

Environmental Division

## CERTIFICATE OF ANALYSIS

<b>Work Order</b>	: <b>EW1202342</b>	Page	: 1 of 15
<b>Client</b>	: <b>WOLLONGONG CITY COUNCIL</b>	<b>Laboratory</b>	: Environmental Division NSW South Coast
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<b>Project</b>	: Whytes Gully Groundwater Annual	<b>QC Level</b>	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Order number</b>	: 3001821	<b>Date Samples Received</b>	: 23-AUG-2012
<b>C-O-C number</b>	: ----	<b>Issue Date</b>	: 03-SEP-2012
<b>Sampler</b>	: Craig Wilson	<b>No. of samples received</b>	: 12
<b>Site</b>	: ----	<b>No. of samples analysed</b>	: 12
<b>Quote number</b>	: WL/001/11 Whytes Gully Groundwater Annual		

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



WORLD RECOGNISED  
**ACCREDITATION**

NATA Accredited Laboratory 825

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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Glenn Davies	Environmental Services Representative	Laboratory - Wollongong
Pabi Subba	Senior Organic Chemist	Sydney Organics
Sarah Millington	Senior Inorganic Chemist	Sydney Inorganics

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Environmental Division NSW South Coast, P.O. Box 3105, North Nowra 2541, Australia. ALS Group is a subsidiary of Campbell Brothers Limited Company.



## 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 sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

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

- **EG020: LCS recoveries for some elements fall outside ALS Dynamic Control Limit. However, they are within the acceptance criteria based on ALS DQO. No further action is required.**
- **Sites BH1A, BH2A, BH3A & BH7A - Dry at time of sampling.**



## Analytical Results

Sub-Matrix: WATER

				Client sample ID				
				BH1	BH 1A	BH 2A	BH 3	BH 3A
				23-AUG-2012 12:00	23-AUG-2012 10:55	23-AUG-2012 11:00	23-AUG-2012 11:20	23-AUG-2012 11:05
				Client sampling date / time				
Compound	CAS Number	LOR	Unit	EW1202342-001	EW1202342-002	EW1202342-003	EW1202342-004	EW1202342-005
<b>EG020T: Total Metals by ICP-MS</b>								
Aluminium	7429-90-5	0.01	mg/L	0.16	----	----	0.16	----
Arsenic	7440-38-2	0.001	mg/L	0.001	----	----	<0.001	----
Barium	7440-39-3	0.001	mg/L	0.087	----	----	0.090	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	<0.0001	----
Cobalt	7440-48-4	0.001	mg/L	0.012	----	----	0.008	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	<0.001	----
Copper	7440-50-8	0.001	mg/L	0.004	----	----	0.003	----
Manganese	7439-96-5	0.001	mg/L	1.02	----	----	0.407	----
Lead	7439-92-1	0.001	mg/L	0.004	----	----	0.002	----
Zinc	7440-66-6	0.005	mg/L	0.012	----	----	0.039	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	<0.0001	----
<b>EG050T: Total Hexavalent Chromium</b>								
Hexavalent Chromium	18540-29-9	0.010	mg/L	<0.010	----	----	<0.010	----
<b>EK040P: Fluoride by PC Titrator</b>								
Fluoride	16984-48-8	0.1	mg/L	0.2	----	----	0.6	----
<b>EK057G: Nitrite as N by Discrete Analyser</b>								
Nitrite as N	----	0.01	mg/L	<0.01	----	----	<0.01	----
<b>EK058G: Nitrate as N by Discrete Analyser</b>								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	----	----	0.03	----
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	----	----	0.03	----
<b>EN67 PK: Field Tests</b>								
Field Observations	----	0.01	--	----	DRY	DRY	----	DRY
<b>EP035G: Total Phenol by Discrete Analyser</b>								
Phenols (Total)	----	0.05	mg/L	<0.05	----	----	<0.05	----
<b>EP068A: Organochlorine Pesticides (OC)</b>								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	----	----	<0.5	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	----	----	<0.5	----
beta-BHC	319-85-7	0.5	µg/L	<0.5	----	----	<0.5	----
gamma-BHC	58-89-9	0.5	µg/L	<0.5	----	----	<0.5	----
delta-BHC	319-86-8	0.5	µg/L	<0.5	----	----	<0.5	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	----	----	<0.5	----
Aldrin	309-00-2	0.5	µg/L	<0.5	----	----	<0.5	----
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	----	----	<0.5	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	----	----	<0.5	----



## Analytical Results

Sub-Matrix: WATER

Client sample ID  
 Client sampling date / time

Compound	CAS Number	LOR	Unit	BH1	BH 1A	BH 2A	BH 3	BH 3A
				23-AUG-2012 12:00	23-AUG-2012 10:55	23-AUG-2012 11:00	23-AUG-2012 11:20	23-AUG-2012 11:05
				EW1202342-001	EW1202342-002	EW1202342-003	EW1202342-004	EW1202342-005
<b>EP068A: Organochlorine Pesticides (OC) - Continued</b>								
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	----	----	<0.5	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	----	----	<0.5	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	----	----	<0.5	----
4,4'-DDE	72-55-9	0.5	µg/L	<0.5	----	----	<0.5	----
Endrin	72-20-8	0.5	µg/L	<0.5	----	----	<0.5	----
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	----	----	<0.5	----
4,4'-DDD	72-54-8	0.5	µg/L	<0.5	----	----	<0.5	----
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	----	----	<0.5	----
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	----	----	<0.5	----
4,4'-DDT	50-29-3	2	µg/L	<2	----	----	<2	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	----	----	<0.5	----
Methoxychlor	72-43-5	2	µg/L	<2	----	----	<2	----
<b>EP068B: Organophosphorus Pesticides (OP)</b>								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	----	----	<0.5	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	----	----	<0.5	----
Monocrotophos	6923-22-4	2	µg/L	<2	----	----	<2	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	----	----	<0.5	----
Diazinon	333-41-5	0.5	µg/L	<0.5	----	----	<0.5	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	----	----	<0.5	----
Parathion-methyl	298-00-0	2	µg/L	<2	----	----	<2	----
Malathion	121-75-5	0.5	µg/L	<0.5	----	----	<0.5	----
Fenthion	55-38-9	0.5	µg/L	<0.5	----	----	<0.5	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	----	----	<0.5	----
Parathion	56-38-2	2	µg/L	<2	----	----	<2	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	----	----	<0.5	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	----	----	<0.5	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	----	----	<0.5	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	----	----	<0.5	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	----	----	<0.5	----
Ethion	563-12-2	0.5	µg/L	<0.5	----	----	<0.5	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	----	----	<0.5	----
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	----	----	<0.5	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	1.0	µg/L	<1.0	----	----	<1.0	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	----	----	<1.0	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	----	----	<1.0	----



## Analytical Results

Sub-Matrix: WATER

Client sample ID  
 Client sampling date / time

Compound	CAS Number	LOR	Unit	BH1	BH 1A	BH 2A	BH 3	BH 3A
				23-AUG-2012 12:00	23-AUG-2012 10:55	23-AUG-2012 11:00	23-AUG-2012 11:20	23-AUG-2012 11:05
				EW1202342-001	EW1202342-002	EW1202342-003	EW1202342-004	EW1202342-005
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Fluorene	86-73-7	1.0	µg/L	<1.0	----	----	<1.0	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	----	----	<1.0	----
Anthracene	120-12-7	1.0	µg/L	<1.0	----	----	<1.0	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	----	----	<1.0	----
Pyrene	129-00-0	1.0	µg/L	<1.0	----	----	<1.0	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	----	----	<1.0	----
Chrysene	218-01-9	1.0	µg/L	<1.0	----	----	<1.0	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	----	----	<1.0	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	----	----	<1.0	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	----	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	----	----	<1.0	----
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	----	----	<1.0	----
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	----	----	<1.0	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	----	----	<0.5	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	20	µg/L	<20	----	----	<20	----
C10 - C14 Fraction	----	50	µg/L	<50	----	----	<50	----
C15 - C28 Fraction	----	100	µg/L	<100	----	----	<100	----
C29 - C36 Fraction	----	50	µg/L	<50	----	----	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	----	----	<50	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft</b>								
C6 - C10 Fraction	----	20	µg/L	<20	----	----	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	----	20	µg/L	<20	----	----	<20	----
>C10 - C16 Fraction	----	100	µg/L	<100	----	----	<100	----
>C16 - C34 Fraction	----	100	µg/L	<100	----	----	<100	----
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	----	----	<100	----
<b>EP080: BTEXN</b>								
Benzene	71-43-2	1	µg/L	<1	----	----	<1	----
Toluene	108-88-3	2	µg/L	<2	----	----	<2	----
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	<2	----
ortho-Xylene	95-47-6	2	µg/L	<2	----	----	<2	----
^ Total Xylenes	1330-20-7	2	µg/L	<2	----	----	<2	----
^ Sum of BTEX	----	1	µg/L	<1	----	----	<1	----
Naphthalene	91-20-3	5	µg/L	<5	----	----	<5	----



## Analytical Results

Sub-Matrix: WATER

Client sample ID  
 Client sampling date / time

				BH1	BH 1A	BH 2A	BH 3	BH 3A
				23-AUG-2012 12:00	23-AUG-2012 10:55	23-AUG-2012 11:00	23-AUG-2012 11:20	23-AUG-2012 11:05
Compound	CAS Number	LOR	Unit	EW1202342-001	EW1202342-002	EW1202342-003	EW1202342-004	EW1202342-005
<b>EP068S: Organochlorine Pesticide Surrogate</b>								
Dibromo-DDE	21655-73-2	0.1	%	85.1	----	----	73.5	----
<b>EP068T: Organophosphorus Pesticide Surrogate</b>								
DEF	78-48-8	0.1	%	81.8	----	----	68.6	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	31.3	----	----	23.3	----
2-Chlorophenol-D4	93951-73-6	0.1	%	68.1	----	----	58.5	----
2,4,6-Tribromophenol	118-79-6	0.1	%	91.6	----	----	75.5	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	76.2	----	----	78.8	----
Anthracene-d10	1719-06-8	0.1	%	93.3	----	----	84.3	----
4-Terphenyl-d14	1718-51-0	0.1	%	85.9	----	----	77.7	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	125	----	----	135	----
Toluene-D8	2037-26-5	0.1	%	110	----	----	98.3	----
4-Bromofluorobenzene	460-00-4	0.1	%	90.9	----	----	95.0	----



## Analytical Results

Sub-Matrix: WATER

				Client sample ID				
				BH 4	BH 4A	BH 5	BH 5A	BH 6
				23-AUG-2012 11:45	23-AUG-2012 10:50	23-AUG-2012 11:30	23-AUG-2012 10:45	23-AUG-2012 10:35
				Client sampling date / time				
Compound	CAS Number	LOR	Unit	EW1202342-006	EW1202342-007	EW1202342-008	EW1202342-009	EW1202342-010
<b>EG020T: Total Metals by ICP-MS</b>								
Aluminium	7429-90-5	0.01	mg/L	0.52	0.03	3.26	0.09	0.07
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.076	0.039	0.308	0.021	0.051
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0002	<0.0001	0.0002
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.019	<0.001	0.011
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.007	<0.001	0.001
Copper	7440-50-8	0.001	mg/L	0.003	0.002	0.014	0.002	0.005
Manganese	7439-96-5	0.001	mg/L	0.057	0.239	2.46	0.023	1.46
Lead	7439-92-1	0.001	mg/L	0.003	0.002	0.022	0.002	0.004
Zinc	7440-66-6	0.005	mg/L	0.011	0.134	0.057	0.007	0.019
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
<b>EG050T: Total Hexavalent Chromium</b>								
Hexavalent Chromium	18540-29-9	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
<b>EK040P: Fluoride by PC Titrator</b>								
Fluoride	16984-48-8	0.1	mg/L	0.2	0.4	0.8	0.9	0.8
<b>EK057G: Nitrite as N by Discrete Analyser</b>								
Nitrite as N	----	0.01	mg/L	<0.01	0.02	0.01	<0.01	<0.01
<b>EK058G: Nitrate as N by Discrete Analyser</b>								
Nitrate as N	14797-55-8	0.01	mg/L	0.04	0.01	0.07	0.06	0.02
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
Nitrite + Nitrate as N	----	0.01	mg/L	0.04	0.03	0.08	0.06	0.02
<b>EP035G: Total Phenol by Discrete Analyser</b>								
Phenols (Total)	----	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP068A: Organochlorine Pesticides (OC)</b>								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
beta-BHC	319-85-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
gamma-BHC	58-89-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
delta-BHC	319-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: WATER

Client sample ID  
 Client sampling date / time

Compound	CAS Number	LOR	Unit	BH 4	BH 4A	BH 5	BH 5A	BH 6
				23-AUG-2012 11:45	23-AUG-2012 10:50	23-AUG-2012 11:30	23-AUG-2012 10:45	23-AUG-2012 10:35
				EW1202342-006	EW1202342-007	EW1202342-008	EW1202342-009	EW1202342-010
<b>EP068A: Organochlorine Pesticides (OC) - Continued</b>								
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin	72-20-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDT	50-29-3	2	µg/L	<2	<2	<2	<2	<2
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Methoxychlor	72-43-5	2	µg/L	<2	<2	<2	<2	<2
<b>EP068B: Organophosphorus Pesticides (OP)</b>								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	6923-22-4	2	µg/L	<2	<2	<2	<2	<2
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	298-00-0	2	µg/L	<2	<2	<2	<2	<2
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	56-38-2	2	µg/L	<2	<2	<2	<2	<2
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0





## Analytical Results

Sub-Matrix: WATER

Client sample ID  
 Client sampling date / time

Compound	CAS Number	LOR	Unit	BH 4	BH 4A	BH 5	BH 5A	BH 6
				23-AUG-2012 11:45	23-AUG-2012 10:50	23-AUG-2012 11:30	23-AUG-2012 10:45	23-AUG-2012 10:35
				EW1202342-006	EW1202342-007	EW1202342-008	EW1202342-009	EW1202342-010
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	640	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	850	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	130	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	1620	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft</b>								
C6 - C10 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	----	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	<100	<100	870	<100	<100
>C16 - C34 Fraction	----	100	µg/L	<100	<100	700	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	1570	<100	<100
<b>EP080: BTEXN</b>								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
<b>EP068S: Organochlorine Pesticide Surrogate</b>								
Dibromo-DDE	21655-73-2	0.1	%	79.7	75.4	76.5	86.7	78.7



## Analytical Results

Sub-Matrix: WATER

Client sample ID  
 Client sampling date / time

				BH 4	BH 4A	BH 5	BH 5A	BH 6
				23-AUG-2012 11:45	23-AUG-2012 10:50	23-AUG-2012 11:30	23-AUG-2012 10:45	23-AUG-2012 10:35
Compound	CAS Number	LOR	Unit	EW1202342-006	EW1202342-007	EW1202342-008	EW1202342-009	EW1202342-010
<b>EP068T: Organophosphorus Pesticide Surrogate</b>								
DEF	78-48-8	0.1	%	78.1	75.6	83.3	65.4	67.9
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	30.1	29.4	28.5	18.9	23.8
2-Chlorophenol-D4	93951-73-6	0.1	%	67.9	66.3	64.3	33.4	58.5
2,4,6-Tribromophenol	118-79-6	0.1	%	87.5	81.7	104	90.7	82.9
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	75.5	78.8	74.2	73.4	71.1
Anthracene-d10	1719-06-8	0.1	%	94.0	89.9	86.1	78.4	86.9
4-Terphenyl-d14	1718-51-0	0.1	%	84.3	77.6	81.6	92.8	92.6
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	118	125	132	128	131
Toluene-D8	2037-26-5	0.1	%	108	111	111	116	114
4-Bromofluorobenzene	460-00-4	0.1	%	92.1	95.7	87.8	89.5	91.1



## Analytical Results

Sub-Matrix: WATER

				Client sample ID	BH 6A	BH 7A			
				Client sampling date / time	23-AUG-2012 10:35	23-AUG-2012 10:05	---	---	---
Compound	CAS Number	LOR	Unit	EW1202342-011	EW1202342-012	---	---	---	---
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.27	---	---	---	---	---
Arsenic	7440-38-2	0.001	mg/L	<0.001	---	---	---	---	---
Barium	7440-39-3	0.001	mg/L	0.006	---	---	---	---	---
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	---	---	---	---	---
Cobalt	7440-48-4	0.001	mg/L	<0.001	---	---	---	---	---
Chromium	7440-47-3	0.001	mg/L	0.002	---	---	---	---	---
Copper	7440-50-8	0.001	mg/L	0.004	---	---	---	---	---
Manganese	7439-96-5	0.001	mg/L	0.034	---	---	---	---	---
Lead	7439-92-1	0.001	mg/L	0.003	---	---	---	---	---
Zinc	7440-66-6	0.005	mg/L	0.012	---	---	---	---	---
<b>EG035T: Total Recoverable Mercury by FIMS</b>									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	---	---	---	---	---
<b>EG050T: Total Hexavalent Chromium</b>									
Hexavalent Chromium	18540-29-9	0.010	mg/L	<0.010	---	---	---	---	---
<b>EK040P: Fluoride by PC Titrator</b>									
Fluoride	16984-48-8	0.1	mg/L	0.9	---	---	---	---	---
<b>EK057G: Nitrite as N by Discrete Analyser</b>									
Nitrite as N	---	0.01	mg/L	<0.01	---	---	---	---	---
<b>EK058G: Nitrate as N by Discrete Analyser</b>									
Nitrate as N	14797-55-8	0.01	mg/L	0.02	---	---	---	---	---
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	---	0.01	mg/L	0.02	---	---	---	---	---
<b>EN67 PK: Field Tests</b>									
Field Observations	---	0.01	--	---	DRY	---	---	---	---
<b>EP035G: Total Phenol by Discrete Analyser</b>									
Phenols (Total)	---	0.05	mg/L	<0.05	---	---	---	---	---
<b>EP068A: Organochlorine Pesticides (OC)</b>									
alpha-BHC	319-84-6	0.5	µg/L	<0.5	---	---	---	---	---
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	---	---	---	---	---
beta-BHC	319-85-7	0.5	µg/L	<0.5	---	---	---	---	---
gamma-BHC	58-89-9	0.5	µg/L	<0.5	---	---	---	---	---
delta-BHC	319-86-8	0.5	µg/L	<0.5	---	---	---	---	---
Heptachlor	76-44-8	0.5	µg/L	<0.5	---	---	---	---	---
Aldrin	309-00-2	0.5	µg/L	<0.5	---	---	---	---	---
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	---	---	---	---	---
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	---	---	---	---	---



## Analytical Results

Sub-Matrix: WATER

				Client sample ID	BH 6A	BH 7A			
				Client sampling date / time	23-AUG-2012 10:35	23-AUG-2012 10:05	----	----	----
Compound	CAS Number	LOR	Unit	EW1202342-011	EW1202342-012	----	----	----	----
<b>EP068A: Organochlorine Pesticides (OC) - Continued</b>									
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	----	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	----	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	----	----	----	----	----
4,4'-DDE	72-55-9	0.5	µg/L	<0.5	----	----	----	----	----
Endrin	72-20-8	0.5	µg/L	<0.5	----	----	----	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	----	----	----	----	----
4,4'-DDD	72-54-8	0.5	µg/L	<0.5	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	----	----	----	----	----
4,4'-DDT	50-29-3	2	µg/L	<2	----	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	----	----	----	----	----
Methoxychlor	72-43-5	2	µg/L	<2	----	----	----	----	----
<b>EP068B: Organophosphorus Pesticides (OP)</b>									
Dichlorvos	62-73-7	0.5	µg/L	<0.5	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	----	----	----	----	----
Monocrotophos	6923-22-4	2	µg/L	<2	----	----	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	----	----	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	----	----	----	----	----
Parathion-methyl	298-00-0	2	µg/L	<2	----	----	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	----	----	----	----	----
Fenthion	55-38-9	0.5	µg/L	<0.5	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	----	----	----	----	----
Parathion	56-38-2	2	µg/L	<2	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	----	----	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	----	----	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	----	----	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	----	----	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	----	----	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	----	----	----	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>									
Naphthalene	91-20-3	1.0	µg/L	<1.0	----	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	----	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	----	----	----	----	----



## Analytical Results

Sub-Matrix: WATER

				Client sample ID					
				Client sampling date / time					
				BH 6A		BH 7A			
				23-AUG-2012 10:35		23-AUG-2012 10:05			
Compound	CAS Number	LOR	Unit	EW1202342-011	EW1202342-012				
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>									
Fluorene	86-73-7	1.0	µg/L	<1.0	----	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	----	----	----	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	----	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	----	----	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	----	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	----	----	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	----	----	----	----	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	----	----	----	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
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	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	----	----	----	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft</b>									
C6 - C10 Fraction	----	20	µg/L	<20	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	----	20	µg/L	<20	----	----	----	----	----
>C10 - C16 Fraction	----	100	µg/L	<100	----	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	----	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	----	----	----	----	----
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	----	----	----	----	----
Toluene	108-88-3	2	µg/L	<2	----	----	----	----	----
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	----	----	----	----	----
^ Total Xylenes	1330-20-7	2	µg/L	<2	----	----	----	----	----
^ Sum of BTEX	----	1	µg/L	<1	----	----	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----	----



## Analytical Results

Sub-Matrix: **WATER**

				Client sample ID	BH 6A	BH 7A			
				Client sampling date / time	23-AUG-2012 10:35	23-AUG-2012 10:05	----	----	----
Compound	CAS Number	LOR	Unit		EW1202342-011	EW1202342-012	----	----	----
<b>EP068S: Organochlorine Pesticide Surrogate</b>									
Dibromo-DDE	21655-73-2	0.1	%		58.2	----	----	----	----
<b>EP068T: Organophosphorus Pesticide Surrogate</b>									
DEF	78-48-8	0.1	%		52.0	----	----	----	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>									
Phenol-d6	13127-88-3	0.1	%		25.5	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		56.4	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%		64.5	----	----	----	----
<b>EP075(SIM)T: PAH Surrogates</b>									
2-Fluorobiphenyl	321-60-8	0.1	%		63.0	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%		73.8	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		66.4	----	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		123	----	----	----	----
Toluene-D8	2037-26-5	0.1	%		111	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		89.7	----	----	----	----



## Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP068S: Organochlorine Pesticide Surrogate</b>			
Dibromo-DDE	21655-73-2	33.6	142.5
<b>EP068T: Organophosphorus Pesticide Surrogate</b>			
DEF	78-48-8	28.1	147.7
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	10.0	64.1
2-Chlorophenol-D4	93951-73-6	11.3	122.9
2,4,6-Tribromophenol	118-79-6	11.7	144.0
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	19.9	122.8
Anthracene-d10	1719-06-8	23.3	125.8
4-Terphenyl-d14	1718-51-0	20.3	134.5
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128