

Report of Examination

None
08E0645; 3.1.1
Jenny McGuire

Dept of Environment and Conservation
P.O. Box 51
Wanneroo
WA 6946

Attention : Susan Jones

Report On:
27 samples received on 09/10/2008

CCWA ID	Material	Client Description
08E0645 / 001	water	ABP101
08E0645 / 002	water	ABP102
08E0645 / 003	water	ABP103
08E0645 / 004	water	ABP104
08E0645 / 005	water	ABP105
08E0645 / 006	water	ABP106
08E0645 / 007	water	ABP109
08E0645 / 008	water	ABP110
08E0645 / 009	water	ABP111
08E0645 / 010	water	ABP112
08E0645 / 011	water	ABP113
08E0645 / 012	water	ABP114
08E0645 / 013	water	ABP116
08E0645 / 014	water	ABP117
08E0645 / 015	water	ABP118
08E0645 / 016	water	ABP119
08E0645 / 017	water	ABP120
08E0645 / 018	water	ABP121
08E0645 / 019	water	ABP122
08E0645 / 020	water	ABP123
08E0645 / 021	water	ABP124
08E0645 / 022	water	ABP125
08E0645 / 023	water	ABP126
08E0645 / 024	water	ABP127
08E0645 / 025	water	ABP128
08E0645 / 026	water	ABP108
08E0645 / 027	water	ABP115

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Environmental Chemistry Section**

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CCWA ID	08E0645/001	08E0645/002	08E0645/003	08E0645/004
Client ID	ABP101	ABP102	ABP103	ABP104
Sampled	08/09/2008	09/09/2008	09/09/2008	10/09/2008

Analyte	Unit				
Alkalinity	mg/L	205	<1	<1	60
Ca	mg/L	462	1800	1590	7.7
Cl	mg/L	31900	36400	56900	12
CO ₃	mg/L	78	<1	<1	<1
Colour	TCU	12	29	8	990
ECond	mS/m	8940	10000	14200	16.9
Fe	mg/L	<0.050	0.19	0.41	13
Hardness	mg/L	12000	14000	19000	35
HCO ₃	mg/L	92	<1	<1	73
K	mg/L	187	371	502	8.4
Mg	mg/L	2680	2200	3690	3.8
Mn	mg/L	<0.010	0.46	1.6	0.029
Na	mg/L	21200	23000	37900	14.1
N-NO ₃	mg/L	<0.01	<0.01	<0.01	0.57
N-total	mg/L	1.5	3.8	2.2	3.3
pH		8.7	3.8	3.8	6.8
P-total	mg/L	<0.01	<0.01	<0.01	0.71
SiO ₂ -Si	mg/L	<1.0	29	40	100
SO ₄ -S	mg/L	4790	6250	8970	2.7
Sr	mg/L	7.3	26	18	0.065
TDS sum	mg/L	61000	70000	110000	90
TDS-180C	mg/L	63000	73000	110000	280
Turbidity	NTU	17	310	130	940
alON-BAL	%	7.7	5.1	6.6	-6.1
Chloro-a	mg/L	0.002	0.003	0.001	0.001
Chloro-b	mg/L	<0.001	<0.001	<0.001	<0.001
Chloro-c	mg/L	<0.001	<0.001	<0.001	<0.001
Phaeo-a	mg/L	<0.001	<0.001	<0.001	<0.001

CCWA ID	08E0645/005	08E0645/006	08E0645/007	08E0645/008
Client ID	ABP105	ABP106	ABP109	ABP110
Sampled	11/09/2008	11/09/2008	15/09/2008	15/09/2008

Analyte	Unit				
Alkalinity	mg/L	<1	135	<1	20
Ca	mg/L	434	440	308	734
Cl	mg/L	42100	12700	33000	49700
CO ₃	mg/L	<1	<1	<1	<1
Colour	TCU	15	15	13	70
ECond	mS/m	11000	4130	9330	12700
Fe	mg/L	0.60	<0.005	4.1	0.88
Hardness	mg/L	13000	4300	10000	13000

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CCWA ID	08E0645/005	08E0645/006	08E0645/007	08E0645/008
Client ID	ABP105	ABP106	ABP109	ABP110
Sampled	11/09/2008	11/09/2008	15/09/2008	15/09/2008

Analyte	Unit				
HCO3	mg/L	<1	165	<1	24
K	mg/L	549	124	560	833
Mg	mg/L	2860	769	2240	2630
Mn	mg/L	1.4	0.001	2.1	0.40
Na	mg/L	28100	8370	23300	36900
N_NO3	mg/L	0.34	<0.01	0.11	<0.01
N_total	mg/L	5.3	0.95	2.0	4.0
pH		3.7	6.8	3.3	5.9
P_total	mg/L	<0.01	<0.01	<0.01	<0.01
SiO2_Si	mg/L	41	0.7	87	13
SO4_S	mg/L	5840	1850	5940	8990
Sr	mg/L	9.1	7.9	9.6	15
TDS sum	mg/L	80000	24000	65000	100000
TDS_180C	mg/L	81000	26000	67000	98000
Turbidit	NTU	42	12	6.2	18
alON_BAL	%	6.6	6.2	7.6	8.4
Chloro_a	mg/L	<0.001	0.001	0.011	<0.001
Chloro_b	mg/L	<0.001	<0.001	0.003	<0.001
Chloro_c	mg/L	<0.001	<0.001	<0.001	<0.001
Phaeo_a	mg/L	<0.001	<0.001	<0.001	<0.001

CCWA ID	08E0645/009	08E0645/010	08E0645/011	08E0645/012
Client ID	ABP111	ABP112	ABP113	ABP114
Sampled	16/09/2008	16/09/2008	16/09/2008	17/09/2008

Analyte	Unit				
Alkaline	mg/L	225	190	55	85
Ca	mg/L	1190	6.3	921	246
Cl	mg/L	55200	1760	50400	2640
CO3	mg/L	<1	<1	<1	<1
Colour	TCU	49	31	43	30
ECond	mS/m	14000	657	13000	984
Fe	mg/L	<0.050	1.3	<0.050	0.011
Hardness	mg/L	16000	87	12000	1100
HCO3	mg/L	275	232	67	104
K	mg/L	489	63.2	471	42.8
Mg	mg/L	3190	17.3	2470	115
Mn	mg/L	<0.010	0.17	0.12	0.001
Na	mg/L	39700	1180	37100	1530
N_NO3	mg/L	<0.01	<0.01	<0.01	<0.01
N_total	mg/L	4.3	7.2	1.4	1.6
pH		7.5	7.1	6.5	6.8

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Environmental Chemistry Section**

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CCWA ID	08E0645/009	08E0645/010	08E0645/011	08E0645/012
Client ID	ABP111	ABP112	ABP113	ABP114
Sampled	16/09/2008	16/09/2008	16/09/2008	17/09/2008

Analyte	Unit				
P_total	mg/L	0.11	0.31	<0.01	0.04
SiO2_Si	mg/L	<1.0	39	1.1	2.2
SO4_S	mg/L	5020	48.8	5530	668
Sr	mg/L	21	0.18	16	2.6
TDS sum	mg/L	100000	3200	97000	5300
TDS_180C	mg/L	110000	3100	95000	5300
Turbidit	NTU	8.9	9300	5.0	69
alON_BAL	%	11	0.1	9.9	-0.4
Chloro_a	mg/L	0.011	0.002	0.004	0.021
Chloro_b	mg/L	0.002	<0.001	<0.001	<0.001
Chloro_c	mg/L	0.008	<0.001	<0.001	<0.001
Phaeo_a	mg/L	<0.001	<0.001	<0.001	<0.001

CCWA ID	08E0645/013	08E0645/014	08E0645/015	08E0645/016
Client ID	ABP116	ABP117	ABP118	ABP119
Sampled	18/09/2008	18/09/2008	22/09/2008	23/09/2008

Analyte	Unit				
Alkaline	mg/L	100	95	225	175
Ca	mg/L	15.8	5.6	68.0	109
Cl	mg/L	1390	680	504	4970
CO3	mg/L	<1	<1	<1	78
Colour	TCU	11	73	450	54
ECond	mS/m	530	272	236	1640
Fe	mg/L	<0.005	0.025	0.22	<0.005
Hardness	mg/L	400	210	360	1800
HCO3	mg/L	122	116	275	55
K	mg/L	9.1	5	9	36.4
Mg	mg/L	87.8	48.4	45.8	362
Mn	mg/L	<0.001	<0.001	<0.001	0.001
Na	mg/L	824	412	303	2860
N_NO3	mg/L	<0.01	0.02	<0.01	<0.01
N_total	mg/L	0.78	1.1	5.9	1.3
pH		8.1	7.5	7.4	9.5
P_total	mg/L	<0.01	<0.01	1.9	<0.01
SiO2_Si	mg/L	27	34	62	2.3
SO4_S	mg/L	139	75.0	102	490
Sr	mg/L	0.26	0.084	0.63	1.8
TDS sum	mg/L	2500	1300	1200	8900
TDS_180C	mg/L	2600	1300	1300	8800
Turbidit	NTU	2.1	6.2	20	5.2
alON_BAL	%	-0.1	-1.0	-0.9	2.1

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CCWA ID	08E0645/013	08E0645/014	08E0645/015	08E0645/016
Client ID	ABP116	ABP117	ABP118	ABP119
Sampled	18/09/2008	18/09/2008	22/09/2008	23/09/2008

Analyte	Unit				
Chloro_a	mg/L	0.001	0.004	<0.001	<0.001
Chloro_b	mg/L	<0.001	<0.001	<0.001	<0.001
Chloro_c	mg/L	<0.001	<0.001	<0.001	<0.001
Phaeo_a	mg/L	<0.001	<0.001	<0.001	<0.001

CCWA ID	08E0645/017	08E0645/018	08E0645/019	08E0645/020
Client ID	ABP120	ABP121	ABP122	ABP123
Sampled	24/09/2008	24/09/2008	25/09/2008	26/09/2008

Analyte	Unit				
Alkaline	mg/L	115	100	140	13
Ca	mg/L	508	1350	32.8	1600
Cl	mg/L	14500	28000	886	53400
CO ₃	mg/L	48	36	<1	<1
Colour	TCU	30	11	150	11
ECond	mS/m	4500	7740	354	12700
Fe	mg/L	<0.005	<0.050	1.8	<0.050
Hardness	mg/L	5600	14000	380	19000
HCO ₃	mg/L	43	<1	171	15
K	mg/L	94.7	179	7.3	486
Mg	mg/L	1050	2660	73.0	3630
Mn	mg/L	<0.001	<0.010	0.003	1.7
Na	mg/L	8970	16100	499	34100
N_NO ₃	mg/L	<0.01	<0.01	<0.01	<0.01
N_total	mg/L	1.7	1.3	2.5	1.1
pH		9.1	9.1	7.5	6.4
P_total	mg/L	<0.01	<0.01	0.01	<0.01
SiO ₂ _Si	mg/L	1.4	<1.0	22	5.2
SO ₄ _S	mg/L	2030	5070	120	8190
Sr	mg/L	7.6	18	0.45	26
TDS sum	mg/L	27000	53000	1700	100000
TDS_180C	mg/L	28000	55000	1800	100000
Turbidity	NTU	18	2.4	94	19
alON_BAL	%	5.3	5.0	-1.4	5.5
Chloro_a	mg/L	<0.001	0.001	0.001	
Chloro_b	mg/L	<0.001	<0.001	<0.001	
Chloro_c	mg/L	<0.001	<0.001	<0.001	
Phaeo_a	mg/L	<0.001	<0.001	<0.001	

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CCWA ID		08E0645/021	08E0645/022	08E0645/023	08E0645/024
Client ID		ABP124	ABP125	ABP126	ABP127
Sampled		30/09/2008	30/09/2008	01/10/2008	01/10/2008
Analyte	Unit				
Alkalinity	mg/L	80	118	25	20
Ca	mg/L	97.5	1760	569	1730
Cl	mg/L	3200	55600	17500	73500
CO ₃	mg/L	<1	<1	<1	<1
Colour	TCU	35	47	5	11
ECond	mS/m	1050	13100	5400	16500
Fe	mg/L	0.018	<0.050	<0.005	<0.050
Hardness	mg/L	1700	19000	7700	31000
HCO ₃	mg/L	98	143	31	24
K	mg/L	8.6	371	107	427
Mg	mg/L	355	3480	1530	6560
Mn	mg/L	<0.001	0.026	0.25	2.6
Na	mg/L	1370	36000	11200	51200
N-NO ₃	mg/L	<0.01	<0.01	<0.01	0.02
N-total	mg/L	1.5	3.3	0.55	0.81
pH		7.1	7.4	6.6	6.1
P-total	mg/L	<0.01	0.02	<0.01	<0.01
SiO ₂ -Si	mg/L	11	<1.0	2.2	25
SO ₄ -S	mg/L	189	7300	2850	8910
Sr	mg/L	1.3	26	9.6	36
TDS sum	mg/L	5300	100000	34000	140000
TDS-180C	mg/L	6000	100000	37000	140000
Turbidity	NTU	4.8	5.3	1.0	2.4
alON-BAL	%	-1.1	6.2	7.6	12
Chloro-a	mg/L	<0.001	0.002	<0.001	<0.001
Chloro-b	mg/L	<0.001	<0.001	<0.001	<0.001
Chloro-c	mg/L	<0.001	0.002	<0.001	<0.001
Phaeo-a	mg/L	<0.001	<0.001	<0.001	<0.001

CCWA ID		08E0645/025	08E0645/026	08E0645/027
Client ID		ABP128	ABP108	ABP115
Sampled		02/10/2008	12/09/2008	17/09/2008

Analyte	Unit			
Alkalinity	mg/L	<1	215	113
Ca	mg/L	1600	49.4	654
Cl	mg/L	58600	2880	15000
CO ₃	mg/L	<1	<1	30
Colour	TCU	39	160	9
ECond	mS/m	14100	1020	4880
Fe	mg/L	2.1	0.009	<0.005
Hardness	mg/L	23000	890	5100

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CCWA ID	08E0645/025	08E0645/026	08E0645/027
Client ID	ABP128	ABP108	ABP115
Sampled	02/10/2008	12/09/2008	17/09/2008

Analyte	Unit			
HCO3	mg/L	<1	262	76
K	mg/L	527	45.2	161
Mg	mg/L	4590	187	839
Mn	mg/L	2.2	<0.001	0.047
Na	mg/L	40000	1710	10100
N_NO3	mg/L	<0.01	<0.01	<0.01
N_total	mg/L	2.0	3.1	1.2
pH		3.5	7.2	8.4
P_total	mg/L	<0.01	0.05	<0.01
SiO2_Si	mg/L	69	19	<0.1
SO4_S	mg/L	9510	366	2890
Sr	mg/L	29	0.67	9.5
TDS sum	mg/L	110000	5400	30000
TDS_180C	mg/L	120000	5400	32000
Turbidit	NTU	120	9.7	1.1
alON_BAL	%	8.9	0.1	5.8
Chloro_a	mg/L	0.006		0.001
Chloro_b	mg/L	0.002		<0.001
Chloro_c	mg/L	<0.001		<0.001
Phaeo_a	mg/L	0.001		<0.001

Analyte	Method	Description
alON_BAL	ixIONBAL	Ionic Balance of neutral charged waters.
Alkaline	iALK1WATI	Alkalinity, total expressed as CaCO3 mg/L.
Ca	iMET1WCICP	Calcium
Chloro_a	iCHLA1WAC	Chlorophyll "a", as per APHA (21st ed) Method 1020
Chloro_b	iCHLA1WAC	Chlorophyll "b", as per APHA (21th ed) Method 1020
Chloro_c	iCHLA1WAC	Chlorophyll "c", as per APHA (21st ed) Method 1020
Cl	iCO1WCDA	Chloride
CO3	iALK1WATI	Carbonate
Colour	iCOL1WACO	Colour, True Colour Units (TCU).
ECond	IEC1WZSE	Electrical Conductivity, 25 degrees celcius.
Fe	iMET1WCICP	Iron
Hardness	iHTOT2WAC	Hardness, total expressed as CaCO3 mg/L.
HCO3	iALK1WATI	Bicarbonate
K	iMET1WCICP	Potassium
Mg	iMET1WCICP	Magnesium
Mn	iMET1WCICP	Manganese
Na	iMET1WCICP	Sodium

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Analyte	Method	Description
N_NO3	iNTAN1WFIA	Nitrogen, nitrate + nitrite fraction by FIA.
N_total	iNP1WTFIA	Nitrogen, persulphate total by FIA
pH	iPH1WASE	pH
Phaeo_a	iCHLA1WAC	Phaeophytin "a", as per APHA (21st ed) Method 1020
P_total	iPP1WTFIA	Phosphorus, persulphate total by FIA.
SiO2_Si	iMET1WCICP	Silica, calculated from Si by ICPAES.
SO4_S	iMET1WCICP	Sulphate, sulphur expressed as sulphate.
Sr	iMET1WCICP	Strontium
TDS sum	ixTDS_Sum	TDS by summation
TDS_180C	iSOL1WDGR	Total dissolved solids as per APHA (21st ed) Method 2540 C
Turbidit	iTURB1WCZ	Turbidity

The total dissolved solids (TDS_180C) for sample ABP104 is artificially high due to turbidity in the sample that could not be filtered out. TDS sum is a better estimate of the total dissolved solids for this sample.

These results apply only to the sample(s) as received. Unless arrangements are made to the contrary, these samples will be disposed of after 30 days of the issue of this report.
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Jenny McGuire
Science Business Manager
Environmental Chemistry Section

12/11/2008

Report of Examination

None
08E0803; 3.1.1
Jenny McGuire

Dept of Environment and Conservation
P O Box 51
WOODVALE
WA 6946

Attention : Anna Leung

Report On:
1 sample received on 04/11/2008

CCWA ID	Material	Client Description
08E0803 / 001	water	ABP130

CCWA ID 08E0803/001
Client ID ABP130
Sampled

Analyte	Unit	
Alkalinity	mg/L	35
Ca	mg/L	4.2
Cl	mg/L	72
CO3	mg/L	<1
Colour	TCU	18
ECond	mS/m	32.4
Fe	mg/L	1.4
Hardness	mg/L	26
HCO3	mg/L	43
K	mg/L	3
Mg	mg/L	3.8
Mn	mg/L	0.006
Na	mg/L	51.1
N_NO3	mg/L	0.01
N_total	mg/L	1.0
pH		8.2
P_total	mg/L	0.07
SiO2_Si	mg/L	4.1
SO4_S	mg/L	4.5
Sr	mg/L	0.033
TDS sum	mg/L	160
TDS_180C	mg/L	190
Turbidity	NTU	320

**Chemistry Centre of Western Australia
Environmental Chemistry Section
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CCWA ID 08E0803/001
Client ID ABP130
Sampled

Analyte	Unit	
alON_BAL	%	-0.1

Analyte	Method	Description
alON_BAL	ixIONBAL	Ionic Balance of neutral charged waters.
Alkalinity	iALK1WATI	Alkalinity, total expressed as CaCO ₃ mg/L.
Ca	iMET1WCICP	Calcium
Cl	iCO1WCDA	Chloride
CO ₃	iALK1WATI	Carbonate
Colour	iCOL1WACO	Colour, True Colour Units (TCU).
ECond	IEC1WZSE	Electrical Conductivity, 25 degrees celcius.
Fe	iMET1WCICP	Iron
Hardness	iHTOT2WAC	Hardness, total expressed as CaCO ₃ mg/L.
HCO ₃	iALK1WATI	Bicarbonate
K	iMET1WCICP	Potassium
Mg	iMET1WCICP	Magnesium
Mn	iMET1WCICP	Manganese
Na	iMET1WCICP	Sodium
N_NO3	iNTAN1WFIA	Nitrogen, nitrate + nitrite fraction by FIA.
N_total	iNP1WTFIA	Nitrogen, persulphate total by FIA
pH	iPH1WASE	pH
P_total	iCO1WCDA	Phosphorus, persulphate total by DA
SiO ₂ _Si	iMET1WCICP	Silica, calculated from Si by ICPAES.
SO ₄ _S	iMET1WCICP	Sulphate, sulphur expressed as sulphate.
Sr	iMET1WCICP	Strontium
TDS sum	ixTDS_Sum	TDS by summation
TDS_180C	iSOL1WDGR	Total dissolved solids as per APHA (21st ed) Method 2540 C
Turbidity	iTURB1WCZ	Turbidity

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Jenny McGuire
Science Business Manager
Environmental Chemistry Section

23/12/2008

08E0803
23/12/2008