



QA-F15 Sample Record – Water

Job Number: J1418 Project Name: Korrance Brickpit Redevelopment

Date: 19 December 2006 Borehole No.: GW:2

Sampling Method: Peristaltic Pump

Time Start: 09:30 Time Finish: 10:30

Analyte	Container	Preservative	Laboratory	Tick
VOC (inc. BTEX, TPH C ₆ -C ₉) VHC	40 ml VOA	HCl	ALS	✓
TOC / TIC / TC DOC	40 ml VOA	H ₂ SO ₄	ALS	✓
Sulphide	250 ml glass	Zn acetate	x	x
Semi-volatiles (inc. TPH C ₁₀ -C ₃₆)	1 L brown glass	-	x	x
Dissolved metals	250 ml polyethylene	Filter + HNO ₃	ALS	✓
Total metals	250 ml polyethylene	HNO ₃	x	x
NH ₃ , NO ₃ , TKN, PO ₄ , TOC	1 L polyethylene	H ₂ SO ₄	ALS	✓
Other inorganics	1 L polyethylene	None	ALS	✓
Bacteriological	Sterile	None	x	x
Cu	250-ml glass	NaOH	x	x

Comments:



QA-F14 Well Purge Field Chemistry Record

Job No: J1418..... Project Name: Kooragang Island Redevelopment.....
Facility/Location: Former Kooragang Borepit, Princess Highway, Kooragang..... Measured by: C. Wilenczak (CMJA).....
Date: 19 December 2008..... Well Designation: GW-3 (SE corner of the site).....
Purging Method: Peristaltic Pump.....
Start Time: 08:00.....Hrs..... Finish Time: 08:55.....Hrs

PURGE DATA

Depth to Top of Sediment Before Purging: 8.10..m After Purging: 8.10..m
Total Well Depth (actual depth w/o sediment): Unknown..m
Casing Stick-up (TOC to Ground Surface): 0.50..m (or) Casing Recess (Ground Surface to TOC): 0.10..m
Screen Length: 2.70..m(?) Depth to Top Screen Slot: Unknown..m
Depth from TOC to Static Water Before Purging: 2.27..m
Length of Water Column: Unknown..m Water Level is: ?..m above/below top screen slot
Well Diameter: 50..mm Borehole/sandpack diameter: 76..mm
Volume of Water in Well and Sandpack before Purging: Unknown..litres (assuming 20 per cent pore space)
Volume of Water to Remove for Purging: N/A..litres
Depth from TOC to Static Water 24 hours after Purging: Unknown..m

Note: Purging must continue until at least three well volumes (including saturated filter annulus) of water have been removed, or, all available water has been evacuated from the well (i.e. unable to fill bailer after ten minutes' wait for recharge). A sample should be obtained after the well has recharged to at least 80% of original volume. Alternatively, for micropurging using a bladder pump or peristaltic pump, purging at 100 to 400 mL/minute, with minimal drawdown, must continue until at least five parameters have stabilised.

FIELD MEASUREMENTS

Parameter	Equipment Used	Reading Number								
		1	2	3	4	5	6	7	8	9
Temperature °C	TDS FLMV90 Multimeter	19.0	19.0	19.0	19.0					
pH	TDS FLMV90 Multimeter	6.11	6.12	6.15	6.14					
Specific conductivity µS	TDS FLMV90 Multimeter	1670	1676	1675	1674					
Dissolved oxygen % sat	TDS FLMV90 Multimeter	1.04	0.73	0.46	0.36					
Redox potential	TDS FLMV90 Multimeter	-306	-313	-313	-312					
Turbidity (NTU)	TURBIDITY METER	Turbid	Turbid	Turbid	94.6					
No. of litres removed		1.0	2.0	3.5	4.5					
Total Volume of Water Removed: 5.5 litres										
Comments:										

GENERAL DATA

Weather: Fine & sunny.....
Type and size of well purging equipment: Geopump, Peristaltic Pump.....
Physical description of water: Turbid.....



QA-F15 Sample Record – Water

Job Number: J1416..... Project Name: Kierawee Beachpit Redevelopment.....

Date: 19 December 2008..... Borehole No.: GW:3.....

Sampling Method: Peristaltic Pump.....

Time Start: 06:00..... Time Finish: 06:55.....

Analyte	Container	Preservative	Laboratory	Tick
VOC (inc. BTEX, TPH C ₆ -C ₉) _{VHC}	40 ml VOA	HCl	ALS	✓✓
TOC / TIC / TC _{DOC}	40 ml VOA	H ₂ SO ₄	ALS	✓✓
Sulphide	250 ml glass	Zn acetate	x	x
Semi-volatiles (inc. TPH C ₁₀ -C ₃₆)	1 L brown glass	-	x	x
Dissolved metals	250 ml polyethylene	Filter + HNO ₃	ALS	✓✓
Total metals	250 ml polyethylene	HNO ₃	x	x
NH ₃ , NO ₃ , TKN, PO ₄ , TOC	1 L polyethylene	H ₂ SO ₄	ALS	✓✓
Other inorganics	1 L polyethylene	None	ALS	✓✓
Bacteriological	Sterile	None	x	x
Cn	250-ml glass	NaOH	x	x

Comments: Duplicate sample (GW:D) collected from monitoring well GW:3



C. M. Jewell & Associates Pty Ltd
Water and Environmental Management
ABN 54 056 283 295

QA-F14 Well Purge Field Chemistry Record

Job No.: J1418 Project Name: Kirrawee Brichpit Redevelopment
Facility/Location: Former Kirrawee Brichpit, Princess Highway, Kirrawee Measured by: C. Wicenciah (CMJA)
Date: 19 December 2008 Well Designation: BH:04 (eastern end of property)
Purging Method: Peristaltic Pump
Start Time: 10:50 Hrs Finish Time: 11:25 Hrs

PURGE DATA

Depth to Top of Sediment Before Purging: 15.34 m After Purging: 15.64 m
Total Well Depth (actual depth w/o sediment): 15.64 m
Casing Stick-up (TOC to Ground Surface): 0.44 m (or) Casing Recess (Ground Surface to TOC): 0.44 m
Screen Length: 2.90 m Depth to Top Screen Slot: 12.69 m
Depth from TOC to Static Water Before Purging: 4.29 m
Length of Water Column: 11.35 m Water Level is: 7.22 m above/below top screen slot
Well Diameter: 50 mm Borehole/sandpack diameter: 76 mm
Volume of Water in Well and Sandpack before Purging: 35 litres (assuming 20 per cent pore space)
Volume of Water to Remove for Purging: N/A litres
Depth from TOC to Static Water 24 hours after Purging: Unknown m

Note: Purging must continue until at least three well volumes (including saturated filter annulus) of water have been removed, or, all available water has been evacuated from the well (i.e., unable to fill bailer after ten minutes' wait for recharge). A sample should be obtained after the well has recharged to at least 80% of original volume. Alternatively, for micropurging using a bladder pump or peristaltic pump, purging at 100 to 400 mL/minute, with minimal drawdown, must continue until at least five parameters have stabilised.

FIELD MEASUREMENTS

Parameter	Equipment Used	Reading Number								
		1	2	3	4	5	6	7	8	9
Temperature °C	TPS FLMV90 Multimeter	23.1	23.1							
pH	TPS FLMV90 Multimeter	11.54	12.22							
Specific conductivity µS	TPS FLMV90 Multimeter	9420	9520							
Dissolved oxygen % sat	TPS FLMV90 Multimeter	5.53	5.12							
Redox potential	TPS FLMV90 Multimeter	-58	-22							
Turbidity (NTU)	TURBIDITY METER		46.8							
No. of litres removed		1.0	2.0							
Total Volume of Water Removed: 3.0 litres										
Comments: Grab sample as yield extremely low.										

GENERAL DATA

Weather: Fine & sunny
Type and size of well purging equipment: Geopump, Peristaltic Pump
Physical description of water: Turbid
.....



QA-F15 Sample Record – Water

Job Number: J14B..... Project Name: Kooragang Bridgeport Redevelopment.....

Date: 19 December 2008..... Borehole No.: BH: 04.....

Sampling Method: Peristaltic Pump.....

Time Start: 10:50..... Time Finish: 11:25.....

Analyte	Container	Preservative	Laboratory	Tick
VOC (inc. BTEX, TPH C ₆ -C ₉) VHC	40 ml VOA	HCl	ALS	✓✓
TOC / TIC / TC DOC	40 ml VOA	H ₂ SO ₄	ALS	✓✓
Sulphide	250 ml glass	Zn acetate	x	x
Semi-volatiles (inc. TPH C ₁₀ -C ₃₆)	1 L brown glass	-	ALS	✓✓
Dissolved metals	250 ml polyethylene	Filter + HNO ₃	ALS	✓✓
Total metals	250 ml polyethylene	HNO ₃	x	x
NH ₃ , NO ₃ , TKN, PO ₄ , TOC	1 L polyethylene	H ₂ SO ₄	ALS	✓✓
Other inorganics	1 L polyethylene	None	ALS	✓✓
Bacteriological	Sterile	None	x	x
Cn	250-ml glass	NaOH	x	x

Comments: Noted as GW:4 on the chain of custody.



QA-F14 Well Purge Field Chemistry Record

Job No: J1419 Project Name: Kiriwee Bridgepit Redevelopment
Facility/Location: Former Kiriwee Bridgepit, Princess Highway, Kiriwee Measured by: C. Niceneiah (CMJA)
Date: 19 December 2008 Well Designation: BH: 01 (NW corner of site in open area)
Purging Method: Peristaltic Pump
Start Time: 11:35 Hrs Finish Time: 12:40 Hrs

PURGE DATA

Depth to Top of Sediment Before Purging: 15.21 m After Purging: 15.61 m
Total Well Depth (actual depth w/o sediment): 15.61 m
Casing Stick-up (TOC to Ground Surface): 0.53 m (or) Casing Recess (Ground Surface to TOC): N/A m
Screen Length: 2.90 m Depth to Top Screen Slot: 12.66 m
Depth from TOC to Static Water Before Purging: 5.47 m
Length of Water Column: 10.14 m Water Level is: 7.19 m above/below top screen slot
Well Diameter: 50 mm Borehole/sandpack diameter: 96 mm
Volume of Water in Well and Sandpack before Purging: 7.35 litres (assuming 20 per cent pore space)
Volume of Water to Remove for Purging: N/A litres
Depth from TOC to Static Water 24 hours after Purging: Unknown m

Note: Purging must continue until at least three well volumes (including saturated filter annulus) of water have been removed, or, all available water has been evacuated from the well (i.e. unable to fill bailer after ten minutes' wait for recharge). A sample should be obtained after the well has recharged to at least 80% of original volume. Alternatively, for micropurging using a bladder pump or peristaltic pump, purging at 100 to 400 mL/minute, with minimal drawdown, must continue until at least five parameters have stabilised.

FIELD MEASUREMENTS

Parameter	Equipment Used	Reading Number								
		1	2	3	4	5	6	7	8	9
Temperature °C	TPS FLMV90 Multimeter	22.8	22.3	22.2	22.2	22.2				
pH	TPS FLMV90 Multimeter	5.50	5.05	4.75	4.37	4.47				
Specific conductivity µs	TPS FLMV90 Multimeter	367	366	364	362	361				
Dissolved oxygen % sat	TPS FLMV90 Multimeter	2.63	2.08	1.98	1.91	1.63				
Redox potential	TPS FLMV90 Multimeter	377	213	-62	-38					
Turbidity	TURBIDITY METER		57.0	57.0						
No. of litres removed		1.0	2.0	3.0	4.0	5.0				
Total Volume of Water Removed: 6.0 litres										
Comments:										

GENERAL DATA

Weather: Fine & sunny
Type and size of well purging equipment: Peristaltic pump
Physical description of water: Turbid



QA-F15 Sample Record – Water

Job Number: J1418..... Project Name: Kinnaroo Borehole Redevelopment.....

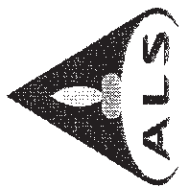
Date: 19 December 2009..... Borehole No.: BH:01.....

Sampling Method: Peristaltic Pump.....

Time Start: 11:35..... Time Finish: 12:40.....

Analyte	Container	Preservative	Laboratory	Tick
VOC (inc. BTEX, TPH C ₆ -C ₉) VOC	40 ml VOA	HCl	ALS	//
TOC / TIC / TC TC	40 ml VOA	H ₂ SO ₄	ALS	//
Sulphide	250 ml glass	Zn acetate	x	x
Semi-volatiles (inc. TPH C ₁₀ -C ₃₆)	1 L brown glass	-	ALS	//
Dissolved metals	250 ml polyethylene	Filter + HNO ₃	ALS	//
Total metals	250 ml polyethylene	HNO ₃	x	x
NH ₃ , NO ₃ , TKN, PO ₄ , TOC	1 L polyethylene	H ₂ SO ₄	ALS	//
Other inorganics	1 L polyethylene	None	ALS	//
Bacteriological	Sterile	None	x	x
Cn	250-ml glass	NaOH	x	x

Comments:



Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: ES0818838	Page	: 1 of 10
Amendment	: 1		
Client	: C M JEWELL & ASSOC PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR CRAIG WICENCIAK	Contact	: Charlie Pierce
Address	: P O BOX 10 WENTWORTH FALLS NSW, AUSTRALIA 2782	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
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Project	: J1418	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: —	Date Samples Received	: 19-DEC-2008
C-O-C number	: —	Issue Date	: 08-JAN-2009
Sampler	: DVE/CBW	No. of samples received	: 6
Site	: KIRRAWEE BRICK PIT	No. of samples analysed	: 6
Quote number	: SY100/08		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Celine Conceicao	Spectroscopist	Inorganics
Edwandy Fadjar	Senior Organic Chemist	Inorganics
Sarah Millington	Senior Inorganic Chemist	Organics
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Work Order : ES0818838 Amendment 1
Client : C M JEWELL & ASSOC PTY LTD
Project : J1418

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key :

CAS Number = Chemistry Abstract Services number

LOR = Limit of reporting

A = This result is computed from individual analyte detections at or above the level of reporting

● EG020A-F: LOR raised for Iron due to matrix interference.

● EK057: It has been noted that NO₂ is greater than NO_x for sample ID's 'GW.2' and 'GW.3', however these differences are within the limits of experimental variation.

● EN055-TS: Ionic Balance out of acceptable limits for sample ID 'GW.4' due to analytes not quantified in this report.

● EP080: Level of Reporting raised for toluene due to ambient background levels in the laboratory.

● This report has been amended and re-released to allow the reporting of additional analytical data.



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Work Order : ES0818838 Amendment 1
Client : C M JEWELL & ASSOC PTY LTD
Project : J1418

Analytical Results

Sub-Matrix: WATER		Client sample ID				Client sampling date / time			
Compound	CAS Number	LOR	Unit	GW:1	GW:2	GW:3	GW:D	GW:4	
ES0818838-001 [19-DEC-2008] ES0818838-002 [19-DEC-2008] ES0818838-003 [19-DEC-2008] ES0818838-004 [19-DEC-2008] ES0818838-005									
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO ₃	DMO-210-001	1	mg/L	<1	<1	<1	<1	2210	
Carbonate Alkalinity as CaCO ₃	3812-32-6	1	mg/L	<1	<1	<1	<1	440	
Bicarbonate Alkalinity as CaCO ₃	71-52-3	1	mg/L	<1	31	275	254	<1	
Total Alkalinity as CaCO ₃	—	1	mg/L	<1	31	275	254	2650	
ED041: Sulfate (Turbidimetric) as SO ₄ 2-									
Sulfate as SO ₄ - Turbidimetric	14808-79-8	1	mg/L	202	231	180	168	64	
ED045G: Chloride Discrete analyser									
Chloride	16887-00-6	1	mg/L	324	62	294	292	73	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	<1	<1	17	17	164	
Magnesium	7439-95-4	1	mg/L	22	8	21	21	<1	
Sodium	7440-23-5	1	mg/L	269	148	366	353	158	
Potassium	7440-09-7	1	mg/L	1	1	3	3	199	
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	—	—	—	—	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	—	—	—	—	<0.0001	
Chromium	7440-47-3	0.001	mg/L	—	—	—	—	0.035	
Copper	7440-50-8	0.001	mg/L	—	—	—	—	0.005	
Lead	7439-92-1	0.001	mg/L	—	—	—	—	0.030	
Manganese	7439-96-5	0.001	mg/L	0.007	0.672	1.08	1.08	<0.001	
Nickel	7440-02-0	0.001	mg/L	—	—	—	—	0.008	
Zinc	7440-66-6	0.005	mg/L	—	—	—	—	<0.005	
Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	0.54	0.54	<0.05	
Iron	7439-89-6	0.05	mg/L	0.37	8.82	6.99	7.13	<0.50	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	—	—	—	—	<0.0001	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.14	0.23	0.22	0.18	1.21	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	—	0.01	mg/L	0.01	0.02	0.02	0.02	0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.03	
EK059G: NO ₃ as N by Discrete Analyser									
Nitrite + Nitrate as N	—	0.01	mg/L	0.02	<0.01	0.02	0.01	0.04	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	—	0.01	mg/L	0.01	0.02	0.21	0.51	<0.01	



Analytical Results

Sub-Matrix: WATER		Client sample ID				GW:1	GW:2	GW:3	GW:D	GW:4
		Client sampling date / time				[19-DEC-2008]	[19-DEC-2008]	[19-DEC-2008]	[19-DEC-2008]	[19-DEC-2008]
Compound	CAS Number	LOR	Unit		ES0818838-001	ES0818838-002	ES0818838-003	ES0818838-004	ES0818838-005	
EN055: Ionic Balance										
Δ Total Anions	—	0.01	meq/L		13.3	7.20	17.6	16.8		56.3
Δ Total Cations	—	0.01	meq/L		13.6	7.12	18.6	18.0		20.2
Δ Ionic Balance	—	0.01	%		0.91	0.58	2.90	3.34		47.2
EP002: Dissolved Organic Carbon (DOC)										
Dissolved Organic Carbon	—	1	mg/L		1	<1	3	5		10
EP074B: Fumigants										
2,2-Dichloropropane	594-20-7	5	µg/L		<5	<5	<5	<5		<5
1,2-Dichloropropane	78-87-5	5	µg/L		<5	<5	<5	<5		<5
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L		<5	<5	<5	<5		<5
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L		<5	<5	<5	<5		<5
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L		<5	<5	<5	<5		<5
EP074E: Halogenated Aliphatic Compounds										
Dichlorodifluoromethane	75-71-8	50	µg/L		<50	<50	<50	<50		<50
Chloromethane	74-87-3	50	µg/L		<50	<50	<50	<50		<50
Vinyl chloride	75-01-4	50	µg/L		<50	<50	<50	<50		<50
Bromomethane	74-83-9	50	µg/L		<50	<50	<50	<50		<50
Chloroethane	75-00-3	50	µg/L		<50	<50	<50	<50		<50
Trichlorofluoromethane	75-69-4	50	µg/L		<50	<50	<50	<50		<50
1,1-Dichloroethene	75-35-4	5	µg/L		<5	<5	<5	<5		<5
Iodomethane	74-88-4	5	µg/L		<5	<5	<5	<5		<5
trans-1,2-Dichloroethene	156-60-5	5	µg/L		<5	<5	<5	<5		<5
1,1-Dichloroethane	75-34-3	5	µg/L		<5	<5	<5	<5		<5
cis-1,2-Dichloroethene	156-59-2	5	µg/L		<5	<5	<5	<5		<5
1,1,1-Trichloroethane	71-55-6	5	µg/L		<5	<5	<5	<5		<5
1,1-Dichloropropylene	563-58-6	5	µg/L		<5	<5	<5	<5		<5
Carbon Tetrachloride	56-23-5	5	µg/L		<5	<5	<5	<5		<5
1,2-Dichloroethane	107-06-2	5	µg/L		<5	<5	<5	<5		<5
Trichloroethene	79-01-6	5	µg/L		<5	<5	<5	<5		<5
Dibromomethane	74-95-3	5	µg/L		<5	<5	<5	<5		<5
1,1,2-Trichloroethane	79-00-5	5	µg/L		<5	<5	<5	<5		<5
1,3-Dichloropropane	142-28-9	5	µg/L		<5	<5	<5	<5		<5
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	<5	<5		<5
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	<5	<5		<5
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L		<5	<5	<5	<5		<5
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L		<5	<5	<5	<5		<5
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	<5	<5		<5
1,2,3-Trichloropropane	96-18-4	5	µg/L		<5	<5	<5	<5		<5
Pentachloroethane	76-01-7	5	µg/L		<5	<5	<5	<5		<5



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Work Order : ES0818838 Amendment 1
Client : C M JEWELL & ASSOC PTY LTD
Project : J1418

Analytical Results

Sub-Matrix: WATER

Sub-Matrix: WATER	Client sample ID		CAS Number	Client sampling date / time		GW:1 [19-DEC-2008] ES0818838-001	GW:2 [19-DEC-2008] ES0818838-002	GW:3 [19-DEC-2008] ES0818838-003	GW:D [19-DEC-2008] ES0818838-004	GW:4 [19-DEC-2008] ES0818838-005
	Compound	LOR		Unit	Unit					
EP074E: Halogenated Aliphatic Compounds - Continued										
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	<5	<5	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	<5	<5	<5	<5
EP074F: Halogenated Aromatic Compounds										
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	<5	<5	<5	<5
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	<5	<5	<5	<5
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	<5	<5	<5	<5
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	<5	<5	<5	<5
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	<5	<5	<5	<5
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	<5	<5	<5	<5
EP074G: Trihalomethanes										
Chloroform	67-66-3	5	µg/L	<5	<5	<5	<5	<5	<5	<5
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	<5	<5	<5	<5
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	<5	<5	<5	<5
Bromoform	75-25-2	5	µg/L	<5	<5	<5	<5	<5	<5	<5
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	—	20	µg/L	—	—	—	—	—	—	<20
C10 - C14 Fraction	—	50	µg/L	—	—	—	—	—	—	<50
C15 - C28 Fraction	—	100	µg/L	—	—	—	—	—	—	<100
C29 - C36 Fraction	—	50	µg/L	—	—	—	—	—	—	<50
EP080: BTEX										
Benzene	71-43-2	1	µg/L	—	—	—	—	—	—	<1
Toluene	108-88-3	2	µg/L	—	—	—	—	—	—	<5
Ethylbenzene	100-41-4	2	µg/L	—	—	—	—	—	—	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	—	—	—	—	—	—	3
ortho-Xylene	95-47-6	2	µg/L	—	—	—	—	—	—	2
EP074S: VOC Surrogates										
1,2-Dichloroethane-D4	17060-07-0	0.1	%	121	120	116	120	116	120	118
Toluene-D8	2037-26-5	0.1	%	89.6	86.6	86.0	86.6	86.0	87.7	93.2
4-Bromofluorobenzene	460-00-4	0.1	%	96.7	90.7	89.7	90.7	89.7	92.3	103
EP080S: TPH(V)/BTEX Surrogates										
1,2-Dichloroethane-D4	17060-07-0	0.1	%	—	—	—	—	—	—	108
Toluene-D8	2037-26-5	0.1	%	—	—	—	—	—	—	105
4-Bromofluorobenzene	460-00-4	0.1	%	—	—	—	—	—	—	113



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Work Order : ES0818838 Amendment 1
Client : C M JEWELL & ASSOC PTY LTD
Project : J1418

Analytical Results

Sub-Matrix: WATER

Sub-Matrix: WATER			Client sample ID		BH01	[19-DEC-2008]	ES0818838-006
Compound	CAS Number	LOR	Unit				
ED037P: Alkalinity by PC Titrator							
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1		
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		<1		
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		<1		
Total Alkalinity as CaCO3	---	1	mg/L		<1		
ED041: Sulfate (Turbidimetric) as SO4 2-							
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		19		
ED045G: Chloride Discrete analyser							
Chloride	16887-00-6	1	mg/L		84		
ED093F: Dissolved Major Cations							
Calcium	7440-70-2	1	mg/L		2		
Magnesium	7439-95-4	1	mg/L		5		
Sodium	7440-23-5	1	mg/L		46		
Potassium	7440-09-7	1	mg/L		2		
EG020F: Dissolved Metals by ICP-MS							
Arsenic	7440-38-2	0.001	mg/L		<0.001		
Cadmium	7440-43-9	0.0001	mg/L		<0.0001		
Chromium	7440-47-3	0.001	mg/L		<0.001		
Copper	7440-50-8	0.001	mg/L		0.028		
Lead	7439-92-1	0.001	mg/L		0.029		
Manganese	7439-96-5	0.001	mg/L		0.047		
Nickel	7440-02-0	0.001	mg/L		0.004		
Zinc	7440-66-6	0.005	mg/L		0.036		
Boron	7440-42-8	0.05	mg/L		<0.05		
Iron	7439-89-6	0.05	mg/L		1.24		
EG035F: Dissolved Mercury by FIMS							
Mercury	7439-97-6	0.0001	mg/L		<0.0001		
EK055G: Ammonia as N by Discrete Analyser							
Ammonia as N	7664-41-7	0.01	mg/L		0.17		
EK057G: Nitrite as N by Discrete Analyser							
Nitrite as N	---	0.01	mg/L		0.02		
EK058G: Nitrate as N by Discrete Analyser							
Nitrate as N	14797-55-8	0.01	mg/L		0.08		
EK059G: NOX as N by Discrete Analyser							
Nitrite + Nitrate as N	---	0.01	mg/L		0.09		
EK071G: Reactive Phosphorus as P by discrete analyser							
Reactive Phosphorus as P	---	0.01	mg/L		0.01		

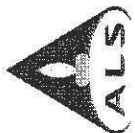


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Work Order : ES0618838 Amendment 1
Client : C M JEWELL & ASSOC PTY LTD
Project : J1418

Analytical Results

Sub-Matrix: WATER

Sub-Matrix: WATER			Client sample ID	
Compound	CAS Number	LOR	Client sampling date / time	BH01
				[19-DEC-2008]
ES0818338-006				
EN055: Ionic Balance				
Δ Total Anions	—	0.01	meq/L	2.76
Δ Total Cations	—	0.01	meq/L	2.57
EP002: Dissolved Organic Carbon (DOC)				
Dissolved Organic Carbon	—	1	mg/L	<1
EP074D: Fumigants				
2,2-Dichloropropane	594-20-7	5	µg/L	<5
1,2-Dichloropropane	78-87-5	5	µg/L	<5
cis-1,3-Dichloropropylene	10081-01-5	5	µg/L	<5
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5
EP074E: Halogenated Aliphatic Compounds				
Dichlorodifluoromethane	75-71-8	50	µg/L	<50
Chloromethane	74-87-3	50	µg/L	<50
Vinyl chloride	75-01-4	50	µg/L	<50
Bromomethane	74-83-9	50	µg/L	<50
Chloroethane	75-00-3	50	µg/L	<50
Trichlorofluoromethane	75-69-4	50	µg/L	<50
1,1-Dichloroethene	75-35-4	5	µg/L	<5
Iodomethane	74-88-4	5	µg/L	<5
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5
1,1-Dichloroethane	75-34-3	5	µg/L	<5
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5
1,1-Dichloropropylene	563-58-6	5	µg/L	<5
Carbon Tetrachloride	56-23-5	5	µg/L	<5
1,2-Dichloroethane	107-06-2	5	µg/L	<5
Trichloroethene	79-01-6	5	µg/L	<5
Dibromomethane	74-95-3	5	µg/L	<5
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5
1,3-Dichloropropane	142-28-9	5	µg/L	<5
Tetrachloroethene	127-18-4	5	µg/L	<5
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5
1,2,3-Trichloropropane	96-18-4	5	µg/L	<5
Pentachloroethane	76-01-7	5	µg/L	<5
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5



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Work Order : ES0818838 Amendment 1
Client : C M JEWELL & ASSOC PTY LTD
Project : J1418

Analytical Results

Sub-Matrix: WATER

Sub-Matrix: WATER		Client sample ID		BH01 [19-DEC-2008]	ES0818838-006				
Compound	CAS Number	LOR	Unit						
EP074E: Halogenated Aliphatic Compounds - Continued									
Hexachlorobutadiene	87-68-3	5	µg/L	<5					
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L	<5					
Bromobenzene	108-86-1	5	µg/L	<5					
2-Chlorotoluene	95-49-8	5	µg/L	<5					
4-Chlorotoluene	106-43-4	5	µg/L	<5					
1,3-Dichlorobenzene	541-73-1	5	µg/L	<5					
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5					
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5					
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5					
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5					
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L	<5					
Bromodichloromethane	75-27-4	5	µg/L	<5					
Dibromochloromethane	124-48-1	5	µg/L	<5					
Bromoform	75-25-2	5	µg/L	<5					
EP080/074: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	—	20	µg/L	<20					
C10 - C14 Fraction	—	50	µg/L	310					
C15 - C28 Fraction	—	100	µg/L	<100					
C29 - C36 Fraction	—	50	µg/L	<50					
EP080: BTEX									
Benzene	71-43-2	1	µg/L	<1					
Toluene	108-88-3	2	µg/L	<5					
Ethylbenzene	100-41-4	2	µg/L	<2					
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2					
ortho-Xylene	95-47-6	2	µg/L	<2					
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%	117					
Toluene-D8	2037-26-5	0.1	%	90.2					
4-Bromofluorobenzene	460-00-4	0.1	%	98.6					
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%	116					
Toluene-D8	2037-26-5	0.1	%	104					
4-Bromofluorobenzene	460-00-4	0.1	%	102					



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Work Order : ES0818838 Amendment 1
Client : C M JEWELL & ASSOC PTY LTD
Project : J1418

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP074S: VOC-Surrogates			
1,2-Dichloroethane-D4	17060-07-0	80	120
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115
EP080S: TPH(V)/BTX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	80	120
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115



APPENDIX E

Groundwater Chemistry Data Other Sampling Events



APPENDIX E1

AWT Sampling Event, 2001

Table A16 Results of Field Parameters, Nutrients, PAH's, TPH's
in Surface water and Groundwater, Kirrawee (10/06/99 & 11/01/01)

Units in µg/L unless indicated otherwise

Sample Location	GW1	GW2	GW3	GW4 ¹	SW-SUR	SW-DEP	SW2	SW3	SW-DEP ²	Freshwater Guidelines
Sample Type	GW	GW	GW	GW	SW	SW	SW	SW	SW	
Sample Date	10/06/99	11/01/01	10/06/99	11/01/01	10/06/99	10/06/99	11/01/01	11/01/01	10/06/99	
Label Numbers	99044070	201002137	99044071	201002138	99044072	99044073	99044074	201002135	99044077	
Field Parameters										
Standing Water Level	6.42	7	4.42	5.15	3.05	3.17	nt	nt	nt	nt
Temperature	21.3	19.79	21.6	20.81	18.6	18.88	nt	14	19.09	nt
pH	8.3	8.09	8.01	8.05	8.95	8.18	nt	6.98	6.7	nt
Electrical Conductivity (µS/cm)	1835	1360	781	800	2383	2230	nt	1018	1200	nt
Salinity (mg/L)	900	720	400	410	1300	1190	nt	500	630	nt
DO (mg/L)	5.2	8.21	nt	2.55	nt	3.23	nt	nt	1.10	nt
Redox (V)	371	443	nt	225	nt	251	nt	-203	121	nt
Turbidity	43	92.2	nt	48.1	nt	>1000	nt	11.5	0	nt
Inorganics and Nutrients										
pH (pH units)	8.8	nt	8.59	nt	8.1	nt	nt	6.6	nt	nt
Electrical Conductivity (µS/cm)	900	nt	900	nt	2600	nt	nt	1100	nt	nt
Total Nitrogen (mg/L)	nt	nt	nt	nt	nt	nt	nt	2.1	0.63	nt
Total Phosphorous (mg/L)	nt	nt	nt	nt	nt	nt	nt	0.15	0.038	nt
Sulphate (mg/kg)	nt	nt	nt	nt	nt	nt	nt	nt	nt	700
Polycyclic Aromatic Hydrocarbons										
Naphthalene	<0.5	nt	<0.5	nt	<0.5	nt	nt	<0.5	nt	nt
Acenaphthylene	<0.5	nt	<0.5	nt	<0.5	nt	nt	<0.5	nt	nt
Acenaphthene	<0.5	nt	<0.5	nt	<0.5	nt	nt	<0.5	nt	nt
Fluorene	<0.5	nt	<0.5	nt	<0.5	nt	nt	<0.5	nt	nt
Phenanthrene	<0.5	nt	<0.5	nt	<0.5	nt	nt	<0.5	nt	nt
Anthracene	<0.5	nt	<0.5	nt	<0.5	nt	nt	<0.5	nt	nt
Fluoranthene	<0.5	nt	<0.5	nt	<0.5	nt	nt	<0.5	nt	nt
Pyrene	<0.5	nt	<0.5	nt	<0.5	nt	nt	<0.5	nt	nt
Benzo(a)anthracene	<0.5	nt	<0.5	nt	<0.5	nt	nt	<0.5	nt	nt
Chrysene	<0.5	nt	<0.5	nt	<0.5	nt	nt	<0.5	nt	nt
Benzo(b)fluoranthene	<0.5	nt	<0.5	nt	<0.5	nt	nt	<0.5	nt	nt
Benzo(k)fluoranthene	<0.5	nt	<0.5	nt	<0.5	nt	nt	<0.5	nt	nt
Benzo(a)pyrene	<0.5	nt	<0.5	nt	<0.5	nt	nt	<0.5	nt	nt
Indeno(1,2,3-cd)pyrene	<0.5	nt	<0.5	nt	<0.5	nt	nt	<0.5	nt	nt
Dibenzo(a,h)anthracene	<0.5	nt	<0.5	nt	<0.5	nt	nt	<0.5	nt	nt
Benzo(ghi)perylene	<0.5	nt	<0.5	nt	<0.5	nt	nt	<0.5	nt	nt
Total Detectable PAHs	<0.5	nt	<0.5	nt	<0.5	nt	nt	<0.5	nt	3 ^{anc}
Total Recoverable Hydrocarbons										
C6-C9	<40	nt	<40	nt	<40	nt	nt	<40	nt	nt
C10-C14	<100	nt	<100	nt	<100	nt	nt	<100	nt	nt
C15-C28	<200	nt	<200	nt	<200	nt	nt	<200	nt	nt
C29-C40	<200	nt	<200	nt	<200	nt	nt	<200	nt	nt
Total C10-C40	nd	nt	0	nt	nd	nt	nt	nd	nt	10000 ^e

nt - not recommended

nd - not tested

nd - not detected

^a NEPC (1999) Groundwater Investigation Levels, Aquatic Ecosystems - Fresh Waters

^b ANZECC (1992) Summary Guidelines for the Protection of Aquatic Ecosystems - Fresh Waters

^c NSW EPA (1994) Threshold Concentrations - Protection of Aquatic Ecosystems - Fresh

^d GW4 is a duplicate sample of GW3

^e SW-DEP is a duplicate sample of SW - DEP

Source: Kirrawee Water Treatment Plant

Table A17 Results of Organic Parameters: PCB's, BTEX and OPP's in Surface water and Groundwater, Kirrawee (10/06/99 & 11/01/01)

Units in µg/L unless indicated otherwise

Sample Location	GW1		GW2		GW3		GW4 ¹		SW-SUR		SW-DEP		SW2		SW3		SW-DEP ²		Freshwater Guidelines
	10/06/99	11/01/01	10/06/99	11/01/01	10/06/99	11/01/01	10/06/99	11/01/01	10/06/99	11/01/01	10/06/99	11/01/01	10/06/99	11/01/01	10/06/99	11/01/01	10/06/99	11/01/01	
Sample Type	GW	GW	GW	GW	GW	GW	GW	GW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	
Sample Date	10/06/99	11/01/01	10/06/99	11/01/01	10/06/99	11/01/01	10/06/99	11/01/01	10/06/99	11/01/01	10/06/99	11/01/01	10/06/99	11/01/01	10/06/99	11/01/01	10/06/99	11/01/01	
Label Numbers	99044070	201002137	99044071	201002138	99044072	201002139	99044073	99044074	99044075	99044076	99044077	99044078	99044079	99044080	99044081	99044082	99044083	99044084	
PCB's																			
Arochlor 1016	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	nt	nt	<0.2	nt	nt	nt	nt	nt	nt	nt	nr
Arochlor 1221	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	nt	nt	<0.2	nt	nt	nt	nt	nt	nt	nt	nr
Arochlor 1232	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	nt	nt	<0.2	nt	nt	nt	nt	nt	nt	nt	nr
Arochlor 1242	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	nt	nt	<0.2	nt	nt	nt	nt	nt	nt	nt	nr
Arochlor 1248	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	nt	nt	<0.2	nt	nt	nt	nt	nt	nt	nt	nr
Arochlor 1254	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	nt	nt	<0.2	nt	nt	nt	nt	nt	nt	nt	nr
Arochlor 1260	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	nt	nt	<0.2	nt	nt	nt	nt	nt	nt	nt	nr
Arochlor 12626	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	nt	nt	<0.2	nt	nt	nt	nt	nt	nt	nt	nr
Arochlor 1268	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	nt	nt	<0.2	nt	nt	nt	nt	nt	nt	nt	nr
Total Detectable PCB's	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	nt	nt	<0.2	nt	nt	nt	nt	nt	nt	nt	0.001 ^{ab}
Organophosphate Pesticides																			
Chlorpyrifos	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	nt	nt	<0.2	nt	<1	<1	<1	<1	nt	nt	0.001 ^{ab}
Fenitrothion	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	nt	nt	<0.2	nt	<1	<1	<1	<1	nt	nt	nr
Demeton	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	<1	<1	<1	<1	nt	nt	0.1 ^{ab}
Azinphos-methyl	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	<1	<1	<1	<1	nt	nt	nr
Malathion	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	<1	<1	<1	<1	nt	nt	0.07 ^b
Parathion	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	<1	<1	<1	<1	nt	nt	0.004 ^b
Bromofos Ethyl	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	nt	nt	<0.2	nt	nt	nt	nt	nt	nt	nt	nr
Ethion	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	nt	nt	<0.2	nt	nt	nt	nt	nt	nt	nt	nr
BTEX																			
Benzene	<1	nt	<1	nt	<1	nt	<1	nt	nt	nt	<1	nt	nt	nt	nt	nt	nt	nt	300 ^{bc}
Toluene	<1	nt	<1	nt	<1	nt	<1	nt	nt	nt	<1	nt	nt	nt	nt	nt	nt	nt	300 ^{bc}
Ethylbenzene	<1	nt	<1	nt	<1	nt	<1	nt	nt	nt	<1	nt	nt	nt	nt	nt	nt	nt	140 ^{bc}
Total Xylenes	<3	nt	<3	nt	<3	nt	<3	nt	nt	nt	<3	nt	nt	nt	nt	nt	nt	nt	380 ^c

nr - not recommended

nt - not tested

^a NEPC (1999) Groundwater Investigation Levels, Aquatic Ecosystems - Fresh Waters

^b ANZECC (1992) Summary Guidelines for the Protection of Aquatic Ecosystems - Fresh Waters

^c NSW EPA (1994) Threshold Concentrations- Protection of Aquatic Ecosystems - Fresh

¹ GW4 is a duplicate sample of GW3

² SW-DEP is a duplicate sample of SW - DEP

Notes: Concentrations exceed respective guideline concentration

Table A18 Results of OCP's and heavy metals in Surface water and Groundwater, Kirrawee (10/06/99)

Units in µg/L unless indicated otherwise

Sample Location	GW1 GW	GW2 GW	GW3 GW	GW4, GW	SW-SUR SW	SW-DEP SW	SW2 SW	SW3 SW	SW-DEP ₂ SW	Freshwater Guidelines
Sample Type	10/06/99	11/01/01	10/06/99	11/01/01	10/06/99	10/06/99	11/01/01	11/01/01	10/06/99	
Label Numbers	99044070	201002137	99044071	201002138	99044072	99044073	201002135	201002136	99044077	
Organochlorine pesticides										
HCB	<0.2	nt	<0.2	nt	<0.2	nt	<0.1	<0.1	nt	nt
alpha BHC	<0.2	nt	<0.2	nt	<0.2	nt	<0.1	<0.1	nt	nt
Lindane (gamma BHC)	<0.2	nt	<0.2	nt	<0.2	nt	<0.1	<0.1	nt	0.03 ^b
Heptachlor	<0.2	nt	<0.2	nt	<0.2	nt	<0.1	<0.1	nt	0.01 ^{ab}
Aldrin	<0.2	nt	<0.2	nt	<0.2	nt	<0.1	<0.1	nt	0.01 ^{ab}
beta BHC	<0.2	nt	<0.2	nt	<0.2	nt	<0.1	<0.1	nt	nt
Oxychlorodane	<0.2	nt	<0.2	nt	<0.2	nt	<0.1	<0.1	nt	nt
delta BHC	<0.2	nt	<0.2	nt	<0.2	nt	<0.1	<0.1	nt	nt
Heptachlor Epoxide	<0.2	nt	<0.2	nt	<0.2	nt	<0.1	<0.1	nt	nt
o, p-DDE	<0.2	nt	<0.2	nt	<0.2	nt	<0.1	<0.1	nt	0.014 ^b
alpha Endosulfan	<0.2	nt	<0.2	nt	<0.2	nt	<0.1	<0.1	nt	0.01 ^b
trans Chlordane	<0.2	nt	<0.2	nt	<0.2	nt	<0.1	<0.1	nt	0.004 ^{ab}
cis Chlordane	<0.2	nt	<0.2	nt	<0.2	nt	<0.1	<0.1	nt	0.004 ^{ab}
trans Nonachlor	<0.2	nt	<0.2	nt	<0.2	nt	<0.1	<0.1	nt	nt
p, p-DDE	<0.2	nt	<0.2	nt	<0.2	nt	<0.1	<0.1	nt	0.014 ^b
Dieldrin	<0.2	nt	<0.2	nt	<0.2	nt	<0.1	<0.1	nt	0.002 ^{ab}
Endrin	<0.2	nt	<0.2	nt	<0.2	nt	<0.1	<0.1	nt	0.003 ^b
o, p-DDD	<0.2	nt	<0.2	nt	<0.2	nt	<0.1	<0.1	nt	nt
o, p-DDT	<0.2	nt	<0.2	nt	<0.2	nt	<0.1	<0.1	nt	0.001 ^{ab}
beta Endosulfan	<0.2	nt	<0.2	nt	<0.2	nt	<0.1	<0.1	nt	0.01 ^b
p, p-DDD	<0.2	nt	<0.2	nt	<0.2	nt	<0.1	<0.1	nt	nt
p, p-DDT	<0.2	nt	<0.2	nt	<0.2	nt	<0.1	<0.1	nt	0.001 ^{ab}
Endosulfan Sulphate	<0.2	nt	<0.2	nt	<0.2	nt	<0.1	<0.1	nt	nt
Endrin Aldehyde	<0.2	nt	<0.2	nt	<0.2	nt	<0.1	<0.1	nt	nt
Methoxychlor	<0.2	nt	<0.2	nt	<0.2	nt	<0.1	<0.1	nt	0.04 ^b
Endrin Ketone	<0.2	nt	<0.2	nt	<0.2	nt	<0.1	<0.1	nt	nt
Metals*										
arsenic (As)	<1	1	<1	<1	1	<1	<1	<1	nt	50 ^{ab}
cadmium (Cd)	<1	<1	<1	<1	<1	<1	<1	<1	nt	0.2 - 2.0 ^{ab}
chromium (Cr)	<10	<1	<10	<1	<1	nt	<1	<1	nt	10 ^{ab}
copper (Cu)	81	19	<2	<1	<2	<2	<1	<1	nt	2.0 - 5.0 ^{ab}
lead (Pb)	25	35	<1	<1	<1	<1	<1	<1	nt	1.0 - 5.0 ^{ab}
mercury (Hg)	0.8	<0.1	<0.5	<0.1	<0.5	0.5	<0.5	<0.1	nt	0.1 ^{ab}
nickel (Ni)	40	4	20	20	20	<10	<10	<1	nt	15.0 - 150.0 ^{ab}
selenium (Se)	<1	4	<1	<3	<1	<1	<3	<3	nt	5 ^{ab}
zinc (Zn)	55	95	5	167	<5	<5	<5	<5	nt	5.0 - 50.0 ^{ab}

* - analysis for metals undertaken on 0.45µm filtrate for groundwaters and total unfiltered waters for surface water analysis

nt - not recommended

nt - not tested

^a NEPC (1999) Groundwater Investigation Levels, Aquatic Ecosystems - Fresh Waters

^b ANZECC (1992) Summary Guidelines for the Protection of Aquatic Ecosystems - Fresh Waters

^c NSW EPA (1994) Threshold Concentrations- Protection of Aquatic Ecosystems - Fresh

^d GW4 is a duplicate sample of GW3

^e SW-DEP₂ is a duplicate sample of SW - DEP

^f guideline value for DDE is o,p DDE plus p, p DDE

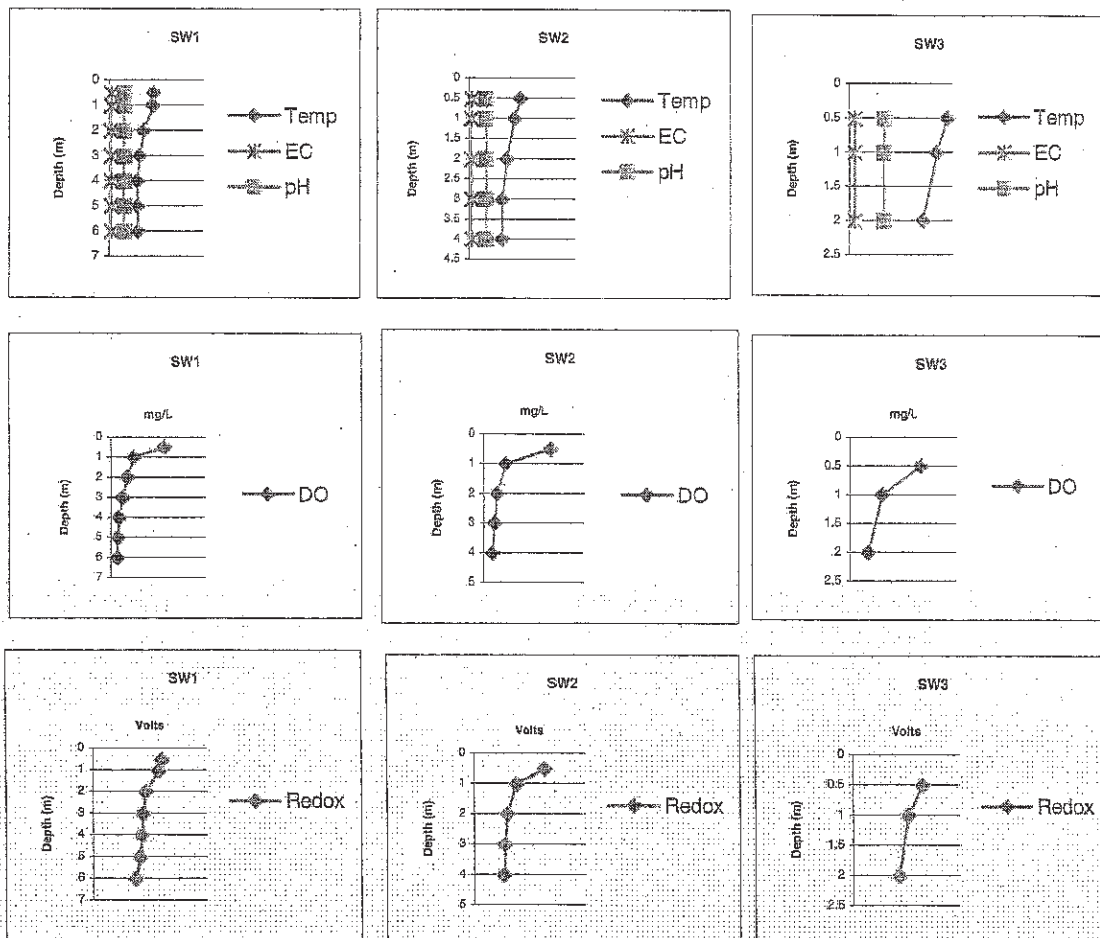
^g guideline value for endosulfan is alpha endosulfan plus beta endosulfan

^h guideline value for chlordane is trans chlordane plus cis chlordane

ⁱ guideline value for DDT is o,p DDT plus p, p DDT

^j depends on water hardness

Figure A1. Depth profile figures for each surface water location





APPENDIX E2

Douglas Sampling Event, 2008

Table 10: Groundwater Results
(All Results Reported in µg/L Unless Otherwise Specified)

Sample ID	Heavy Metals										PAH			TPH		Benzene	Toluene	Ethylbenzene	Total Xylene	Total Positive VOCs	Positive VOCs - Isopropyl benzene		OCP	Calcium (mg/L)	Magnesium (mg/L)	Hardness by calculation (mgCaCO ₃ /L)
	As	Cd	Cr	Cu	Pb	Hg	Ni	Zn	B(a)P	Naphthalene	Total +ve PAH	C6-C9	C10-C16	2,9	<POL											
GW1	<1	0.1	<1	1.6	2.9	<0.5	3.6	31	<0.1	<0.1	<POL	<10	250	<POL	<POL	<POL	<POL	<POL	<POL	<POL	2,9	<POL	<0.001	0.93	24	100
GW2	<1	<0.1	<1	<1	<1	<0.5	21	36	<0.1	<0.1	<POL	<10	<250	<POL	<POL	<POL	<POL	<POL	<POL	<POL	<POL	<POL	<0.001	0.93	11	48
GW3	1.2	<0.1	<1	<1	<1	<0.5	8.2	3.2	<0.1	<0.1	<POL	<10	<250	<POL	<POL	<POL	<POL	<POL	<POL	<POL	<POL	<POL	<0.001	14	21	120
BD1/11208	1	<0.1	<1	<1	<1	<0.5	8.4	6.1	-	-	<POL	<10	<250	<POL	<POL	<POL	<POL	<POL	<POL	-	-	-	-	-	-	-
RS1/11208	<1	<0.1	<1	<1	<1	<0.5	<1	<1	-	-	<POL	<10	<250	<POL	<POL	<POL	<POL	<POL	<POL	-	-	-	-	-	-	-
POL	4	1	1	1	1	<0.5	<1	1	1	1	1	10	250	1	1	1	3	3	1	1	1	0.001	-	-	-	-
GL Freshwater	13	0.54	68.5	3.5	13.6	0.6	27.5	20	Not specified	16	Not specified	150	600	950	180	140	380	ND	ND	ND	0.06/0.01/0.2/0.02/0.09	ND	0.001	0.93	24	100
GL Marine	Not specified	5.5	27.4	1.3	4.4	0.4	70	15	Not specified	70	Not specified	Not specified	Not specified	700	300	140	380	ND	ND	ND	ND/ND/0.01/0.009/ND	30	0.001	0.93	24	100

Notes:

Given in the order of Chloroform, DDT, Endosulfan, Endrin and Heptachlor

All Chromium are assumed to exist in the stable Cr(III) oxidation state, Guidelines for the NSW Site Auditor Scheme (2nd Edition)

POL: Practical Quantification Limit

BD1/11208 Intra-laboratory duplicate sample collected at GW 44

RS1/11208 Rinse Sample

Exceeds GL



APPENDIX F

Pit Water Chemistry Data CMJA Sampling Event

APPENDIX F

TABLE F1 Pit Water Measurements of Physio-Chemical Parameters – BP:01						
Depth (m)	Parameter					
	pH	Electrical Conductivity ($\mu\text{S}/\text{cm}^\beta$)	Oxidation- Reduction Potential $^\chi$ (mV $^\delta$)	Temperature ($^\circ\text{C}^\epsilon$)	Turbidity (NTU $^\psi$)	Dissolved Oxygen (ppm $^\phi$)
0.1	8.59	1022	-84	22.2	2.2	7.58
0.5	8.58	1026	35	23.1	2.8	6.93
1.0	8.60	1027	59	24.4	2.8	5.09
1.5	8.60	1027	60	24.5	2.8	4.99
2.0	8.60	1029	69	24.4	2.4	5.08
2.5	8.60	1021	80	24.4	2.2	5.23
3.0	8.24	1000	90	24.2	5.9	5.32
3.5	7.83	985	92	22.6	12.0	5.60

Notes: $^\beta$ microsiemens per centimetre
 $^\chi$ measured relative to Ag/AgCl electrode (i.e. not converted to Eh)
 $^\delta$ millivolts
 $^\epsilon$ degrees Celsius
 $^\psi$ nephelometric turbidity units
 $^\phi$ parts per million

TABLE F2 Pit Water Measurements of Physio-Chemical Parameters – BP:02						
Depth (m)	Parameter					
	pH	Electrical Conductivity ($\mu\text{S}/\text{cm}^\beta$)	Oxidation- Reduction Potential $^\chi$ (mV $^\delta$)	Temperature ($^\circ\text{C}^\epsilon$)	Turbidity (NTU $^\psi$)	Dissolved Oxygen (ppm $^\phi$)
0.1	8.60	1039	21	23.9	2.1	5.86
0.5	8.60	1027	23	23.9	3.2	5.73
1.0	8.60	1024	24	23.9	3.0	5.46
1.5	8.60	1025	25	23.9	2.3	5.30
2.0	8.60	1028	25	23.9	2.1	5.79
2.5	8.60	1019	26	23.8	2.5	5.45
3.0	8.30	997	32	22.9	4.3	5.40
3.5	8.01	988	30	22.3	6.5	5.51
3.8	8.01	995	-136	22.0	7.6	3.56

Notes: $^\beta$ microsiemens per centimetre
 $^\chi$ measured relative to Ag/AgCl electrode (i.e. not converted to Eh)
 $^\delta$ millivolts
 $^\epsilon$ degrees Celsius
 $^\psi$ nephelometric turbidity units
 $^\phi$ parts per million

TABLE F3						
Measurements of Physio-Chemical Parameters – BP:03						
Depth (m)	Parameter					
	pH	Electrical Conductivity ($\mu\text{S}/\text{cm}^\beta$)	Oxidation-Reduction Potential $^\chi$ (mV^δ)	Temperature ($^\circ\text{C}^\epsilon$)	Turbidity (NTU^ψ)	Dissolved Oxygen (ppm^ϕ)
0.1	8.60	1036	-12	24	563	5.55
0.5	8.60	1032	9	24	3.0	4.87
1.0	8.60	1026	11	24	4.4	4.17
1.5	8.60	1023	13	24	4.4	4.37
2.0	8.60	1022	15	23.9	2.6	4.42
2.5	8.60	1020	17	23.9	2.8	4.82
3.0	8.50	997	19	23.1	3.0	4.88
3.5	8.00	984	20	22.7	5.5	5.39
3.8	8.00	1002	-27	20.9	43.5	5.29
4.5	7.52	1035	-184	18.3	29.7	4.25
5.0	7.31	951	-173	16.6	12.9	1.27
5.5	7.26	943	-172	15.4	9.0	0.78
5.8	7.26	952	-164	15.3	7.8	0.25

Notes:

- β microsiemens per centimetre
- χ measured relative to Ag/AgCl electrode (i.e. not converted to Eh)
- δ millivolts
- ϵ degrees Celsius
- ψ nephelometric turbidity units
- ϕ parts per million

TABLE F4						
Measurements of Physio-Chemical Parameters – BP:04						
Depth (m)	Parameter					
	pH	Electrical Conductivity ($\mu\text{S}/\text{cm}^\beta$)	Oxidation-Reduction Potential $^\chi$ (mV^δ)	Temperature ($^\circ\text{C}^\epsilon$)	Turbidity (NTU^ψ)	Dissolved Oxygen (ppm^ϕ)
0.1	8.60	1031	160	25	3.5	5.52
0.5	8.60	1035	153	25.4	3.1	5.19
1.0	8.60	1034	151	25.5	2.9	5.07
1.5	8.60	1035	152	25.6	2.2	5.05
2.0	8.60	1033	151	25.4	2.4	5.19
2.5	8.59	1031	151	25.4	2.4	5.19
3.0	8.58	1030	150	25.4	2.9	5.31
3.5	8.58	1029	149	25.4	6.1	5.58
4.0	8.59	1028	141	25.3	35.6	5.71
4.5	8.52	1030	145	25.2	31.3	5.26
5.0	8.25	1020	51	24.2	27.7	3.64
5.5	7.71	998	-68	23.9	24.4	2.13
6.0	7.40	987	-98	23.1	36.6	1.59
6.5	7.15	965	-93	22.4	51.1	0.93

Notes:

- β microsiemens per centimetre
- χ measured relative to Ag/AgCl electrode (i.e. not converted to Eh)
- δ millivolts
- ϵ degrees Celsius
- ψ nephelometric turbidity units
- ϕ parts per million

TABLE F5 Measurements of Physio-Chemical Parameters – BP:05						
Depth (m)	Parameter					
	pH	Electrical Conductivity ($\mu\text{S}/\text{cm}^\beta$)	Oxidation-Reduction Potential $^\chi$ (mV^δ)	Temperature ($^\circ\text{C}^\epsilon$)	Turbidity (NTU^ψ)	Dissolved Oxygen (ppm^ϕ)
0.1	8.60	1054	-15	24.2	59.5	6.28
0.5	8.60	1032	-8	24.2	70.9	5.29
1.0	8.60	1037	-4	24.2	2.3	4.93
1.5	8.60	1022	1	24.0	2.4	5.15
2.0	8.60	1021	6	23.9	2.5	5.04
2.5	8.60	1021	9	23.9	2.3	5.25
3.0	8.52	1003	13	23.4	3.7	5.08
3.5	8.21	989	19	22.5	3.7	5.11
3.8	8.07	1015	-56	20.8	47.2	5.09
4.5	7.51	1033	-175	18.2	26.5	3.87
5.0	7.43	1064	-175	16.5	13.9	1.63
5.5	7.30	945	-171	15.6	7.7	1.07
6.0	7.26	947	-174	15.2	6.3	0.65

Notes: $^\beta$ microsiemens per centimetre
 $^\chi$ measured relative to Ag/AgCl electrode (i.e. not converted to Eh)
 $^\delta$ millivolts
 $^\epsilon$ degrees Celsius
 $^\psi$ nephelometric turbidity units
 $^\phi$ parts per million

TABLE F6 Measurements of Physio-Chemical Parameters – BP:06						
Depth (m)	Parameter					
	pH	Electrical Conductivity ($\mu\text{S}/\text{cm}^\beta$)	Oxidation-Reduction Potential $^\chi$ (mV^δ)	Temperature ($^\circ\text{C}^\epsilon$)	Turbidity (NTU^ψ)	Dissolved Oxygen (ppm^ϕ)
0.1	8.65	1060	-53	24.3	2.7	6.22
0.5	8.60	1037	-8	24.2	2.8	5.58
1.0	8.60	1031	-3	24.0	2.7	5.50
1.5	8.60	1021	1	23.9	2.3	5.83
2.0	8.41	1025	7	23.8	3.9	6.02

Notes: $^\beta$ microsiemens per centimetre
 $^\chi$ measured relative to Ag/AgCl electrode (i.e. not converted to Eh)
 $^\delta$ millivolts
 $^\epsilon$ degrees Celsius
 $^\psi$ nephelometric turbidity units
 $^\phi$ parts per million

TABLE F7						
Measurements of Physio-Chemical Parameters – BP:07						
Depth (m)	Parameter					
	pH	Electrical Conductivity ($\mu\text{S}/\text{cm}^\beta$)	Oxidation-Reduction Potential $^\chi$ (mV^δ)	Temperature ($^\circ\text{C}^\epsilon$)	Turbidity (NTU^ψ)	Dissolved Oxygen (ppm^ϕ)
0.1	8.60	1049	-57	24.1	3.1	6.02
0.5	8.60	1034	-47	24.2	2.1	5.22
1.0	8.60	1025	-34	24.1	3.4	5.32
1.5	8.60	1020	-25	24.0	2.9	5.37
2.0	8.60	1023	-23	23.9	3.6	5.46
2.5	8.55	1017	-14	23.8	3.8	5.50
3.0	8.50	1000	-8	23.3	2.6	5.22
3.5	8.02	982	-6	23.3	14.1	5.24
4.0	7.90	1029	-130	21.0	39.1	5.47
4.5	7.27	1021	-175	17.9	345	2.34

Notes: $^\beta$ microsiemens per centimetre
 $^\chi$ measured relative to Ag/AgCl electrode (i.e. not converted to Eh)
 $^\delta$ millivolts
 $^\epsilon$ degrees Celsius
 $^\psi$ nephelometric turbidity units
 $^\phi$ parts per million

TABLE F8											
Analytical Results – Heavy Metals and Boron (mg/L^*)											
Sample ID	Analyte										
	Arsenic	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Zinc
BP:01; 1.5	<0.001	0.70	<0.0001	<0.001	<0.001	<0.05	<0.001	0.002	<0.0001	<0.001	<0.005
BP:01; 3.5	<0.001	0.70	<0.0001	<0.001	<0.001	<0.05	<0.001	0.008	<0.0001	<0.001	<0.005
BP:02; 1.5	<0.001	0.70	<0.0001	<0.001	<0.001	<0.05	<0.001	0.002	<0.0001	<0.001	<0.005
BP:02; 3.5	<0.001	0.70	<0.0001	<0.001	<0.001	<0.05	<0.001	0.001	<0.0001	<0.001	<0.005
BP:03; 2.5	<0.001	0.68	<0.0001	<0.001	<0.001	<0.05	<0.001	0.002	<0.0001	<0.001	<0.005
BP:03; 5.5	0.004	0.68	<0.0001	<0.001	<0.001	16.4	<0.001	1.59	<0.0001	<0.001	<0.005
BP:04; 2.5	<0.001	0.72	<0.0001	<0.001	<0.001	<0.05	<0.001	0.002	<0.0001	<0.001	<0.005
BP:04; 6.0	<0.001	0.69	0.0019	<0.001	<0.001	0.80	<0.001	1.42	<0.0001	<0.001	<0.005
BP:05; 2.5	0.001	0.71	<0.0001	<0.001	<0.001	<0.05	<0.001	0.256	<0.0001	<0.001	<0.005
BP:05; 6.0	0.007	0.68	<0.0001	<0.001	<0.001	22.0	<0.001	1.62	<0.0001	<0.001	<0.005
BP:06; 0.5	<0.001	0.69	<0.0001	<0.001	<0.001	<0.05	<0.001	0.002	<0.0001	<0.001	<0.005
BP:06; 2.0	<0.001	0.69	<0.0001	<0.001	<0.001	<0.05	<0.001	0.002	<0.0001	<0.001	<0.005
BP:07; 1.0	<0.001	0.70	<0.0001	<0.001	<0.001	<0.05	<0.001	0.002	<0.0001	<0.001	0.005
BP:07; 4.0	<0.001	0.71	<0.0001	<0.001	<0.001	<0.05	<0.001	0.003	<0.0001	<0.001	0.017
BP:D1 $^\alpha$	0.001	0.72	<0.0001	<0.001	<0.001	<0.05	<0.001	0.001	<0.0001	<0.001	<0.005
BP:D2 $^\beta$	0.003	0.71	<0.0001	<0.001	<0.001	7.32	<0.001	2.74	<0.0001	<0.001	<0.005

Notes: * milligrams per litre
 $^\alpha$ duplicate sample collected from BP:02; 1.5
 $^\beta$ duplicate sample collected from BP:02; 3.5

TABLE F9 Analytical Results – Major Anions and Cations (mg/L[*])								
Sample ID	Analyte							
	Calcium	Magnesium	Sodium	Potassium	Carbonate	Bicarbonate	Sulphate	Chloride
BP:01; 1.5	27	33	119	26	19	227	<1.0	189
BP:01; 3.5	27	34	115	27	<1.0	236	<1.0	184
BP:02; 1.5	27	33	122	27	50	209	<1.0	186
BP:02; 3.5	27	33	114	27	<1.0	239	<1.0	182
BP:03; 2.5	26	32	122	27	<1.0	250	<1.0	184
BP:03; 5.5	36	34	114	27	<1.0	294	<1.0	188
BP:04; 2.5	27	33	120	27	15	242	<1.0	181
BP:04; 6.0	34	34	113	26	<1.0	274	<1.0	187
BP:05; 2.5	27	33	116	26	14	229	<1.0	185
BP:05; 6.0	36	36	114	26	<1.0	273	<1.0	190
BP:06; 0.5	27	33	120	26	18	229	<1.0	187
BP:06; 2.0	27	33	115	27	19	215	<1.0	183
BP:07; 1.0	27	33	113	26	15	218	<1.0	187
BP:07; 4.0	27	34	118	26	18	234	<1.0	185
BP:D1 ^α	27	34	117	26	21	241	<1.0	178
BP:D2 ^β	35	35	114	27	<1.0	271	<1.0	188

Notes: * milligrams per litre
^α duplicate sample collected from BP:02; 1.5
^β duplicate sample collected from BP:02; 3.5

TABLE F10 Analytical Results – Nutrients, BOD and DOC (mg/L[*])								
Sample ID	Analyte							
	BOD ^χ	Ammonia	Nitrite	Nitrate	NO _x ^φ	Total PO ₄ ^{3-κ}	Reactive PO ₄ ³⁻	DOC ^δ
BP:01; 1.5	4.0	<0.01	<0.01	0.01	0.01	0.02	<0.01	7.0
BP:01; 3.5	5.0	<0.01	<0.01	<0.01	<0.01	0.07	0.01	7.0
BP:02; 1.5	3.0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	7.0
BP:02; 3.5	4.0	<0.01	0.01	<0.01	<0.01	0.01	0.01	7.0
BP:03; 2.5	3.0	<0.01	<0.01	<0.01	<0.01	0.10	<0.01	6.0
BP:03; 5.5	8.0	<0.01	<0.01	<0.01	<0.01	0.10	0.02	11
BP:04; 2.5	3.0	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	7.0
BP:04; 6.0	9.0	0.70	0.01	<0.01	<0.01	0.03	<0.01	8.0
BP:05; 2.5	3.0	<0.01	0.01	<0.01	<0.01	0.04	<0.01	7.0
BP:05; 6.0	8.0	0.70	<0.01	<0.01	<0.01	0.05	0.02	12
BP:06; 0.5	3.0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	7.0
BP:06; 2.0	3.0	<0.01	0.01	<0.01	<0.01	0.02	<0.01	7.0
BP:07; 1.0	3.0	<0.01	<0.01	<0.01	<0.01	0.04	<0.01	7.0
BP:07; 4.0	4.0	<0.01	0.02	<0.01	<0.01	0.04	<0.01	7.0
BP:D1 ^α	4.0	<0.01	0.01	0.02	0.03	<0.01	<0.01	7.0
BP:D2 ^β	9.0	0.63	<0.01	<0.01	<0.01	0.01	0.01	9.0

Notes: * milligrams per litre
^α duplicate sample collected from BP:02; 1.5
^β duplicate sample collected from BP:02; 3.5
^χ biological oxygen demand
^φ total nitrogen
^κ phosphate
^δ dissolved organic carbon

TABLE F11 Analytical Results – TPH and Oil and Grease (mg/L[*])					
Sample ID	Analyte				
	TPH ^z : C ₆ –C ₉	TPH: C ₁₀ –C ₁₄	TPH: C ₁₅ –C ₂₈	TPH: C ₂₉ –C ₃₆	Oil and Grease
BP:01; 1.5	<20	<50	<100	<50	<5.0
BP:01; 3.5	<20	<50	<100	<50	<5.0
BP:02; 1.5	<20	<50	<100	<50	<5.0
BP:02; 3.5	<20	<50	<100	<50	<5.0
BP:03; 2.5	<20	<50	<100	<50	<5.0
BP:03; 5.5	<20	<50	<100	<50	<5.0
BP:04; 2.5	<20	<50	<100	<50	<5.0
BP:04; 6.0	<20	<50	<100	<50	<5.0
BP:05; 2.5	<20	<50	<100	<50	<5.0
BP:05; 6.0	<20	<50	<100	<50	<5.0
BP:06; 0.5	<20	<50	<100	<50	<5.0
BP:06; 2.0	<20	<50	<100	<50	<5.0
BP:07; 1.0	<20	<50	<100	<50	<5.0
BP:07; 4.0	<20	<50	<100	<50	<5.0
BP:D1 ^α	<20	<50	<100	<50	<5.0
BP:D2 ^β	<20	<50	<100	<50	<5.0

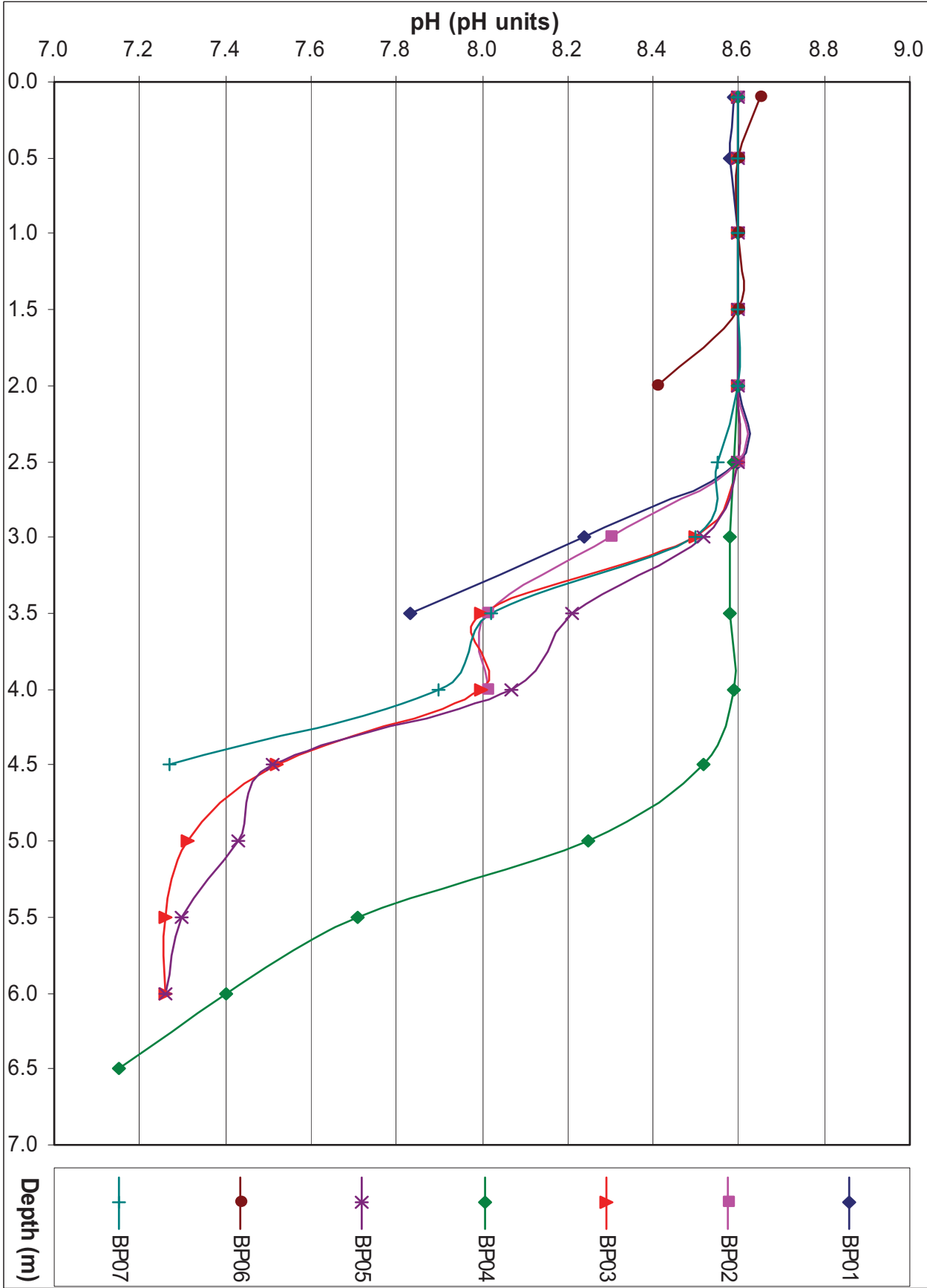
Notes: * milligrams per litre

^α duplicate sample collected from BP:02; 1.5

^β duplicate sample collected from BP:02; 3.5

^z total petroleum hydrocarbons

Appendix F Pit Water Chemistry Data - CMJA Sampling Event



Appendix F Pit Water Chemistry Data - CMJA Sampling Event

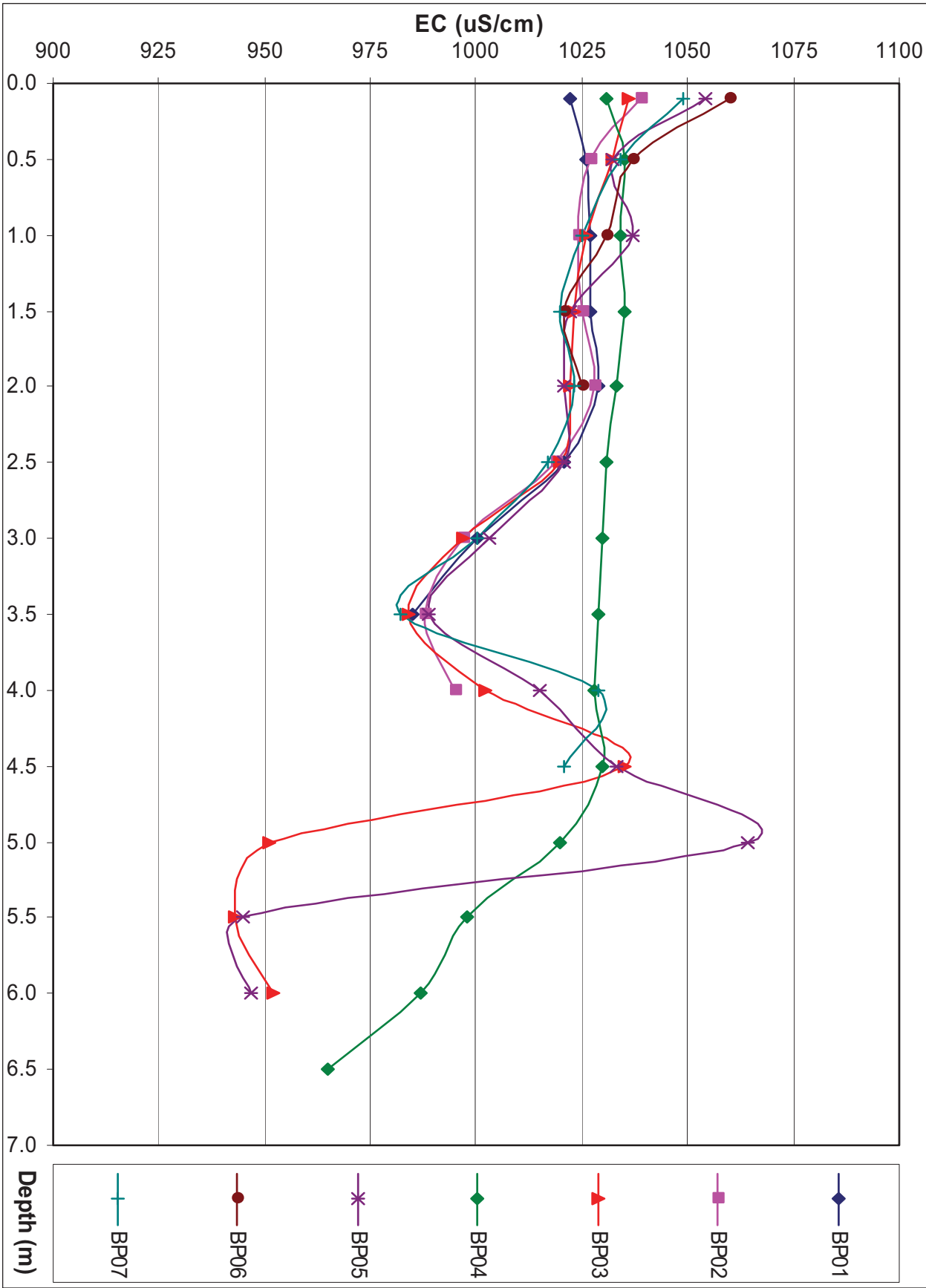
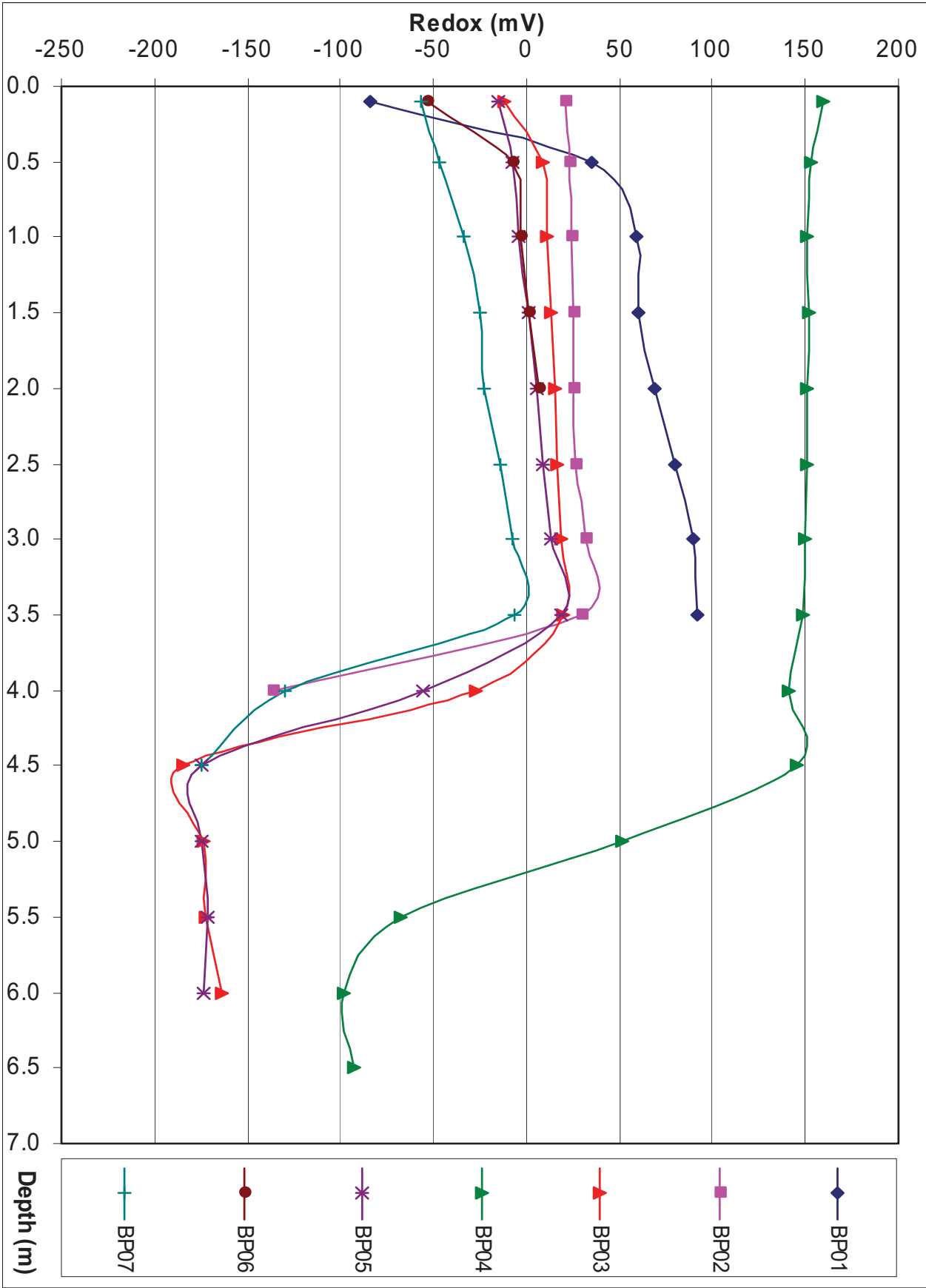


Figure F2
Pit Water Profile
Water EC

Appendix F Pit Water Chemistry Data - CMJA Sampling Event



Appendix F Pit Water Chemistry Data - CMJA Sampling Event

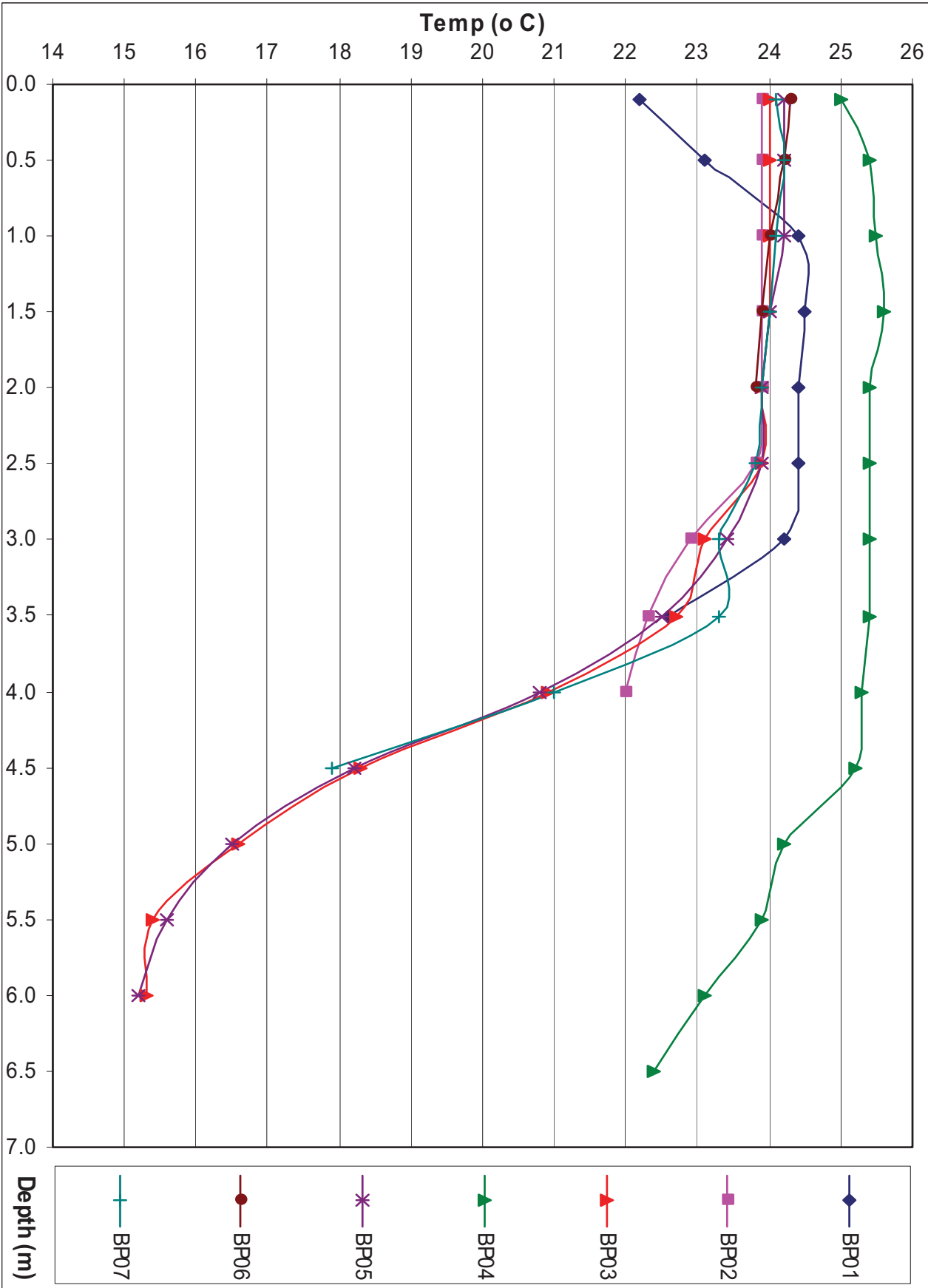
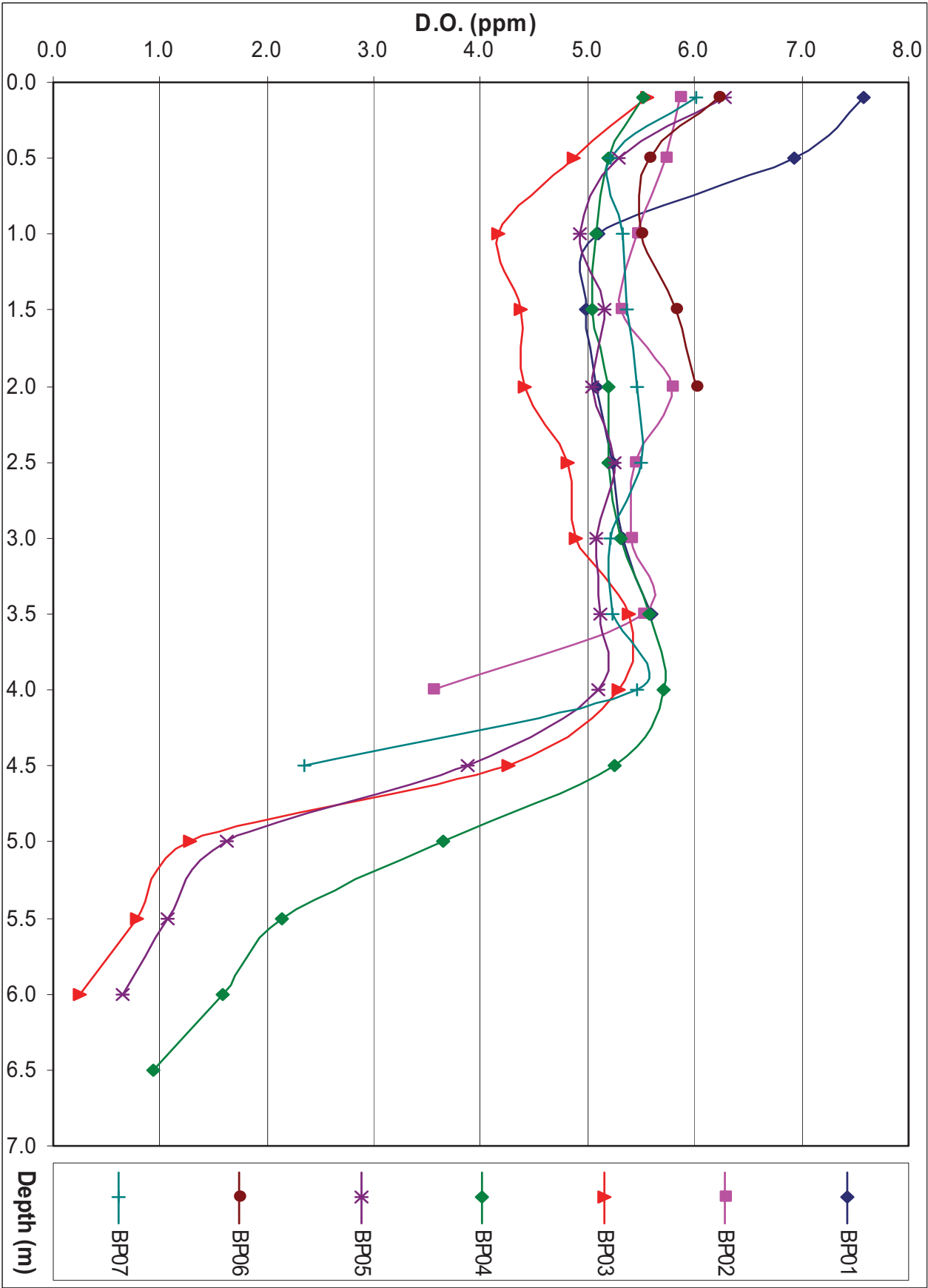


Figure F4
Pit Water Profile
Temperature

Appendix F Pit Water Chemistry Data - CMJA Sampling Event



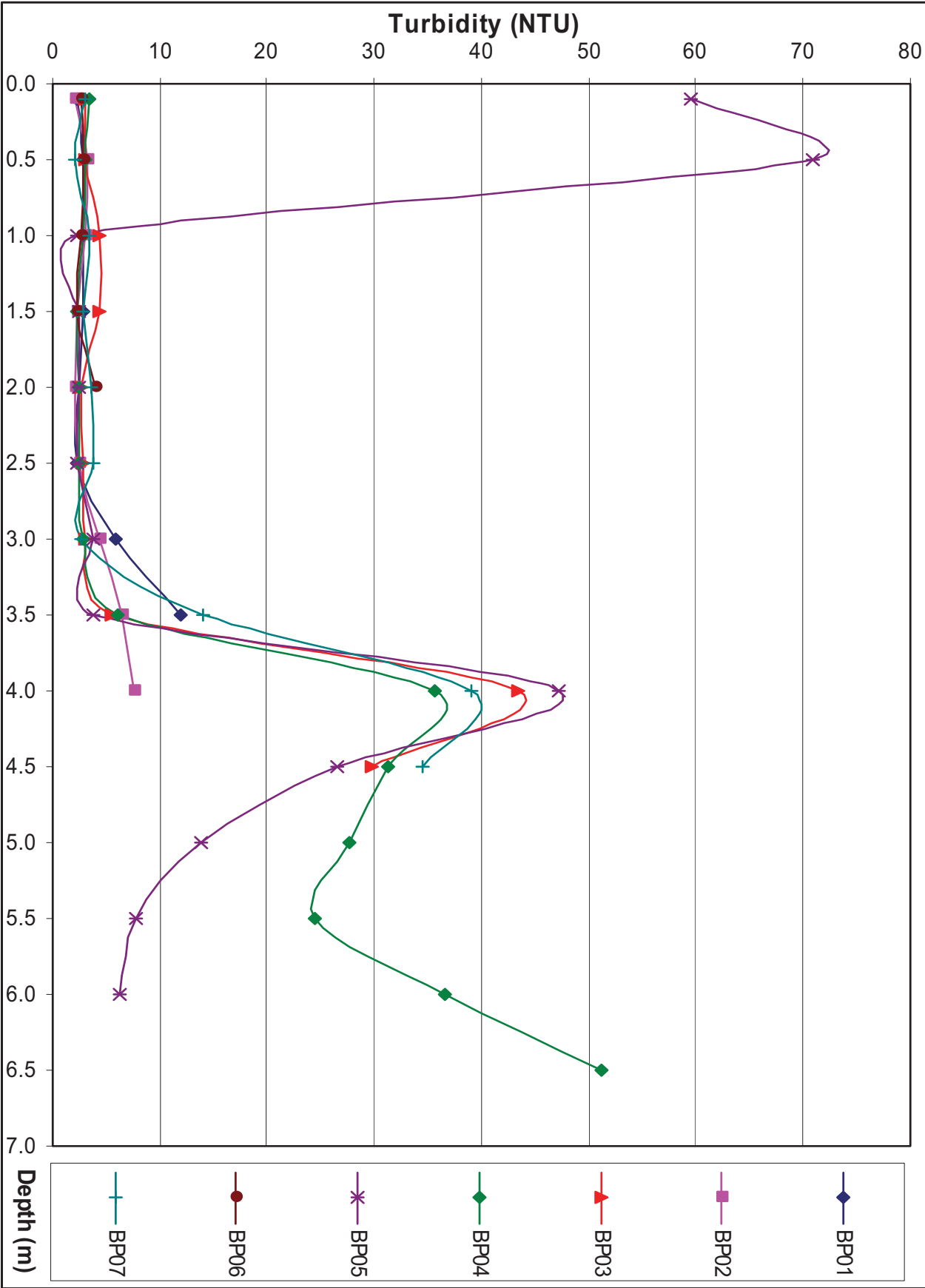
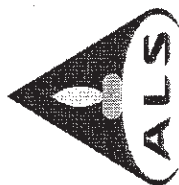


Figure F6
Pit Water Profile
Turbidity



Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: ES0818896	Page	: 1 of 12
Amendment	: 1		
Client	: C M JEWELL & ASSOC PTY LTD	Laboratory	: Environmental Division Sydney
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Project	: J1418	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: —	Date Samples Received	: 22-DEC-2008
C-O-C number	: —	Issue Date	: 07-JAN-2009
Sampler	: DVE/CBW	No. of samples received	: 16
Site	: KIRRAWEE BRICK PIT	No. of samples analysed	: 16
Quote number	: SY/100/08		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



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Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Celine Conceicao	Spectroscopist	Inorganics
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