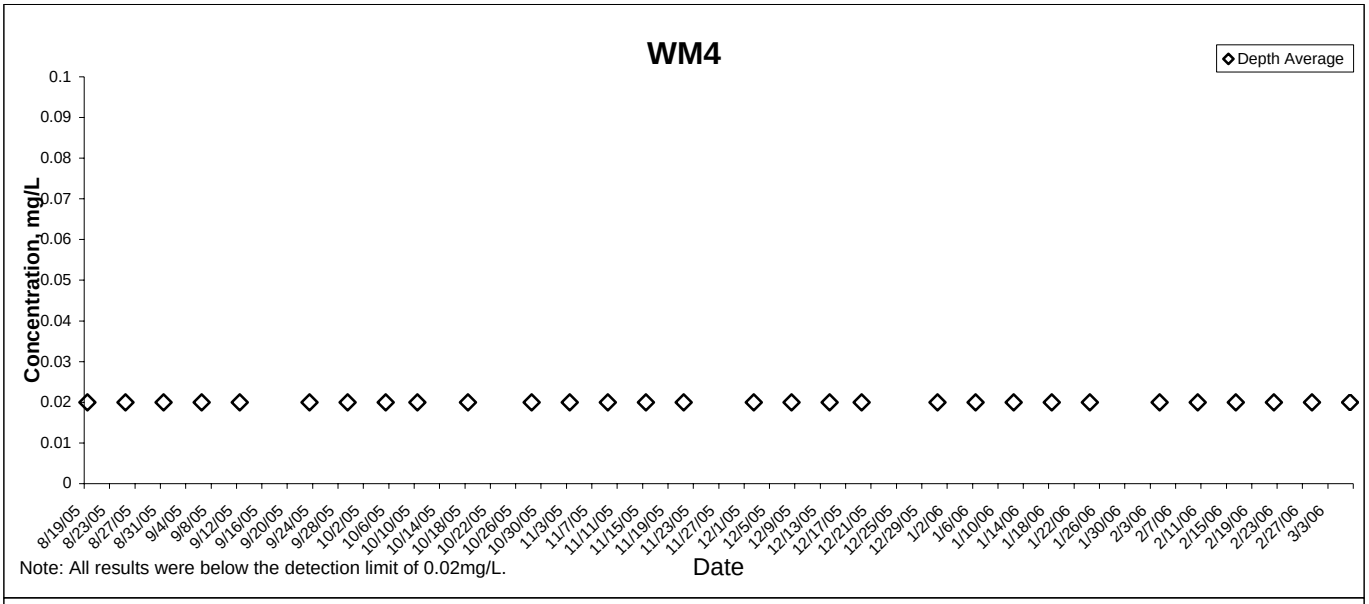
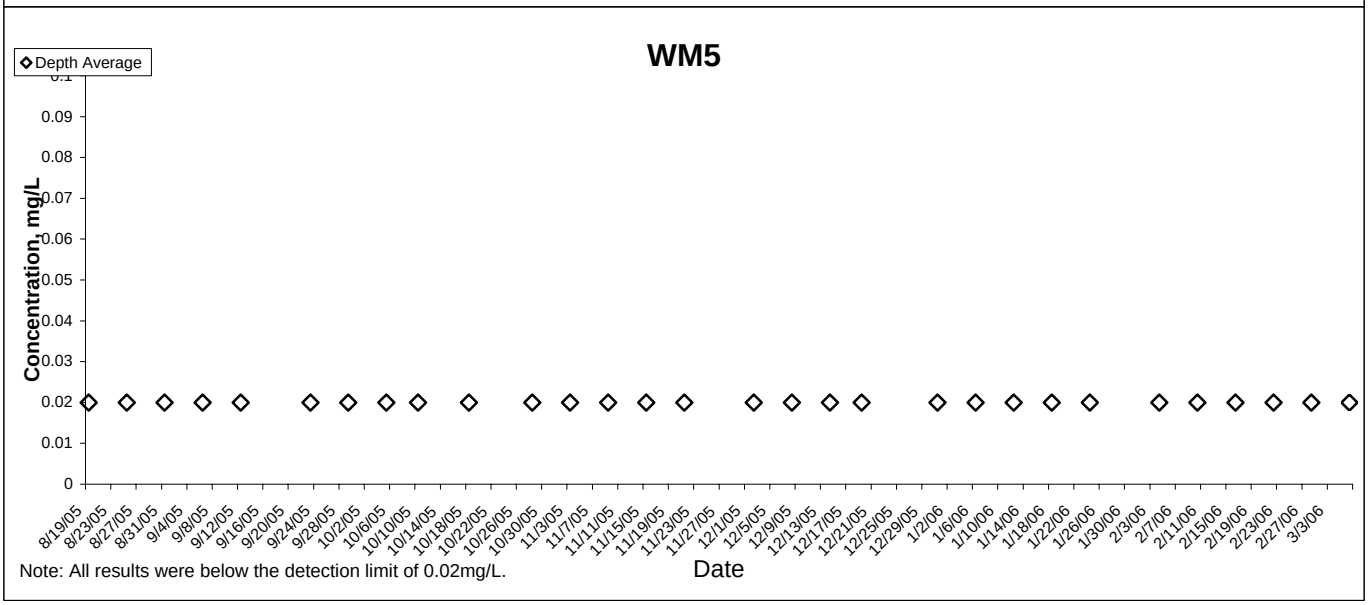
Total Phosphorous



Note: All results were below the detection limit of 0.02mg/L.



Note: All results were below the detection limit of 0.02mg/L.

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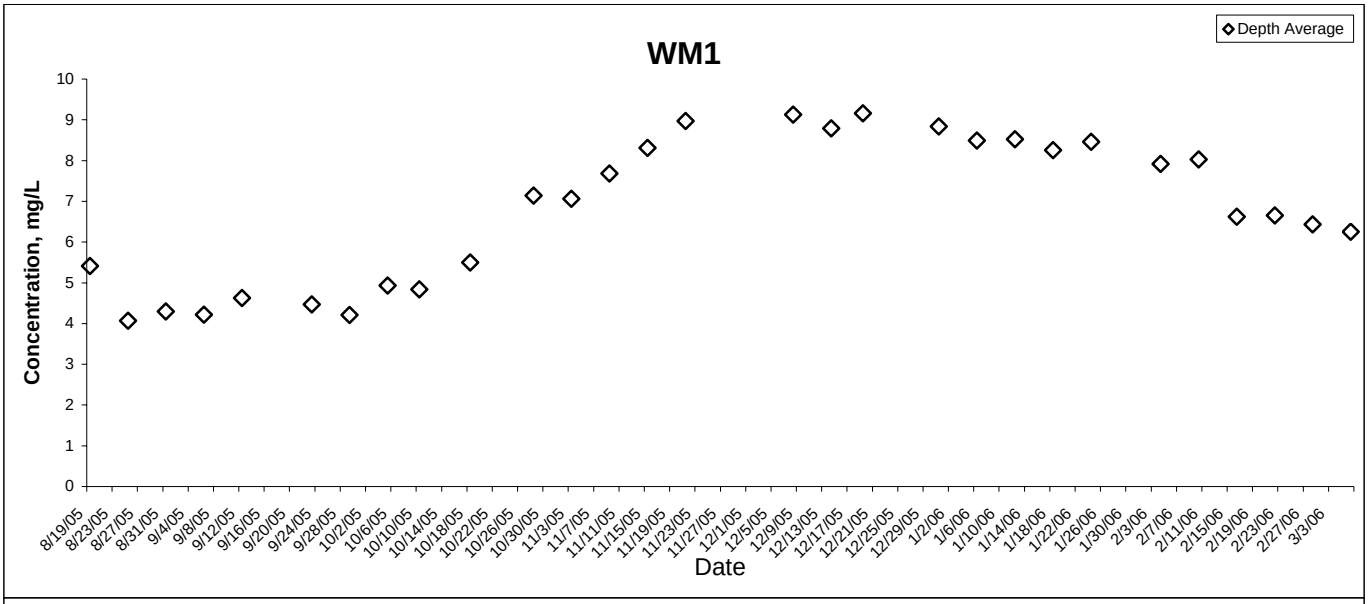
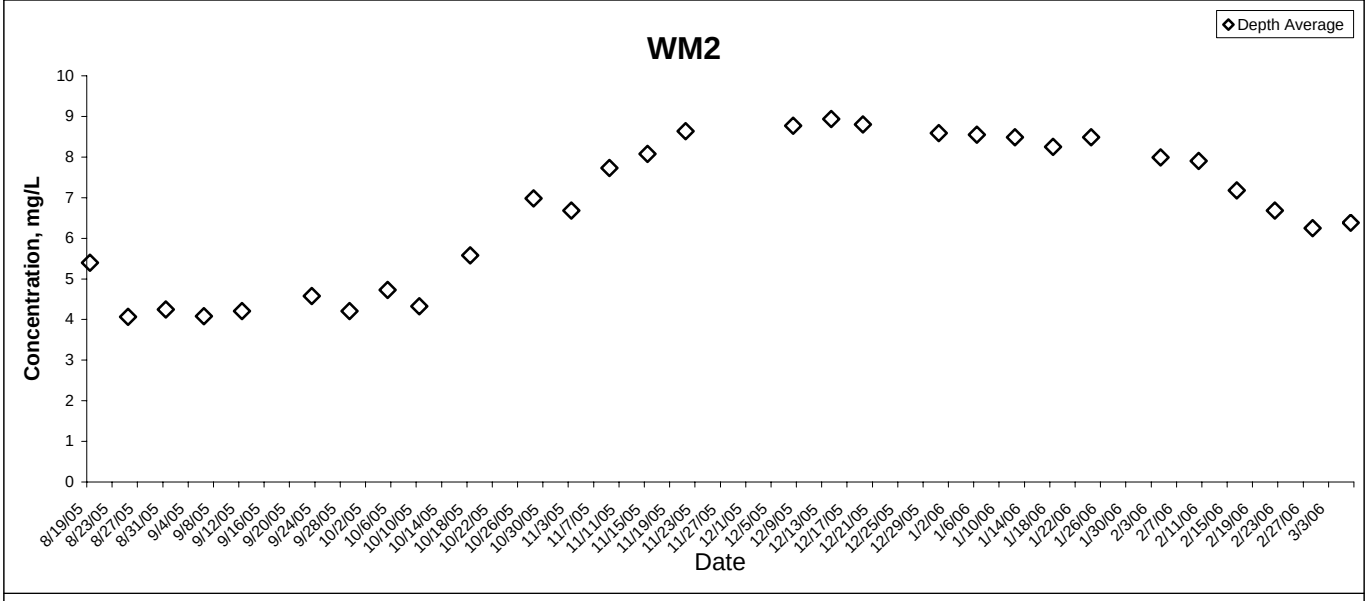
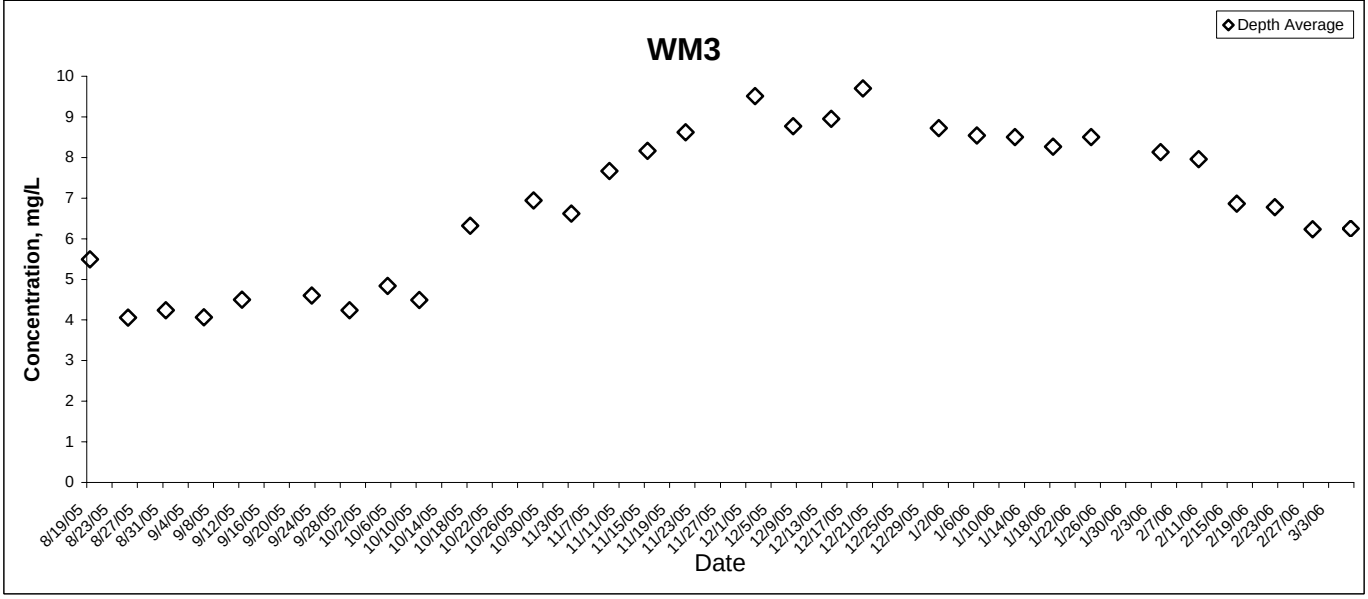
Silica







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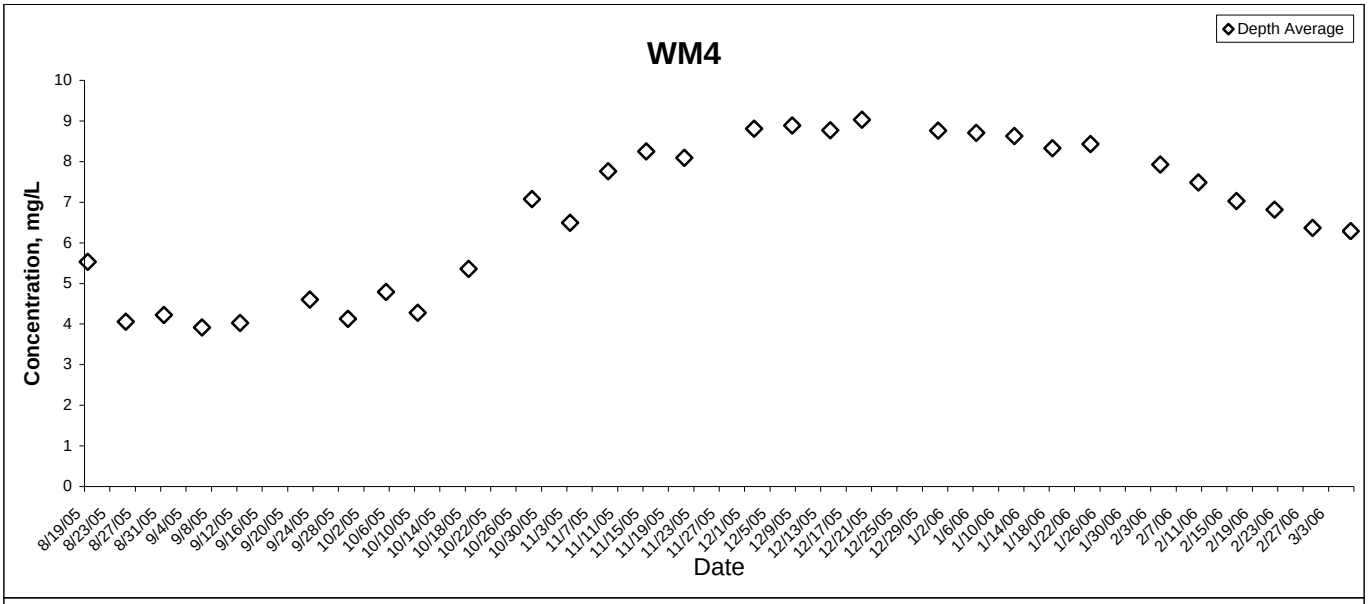
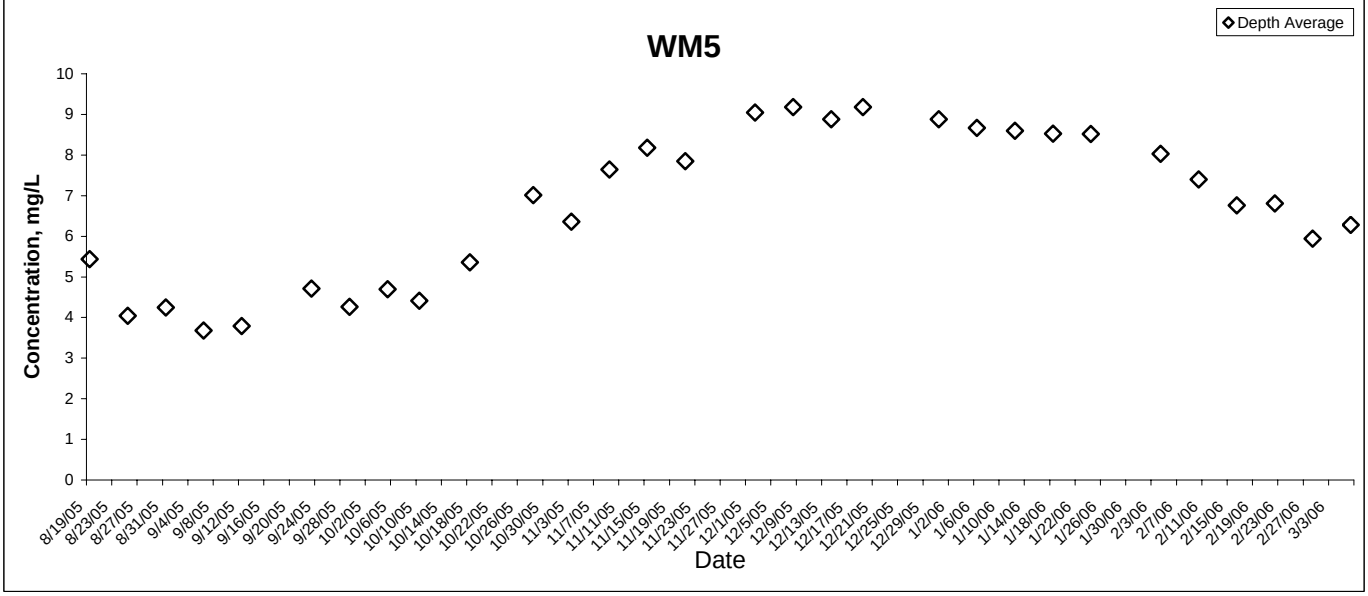
Silica





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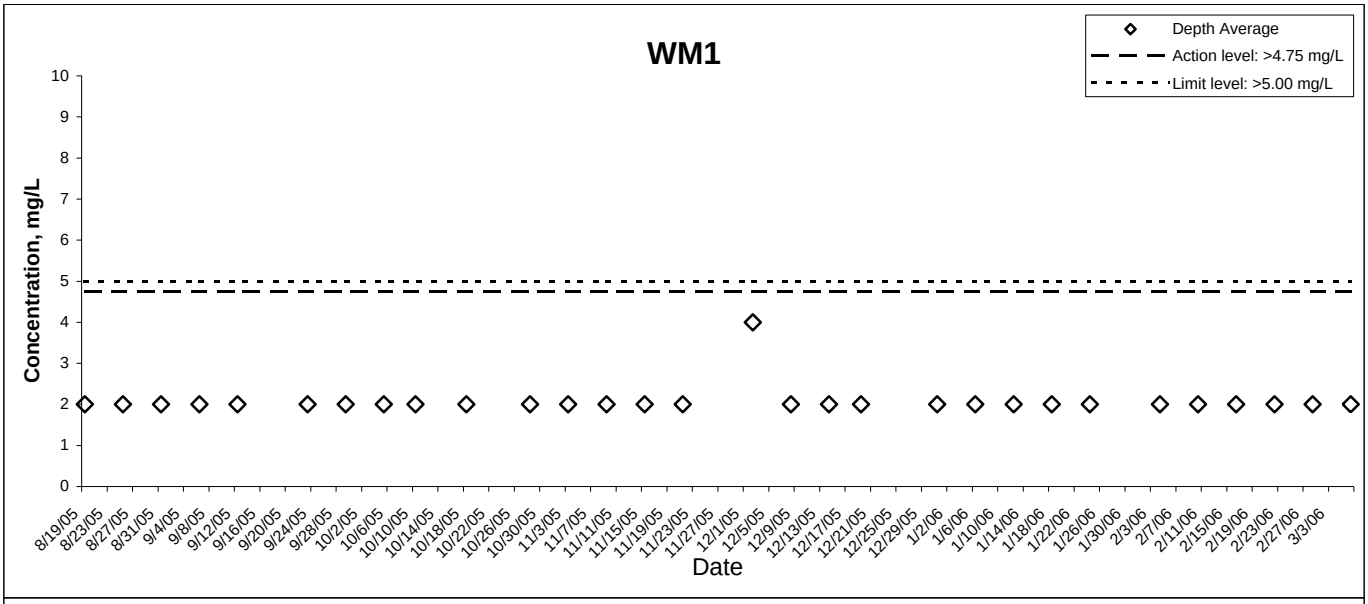
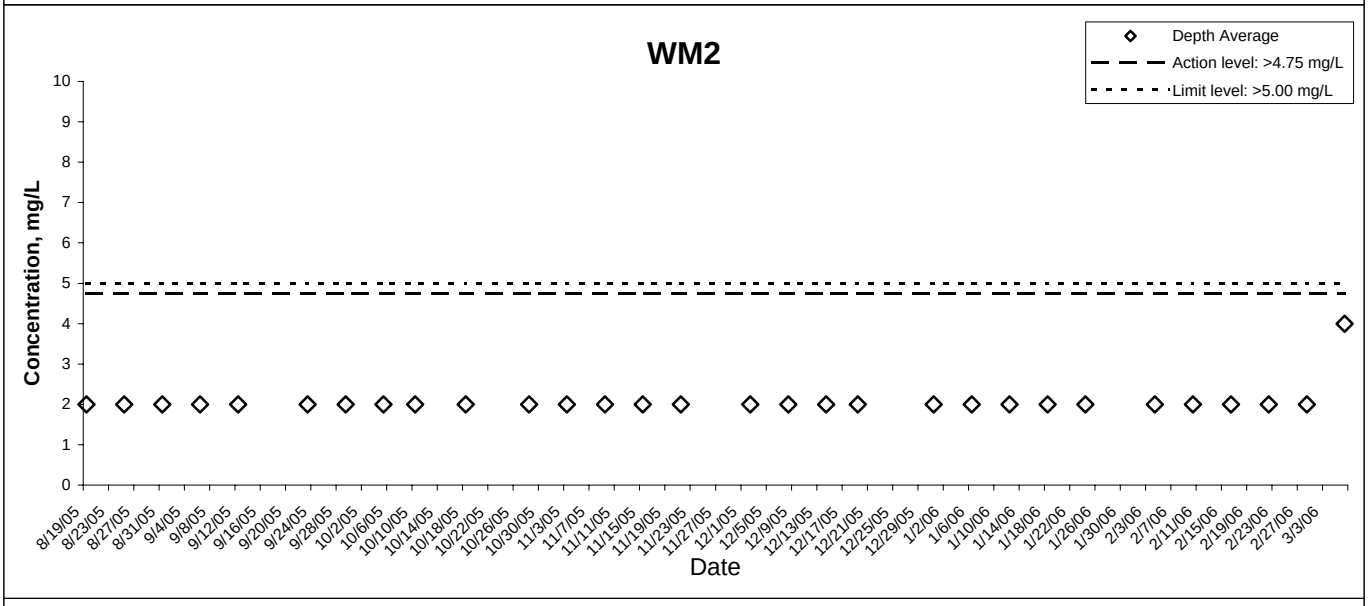
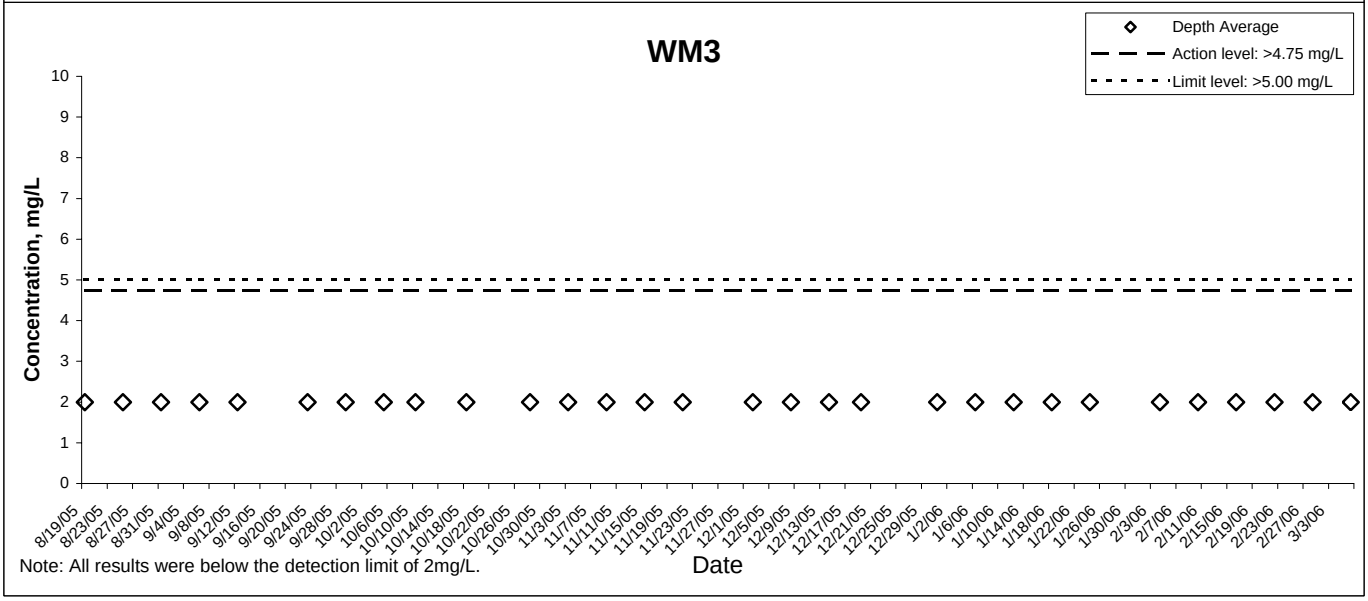
5-day BOD







Note: All results were below the detection limit of 2mg/L.

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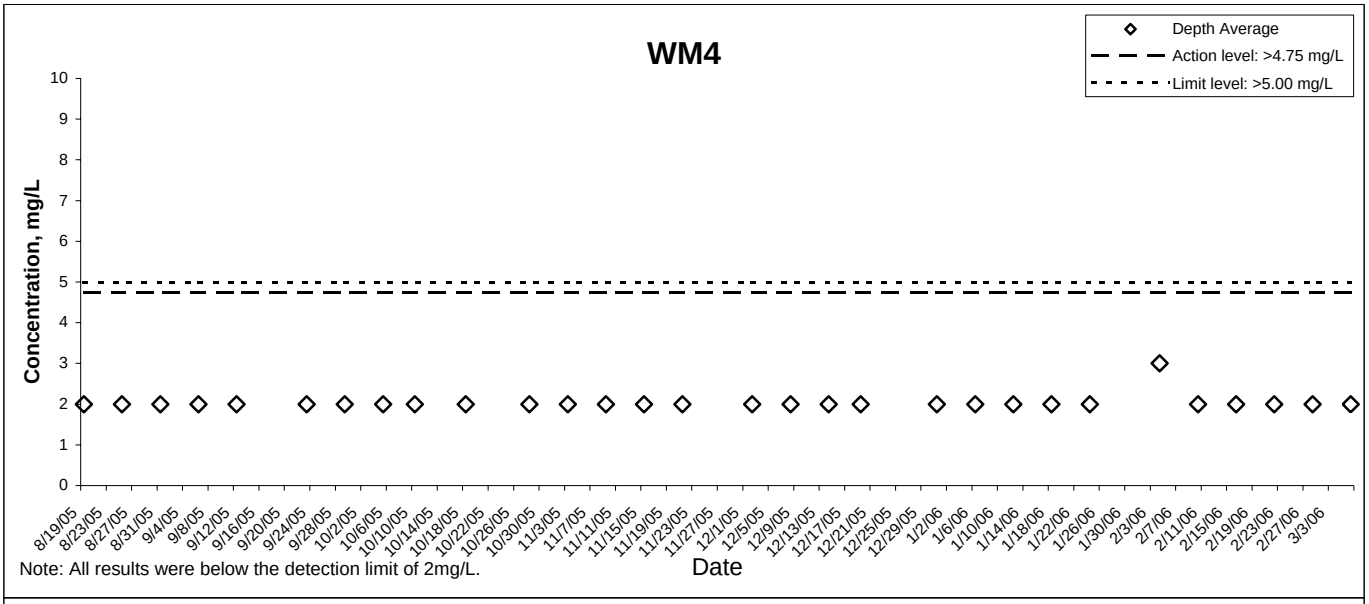
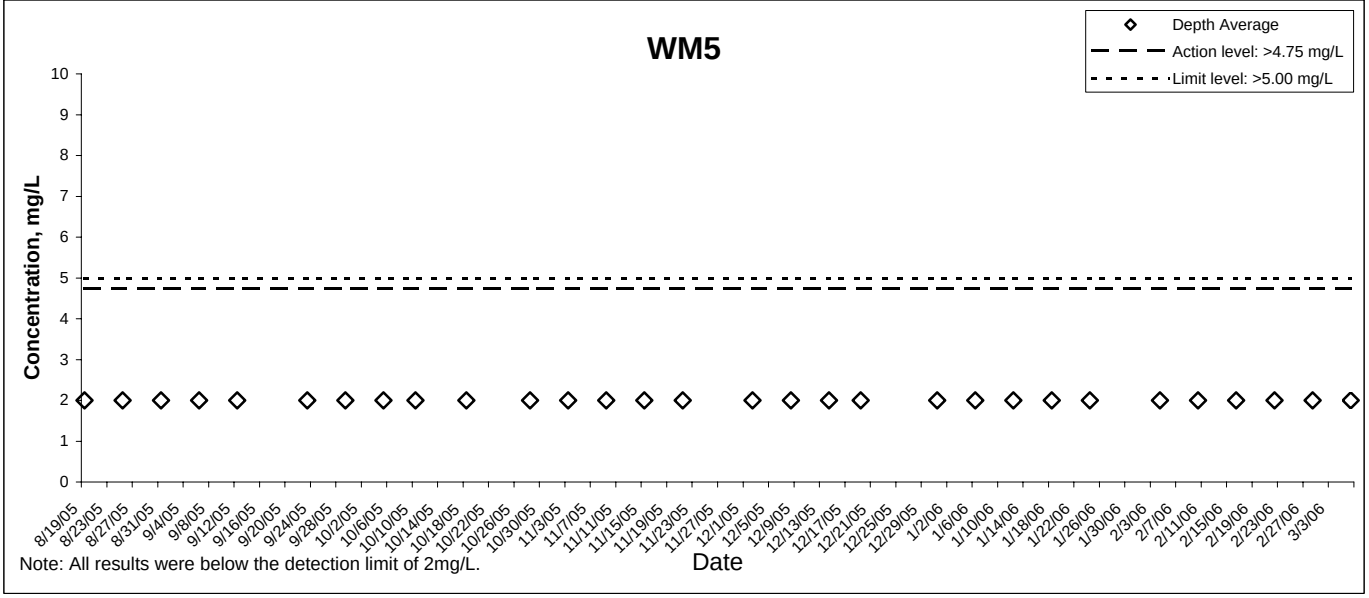
5-day BOD



Note: All results were below the detection limit of 2mg/L.



Note: All results were below the detection limit of 2mg/L.

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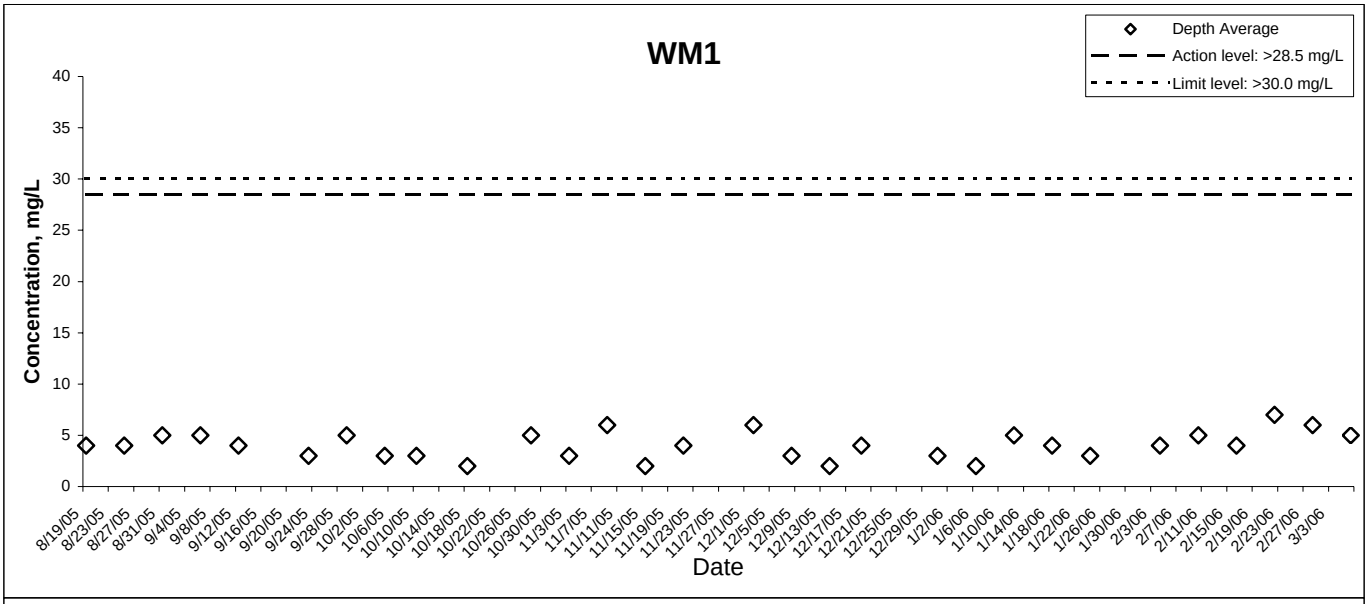
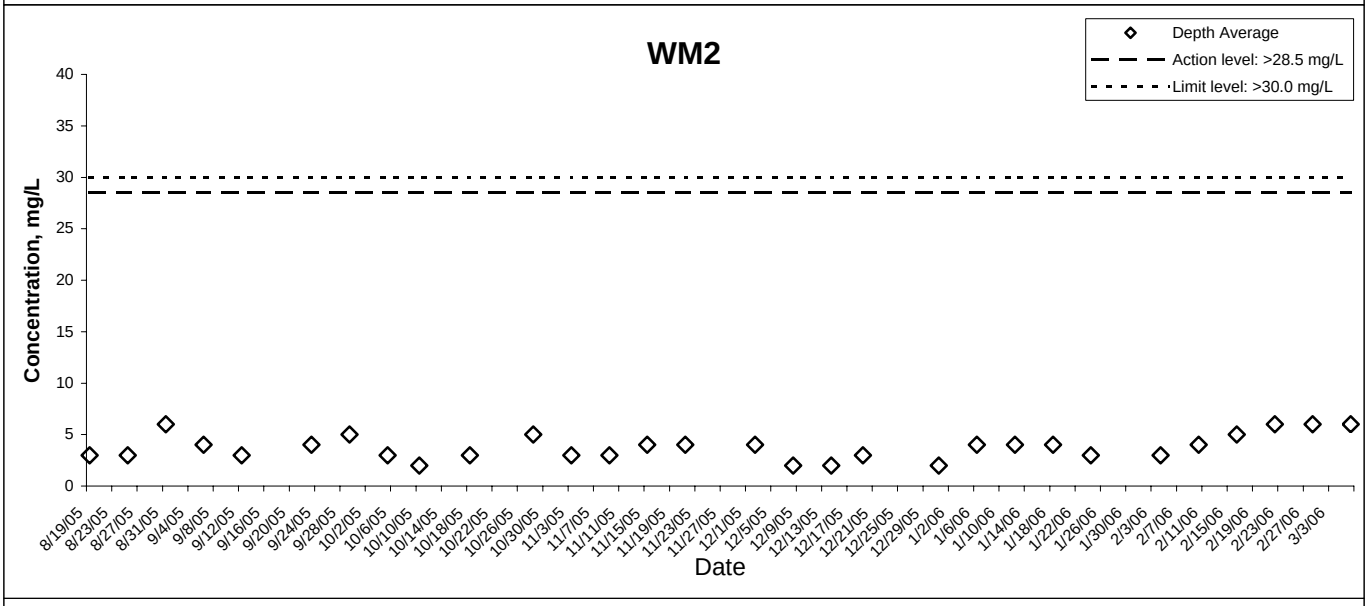
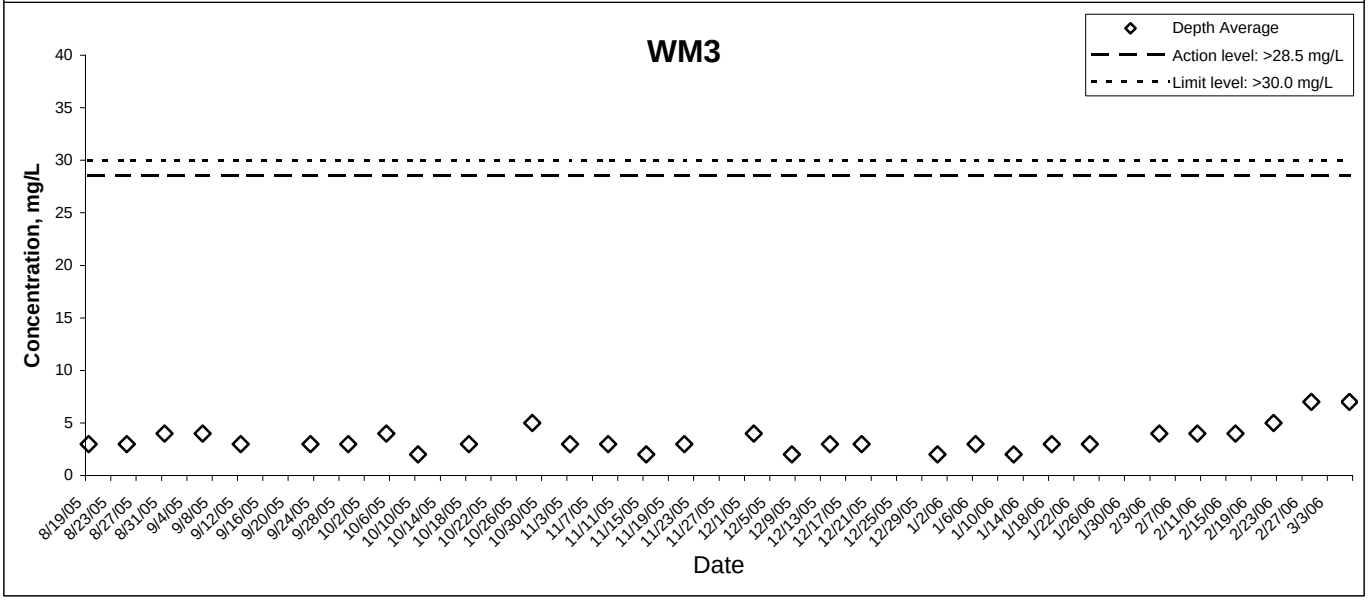
Chemical Oxygen Demand







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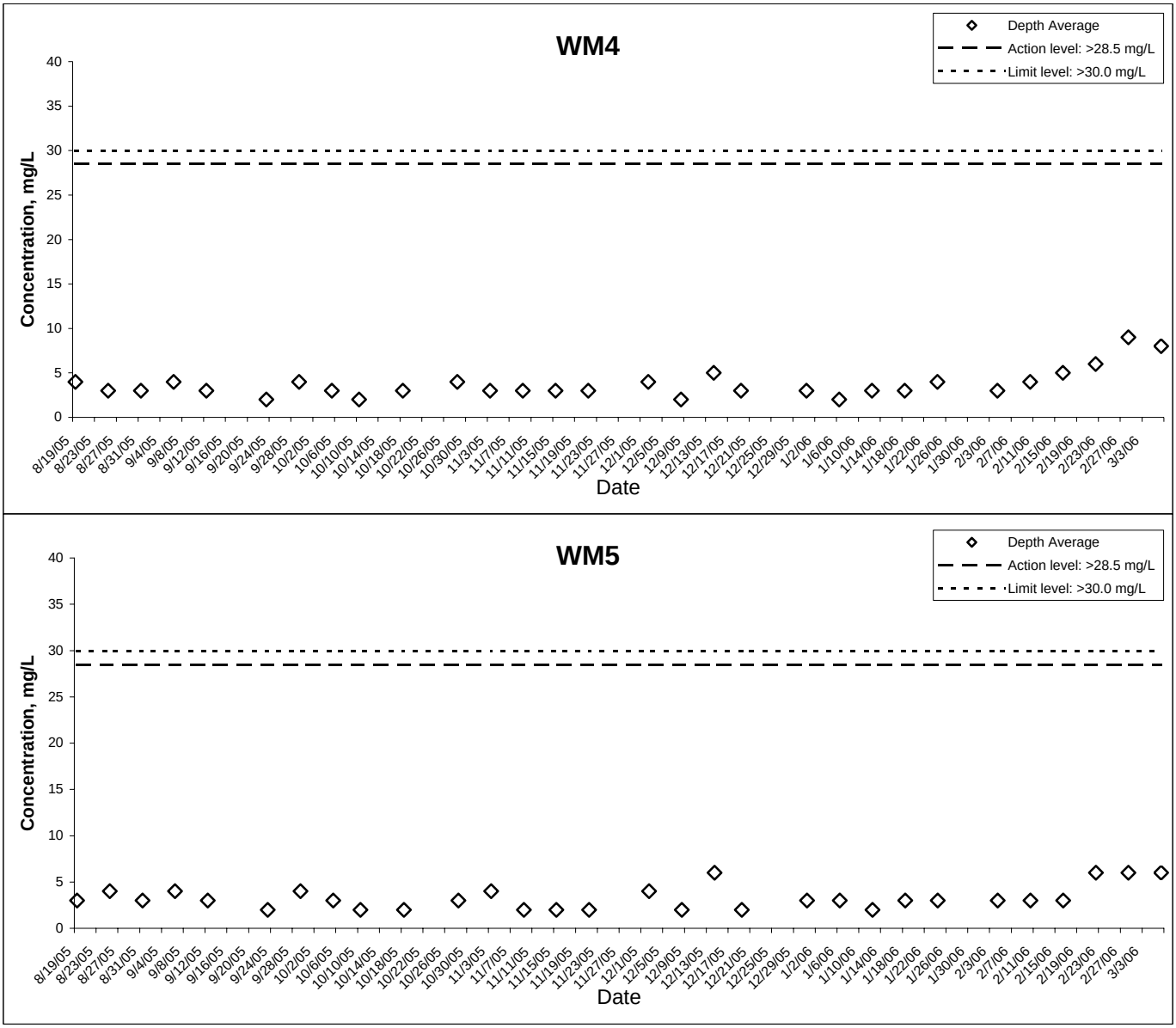
Chemical Oxygen Demand



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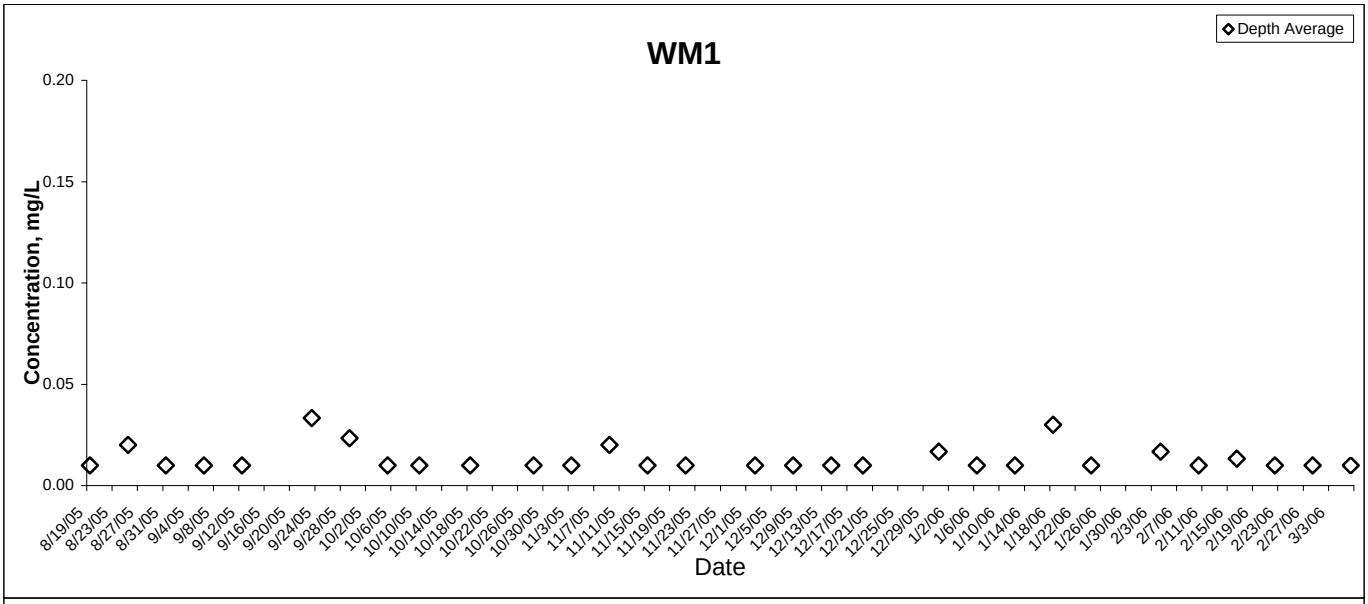
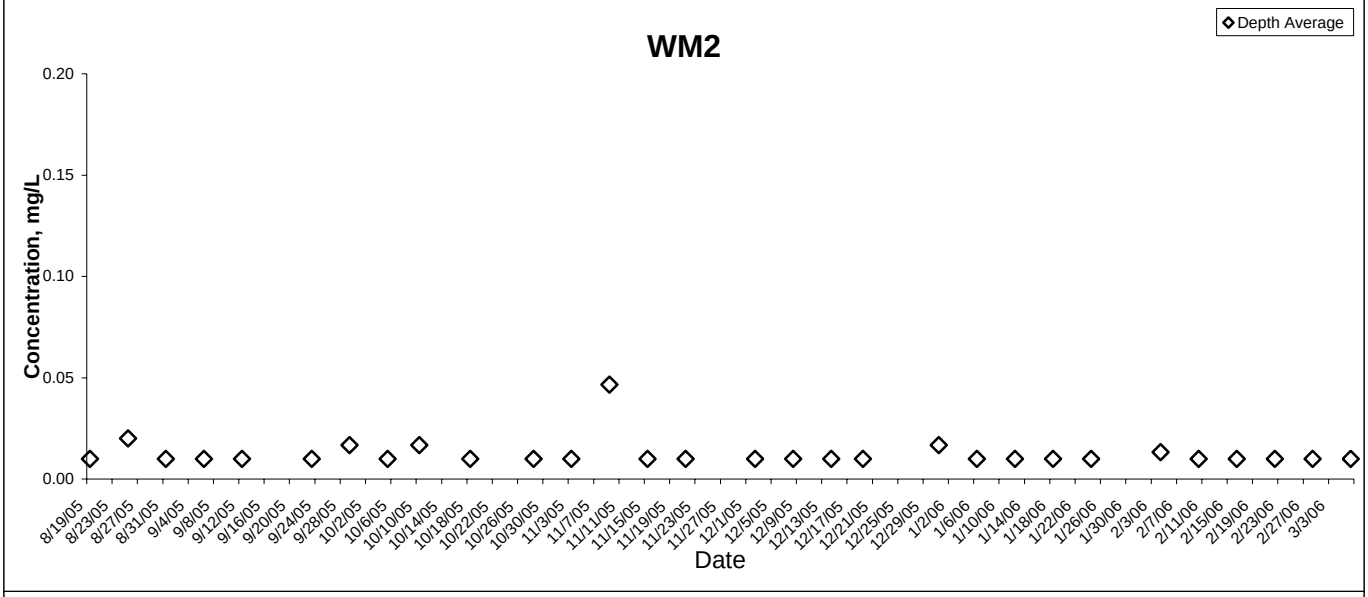
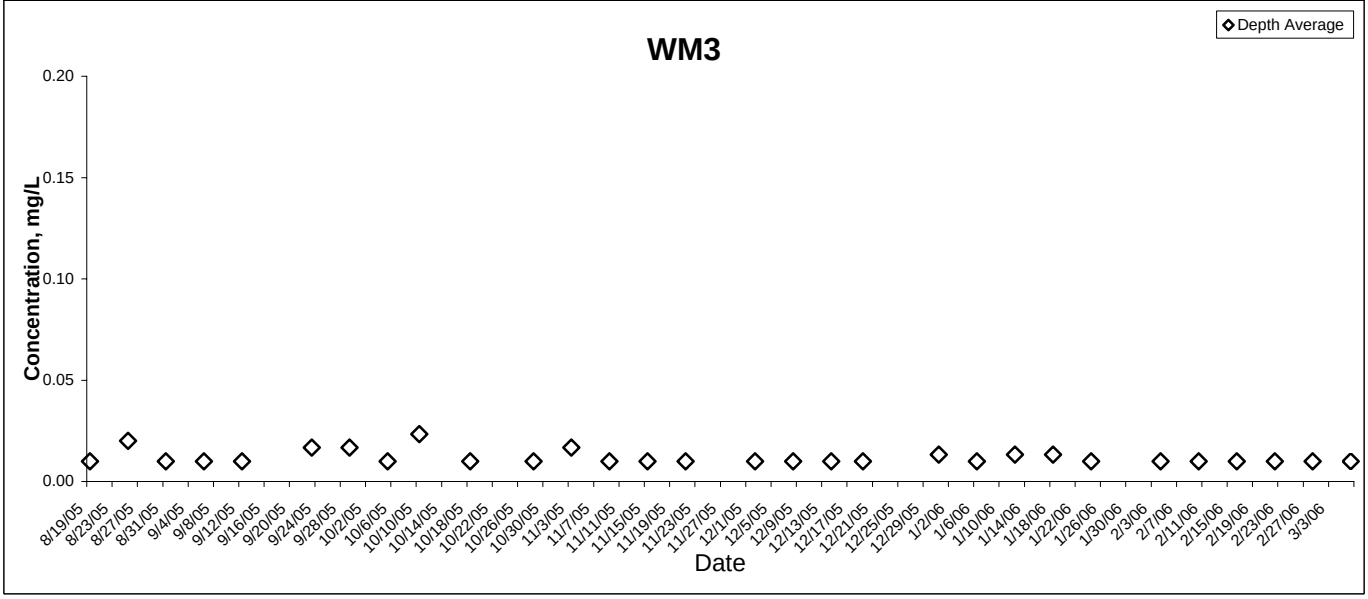
Ammonia Nitrogen







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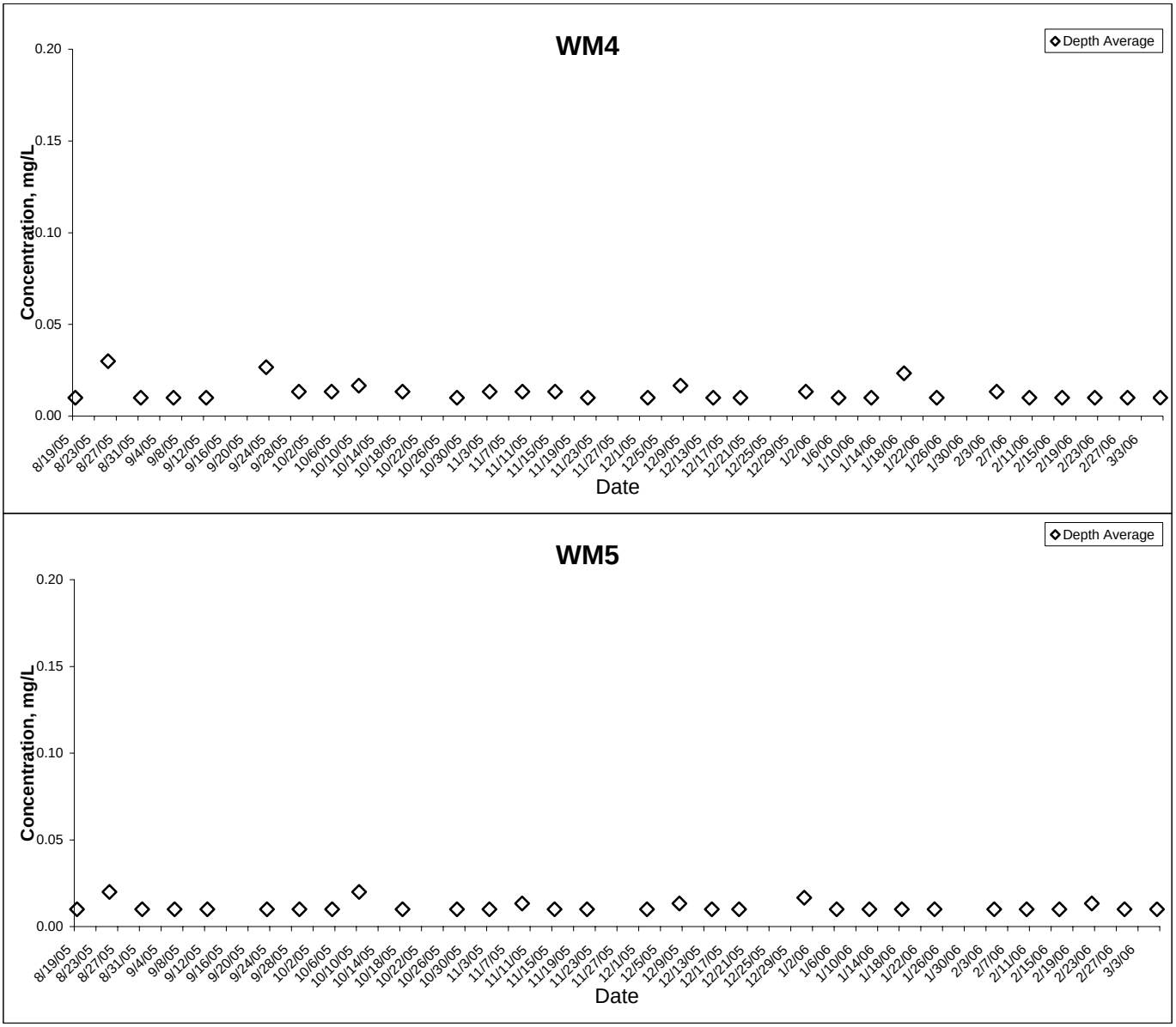
Ammonia Nitrogen



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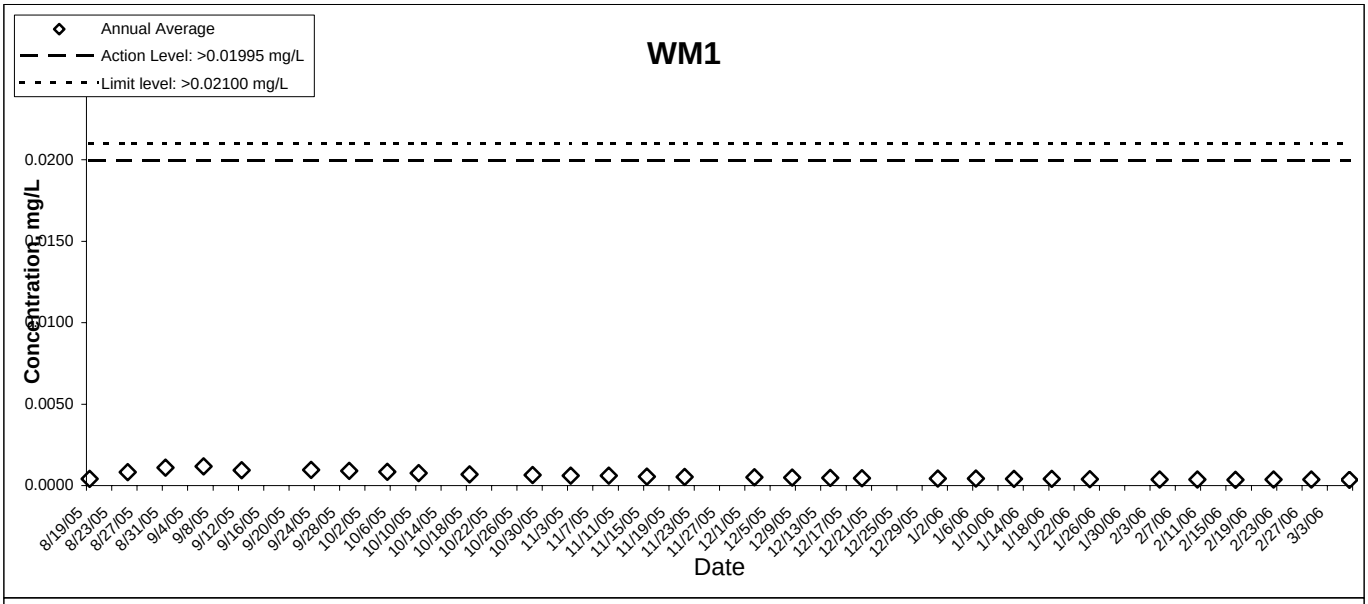
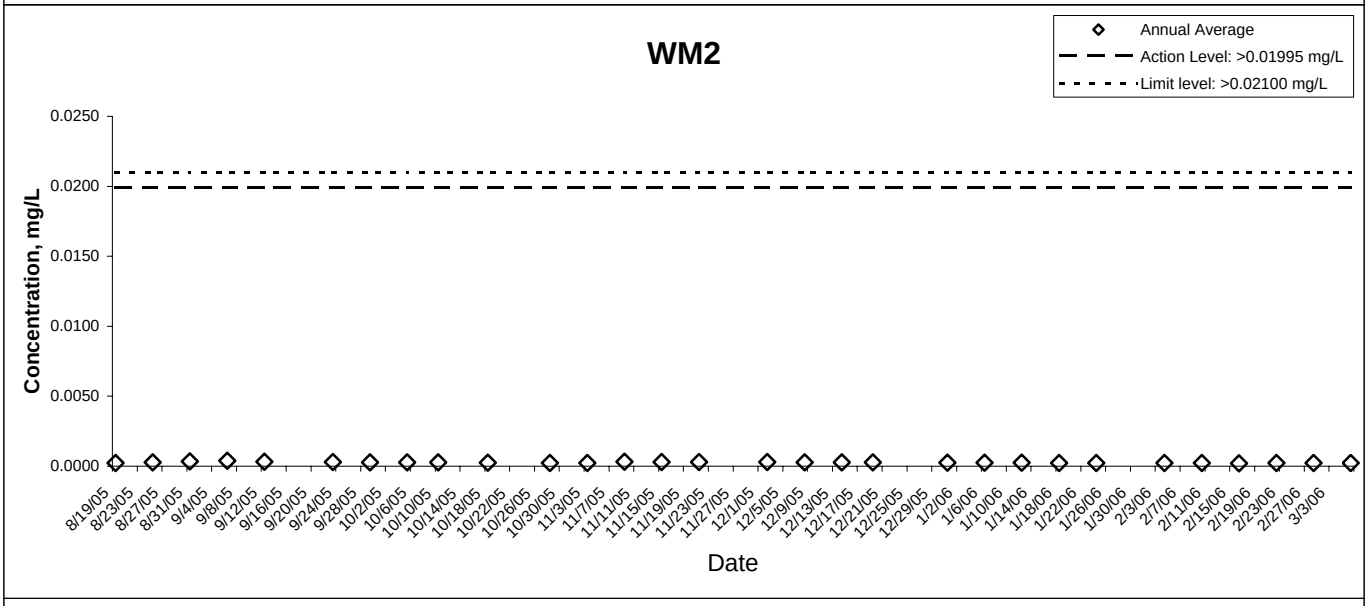
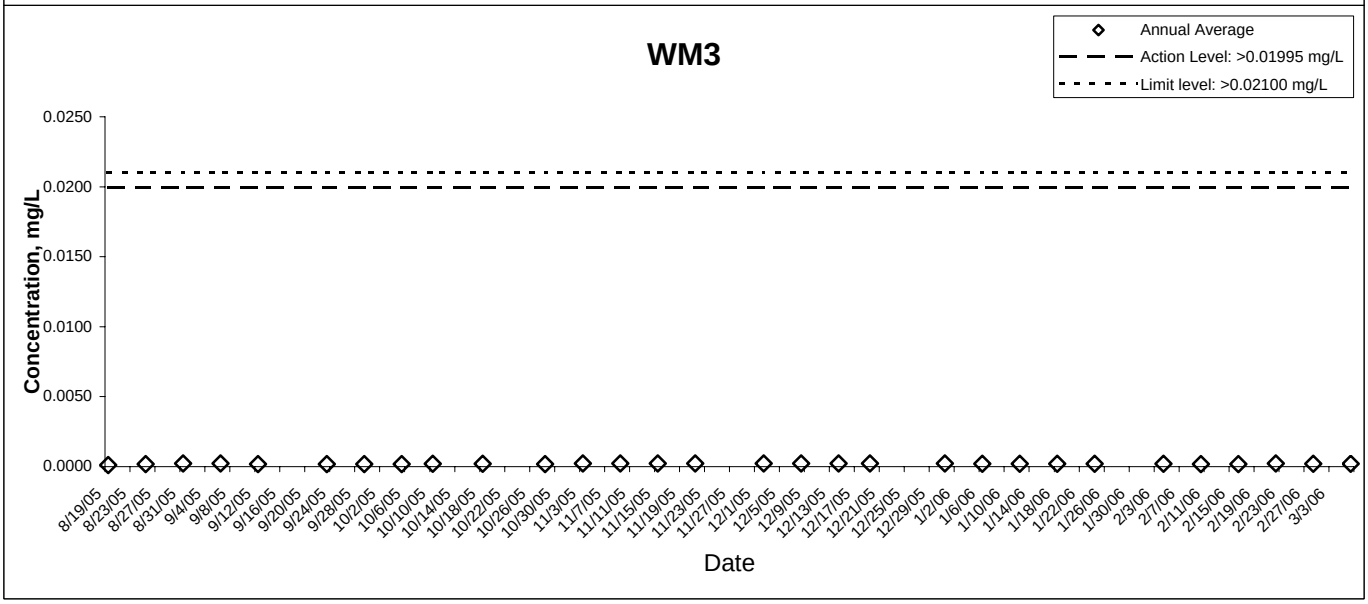
Unionised Nitrogen (Annual Average)







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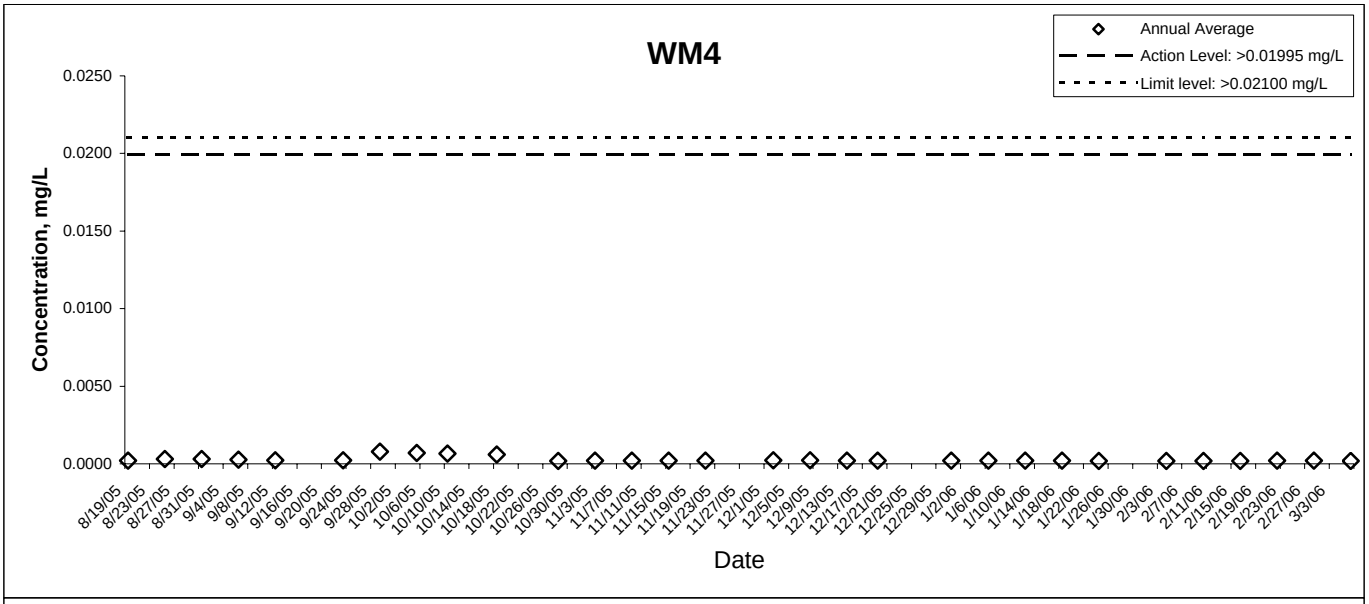
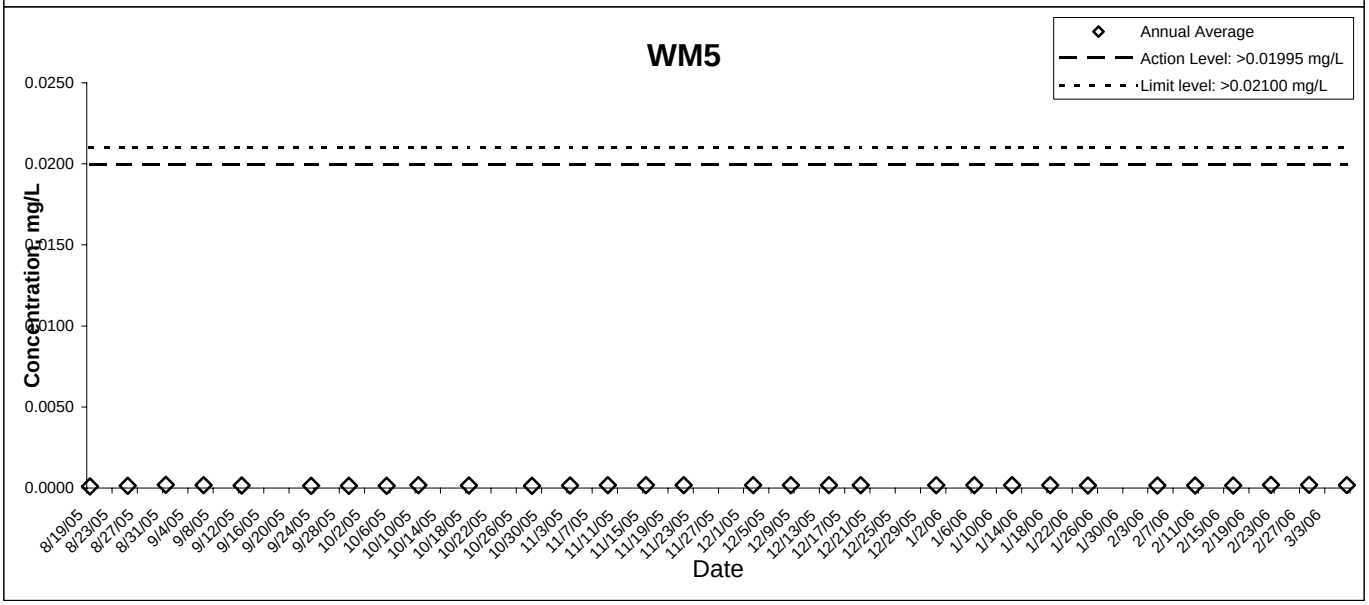
Unionised Nitrogen (Annual Average)





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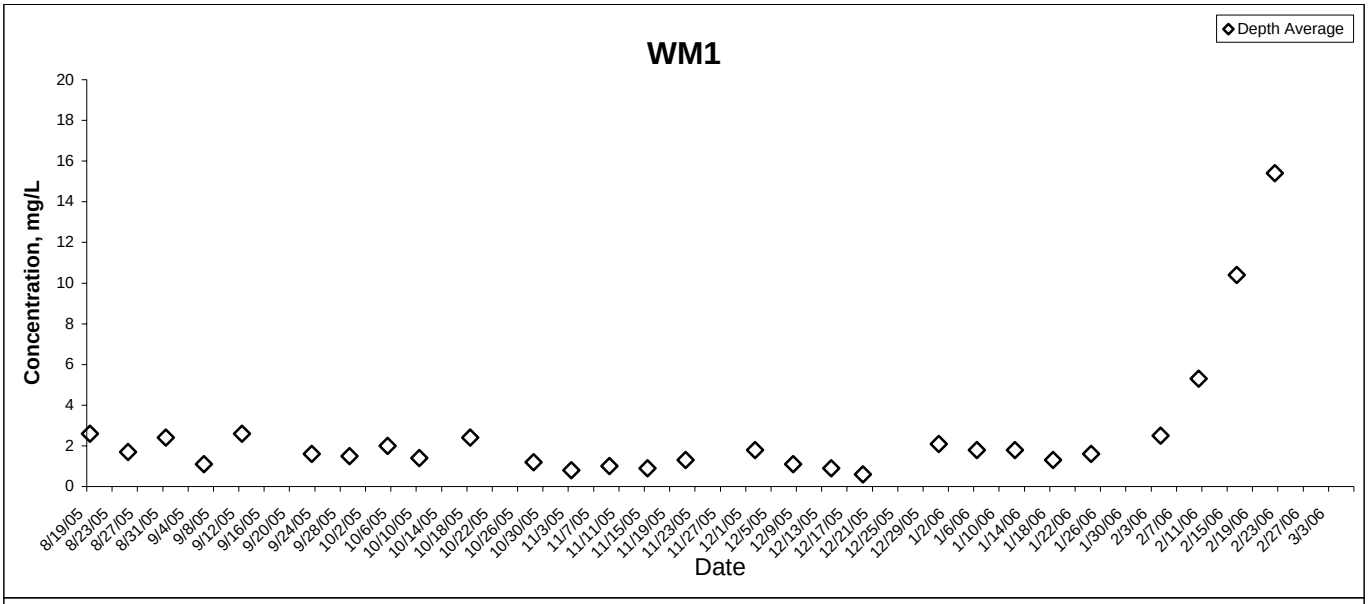
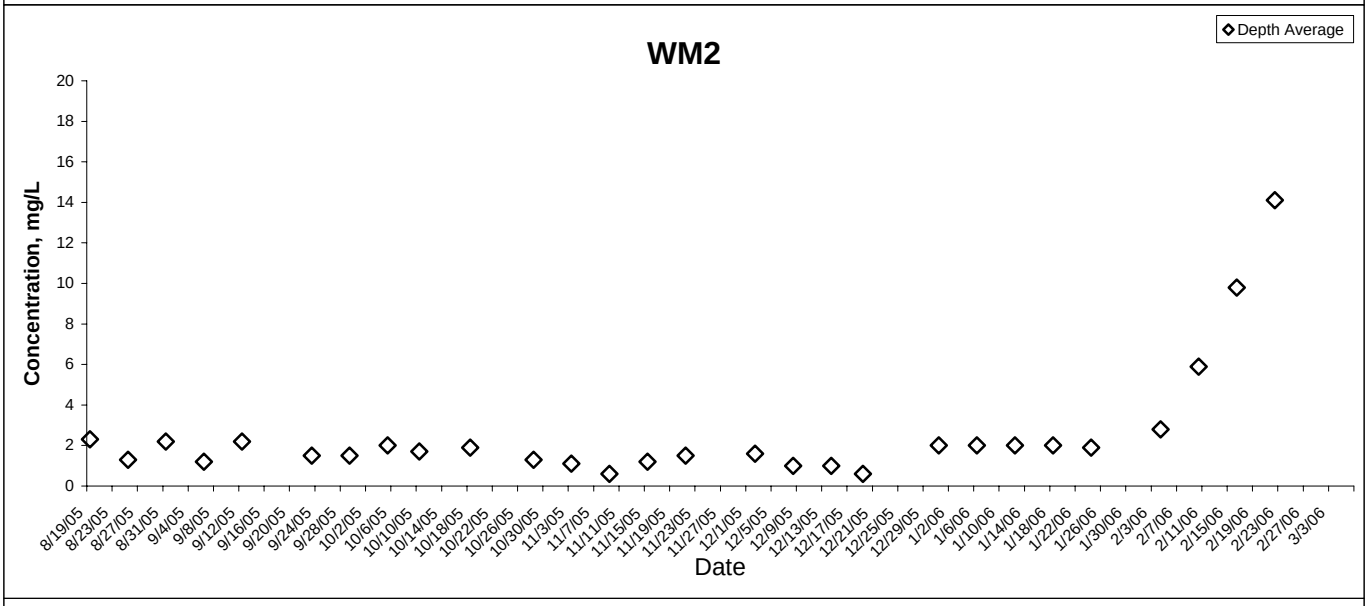
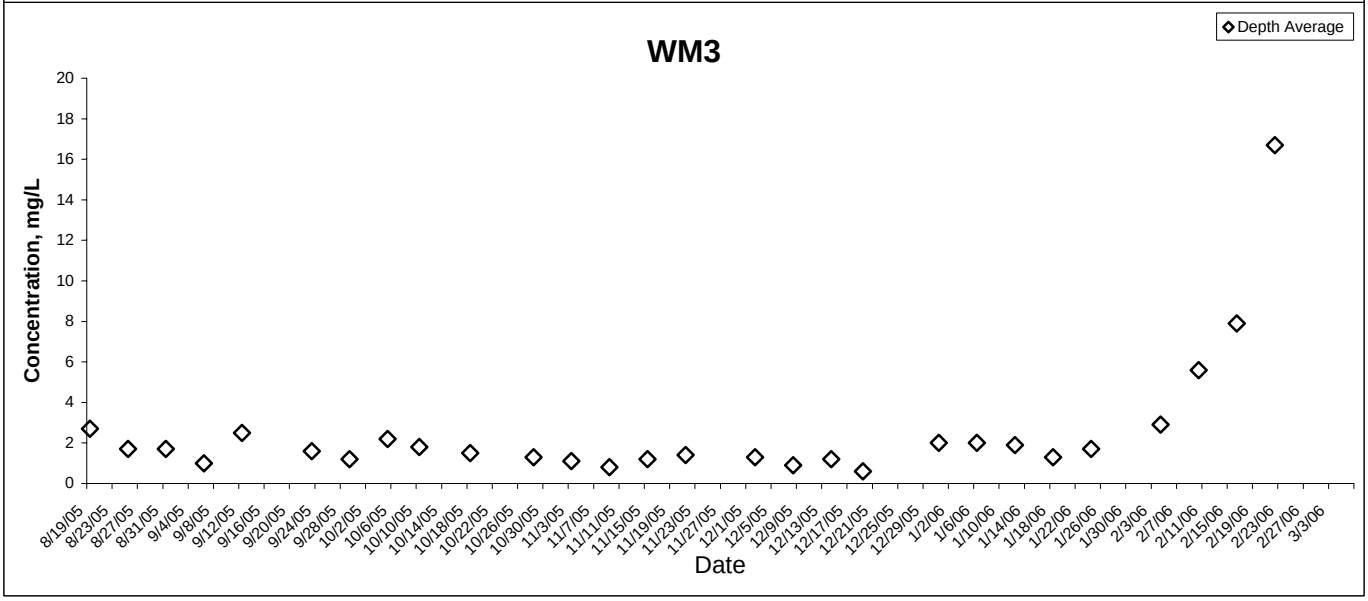
Chlorophyll-a







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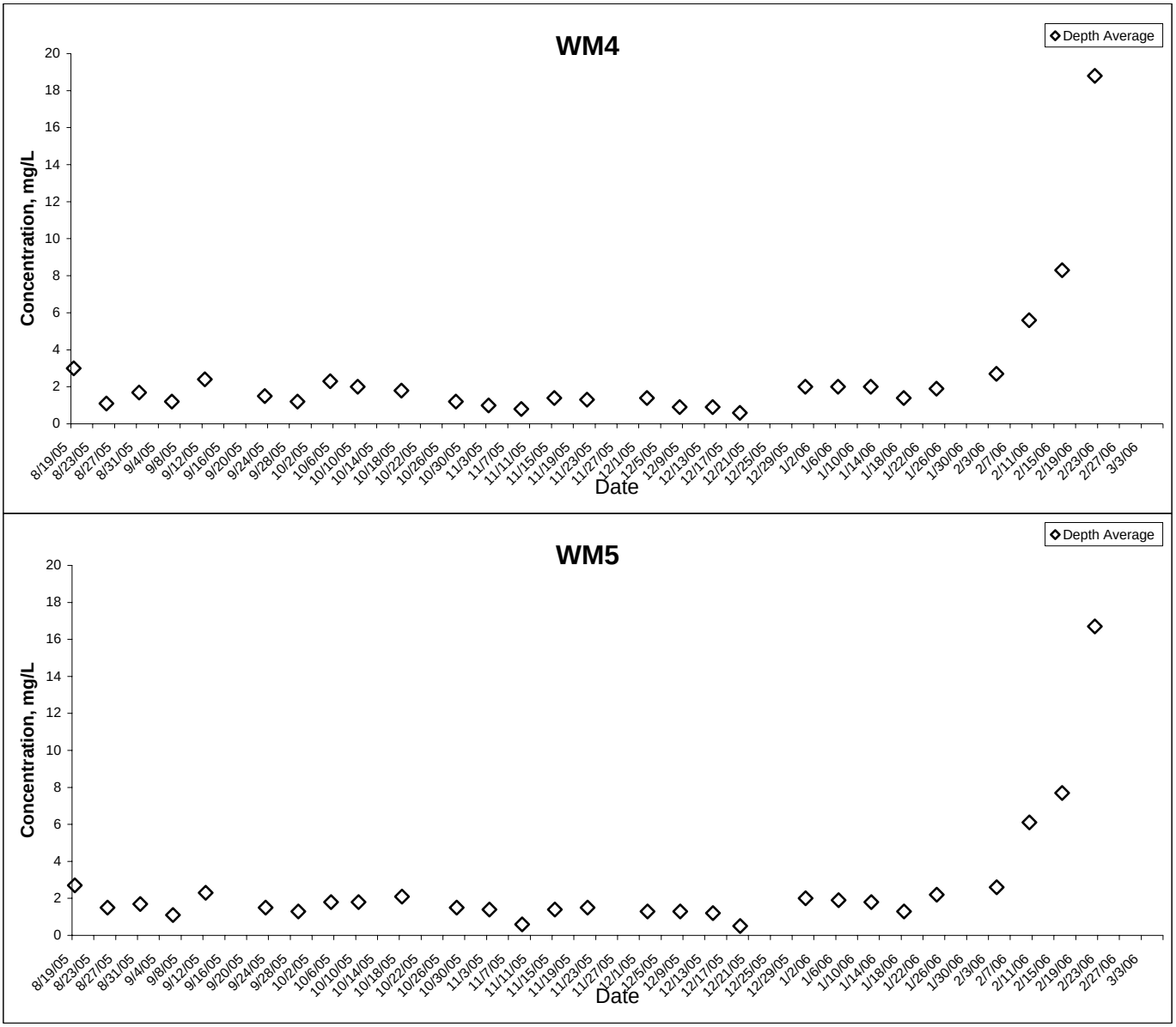
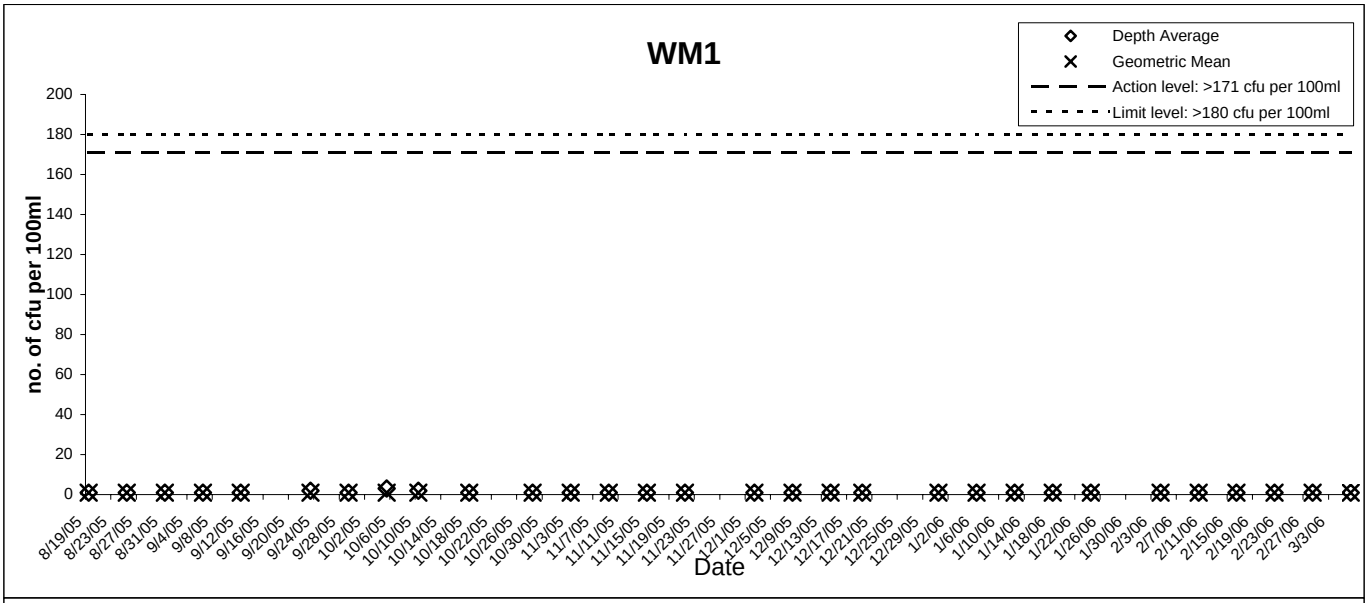
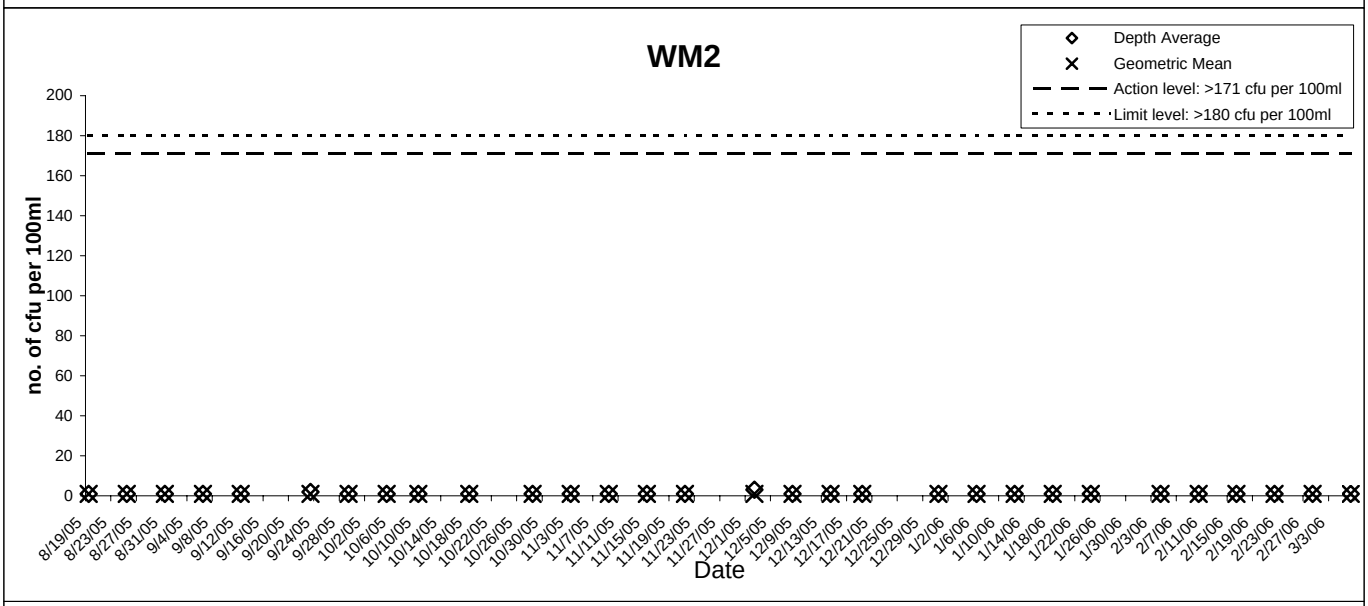
Chlorophyll-a

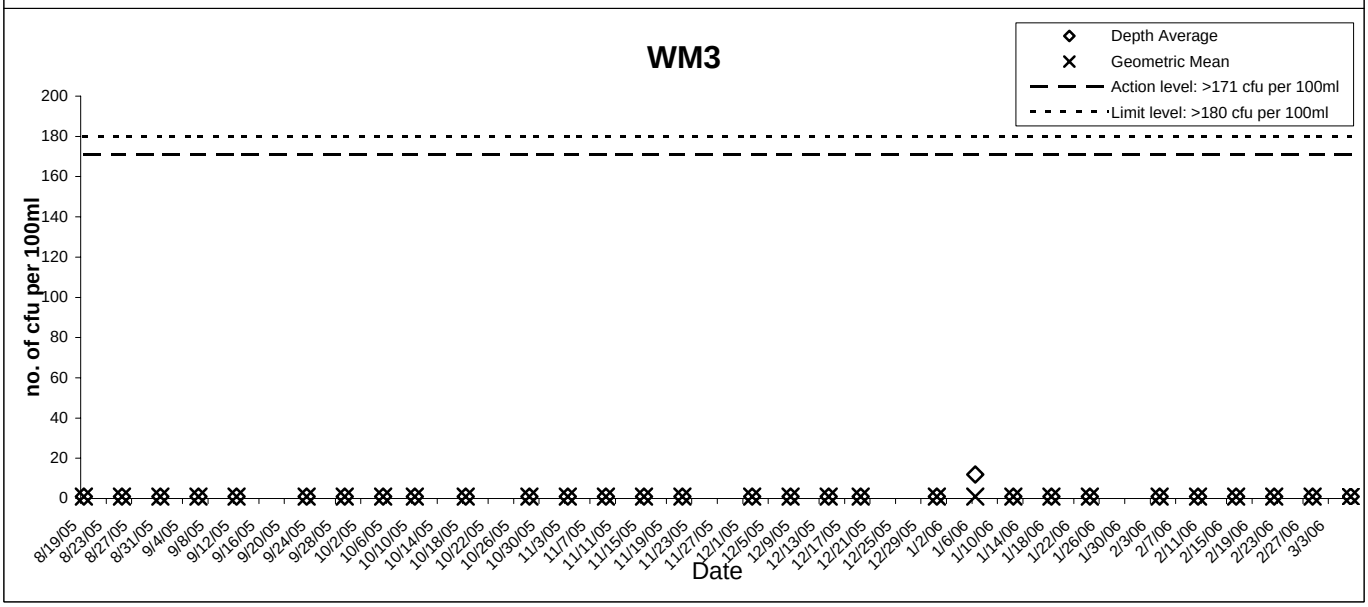


MAUNSELL AECOM Maunsell Environmental Management Consultants Ltd	FEP-01/097/2001/B Provision of EM&A Services at Water Recreation Centre **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	Mar 06
		CHECK	FSYY	DRAWN	LLMC
		JOB NO.	S07105	APPENDIX E	Rev -

E.coli

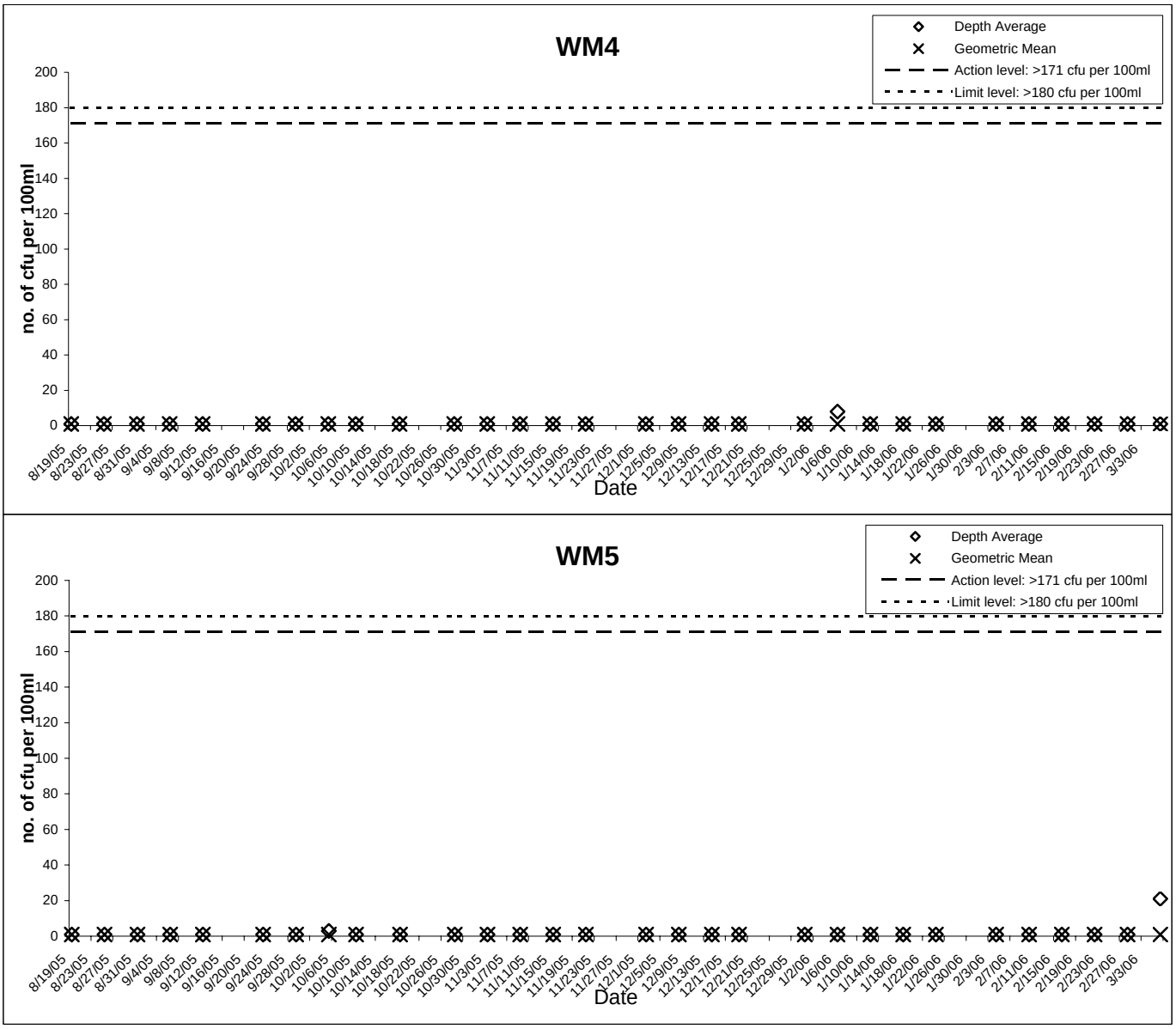






MAUNSELL AECOM Maunsell Environmental Management Consultants Ltd	FEP-01/097/2001/B Provision of EM&A Services at Water Recreation Centre **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	Mar 06
		CHECK	FSYY	DRAWN	LLMC
		JOB NO.	S07105	**APPENDIX** E	**Rev** -

E.coli



MAUNSELL AECOM Maunsell Environmental Management Consultants Ltd	FEP-01/097/2001/B Provision of EM&A Services at Water Recreation Centre **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	Mar 06
		CHECK	FSYY	DRAWN	LLMC
		JOB NO.	S07105	APPENDIX E	Rev -

Appendix F:
Quality Control Reports

Date		02/16/06	02/16/06	02/16/06	02/16/06	02/16/06	02/16/06	2/22/2006	2/22/2006	2/22/2006	2/22/2006	2/22/2006	2/22/2006	02/28/06	02/28/06	02/28/06
Id		200	201	1	11	10	15	200	201	1	11	10	15	200	201	1
Monitoring Location		BLANK	LCS % REC	WM 1S	WM 4M	WM 4S	WM 5B	BLANK	LCS % REC	WM 1S	WM 4M	WM 4S	WM 5B	BLANK	LCS % REC	WM 1S
				% SPK REC	% SPK REC	CHK	CHK			% SPK REC	% SPK REC	CHK	CHK			% SPK REC
Conductivity @ 25'C	uS/cm	<1	100%	----	----	97	94	<1	102%	----	----	97	134	<1	103%	----
Salinity	g/L	----	----	----	----	<0.1	<0.1	----	----	----	----	<0.1	<0.1	----	----	----
Suspended Solids (SS)	mg/L	<2	110%	----	----	2	3	<2	90%	----	----	3	3	<2	95%	----
Chromium	ug/L	<1	84%	84%	86%	<1	<1	<1	98%	100%	99%	<1	<1	<1	96%	96%
Copper	ug/L	<1	92%	92%	94%	<1	<1	<1	99%	102%	98%	1	1	<1	97%	97%
Lead	ug/L	<1	90%	97%	95%	<1	<1	<1	95%	97%	93%	<1	<1	<1	97%	96%
Zinc	ug/L	<10	95%	138%	95%	<10	<10	<10	95%	96%	95%	<10	<10	<10	103%	105%
Silica	mg/L	<0.01	96%	93%	83%	6.06	7.13	<0.01	100%	104%	101%	6.89	6.71	<0.01	98%	75%
Ammonia as N	mg/L	<0.01	97%	96%	97%	<0.01	<0.01	<0.01	90%	109%	105%	<0.01	<0.01	<0.01	105%	109%
Nitrite + Nitrate as N	mg/L	<0.1	104%	106%	106%	0.5	0.5	<0.1	108%	109%	109%	0.5	0.5	<0.1	105%	109%
Total Kjeldahl Nitrogen as N	mg/L	<0.1	112%	116%	108%	0.1	0.1	<0.1	109%	88%	76%	0.1	0.1	<0.1	95%	77%
Total Nitrogen	mg/L	----	----	----	----	----	----	----	0.7	----	----	0.6	0.6	----	----	----
Total Phosphorus	mg/L	<0.02	103%	82%	75%	<0.02	<0.02	<0.02	111%	92%	114%	<0.02	<0.02	<0.02	102%	108%
E. coli	cfu/100ml	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Chlorophyll a	ug/L	<0.5	90%	----	----	----	8.1	<0.5	87%	----	----	17.5	17.7	<0.5	89%	----
Dissolved Oxygen	mg/L	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Chemical Oxygen Demand	mg/L	----	92%	112%	93%	4	5	----	96%	97%	91%	6	6	----	94%	94%
Biochemical Oxygen Demand	mg/L	----	102%	----	----	----	----	----	91%	----	----	----	----	----	94%	----
ORGANOTIN COMPOUNDS -																
Tributyltin - Soluble	ng Sn/L	<5	**********	**********	**********	**********	**********	<5	**********	**********	**********	**********	**********	<5	**********	**********
ORGANOTIN COMPOUND SURROGATE -																
Tripropyltin- Soluble	%	101	**********	**********	**********	**********	**********	111	**********	**********	**********	**********	**********	100	**********	**********

Appendix F:
Quality Control Reports

Date		02/28/06	02/28/06	02/28/06	03/06/06	03/06/06	03/06/06	03/06/06	03/06/06	03/06/06
Id		11	10	15	200	201	1	11	10	15
Monitoring Location		WM 4M	WM 4S	WM 5B	BLANK	LCS % REC	WM 1S	WM 4M	WM 4S	WM 5B
		% SPK REC	CHK	CHK			% SPK REC	% SPK REC	CHK	CHK
Conductivity @ 25'C	uS/cm	----	98	96	<1	102%	----	----	99	98
Salinity	g/L	----	<0.1	<0.1	<0.1	102%	----	----	<0.1	<0.1
Suspended Solids (SS)	mg/L	----	5	4	<2	100%	----	----	4	4
Chromium	ug/L	95%	<1	<1	<1	90%	95%	96%	<1	<1
Copper	ug/L	96%	1	<1	<1	97%	99%	95%	<1	<1
Lead	ug/L	97%	<1	<1	<1	88%	85%	87%	<1	<1
Zinc	ug/L	106%	<10	<10	<10	104%	103%	107%	<10	<10
Silica	mg/L	98%	5.74	5.66	<0.01	104%	103%	80%	6.09	6.35
Ammonia as N	mg/L	112%	<0.01	<0.01	<0.01	91%	90%	86%	<0.01	<0.01
Nitrite + Nitrate as N	mg/L	111%	0.6	0.6	<0.1	101%	125%	115%	0.5	0.5
Total Kjeldahl Nitrogen as N	mg/L	105%	0.2	0.1	<0.1	107%	117%	102%	0.3	0.4
Total Nitrogen	mg/L	----	0.8	0.7	----	----	----	----	0.8	0.9
Total Phosphorus	mg/L	89%	<0.02	<0.02	<0.02	87%	82%	78%	<0.02	<0.02
E. coli	cfu/100ml	----	----	----	----	----	----	----	----	----
Chlorophyll a	ug/L	----	26.1	28.3	<0.5	92%	----	----	31.1	30
Dissolved Oxygen	mg/L	----	----	----	----	----	----	----	----	----
Chemical Oxygen Demand	mg/L	87%	8	7	----	87%	----	----	----	----
Biochemical Oxygen Demand	mg/L	----	----	----	----	91%	----	----	----	----
ORGANOTIN COMPOUNDS -										
Tributyltin - Soluble	ng Sn/L	**********	**********	**********	<5	**********	**********	**********	**********	**********
ORGANOTIN COMPOUND SURROGATE -										
Tripropyltin- Soluble	%	**********	**********	**********	108	**********	**********	**********	**********	**********

Appendix G — Summary of Environmental Mitigation Implementation Schedule

Reference	Mitigation Measures	Status
	Water Quality	
EIA Report 5.11.2	• The lake shall be lined with an impermeable liner. However, as such liners may have a limited life span, beyond which the performance may deteriorates, the liner shall be replaced once the manufacturer's specified lifespan is reached.	√
EIA Report 5.11.2	• Stormwater run-off from surrounding hillsides shall pass through silt traps prior to entering the artificial lake to prevent siltation. The silt traps shall be designed to have adequate capacity to retain any silt/sediment contained within the stormwater. The silt traps shall be frequently maintained/cleaned to prevent a deterioration in performance.	√
EIA Report 5.11.2, EP 3.7	• Should the quality of the water in the Tai Lam Chung Reservoir deteriorate below the present levels an alternate supply of water, of a quality at least as good as that within the Tai Lam Chung Reservoir, shall be used to 'top up' the water within the lake.	N/A
EIA Report 5.11.2, EP 3.8, 3.9	• If it becomes necessary to add an algicide to the lake to control algal growth, the algicide shall be biodegradable with a short half life of three days or less. During use of the algicide discharge of the lake water to the marine waters shall be prohibited, until the algicide has decayed. The algicide shall not be used during periods of heavy rainfall when overflow of the lake is possible.	N/A
EIA Report 5.11.2, EP 3.6	• Stormwater from any urban/developed areas shall not be allowed to enter the lake as they may contain pollutants. Sewage effluent from the water recreation centre shall be transported to the sewerage mains for conveyance to the Siu Ho Wan STW.	√
EIA Report 5.11.2, EP 3.10	• Any fuel for motorised water sports vessels shall be stored in bunded areas, of at least 110% capacity of the largest fuel storage container to prevent any accidental spills entering the lake.	N/A
EIA Report 5.11.2	• Servicing of any water sports vessels shall be undertaken at suitable facilities away from the artificial lake. In the event that fuel or other petroleum products enter the lake, a suitable clean-up plan shall be implemented. The clean-up plan being devised by the operators of the water recreation centre and approved by EPD prior to the commencement of operations at the water sports centre.	√
	Waste	
EIA Report 5.11.2	• To minimise the potential adverse impacts to aesthetics and odour impacts, the HKITP should maintain floating refuse collection initiatives at both the coast of the Theme Park and within the artificial lake of the Water Recreation Centre.	√

Note:

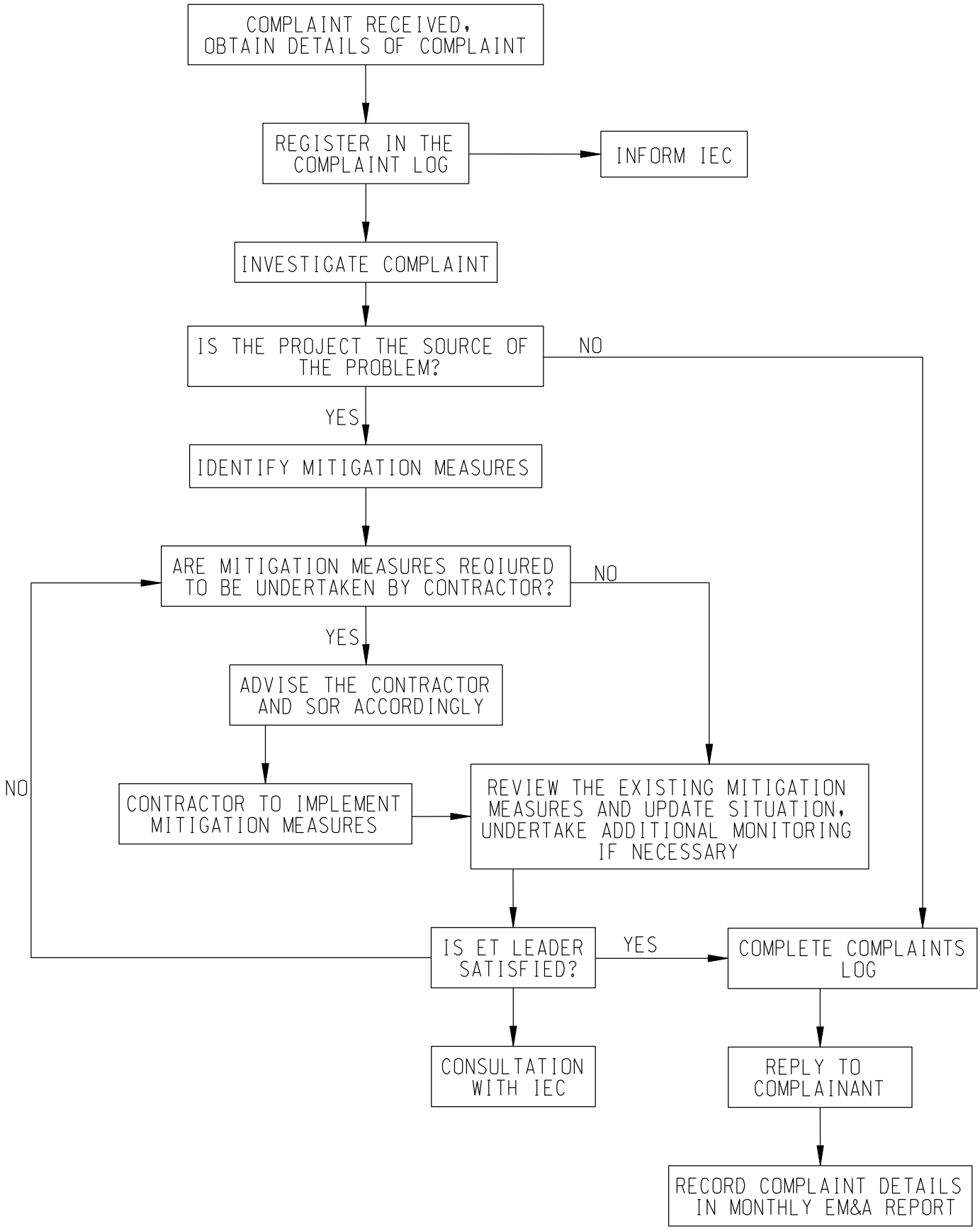
√	Compliance of mitigation measure
×	Non-compliance of mitigation measures
•	Non-compliance but rectified
N/A	Not applicable

Appendix H — Event and Action Plans

Event and Action Plan for Water Quality

Exceedance	ETL	HKITP	IEC
Action Level			
1. Exceedance for one sample	1. Repeat in-situ measurement to confirm findings. 2. Identify the source(s) of impact (e.g. intake water). 3. Inform HKITP and IEC. 4. Check monitoring data, all monitoring equipment and monitoring methods; consider changes of monitoring methods. 5. Discuss mitigation measures with HKITP and IEC. 6. Repeat measurement on next day of exceedance.	1. Discuss with IEC and ETL on WRC operations or any changes to the operations that may have an impact on the water quality. 2. Rectify unacceptable practice and propose mitigation measures. 3. Make agreement on the mitigation measures to be implemented. 4. Implement the agreed mitigation measures.	1. Discuss with ETL and HKITP on WRC operations or any changes to the operations that may have an impact on the water quality, and discuss possible mitigation measures. 2. Review proposals on mitigation measures by HKITP. 3. Assess the effectiveness of the implemented mitigation measures.
2. Exceedance for two or more consecutive samples	1. Repeat in-situ measurement to confirm findings. 2. Identify the source(s) of impact (eg intake water). 3. Inform HKITP and IEC. 4. Check monitoring data, all monitoring equipment and monitoring methods; consider changes of monitoring methods 5. Discuss mitigation measures with HKITP and IEC. 6. Ensure mitigation measures are implemented. 7. Prepare to increase monitoring frequency to assess efficacy of remedial measures. 8. Repeat measurement on next day of exceedance.	1. Discuss with IEC and ETL on WRC operations or any changes to the operations that may have an impact on the water quality. 2. Rectify unacceptable practice and propose mitigation measures. 3. Make agreement on the mitigation measures to be implemented. 4. Implement the agreed mitigation measures 5. Assess the effectiveness of the implemented mitigation measures	1. Discuss with HKITP and ETL on WRC operations or any changes to the operations that may have an impact on the water quality, and discuss possible mitigation measures. 2. Review proposals on mitigation measures by HKITP. 3 .Assess the effectiveness of the implemented mitigation measures

Exceedance	ETL	HKITP	IEC
Limit Level			
1. Exceedance for one sample	1. Repeat measurement to confirm findings. 2. Identify the source(s) of impact (eg intake water). 3. Inform HKITP and IEC. 4. Check monitoring data, all monitoring equipment and monitoring methods; consider changes of monitoring methods 5. Discuss mitigation measures with HKITP and IEC. 6. Ensure mitigation measures are implemented. 7. Increase monitoring frequency to daily until no exceedance of Limit Level.	1. Inform EPD of exceedance. 2. Discuss with IEC and ETL on WRC operations or any changes to the operations that may have an impact on the water quality. 3. Rectify unacceptable practice and propose mitigation measures. 4. Make agreement on the mitigation measures to be implemented. 5. Implement the agreed mitigation measures 6. Assess the effectiveness of the implemented mitigation measures	1. Discuss with HKITP and ETL on WRC operations or any changes to the operations that may have an impact on the water quality, and discuss possible mitigation measures. 2. Review proposals on mitigation measures by HKITP. 3. Assess the effectiveness of the implemented mitigation measures
2. Exceedance for two or more consecutive samples	1. Repeat measurement to confirm findings. 2. Identify the source(s) of impact (eg intake water). 3. Inform HKITP and IEC. 4. Check monitoring data, all monitoring equipment and monitoring methods; consider changes of monitoring methods 5. Discuss mitigation measures with HKITP and IEC. 6. Ensure mitigation measures are implemented. 7. Increase monitoring frequency to daily until no exceedance of Limit Level for two consecutive days.	1. Inform EPD of exceedance. 2. Discuss with IEC and ETL on WRC operations or any changes to the operations that may have an impact on the water quality. 3. Rectify unacceptable practice and propose mitigation measures. 4. Make agreement on the mitigation measures to be implemented. 5. Implement the agreed mitigation measures 6. Assess the effectiveness of the implemented mitigation measures 7. Consider to slow down or to stop all or part of the water-based activities until no exceedance of Limit level.	1. Discuss with HKITP and ETL on WRC operations or any changes to the operations that may have an impact on the water quality, and discuss possible mitigation measures. 2. Review proposals on mitigation measures by HKITP. 3. Assess the effectiveness of the implemented mitigation measures



MAUNSELL AECOM

Maunsell Environmental Management Consultants Ltd

FEP-01/097/2001/B
PROVISION OF ENVIRONMENTAL MONITORING & AUDIT SERVICES FOR WATER RECREATION CENTRE

COMPLAINT RESPONSE PROCEDURE

SCALE	N.T.S.	DATE	2005
CHECK	KCHC	DRAWN	YPK
JOB No.	S07105	APPENDIX.	I
REV	–		

K:/S07105/DRAWING/REPORTS/FLOW DIAGRAM.DGN