

QUESTION ON NOTICE

No. 913

asked on Tuesday, 22 August 2021

MR S O'CONNOR ASKED THE MINISTER FOR RESOURCES (HON S STEWART)—

QUESTION:

Will the Minister provide the results of all sampling undertaken from the bores operated by the department in proximity of the former Linc Energy site (and any relevant surrounding bores) for the last twelve months (reported separately by the date the sample was collected)?

ANSWER:

I have attached the laboratory analysis for monitoring of groundwater carried out by the Department of Resources for the last 12 months.

CERTIFICATE OF ANALYSIS

Work Order : **EB2222024**
Client : **QLD DEPT OF RESOURCES**
Contact :
Address : 357 KUMMEROWS ROAD
 HOPELAND 4413
Telephone :
Project : LINC-115D Hopeland
Order number : 4500018640
C-O-C number : ----
Sampler :
Site : ----
Quote number : BN/158/22 V3
No. of samples received : 3
No. of samples analysed : 3

Page : 1 of 8
Laboratory : Environmental Division Brisbane
Contact :
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61-7-3243 7222
Date Samples Received : 29-Jul-2022 10:00
Date Analysis Commenced : 29-Jul-2022
Issue Date : 09-Aug-2022 14:18



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD
Timothy Creagh	2IC Organic Chemist	Brisbane Organics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- **Gases in Water analysis is conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- EP080 TRH Volatiles/BTEX: Sample "NB01S" required dilution due to high contaminants. LOR values have been adjusted accordingly.
- EK027 (Thiocyanate): Sample NB01S (EB2222024-002) has been diluted due to matrix interference. The limit of reporting has been adjusted accordingly.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				NB01D	NB01S	NB02D	----	----
Sampling date / time				27-Jul-2022 12:15	27-Jul-2022 11:05	27-Jul-2022 15:00	----	----
Compound	CAS Number	LOR	Unit	EB2222024-001	EB2222024-002	EB2222024-003	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.81	8.13	8.53	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	4230	5990	5110	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	2330	3090	2880	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	86	<1	78	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	832	258	1570	----	----
Total Alkalinity as CaCO3	----	1	mg/L	918	258	1650	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	<1	<1	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	868	1770	866	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	8	54	6	----	----
Magnesium	7439-95-4	1	mg/L	2	25	2	----	----
Sodium	7440-23-5	1	mg/L	870	1040	1220	----	----
Potassium	7440-09-7	1	mg/L	16	57	10	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Boron	7440-42-8	0.05	mg/L	0.34	0.23	0.19	----	----
Barium	7440-39-3	0.001	mg/L	0.357	1.74	0.640	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Manganese	7439-96-5	0.001	mg/L	0.011	0.043	0.003	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	0.003	<0.001	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----



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 (Matrix: **WATER**)

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				Result	Result	Result	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	----	----
Molybdenum	7439-98-7	0.001	mg/L	0.013	0.014	0.006	----	----
Strontium	7440-24-6	0.001	mg/L	0.867	3.52	1.40	----	----
Iron	7439-89-6	0.05	mg/L	0.32	3.86	0.30	----	----
Bromine	7726-95-6	0.1	mg/L	1.6	4.1	0.8	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
EK025SF: Free CN by Segmented Flow Analyser								
Free Cyanide	----	0.004	mg/L	<0.004	0.005	<0.004	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	0.007	0.021	0.007	----	----
EK027: Thiocyanate								
Thiocyanate	463-56-9	0.1	mg/L	0.1	<0.2	0.2	----	----
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser								
Weak Acid Dissociable Cyanide	----	0.004	mg/L	<0.004	0.007	<0.004	----	----
EK030: Cyanide Amenable to Chlorination								
Cyanide amenable to chlorination	----	0.01	mg/L	<0.01	<0.01	<0.01	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.9	0.2	0.6	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.77	1.24	0.88	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<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	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.0	1.4	1.0	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	1.0	1.4	1.0	----	----
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	42.8	55.1	57.4	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				NB01D	NB01S	NB02D	----	----
Sampling date / time				27-Jul-2022 12:15	27-Jul-2022 11:05	27-Jul-2022 15:00	----	----
Compound	CAS Number	LOR	Unit	EB2222024-001	EB2222024-002	EB2222024-003	-----	-----
				Result	Result	Result	----	----
EN055: Ionic Balance - Continued								
∅ Total Cations	----	0.01	meq/L	38.8	51.4	53.8	----	----
∅ Ionic Balance	----	0.01	%	4.91	3.41	3.25	----	----
EP033: C1 - C4 Hydrocarbon Gases								
Methane	74-82-8	10	µg/L	18800	34800	20500	----	----
Ethene	74-85-1	10	µg/L	<10	<10	<10	----	----
Ethane	74-84-0	10	µg/L	22	16	26	----	----
Propene	115-07-1	10	µg/L	<10	<10	<10	----	----
Propane	74-98-6	10	µg/L	<10	<10	<10	----	----
Butene	25167-67-3	10	µg/L	<10	<10	<10	----	----
Butane	106-97-8	10	µg/L	<10	<10	<10	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	8.2	<1.0	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	3.8	<2.0	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	NB01D	NB01S	NB02D	----	----
Sampling date / time					27-Jul-2022 12:15	27-Jul-2022 11:05	27-Jul-2022 15:00	----	----
Compound	CAS Number	LOR	Unit	EB2222024-001	EB2222024-002	EB2222024-003	-----	-----	
				Result	Result	Result	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----	
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----	
Benzo(a)pyrene	50-32-8	0.5	µg/L	<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	----	----	
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----	
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----	
^ Sum of polycyclic aromatic hydrocarbons		----	0.5	µg/L	<0.5	<0.5	----	----	
^ Benzo(a)pyrene TEQ (zero)		----	0.5	µg/L	<0.5	<0.5	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	5210	<20	----	----	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	----	----	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	----	----	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	----	----	
^ C10 - C36 Fraction (sum)		----	50	µg/L	<50	<50	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	5110	<20	----	----	
^ C6 - C10 Fraction minus BTEX (F1)		C6_C10-BTEX	20	µg/L	<20	<1000	<20	----	----
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	----	----	
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	----	
^ >C10 - C40 Fraction (sum)		----	100	µg/L	<100	<100	<100	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)		----	100	µg/L	<100	<100	<100	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	1	4100	20	----	----	
Toluene	108-88-3	2	µg/L	<2	895	<2	----	----	
Ethylbenzene	100-41-4	2	µg/L	<2	43	<2	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	101	<2	----	----	
ortho-Xylene	95-47-6	2	µg/L	<2	40	<2	----	----	
^ Total Xylenes		----	2	µg/L	<2	141	<2	----	----
^ Sum of BTEX		----	1	µg/L	1	5180	20	----	----
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				NB01D	NB01S	NB02D	----	----
Sampling date / time				27-Jul-2022 12:15	27-Jul-2022 11:05	27-Jul-2022 15:00	----	----
Compound	CAS Number	LOR	Unit	EB2222024-001	EB2222024-002	EB2222024-003	-----	-----
				Result	Result	Result	----	----
EP075(SIM)S: Phenolic Compound Surrogates - Continued								
Phenol-d6	13127-88-3	1.0	%	28.1	30.8	28.9	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	59.6	72.4	64.9	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	34.6	66.8	44.3	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	84.6	86.0	80.8	----	----
Anthracene-d10	1719-06-8	1.0	%	85.7	92.3	83.6	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	87.1	88.6	84.0	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	111	127	99.2	----	----
Toluene-D8	2037-26-5	2	%	99.3	98.2	100.0	----	----
4-Bromofluorobenzene	460-00-4	2	%	97.7	102	106	----	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	72
2-Chlorophenol-D4	93951-73-6	27	130
2,4,6-Tribromophenol	118-79-6	19	181
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	14	146
Anthracene-d10	1719-06-8	35	137
4-Terphenyl-d14	1718-51-0	36	154
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EP033: C1 - C4 Hydrocarbon Gases

CERTIFICATE OF ANALYSIS

Work Order : **EB2222162**
Client : **QLD DEPT OF RESOURCES**
Contact :
Address : 357 KUMMEROWS ROAD
 HOPELAND 4413
Telephone :
Project : LINC-115D Hopeland
Order number : 4500018640
C-O-C number : ----
Sampler :
Site : ----
Quote number : BN/158/22 V3
No. of samples received : 6
No. of samples analysed : 6

Page : 1 of 9
Laboratory : Environmental Division Brisbane
Contact :
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61-7-3243 7222
Date Samples Received : 29-Jul-2022 19:15
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<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD



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ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- It is recognised that EK028SF (WAD Cyanide by SFA) is less than EK025SF (Free Cyanide) for some samples. However, the difference is within experimental variation of the methods.
- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- **Gases in Water analysis is conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- EK027 (Thiocyanate): Some samples have been diluted due to matrix interference. The limit of reporting has been adjusted accordingly.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				NB02S	NB04D	NB05S	Trip Spike 4	Trip Blank
Sampling date / time				28-Jul-2022 09:55	28-Jul-2022 11:15	28-Jul-2022 13:50	28-Jul-2022 00:00	28-Jul-2022 00:00
Compound	CAS Number	LOR	Unit	EB2222162-001	EB2222162-002	EB2222162-003	EB2222162-004	EB2222162-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	11.1	8.43	11.1	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	20000	9530	8850	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	13000	5640	4870	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO ₃	DMO-210-001	1	mg/L	107	<1	64	----	----
Carbonate Alkalinity as CaCO ₃	3812-32-6	1	mg/L	72	<1	118	----	----
Bicarbonate Alkalinity as CaCO ₃	71-52-3	1	mg/L	<1	86	<1	----	----
Total Alkalinity as CaCO ₃	----	1	mg/L	179	86	182	----	----
ED041G: Sulfate (Turbidimetric) as SO₄ 2- by DA								
Sulfate as SO ₄ - Turbidimetric	14808-79-8	1	mg/L	11	<1	8	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	7210	3380	3010	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	664	62	25	----	----
Magnesium	7439-95-4	1	mg/L	<1	19	<1	----	----
Sodium	7440-23-5	1	mg/L	3710	1940	1810	----	----
Potassium	7440-09-7	1	mg/L	143	37	67	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.02	<0.01	0.08	----	----
Arsenic	7440-38-2	0.001	mg/L	0.001	0.003	0.001	----	----
Boron	7440-42-8	0.05	mg/L	0.30	0.35	0.38	----	----
Barium	7440-39-3	0.001	mg/L	7.69	2.35	1.01	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
Cobalt	7440-48-4	0.001	mg/L	0.002	<0.001	<0.001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	0.014	0.001	<0.001	----	----
Manganese	7439-96-5	0.001	mg/L	<0.001	0.078	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	0.032	<0.001	0.003	----	----
Lead	7439-92-1	0.001	mg/L	0.002	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	NB02S	NB04D	NB05S	Trip Spike 4	Trip Blank
Sampling date / time					28-Jul-2022 09:55	28-Jul-2022 11:15	28-Jul-2022 13:50	28-Jul-2022 00:00	28-Jul-2022 00:00
Compound	CAS Number	LOR	Unit		EB2222162-001	EB2222162-002	EB2222162-003	EB2222162-004	EB2222162-005
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Zinc	7440-66-6	0.005	mg/L		0.005	<0.005	<0.005	----	----
Molybdenum	7439-98-7	0.001	mg/L		0.092	0.015	0.094	----	----
Strontium	7440-24-6	0.001	mg/L		29.5	5.02	2.42	----	----
Iron	7439-89-6	0.05	mg/L		0.29	0.31	<0.05	----	----
Bromine	7726-95-6	0.1	mg/L		19.9	7.6	6.6	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	----	----
EK025SF: Free CN by Segmented Flow Analyser									
Free Cyanide	----	0.004	mg/L		0.069	<0.004	0.037	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	0.004	mg/L		0.490	0.018	0.071	----	----
EK027: Thiocyanate									
Thiocyanate	463-56-9	0.1	mg/L		<1.0	<0.5	<0.5	----	----
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser									
Weak Acid Dissociable Cyanide	----	0.004	mg/L		0.072	<0.004	0.035	----	----
EK030: Cyanide Amenable to Chlorination									
Cyanide amenable to chlorination	----	0.01	mg/L		0.11	0.02	0.04	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		<0.1	0.4	0.4	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		5.76	1.01	1.75	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	<0.01	<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	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	<0.01	<0.01	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		6.7	1.1	2.0	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		6.7	1.1	2.0	----	----
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L		207	97.1	88.7	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				NB02S	NB04D	NB05S	Trip Spike 4	Trip Blank
Sampling date / time				28-Jul-2022 09:55	28-Jul-2022 11:15	28-Jul-2022 13:50	28-Jul-2022 00:00	28-Jul-2022 00:00
Compound	CAS Number	LOR	Unit	EB2222162-001	EB2222162-002	EB2222162-003	EB2222162-004	EB2222162-005
				Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued								
∅ Total Cations	----	0.01	meq/L	198	90.0	81.7	----	----
∅ Ionic Balance	----	0.01	%	2.23	3.78	4.12	----	----
EP033: C1 - C4 Hydrocarbon Gases								
Methane	74-82-8	10	µg/L	16000	11000	12400	----	----
Ethene	74-85-1	10	µg/L	<10	<10	<10	----	----
Ethane	74-84-0	10	µg/L	11	<10	<10	----	----
Propene	115-07-1	10	µg/L	<10	<10	<10	----	----
Propane	74-98-6	10	µg/L	<10	<10	<10	----	----
Butene	25167-67-3	10	µg/L	<10	<10	<10	----	----
Butane	106-97-8	10	µg/L	<10	<10	<10	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	----	1.1	1.6	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	----	<1.0	<1.0	----	----
2-Methylphenol	95-48-7	1.0	µg/L	----	<1.0	<1.0	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	----	8.5	<2.0	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	----	<1.0	<1.0	----	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	----	<1.0	<1.0	----	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	----	<1.0	<1.0	----	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	----	<1.0	<1.0	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	----	<1.0	<1.0	----	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	----	<1.0	<1.0	----	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	----	<1.0	<1.0	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	----	<2.0	<2.0	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
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	----	----
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	----	----

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	NB02S	NB04D	NB05S	Trip Spike 4	Trip Blank
Sampling date / time				28-Jul-2022 09:55	28-Jul-2022 11:15	28-Jul-2022 13:50	28-Jul-2022 00:00	28-Jul-2022 00:00	
Compound	CAS Number	LOR	Unit	EB2222162-001	EB2222162-002	EB2222162-003	EB2222162-004	EB2222162-005	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b+j)fluoranthene	205-99-2 205-82-3	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	----	1.0	<0.5	----	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	----	<0.5	<0.5	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	20	<20	<20	220	<20	
C10 - C14 Fraction	----	50	µg/L	----	70	80	----	----	
C15 - C28 Fraction	----	100	µg/L	----	<100	<100	----	----	
C29 - C36 Fraction	----	50	µg/L	----	<50	<50	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	70	80	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	20	<20	<20	280	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	180	<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	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	<100	<100	----	----	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	14	<1	1	17	<1	
Toluene	108-88-3	2	µg/L	<2	<2	4	17	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	16	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	33	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	17	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	50	<2	
^ Sum of BTEX	----	1	µg/L	14	<1	5	100	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	19	<5	
EP075(SIM)S: Phenolic Compound Surrogates									



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				NB02S	NB04D	NB05S	Trip Spike 4	Trip Blank
Sampling date / time				28-Jul-2022 09:55	28-Jul-2022 11:15	28-Jul-2022 13:50	28-Jul-2022 00:00	28-Jul-2022 00:00
Compound	CAS Number	LOR	Unit	EB2222162-001	EB2222162-002	EB2222162-003	EB2222162-004	EB2222162-005
				Result	Result	Result	Result	Result
EP075(SIM)S: Phenolic Compound Surrogates - Continued								
Phenol-d6	13127-88-3	1.0	%	----	36.8	37.2	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	----	96.9	95.4	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	----	120	123	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	----	98.3	99.9	----	----
Anthracene-d10	1719-06-8	1.0	%	----	108	109	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	----	108	108	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	94.5	97.8	97.7	99.1	98.4
Toluene-D8	2037-26-5	2	%	96.9	99.3	100	98.9	96.5
4-Bromofluorobenzene	460-00-4	2	%	101	103	101	105	102



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	ALS Control Spike 4	----	----	----	----
Sampling date / time					28-Jul-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB2222162-006	-----	-----	-----	-----
Result						----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		250	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		320	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		220	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		17	----	----	----	----
Toluene	108-88-3	2	µg/L		16	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		16	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		32	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		17	----	----	----	----
^ Total Xylenes	----	2	µg/L		49	----	----	----	----
^ Sum of BTEX	----	1	µg/L		98	----	----	----	----
Naphthalene	91-20-3	5	µg/L		19	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		98.3	----	----	----	----
Toluene-D8	2037-26-5	2	%		97.6	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		101	----	----	----	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	72
2-Chlorophenol-D4	93951-73-6	27	130
2,4,6-Tribromophenol	118-79-6	19	181
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	14	146
Anthracene-d10	1719-06-8	35	137
4-Terphenyl-d14	1718-51-0	36	154
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EP033: C1 - C4 Hydrocarbon Gases

CERTIFICATE OF ANALYSIS

Work Order : **EB2222776**
Client : **QLD DEPT OF RESOURCES**
Contact :
Address : 357 KUMMEROWS ROAD
 HOPELAND 4413
Telephone :
Project : LINC-115D Hopeland
Order number : 4500018640
C-O-C number : ----
Sampler :
Site : ----
Quote number : BN/158/22 V3
No. of samples received : 9
No. of samples analysed : 9

Page : 1 of 13
Laboratory : Environmental Division Brisbane
Contact :
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61-7-3243 7222
Date Samples Received : 04-Aug-2022 09:40
Date Analysis Commenced : 04-Aug-2022
Issue Date : 12-Aug-2022 14:29



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD
Timothy Creagh	2IC Organic Chemist	Brisbane Organics, Stafford, QLD
Vincent Muller		Brisbane Inorganics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- It is recognised that EK028SF (WAD Cyanide by SFA) is less than EK025SF (Free Cyanide) for some samples. However, the difference is within experimental variation of the methods.
- EK028SF (WAD Cyanide by SFA): Sample "HSMB2S", EB2222776-007 was diluted due to matrix interference. Limit of reporting adjusted accordingly.
- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- **C1 - C4 Gas analysis is conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- EP075(SIM) (PAH/Phenols): Sample "HSMB1D" required dilution due to sample matrix. LOR values have been adjusted accordingly and surrogate recoveries not determined.
- EK027 (Thiocyanate): Sample HSMB3S1 (EB2222776-008) has been diluted due to matrix interference. The limit of reporting has been adjusted accordingly.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				NB03D	DUP01A	HSMB1D	Trip Spike #1	Trip Blank #1
Sampling date / time				29-Jul-2022 10:40	29-Jul-2022 10:45	29-Jul-2022 14:25	29-Jul-2022 00:00	29-Jul-2022 00:00
Compound	CAS Number	LOR	Unit	EB2222776-001	EB2222776-002	EB2222776-003	EB2222776-004	EB2222776-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	9.22	9.22	5.84	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1600	1600	481	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	884	872	335	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	81	83	<1	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	244	252	82	----	----
Total Alkalinity as CaCO3	----	1	mg/L	325	336	82	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	<1	<1	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	298	307	61	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	2	2	30	----	----
Magnesium	7439-95-4	1	mg/L	<1	<1	1	----	----
Sodium	7440-23-5	1	mg/L	324	333	28	----	----
Potassium	7440-09-7	1	mg/L	21	22	13	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Boron	7440-42-8	0.05	mg/L	0.23	0.24	<0.05	----	----
Barium	7440-39-3	0.001	mg/L	0.087	0.086	0.338	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Manganese	7439-96-5	0.001	mg/L	0.063	0.062	1.37	----	----
Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.004	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	NB03D	DUP01A	HSMB1D	Trip Spike #1	Trip Blank #1
Sampling date / time					29-Jul-2022 10:40	29-Jul-2022 10:45	29-Jul-2022 14:25	29-Jul-2022 00:00	29-Jul-2022 00:00
Compound	CAS Number	LOR	Unit		EB2222776-001	EB2222776-002	EB2222776-003	EB2222776-004	EB2222776-005
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Zinc	7440-66-6	0.005	mg/L		<0.005	<0.005	<0.005	----	----
Molybdenum	7439-98-7	0.001	mg/L		0.031	0.032	<0.001	----	----
Strontium	7440-24-6	0.001	mg/L		0.169	0.172	0.994	----	----
Iron	7439-89-6	0.05	mg/L		0.32	0.32	55.0	----	----
Bromine	7726-95-6	0.1	mg/L		0.5	0.5	<0.1	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	----	----
EK025SF: Free CN by Segmented Flow Analyser									
Free Cyanide	----	0.004	mg/L		0.040	0.029	<0.004	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	0.004	mg/L		0.212	0.206	0.006	----	----
EK027: Thiocyanate									
Thiocyanate	463-56-9	0.1	mg/L		0.2	0.1	0.1	----	----
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser									
Weak Acid Dissociable Cyanide	----	0.004	mg/L		0.038	0.027	<0.004	----	----
EK030: Cyanide Amenable to Chlorination									
Cyanide amenable to chlorination	----	0.01	mg/L		0.07	0.06	<0.01	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		0.7	0.7	<0.1	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		2.82	2.71	0.14	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	<0.01	<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	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.01	0.01	<0.01	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		3.4	3.5	0.2	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		3.4	3.5	0.2	----	----
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L		14.9	15.4	3.36	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				NB03D	DUP01A	HSMB1D	Trip Spike #1	Trip Blank #1
Sampling date / time				29-Jul-2022 10:40	29-Jul-2022 10:45	29-Jul-2022 14:25	29-Jul-2022 00:00	29-Jul-2022 00:00
Compound	CAS Number	LOR	Unit	EB2222776-001	EB2222776-002	EB2222776-003	EB2222776-004	EB2222776-005
				Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued								
∅ Total Cations	----	0.01	meq/L	14.7	15.1	3.13	----	----
∅ Ionic Balance	----	0.01	%	0.57	0.74	3.54	----	----
EP033: C1 - C4 Hydrocarbon Gases								
Methane	74-82-8	10	µg/L	18200	17900	11100	----	----
Ethene	74-85-1	10	µg/L	<10	<10	<10	----	----
Ethane	74-84-0	10	µg/L	<10	<10	<10	----	----
Propene	115-07-1	10	µg/L	<10	<10	<10	----	----
Propane	74-98-6	10	µg/L	<10	<10	<10	----	----
Butene	25167-67-3	10	µg/L	<10	<10	<10	----	----
Butane	106-97-8	10	µg/L	<10	<10	<10	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	5.3	6.0	<9.5	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<9.5	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<9.5	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	3.6	4.0	<19.0	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<9.5	----	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<9.5	----	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<9.5	----	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<9.5	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<9.5	----	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<9.5	----	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<9.5	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<19.0	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<9.5	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<9.5	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<9.5	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<9.5	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<9.5	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<9.5	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<9.5	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<9.5	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<9.5	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<9.5	----	----

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	NB03D	DUP01A	HSMB1D	Trip Spike #1	Trip Blank #1
Sampling date / time				29-Jul-2022 10:40	29-Jul-2022 10:45	29-Jul-2022 14:25	29-Jul-2022 00:00	29-Jul-2022 00:00	
Compound	CAS Number	LOR	Unit	EB2222776-001	EB2222776-002	EB2222776-003	EB2222776-004	EB2222776-005	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<9.5	----	----	
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<9.5	----	----	
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<4.8	----	----	
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<9.5	----	----	
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<9.5	----	----	
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<9.5	----	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<4.8	----	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<4.8	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	250	<20	
C10 - C14 Fraction	----	50	µg/L	250	280	7320	----	----	
C15 - C28 Fraction	----	100	µg/L	<100	<100	460	----	----	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	250	280	7780	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	30	300	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	30	190	<20	
>C10 - C16 Fraction	----	100	µg/L	250	280	7140	----	----	
>C16 - C34 Fraction	----	100	µg/L	<100	<100	400	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	250	280	7540	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	250	280	7140	----	----	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	<1	1	18	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	17	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	16	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	36	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	19	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	55	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	1	106	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	20	<5	
EP075(SIM)S: Phenolic Compound Surrogates									



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				NB03D	DUP01A	HSMB1D	Trip Spike #1	Trip Blank #1
Sampling date / time				29-Jul-2022 10:40	29-Jul-2022 10:45	29-Jul-2022 14:25	29-Jul-2022 00:00	29-Jul-2022 00:00
Compound	CAS Number	LOR	Unit	EB2222776-001	EB2222776-002	EB2222776-003	EB2222776-004	EB2222776-005
				Result	Result	Result	Result	Result
EP075(SIM)S: Phenolic Compound Surrogates - Continued								
Phenol-d6	13127-88-3	1.0	%	28.8	32.9	Not Determined	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	47.8	55.7	Not Determined	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	39.5	37.9	Not Determined	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	95.9	106	Not Determined	----	----
Anthracene-d10	1719-06-8	1.0	%	104	104	Not Determined	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	100.0	98.9	Not Determined	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	114	113	116	114	116
Toluene-D8	2037-26-5	2	%	93.6	93.1	95.9	94.4	95.7
4-Bromofluorobenzene	460-00-4	2	%	92.7	91.7	94.1	104	93.7



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB3D1	HSMB2S	HSMB3S1	ALS CONTROL SPIKE #1	----
Sampling date / time				02-Aug-2022 13:30	02-Aug-2022 11:00	02-Aug-2022 15:00	29-Jul-2022 00:00	----
Compound	CAS Number	LOR	Unit	EB2222776-006	EB2222776-007	EB2222776-008	EB2222776-009	-----
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.87	10.1	5.16	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	3450	6130	19700	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	1950	3310	13200	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	83	350	<1	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	526	105	4	----	----
Total Alkalinity as CaCO3	----	1	mg/L	609	455	4	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	2	<1	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	767	1620	7620	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	5	<1	529	----	----
Magnesium	7439-95-4	1	mg/L	2	<1	116	----	----
Sodium	7440-23-5	1	mg/L	718	1170	3410	----	----
Potassium	7440-09-7	1	mg/L	67	121	286	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	0.01	<0.01	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Boron	7440-42-8	0.05	mg/L	0.29	0.43	0.05	----	----
Barium	7440-39-3	0.001	mg/L	0.194	0.028	12.5	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.002	<0.001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Manganese	7439-96-5	0.001	mg/L	0.021	<0.001	16.8	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	0.005	0.001	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB3D1	HSMB2S	HSMB3S1	ALS CONTROL SPIKE #1	----
Sampling date / time				02-Aug-2022 13:30	02-Aug-2022 11:00	02-Aug-2022 15:00	29-Jul-2022 00:00	----
Compound	CAS Number	LOR	Unit	EB2222776-006	EB2222776-007	EB2222776-008	EB2222776-009	-----
				Result	Result	Result	Result	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.019	----	----
Molybdenum	7439-98-7	0.001	mg/L	0.004	0.022	<0.001	----	----
Strontium	7440-24-6	0.001	mg/L	0.652	0.152	24.5	----	----
Iron	7439-89-6	0.05	mg/L	0.26	0.22	292	----	----
Bromine	7726-95-6	0.1	mg/L	1.6	3.4	21.2	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
EK025SF: Free CN by Segmented Flow Analyser								
Free Cyanide	----	0.004	mg/L	0.009	0.063	<0.004	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	0.036	0.407	0.016	----	----
EK027: Thiocyanate								
Thiocyanate	463-56-9	0.1	mg/L	0.2	0.3	<1.0	----	----
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser								
Weak Acid Dissociable Cyanide	----	0.004	mg/L	<0.010	0.060	<0.004	----	----
EK030: Cyanide Amenable to Chlorination								
Cyanide amenable to chlorination	----	0.01	mg/L	0.02	0.14	<0.01	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	1.3	0.7	<0.1	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.65	3.13	0.55	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.04	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	<0.01	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.02	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.7	3.4	2.9	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	0.7	3.4	2.9	----	----
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	33.8	54.8	215	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB3D1	HSMB2S	HSMB3S1	ALS CONTROL SPIKE #1	----
Sampling date / time				02-Aug-2022 13:30	02-Aug-2022 11:00	02-Aug-2022 15:00	29-Jul-2022 00:00	----
Compound	CAS Number	LOR	Unit	EB2222776-006	EB2222776-007	EB2222776-008	EB2222776-009	-----
				Result	Result	Result	Result	----
EN055: Ionic Balance - Continued								
∅ Total Cations	----	0.01	meq/L	33.4	54.0	192	----	----
∅ Ionic Balance	----	0.01	%	0.66	0.78	5.77	----	----
EP033: C1 - C4 Hydrocarbon Gases								
Methane	74-82-8	10	µg/L	12100	6560	6730	----	----
Ethene	74-85-1	10	µg/L	<10	<10	<10	----	----
Ethane	74-84-0	10	µg/L	<10	<10	<10	----	----
Propene	115-07-1	10	µg/L	<10	<10	<10	----	----
Propane	74-98-6	10	µg/L	<10	<10	<10	----	----
Butene	25167-67-3	10	µg/L	<10	<10	<10	----	----
Butane	106-97-8	10	µg/L	<10	<10	<10	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	4.7	4.6	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	2.3	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HSMB3D1	HSMB2S	HSMB3S1	ALS CONTROL SPIKE #1	----
Sampling date / time				02-Aug-2022 13:30	02-Aug-2022 11:00	02-Aug-2022 15:00	29-Jul-2022 00:00	----	
Compound	CAS Number	LOR	Unit	EB2222776-006	EB2222776-007	EB2222776-008	EB2222776-009	-----	
				Result	Result	Result	Result	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----	
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----	
Benzo(a)pyrene	50-32-8	0.5	µg/L	<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	----	----	
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----	
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	2.3	<0.5	----	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	140	<20	300	----	
C10 - C14 Fraction	----	50	µg/L	<50	230	230	----	----	
C15 - C28 Fraction	----	100	µg/L	<100	1740	400	----	----	
C29 - C36 Fraction	----	50	µg/L	<50	180	80	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	2150	710	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	150	<20	360	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	30	<20	250	----	
>C10 - C16 Fraction	----	100	µg/L	<100	180	220	----	----	
>C16 - C34 Fraction	----	100	µg/L	<100	1840	410	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	140	<100	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	2160	630	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	180	220	----	----	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	6	105	4	18	----	
Toluene	108-88-3	2	µg/L	<2	11	<2	17	----	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	16	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	36	----	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	19	----	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	55	----	
^ Sum of BTEX	----	1	µg/L	6	116	4	106	----	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	20	----	
EP075(SIM)S: Phenolic Compound Surrogates									



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				HSMB3D1	HSMB2S	HSMB3S1	ALS CONTROL SPIKE #1	----
Sampling date / time				02-Aug-2022 13:30	02-Aug-2022 11:00	02-Aug-2022 15:00	29-Jul-2022 00:00	----
Compound	CAS Number	LOR	Unit	EB2222776-006	EB2222776-007	EB2222776-008	EB2222776-009	-----
				Result	Result	Result	Result	----
EP075(SIM)S: Phenolic Compound Surrogates - Continued								
Phenol-d6	13127-88-3	1.0	%	32.5	32.5	34.2	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	85.0	86.2	88.5	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	108	119	113	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	97.9	97.3	92.7	----	----
Anthracene-d10	1719-06-8	1.0	%	100	102	99.9	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	107	108	102	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	120	117	115	116	----
Toluene-D8	2037-26-5	2	%	95.2	95.4	94.2	92.3	----
4-Bromofluorobenzene	460-00-4	2	%	93.9	96.8	93.4	106	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	72
2-Chlorophenol-D4	93951-73-6	27	130
2,4,6-Tribromophenol	118-79-6	19	181
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	14	146
Anthracene-d10	1719-06-8	35	137
4-Terphenyl-d14	1718-51-0	36	154
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EP033: C1 - C4 Hydrocarbon Gases

CERTIFICATE OF ANALYSIS

Work Order : **EB2223390**
Client : **QLD DEPT OF RESOURCES**
Contact :
Address : 357 KUMMEROWS ROAD
 HOPELAND 4413
Telephone :
Project : LINC-115D Hopeland
Order number : 4500018640
C-O-C number : ----
Sampler :
Site : ----
Quote number : BN/158/22 V3
No. of samples received : 6
No. of samples analysed : 6

Page : 1 of 13
Laboratory : Environmental Division Brisbane
Contact :
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61-7-3243 7222
Date Samples Received : 11-Aug-2022 11:28
Date Analysis Commenced : 11-Aug-2022
Issue Date : 18-Aug-2022 14:26



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

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

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EK028SF (WAD Cyanide by SFA): Sample "HSMB5D", EB2223390-006 was diluted due to matrix interference. Limit of reporting adjusted accordingly.
- It is recognised that EK028SF (WAD Cyanide by SFA) is less than EK025SF (Free Cyanide) for sample "HSMB3D2", EB2223390-003. However, the difference is within experimental variation of the methods.
- EK057G (Nitrite as N): Some samples were diluted due to matrix interference. LOR adjusted accordingly.
- Ek027 (thiocyanate): Sample EB2223390-001,002,004 were diluted due to matrix interference. LOR adjusted accordingly.
- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- **C1-C4 Gases analysis is conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Bromine and Iodine results off the EG020 method code should be regarded as semi quantitative only.
- EG020F-Dissolved Metals by ICP-MS: The limit of reporting of some samples have been raised due to matrix interference.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB3S2	DUP02A	HSMB3D2	HSMB4S	HSMB4D
Sampling date / time				03-Aug-2022 14:00	03-Aug-2022 14:00	03-Aug-2022 11:00	04-Aug-2022 11:00	04-Aug-2022 10:00
Compound	CAS Number	LOR	Unit	EB2223390-001	EB2223390-002	EB2223390-003	EB2223390-004	EB2223390-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	5.40	5.46	8.29	6.02	9.99
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	26600	25700	1720	18200	957
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	17400	17200	1040	11600	570
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	32
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	37	40	444	61	25
Total Alkalinity as CaCO3	----	1	mg/L	37	40	445	61	57
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	<1	<1	<1	3
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	9800	9870	304	6420	266
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	652	662	11	308	28
Magnesium	7439-95-4	1	mg/L	192	189	2	40	<1
Sodium	7440-23-5	1	mg/L	4630	4640	322	2070	102
Potassium	7440-09-7	1	mg/L	437	444	101	2560	111
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.05	<0.05	<0.01	<0.01	0.08
Arsenic	7440-38-2	0.001	mg/L	<0.005	<0.005	<0.001	<0.001	0.002
Boron	7440-42-8	0.05	mg/L	0.11	0.09	0.17	0.12	0.08
Barium	7440-39-3	0.001	mg/L	16.3	16.2	0.500	3.61	0.136
Beryllium	7440-41-7	0.001	mg/L	<0.005	<0.005	<0.001	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001
Cobalt	7440-48-4	0.001	mg/L	<0.005	<0.005	<0.001	<0.001	<0.001
Chromium	7440-47-3	0.001	mg/L	<0.005	<0.005	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	<0.005	<0.005	<0.001	<0.001	<0.001
Manganese	7439-96-5	0.001	mg/L	4.79	4.73	0.076	4.90	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.005	<0.005	0.001	0.002	<0.001
Lead	7439-92-1	0.001	mg/L	<0.005	<0.005	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.05	<0.05	<0.01	<0.01	<0.01
Vanadium	7440-62-2	0.01	mg/L	<0.05	<0.05	<0.01	<0.01	<0.01



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HSMB3S2	DUP02A	HSMB3D2	HSMB4S	HSMB4D
Sampling date / time					03-Aug-2022 14:00	03-Aug-2022 14:00	03-Aug-2022 11:00	04-Aug-2022 11:00	04-Aug-2022 10:00
Compound	CAS Number	LOR	Unit		EB2223390-001	EB2223390-002	EB2223390-003	EB2223390-004	EB2223390-005
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Zinc	7440-66-6	0.005	mg/L		<0.025	<0.025	<0.005	<0.005	<0.005
Molybdenum	7439-98-7	0.001	mg/L		<0.005	<0.005	0.003	<0.001	0.002
Strontium	7440-24-6	0.001	mg/L		32.8	32.4	1.12	15.4	0.632
Iron	7439-89-6	0.05	mg/L		146	145	2.93	18.1	0.06
Bromine	7726-95-6	0.1	mg/L		23.6	22.7	0.6	15.8	0.4
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK025SF: Free CN by Segmented Flow Analyser									
Free Cyanide	----	0.004	mg/L		0.011	0.011	0.016	0.032	<0.004
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	0.004	mg/L		0.074	0.074	0.055	0.363	0.015
EK027: Thiocyanate									
Thiocyanate	463-56-9	0.1	mg/L		<1.0	<1.0	<0.1	<0.8	<0.1
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser									
Weak Acid Dissociable Cyanide	----	0.004	mg/L		0.011	0.011	0.015	0.035	<0.004
EK030: Cyanide Amenable to Chlorination									
Cyanide amenable to chlorination	----	0.01	mg/L		<0.01	<0.01	0.02	0.04	<0.01
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		0.1	0.1	0.4	0.3	<0.1
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		3.39	3.38	0.06	10.4	0.38
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.10	<0.10	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		<0.10	<0.10	<0.01	<0.01	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		4.9	4.8	0.6	13.2	0.5
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		4.9	4.8	0.6	13.2	0.5
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L		277	279	17.5	182	8.70



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB3S2	DUP02A	HSMB3D2	HSMB4S	HSMB4D
Sampling date / time				03-Aug-2022 14:00	03-Aug-2022 14:00	03-Aug-2022 11:00	04-Aug-2022 11:00	04-Aug-2022 10:00
Compound	CAS Number	LOR	Unit	EB2223390-001	EB2223390-002	EB2223390-003	EB2223390-004	EB2223390-005
				Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued								
∅ Total Cations	----	0.01	meq/L	261	262	17.3	174	8.67
∅ Ionic Balance	----	0.01	%	3.02	3.22	0.47	2.28	0.18
EP033: C1 - C4 Hydrocarbon Gases								
Methane	74-82-8	10	µg/L	16500	15700	16900	6180	12800
Ethene	74-85-1	10	µg/L	<10	<10	<10	<10	<10
Ethane	74-84-0	10	µg/L	<10	<10	<10	<10	<10
Propene	115-07-1	10	µg/L	<10	<10	<10	<10	<10
Propane	74-98-6	10	µg/L	<10	<10	<10	<10	<10
Butene	25167-67-3	10	µg/L	<10	<10	<10	<10	<10
Butane	106-97-8	10	µg/L	<10	<10	<10	<10	<10
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	2.9	2.8	<1.0	5.8	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	1.8	1.6	<1.0	1.7	<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
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

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HSMB3S2	DUP02A	HSMB3D2	HSMB4S	HSMB4D
Sampling date / time				03-Aug-2022 14:00	03-Aug-2022 14:00	03-Aug-2022 11:00	04-Aug-2022 11:00	04-Aug-2022 10:00	
Compound	CAS Number	LOR	Unit	EB2223390-001	EB2223390-002	EB2223390-003	EB2223390-004	EB2223390-005	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b+j)fluoranthene	205-99-2 205-82-3	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		----	µg/L	1.8	1.6	<0.5	1.7	<0.5	
^ Benzo(a)pyrene TEQ (zero)		----	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	20	20	20	340	<20	
C10 - C14 Fraction	----	50	µg/L	360	400	160	340	230	
C15 - C28 Fraction	----	100	µg/L	700	820	360	610	7880	
C29 - C36 Fraction	----	50	µg/L	90	120	100	140	420	
^ C10 - C36 Fraction (sum)		----	µg/L	1150	1340	620	1090	8530	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	30	30	40	350	<20	
^ C6 - C10 Fraction minus BTEX (F1)		C6_C10-BTEX	20	µg/L	20	40	30	<20	
>C10 - C16 Fraction	----	100	µg/L	360	410	<100	340	220	
>C16 - C34 Fraction	----	100	µg/L	710	850	420	650	8040	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	100	340	
^ >C10 - C40 Fraction (sum)		----	µg/L	1070	1260	420	1090	8600	
^ >C10 - C16 Fraction minus Naphthalene (F2)		----	µg/L	360	410	<100	340	220	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	8	8	3	293	3	
Toluene	108-88-3	2	µg/L	<2	<2	<2	23	<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		----	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX		----	µg/L	8	8	3	316	3	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
EP075(SIM)S: Phenolic Compound Surrogates									



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				HSMB3S2	DUP02A	HSMB3D2	HSMB4S	HSMB4D
Sampling date / time				03-Aug-2022 14:00	03-Aug-2022 14:00	03-Aug-2022 11:00	04-Aug-2022 11:00	04-Aug-2022 10:00
Compound	CAS Number	LOR	Unit	EB2223390-001	EB2223390-002	EB2223390-003	EB2223390-004	EB2223390-005
				Result	Result	Result	Result	Result
EP075(SIM)S: Phenolic Compound Surrogates - Continued								
Phenol-d6	13127-88-3	1.0	%	34.4	34.0	27.7	32.6	30.7
2-Chlorophenol-D4	93951-73-6	1.0	%	84.7	83.8	70.7	80.1	81.3
2,4,6-Tribromophenol	118-79-6	1.0	%	111	117	83.2	110	118
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	79.2	78.5	71.8	78.9	79.9
Anthracene-d10	1719-06-8	1.0	%	87.0	88.4	78.8	85.2	85.9
4-Terphenyl-d14	1718-51-0	1.0	%	77.3	78.5	70.5	74.9	75.7
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	113	99.1	108	104	96.2
Toluene-D8	2037-26-5	2	%	102	100.0	89.6	101	89.9
4-Bromofluorobenzene	460-00-4	2	%	114	113	99.6	112	96.0



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				HSMB5D	----	----	----	----
Sampling date / time				04-Aug-2022 13:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2223390-006	-----	-----	-----	-----
Result				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.76	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	2920	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	1690	----	----	----	----
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	56	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	537	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	593	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	642	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	2	----	----	----	----
Magnesium	7439-95-4	1	mg/L	<1	----	----	----	----
Sodium	7440-23-5	1	mg/L	615	----	----	----	----
Potassium	7440-09-7	1	mg/L	81	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Boron	7440-42-8	0.05	mg/L	0.29	----	----	----	----
Barium	7440-39-3	0.001	mg/L	0.149	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
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	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.013	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HSMB5D	----	----	----	----
Sampling date / time					04-Aug-2022 13:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB2223390-006	-----	-----	-----	-----
Result						----	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued									
Zinc	7440-66-6	0.005	mg/L		<0.005	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L		0.002	----	----	----	----
Strontium	7440-24-6	0.001	mg/L		0.381	----	----	----	----
Iron	7439-89-6	0.05	mg/L		0.86	----	----	----	----
Bromine	7726-95-6	0.1	mg/L		1.5	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EK025SF: Free CN by Segmented Flow Analyser									
Free Cyanide	----	0.004	mg/L		0.008	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	0.004	mg/L		0.116	----	----	----	----
EK027: Thiocyanate									
Thiocyanate	463-56-9	0.1	mg/L		0.1	----	----	----	----
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser									
Weak Acid Dissociable Cyanide	----	0.004	mg/L		<0.010	----	----	----	----
EK030: Cyanide Amenable to Chlorination									
Cyanide amenable to chlorination	----	0.01	mg/L		0.03	----	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		1.8	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		1.44	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		<0.01	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		1.2	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		1.2	----	----	----	----
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L		30.0	----	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				HSMB5D	----	----	----	----
				04-Aug-2022 13:00	----	----	----	----
<i>Compound</i>	<i>CAS Number</i>	<i>LOR</i>	<i>Unit</i>	EB2223390-006	-----	-----	-----	-----
				Result	----	----	----	----

EN055: Ionic Balance - Continued

∅ Total Cations	----	0.01	meq/L	28.9	----	----	----	----
∅ Ionic Balance	----	0.01	%	1.76	----	----	----	----

EP033: C1 - C4 Hydrocarbon Gases

Methane	74-82-8	10	µg/L	15200	----	----	----	----
Ethene	74-85-1	10	µg/L	<10	----	----	----	----
Ethane	74-84-0	10	µg/L	<10	----	----	----	----
Propene	115-07-1	10	µg/L	<10	----	----	----	----
Propane	74-98-6	10	µg/L	<10	----	----	----	----
Butene	25167-67-3	10	µg/L	<10	----	----	----	----
Butane	106-97-8	10	µg/L	<10	----	----	----	----

EP075(SIM)A: Phenolic Compounds

Phenol	108-95-2	1.0	µg/L	<1.0	----	----	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	----	----	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	----	----	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	7.0	----	----	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	----	----	----	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	----	----	----	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	----	----	----	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	----	----	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	----	----	----	----

EP075(SIM)B: Polynuclear Aromatic Hydrocarbons

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	----	----	----	----
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	----	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				HSMB5D	----	----	----	----
				04-Aug-2022 13:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2223390-006	-----	-----	-----	-----
				Result	----	----	----	----

EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued

Benzo(b+j)fluoranthene	205-99-2 205-82-3	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	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	----	----	----	----

EP080/071: Total Petroleum Hydrocarbons

C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----
C10 - C14 Fraction	----	50	µg/L	110	----	----	----	----
C15 - C28 Fraction	----	100	µg/L	140	----	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	250	----	----	----	----

EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions

C6 - C10 Fraction	C6_C10	20	µg/L	30	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	20	----	----	----	----
>C10 - C16 Fraction	----	100	µg/L	<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L	160	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	160	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	----	----	----	----

EP080: BTEXN

Benzene	71-43-2	1	µg/L	10	----	----	----	----
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	----	2	µg/L	<2	----	----	----	----
^ Sum of BTEX	----	1	µg/L	10	----	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----

EP075(SIM)S: Phenolic Compound Surrogates



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HSMB5D	----	----	----	----
Sampling date / time					04-Aug-2022 13:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB2223390-006	-----	-----	-----	-----
					Result	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates - Continued									
Phenol-d6	13127-88-3	1.0	%		36.8	----	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		94.5	----	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		112	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		89.5	----	----	----	----
Anthracene-d10	1719-06-8	1.0	%		93.9	----	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		80.3	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		130	----	----	----	----
Toluene-D8	2037-26-5	2	%		101	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		116	----	----	----	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	72
2-Chlorophenol-D4	93951-73-6	27	130
2,4,6-Tribromophenol	118-79-6	19	181
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	14	146
Anthracene-d10	1719-06-8	35	137
4-Terphenyl-d14	1718-51-0	36	154
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EP033: C1 - C4 Hydrocarbon Gases

CERTIFICATE OF ANALYSIS

Work Order : **EB2223831**
Client : **QLD DEPT OF RESOURCES**
Contact :
Address : 357 KUMMEROWS ROAD
 HOPELAND 4413
Telephone :
Project : LINC-115D Hopeland
Order number : 4500018640
C-O-C number : ----
Sampler :
Site : ----
Quote number : BN/158/22 V3
No. of samples received : 6
No. of samples analysed : 6

Page : 1 of 9
Laboratory : Environmental Division Brisbane
Contact :
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61-7-3243 7222
Date Samples Received : 16-Aug-2022 09:45
Date Analysis Commenced : 17-Aug-2022
Issue Date : 23-Aug-2022 13:53



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EK027 (Thiocyanate): Sample EB2223831-001,002,003 were diluted due to matrix interference. LOR adjusted accordingly.
- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- **Methane analysis is conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Bromine and Iodine results off the EG020 method code should be regarded as semi quantitative only.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB-7S	HSMB-7D	DUP03A	Trip Spike	Trip Blank 270706
Sampling date / time				12-Aug-2022 12:30	12-Aug-2022 16:00	12-Aug-2022 16:00	28-Jul-2022 00:00	28-Jul-2022 00:00
Compound	CAS Number	LOR	Unit	EB2223831-001	EB2223831-002	EB2223831-003	EB2223831-004	EB2223831-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.27	9.12	9.18	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	7720	9670	9660	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	4330	5360	5350	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	77	85	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	55	172	170	----	----
Total Alkalinity as CaCO3	----	1	mg/L	55	250	255	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	8	<1	<1	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	2550	3130	3160	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	16	4	4	----	----
Magnesium	7439-95-4	1	mg/L	3	6	6	----	----
Sodium	7440-23-5	1	mg/L	1520	1830	1820	----	----
Potassium	7440-09-7	1	mg/L	138	379	376	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Boron	7440-42-8	0.05	mg/L	0.30	0.20	0.20	----	----
Barium	7440-39-3	0.001	mg/L	1.14	0.831	0.796	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.002	0.002	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Manganese	7439-96-5	0.001	mg/L	0.697	0.029	0.027	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	0.011	0.011	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB-7S	HSMB-7D	DUP03A	Trip Spike	Trip Blank 270706
Sampling date / time				12-Aug-2022 12:30	12-Aug-2022 16:00	12-Aug-2022 16:00	28-Jul-2022 00:00	28-Jul-2022 00:00
Compound	CAS Number	LOR	Unit	EB2223831-001	EB2223831-002	EB2223831-003	EB2223831-004	EB2223831-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.007	----	----
Molybdenum	7439-98-7	0.001	mg/L	0.007	0.040	0.036	----	----
Strontium	7440-24-6	0.001	mg/L	1.87	2.85	2.76	----	----
Iron	7439-89-6	0.05	mg/L	3.74	0.28	0.25	----	----
Bromine	7726-95-6	0.1	mg/L	24.6	17.8	16.5	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
EK025SF: Free CN by Segmented Flow Analyser								
Free Cyanide	----	0.004	mg/L	<0.004	0.104	0.112	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	0.006	0.649	0.656	----	----
EK027: Thiocyanate								
Thiocyanate	463-56-9	0.1	mg/L	<0.5	<0.5	<0.5	----	----
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser								
Weak Acid Dissociable Cyanide	----	0.004	mg/L	<0.004	0.116	0.115	----	----
EK030: Cyanide Amenable to Chlorination								
Cyanide amenable to chlorination	----	0.01	mg/L	<0.01	0.23	0.29	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.6	0.7	0.7	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	1.86	5.89	5.79	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<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	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.8	6.0	6.0	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	1.8	6.0	6.0	----	----
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	73.2	93.3	94.2	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB-7S	HSMB-7D	DUP03A	Trip Spike	Trip Blank 270706
Sampling date / time				12-Aug-2022 12:30	12-Aug-2022 16:00	12-Aug-2022 16:00	28-Jul-2022 00:00	28-Jul-2022 00:00
Compound	CAS Number	LOR	Unit	EB2223831-001	EB2223831-002	EB2223831-003	EB2223831-004	EB2223831-005
				Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued								
∅ Total Cations	----	0.01	meq/L	70.7	90.0	89.5	----	----
∅ Ionic Balance	----	0.01	%	1.74	1.80	2.59	----	----
EP033: C1 - C4 Hydrocarbon Gases								
Methane	74-82-8	10	µg/L	18100	17900	15200	----	----
Ethene	74-85-1	10	µg/L	<10	<10	<10	----	----
Ethane	74-84-0	10	µg/L	<10	<10	<10	----	----
Propene	115-07-1	10	µg/L	<10	<10	<10	----	----
Propane	74-98-6	10	µg/L	<10	<10	<10	----	----
Butene	25167-67-3	10	µg/L	<10	<10	<10	----	----
Butane	106-97-8	10	µg/L	<10	<10	<10	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	2.0	2.1	2.1	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HSMB-7S	HSMB-7D	DUP03A	Trip Spike	Trip Blank 270706
Sampling date / time					12-Aug-2022 12:30	12-Aug-2022 16:00	12-Aug-2022 16:00	28-Jul-2022 00:00	28-Jul-2022 00:00
Compound	CAS Number	LOR	Unit	EB2223831-001	EB2223831-002	EB2223831-003	EB2223831-004	EB2223831-005	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----	
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----	
Benzo(a)pyrene	50-32-8	0.5	µg/L	<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	----	----	
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----	
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	20	<20	210	<20	
C10 - C14 Fraction	----	50	µg/L	<50	80	50	----	----	
C15 - C28 Fraction	----	100	µg/L	120	180	130	----	----	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	120	260	180	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	20	20	260	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	150	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	----	----	
>C16 - C34 Fraction	----	100	µg/L	120	170	130	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	120	170	130	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	----	----	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	12	11	18	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	18	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	18	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	36	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	20	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	56	<2	
^ Sum of BTEX	----	1	µg/L	<1	12	11	110	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	18	<5	
EP075(SIM)S: Phenolic Compound Surrogates									



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				HSMB-7S	HSMB-7D	DUP03A	Trip Spike	Trip Blank 270706
Sampling date / time				12-Aug-2022 12:30	12-Aug-2022 16:00	12-Aug-2022 16:00	28-Jul-2022 00:00	28-Jul-2022 00:00
Compound	CAS Number	LOR	Unit	EB2223831-001	EB2223831-002	EB2223831-003	EB2223831-004	EB2223831-005
				Result	Result	Result	Result	Result
EP075(SIM)S: Phenolic Compound Surrogates - Continued								
Phenol-d6	13127-88-3	1.0	%	22.6	28.0	28.2	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	44.5	66.8	65.3	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	36.8	79.3	77.5	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	62.0	84.2	82.7	----	----
Anthracene-d10	1719-06-8	1.0	%	71.2	88.9	89.0	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	71.7	84.8	86.2	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	117	102	112	77.2	108
Toluene-D8	2037-26-5	2	%	98.4	97.0	98.7	97.1	95.5
4-Bromofluorobenzene	460-00-4	2	%	111	114	112	105	109



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	ALS CONTROL SPIKE	----	----	----	----
Sampling date / time					28-Jul-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB2223831-006	-----	-----	-----	-----
Result						----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		230	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		280	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		180	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		16	----	----	----	----
Toluene	108-88-3	2	µg/L		16	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		17	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		34	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		18	----	----	----	----
^ Total Xylenes	----	2	µg/L		52	----	----	----	----
^ Sum of BTEX	----	1	µg/L		101	----	----	----	----
Naphthalene	91-20-3	5	µg/L		17	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		97.6	----	----	----	----
Toluene-D8	2037-26-5	2	%		106	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		114	----	----	----	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	72
2-Chlorophenol-D4	93951-73-6	27	130
2,4,6-Tribromophenol	118-79-6	19	181
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	14	146
Anthracene-d10	1719-06-8	35	137
4-Terphenyl-d14	1718-51-0	36	154
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EP033: C1 - C4 Hydrocarbon Gases

CERTIFICATE OF ANALYSIS

Work Order : **EB2230158**
Client : **QLD DEPT OF RESOURCES**
Contact :
Address : 357 KUMMEROWS ROA
HOPELAND 4413
Telephone :
Project : LINC-115DE Hopeland
Order number : 4500018640
C-O-C number : ----
Sampler :
Site : ----
Quote number : BN/158/22 V4
No. of samples received : 6
No. of samples analysed : 6

Page : 1 of 17
Laboratory : Environmental Division Brisbane
Contact :
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61-7-3243 7222
Date Samples Received : 13-Oct-2022 09:45
Date Analysis Commenced : 13-Oct-2022
Issue Date : 25-Oct-2022 15:29



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD
Sarah Ashworth	Laboratory Manager - Brisbane	Brisbane Organics, Stafford, QLD
Vincent Muller		Brisbane Inorganics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EK027 (Thiocyanate): Samples were diluted due to matrix interference. LOR adjusted accordingly.
- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO2 and Fluoride to the Anions.
- **Methane analysis is conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Bromine results from the EG020 method code should be regarded as semi-quantitative only.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				NB01D	NB01S	NB02D	NB02S	NB03D
Sampling date / time				10-Oct-2022 16:00	10-Oct-2022 13:15	11-Oct-2022 10:40	11-Oct-2022 11:45	11-Oct-2022 15:15
Compound	CAS Number	LOR	Unit	EB2230158-001	EB2230158-002	EB2230158-003	EB2230158-004	EB2230158-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.72	7.98	8.53	11.0	9.17
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	3970	7920	5450	21300	1670
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	2180	3990	3000	12900	929
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO ₃	DMO-210-001	1	mg/L	<1	<1	<1	108	<1
Carbonate Alkalinity as CaCO ₃	3812-32-6	1	mg/L	62	<1	83	69	77
Bicarbonate Alkalinity as CaCO ₃	71-52-3	1	mg/L	801	242	1550	<1	321
Total Alkalinity as CaCO ₃	----	1	mg/L	864	242	1630	178	398
ED041G: Sulfate (Turbidimetric) as SO₄ 2- by DA								
Sulfate as SO ₄ - Turbidimetric	14808-79-8	1	mg/L	<1	<1	<1	11	<1
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	822	2240	840	7150	303
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	5	68	9	679	2
Magnesium	7439-95-4	1	mg/L	2	32	3	<1	<1
Sodium	7440-23-5	1	mg/L	827	1280	1130	3350	326
Potassium	7440-09-7	1	mg/L	16	65	21	143	20
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	<0.01	0.02	<0.01
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	7440-42-8	0.05	mg/L	0.31	0.23	0.36	0.29	0.23
Barium	7440-39-3	0.001	mg/L	0.401	2.74	0.696	8.24	0.089
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	0.002	<0.001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	0.013	<0.001
Manganese	7439-96-5	0.001	mg/L	0.011	0.063	0.006	<0.001	0.062
Nickel	7440-02-0	0.001	mg/L	<0.001	0.004	<0.001	0.027	0.002
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	0.002	0.010
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01



Analytical Results

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Compound	CAS Number	LOR	Unit	EB2230158-001	EB2230158-002	EB2230158-003	EB2230158-004	EB2230158-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Zinc	7440-66-6	0.005	mg/L	<0.005	0.005	<0.005	<0.005	0.007
Molybdenum	7439-98-7	0.001	mg/L	0.013	0.018	0.012	0.090	0.033
Strontium	7440-24-6	0.001	mg/L	0.973	5.59	1.49	27.2	0.168
Iron	7439-89-6	0.05	mg/L	0.22	4.88	0.50	0.27	0.18
Bromine	7726-95-6	0.1	mg/L	1.7	5.4	1.8	17.4	0.6
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK025SF: Free CN by Segmented Flow Analyser								
Free Cyanide	----	0.004	mg/L	<0.004	<0.004	<0.004	0.226	0.062
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	0.007	0.023	0.007	0.490	0.224
EK027: Thiocyanate								
Thiocyanate	463-56-9	0.1	mg/L	<0.1	<0.4	<0.1	<1.0	<0.1
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser								
Weak Acid Dissociable Cyanide	----	0.004	mg/L	<0.004	<0.004	<0.004	0.254	0.064
EK030: Cyanide Amenable to Chlorination								
Cyanide amenable to chlorination	----	0.01	mg/L	<0.01	<0.01	<0.01	0.30	0.12
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.9	0.2	0.5	<0.1	0.7
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.78	1.15	0.87	5.40	2.75
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<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	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.9	1.7	1.1	7.2	3.6
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	0.9	1.7	1.1	7.2	3.6
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	40.4	68.0	56.3	205	16.5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				NB01D	NB01S	NB02D	NB02S	NB03D
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Compound	CAS Number	LOR	Unit	EB2230158-001	EB2230158-002	EB2230158-003	EB2230158-004	EB2230158-005
				Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued								
∅ Total Cations	----	0.01	meq/L	36.8	63.4	50.4	183	14.8
∅ Ionic Balance	----	0.01	%	4.73	3.54	5.51	5.72	5.46
EP033: C1 - C4 Hydrocarbon Gases								
Methane	74-82-8	10	µg/L	21800	18700	18500	16000	16300
Ethene	74-85-1	10	µg/L	<10	<10	<10	<10	<10
Ethane	74-84-0	10	µg/L	15	15	22	10	<10
Propene	115-07-1	10	µg/L	<10	<10	<10	<10	<10
Propane	74-98-6	10	µg/L	<10	<10	<10	<10	<10
Butene	25167-67-3	10	µg/L	<10	<10	<10	<10	<10
Butane	106-97-8	10	µg/L	<10	<10	<10	<10	<10
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	7.4	<1.0	5.0	5.8
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	4.6	<2.0	15.1	3.6
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
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
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



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				NB01D	NB01S	NB02D	NB02S	NB03D
Sampling date / time				10-Oct-2022 16:00	10-Oct-2022 13:15	11-Oct-2022 10:40	11-Oct-2022 11:45	11-Oct-2022 15:15
Compound	CAS Number	LOR	Unit	EB2230158-001	EB2230158-002	EB2230158-003	EB2230158-004	EB2230158-005
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(b+j)fluoranthene	205-99-2 205-82-3	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
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	6220	30	30	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	320	380
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	250	130
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	80	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	650	510
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	6030	20	30	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	140	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	340	390
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	270	120
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	610	510
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	----	<100	340	390
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	1	4760	22	15	<1
Toluene	108-88-3	2	µg/L	<2	957	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	40	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	98	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	37	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	135	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	1	5890	22	15	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	NB01D	NB01S	NB02D	NB02S	NB03D
Sampling date / time					10-Oct-2022 16:00	10-Oct-2022 13:15	11-Oct-2022 10:40	11-Oct-2022 11:45	11-Oct-2022 15:15
Compound	CAS Number	LOR	Unit		EB2230158-001	EB2230158-002	EB2230158-003	EB2230158-004	EB2230158-005
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		----	----	----	----	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		----	----	----	----	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		----	----	----	----	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		----	----	----	----	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		----	----	----	----	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		----	----	----	----	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		----	----	----	----	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		----	----	----	----	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		----	----	----	----	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		----	----	----	----	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		----	----	----	----	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		----	----	----	----	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		----	----	----	----	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		----	----	----	----	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		----	----	----	----	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		----	----	----	----	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		----	----	----	----	<0.05
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		----	----	----	----	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		----	----	----	----	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		----	----	----	----	<0.05



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Compound	CAS Number	LOR	Unit	EB2230158-001	EB2230158-002	EB2230158-003	EB2230158-004	EB2230158-005
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	----	----	----	----	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	----	----	----	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	----	----	----	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	----	----	----	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	----	----	----	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	----	----	----	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	----	----	----	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	----	----	----	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	----	----	----	----	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	----	----	----	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	----	----	----	<0.01
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	40.9	36.5	35.5	40.0	29.3
2-Chlorophenol-D4	93951-73-6	1.0	%	101	86.3	74.4	88.1	48.1
2,4,6-Tribromophenol	118-79-6	1.0	%	84.1	79.3	36.5	79.0	20.6
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	88.0	80.2	82.4	85.9	77.3
Anthracene-d10	1719-06-8	1.0	%	120	124	96.5	104	96.8
4-Terphenyl-d14	1718-51-0	1.0	%	117	121	96.8	97.5	92.0
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	110	115	96.1	112	97.9
Toluene-D8	2037-26-5	2	%	99.9	95.4	96.5	98.9	97.3



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				NB01D	NB01S	NB02D	NB02S	NB03D
Sampling date / time				10-Oct-2022 16:00	10-Oct-2022 13:15	11-Oct-2022 10:40	11-Oct-2022 11:45	11-Oct-2022 15:15
Compound	CAS Number	LOR	Unit	EB2230158-001	EB2230158-002	EB2230158-003	EB2230158-004	EB2230158-005
				Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued								
4-Bromofluorobenzene	460-00-4	2	%	118	95.6	96.4	98.2	115
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	----	----	----	----	107
13C8-PFOA	----	0.02	%	----	----	----	----	99.3



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	DUP01A	----	----	----	----
Sampling date / time				11-Oct-2022 15:15	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2230158-006	-----	-----	-----	-----
Result				----	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	9.15	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1630	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	904	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO ₃	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO ₃	3812-32-6	1	mg/L	76	----	----	----	----
Bicarbonate Alkalinity as CaCO ₃	71-52-3	1	mg/L	322	----	----	----	----
Total Alkalinity as CaCO ₃	----	1	mg/L	398	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO₄ 2- by DA								
Sulfate as SO ₄ - Turbidimetric	14808-79-8	1	mg/L	<1	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	303	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	2	----	----	----	----
Magnesium	7439-95-4	1	mg/L	<1	----	----	----	----
Sodium	7440-23-5	1	mg/L	331	----	----	----	----
Potassium	7440-09-7	1	mg/L	20	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Boron	7440-42-8	0.05	mg/L	0.23	----	----	----	----
Barium	7440-39-3	0.001	mg/L	0.086	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
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	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.064	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	0.002	----	----	----	----
Lead	7439-92-1	0.001	mg/L	0.011	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	DUP01A	----	----	----	----
Sampling date / time					11-Oct-2022 15:15	----	----	----	----
Compound	CAS Number	LOR	Unit		EB2230158-006	-----	-----	-----	-----
				Result	----	----	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued									
Zinc	7440-66-6	0.005	mg/L		<0.005	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L		0.029	----	----	----	----
Strontium	7440-24-6	0.001	mg/L		0.169	----	----	----	----
Iron	7439-89-6	0.05	mg/L		0.21	----	----	----	----
Bromine	7726-95-6	0.1	mg/L		0.6	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EK025SF: Free CN by Segmented Flow Analyser									
Free Cyanide	----	0.004	mg/L		0.063	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	0.004	mg/L		0.223	----	----	----	----
EK027: Thiocyanate									
Thiocyanate	463-56-9	0.1	mg/L		0.1	----	----	----	----
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser									
Weak Acid Dissociable Cyanide	----	0.004	mg/L		0.065	----	----	----	----
EK030: Cyanide Amenable to Chlorination									
Cyanide amenable to chlorination	----	0.01	mg/L		0.11	----	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		0.7	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		2.71	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		<0.01	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		3.7	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		3.7	----	----	----	----
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L		16.5	----	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				DUP01A	----	----	----	----
Sampling date / time				11-Oct-2022 15:15	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2230158-006	-----	-----	-----	-----
Result				----	----	----	----	----

EN055: Ionic Balance - Continued

∅ Total Cations	----	0.01	meq/L	15.0	----	----	----	----
∅ Ionic Balance	----	0.01	%	4.73	----	----	----	----

EP033: C1 - C4 Hydrocarbon Gases

Methane	74-82-8	10	µg/L	14600	----	----	----	----
Ethene	74-85-1	10	µg/L	<10	----	----	----	----
Ethane	74-84-0	10	µg/L	<10	----	----	----	----
Propene	115-07-1	10	µg/L	<10	----	----	----	----
Propane	74-98-6	10	µg/L	<10	----	----	----	----
Butene	25167-67-3	10	µg/L	<10	----	----	----	----
Butane	106-97-8	10	µg/L	<10	----	----	----	----

EP075(SIM)A: Phenolic Compounds

Phenol	108-95-2	1.0	µg/L	6.4	----	----	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	----	----	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	----	----	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	4.0	----	----	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	----	----	----	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	----	----	----	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	----	----	----	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	----	----	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	----	----	----	----

EP075(SIM)B: Polynuclear Aromatic Hydrocarbons

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	----	----	----	----
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	----	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				DUP01A	----	----	----	----
				11-Oct-2022 15:15	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2230158-006	-----	-----	-----	-----
				Result	----	----	----	----

EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued

Benzo(b+j)fluoranthene	205-99-2 205-82-3	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	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	----	----	----	----

EP080/071: Total Petroleum Hydrocarbons

C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----
C10 - C14 Fraction	----	50	µg/L	420	----	----	----	----
C15 - C28 Fraction	----	100	µg/L	130	----	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	550	----	----	----	----

EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions

C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----
>C10 - C16 Fraction	----	100	µg/L	420	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L	130	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	550	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	420	----	----	----	----

EP080: BTEXN

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	----	2	µg/L	<2	----	----	----	----
^ Sum of BTEX	----	1	µg/L	<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----

EP231A: Perfluoroalkyl Sulfonic Acids



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				DUP01A	----	----	----	----
Sampling date / time				11-Oct-2022 15:15	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2230158-006	-----	-----	-----	-----
Result				----	----	----	----	----

EP231A: Perfluoroalkyl Sulfonic Acids - Continued

Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----

EP231B: Perfluoroalkyl Carboxylic Acids

Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----

EP231C: Perfluoroalkyl Sulfonamides

Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	DUP01A	----	----	----	----
Sampling date / time					11-Oct-2022 15:15	----	----	----	----
Compound	CAS Number	LOR	Unit		EB2230158-006	-----	-----	-----	-----
					Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	----	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		31.9	----	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		52.1	----	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		21.7	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		79.7	----	----	----	----
Anthracene-d10	1719-06-8	1.0	%		97.5	----	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		91.4	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		97.0	----	----	----	----
Toluene-D8	2037-26-5	2	%		96.8	----	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				DUP01A	----	----	----	----
Sampling date / time				11-Oct-2022 15:15	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2230158-006	-----	-----	-----	-----
Result					----	----	----	----
EP080S: TPH(V)/BTEX Surrogates - Continued								
4-Bromofluorobenzene	460-00-4	2	%	113	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	97.4	----	----	----	----
13C8-PFOA	----	0.02	%	106	----	----	----	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	72
2-Chlorophenol-D4	93951-73-6	27	130
2,4,6-Tribromophenol	118-79-6	19	181
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	14	146
Anthracene-d10	1719-06-8	35	137
4-Terphenyl-d14	1718-51-0	36	154
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EP033: C1 - C4 Hydrocarbon Gases

CERTIFICATE OF ANALYSIS

Work Order : **EB2230270**
Client : **QLD DEPT OF RESOURCES**
Contact :
Address : 357 KUMMEROWS ROAD
 HOPELAND 4413
Telephone :
Project : LINC-115E Hopeland
Order number : 4500019052
C-O-C number : ----
Sampler :
Site : ----
Quote number : BN/158/22 V4
No. of samples received : 3
No. of samples analysed : 3

Page : 1 of 8
Laboratory : Environmental Division Brisbane
Contact :
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61-7-3243 7222
Date Samples Received : 14-Oct-2022 09:50
Date Analysis Commenced : 14-Oct-2022
Issue Date : 25-Oct-2022 18:33



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

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

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- It is recognised that EK028SF (WAD Cyanide by SFA) is less than EK025SF (Free Cyanide) for sample "HSMB1S", EB2230270-001. However, the difference is within experimental variation of the methods.
- EK055G (Ammonia as N): Sample EB2230270_002 (HSMB1D) was diluted due to matrix interference. LOR adjusted accordingly.
- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H⁺ to the Cations and Nitrate, SiO₂ and Fluoride to the Anions.
- TDS by method EA-015 may bias high for sample 2(HSMB1D) due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- **C1 - C4 Gas analysis is conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Ionic Balance out of acceptable limits due to analytes not quantified in this report.
- EG020F (Dissolved Metals by ICP-MS): Limit of reporting raised for HSMB1D (EB2230270-002) due to matrix interference.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB1S	HSMB1D	NB04D(S)	----	----
Sampling date / time				12-Oct-2022 12:00	12-Oct-2022 13:40	12-Oct-2022 16:10	----	----
Compound	CAS Number	LOR	Unit	EB2230270-001	EB2230270-002	EB2230270-003	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	5.30	5.85	7.91	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	17000	617	10200	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	10700	494	5690	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	44	118	72	----	----
Total Alkalinity as CaCO3	----	1	mg/L	44	118	72	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	<1	<1	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	5500	85	3350	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	176	40	60	----	----
Magnesium	7439-95-4	1	mg/L	43	2	18	----	----
Sodium	7440-23-5	1	mg/L	2240	38	1880	----	----
Potassium	7440-09-7	1	mg/L	581	16	36	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.05	<0.01	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.005	0.002	----	----
Boron	7440-42-8	0.05	mg/L	0.10	<0.05	0.32	----	----
Barium	7440-39-3	0.001	mg/L	3.58	0.410	2.46	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.005	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0005	<0.0001	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.005	<0.001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.005	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.005	<0.001	----	----
Manganese	7439-96-5	0.001	mg/L	14.8	1.80	0.067	----	----
Nickel	7440-02-0	0.001	mg/L	0.002	<0.005	<0.001	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	0.029	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.05	<0.01	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.05	<0.01	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HSMB1S	HSMB1D	NB04D(S)	----	----
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Compound	CAS Number	LOR	Unit		EB2230270-001	EB2230270-002	EB2230270-003	-----	-----
					Result	Result	Result	----	----
EG020F: Dissolved Metals by ICP-MS - Continued									
Zinc	7440-66-6	0.005	mg/L		0.037	<0.025	0.011	----	----
Molybdenum	7439-98-7	0.001	mg/L		<0.001	<0.005	0.012	----	----
Strontium	7440-24-6	0.001	mg/L		7.74	1.20	5.03	----	----
Iron	7439-89-6	0.05	mg/L		462	67.7	0.08	----	----
Bromine	7726-95-6	0.1	mg/L		13.2	<0.5	8.2	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	----	----
EK025SF: Free CN by Segmented Flow Analyser									
Free Cyanide	----	0.004	mg/L		0.065	<0.004	0.004	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	0.004	mg/L		0.323	<0.004	0.012	----	----
EK027: Thiocyanate									
Thiocyanate	463-56-9	0.1	mg/L		<1.0	0.1	<0.5	----	----
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser									
Weak Acid Dissociable Cyanide	----	0.004	mg/L		0.063	<0.004	0.006	----	----
EK030: Cyanide Amenable to Chlorination									
Cyanide amenable to chlorination	----	0.01	mg/L		0.06	<0.01	0.01	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		0.1	<0.1	0.4	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		2.77	<0.10	1.10	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	<0.01	<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	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	<0.01	<0.01	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		7.3	0.2	1.1	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		7.3	0.2	1.1	----	----
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L		156	4.76	95.9	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB1S	HSMB1D	NB04D(S)	----	----
Sampling date / time				12-Oct-2022 12:00	12-Oct-2022 13:40	12-Oct-2022 16:10	----	----
Compound	CAS Number	LOR	Unit	EB2230270-001	EB2230270-002	EB2230270-003	-----	-----
				Result	Result	Result	----	----
EN055: Ionic Balance - Continued								
∅ Total Cations	----	0.01	meq/L	142	4.29	----	----	----
∅ Total Cations	----	0.01	meq/L	----	----	87.2	----	----
∅ Ionic Balance	----	0.01	%	4.81	5.16	----	----	----
∅ Ionic Balance	----	0.01	%	----	----	4.79	----	----
EP033: C1 - C4 Hydrocarbon Gases								
Methane	74-82-8	10	µg/L	18500	10600	8150	----	----
Ethene	74-85-1	10	µg/L	<10	<10	<10	----	----
Ethane	74-84-0	10	µg/L	<10	<10	<10	----	----
Propene	115-07-1	10	µg/L	<10	<10	<10	----	----
Propane	74-98-6	10	µg/L	<10	<10	<10	----	----
Butene	25167-67-3	10	µg/L	<10	<10	<10	----	----
Butane	106-97-8	10	µg/L	<10	<10	<10	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	6.6	1.4	<1.0	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	2.0	2.0	5.3	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	1.5	<1.0	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB1S	HSMB1D	NB04D(S)	----	----
Sampling date / time				12-Oct-2022 12:00	12-Oct-2022 13:40	12-Oct-2022 16:10	----	----
Compound	CAS Number	LOR	Unit	EB2230270-001	EB2230270-002	EB2230270-003	-----	-----
				Result	Result	Result	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<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	----	----
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	1.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	150	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	550	7340	<50	----	----
C15 - C28 Fraction	----	100	µg/L	1220	930	<100	----	----
C29 - C36 Fraction	----	50	µg/L	640	80	<50	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	2410	8350	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	150	30	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	30	30	<20	----	----
>C10 - C16 Fraction	----	100	µg/L	540	7200	<100	----	----
>C16 - C34 Fraction	----	100	µg/L	1680	840	<100	----	----
>C34 - C40 Fraction	----	100	µg/L	220	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	2440	8040	<100	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	540	7200	<100	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	109	1	<1	----	----
Toluene	108-88-3	2	µg/L	8	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L	2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L	119	1	<1	----	----
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HSMB1S	HSMB1D	NB04D(S)	----	----
Sampling date / time					12-Oct-2022 12:00	12-Oct-2022 13:40	12-Oct-2022 16:10	----	----
Compound	CAS Number	LOR	Unit		EB2230270-001	EB2230270-002	EB2230270-003	-----	-----
					Result	Result	Result	----	----
EP080: BTEXN - Continued									
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		25.6	35.9	29.5	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		57.2	73.0	63.3	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		65.4	72.6	39.3	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		66.1	97.8	64.8	----	----
Anthracene-d10	1719-06-8	1.0	%		82.8	90.2	77.5	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		81.8	86.7	79.0	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		124	98.0	114	----	----
Toluene-D8	2037-26-5	2	%		91.0	96.6	90.0	----	----
4-Bromofluorobenzene	460-00-4	2	%		107	92.3	107	----	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	72
2-Chlorophenol-D4	93951-73-6	27	130
2,4,6-Tribromophenol	118-79-6	19	181
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	14	146
Anthracene-d10	1719-06-8	35	137
4-Terphenyl-d14	1718-51-0	36	154
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EP033: C1 - C4 Hydrocarbon Gases

CERTIFICATE OF ANALYSIS

Work Order : **EB2230335**
Client : **QLD DEPT OF RESOURCES**
Contact :
Address : 357 KUMMEROWS ROAD
 HOPELAND 4413
Telephone :
Project : LINC-115E Hopeland
Order number : 4500019052
C-O-C number : ----
Sampler :
Site : ----
Quote number : BN/158/22 V4
No. of samples received : 5
No. of samples analysed : 5

Page : 1 of 8
Laboratory : Environmental Division Brisbane
Contact :
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61-7-3243 7222
Date Samples Received : 14-Oct-2022 19:20
Date Analysis Commenced : 15-Oct-2022
Issue Date : 26-Oct-2022 18:14



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

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Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD
Sarah Ashworth	Laboratory Manager - Brisbane	Brisbane Organics, Stafford, QLD



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Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- It is recognised that EK028SF (WAD Cyanide by SFA) is less than EK025SF (Free Cyanide) for sample "HSMB2S", EB2230335-001. However, the difference is within experimental variation of the methods.
- EK027 (Thiocyanate): Samples 001,002 were diluted due to matrix interference. LOR adjusted accordingly.
- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO2 and Fluoride to the Anions.
- **Methane analysis is conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Bromine results from the EG020 method code should be regarded as semi-quantitative only.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB2S	NB05S	Trip Spike (from ALS Chinchilla)	Trip Blank (from ALS Chinchilla)	ALS CONTROL SPIKE 2
Sampling date / time				13-Oct-2022 11:35	13-Oct-2022 14:20	10-Oct-2022 00:00	13-Oct-2022 00:00	10-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	EB2230335-001	EB2230335-002	EB2230335-003	EB2230335-004	EB2230335-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	10.1	10.9	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	5960	8990	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	3340	4980	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	66	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	380	96	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	136	<1	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	516	163	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	3	8	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	1570	2930	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	<1	22	----	----	----
Magnesium	7439-95-4	1	mg/L	<1	<1	----	----	----
Sodium	7440-23-5	1	mg/L	1230	1790	----	----	----
Potassium	7440-09-7	1	mg/L	123	66	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.01	0.07	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Boron	7440-42-8	0.05	mg/L	0.52	0.48	----	----	----
Barium	7440-39-3	0.001	mg/L	0.025	1.04	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Cobalt	7440-48-4	0.001	mg/L	0.001	<0.001	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	0.001	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.002	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	0.005	0.003	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	0.353	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB2S	NB05S	Trip Spike (from ALS Chinchilla)	Trip Blank (from ALS Chinchilla)	ALS CONTROL SPIKE 2
Sampling date / time				13-Oct-2022 11:35	13-Oct-2022 14:20	10-Oct-2022 00:00	13-Oct-2022 00:00	10-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	EB2230335-001	EB2230335-002	EB2230335-003	EB2230335-004	EB2230335-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	0.018	0.092	----	----	----
Strontium	7440-24-6	0.001	mg/L	0.151	2.54	----	----	----
Iron	7439-89-6	0.05	mg/L	0.20	0.06	----	----	----
Bromine	7726-95-6	0.1	mg/L	3.9	6.9	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EK025SF: Free CN by Segmented Flow Analyser								
Free Cyanide	----	0.004	mg/L	0.084	0.041	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	0.478	0.095	----	----	----
EK027: Thiocyanate								
Thiocyanate	463-56-9	0.1	mg/L	<0.2	<0.4	----	----	----
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser								
Weak Acid Dissociable Cyanide	----	0.004	mg/L	0.081	0.041	----	----	----
EK030: Cyanide Amenable to Chlorination								
Cyanide amenable to chlorination	----	0.01	mg/L	0.16	0.06	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.8	0.4	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	3.08	1.75	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	4.1	2.3	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	4.1	2.3	----	----	----
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	54.6	86.1	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB2S	NB05S	Trip Spike (from ALS Chinchilla)	Trip Blank (from ALS Chinchilla)	ALS CONTROL SPIKE 2
Sampling date / time				13-Oct-2022 11:35	13-Oct-2022 14:20	10-Oct-2022 00:00	13-Oct-2022 00:00	10-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	EB2230335-001	EB2230335-002	EB2230335-003	EB2230335-004	EB2230335-005
				Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued								
∅ Total Cations	----	0.01	meq/L	56.6	80.6	----	----	----
∅ Ionic Balance	----	0.01	%	1.78	3.26	----	----	----
EP033: C1 - C4 Hydrocarbon Gases								
Methane	74-82-8	10	µg/L	5520	15800	----	----	----
Ethene	74-85-1	10	µg/L	<10	<10	----	----	----
Ethane	74-84-0	10	µg/L	<10	<10	----	----	----
Propene	115-07-1	10	µg/L	<10	<10	----	----	----
Propane	74-98-6	10	µg/L	<10	<10	----	----	----
Butene	25167-67-3	10	µg/L	<10	<10	----	----	----
Butane	106-97-8	10	µg/L	<10	<10	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	5.8	1.7	----	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	----	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	----	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	----	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	----	----	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	----	----	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	----	----	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	----	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	----	----	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	----	----	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	----	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	2.7	<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	----	----	----
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	----	----	----

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HSMB2S	NB05S	Trip Spike (from ALS Chinchilla)	Trip Blank (from ALS Chinchilla)	ALS CONTROL SPIKE 2
Sampling date / time				13-Oct-2022 11:35	13-Oct-2022 14:20	10-Oct-2022 00:00	13-Oct-2022 00:00	10-Oct-2022 00:00	
Compound	CAS Number	LOR	Unit	EB2230335-001	EB2230335-002	EB2230335-003	EB2230335-004	EB2230335-005	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b+j)fluoranthene	205-99-2 205-82-3	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	2.7	<0.5	----	----	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	----	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	110	<20	170	<20	200	
C10 - C14 Fraction	----	50	µg/L	240	100	----	----	----	
C15 - C28 Fraction	----	100	µg/L	2120	110	----	----	----	
C29 - C36 Fraction	----	50	µg/L	200	<50	----	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	2560	210	----	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	130	<20	200	<20	250	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	20	<20	110	<20	150	
>C10 - C16 Fraction	----	100	µg/L	200	110	----	----	----	
>C16 - C34 Fraction	----	100	µg/L	2240	130	----	----	----	
>C34 - C40 Fraction	----	100	µg/L	140	<100	----	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	2580	240	----	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	200	110	----	----	----	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	97	2	16	<1	17	
Toluene	108-88-3	2	µg/L	12	5	16	<2	16	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	15	<2	16	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	30	<2	32	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	16	<2	17	
^ Total Xylenes	----	2	µg/L	<2	<2	46	<2	49	
^ Sum of BTEX	----	1	µg/L	109	7	93	<1	98	
Naphthalene	91-20-3	5	µg/L	<5	<5	16	<5	17	
EP075(SIM)S: Phenolic Compound Surrogates									



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				HSMB2S	NB05S	Trip Spike (from ALS Chinchilla)	Trip Blank (from ALS Chinchilla)	ALS CONTROL SPIKE 2
Sampling date / time				13-Oct-2022 11:35	13-Oct-2022 14:20	10-Oct-2022 00:00	13-Oct-2022 00:00	10-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	EB2230335-001	EB2230335-002	EB2230335-003	EB2230335-004	EB2230335-005
				Result	Result	Result	Result	Result
EP075(SIM)S: Phenolic Compound Surrogates - Continued								
Phenol-d6	13127-88-3	1.0	%	36.7	38.5	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	94.0	103	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	87.1	90.7	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	89.6	96.3	----	----	----
Anthracene-d10	1719-06-8	1.0	%	114	118	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	107	113	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	102	103	105	104	104
Toluene-D8	2037-26-5	2	%	99.6	102	99.7	98.4	102
4-Bromofluorobenzene	460-00-4	2	%	91.4	95.4	94.2	93.9	95.2



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	72
2-Chlorophenol-D4	93951-73-6	27	130
2,4,6-Tribromophenol	118-79-6	19	181
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	14	146
Anthracene-d10	1719-06-8	35	137
4-Terphenyl-d14	1718-51-0	36	154
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EP033: C1 - C4 Hydrocarbon Gases

CERTIFICATE OF ANALYSIS

Work Order : **EB2230577**
Client : **QLD DEPT OF RESOURCES**
Contact :
Address : 357 KUMMEROWS ROAD
 HOPELAND 4413
Telephone :
Project : LINC-115E Hopeland
Order number : 4500019052
C-O-C number : ----
Sampler :
Site : ----
Quote number : BN/158/22 V4
No. of samples received : 5
No. of samples analysed : 5

Page : 1 of 8
Laboratory : Environmental Division Brisbane
Contact :
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61-7-3243 7222
Date Samples Received : 18-Oct-2022 10:20
Date Analysis Commenced : 18-Oct-2022
Issue Date : 26-Oct-2022 19:25



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Keegan Mullane	2IC Organic Chemist	Brisbane Organics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

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

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EK057G (Nitrite as N): Sample EB2230577_002 (MSMB3S1) was diluted due to matrix interference. LOR adjusted accordingly.
- EK027(Thiocyanate): Sample 002 was diluted due to matrix interference. LOR adjusted accordingly.
- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO2 and Fluoride to the Anions.
- **Gases in Water analysis is conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- EG020F (Dissolved Metals by ICP-MS): Limit of reporting raised for some samples due to matrix interference.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB3D1	MSMB3S1	Trip Spike #4	Trip Blank	ALS Control Spike #4
Sampling date / time				14-Oct-2022 13:35	14-Oct-2022 11:50	10-Oct-2022 00:00	14-Oct-2022 00:00	10-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	EB2230577-001	EB2230577-002	EB2230577-003	EB2230577-004	EB2230577-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.85	5.08	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	3360	20100	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	1930	13500	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO ₃	DMO-210-001	1	mg/L	<1	<1	----	----	----
Carbonate Alkalinity as CaCO ₃	3812-32-6	1	mg/L	76	<1	----	----	----
Bicarbonate Alkalinity as CaCO ₃	71-52-3	1	mg/L	619	1	----	----	----
Total Alkalinity as CaCO ₃	----	1	mg/L	696	1	----	----	----
ED041G: Sulfate (Turbidimetric) as SO₄ 2- by DA								
Sulfate as SO ₄ - Turbidimetric	14808-79-8	1	mg/L	<1	<1	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	704	7040	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	4	474	----	----	----
Magnesium	7439-95-4	1	mg/L	2	120	----	----	----
Sodium	7440-23-5	1	mg/L	755	3690	----	----	----
Potassium	7440-09-7	1	mg/L	63	268	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.05	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.005	----	----	----
Boron	7440-42-8	0.05	mg/L	0.32	0.11	----	----	----
Barium	7440-39-3	0.001	mg/L	0.195	12.0	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.005	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0005	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.005	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.005	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.005	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.019	16.0	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.005	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	0.062	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.05	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.05	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				HSMB3D1	MSMB3S1	Trip Spike #4	Trip Blank	ALS Control Spike #4
Sampling date / time				14-Oct-2022 13:35	14-Oct-2022 11:50	10-Oct-2022 00:00	14-Oct-2022 00:00	10-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	EB2230577-001	EB2230577-002	EB2230577-003	EB2230577-004	EB2230577-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.025	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	0.004	<0.005	----	----	----
Strontium	7440-24-6	0.001	mg/L	0.716	22.7	----	----	----
Iron	7439-89-6	0.05	mg/L	0.36	293	----	----	----
Bromine	7726-95-6	0.1	mg/L	1.5	14.9	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EK025SF: Free CN by Segmented Flow Analyser								
Free Cyanide	----	0.004	mg/L	0.007	<0.004	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	0.031	0.015	----	----	----
EK027: Thiocyanate								
Thiocyanate	463-56-9	0.1	mg/L	0.1	<1.0	----	----	----
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser								
Weak Acid Dissociable Cyanide	----	0.004	mg/L	0.008	<0.004	----	----	----
EK030: Cyanide Amenable to Chlorination								
Cyanide amenable to chlorination	----	0.01	mg/L	0.01	<0.01	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	1.3	<0.1	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.52	0.44	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.10	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.10	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.7	2.8	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	0.7	2.8	----	----	----
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	33.8	199	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB3D1	MSMB3S1	Trip Spike #4	Trip Blank	ALS Control Spike #4
Sampling date / time				14-Oct-2022 13:35	14-Oct-2022 11:50	10-Oct-2022 00:00	14-Oct-2022 00:00	10-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	EB2230577-001	EB2230577-002	EB2230577-003	EB2230577-004	EB2230577-005
				Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued								
∅ Total Cations	----	0.01	meq/L	34.8	201	----	----	----
∅ Ionic Balance	----	0.01	%	1.53	0.57	----	----	----
EP033: C1 - C4 Hydrocarbon Gases								
Methane	74-82-8	10	µg/L	14300	7520	----	----	----
Ethene	74-85-1	10	µg/L	<10	<10	----	----	----
Ethane	74-84-0	10	µg/L	<10	<10	----	----	----
Propene	115-07-1	10	µg/L	<10	<10	----	----	----
Propane	74-98-6	10	µg/L	<10	<10	----	----	----
Butene	25167-67-3	10	µg/L	<10	<10	----	----	----
Butane	106-97-8	10	µg/L	<10	<10	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	5.7	----	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	----	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	----	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	----	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	----	----	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	----	----	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	----	----	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	----	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	----	----	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	----	----	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	----	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
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	----	----	----
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	----	----	----

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HSMB3D1	MSMB3S1	Trip Spike #4	Trip Blank	ALS Control Spike #4
Sampling date / time				14-Oct-2022 13:35	14-Oct-2022 11:50	10-Oct-2022 00:00	14-Oct-2022 00:00	10-Oct-2022 00:00	
Compound	CAS Number	LOR	Unit	EB2230577-001	EB2230577-002	EB2230577-003	EB2230577-004	EB2230577-005	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b+j)fluoranthene	205-99-2 205-82-3	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	----	----	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	----	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	<20	180	<20	190	
C10 - C14 Fraction	----	50	µg/L	<50	220	----	----	----	
C15 - C28 Fraction	----	100	µg/L	<100	200	----	----	----	
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	420	----	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	190	<20	210	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	100	<20	120	
>C10 - C16 Fraction	----	100	µg/L	<100	220	----	----	----	
>C16 - C34 Fraction	----	100	µg/L	<100	170	----	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	390	----	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	220	----	----	----	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	5	4	15	<1	15	
Toluene	108-88-3	2	µg/L	<2	<2	15	<2	15	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	14	<2	14	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	30	<2	29	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	16	<2	16	
^ Total Xylenes	----	2	µg/L	<2	<2	46	<2	45	
^ Sum of BTEX	----	1	µg/L	5	4	90	<1	89	
Naphthalene	91-20-3	5	µg/L	<5	<5	17	<5	17	
EP075(SIM)S: Phenolic Compound Surrogates									



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				HSMB3D1	MSMB3S1	Trip Spike #4	Trip Blank	ALS Control Spike #4
Sampling date / time				14-Oct-2022 13:35	14-Oct-2022 11:50	14-Oct-2022 00:00	14-Oct-2022 00:00	10-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	EB2230577-001	EB2230577-002	EB2230577-003	EB2230577-004	EB2230577-005
				Result	Result	Result	Result	Result
EP075(SIM)S: Phenolic Compound Surrogates - Continued								
Phenol-d6	13127-88-3	1.0	%	39.0	40.9	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	72.9	86.6	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	36.9	74.9	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	83.1	78.1	----	----	----
Anthracene-d10	1719-06-8	1.0	%	101	96.5	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	97.1	90.1	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	96.5	96.5	98.4	95.4	98.5
Toluene-D8	2037-26-5	2	%	98.2	99.7	99.1	98.3	99.5
4-Bromofluorobenzene	460-00-4	2	%	114	117	108	115	106



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	72
2-Chlorophenol-D4	93951-73-6	27	130
2,4,6-Tribromophenol	118-79-6	19	181
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	14	146
Anthracene-d10	1719-06-8	35	137
4-Terphenyl-d14	1718-51-0	36	154
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EP033: C1 - C4 Hydrocarbon Gases



CERTIFICATE OF ANALYSIS

Work Order	: EB2230778
Client	: QLD DEPT OF RESOURCES
Contact	:
Address	: 357 KUMMEROWS ROAD HOPELAND 4413
Telephone	:
Project	: LINC-115E Hopeland
Order number	: 4500019052
C-O-C number	: ----
Sampler	:
Site	: ----
Quote number	: BN/158/22 V4
No. of samples received	: 6
No. of samples analysed	: 6

Page : 1 of 9

Laboratory : Environmental Division Brisbane

Contact :

Address : 2 Byth Street Stafford QLD Australia 4053

Telephone : +61-7-3243 7222

Date Samples Received : 19-Oct-2022 10:40

Date Analysis Commenced : 19-Oct-2022

Issue Date : 28-Oct-2022 14:38



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	Position	Accreditation Category
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Timothy Creagh	2IC Organic Chemist	Brisbane Organics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

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

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- Ek027(Thiocyanate): Sample 001,002 were diluted due to matrix interference. LOR adjusted accordingly.
- EK059G (Nitrite and Nitrate as N (NOx)): Some samples were diluted due to matrix interference. LOR adjusted accordingly.
- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO2 and Fluoride to the Anions.
- **Gases in Water analysis is conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- EG020-F (Dissolved Metals by ICP-MS): Limit of reporting raised due to matrix interference.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB3S2	DUP02A	HSMB3D2	Trip Spike1	Trip Blank
Sampling date / time				17-Oct-2022 13:50	17-Oct-2022 13:50	17-Oct-2022 16:05	10-Oct-2022 00:00	17-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	EB2230778-001	EB2230778-002	EB2230778-003	EB2230778-004	EB2230778-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	5.37	5.40	8.44	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	27800	28200	2440	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	18100	18200	1410	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	24	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	42	43	631	----	----
Total Alkalinity as CaCO3	----	1	mg/L	42	43	655	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	<1	<1	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	9580	9520	396	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	723	711	9	----	----
Magnesium	7439-95-4	1	mg/L	197	194	2	----	----
Sodium	7440-23-5	1	mg/L	4760	4610	484	----	----
Potassium	7440-09-7	1	mg/L	408	406	120	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.05	<0.05	<0.01	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.005	<0.005	<0.001	----	----
Boron	7440-42-8	0.05	mg/L	0.12	0.09	0.21	----	----
Barium	7440-39-3	0.001	mg/L	14.8	14.5	0.404	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.005	<0.005	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0005	<0.0005	<0.0001	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.005	<0.005	<0.001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.005	<0.005	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	<0.005	<0.005	<0.001	----	----
Manganese	7439-96-5	0.001	mg/L	5.60	5.45	0.026	----	----
Nickel	7440-02-0	0.001	mg/L	<0.005	<0.005	0.001	----	----
Lead	7439-92-1	0.001	mg/L	0.015	0.006	0.014	----	----
Selenium	7782-49-2	0.01	mg/L	<0.05	<0.05	<0.01	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.05	<0.05	<0.01	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HSMB3S2	DUP02A	HSMB3D2	Trip Spike1	Trip Blank
Sampling date / time					17-Oct-2022 13:50	17-Oct-2022 13:50	17-Oct-2022 16:05	10-Oct-2022 00:00	17-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		EB2230778-001	EB2230778-002	EB2230778-003	EB2230778-004	EB2230778-005
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Zinc	7440-66-6	0.005	mg/L		<0.025	<0.025	<0.005	----	----
Molybdenum	7439-98-7	0.001	mg/L		<0.005	<0.005	0.006	----	----
Strontium	7440-24-6	0.001	mg/L		35.7	34.8	0.909	----	----
Iron	7439-89-6	0.05	mg/L		175	170	0.44	----	----
Bromine	7726-95-6	0.1	mg/L		22.8	22.6	1.0	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	----	----
EK025SF: Free CN by Segmented Flow Analyser									
Free Cyanide	----	0.004	mg/L		0.007	0.021	0.019	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	0.004	mg/L		0.083	0.081	0.086	----	----
EK027: Thiocyanate									
Thiocyanate	463-56-9	0.1	mg/L		<1.0	<1.0	<0.1	----	----
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser									
Weak Acid Dissociable Cyanide	----	0.004	mg/L		0.010	0.022	0.019	----	----
EK030: Cyanide Amenable to Chlorination									
Cyanide amenable to chlorination	----	0.01	mg/L		<0.01	0.02	0.03	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		0.1	0.1	0.6	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		3.29	3.29	<0.01	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		0.02	0.02	<0.01	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		<0.10	<0.10	<0.01	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.10	<0.10	<0.01	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		5.8	5.7	0.6	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		5.8	5.7	0.6	----	----
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L		271	269	24.2	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB3S2	DUP02A	HSMB3D2	Trip Spike1	Trip Blank
Sampling date / time				17-Oct-2022 13:50	17-Oct-2022 13:50	17-Oct-2022 16:05	10-Oct-2022 00:00	17-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	EB2230778-001	EB2230778-002	EB2230778-003	EB2230778-004	EB2230778-005
				Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued								
∅ Total Cations	----	0.01	meq/L	270	262	24.7	----	----
∅ Ionic Balance	----	0.01	%	0.24	1.33	0.98	----	----
EP033: C1 - C4 Hydrocarbon Gases								
Methane	74-82-8	10	µg/L	15400	16300	13300	----	----
Ethene	74-85-1	10	µg/L	<10	<10	<10	----	----
Ethane	74-84-0	10	µg/L	<10	<10	<10	----	----
Propene	115-07-1	10	µg/L	<10	<10	<10	----	----
Propane	74-98-6	10	µg/L	<10	<10	<10	----	----
Butene	25167-67-3	10	µg/L	<10	<10	<10	----	----
Butane	106-97-8	10	µg/L	<10	<10	<10	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	3.2	3.4	<1.0	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	1.8	1.9	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HSMB3S2	DUP02A	HSMB3D2	Trip Spike1	Trip Blank
Sampling date / time				17-Oct-2022 13:50	17-Oct-2022 13:50	17-Oct-2022 16:05	10-Oct-2022 00:00	17-Oct-2022 00:00	
Compound	CAS Number	LOR	Unit	EB2230778-001	EB2230778-002	EB2230778-003	EB2230778-004	EB2230778-005	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----	
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----	
Benzo(a)pyrene	50-32-8	0.5	µg/L	<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	----	----	
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----	
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	1.8	1.9	<0.5	----	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	20	40	180	<20	
C10 - C14 Fraction	----	50	µg/L	680	740	120	----	----	
C15 - C28 Fraction	----	100	µg/L	900	1020	240	----	----	
C29 - C36 Fraction	----	50	µg/L	180	200	100	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	1760	1960	460	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	20	20	<20	220	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	120	<20	
>C10 - C16 Fraction	----	100	µg/L	700	750	<100	----	----	
>C16 - C34 Fraction	----	100	µg/L	950	1090	290	----	----	
>C34 - C40 Fraction	----	100	µg/L	150	180	120	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	1800	2020	410	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	700	750	<100	----	----	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	7	8	3	17	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	16	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	16	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	32	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	17	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	49	<2	
^ Sum of BTEX	----	1	µg/L	7	8	3	98	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	17	<5	
EP075(SIM)S: Phenolic Compound Surrogates									



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				HSMB3S2	DUP02A	HSMB3D2	Trip Spike1	Trip Blank
Sampling date / time				17-Oct-2022 13:50	17-Oct-2022 13:50	17-Oct-2022 16:05	10-Oct-2022 00:00	17-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	EB2230778-001	EB2230778-002	EB2230778-003	EB2230778-004	EB2230778-005
				Result	Result	Result	Result	Result
EP075(SIM)S: Phenolic Compound Surrogates - Continued								
Phenol-d6	13127-88-3	1.0	%	39.4	39.9	32.4	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	83.5	85.3	70.4	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	80.7	85.3	48.9	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	81.0	79.9	72.2	----	----
Anthracene-d10	1719-06-8	1.0	%	103	108	91.8	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	96.6	101	87.8	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	98.5	98.8	98.6	98.9	98.1
Toluene-D8	2037-26-5	2	%	97.8	97.2	97.7	99.3	96.5
4-Bromofluorobenzene	460-00-4	2	%	96.0	91.1	91.5	90.5	92.9



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	ALS Control Spike 1	----	----	----	----
Sampling date / time					10-Oct-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB2230778-006	-----	-----	-----	-----
					Result	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		260	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		290	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		190	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		18	----	----	----	----
Toluene	108-88-3	2	µg/L		17	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		16	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		34	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		18	----	----	----	----
^ Total Xylenes	----	2	µg/L		52	----	----	----	----
^ Sum of BTEX	----	1	µg/L		103	----	----	----	----
Naphthalene	91-20-3	5	µg/L		19	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		102	----	----	----	----
Toluene-D8	2037-26-5	2	%		99.8	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		108	----	----	----	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	72
2-Chlorophenol-D4	93951-73-6	27	130
2,4,6-Tribromophenol	118-79-6	19	181
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	14	146
Anthracene-d10	1719-06-8	35	137
4-Terphenyl-d14	1718-51-0	36	154
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EP033: C1 - C4 Hydrocarbon Gases

CERTIFICATE OF ANALYSIS

Work Order : **EB2230883**
Client : **QLD DEPT OF RESOURCES**
Contact :
Address : 357 KUMMEROWS ROAD
 HOPELAND 4413
Telephone :
Project : LINC-115E Hopeland
Order number : 4500019052
C-O-C number : ----
Sampler :
Site : ----
Quote number : BN/158/22 V4
No. of samples received : 6
No. of samples analysed : 6

Page : 1 of 9
Laboratory : Environmental Division Brisbane
Contact :
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61-7-3243 7222
Date Samples Received : 20-Oct-2022 09:50
Date Analysis Commenced : 20-Oct-2022
Issue Date : 31-Oct-2022 19:09



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

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

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- It is recognised that EK028SF (WAD Cyanide by SFA) is less than EK025SF (Free Cyanide) for sample "HSMB5D", EB2230883-003. However, the difference is within experimental variation of the methods.
- Ek027 (Thiocyanate): Sample 002 was diluted due to matrix interference. LOR adjusted accordingly.
- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO2 and Fluoride to the Anions.
- **Gases in Water analysis is conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- EG020F (Dissolved Metals by ICP-MS): Limit of reporting raised for some samples due to matrix interference.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB4D	HSMB4S	HSMB5D	Trip Spike 3	Trip Blank
Sampling date / time				18-Oct-2022 12:05	18-Oct-2022 13:40	18-Oct-2022 16:05	17-Oct-2022 00:00	17-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	EB2230883-001	EB2230883-002	EB2230883-003	EB2230883-004	EB2230883-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.94	5.96	8.80	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1080	18900	2850	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	643	12000	1640	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO ₃	DMO-210-001	1	mg/L	<1	<1	<1	----	----
Carbonate Alkalinity as CaCO ₃	3812-32-6	1	mg/L	12	<1	64	----	----
Bicarbonate Alkalinity as CaCO ₃	71-52-3	1	mg/L	62	63	596	----	----
Total Alkalinity as CaCO ₃	----	1	mg/L	74	63	660	----	----
ED041G: Sulfate (Turbidimetric) as SO₄ 2- by DA								
Sulfate as SO ₄ - Turbidimetric	14808-79-8	1	mg/L	5	<1	<1	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	269	5980	559	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	34	313	1	----	----
Magnesium	7439-95-4	1	mg/L	<1	38	<1	----	----
Sodium	7440-23-5	1	mg/L	112	2070	627	----	----
Potassium	7440-09-7	1	mg/L	111	2220	71	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.12	<0.01	<0.01	----	----
Arsenic	7440-38-2	0.001	mg/L	0.001	<0.001	<0.001	----	----
Boron	7440-42-8	0.05	mg/L	0.09	0.11	0.28	----	----
Barium	7440-39-3	0.001	mg/L	0.127	3.56	0.128	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Manganese	7439-96-5	0.001	mg/L	<0.001	4.76	0.008	----	----
Nickel	7440-02-0	0.001	mg/L	0.001	0.002	<0.001	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HSMB4D	HSMB4S	HSMB5D	Trip Spike 3	Trip Blank
Sampling date / time					18-Oct-2022 12:05	18-Oct-2022 13:40	18-Oct-2022 16:05	17-Oct-2022 00:00	17-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		EB2230883-001	EB2230883-002	EB2230883-003	EB2230883-004	EB2230883-005
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Zinc	7440-66-6	0.005	mg/L		<0.005	<0.005	<0.005	----	----
Molybdenum	7439-98-7	0.001	mg/L		0.002	<0.001	0.002	----	----
Strontium	7440-24-6	0.001	mg/L		0.689	14.8	0.318	----	----
Iron	7439-89-6	0.05	mg/L		<0.05	16.5	0.68	----	----
Bromine	7726-95-6	0.1	mg/L		0.5	15.9	1.4	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	----	----
EK025SF: Free CN by Segmented Flow Analyser									
Free Cyanide	----	0.004	mg/L		0.005	0.028	0.018	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	0.004	mg/L		0.021	0.422	0.140	----	----
EK027: Thiocyanate									
Thiocyanate	463-56-9	0.1	mg/L		0.1	<0.8	<0.1	----	----
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser									
Weak Acid Dissociable Cyanide	----	0.004	mg/L		0.005	0.029	0.017	----	----
EK030: Cyanide Amenable to Chlorination									
Cyanide amenable to chlorination	----	0.01	mg/L		<0.01	0.05	0.05	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		<0.1	0.3	1.8	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		0.44	10.1	1.31	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	<0.01	<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	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	<0.01	<0.01	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.6	13.6	1.4	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		0.6	13.6	1.4	----	----
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L		9.17	170	29.0	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB4D	HSMB4S	HSMB5D	Trip Spike 3	Trip Blank
Sampling date / time				18-Oct-2022 12:05	18-Oct-2022 13:40	18-Oct-2022 16:05	17-Oct-2022 00:00	17-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	EB2230883-001	EB2230883-002	EB2230883-003	EB2230883-004	EB2230883-005
				Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued								
∅ Total Cations	----	0.01	meq/L	9.41	166	29.1	----	----
∅ Ionic Balance	----	0.01	%	1.27	1.31	0.31	----	----
EP033: C1 - C4 Hydrocarbon Gases								
Methane	74-82-8	10	µg/L	15300	7540	13100	----	----
Ethene	74-85-1	10	µg/L	<10	<10	<10	----	----
Ethane	74-84-0	10	µg/L	<10	<10	<10	----	----
Propene	115-07-1	10	µg/L	<10	<10	<10	----	----
Propane	74-98-6	10	µg/L	<10	<10	<10	----	----
Butene	25167-67-3	10	µg/L	<10	<10	<10	----	----
Butane	106-97-8	10	µg/L	<10	<10	<10	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	7.3	<1.0	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	1.2	<1.0	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	2.2	<2.0	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	2.2	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HSMB4D	HSMB4S	HSMB5D	Trip Spike 3	Trip Blank
Sampling date / time				18-Oct-2022 12:05	18-Oct-2022 13:40	18-Oct-2022 16:05	17-Oct-2022 00:00	17-Oct-2022 00:00	
Compound	CAS Number	LOR	Unit	EB2230883-001	EB2230883-002	EB2230883-003	EB2230883-004	EB2230883-005	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----	
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----	
Benzo(a)pyrene	50-32-8	0.5	µg/L	<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	----	----	
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----	
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	2.2	<0.5	----	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	60	340	30	220	<20	
C10 - C14 Fraction	----	50	µg/L	690	440	120	----	----	
C15 - C28 Fraction	----	100	µg/L	12200	690	160	----	----	
C29 - C36 Fraction	----	50	µg/L	850	80	50	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	13700	1210	330	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	50	330	40	260	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	20	<20	30	150	<20	
>C10 - C16 Fraction	----	100	µg/L	690	450	<100	----	----	
>C16 - C34 Fraction	----	100	µg/L	12900	720	200	----	----	
>C34 - C40 Fraction	----	100	µg/L	570	<100	<100	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	14200	1170	200	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	690	450	<100	----	----	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	302	9	18	<1	
Toluene	108-88-3	2	µg/L	26	20	<2	18	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	16	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	35	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	19	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	54	<2	
^ Sum of BTEX	----	1	µg/L	26	322	9	106	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	22	<5	
EP075(SIM)S: Phenolic Compound Surrogates									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HSMB4D	HSMB4S	HSMB5D	Trip Spike 3	Trip Blank
Sampling date / time					18-Oct-2022 12:05	18-Oct-2022 13:40	18-Oct-2022 16:05	17-Oct-2022 00:00	17-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		EB2230883-001	EB2230883-002	EB2230883-003	EB2230883-004	EB2230883-005
					Result	Result	Result	Result	Result
EP075(SIM)S: Phenolic Compound Surrogates - Continued									
Phenol-d6	13127-88-3	1.0	%		47.5	41.6	46.8	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		98.7	92.1	104	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		140	99.0	107	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		100	94.1	106	----	----
Anthracene-d10	1719-06-8	1.0	%		99.7	88.3	97.6	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		106	98.2	102	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		105	126	110	105	117
Toluene-D8	2037-26-5	2	%		96.5	95.7	95.4	94.8	96.8
4-Bromofluorobenzene	460-00-4	2	%		93.5	93.9	88.6	100	87.3



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				ALS Control Spike 3	----	----	----	----
Sampling date / time				17-Oct-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2230883-006	-----	-----	-----	-----
Result				Result	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	220	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	270	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	160	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	17	----	----	----	----
Toluene	108-88-3	2	µg/L	17	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L	17	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	37	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L	19	----	----	----	----
^ Total Xylenes	----	2	µg/L	56	----	----	----	----
^ Sum of BTEX	----	1	µg/L	107	----	----	----	----
Naphthalene	91-20-3	5	µg/L	19	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	95.1	----	----	----	----
Toluene-D8	2037-26-5	2	%	100	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	108	----	----	----	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	72
2-Chlorophenol-D4	93951-73-6	27	130
2,4,6-Tribromophenol	118-79-6	19	181
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	14	146
Anthracene-d10	1719-06-8	35	137
4-Terphenyl-d14	1718-51-0	36	154
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EP033: C1 - C4 Hydrocarbon Gases

CERTIFICATE OF ANALYSIS

Work Order : **EB2230996**
Client : **QLD DEPT OF RESOURCES**
Contact :
Address : 357 KUMMEROWS ROAD
 HOPELAND 4413
Telephone :
Project : LINC-115E Hopeland
Order number : 4500019052
C-O-C number : ----
Sampler :
Site : ----
Quote number : BN/158/22 V4
No. of samples received : 5
No. of samples analysed : 5

Page : 1 of 8
Laboratory : Environmental Division Brisbane
Contact :
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61-7-3243 7222
Date Samples Received : 21-Oct-2022 11:22
Date Analysis Commenced : 21-Oct-2022
Issue Date : 01-Nov-2022 17:27



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

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

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EK027 (Thiocyanate): Sample EB2230996-001 (HSMB7S) was diluted due to matrix interference. LOR adjusted accordingly.
- EK027 (Thiocyanate): Sample EB2230996-002 (HSMB7D) was diluted due to matrix interference. LOR adjusted accordingly.
- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO2 and Fluoride to the Anions.
- **Gases in Water analysis is conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Bromine results from the EG020 method code should be regarded as semi-quantitative only.
- EP071 Semivolatile TPH: Sample "EB2230803_001" shows poor duplicate recovery due to possible heterogeneity. Insufficient volume to re-extract.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB7S	HSMB7D	Trip Spike 4	Trip Blank	ALS Control Spike 4
Sampling date / time				19-Oct-2022 11:10	19-Oct-2022 12:50	17-Oct-2022 00:00	19-Oct-2022 00:00	17-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	EB2230996-001	EB2230996-002	EB2230996-003	EB2230996-004	EB2230996-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	5.26	9.04	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	8810	9390	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	5460	5290	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	58	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	1	203	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	1	261	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	12	<1	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	3020	3080	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	90	7	----	----	----
Magnesium	7439-95-4	1	mg/L	5	6	----	----	----
Sodium	7440-23-5	1	mg/L	1450	1710	----	----	----
Potassium	7440-09-7	1	mg/L	276	324	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.01	<0.01	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Boron	7440-42-8	0.05	mg/L	0.19	0.30	----	----	----
Barium	7440-39-3	0.001	mg/L	3.09	0.818	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.002	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Manganese	7439-96-5	0.001	mg/L	3.30	0.039	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	0.008	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HSMB7S	HSMB7D	Trip Spike 4	Trip Blank	ALS Control Spike 4
Sampling date / time					19-Oct-2022 11:10	19-Oct-2022 12:50	17-Oct-2022 00:00	19-Oct-2022 00:00	17-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		EB2230996-001	EB2230996-002	EB2230996-003	EB2230996-004	EB2230996-005
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Zinc	7440-66-6	0.005	mg/L		<0.005	<0.005	----	----	----
Molybdenum	7439-98-7	0.001	mg/L		<0.001	0.039	----	----	----
Strontium	7440-24-6	0.001	mg/L		4.21	2.63	----	----	----
Iron	7439-89-6	0.05	mg/L		51.2	0.44	----	----	----
Bromine	7726-95-6	0.1	mg/L		6.5	6.9	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	----	----	----
EK025SF: Free CN by Segmented Flow Analyser									
Free Cyanide	----	0.004	mg/L		<0.004	0.076	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	0.004	mg/L		0.006	0.618	----	----	----
EK027: Thiocyanate									
Thiocyanate	463-56-9	0.1	mg/L		<0.5	<0.5	----	----	----
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser									
Weak Acid Dissociable Cyanide	----	0.004	mg/L		<0.004	0.085	----	----	----
EK030: Cyanide Amenable to Chlorination									
Cyanide amenable to chlorination	----	0.01	mg/L		<0.01	0.17	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		0.5	0.8	----	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		0.95	5.39	----	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		<0.01	<0.01	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	<0.01	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		1.8	5.4	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		1.8	5.4	----	----	----
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L		85.5	92.1	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB7S	HSMB7D	Trip Spike 4	Trip Blank	ALS Control Spike 4
Sampling date / time				19-Oct-2022 11:10	19-Oct-2022 12:50	17-Oct-2022 00:00	19-Oct-2022 00:00	17-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	EB2230996-001	EB2230996-002	EB2230996-003	EB2230996-004	EB2230996-005
				Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued								
∅ Total Cations	----	0.01	meq/L	75.0	83.5	----	----	----
∅ Ionic Balance	----	0.01	%	6.50	4.89	----	----	----
EP033: C1 - C4 Hydrocarbon Gases								
Methane	74-82-8	10	µg/L	17600	13600	----	----	----
Ethene	74-85-1	10	µg/L	<10	<10	----	----	----
Ethane	74-84-0	10	µg/L	<10	<10	----	----	----
Propene	115-07-1	10	µg/L	<10	<10	----	----	----
Propane	74-98-6	10	µg/L	<10	<10	----	----	----
Butene	25167-67-3	10	µg/L	<10	<10	----	----	----
Butane	106-97-8	10	µg/L	<10	<10	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	1.4	2.0	----	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	----	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	----	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	----	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	----	----	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	----	----	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	----	----	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	----	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	----	----	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	----	----	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	----	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
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	----	----	----
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	----	----	----

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HSMB7S	HSMB7D	Trip Spike 4	Trip Blank	ALS Control Spike 4
Sampling date / time				19-Oct-2022 11:10	19-Oct-2022 12:50	17-Oct-2022 00:00	19-Oct-2022 00:00	17-Oct-2022 00:00	
Compound	CAS Number	LOR	Unit	EB2230996-001	EB2230996-002	EB2230996-003	EB2230996-004	EB2230996-005	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b+j)fluoranthene	205-99-2 205-82-3	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	----	----	----	
^ Benzo(a)pyrene TEQ (zero)		----	0.5	µg/L	<0.5	----	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	<20	230	<20	270	
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----	
C15 - C28 Fraction	----	100	µg/L	130	<100	----	----	----	
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----	
^ C10 - C36 Fraction (sum)		----	50	µg/L	130	<50	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	240	<20	290	
^ C6 - C10 Fraction minus BTEX (F1)		C6_C10-BTEX	20	µg/L	<20	130	<20	170	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	----	----	----	
>C16 - C34 Fraction	----	100	µg/L	150	110	----	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	----	----	
^ >C10 - C40 Fraction (sum)		----	100	µg/L	150	110	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)		----	100	µg/L	<100	<100	----	----	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	11	17	<1	18	
Toluene	108-88-3	2	µg/L	<2	<2	19	<2	20	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	17	<2	19	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	37	<2	40	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	20	<2	21	
^ Total Xylenes		----	2	µg/L	<2	57	<2	61	
^ Sum of BTEX		----	1	µg/L	<1	110	<1	118	
Naphthalene	91-20-3	5	µg/L	<5	<5	19	<5	18	
EP075(SIM)S: Phenolic Compound Surrogates									



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				HSMB7S	HSMB7D	Trip Spike 4	Trip Blank	ALS Control Spike 4
Sampling date / time				19-Oct-2022 11:10	19-Oct-2022 12:50	17-Oct-2022 00:00	19-Oct-2022 00:00	17-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	EB2230996-001	EB2230996-002	EB2230996-003	EB2230996-004	EB2230996-005
				Result	Result	Result	Result	Result
EP075(SIM)S: Phenolic Compound Surrogates - Continued								
Phenol-d6	13127-88-3	1.0	%	27.3	25.3	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	66.5	43.3	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	89.5	53.7	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	66.4	39.5	----	----	----
Anthracene-d10	1719-06-8	1.0	%	82.6	49.7	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	88.8	53.8	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	100	96.6	97.6	93.5	100
Toluene-D8	2037-26-5	2	%	95.1	96.7	101	96.5	104
4-Bromofluorobenzene	460-00-4	2	%	97.2	100	106	109	111



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	72
2-Chlorophenol-D4	93951-73-6	27	130
2,4,6-Tribromophenol	118-79-6	19	181
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	14	146
Anthracene-d10	1719-06-8	35	137
4-Terphenyl-d14	1718-51-0	36	154
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EP033: C1 - C4 Hydrocarbon Gases

CERTIFICATE OF ANALYSIS

Work Order : **EB2302837**
Client : **QLD DEPT OF RESOURCES**
Contact :
Address : 357 KUMMEROWS ROAD
 HOPELAND 4413
Telephone :
Project : LINC-115DE Hopeland
Order number : 4500018640
C-O-C number : ----
Sampler :
Site : ----
Quote number : BN/158/22 V4
No. of samples received : 3
No. of samples analysed : 3

Page : 1 of 8
Laboratory : Environmental Division Brisbane
Contact :
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61-7-3243 7222
Date Samples Received : 02-Feb-2023 09:30
Date Analysis Commenced : 02-Feb-2023
Issue Date : 13-Feb-2023 17:06



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Dilani Fernando	Laboratory Coordinator	Melbourne Inorganics, Springvale, VIC
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Timothy Creagh	Senior Chemist - Organics	Brisbane Organics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EK028SF (WAD Cyanide by SFA): Sample "HSMB-6D2" EB2302837-002, was diluted due to matrix interference. Limit of reporting adjusted accordingly.
- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO2 and Fluoride to the Anions.
- **C1-C4 Gases in Water analysis is conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Bromine and Iodine results off the EG020 method code should be regarded as semi quantitative only.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB-6S	HSMB-6D2	Trip Blank 160109	----	----
Sampling date / time				31-Jan-2023 13:30	31-Jan-2023 16:20	31-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	EB2302837-001	EB2302837-002	EB2302837-003	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	5.05	9.01	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	25200	7690	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	17200	4290	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	145	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	1	636	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	1	781	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	<1	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	9140	1980	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	666	3	----	----	----
Magnesium	7439-95-4	1	mg/L	181	3	----	----	----
Sodium	7440-23-5	1	mg/L	5110	1500	----	----	----
Potassium	7440-09-7	1	mg/L	31	147	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.05	<0.01	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.005	<0.001	----	----	----
Boron	7440-42-8	0.05	mg/L	0.20	0.24	----	----	----
Barium	7440-39-3	0.001	mg/L	12.4	0.958	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.005	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0005	<0.0001	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.005	<0.001	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.005	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.005	<0.001	----	----	----
Manganese	7439-96-5	0.001	mg/L	1.98	0.010	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.005	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.005	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.05	<0.01	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.05	<0.01	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				HSMB-6S	HSMB-6D2	Trip Blank 160109	----	----
Sampling date / time				31-Jan-2023 13:30	31-Jan-2023 16:20	31-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	EB2302837-001	EB2302837-002	EB2302837-003	-----	-----
				Result	Result	Result	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Zinc	7440-66-6	0.005	mg/L	<0.025	<0.005	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.005	0.018	----	----	----
Strontium	7440-24-6	0.001	mg/L	30.4	2.20	----	----	----
Iron	7439-89-6	0.05	mg/L	60.3	0.19	----	----	----
Bromine	7726-95-6	0.1	mg/L	18.0	29.0	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EK025SF: Free CN by Segmented Flow Analyser								
Free Cyanide	----	0.004	mg/L	<0.004	<0.004	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	0.015	0.040	----	----	----
EK027: Thiocyanate								
Thiocyanate	463-56-9	0.1	mg/L	<0.1	<0.1	----	----	----
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser								
Weak Acid Dissociable Cyanide	----	0.004	mg/L	0.004	<0.010	----	----	----
EK030: Cyanide Amenable to Chlorination								
Cyanide amenable to chlorination	----	0.01	mg/L	<0.01	0.01	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.1	1.7	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	1.49	1.10	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.01	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.0	1.2	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	2.0	1.2	----	----	----
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	258	71.4	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB-6S	HSMB-6D2	Trip Blank 160109	----	----
Sampling date / time				31-Jan-2023 13:30	31-Jan-2023 16:20	31-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	EB2302837-001	EB2302837-002	EB2302837-003	-----	-----
				Result	Result	Result	----	----
EN055: Ionic Balance - Continued								
∅ Total Cations	----	0.01	meq/L	271	69.4	----	----	----
∅ Ionic Balance	----	0.01	%	2.52	1.46	----	----	----
EP033: C1 - C4 Hydrocarbon Gases								
Methane	74-82-8	10	µg/L	18400	17200	----	----	----
Ethene	74-85-1	10	µg/L	<10	<10	----	----	----
Ethane	74-84-0	10	µg/L	<10	<10	----	----	----
Propene	115-07-1	10	µg/L	<10	<10	----	----	----
Propane	74-98-6	10	µg/L	<10	<10	----	----	----
Butene	25167-67-3	10	µg/L	<10	<10	----	----	----
Butane	106-97-8	10	µg/L	<10	<10	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	1.1	<1.0	----	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	----	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	----	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	----	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	----	----	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	----	----	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	----	----	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	----	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	----	----	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	----	----	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	----	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
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	----	----	----
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	----	----	----

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HSMB-6S	HSMB-6D2	Trip Blank 160109	----	----
Sampling date / time				31-Jan-2023 13:30	31-Jan-2023 16:20	31-Jan-2023 00:00	----	----	
Compound	CAS Number	LOR	Unit	EB2302837-001	EB2302837-002	EB2302837-003	-----	-----	
				Result	Result	Result	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b+j)fluoranthene	205-99-2	205-82-3	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	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----		0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20		µg/L	<20	<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	200	----	----	----
^ C10 - C36 Fraction (sum)	----	50		µg/L	<50	200	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20		µg/L	<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20		µg/L	<20	<20	<20	----	----
>C10 - C16 Fraction	----	100		µg/L	<100	<100	----	----	----
>C16 - C34 Fraction	----	100		µg/L	<100	240	----	----	----
>C34 - C40 Fraction	----	100		µg/L	<100	120	----	----	----
^ >C10 - C40 Fraction (sum)	----	100		µg/L	<100	360	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100		µg/L	<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1		µg/L	2	<1	<1	----	----
Toluene	108-88-3	2		µg/L	4	<2	<2	----	----
Ethylbenzene	100-41-4	2		µg/L	<2	<2	<2	----	----
meta- & para-Xylene	108-38-3	106-42-3	2	µg/L	<2	<2	<2	----	----
ortho-Xylene	95-47-6		2	µg/L	<2	<2	<2	----	----
^ Total Xylenes	----		2	µg/L	<2	<2	<2	----	----
^ Sum of BTEX	----		1	µg/L	6	<1	<1	----	----
Naphthalene	91-20-3	5		µg/L	<5	<5	<5	----	----
EP075(SIM)S: Phenolic Compound Surrogates									



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				HSMB-6S	HSMB-6D2	Trip Blank 160109	----	----
Sampling date / time				31-Jan-2023 13:30	31-Jan-2023 16:20	31-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	EB2302837-001	EB2302837-002	EB2302837-003	-----	-----
				Result	Result	Result	----	----
EP075(SIM)S: Phenolic Compound Surrogates - Continued								
Phenol-d6	13127-88-3	1.0	%	25.3	37.3	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	52.4	87.9	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	83.9	97.7	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	55.7	89.9	----	----	----
Anthracene-d10	1719-06-8	1.0	%	88.8	109	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	111	131	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	99.8	99.8	103	----	----
Toluene-D8	2037-26-5	2	%	98.6	99.3	98.1	----	----
4-Bromofluorobenzene	460-00-4	2	%	101	99.0	95.3	----	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	72
2-Chlorophenol-D4	93951-73-6	27	130
2,4,6-Tribromophenol	118-79-6	19	181
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	14	146
Anthracene-d10	1719-06-8	35	137
4-Terphenyl-d14	1718-51-0	36	154
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

Inter-Laboratory Testing

Analysis conducted by ALS Melbourne, NATA accreditation no. 825, site no. 13778 (Chemistry).

(WATER) EK027: Thiocyanate

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EP033: C1 - C4 Hydrocarbon Gases

CERTIFICATE OF ANALYSIS

Work Order : **EB2302931**
Client : **QLD DEPT OF RESOURCES**
Contact :
Address : 357 KUMMEROWS ROAD
 HOPELAND 4413
Telephone :
Project : LINC-115DE Hopeland
Order number : 4500018640
C-O-C number : ----
Sampler :
Site : ----
Quote number : BN/158/22 V4
No. of samples received : 5
No. of samples analysed : 5

Page : 1 of 8
Laboratory : Environmental Division Brisbane
Contact :
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61-7-3243 7222
Date Samples Received : 03-Feb-2023 09:30
Date Analysis Commenced : 03-Feb-2023
Issue Date : 28-Feb-2023 16:39



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Dilani Fernando	Laboratory Coordinator	Melbourne Inorganics, Springvale, VIC
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Keegan Mullane	Senior Chemist - Organics	Brisbane Organics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

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

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EK028SF (WAD Cyanide by SFA): Sample "HSMB-3D2" EB2302931-002, was diluted due to matrix interference. Limit of reporting adjusted accordingly.
- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO2 and Fluoride to the Anions.
- TDS by method EA-015 may bias high for sample 1(HSMB-3S2) due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- **C1-C4 Gases in Water analysis is conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- EK040P (Fluoride) - Particular samples required dilution due to matrix interferences. LOR values have been adjusted accordingly.
- EG020-F (Dissolved Metals by ICP-MS): Limit of reporting raised for sample HSMB-3S2 (EB2302931-001) due to matrix interference.
- Bromine results from the EG020 method code should be regarded as semi-quantitative only.
- EK057G (Nitrite as N): Sample EB2302931-001 (HSMB-3S2) was diluted due to matrix interference. LOR adjusted accordingly.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB-3S2	HSMB-3D2	Trip Spike 3	Trip Blank 160111	ALS Control Spike 3
Sampling date / time				02-Feb-2023 12:30	02-Feb-2023 15:30	30-Jan-2023 00:00	01-Feb-2023 00:00	30-Jan-2023 00:00
Compound	CAS Number	LOR	Unit	EB2302931-001	EB2302931-002	EB2302931-003	EB2302931-004	EB2302931-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	5.37	8.51	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	26200	3010	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	21300	1740	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	35	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	47	657	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	47	692	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	<1	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	9720	565	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	708	7	----	----	----
Magnesium	7439-95-4	1	mg/L	197	2	----	----	----
Sodium	7440-23-5	1	mg/L	4960	600	----	----	----
Potassium	7440-09-7	1	mg/L	420	152	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.05	<0.01	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.005	<0.001	----	----	----
Boron	7440-42-8	0.05	mg/L	0.11	0.24	----	----	----
Barium	7440-39-3	0.001	mg/L	14.2	0.390	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.005	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0005	<0.0001	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.005	<0.001	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.005	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.005	<0.001	----	----	----
Manganese	7439-96-5	0.001	mg/L	6.38	0.023	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.005	0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.005	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.05	<0.01	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.05	<0.01	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				HSMB-3S2	HSMB-3D2	Trip Spike 3	Trip Blank 160111	ALS Control Spike 3
Sampling date / time				02-Feb-2023 12:30	02-Feb-2023 15:30	30-Jan-2023 00:00	01-Feb-2023 00:00	30-Jan-2023 00:00
Compound	CAS Number	LOR	Unit	EB2302931-001	EB2302931-002	EB2302931-003	EB2302931-004	EB2302931-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Zinc	7440-66-6	0.005	mg/L	<0.025	<0.005	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.005	0.007	----	----	----
Strontium	7440-24-6	0.001	mg/L	38.2	1.02	----	----	----
Iron	7439-89-6	0.05	mg/L	202	0.77	----	----	----
Bromine	7726-95-6	0.1	mg/L	49.5	11.1	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EK025SF: Free CN by Segmented Flow Analyser								
Free Cyanide	----	0.004	mg/L	0.009	0.013	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	0.079	0.104	----	----	----
EK027: Thiocyanate								
Thiocyanate	463-56-9	0.1	mg/L	<0.1	<0.1	----	----	----
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser								
Weak Acid Dissociable Cyanide	----	0.004	mg/L	0.009	<0.015	----	----	----
EK030: Cyanide Amenable to Chlorination								
Cyanide amenable to chlorination	----	0.01	mg/L	0.04	0.06	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<1.0	0.6	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.92	0.01	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.05	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.05	<0.01	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	4.6	0.4	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	4.6	0.4	----	----	----
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	275	29.8	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB-3S2	HSMB-3D2	Trip Spike 3	Trip Blank 160111	ALS Control Spike 3
Sampling date / time				02-Feb-2023 12:30	02-Feb-2023 15:30	30-Jan-2023 00:00	01-Feb-2023 00:00	30-Jan-2023 00:00
Compound	CAS Number	LOR	Unit	EB2302931-001	EB2302931-002	EB2302931-003	EB2302931-004	EB2302931-005
				Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued								
∅ Total Cations	----	0.01	meq/L	278	30.5	----	----	----
∅ Ionic Balance	----	0.01	%	0.52	1.22	----	----	----
EP033: C1 - C4 Hydrocarbon Gases								
Methane	74-82-8	10	µg/L	13500	11800	----	----	----
Ethene	74-85-1	10	µg/L	<10	<10	----	----	----
Ethane	74-84-0	10	µg/L	<10	<10	----	----	----
Propene	115-07-1	10	µg/L	<10	<10	----	----	----
Propane	74-98-6	10	µg/L	<10	<10	----	----	----
Butene	25167-67-3	10	µg/L	<10	<10	----	----	----
Butane	106-97-8	10	µg/L	<10	<10	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	3.2	<1.0	----	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	----	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	----	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	----	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	----	----	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	----	----	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	----	----	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	----	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	----	----	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	----	----	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	----	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	1.3	<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	----	----	----
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	----	----	----

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HSMB-3S2		HSMB-3D2		Trip Spike 3		Trip Blank 160111		ALS Control Spike 3	
Sampling date / time					02-Feb-2023 12:30		02-Feb-2023 15:30		30-Jan-2023 00:00		01-Feb-2023 00:00		30-Jan-2023 00:00	
Compound		CAS Number	LOR	Unit	EB2302931-001		EB2302931-002		EB2302931-003		EB2302931-004		EB2302931-005	
					Result		Result		Result		Result		Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued														
Benzo(b+j)fluoranthene		205-99-2 205-82-3	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	1.3		<0.5		----		----		----	
^ Benzo(a)pyrene TEQ (zero)		----	0.5	µg/L	<0.5		<0.5		----		----		----	
EP080/071: Total Petroleum Hydrocarbons														
C6 - C9 Fraction		----	20	µg/L	30		20		210		<20		210	
C10 - C14 Fraction		----	50	µg/L	560		<50		----		----		----	
C15 - C28 Fraction		----	100	µg/L	380		<100		----		----		----	
C29 - C36 Fraction		----	50	µg/L	<50		<50		----		----		----	
^ C10 - C36 Fraction (sum)		----	50	µg/L	940		<50		----		----		----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions														
C6 - C10 Fraction		C6_C10	20	µg/L	40		30		230		<20		230	
^ C6 - C10 Fraction minus BTEX (F1)		C6_C10-BTEX	20	µg/L	30		30		120		<20		130	
>C10 - C16 Fraction		----	100	µg/L	560		<100		----		----		----	
>C16 - C34 Fraction		----	100	µg/L	390		<100		----		----		----	
>C34 - C40 Fraction		----	100	µg/L	<100		<100		----		----		----	
^ >C10 - C40 Fraction (sum)		----	100	µg/L	950		<100		----		----		----	
^ >C10 - C16 Fraction minus Naphthalene (F2)		----	100	µg/L	560		<100		----		----		----	
EP080: BTEXN														
Benzene		71-43-2	1	µg/L	10		3		17		<1		16	
Toluene		108-88-3	2	µg/L	3		<2		19		<2		17	
Ethylbenzene		100-41-4	2	µg/L	<2		<2		16		<2		15	
meta- & para-Xylene		108-38-3 106-42-3	2	µg/L	<2		<2		38		<2		35	
ortho-Xylene		95-47-6	2	µg/L	<2		<2		20		<2		18	
^ Total Xylenes		----	2	µg/L	<2		<2		58		<2		53	
^ Sum of BTEX		----	1	µg/L	13		3		110		<1		101	
Naphthalene		91-20-3	5	µg/L	<5		<5		21		<5		20	
EP075(SIM)S: Phenolic Compound Surrogates														



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				HSMB-3S2	HSMB-3D2	Trip Spike 3	Trip Blank 160111	ALS Control Spike 3
Sampling date / time				02-Feb-2023 12:30	02-Feb-2023 15:30	30-Jan-2023 00:00	01-Feb-2023 00:00	30-Jan-2023 00:00
Compound	CAS Number	LOR	Unit	EB2302931-001	EB2302931-002	EB2302931-003	EB2302931-004	EB2302931-005
				Result	Result	Result	Result	Result
EP075(SIM)S: Phenolic Compound Surrogates - Continued								
Phenol-d6	13127-88-3	1.0	%	38.8	40.2	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	82.3	86.7	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	105	61.3	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	87.2	101	----	----	----
Anthracene-d10	1719-06-8	1.0	%	87.7	107	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	83.1	114	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	92.8	111	93.9	95.2	93.5
Toluene-D8	2037-26-5	2	%	98.4	98.2	103	104	104
4-Bromofluorobenzene	460-00-4	2	%	100	97.6	115	99.4	114



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	72
2-Chlorophenol-D4	93951-73-6	27	130
2,4,6-Tribromophenol	118-79-6	19	181
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	14	146
Anthracene-d10	1719-06-8	35	137
4-Terphenyl-d14	1718-51-0	36	154
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

Inter-Laboratory Testing

Analysis conducted by ALS Melbourne, NATA accreditation no. 825, site no. 13778 (Chemistry).

(WATER) EK027: Thiocyanate

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EP033: C1 - C4 Hydrocarbon Gases

CERTIFICATE OF ANALYSIS

Work Order : **EB2303177**
Client : **QLD DEPT OF RESOURCES**
Contact :
Address : 357 KUMMEROWS ROAD
 HOPELAND 4413
Telephone :
Project : LINC-115DE Hopeland
Order number : 4500018640
C-O-C number : ----
Sampler :
Site : ----
Quote number : BN/158/22 V4
No. of samples received : 10
No. of samples analysed : 10

Page : 1 of 9
Laboratory : Environmental Division Brisbane
Contact :
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61-7-3243 7222
Date Samples Received : 07-Feb-2023 09:40
Date Analysis Commenced : 08-Feb-2023
Issue Date : 15-Feb-2023 17:53



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Dilani Fernando	Laboratory Coordinator	Melbourne Inorganics, Springvale, VIC
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Keegan Mullane	Senior Chemist - Organics	Brisbane Organics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

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

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- It is recognised that EK028SF (WAD Cyanide by SFA) is less than EK025SF (Free Cyanide) for sample "HSMB2S", EB2303177-004. However, the difference is within experimental variation of the methods.
- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO2 and Fluoride to the Anions.
- TDS by method EA-015 may bias high for some samples due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- **C1-C4 Gases in Water analysis is conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Bromine results from the EG020 method code should be regarded as semi-quantitative only.
- EK057G (Nitrite as N): Some samples were diluted due to matrix interference. LOR adjusted accordingly.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB-3D1	HSMB-3S1	DUP02A	HSMB2S	Trip Spike 3
Sampling date / time				02-Feb-2023 15:00	02-Feb-2023 12:15	02-Feb-2023 12:15	03-Feb-2023 10:30	30-Jan-2023 00:00
Compound	CAS Number	LOR	Unit	EB2303177-001	EB2303177-002	EB2303177-003	EB2303177-004	EB2303177-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.87	4.98	4.94	10.1	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	3190	18800	19000	6050	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	1890	16200	15900	3400	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	107	<1	<1	400	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	569	<1	<1	101	----
Total Alkalinity as CaCO3	----	1	mg/L	676	<1	<1	501	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	<1	<1	1	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	770	7440	7500	1670	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	4	455	457	<1	----
Magnesium	7439-95-4	1	mg/L	2	113	114	<1	----
Sodium	7440-23-5	1	mg/L	742	3510	3470	1240	----
Potassium	7440-09-7	1	mg/L	59	269	266	121	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	<0.01	0.01	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Boron	7440-42-8	0.05	mg/L	0.26	0.08	0.08	0.40	----
Barium	7440-39-3	0.001	mg/L	0.191	11.5	11.5	0.031	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	0.001	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Manganese	7439-96-5	0.001	mg/L	0.018	15.7	15.7	0.001	----
Nickel	7440-02-0	0.001	mg/L	<0.001	0.002	0.002	0.006	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	0.005	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB-3D1	HSMB-3S1	DUP02A	HSMB2S	Trip Spike 3
Sampling date / time				02-Feb-2023 15:00	02-Feb-2023 12:15	02-Feb-2023 12:15	03-Feb-2023 10:30	30-Jan-2023 00:00
Compound	CAS Number	LOR	Unit	EB2303177-001	EB2303177-002	EB2303177-003	EB2303177-004	EB2303177-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Zinc	7440-66-6	0.005	mg/L	<0.005	0.023	0.030	0.022	----
Molybdenum	7439-98-7	0.001	mg/L	0.003	<0.001	<0.001	0.019	----
Strontium	7440-24-6	0.001	mg/L	0.595	21.6	21.6	0.160	----
Iron	7439-89-6	0.05	mg/L	0.32	299	300	0.19	----
Bromine	7726-95-6	0.1	mg/L	1.7	18.0	18.8	3.7	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
EK025SF: Free CN by Segmented Flow Analyser								
Free Cyanide	----	0.004	mg/L	<0.004	<0.004	<0.004	0.029	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	0.028	0.016	0.013	0.388	----
EK027: Thiocyanate								
Thiocyanate	463-56-9	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	----
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser								
Weak Acid Dissociable Cyanide	----	0.004	mg/L	<0.004	<0.004	<0.004	0.028	----
EK030: Cyanide Amenable to Chlorination								
Cyanide amenable to chlorination	----	0.01	mg/L	<0.01	<0.01	<0.01	0.11	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	1.3	<0.1	<0.1	0.8	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.60	0.67	0.62	3.39	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.05	<0.05	<0.01	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.05	<0.05	<0.01	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.7	2.6	2.5	3.4	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	0.7	2.6	2.5	3.4	----
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	35.2	210	212	57.1	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB-3D1	HSMB-3S1	DUP02A	HSMB2S	Trip Spike 3
Sampling date / time				02-Feb-2023 15:00	02-Feb-2023 12:15	02-Feb-2023 12:15	03-Feb-2023 10:30	30-Jan-2023 00:00
Compound	CAS Number	LOR	Unit	EB2303177-001	EB2303177-002	EB2303177-003	EB2303177-004	EB2303177-005
				Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued								
∅ Total Cations	----	0.01	meq/L	34.1	192	190	57.0	----
∅ Ionic Balance	----	0.01	%	1.56	4.56	5.39	0.09	----
EP033: C1 - C4 Hydrocarbon Gases								
Methane	74-82-8	10	µg/L	13400	7230	7420	4830	----
Ethene	74-85-1	10	µg/L	<10	<10	<10	<10	----
Ethane	74-84-0	10	µg/L	<10	<10	<10	<10	----
Propene	115-07-1	10	µg/L	<10	<10	<10	<10	----
Propane	74-98-6	10	µg/L	<10	<10	<10	<10	----
Butene	25167-67-3	10	µg/L	<10	<10	<10	<10	----
Butane	106-97-8	10	µg/L	<10	<10	<10	<10	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	5.6	4.8	6.5	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	2.2	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Pyrene	129-00-0	1.0	µg/L	<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	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HSMB-3D1	HSMB-3S1	DUP02A	HSMB2S	Trip Spike 3
Sampling date / time					02-Feb-2023 15:00	02-Feb-2023 12:15	02-Feb-2023 12:15	03-Feb-2023 10:30	30-Jan-2023 00:00
Compound	CAS Number	LOR	Unit	EB2303177-001	EB2303177-002	EB2303177-003	EB2303177-004	EB2303177-005	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<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	----	
Benzo(a)pyrene	50-32-8	0.5	µg/L	<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	----	
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<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	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	2.2	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	150	210	
C10 - C14 Fraction	----	50	µg/L	<50	200	270	140	----	
C15 - C28 Fraction	----	100	µg/L	<100	140	250	1530	----	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	130	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	340	520	1800	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	150	230	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	30	120	
>C10 - C16 Fraction	----	100	µg/L	<100	200	290	110	----	
>C16 - C34 Fraction	----	100	µg/L	<100	120	240	1590	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	320	530	1700	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	200	290	110	----	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	5	3	3	109	17	
Toluene	108-88-3	2	µg/L	<2	<2	<2	13	19	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	16	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	38	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	20	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	58	
^ Sum of BTEX	----	1	µg/L	5	3	3	122	110	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	21	
EP075(SIM)S: Phenolic Compound Surrogates									



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				HSMB-3D1	HSMB-3S1	DUP02A	HSMB2S	Trip Spike 3
Sampling date / time				02-Feb-2023 15:00	02-Feb-2023 12:15	02-Feb-2023 12:15	03-Feb-2023 10:30	30-Jan-2023 00:00
Compound	CAS Number	LOR	Unit	EB2303177-001	EB2303177-002	EB2303177-003	EB2303177-004	EB2303177-005
				Result	Result	Result	Result	Result
EP075(SIM)S: Phenolic Compound Surrogates - Continued								
Phenol-d6	13127-88-3	1.0	%	33.7	38.1	33.6	40.3	----
2-Chlorophenol-D4	93951-73-6	1.0	%	85.7	97.6	84.4	87.8	----
2,4,6-Tribromophenol	118-79-6	1.0	%	97.7	138	128	95.2	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	96.1	102	91.8	89.2	----
Anthracene-d10	1719-06-8	1.0	%	109	117	105	103	----
4-Terphenyl-d14	1718-51-0	1.0	%	102	108	96.8	96.0	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	93.0	94.0	97.5	101	93.9
Toluene-D8	2037-26-5	2	%	103	104	105	102	103
4-Bromofluorobenzene	460-00-4	2	%	101	104	104	105	115



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				Trip Blank 160111	ALS Control Spike	Trip Spike 4	Trip Blank 160110	ALS Control Spike
Sampling date / time				02-Feb-2023 00:00	30-Jan-2023 00:00	30-Jan-2023 00:00	03-Feb-2023 00:00	30-Jan-2023 00:00
Compound	CAS Number	LOR	Unit	EB2303177-006	EB2303177-007	EB2303177-008	EB2303177-009	EB2303177-010
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	210	190	<20	150
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	230	220	<20	190
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	130	120	<20	100
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	16	16	<1	16
Toluene	108-88-3	2	µg/L	<2	17	17	<2	15
Ethylbenzene	100-41-4	2	µg/L	<2	15	15	<2	15
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	35	34	<2	31
ortho-Xylene	95-47-6	2	µg/L	<2	18	19	<2	16
^ Total Xylenes	----	2	µg/L	<2	53	53	<2	47
^ Sum of BTEX	----	1	µg/L	<1	101	101	<1	93
Naphthalene	91-20-3	5	µg/L	<5	20	21	<5	18
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	94.4	93.5	93.6	105	104
Toluene-D8	2037-26-5	2	%	103	104	105	98.7	98.4
4-Bromofluorobenzene	460-00-4	2	%	100	114	115	98.0	100



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	72
2-Chlorophenol-D4	93951-73-6	27	130
2,4,6-Tribromophenol	118-79-6	19	181
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	14	146
Anthracene-d10	1719-06-8	35	137
4-Terphenyl-d14	1718-51-0	36	154
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

Inter-Laboratory Testing

Analysis conducted by ALS Melbourne, NATA accreditation no. 825, site no. 13778 (Chemistry).

(WATER) EK027: Thiocyanate

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EP033: C1 - C4 Hydrocarbon Gases

CERTIFICATE OF ANALYSIS

Work Order : **EB2303413**
Client : **QLD DEPT OF RESOURCES**
Contact :
Address : 357 KUMMEROWS ROAD
 HOPELAND 4413
Telephone :
Project : LINC-115DE Hopeland
Order number : 4500018640
C-O-C number : ----
Sampler :
Site : ----
Quote number : BN/158/22 V4
No. of samples received : 5
No. of samples analysed : 5

Page : 1 of 8
Laboratory : Environmental Division Brisbane
Contact :
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61-7-3243 7222
Date Samples Received : 08-Feb-2023 09:20
Date Analysis Commenced : 08-Feb-2023
Issue Date : 20-Feb-2023 10:02



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Dilani Fernando	Laboratory Coordinator	Melbourne Inorganics, Springvale, VIC
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Morgan Lennox	Senior Organic Chemist	Brisbane Organics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

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

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO2 and Fluoride to the Anions.
- **C1-C4 Gases in Water analysis is conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				HSMB1S	HSMB1D	Trip Spike 1	Trip Blank 160112	ALS Control Spike
Sampling date / time				06-Feb-2023 14:30	06-Feb-2023 15:45	30-Jan-2023 00:00	07-Feb-2023 00:00	30-Jan-2023 00:00
Compound	CAS Number	LOR	Unit	EB2303413-001	EB2303413-002	EB2303413-003	EB2303413-004	EB2303413-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	5.14	5.57	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	14900	655	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	9480	442	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	38	109	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	38	109	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	<1	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	5410	107	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	159	45	----	----	----
Magnesium	7439-95-4	1	mg/L	44	2	----	----	----
Sodium	7440-23-5	1	mg/L	2240	48	----	----	----
Potassium	7440-09-7	1	mg/L	595	20	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Boron	7440-42-8	0.05	mg/L	0.14	<0.05	----	----	----
Barium	7440-39-3	0.001	mg/L	3.46	0.461	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Manganese	7439-96-5	0.001	mg/L	15.2	2.08	----	----	----
Nickel	7440-02-0	0.001	mg/L	0.003	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				HSMB1S	HSMB1D	Trip Spike 1	Trip Blank 160112	ALS Control Spike
Sampling date / time				06-Feb-2023 14:30	06-Feb-2023 15:45	30-Jan-2023 00:00	07-Feb-2023 00:00	30-Jan-2023 00:00
Compound	CAS Number	LOR	Unit	EB2303413-001	EB2303413-002	EB2303413-003	EB2303413-004	EB2303413-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Zinc	7440-66-6	0.005	mg/L	0.035	<0.005	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	----	----
Strontium	7440-24-6	0.001	mg/L	7.40	1.28	----	----	----
Iron	7439-89-6	0.05	mg/L	446	72.1	----	----	----
Bromine	7726-95-6	0.1	mg/L	13.1	0.3	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EK025SF: Free CN by Segmented Flow Analyser								
Free Cyanide	----	0.004	mg/L	0.021	<0.004	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	0.307	<0.004	----	----	----
EK027: Thiocyanate								
Thiocyanate	463-56-9	0.1	mg/L	<0.1	<0.1	----	----	----
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser								
Weak Acid Dissociable Cyanide	----	0.004	mg/L	0.026	<0.004	----	----	----
EK030: Cyanide Amenable to Chlorination								
Cyanide amenable to chlorination	----	0.01	mg/L	0.03	<0.01	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.1	<0.1	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.96	0.48	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	5.9	0.2	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	5.9	0.2	----	----	----
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	153	5.20	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				HSMB1S	HSMB1D	Trip Spike 1	Trip Blank 160112	ALS Control Spike
Sampling date / time				06-Feb-2023 14:30	06-Feb-2023 15:45	30-Jan-2023 00:00	07-Feb-2023 00:00	30-Jan-2023 00:00
Compound	CAS Number	LOR	Unit	EB2303413-001	EB2303413-002	EB2303413-003	EB2303413-004	EB2303413-005
				Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued								
∅ Total Cations	----	0.01	meq/L	141	----	----	----	----
∅ Total Cations	----	0.01	meq/L	----	5.01	----	----	----
∅ Ionic Balance	----	0.01	%	4.22	----	----	----	----
∅ Ionic Balance	----	0.01	%	----	1.83	----	----	----
EP033: C1 - C4 Hydrocarbon Gases								
Methane	74-82-8	10	µg/L	21200	16200	----	----	----
Ethene	74-85-1	10	µg/L	<10	<10	----	----	----
Ethane	74-84-0	10	µg/L	<10	<10	----	----	----
Propene	115-07-1	10	µg/L	<10	<10	----	----	----
Propane	74-98-6	10	µg/L	<10	<10	----	----	----
Butene	25167-67-3	10	µg/L	<10	<10	----	----	----
Butane	106-97-8	10	µg/L	<10	<10	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	9.9	1.6	----	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	----	----	----
2-Methylphenol	95-48-7	1.0	µg/L	1.2	<1.0	----	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	3.2	2.4	----	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	----	----	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	----	----	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	----	----	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	----	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	----	----	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	----	----	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	----	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	2.0	<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	----	----	----
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	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB1S	HSMB1D	Trip Spike 1	Trip Blank 160112	ALS Control Spike
Sampling date / time				06-Feb-2023 14:30	06-Feb-2023 15:45	30-Jan-2023 00:00	07-Feb-2023 00:00	30-Jan-2023 00:00
Compound	CAS Number	LOR	Unit	EB2303413-001	EB2303413-002	EB2303413-003	EB2303413-004	EB2303413-005
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
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+j)fluoranthene	205-99-2 205-82-3	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	2.0	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	120	<20	170	<20	170
C10 - C14 Fraction	----	50	µg/L	540	5570	----	----	----
C15 - C28 Fraction	----	100	µg/L	430	540	----	----	----
C29 - C36 Fraction	----	50	µg/L	140	<50	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	1110	6110	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	120	50	200	<20	210
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	50	100	<20	110
>C10 - C16 Fraction	----	100	µg/L	500	5440	----	----	----
>C16 - C34 Fraction	----	100	µg/L	510	470	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	1010	5910	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	500	5440	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	108	2	17	<1	18
Toluene	108-88-3	2	µg/L	8	<2	17	<2	17
Ethylbenzene	100-41-4	2	µg/L	<2	<2	16	<2	17
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	2	<2	33	<2	34
ortho-Xylene	95-47-6	2	µg/L	<2	<2	18	<2	18
^ Total Xylenes	----	2	µg/L	2	<2	51	<2	52
^ Sum of BTEX	----	1	µg/L	118	2	101	<1	104



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				HSMB1S	HSMB1D	Trip Spike 1	Trip Blank 160112	ALS Control Spike
Sampling date / time				06-Feb-2023 14:30	06-Feb-2023 15:45	30-Jan-2023 00:00	07-Feb-2023 00:00	30-Jan-2023 00:00
Compound	CAS Number	LOR	Unit	EB2303413-001	EB2303413-002	EB2303413-003	EB2303413-004	EB2303413-005
				Result	Result	Result	Result	Result
EP080: BTEXN - Continued								
Naphthalene	91-20-3	5	µg/L	<5	<5	18	<5	18
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	42.5	31.8	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	100	82.5	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	118	114	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	103	120	----	----	----
Anthracene-d10	1719-06-8	1.0	%	117	113	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	111	104	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	102	100.0	102	102	102
Toluene-D8	2037-26-5	2	%	100	97.9	100	97.7	99.5
4-Bromofluorobenzene	460-00-4	2	%	97.1	95.4	104	102	99.9



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	72
2-Chlorophenol-D4	93951-73-6	27	130
2,4,6-Tribromophenol	118-79-6	19	181
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	14	146
Anthracene-d10	1719-06-8	35	137
4-Terphenyl-d14	1718-51-0	36	154
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

Inter-Laboratory Testing

Analysis conducted by ALS Melbourne, NATA accreditation no. 825, site no. 13778 (Chemistry).

(WATER) EK027: Thiocyanate

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EP033: C1 - C4 Hydrocarbon Gases

CERTIFICATE OF ANALYSIS

Work Order : **EB2303575**
Client : **QLD DEPT OF RESOURCES**
Contact :
Address : 357 KUMMEROWS ROAD
HOPELAND 4413
Telephone :
Project : LINC-115DE Hopeland
Order number : 4500018640
C-O-C number : ----
Sampler :
Site : ----
Quote number : BN/158/22 V4
No. of samples received : 6
No. of samples analysed : 6

Page : 1 of 9
Laboratory : Environmental Division Brisbane
Contact :
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61-7-3243 7222
Date Samples Received : 09-Feb-2023 09:30
Date Analysis Commenced : 09-Feb-2023
Issue Date : 17-Feb-2023 17:21



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Keegan Mullane	Senior Chemist - Organics	Brisbane Organics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

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

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- It is recognised that EK028SF (WAD Cyanide by SFA) is less than EK025SF (Free Cyanide) for sample "HSMB5D", EB2303575-003. However, the difference is within experimental variation of the methods.
- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO2 and Fluoride to the Anions.
- EK027:LOR raised due to sample matrix.
- **Thiocyanate and C1-C4 Gases in Water analysis is conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB4D	HSMB4S	HSMB5D	Trip Spike 1	Trip Blank 160112
Sampling date / time				07-Feb-2023 11:00	07-Feb-2023 12:45	07-Feb-2023 15:30	30-Jan-2023 00:00	07-Feb-2023 00:00
Compound	CAS Number	LOR	Unit	EB2303575-001	EB2303575-002	EB2303575-003	EB2303575-004	EB2303575-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	10.1	5.99	8.89	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1320	17700	2830	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	771	11400	1660	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	53	<1	80	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	29	58	519	----	----
Total Alkalinity as CaCO3	----	1	mg/L	82	58	600	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	6	<1	<1	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	368	6150	598	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	40	275	<1	----	----
Magnesium	7439-95-4	1	mg/L	<1	35	<1	----	----
Sodium	7440-23-5	1	mg/L	124	1990	586	----	----
Potassium	7440-09-7	1	mg/L	128	2130	61	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.14	<0.01	<0.01	----	----
Arsenic	7440-38-2	0.001	mg/L	0.001	<0.001	<0.001	----	----
Boron	7440-42-8	0.05	mg/L	0.07	0.10	0.25	----	----
Barium	7440-39-3	0.001	mg/L	0.165	3.48	0.110	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Manganese	7439-96-5	0.001	mg/L	<0.001	4.36	0.007	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	0.002	<0.001	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				HSMB4D	HSMB4S	HSMB5D	Trip Spike 1	Trip Blank 160112
Sampling date / time				07-Feb-2023 11:00	07-Feb-2023 12:45	07-Feb-2023 15:30	30-Jan-2023 00:00	07-Feb-2023 00:00
Compound	CAS Number	LOR	Unit	EB2303575-001	EB2303575-002	EB2303575-003	EB2303575-004	EB2303575-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	----	----
Molybdenum	7439-98-7	0.001	mg/L	0.003	<0.001	0.002	----	----
Strontium	7440-24-6	0.001	mg/L	0.834	13.9	0.284	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	14.5	0.49	----	----
Bromine	7726-95-6	0.1	mg/L	0.7	15.1	1.4	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
EK025SF: Free CN by Segmented Flow Analyser								
Free Cyanide	----	0.004	mg/L	<0.004	0.027	0.012	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	0.029	0.377	0.115	----	----
EK027: Thiocyanate								
Thiocyanate	463-56-9	0.1	mg/L	<1.0	<1.0	<1.0	----	----
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser								
Weak Acid Dissociable Cyanide	----	0.004	mg/L	<0.004	0.032	0.011	----	----
EK030: Cyanide Amenable to Chlorination								
Cyanide amenable to chlorination	----	0.01	mg/L	<0.01	0.02	0.04	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	0.2	1.6	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.48	9.77	1.09	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.02	<0.01	<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	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.6	11.7	1.2	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	0.6	11.7	1.2	----	----
EN055: Ionic Balance								
ø Total Anions	----	0.01	meq/L	12.1	175	28.8	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				HSMB4D	HSMB4S	HSMB5D	Trip Spike 1	Trip Blank 160112
Sampling date / time				07-Feb-2023 11:00	07-Feb-2023 12:45	07-Feb-2023 15:30	30-Jan-2023 00:00	07-Feb-2023 00:00
Compound	CAS Number	LOR	Unit	EB2303575-001	EB2303575-002	EB2303575-003	EB2303575-004	EB2303575-005
				Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued								
∅ Total Cations	----	0.01	meq/L	10.7	158	27.0	----	----
∅ Ionic Balance	----	0.01	%	6.49	5.12	3.23	----	----
EP033: C1 - C4 Hydrocarbon Gases								
Methane	74-82-8	10	µg/L	18600	13600	17500	----	----
Ethene	74-85-1	10	µg/L	<10	<10	<10	----	----
Ethane	74-84-0	10	µg/L	<10	<10	<10	----	----
Propene	115-07-1	10	µg/L	<10	<10	<10	----	----
Propane	74-98-6	10	µg/L	<10	<10	<10	----	----
Butene	25167-67-3	10	µg/L	<10	<10	<10	----	----
Butane	106-97-8	10	µg/L	<10	<10	<10	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	5.2	<1.0	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	1.4	<1.0	----	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	2.2	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	HSMB4D	HSMB4S	HSMB5D	Trip Spike 1	Trip Blank 160112
Sampling date / time				07-Feb-2023 11:00	07-Feb-2023 12:45	07-Feb-2023 15:30	30-Jan-2023 00:00	07-Feb-2023 00:00	
Compound	CAS Number	LOR	Unit	EB2303575-001	EB2303575-002	EB2303575-003	EB2303575-004	EB2303575-005	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----	
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----	
Benzo(a)pyrene	50-32-8	0.5	µg/L	<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	----	----	
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----	
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	2.2	<0.5	----	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	360	<20	190	<20	
C10 - C14 Fraction	----	50	µg/L	640	310	70	----	----	
C15 - C28 Fraction	----	100	µg/L	6500	430	<100	----	----	
C29 - C36 Fraction	----	50	µg/L	680	110	<50	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	7820	850	70	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	40	340	50	240	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	40	20	40	130	<20	
>C10 - C16 Fraction	----	100	µg/L	610	300	<100	----	----	
>C16 - C34 Fraction	----	100	µg/L	6920	470	<100	----	----	
>C34 - C40 Fraction	----	100	µg/L	580	<100	<100	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	8110	770	<100	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	610	300	<100	----	----	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	4	298	9	19	<1	
Toluene	108-88-3	2	µg/L	<2	22	<2	19	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	18	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	38	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	18	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	56	<2	
^ Sum of BTEX	----	1	µg/L	4	320	9	112	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	19	<5	
EP075(SIM)S: Phenolic Compound Surrogates									



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				HSMB4D	HSMB4S	HSMB5D	Trip Spike 1	Trip Blank 160112
Sampling date / time				07-Feb-2023 11:00	07-Feb-2023 12:45	07-Feb-2023 15:30	30-Jan-2023 00:00	07-Feb-2023 00:00
Compound	CAS Number	LOR	Unit	EB2303575-001	EB2303575-002	EB2303575-003	EB2303575-004	EB2303575-005
				Result	Result	Result	Result	Result
EP075(SIM)S: Phenolic Compound Surrogates - Continued								
Phenol-d6	13127-88-3	1.0	%	30.2	31.0	28.1	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	67.5	83.4	62.9	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	96.9	106	48.1	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	72.4	85.6	85.3	----	----
Anthracene-d10	1719-06-8	1.0	%	87.9	104	102	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	88.8	104	106	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	95.8	109	95.8	94.8	96.0
Toluene-D8	2037-26-5	2	%	103	98.1	101	101	101
4-Bromofluorobenzene	460-00-4	2	%	99.3	104	99.8	99.8	100



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	ALS Control Spike	----	----	----	----
Sampling date / time				30-Jan-2023 00:00	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2303575-006	-----	-----	-----	-----	-----
Result				----	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	160	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	210	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	120	----	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	16	----	----	----	----	----
Toluene	108-88-3	2	µg/L	16	----	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L	15	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	32	----	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L	16	----	----	----	----	----
^ Total Xylenes	----	2	µg/L	48	----	----	----	----	----
^ Sum of BTEX	----	1	µg/L	95	----	----	----	----	----
Naphthalene	91-20-3	5	µg/L	18	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	98.1	----	----	----	----	----
Toluene-D8	2037-26-5	2	%	102	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	104	----	----	----	----	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	72
2-Chlorophenol-D4	93951-73-6	27	130
2,4,6-Tribromophenol	118-79-6	19	181
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	14	146
Anthracene-d10	1719-06-8	35	137
4-Terphenyl-d14	1718-51-0	36	154
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EK027: Thiocyanate

(WATER) EP033: C1 - C4 Hydrocarbon Gases

CERTIFICATE OF ANALYSIS

Work Order : **EB2303770**
Client : **QLD DEPT OF RESOURCES**
Contact :
Address : 357 KUMMEROWS ROAD
 HOPELAND 4413
Telephone :
Project : LINC-115DE Hopeland
Order number : 4500018640
C-O-C number : ----
Sampler :
Site : ----
Quote number : BN/158/22 V4
No. of samples received : 7
No. of samples analysed : 7

Page : 1 of 9
Laboratory : Environmental Division Brisbane
Contact :
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61-7-3243 7222
Date Samples Received : 10-Feb-2023 09:40
Date Analysis Commenced : 13-Feb-2023
Issue Date : 22-Feb-2023 15:26



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD
Morgan Lennox	Senior Organic Chemist	Brisbane Organics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H⁺ to the Cations and Nitrate, SiO₂ and Fluoride to the Anions.
- EK027:LOR raised due to sample matrix.
- **C1-C4 Gases in Water and Thiocyanate analysis is conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				NB03D	DUP01A	NB04D(S)	NB05S	Trip Spike 4
Sampling date / time				08-Feb-2023 11:30	08-Feb-2023 11:30	08-Feb-2023 15:30	08-Feb-2023 16:15	06-Feb-2023 00:00
Compound	CAS Number	LOR	Unit	EB2303770-001	EB2303770-002	EB2303770-003	EB2303770-004	EB2303770-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	9.11	9.11	8.04	10.6	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1710	1720	9430	8640	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	957	960	5620	4840	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	23	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	78	80	<1	125	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	302	298	70	<1	----
Total Alkalinity as CaCO3	----	1	mg/L	379	379	70	148	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	<1	<1	8	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	333	333	3210	2870	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	2	2	50	19	----
Magnesium	7439-95-4	1	mg/L	<1	<1	18	<1	----
Sodium	7440-23-5	1	mg/L	359	358	1910	1820	----
Potassium	7440-09-7	1	mg/L	20	20	36	65	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	<0.01	0.07	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.002	0.001	----
Boron	7440-42-8	0.05	mg/L	0.27	0.28	0.34	0.41	----
Barium	7440-39-3	0.001	mg/L	0.079	0.079	2.31	1.01	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L	0.001	<0.001	<0.001	<0.001	----
Manganese	7439-96-5	0.001	mg/L	0.049	0.048	0.061	<0.001	----
Nickel	7440-02-0	0.001	mg/L	0.001	0.001	<0.001	0.002	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				NB03D	DUP01A	NB04D(S)	NB05S	Trip Spike 4
Sampling date / time				08-Feb-2023 11:30	08-Feb-2023 11:30	08-Feb-2023 15:30	08-Feb-2023 16:15	06-Feb-2023 00:00
Compound	CAS Number	LOR	Unit	EB2303770-001	EB2303770-002	EB2303770-003	EB2303770-004	EB2303770-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	----
Molybdenum	7439-98-7	0.001	mg/L	0.036	0.037	0.014	0.099	----
Strontium	7440-24-6	0.001	mg/L	0.154	0.158	5.01	2.55	----
Iron	7439-89-6	0.05	mg/L	0.14	0.14	<0.05	0.05	----
Bromine	7726-95-6	0.1	mg/L	<0.1	0.3	10.3	8.6	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
EK025SF: Free CN by Segmented Flow Analyser								
Free Cyanide	----	0.004	mg/L	0.074	0.068	<0.004	0.019	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	0.200	0.203	0.010	0.085	----
EK027: Thiocyanate								
Thiocyanate	463-56-9	0.1	mg/L	<1.0	<1.0	<1.0	<1.0	----
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser								
Weak Acid Dissociable Cyanide	----	0.004	mg/L	0.081	0.078	<0.004	0.019	----
EK030: Cyanide Amenable to Chlorination								
Cyanide amenable to chlorination	----	0.01	mg/L	0.10	0.09	0.01	0.04	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.7	0.7	0.4	0.4	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	3.10	3.22	1.29	1.99	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<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	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	4.8	4.7	1.5	2.5	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	4.8	4.7	1.5	2.5	----
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	17.0	17.0	91.9	84.1	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				NB03D	DUP01A	NB04D(S)	NB05S	Trip Spike 4
Sampling date / time				08-Feb-2023 11:30	08-Feb-2023 11:30	08-Feb-2023 15:30	08-Feb-2023 16:15	06-Feb-2023 00:00
Compound	CAS Number	LOR	Unit	EB2303770-001	EB2303770-002	EB2303770-003	EB2303770-004	EB2303770-005
				Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued								
∅ Total Cations	----	0.01	meq/L	16.2	16.2	88.0	81.8	----
∅ Ionic Balance	----	0.01	%	2.23	2.36	2.21	1.39	----
EP033: C1 - C4 Hydrocarbon Gases								
Methane	74-82-8	10	µg/L	16800	15700	20600	10700	----
Ethene	74-85-1	10	µg/L	<10	<10	<10	<10	----
Ethane	74-84-0	10	µg/L	<10	<10	<10	<10	----
Propene	115-07-1	10	µg/L	<10	<10	<10	<10	----
Propane	74-98-6	10	µg/L	<10	<10	<10	<10	----
Butene	25167-67-3	10	µg/L	<10	<10	<10	<10	----
Butane	106-97-8	10	µg/L	<10	<10	<10	<10	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	7.4	7.2	1.2	1.1	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	3.6	3.5	5.3	<2.0	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	1.3	<1.0	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Pyrene	129-00-0	1.0	µg/L	<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	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	NB03D	DUP01A	NB04D(S)	NB05S	Trip Spike 4
Sampling date / time					08-Feb-2023 11:30	08-Feb-2023 11:30	08-Feb-2023 15:30	08-Feb-2023 16:15	06-Feb-2023 00:00
Compound	CAS Number	LOR	Unit		EB2303770-001	EB2303770-002	EB2303770-003	EB2303770-004	EB2303770-005
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<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	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<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	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<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	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	1.3	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	170
C10 - C14 Fraction	----	50	µg/L		310	340	<50	50	----
C15 - C28 Fraction	----	100	µg/L		<100	130	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		310	470	<50	50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	200
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	110
>C10 - C16 Fraction	----	100	µg/L		340	360	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		340	360	<100	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		340	360	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	1	16
Toluene	108-88-3	2	µg/L		<2	<2	<2	4	15
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	15
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	30
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	16
^ Total Xylenes	----	2	µg/L		<2	<2	<2	<2	46
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	5	92
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	18
EP075(SIM)S: Phenolic Compound Surrogates									



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				NB03D	DUP01A	NB04D(S)	NB05S	Trip Spike 4
Sampling date / time				08-Feb-2023 11:30	08-Feb-2023 11:30	08-Feb-2023 15:30	08-Feb-2023 16:15	06-Feb-2023 00:00
Compound	CAS Number	LOR	Unit	EB2303770-001	EB2303770-002	EB2303770-003	EB2303770-004	EB2303770-005
				Result	Result	Result	Result	Result
EP075(SIM)S: Phenolic Compound Surrogates - Continued								
Phenol-d6	13127-88-3	1.0	%	34.8	34.1	35.2	26.1	----
2-Chlorophenol-D4	93951-73-6	1.0	%	87.9	88.5	84.9	33.9	----
2,4,6-Tribromophenol	118-79-6	1.0	%	97.2	107	77.2	22.9	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	93.6	95.9	98.6	111	----
Anthracene-d10	1719-06-8	1.0	%	106	115	109	116	----
4-Terphenyl-d14	1718-51-0	1.0	%	108	123	118	119	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	101	103	103	100	101
Toluene-D8	2037-26-5	2	%	99.3	98.2	96.6	100	99.8
4-Bromofluorobenzene	460-00-4	2	%	101	101	99.9	104	102



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				Trip Blank 060204	ALS Control Spike	----	----	----
Sampling date / time				08-Feb-2023 00:00	06-Feb-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2303770-006	EB2303770-007	-----	-----	-----
Result				Result	Result	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	190	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	230	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	140	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	16	----	----	----
Toluene	108-88-3	2	µg/L	<2	15	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	15	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	30	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	15	----	----	----
^ Total Xylenes	----	2	µg/L	<2	45	----	----	----
^ Sum of BTEX	----	1	µg/L	<1	91	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	17	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	102	101	----	----	----
Toluene-D8	2037-26-5	2	%	98.6	99.5	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	99.1	97.9	----	----	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	72
2-Chlorophenol-D4	93951-73-6	27	130
2,4,6-Tribromophenol	118-79-6	19	181
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	14	146
Anthracene-d10	1719-06-8	35	137
4-Terphenyl-d14	1718-51-0	36	154
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EP033: C1 - C4 Hydrocarbon Gases

(WATER) EK027: Thiocyanate

CERTIFICATE OF ANALYSIS

Work Order : **EB2304035**
Client : **QLD DEPT OF RESOURCES**
Contact :
Address : 357 KUMMEROWS ROAD
 HOPELAND 4413
Telephone :
Project : LINC-115DE Hopeland
Order number : 4500018640
C-O-C number : ----
Sampler :
Site : ----
Quote number : BN/158/22 V4
No. of samples received : 10
No. of samples analysed : 10

Page : 1 of 13
Laboratory : Environmental Division Brisbane
Contact :
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61-7-3243 7222
Date Samples Received : 14-Feb-2023 09:30
Date Analysis Commenced : 15-Feb-2023
Issue Date : 24-Feb-2023 18:09



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD
Sarah Ashworth	Laboratory Manager - Brisbane	Brisbane Organics, Stafford, QLD
Timothy Creagh	Senior Chemist - Organics	Brisbane Organics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

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

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- It is recognised that EK028SF (WAD Cyanide by SFA) is less than EK025SF (Free Cyanide) for sample DUP03A (EB2304035-006). However, the difference is within experimental variation of the methods.
- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO2 and Fluoride to the Anions.
- EK027:LOR raised for various samples due to sample matrix.
- **Thiocyanate and C1-C4 Gas analysis is conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Bromine results from the EG020 method code should be regarded as semi-quantitative only.
- It is recognised that EK061G (Total Kjeldahl Nitrogen) is less than EK055G (Ammonia) for some samples. However, the difference is within experimental variation of the methods.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				NB01D	NB01S	NB02D	NB02S	HSMB-7D
Sampling date / time				09-Feb-2023 13:30	09-Feb-2023 13:20	09-Feb-2023 15:00	09-Feb-2023 15:40	10-Feb-2023 12:45
Compound	CAS Number	LOR	Unit	EB2304035-001	EB2304035-002	EB2304035-003	EB2304035-004	EB2304035-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.71	7.92	8.51	11.1	9.09
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	3860	8510	4760	18600	8670
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	2220	5190	2930	14000	5130
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO ₃	DMO-210-001	1	mg/L	<1	<1	<1	106	<1
Carbonate Alkalinity as CaCO ₃	3812-32-6	1	mg/L	69	<1	68	80	77
Bicarbonate Alkalinity as CaCO ₃	71-52-3	1	mg/L	697	173	1340	<1	196
Total Alkalinity as CaCO ₃	----	1	mg/L	767	173	1400	186	273
ED041G: Sulfate (Turbidimetric) as SO₄ 2- by DA								
Sulfate as SO ₄ - Turbidimetric	14808-79-8	1	mg/L	<1	<1	<1	11	<1
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	875	2940	877	7000	2890
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	4	84	6	576	3
Magnesium	7439-95-4	1	mg/L	2	43	4	<1	6
Sodium	7440-23-5	1	mg/L	861	1640	1100	3740	1710
Potassium	7440-09-7	1	mg/L	15	68	21	141	351
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	<0.01	0.03	<0.01
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	7440-42-8	0.05	mg/L	0.28	0.23	0.31	0.27	0.24
Barium	7440-39-3	0.001	mg/L	0.443	3.94	0.675	8.20	0.788
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	0.002	0.003
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	0.021	<0.001
Manganese	7439-96-5	0.001	mg/L	0.015	0.113	0.011	<0.001	0.038
Nickel	7440-02-0	0.001	mg/L	<0.001	0.004	<0.001	0.032	0.005
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				NB01D	NB01S	NB02D	NB02S	HSMB-7D
Sampling date / time				09-Feb-2023 13:30	09-Feb-2023 13:20	09-Feb-2023 15:00	09-Feb-2023 15:40	10-Feb-2023 12:45
Compound	CAS Number	LOR	Unit	EB2304035-001	EB2304035-002	EB2304035-003	EB2304035-004	EB2304035-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Molybdenum	7439-98-7	0.001	mg/L	0.010	0.014	0.011	0.090	0.042
Strontium	7440-24-6	0.001	mg/L	1.06	8.85	1.48	29.4	2.78
Iron	7439-89-6	0.05	mg/L	0.38	7.33	0.73	0.30	0.24
Bromine	7726-95-6	0.1	mg/L	2.1	8.7	2.0	17.1	7.1
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK025SF: Free CN by Segmented Flow Analyser								
Free Cyanide	----	0.004	mg/L	----	<0.004	<0.004	0.223	0.350
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	----	0.025	0.008	0.594	0.584
EK027: Thiocyanate								
Thiocyanate	463-56-9	0.1	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser								
Weak Acid Dissociable Cyanide	----	0.004	mg/L	----	<0.004	<0.004	0.242	0.352
EK030: Cyanide Amenable to Chlorination								
Cyanide amenable to chlorination	----	0.01	mg/L	----	<0.01	<0.01	0.37	0.46
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.9	0.2	0.5	<0.1	0.5
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.83	1.46	0.86	5.84	5.17
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<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	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.8	1.3	0.9	5.9	4.8
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	0.8	1.3	0.9	5.9	4.8
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	40.0	86.4	52.7	201	87.0



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				NB01D	NB01S	NB02D	NB02S	HSMB-7D
Sampling date / time				09-Feb-2023 13:30	09-Feb-2023 13:20	09-Feb-2023 15:00	09-Feb-2023 15:40	10-Feb-2023 12:45
Compound	CAS Number	LOR	Unit	EB2304035-001	EB2304035-002	EB2304035-003	EB2304035-004	EB2304035-005
				Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued								
∅ Total Cations	----	0.01	meq/L	38.2	80.8	49.0	195	84.0
∅ Ionic Balance	----	0.01	%	2.31	3.34	3.64	1.61	1.74
EP033: C1 - C4 Hydrocarbon Gases								
Methane	74-82-8	10	µg/L	21500	22000	19700	15500	17000
Ethene	74-85-1	10	µg/L	<10	<10	<10	<10	<10
Ethane	74-84-0	10	µg/L	14	12	17	<10	<10
Propene	115-07-1	10	µg/L	<10	<10	<10	<10	<10
Propane	74-98-6	10	µg/L	<10	<10	<10	<10	<10
Butene	25167-67-3	10	µg/L	<10	<10	<10	<10	<10
Butane	106-97-8	10	µg/L	<10	<10	<10	<10	<10
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	7.6	<1.0	4.4	1.6
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	3.6	<2.0	13.6	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
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
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

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	NB01D	NB01S	NB02D	NB02S	HSMB-7D
Sampling date / time				09-Feb-2023 13:30	09-Feb-2023 13:20	09-Feb-2023 15:00	09-Feb-2023 15:40	10-Feb-2023 12:45	
Compound	CAS Number	LOR	Unit	EB2304035-001	EB2304035-002	EB2304035-003	EB2304035-004	EB2304035-005	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b+j)fluoranthene	205-99-2 205-82-3	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	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	5520	30	40	20	
C10 - C14 Fraction	----	50	µg/L	<50	60	<50	250	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	170	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	60	<50	420	<50	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	5490	30	40	30	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	270	<100	
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	180	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	450	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	270	<100	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	1	4460	19	16	12	
Toluene	108-88-3	2	µg/L	<2	900	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	45	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	106	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	43	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	149	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	1	5550	19	16	12	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
EP075(SIM)S: Phenolic Compound Surrogates									



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				NB01D	NB01S	NB02D	NB02S	HSMB-7D
Sampling date / time				09-Feb-2023 13:30	09-Feb-2023 13:20	09-Feb-2023 15:00	09-Feb-2023 15:40	10-Feb-2023 12:45
Compound	CAS Number	LOR	Unit	EB2304035-001	EB2304035-002	EB2304035-003	EB2304035-004	EB2304035-005
				Result	Result	Result	Result	Result
EP075(SIM)S: Phenolic Compound Surrogates - Continued								
Phenol-d6	13127-88-3	1.0	%	30.8	29.0	26.4	36.7	21.6
2-Chlorophenol-D4	93951-73-6	1.0	%	73.9	75.6	67.8	98.2	56.9
2,4,6-Tribromophenol	118-79-6	1.0	%	57.4	83.8	61.3	139	103
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	95.5	85.0	86.1	113	63.0
Anthracene-d10	1719-06-8	1.0	%	102	91.0	94.1	115	90.3
4-Terphenyl-d14	1718-51-0	1.0	%	102	93.7	97.3	109	100
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	108	107	107	108	108
Toluene-D8	2037-26-5	2	%	99.9	99.8	100	101	101
4-Bromofluorobenzene	460-00-4	2	%	100	99.3	103	101	102



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				DUP03A	HSMB-7S	Trip Spike	Trip Blank 060205	ALS CONTROL SPIKE
Sampling date / time				10-Feb-2023 12:45	10-Feb-2023 13:45	06-Feb-2023 00:00	06-Feb-2023 00:00	06-Feb-2023 00:00
Compound	CAS Number	LOR	Unit	EB2304035-006	EB2304035-007	EB2304035-008	EB2304035-009	EB2304035-010
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	9.06	5.86	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	8770	8440	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	5080	5550	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	78	<1	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	200	4	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	277	4	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	12	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	2970	3000	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	3	120	----	----	----
Magnesium	7439-95-4	1	mg/L	6	6	----	----	----
Sodium	7440-23-5	1	mg/L	1640	1440	----	----	----
Potassium	7440-09-7	1	mg/L	346	329	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Boron	7440-42-8	0.05	mg/L	0.24	0.15	----	----	----
Barium	7440-39-3	0.001	mg/L	0.804	3.44	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Cobalt	7440-48-4	0.001	mg/L	0.003	<0.001	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.039	3.15	----	----	----
Nickel	7440-02-0	0.001	mg/L	0.005	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				DUP03A	HSMB-7S	Trip Spike	Trip Blank 060205	ALS CONTROL SPIKE
Sampling date / time				10-Feb-2023 12:45	10-Feb-2023 13:45	06-Feb-2023 00:00	06-Feb-2023 00:00	06-Feb-2023 00:00
Compound	CAS Number	LOR	Unit	EB2304035-006	EB2304035-007	EB2304035-008	EB2304035-009	EB2304035-010
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	0.041	<0.001	----	----	----
Strontium	7440-24-6	0.001	mg/L	2.80	5.52	----	----	----
Iron	7439-89-6	0.05	mg/L	0.24	51.0	----	----	----
Bromine	7726-95-6	0.1	mg/L	7.2	7.5	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EK025SF: Free CN by Segmented Flow Analyser								
Free Cyanide	----	0.004	mg/L	0.329	<0.004	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	0.581	0.008	----	----	----
EK027: Thiocyanate								
Thiocyanate	463-56-9	0.1	mg/L	<1.0	<1.0	----	----	----
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser								
Weak Acid Dissociable Cyanide	----	0.004	mg/L	0.314	<0.004	----	----	----
EK030: Cyanide Amenable to Chlorination								
Cyanide amenable to chlorination	----	0.01	mg/L	0.45	<0.01	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.7	0.3	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	5.12	1.52	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	5.0	1.8	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	5.0	1.8	----	----	----
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	89.3	85.0	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				DUP03A	HSMB-7S	Trip Spike	Trip Blank 060205	ALS CONTROL SPIKE
Sampling date / time				10-Feb-2023 12:45	10-Feb-2023 13:45	06-Feb-2023 00:00	06-Feb-2023 00:00	06-Feb-2023 00:00
Compound	CAS Number	LOR	Unit	EB2304035-006	EB2304035-007	EB2304035-008	EB2304035-009	EB2304035-010
				Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued								
∅ Total Cations	----	0.01	meq/L	80.8	77.5	----	----	----
∅ Ionic Balance	----	0.01	%	4.99	4.57	----	----	----
EP033: C1 - C4 Hydrocarbon Gases								
Methane	74-82-8	10	µg/L	18900	15200	----	----	----
Ethene	74-85-1	10	µg/L	<10	<10	----	----	----
Ethane	74-84-0	10	µg/L	<10	<10	----	----	----
Propene	115-07-1	10	µg/L	<10	<10	----	----	----
Propane	74-98-6	10	µg/L	<10	<10	----	----	----
Butene	25167-67-3	10	µg/L	<10	<10	----	----	----
Butane	106-97-8	10	µg/L	<10	<10	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	1.5	1.4	----	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	----	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	----	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	----	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	----	----	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	----	----	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	----	----	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	----	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	----	----	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	----	----	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	----	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
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	----	----	----
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	----	----	----

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	DUP03A	HSMB-7S	Trip Spike	Trip Blank 060205	ALS CONTROL SPIKE
Sampling date / time				10-Feb-2023 12:45	10-Feb-2023 13:45	06-Feb-2023 00:00	06-Feb-2023 00:00	06-Feb-2023 00:00	
Compound	CAS Number	LOR	Unit	EB2304035-006	EB2304035-007	EB2304035-008	EB2304035-009	EB2304035-010	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b+j)fluoranthene	205-99-2 205-82-3	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	----	----	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	----	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	20	<20	180	<20	200	
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	----	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	20	<20	220	<20	250	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	120	<20	150	
>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	----	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	----	----	----	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	13	<1	17	<1	17	
Toluene	108-88-3	2	µg/L	<2	<2	16	<2	16	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	16	<2	16	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	32	<2	32	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	17	<2	17	
^ Total Xylenes	----	2	µg/L	<2	<2	49	<2	49	
^ Sum of BTEX	----	1	µg/L	13	<1	98	<1	98	
Naphthalene	91-20-3	5	µg/L	<5	<5	18	<5	18	
EP075(SIM)S: Phenolic Compound Surrogates									



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				DUP03A	HSMB-7S	Trip Spike	Trip Blank 060205	ALS CONTROL SPIKE
Sampling date / time				10-Feb-2023 12:45	10-Feb-2023 13:45	06-Feb-2023 00:00	06-Feb-2023 00:00	06-Feb-2023 00:00
Compound	CAS Number	LOR	Unit	EB2304035-006	EB2304035-007	EB2304035-008	EB2304035-009	EB2304035-010
				Result	Result	Result	Result	Result
EP075(SIM)S: Phenolic Compound Surrogates - Continued								
Phenol-d6	13127-88-3	1.0	%	20.8	29.7	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	59.9	86.2	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	94.3	118	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	67.8	87.9	----	----	----
Anthracene-d10	1719-06-8	1.0	%	84.1	102	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	92.6	106	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	113	104	99.6	101	101
Toluene-D8	2037-26-5	2	%	106	99.9	99.4	97.4	99.7
4-Bromofluorobenzene	460-00-4	2	%	106	97.8	98.8	96.9	100



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	72
2-Chlorophenol-D4	93951-73-6	27	130
2,4,6-Tribromophenol	118-79-6	19	181
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	14	146
Anthracene-d10	1719-06-8	35	137
4-Terphenyl-d14	1718-51-0	36	154
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

Inter-Laboratory Testing

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EK027: Thiocyanate

(WATER) EP033: C1 - C4 Hydrocarbon Gases

CLIENT DETAILS

Contact
Client
Address
Telephone
Facsimile
Email
Project
Order Number
Samples

DEPARTMENT OF RESOURCES QLD
357 Kummerows Road
Hopeland
QLD 4413
(Not specified)
GEO2023_0045_LINC-138 (HOPELANDS)
4500020124
28

LABORATORY DETAILS

Manager
Laboratory
Address
Telephone
Facsimile
Email
SGS Reference
Date Received
Date Reported

SGS Melbourne EH&S
10/585 Blackburn Road
Notting Hill Victoria 3168
+61395743200
+61395743399
Au.SampleReceipt.Melbourne@sgs.com
ME334138 R0
15/6/2023
6/7/2023

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562 (14420/22793/24472).

The sampling for the samples in this report was carried out in accordance with SGS' s NATA accredited sampling methods.

Cyanide & bromide subcontracted to SGS Perth Environmental, 28 Reid Rd Perth Airport WA, NATA Accreditation Number 2562, Site Number 898, PE168933.

Amenable to Chlorination Cyanide subcontracted to Envirolab Services Pty Ltd, 12 Ashley St Chatswood NSW 2067, NATA Accreditation Number: 2901, 326083.

MA-8270: Majority of surrogate recoveries are within acceptance criteria.

There was no water for sampling for ME334138.010

Detection limit(s) raised due to the presence of interferences in the sample.

SIGNATORIES



Ryan ZHANG
Inorganics Team Leader



Susan WAN
Senior Chemist



Vanessa PALAMARA
Senior Chemist

MA-1567 Field Test Results [MA1567] Tested: 30/6/2023

PARAMETER	UOM	LOR	NB01D	NB01S	NB02D	NB02S	NB03D
			WATER	WATER	WATER	WATER	WATER
			5/6/23 14:26 ME334138.001	5/6/23 12:40 ME334138.002	6/6/23 9:21 ME334138.003	6/6/23 10:30 ME334138.004	6/6/23 14:15 ME334138.005
Field pH (pH Units)	pH Units	-	8.5	7.8	8.0	11	9.1
Field Conductivity	µS/cm	-	3500	9400	4600	20000	1700
Field Temperature	°C	-	21.1	21.1	22.7	22.6	22.1
Field Dissolved Oxygen	mg/L	-	<0.0	<0.0	<0.0	0.1	<0.0
Field Dissolved Oxygen % Saturation*	%	-	<0.0	<0.0	<0.0	1.6	<0.0
Field Redox (mV)	mV	-	-316.9	-287.6	-216.7	-370	-414.1
Field TDS*	mg/L	-	2500	6600	3200	14000	1200
Field Turbidity*	NTU	0.5	<0.5	6.6	3.5	<0.5	7.3
Salinity*	mg/L	2	2300	6100	3000	13000	1100

PARAMETER	UOM	LOR	NB04D(S)	NB05S	HSMB1S	HSMB1D	HSMB2D
			WATER	WATER	WATER	WATER	WATER
			6/6/23 15:48 ME334138.006	7/6/23 10:20 ME334138.007	7/6/23 11:27 ME334138.008	7/6/23 13:21 ME334138.009	7/6/23 14:53 ME334138.010
Field pH (pH Units)	pH Units	-	8.4	11	7.3	7.1	IS
Field Conductivity	µS/cm	-	9100	8700	15000	960	IS
Field Temperature	°C	-	21.8	21.9	22.0	24.3	IS
Field Dissolved Oxygen	mg/L	-	<0.0	0.2	<0.0	<0.0	IS
Field Dissolved Oxygen % Saturation*	%	-	<0.0	2.1	<0.0	<0.0	IS
Field Redox (mV)	mV	-	-292.9	-255.9	-361.1	-281	IS
Field TDS*	mg/L	-	6300	6000	10000	630	IS
Field Turbidity*	NTU	0.5	51	1.5	0.8	13	IS
Salinity*	mg/L	2	5900	5700	9500	620	IS

PARAMETER	UOM	LOR	HSMB2S	HSMB3D1	HSMB3S1	HSMB3D2	HSMB3S2
			WATER	WATER	WATER	WATER	WATER
			9/6/23 14:21 ME334138.011	8/6/23 9:06 ME334138.012	8/6/23 10:45 ME334138.013	8/6/23 13:05 ME334138.014	8/6/23 14:09 ME334138.015
Field pH (pH Units)	pH Units	-	10	8.8	5.8	8.4	7.3
Field Conductivity	µS/cm	-	5700	3100	20000	3400	26000
Field Temperature	°C	-	22.1	20.8	22.3	23.7	23.1
Field Dissolved Oxygen	mg/L	-	0.4	<0.0	0.4	<0.0	<0.0
Field Dissolved Oxygen % Saturation*	%	-	4.5	<0.0	5.1	<0.0	<0.0
Field Redox (mV)	mV	-	-123.3	-309.4	-84.7	-343.1	-369.7
Field TDS*	mg/L	-	3900	2200	3600	2300	7800
Field Turbidity*	NTU	0.5	5.1	2.4	14	27	21
Salinity*	mg/L	2	3700	2000	13000	2200	17000

PARAMETER	UOM	LOR	HSMB4D	HSMB4S	HSMB5D	HSMB-6D2	HSMB-6S
			WATER	WATER	WATER	WATER	WATER
			12/6/23 8:40 ME334138.016	12/6/23 10:25 ME334138.017	12/6/23 12:20 ME334138.018	13/6/23 8:25 ME334138.019	13/6/23 8:25 ME334138.020
Field pH (pH Units)	pH Units	-	11	8.2	8.8	9.0	6.0
Field Conductivity	µS/cm	-	1400	17000	2800	6800	22000
Field Temperature	°C	-	20.7	22.1	25.4	21.2	22.6
Field Dissolved Oxygen	mg/L	-	<0.0	<0.0	<0.0	<0.0	0.2
Field Dissolved Oxygen % Saturation*	%	-	<0.0	<0.0	<0.0	<0.0	2.0
Field Redox (mV)	mV	-	-165	-420.8	-391	-345.9	-94.6
Field TDS*	mg/L	-	1000	1900	1800	4800	5200
Field Turbidity*	NTU	0.5	120	17	6.1	7.9	2.0
Salinity*	mg/L	2	930	11000	1900	4400	14000

MA-1567 Field Test Results [MA1567] Tested: 30/6/2023 (continued)

PARAMETER	UOM	LOR	HSMB-7D	HSMB-7S	NB01S DUP	HSMB3S1 DUP	HSMB-6D2 DUP
			WATER - 9/6/23 9:44 ME334138.021	WATER - 9/6/23 11:19 ME334138.022	WATER - 5/6/23 12:40 ME334138.023	WATER - 8/6/23 10:45 ME334138.026	WATER - 13/6/23 8:25 ME334138.027
Field pH (pH Units)	pH Units	-	9.3	7.7	7.8	5.8	9.0
Field Conductivity	µS/cm	-	8500	8700	9400	20000	6800
Field Temperature	°C	-	21.8	22.5	21.1	22.3	21.2
Field Dissolved Oxygen	mg/L	-	<0.0	<0.0	<0.0	0.4	<0.0
Field Dissolved Oxygen % Saturation*	%	-	<0.0	<0.0	<0.0	5.1	<0.0
Field Redox (mV)	mV	-	-287.9	-364.1	-287.6	-84.7	-345.9
Field TDS*	mg/L	-	5800	5800	6600	3800	4800
Field Turbidity*	NTU	0.5	34	13	6.6	140	7.9
Salinity*	mg/L	2	5500	5600	6100	13000	4400

pH in water [AN101] Tested: 8/6/2023

PARAMETER	UOM	LOR	NB01D	NB01S	NB02D	NB02S	NB03D
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			5/6/23 14:26 ME334138.001	5/6/23 12:40 ME334138.002	6/6/23 9:21 ME334138.003	6/6/23 10:30 ME334138.004	6/6/23 14:15 ME334138.005
pH**	pH Units	0.1	8.8	7.4	8.1	11.7	8.9

PARAMETER	UOM	LOR	NB04D(S)	NB05S	HSMB1S	HSMB1D	HSMB2D
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			6/6/23 15:48 ME334138.006	7/6/23 10:20 ME334138.007	7/6/23 11:27 ME334138.008	7/6/23 13:21 ME334138.009	7/6/23 14:53 ME334138.010
pH**	pH Units	0.1	8.2	11.6	5.2	5.5	IS

PARAMETER	UOM	LOR	HSMB2S	HSMB3D1	HSMB3S1	HSMB3D2	HSMB3S2
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			9/6/23 14:21 ME334138.011	8/6/23 9:06 ME334138.012	8/6/23 10:45 ME334138.013	8/6/23 13:05 ME334138.014	8/6/23 14:09 ME334138.015
pH**	pH Units	0.1	10.5	9.0	5.5	8.5	5.5

PARAMETER	UOM	LOR	HSMB4D	HSMB4S	HSMB5D	HSMB-6D2	HSMB-6S
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			12/6/23 8:40 ME334138.016	12/6/23 10:25 ME334138.017	12/6/23 12:20 ME334138.018	13/6/23 8:25 ME334138.019	13/6/23 8:25 ME334138.020
pH**	pH Units	0.1	11.2	6.0	8.9	9.2	6.0

PARAMETER	UOM	LOR	HSMB-7D	HSMB-7S	NB01S DUP	HSMB3S1 DUP	HSMB-6D2 DUP
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			9/6/23 9:44 ME334138.021	9/6/23 11:19 ME334138.022	5/6/23 12:40 ME334138.023	8/6/23 10:45 ME334138.026	13/6/23 8:25 ME334138.027
pH**	pH Units	0.1	9.3	5.6	7.4	4.8	9.3

Conductivity and TDS by Calculation - Water [AN106] Tested: 8/6/2023

PARAMETER	UOM	LOR	NB01D	NB01S	NB02D	NB02S	NB03D
			WATER	WATER	WATER	WATER	WATER
			5/6/23 14:26 ME334138.001	5/6/23 12:40 ME334138.002	6/6/23 9:21 ME334138.003	6/6/23 10:30 ME334138.004	6/6/23 14:15 ME334138.005
Conductivity @ 25 C	µS/cm	2	3900	10000	4600	20000	1700
Salinity*	mg/L	2	2500	6800	3000	13000	1100

PARAMETER	UOM	LOR	NB04D(S)	NB05S	HSMB1S	HSMB1D	HSMB2D
			WATER	WATER	WATER	WATER	WATER
			6/6/23 15:48 ME334138.006	7/6/23 10:20 ME334138.007	7/6/23 11:27 ME334138.008	7/6/23 13:21 ME334138.009	7/6/23 14:53 ME334138.010
Conductivity @ 25 C	µS/cm	2	9700	9100	15000	890	IS
Salinity*	mg/L	2	6300	5900	10000	580	IS

PARAMETER	UOM	LOR	HSMB2S	HSMB3D1	HSMB3S1	HSMB3D2	HSMB3S2
			WATER	WATER	WATER	WATER	WATER
			9/6/23 14:21 ME334138.011	8/6/23 9:06 ME334138.012	8/6/23 10:45 ME334138.013	8/6/23 13:05 ME334138.014	8/6/23 14:09 ME334138.015
Conductivity @ 25 C	µS/cm	2	6000	3400	21000	3500	27000
Salinity*	mg/L	2	3900	2200	14000	2300	17000

PARAMETER	UOM	LOR	HSMB4D	HSMB4S	HSMB5D	HSMB-6D2	HSMB-6S
			WATER	WATER	WATER	WATER	WATER
			12/6/23 8:40 ME334138.016	12/6/23 10:25 ME334138.017	12/6/23 12:20 ME334138.018	13/6/23 8:25 ME334138.019	13/6/23 8:25 ME334138.020
Conductivity @ 25 C	µS/cm	2	1700	18000	2800	7300	23000
Salinity*	mg/L	2	1100	12000	1800	4800	15000

PARAMETER	UOM	LOR	HSMB-7D	HSMB-7S	NB01S DUP	HSMB3S1 DUP	HSMB-6D2 DUP
			WATER	WATER	WATER	WATER	WATER
			9/6/23 9:44 ME334138.021	9/6/23 11:19 ME334138.022	5/6/23 12:40 ME334138.023	8/6/23 10:45 ME334138.026	13/6/23 8:25 ME334138.027
Conductivity @ 25 C	µS/cm	2	9100	9200	10000	21000	7400
Salinity*	mg/L	2	5900	6000	6800	13000	4800

Alkalinity [AN135] Tested: 8/6/2023

PARAMETER	UOM	LOR	NB01D	NB01S	NB02D	NB02S	NB03D
			WATER	WATER	WATER	WATER	WATER
			5/6/23 14:26 ME334138.001	5/6/23 12:40 ME334138.002	6/6/23 9:21 ME334138.003	6/6/23 10:30 ME334138.004	6/6/23 14:15 ME334138.005
Bicarbonate Alkalinity as HCO ₃	mg/L	5	890	200	1700	44	400
Carbonate Alkalinity as CO ₃	mg/L	5	36	<5	<5	110	44
Hydroxide Alkalinity as OH	mg/L	5	<5	<5	<5	<5	<5
Total Alkalinity as CaCO ₃	mg/L	5	790	170	1400	220	400
Bicarbonate Alkalinity as CaCO ₃	mg/L	5	730	170	1400	36	330
Carbonate Alkalinity as CaCO ₃	mg/L	5	60	<5	<5	180	74
Hydroxide Alkalinity as CaCO ₃	mg/L	5	<5	<5	<5	<5	<5

PARAMETER	UOM	LOR	NB04D(S)	NB05S	HSMB1S	HSMB1D	HSMB2D
			WATER	WATER	WATER	WATER	WATER
			6/6/23 15:48 ME334138.006	7/6/23 10:20 ME334138.007	7/6/23 11:27 ME334138.008	7/6/23 13:21 ME334138.009	7/6/23 14:53 ME334138.010
Bicarbonate Alkalinity as HCO ₃	mg/L	5	110	<5	40	130	IS
Carbonate Alkalinity as CO ₃	mg/L	5	<5	12	<5	<5	IS
Hydroxide Alkalinity as OH	mg/L	5	<5	46	<5	<5	IS
Total Alkalinity as CaCO ₃	mg/L	5	87	160	33	110	IS
Bicarbonate Alkalinity as CaCO ₃	mg/L	5	87	<5	33	110	IS
Carbonate Alkalinity as CaCO ₃	mg/L	5	<5	20	<5	<5	IS
Hydroxide Alkalinity as CaCO ₃	mg/L	5	<5	140	<5	<5	IS

PARAMETER	UOM	LOR	HSMB2S	HSMB3D1	HSMB3S1	HSMB3D2	HSMB3S2
			WATER	WATER	WATER	WATER	WATER
			9/6/23 14:21 ME334138.011	8/6/23 9:06 ME334138.012	8/6/23 10:45 ME334138.013	8/6/23 13:05 ME334138.014	8/6/23 14:09 ME334138.015
Bicarbonate Alkalinity as HCO ₃	mg/L	5	140	670	15	900	48
Carbonate Alkalinity as CO ₃	mg/L	5	230	50	<5	17	<5
Hydroxide Alkalinity as OH	mg/L	5	<5	<5	<5	<5	<5
Total Alkalinity as CaCO ₃	mg/L	5	490	630	12	770	39
Bicarbonate Alkalinity as CaCO ₃	mg/L	5	110	550	12	740	39
Carbonate Alkalinity as CaCO ₃	mg/L	5	380	84	<5	28	<5
Hydroxide Alkalinity as CaCO ₃	mg/L	5	<5	<5	<5	<5	<5

PARAMETER	UOM	LOR	HSMB4D	HSMB4S	HSMB5D	HSMB-6D2	HSMB-6S
			WATER	WATER	WATER	WATER	WATER
			12/6/23 8:40 ME334138.016	12/6/23 10:25 ME334138.017	12/6/23 12:20 ME334138.018	13/6/23 8:25 ME334138.019	13/6/23 8:25 ME334138.020
Bicarbonate Alkalinity as HCO ₃	mg/L	5	7	65	630	820	10
Carbonate Alkalinity as CO ₃	mg/L	5	52	<5	46	94	<5
Hydroxide Alkalinity as OH	mg/L	5	<5	<5	<5	<5	<5
Total Alkalinity as CaCO ₃	mg/L	5	92	53	600	830	8
Bicarbonate Alkalinity as CaCO ₃	mg/L	5	6	53	520	670	8
Carbonate Alkalinity as CaCO ₃	mg/L	5	86	<5	76	160	<5
Hydroxide Alkalinity as CaCO ₃	mg/L	5	<5	<5	<5	<5	<5



ANALYTICAL RESULTS

ME334138 R0

Alkalinity [AN135] Tested: 8/6/2023 (continued)

PARAMETER	UOM	LOR	HSMB-7D	HSMB-7S	NB01S DUP	HSMB3S1 DUP	HSMB-6D2 DUP
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			9/6/23 9:44 ME334138.021	9/6/23 11:19 ME334138.022	5/6/23 12:40 ME334138.023	8/6/23 10:45 ME334138.026	13/6/23 8:25 ME334138.027
Bicarbonate Alkalinity as HCO ₃	mg/L	5	260	6	200	6	790
Carbonate Alkalinity as CO ₃	mg/L	5	53	<5	<5	<5	91
Hydroxide Alkalinity as OH	mg/L	5	<5	<5	<5	<5	<5
Total Alkalinity as CaCO ₃	mg/L	5	300	5	170	5	800
Bicarbonate Alkalinity as CaCO ₃	mg/L	5	210	5	170	5	650
Carbonate Alkalinity as CaCO ₃	mg/L	5	88	<5	<5	<5	150
Hydroxide Alkalinity as CaCO ₃	mg/L	5	<5	<5	<5	<5	<5

Total Dissolved Solids (TDS) in water [AN113] Tested: 20/6/2023

PARAMETER	UOM	LOR	NB01D	NB01S	NB02D	NB02S	NB03D
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			5/6/23 14:26 ME334138.001	5/6/23 12:40 ME334138.002	6/6/23 9:21 ME334138.003	6/6/23 10:30 ME334138.004	6/6/23 14:15 ME334138.005
Total Dissolved Solids Dried at 175-185°C	mg/L	10	2100	6000	2900	14000	970

PARAMETER	UOM	LOR	NB04D(S)	NB05S	HSMB1S	HSMB1D	HSMB2D
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			6/6/23 15:48 ME334138.006	7/6/23 10:20 ME334138.007	7/6/23 11:27 ME334138.008	7/6/23 13:21 ME334138.009	7/6/23 14:53 ME334138.010
Total Dissolved Solids Dried at 175-185°C	mg/L	10	5400	4700	9400	580	IS

PARAMETER	UOM	LOR	HSMB2S	HSMB3D1	HSMB3S1	HSMB3D2	HSMB3S2
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			9/6/23 14:21 ME334138.011	8/6/23 9:06 ME334138.012	8/6/23 10:45 ME334138.013	8/6/23 13:05 ME334138.014	8/6/23 14:09 ME334138.015
Total Dissolved Solids Dried at 175-185°C	mg/L	10	3300	1900	13000	2000	19000

PARAMETER	UOM	LOR	HSMB4D	HSMB4S	HSMB5D	HSMB-6D2	HSMB-6S
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			12/6/23 8:40 ME334138.016	12/6/23 10:25 ME334138.017	12/6/23 12:20 ME334138.018	13/6/23 8:25 ME334138.019	13/6/23 8:25 ME334138.020
Total Dissolved Solids Dried at 175-185°C	mg/L	10	910	11000	1600	4100	1500

PARAMETER	UOM	LOR	HSMB-7D	HSMB-7S	NB01S DUP	HSMB3S1 DUP	HSMB-6D2 DUP
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			9/6/23 9:44 ME334138.021	9/6/23 11:19 ME334138.022	5/6/23 12:40 ME334138.023	8/6/23 10:45 ME334138.026	13/6/23 8:25 ME334138.027
Total Dissolved Solids Dried at 175-185°C	mg/L	10	4800	5500	5800	13000	4000

Chloride by Discrete Analyser in Water [AN274] Tested: 8/6/2023

PARAMETER	UOM	LOR	NB01D	NB01S	NB02D	NB02S	NB03D
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			5/6/23 14:26 ME334138.001	5/6/23 12:40 ME334138.002	6/6/23 9:21 ME334138.003	6/6/23 10:30 ME334138.004	6/6/23 14:15 ME334138.005
Chloride, Cl	mg/L	1	790	3300	780	6900	250

PARAMETER	UOM	LOR	NB04D(S)	NB05S	HSMB1S	HSMB1D	HSMB2D
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			6/6/23 15:48 ME334138.006	7/6/23 10:20 ME334138.007	7/6/23 11:27 ME334138.008	7/6/23 13:21 ME334138.009	7/6/23 14:53 ME334138.010
Chloride, Cl	mg/L	1	3100	2700	5500	150	IS

PARAMETER	UOM	LOR	HSMB2S	HSMB3D1	HSMB3S1	HSMB3D2	HSMB3S2
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			9/6/23 14:21 ME334138.011	8/6/23 9:06 ME334138.012	8/6/23 10:45 ME334138.013	8/6/23 13:05 ME334138.014	8/6/23 14:09 ME334138.015
Chloride, Cl	mg/L	1	1700	690	7400	630	9600

PARAMETER	UOM	LOR	HSMB4D	HSMB4S	HSMB5D	HSMB-6D2	HSMB-6S
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			12/6/23 8:40 ME334138.016	12/6/23 10:25 ME334138.017	12/6/23 12:20 ME334138.018	13/6/23 8:25 ME334138.019	13/6/23 8:25 ME334138.020
Chloride, Cl	mg/L	1	370	6000	510	2000	8800

PARAMETER	UOM	LOR	HSMB-7D	HSMB-7S	NB01S DUP	HSMB3S1 DUP	HSMB-6D2 DUP
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			9/6/23 9:44 ME334138.021	9/6/23 11:19 ME334138.022	5/6/23 12:40 ME334138.023	8/6/23 10:45 ME334138.026	13/6/23 8:25 ME334138.027
Chloride, Cl	mg/L	1	3100	3200	3300	7400	1800

Sulfate in water [AN275] Tested: 8/6/2023

PARAMETER	UOM	LOR	NB01D	NB01S	NB02D	NB02S	NB03D
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			5/6/23 14:26 ME334138.001	5/6/23 12:40 ME334138.002	6/6/23 9:21 ME334138.003	6/6/23 10:30 ME334138.004	6/6/23 14:15 ME334138.005
Sulfate, SO4	mg/L	1	<1	3	<1	12	<1

PARAMETER	UOM	LOR	NB04D(S)	NB05S	HSMB1S	HSMB1D	HSMB2D
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			6/6/23 15:48 ME334138.006	7/6/23 10:20 ME334138.007	7/6/23 11:27 ME334138.008	7/6/23 13:21 ME334138.009	7/6/23 14:53 ME334138.010
Sulfate, SO4	mg/L	1	<1	8	<1	<1	IS

PARAMETER	UOM	LOR	HSMB2S	HSMB3D1	HSMB3S1	HSMB3D2	HSMB3S2
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			9/6/23 14:21 ME334138.011	8/6/23 9:06 ME334138.012	8/6/23 10:45 ME334138.013	8/6/23 13:05 ME334138.014	8/6/23 14:09 ME334138.015
Sulfate, SO4	mg/L	1	<1	<1	<1	<1	<1

PARAMETER	UOM	LOR	HSMB4D	HSMB4S	HSMB5D	HSMB-6D2	HSMB-6S
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			12/6/23 8:40 ME334138.016	12/6/23 10:25 ME334138.017	12/6/23 12:20 ME334138.018	13/6/23 8:25 ME334138.019	13/6/23 8:25 ME334138.020
Sulfate, SO4	mg/L	1	4	<1	<1	<1	<1

PARAMETER	UOM	LOR	HSMB-7D	HSMB-7S	NB01S DUP	HSMB3S1 DUP	HSMB-6D2 DUP
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			9/6/23 9:44 ME334138.021	9/6/23 11:19 ME334138.022	5/6/23 12:40 ME334138.023	8/6/23 10:45 ME334138.026	13/6/23 8:25 ME334138.027
Sulfate, SO4	mg/L	1	<1	8	1	<1	<1

Fluoride in Water by FIA [MA1127-02] Tested: 21/6/2023

PARAMETER	UOM	LOR	NB01D	NB01S	NB02D	NB02S	NB03D
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			5/6/23 14:26 ME334138.001	5/6/23 12:40 ME334138.002	6/6/23 9:21 ME334138.003	6/6/23 10:30 ME334138.004	6/6/23 14:15 ME334138.005
Fluoride, F	mg/L	0.1	1.1	0.2	0.8	<0.1	1.0

PARAMETER	UOM	LOR	NB04D(S)	NB05S	HSMB1S	HSMB1D	HSMB2D
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			6/6/23 15:48 ME334138.006	7/6/23 10:20 ME334138.007	7/6/23 11:27 ME334138.008	7/6/23 13:21 ME334138.009	7/6/23 14:53 ME334138.010
Fluoride, F	mg/L	0.1	0.5	0.5	0.1	0.2	IS

PARAMETER	UOM	LOR	HSMB2S	HSMB3D1	HSMB3S1	HSMB3D2	HSMB3S2
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			9/6/23 14:21 ME334138.011	8/6/23 9:06 ME334138.012	8/6/23 10:45 ME334138.013	8/6/23 13:05 ME334138.014	8/6/23 14:09 ME334138.015
Fluoride, F	mg/L	0.1	0.9	1.4	<0.1	0.9	0.1

PARAMETER	UOM	LOR	HSMB4D	HSMB4S	HSMB5D	HSMB-6D2	HSMB-6S
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			12/6/23 8:40 ME334138.016	12/6/23 10:25 ME334138.017	12/6/23 12:20 ME334138.018	13/6/23 8:25 ME334138.019	13/6/23 8:25 ME334138.020
Fluoride, F	mg/L	0.1	0.3	0.5	2.0	1.8	0.2

PARAMETER	UOM	LOR	HSMB-7D	HSMB-7S	NB01S DUP	HSMB3S1 DUP	HSMB-6D2 DUP
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			9/6/23 9:44 ME334138.021	9/6/23 11:19 ME334138.022	5/6/23 12:40 ME334138.023	8/6/23 10:45 ME334138.026	13/6/23 8:25 ME334138.027
Fluoride, F	mg/L	0.1	0.8	0.3	<0.1	<0.1	1.8

Anions by Ion Chromatography in Water [AN245] Tested: 21/6/2023

PARAMETER	UOM	LOR	NB01D	NB01S	NB02D	NB02S	NB03D
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			5/6/23 14:26 ME334138.001	5/6/23 12:40 ME334138.002	6/6/23 9:21 ME334138.003	6/6/23 10:30 ME334138.004	6/6/23 14:15 ME334138.005
Bromide	mg/L	0.05	<0.05	<2.5†	2.7	18	0.74

PARAMETER	UOM	LOR	NB04D(S)	NB05S	HSMB1S	HSMB1D	HSMB2D
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			6/6/23 15:48 ME334138.006	7/6/23 10:20 ME334138.007	7/6/23 11:27 ME334138.008	7/6/23 13:21 ME334138.009	7/6/23 14:53 ME334138.010
Bromide	mg/L	0.05	7.4	6.6	13	1.3	IS

PARAMETER	UOM	LOR	HSMB2S	HSMB3D1	HSMB3S1	HSMB3D2	HSMB3S2
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			9/6/23 14:21 ME334138.011	8/6/23 9:06 ME334138.012	8/6/23 10:45 ME334138.013	8/6/23 13:05 ME334138.014	8/6/23 14:09 ME334138.015
Bromide	mg/L	0.05	4.2	1.9	18	2.6	24

PARAMETER	UOM	LOR	HSMB4D	HSMB4S	HSMB5D	HSMB-6D2	HSMB-6S
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			12/6/23 8:40 ME334138.016	12/6/23 10:25 ME334138.017	12/6/23 12:20 ME334138.018	13/6/23 8:25 ME334138.019	13/6/23 8:25 ME334138.020
Bromide	mg/L	0.05	1.3	14	1.7	5.6	19

PARAMETER	UOM	LOR	HSMB-7D	HSMB-7S	NB01S DUP	HSMB3S1 DUP	HSMB-6D2 DUP
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			9/6/23 9:44 ME334138.021	9/6/23 11:19 ME334138.022	5/6/23 12:40 ME334138.023	8/6/23 10:45 ME334138.026	13/6/23 8:25 ME334138.027
Bromide	mg/L	0.05	6.5	7.0	8.6	19	5.4

Cyanide Forms in Water by CFA [AN296] Tested: 6/7/2023

PARAMETER	UOM	LOR	NB01D	NB01S	NB02D	NB02S	NB03D
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			5/6/23 14:26 ME334138.001	5/6/23 12:40 ME334138.002	6/6/23 9:21 ME334138.003	6/6/23 10:30 ME334138.004	6/6/23 14:15 ME334138.005
Free Cyanide (pH 6)	mg/L	0.004	<0.004	<0.004	<0.004	0.096	0.016
Weak Acid Dissociable Cyanide (WADCN)	mg/L	0.004	<0.004	<0.004	<0.004	0.12	0.033
Total Cyanide	mg/L	0.004	0.009	0.026	0.012	0.55	0.21

PARAMETER	UOM	LOR	NB04D(S)	NB05S	HSMB1S	HSMB1D	HSMB2D
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			6/6/23 15:48 ME334138.006	7/6/23 10:20 ME334138.007	7/6/23 11:27 ME334138.008	7/6/23 13:21 ME334138.009	7/6/23 14:53 ME334138.010
Free Cyanide (pH 6)	mg/L	0.004	<0.004	0.017	0.040	<0.004	IS
Weak Acid Dissociable Cyanide (WADCN)	mg/L	0.004	<0.004	0.028	0.074	<0.004	IS
Total Cyanide	mg/L	0.004	0.017	0.11	0.28	0.013	IS

PARAMETER	UOM	LOR	HSMB2S	HSMB3D1	HSMB3S1	HSMB3D2	HSMB3S2
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			9/6/23 14:21 ME334138.011	8/6/23 9:06 ME334138.012	8/6/23 10:45 ME334138.013	8/6/23 13:05 ME334138.014	8/6/23 14:09 ME334138.015
Free Cyanide (pH 6)	mg/L	0.004	0.053	<0.004	<0.004	0.015	0.013
Weak Acid Dissociable Cyanide (WADCN)	mg/L	0.004	0.091	<0.004	<0.004	0.035	0.025
Total Cyanide	mg/L	0.004	0.38	0.031	0.022	0.11	0.084

PARAMETER	UOM	LOR	HSMB4D	HSMB4S	HSMB5D	HSMB-6D2	HSMB-6S
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			12/6/23 8:40 ME334138.016	12/6/23 10:25 ME334138.017	12/6/23 12:20 ME334138.018	13/6/23 8:25 ME334138.019	13/6/23 8:25 ME334138.020
Free Cyanide (pH 6)	mg/L	0.004	<0.004	0.037	0.014	<0.004	<0.004
Weak Acid Dissociable Cyanide (WADCN)	mg/L	0.004	<0.004	0.063	0.027	<0.004	<0.004
Total Cyanide	mg/L	0.004	0.042	0.31	0.097	0.037	0.036

PARAMETER	UOM	LOR	HSMB-7D	HSMB-7S	NB01S DUP	HSMB3S1 DUP	HSMB-6D2 DUP
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			9/6/23 9:44 ME334138.021	9/6/23 11:19 ME334138.022	5/6/23 12:40 ME334138.023	8/6/23 10:45 ME334138.026	13/6/23 8:25 ME334138.027
Free Cyanide (pH 6)	mg/L	0.004	0.032	<0.004	<0.004	<0.004	<0.004
Weak Acid Dissociable Cyanide (WADCN)	mg/L	0.004	0.039	<0.004	<0.004	<0.004	<0.004
Total Cyanide	mg/L	0.004	0.48	0.011	0.025	0.017	0.032

Cyanide Amenable to Chlorination in Water [Inorg-014] Tested: 27/6/2023

PARAMETER	UOM	LOR	NB01D	NB01S	NB02D	NB02S	NB03D
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			5/6/23 14:26 ME334138.001	5/6/23 12:40 ME334138.002	6/6/23 9:21 ME334138.003	6/6/23 10:30 ME334138.004	6/6/23 14:15 ME334138.005
Cyanide Amenable to Chlorination	mg/L	0.1	<0.1	<0.1	<0.1	0.4	<0.1

PARAMETER	UOM	LOR	NB04D(S)	NB05S	HSMB1S	HSMB1D	HSMB2S
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			6/6/23 15:48 ME334138.006	7/6/23 10:20 ME334138.007	7/6/23 11:27 ME334138.008	7/6/23 13:21 ME334138.009	9/6/23 14:21 ME334138.011
Cyanide Amenable to Chlorination	mg/L	0.1	<0.1	<0.1	0.2	<0.1	0.1

PARAMETER	UOM	LOR	HSMB3D1	HSMB3S1	HSMB3D2	HSMB3S2	HSMB4D
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			8/6/23 9:06 ME334138.012	8/6/23 10:45 ME334138.013	8/6/23 13:05 ME334138.014	8/6/23 14:09 ME334138.015	12/6/23 8:40 ME334138.016
Cyanide Amenable to Chlorination	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	HSMB4S	HSMB5D	HSMB-6D2	HSMB-6S	HSMB-7D
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			12/6/23 10:25 ME334138.017	12/6/23 12:20 ME334138.018	13/6/23 8:25 ME334138.019	13/6/23 8:25 ME334138.020	9/6/23 9:44 ME334138.021
Cyanide Amenable to Chlorination	mg/L	0.1	0.1	<0.1	<0.1	<0.1	0.2

PARAMETER	UOM	LOR	HSMB-7S	NB01S DUP	HSMB3S1 DUP	HSMB-6D2 DUP
			WATER	WATER	WATER	WATER
			-	-	-	-
			9/6/23 11:19 ME334138.022	5/6/23 12:40 ME334138.023	8/6/23 10:45 ME334138.026	13/6/23 8:25 ME334138.027
Cyanide Amenable to Chlorination	mg/L	0.1	<0.1	<0.1	<0.1	<0.1

Thiocyanate in Water [AN156] Tested: 13/6/2023

PARAMETER	UOM	LOR	NB01D	NB01S	NB02D	NB02S	NB03D
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			5/6/23 14:26 ME334138.001	5/6/23 12:40 ME334138.002	6/6/23 9:21 ME334138.003	6/6/23 10:30 ME334138.004	6/6/23 14:15 ME334138.005
Thiocyanate	mg/L	0.1	<0.1	<0.1	<0.1	0.3	<0.1

PARAMETER	UOM	LOR	NB04D(S)	NB05S	HSMB1S	HSMB1D	HSMB2D
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			6/6/23 15:48 ME334138.006	7/6/23 10:20 ME334138.007	7/6/23 11:27 ME334138.008	7/6/23 13:21 ME334138.009	7/6/23 14:53 ME334138.010
Thiocyanate	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	IS

PARAMETER	UOM	LOR	HSMB2S	HSMB3D1	HSMB3S1	HSMB3D2	HSMB3S2
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			9/6/23 14:21 ME334138.011	8/6/23 9:06 ME334138.012	8/6/23 10:45 ME334138.013	8/6/23 13:05 ME334138.014	8/6/23 14:09 ME334138.015
Thiocyanate	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	HSMB4D	HSMB4S	HSMB5D	HSMB-6D2	HSMB-6S
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			12/6/23 8:40 ME334138.016	12/6/23 10:25 ME334138.017	12/6/23 12:20 ME334138.018	13/6/23 8:25 ME334138.019	13/6/23 8:25 ME334138.020
Thiocyanate	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	0.2

PARAMETER	UOM	LOR	HSMB-7D	HSMB-7S	NB01S DUP	HSMB3S1 DUP	HSMB-6D2 DUP
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			9/6/23 9:44 ME334138.021	9/6/23 11:19 ME334138.022	5/6/23 12:40 ME334138.023	8/6/23 10:45 ME334138.026	13/6/23 8:25 ME334138.027
Thiocyanate	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Ammonia Nitrogen by Discrete Analyser [AN280] Tested: 8/6/2023

			NB01D	NB01S	NB02D	NB02S	NB03D
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			5/6/23 14:26	5/6/23 12:40	6/6/23 9:21	6/6/23 10:30	6/6/23 14:15
PARAMETER	UOM	LOR	ME334138.001	ME334138.002	ME334138.003	ME334138.004	ME334138.005
Ammonia Nitrogen, NH3 as N	mg/L	0.01	0.77	1.6	0.92	4.9	3.2

			NB04D(S)	NB05S	HSMB1S	HSMB1D	HSMB2D
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			6/6/23 15:48	7/6/23 10:20	7/6/23 11:27	7/6/23 13:21	7/6/23 14:53
PARAMETER	UOM	LOR	ME334138.006	ME334138.007	ME334138.008	ME334138.009	ME334138.010
Ammonia Nitrogen, NH3 as N	mg/L	0.01	1.2	1.9	0.05	<0.01	IS

			HSMB2S	HSMB3D1	HSMB3S1	HSMB3D2	HSMB3S2
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			9/6/23 14:21	8/6/23 9:06	8/6/23 10:45	8/6/23 13:05	8/6/23 14:09
PARAMETER	UOM	LOR	ME334138.011	ME334138.012	ME334138.013	ME334138.014	ME334138.015
Ammonia Nitrogen, NH3 as N	mg/L	0.01	3.2	0.68	0.04	0.02	0.10

			HSMB4D	HSMB4S	HSMB5D	HSMB-6D2	HSMB-6S
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			12/6/23 8:40	12/6/23 10:25	12/6/23 12:20	13/6/23 8:25	13/6/23 8:25
PARAMETER	UOM	LOR	ME334138.016	ME334138.017	ME334138.018	ME334138.019	ME334138.020
Ammonia Nitrogen, NH3 as N	mg/L	0.01	0.48	11	1.1	1.4	0.02

			HSMB-7D	HSMB-7S	NB01S DUP	HSMB3S1 DUP	HSMB-6D2 DUP
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			9/6/23 9:44	9/6/23 11:19	5/6/23 12:40	8/6/23 10:45	13/6/23 8:25
PARAMETER	UOM	LOR	ME334138.021	ME334138.022	ME334138.023	ME334138.026	ME334138.027
Ammonia Nitrogen, NH3 as N	mg/L	0.01	4.7	1.8	1.6	0.04	1.3

Nitrate Nitrogen and Nitrite Nitrogen (NO_x) by DA [AN276] Tested: 8/6/2023

PARAMETER	UOM	LOR	NB01D	NB01S	NB02D	NB02S	NB03D
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			5/6/23 14:26 ME334138.001	5/6/23 12:40 ME334138.002	6/6/23 9:21 ME334138.003	6/6/23 10:30 ME334138.004	6/6/23 14:15 ME334138.005
Nitrate/Nitrite Nitrogen, NO _x as N	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nitrite Nitrogen, NO ₂ as N	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nitrate Nitrogen, NO ₃ as N	mg/L	0.01	<0.010	<0.010	<0.010	<0.010	<0.010

PARAMETER	UOM	LOR	NB04D(S)	NB05S	HSMB1S	HSMB1D	HSMB2D
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			6/6/23 15:48 ME334138.006	7/6/23 10:20 ME334138.007	7/6/23 11:27 ME334138.008	7/6/23 13:21 ME334138.009	7/6/23 14:53 ME334138.010
Nitrate/Nitrite Nitrogen, NO _x as N	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	IS
Nitrite Nitrogen, NO ₂ as N	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	IS
Nitrate Nitrogen, NO ₃ as N	mg/L	0.01	<0.010	<0.010	<0.010	<0.010	IS

PARAMETER	UOM	LOR	HSMB2S	HSMB3D1	HSMB3S1	HSMB3D2	HSMB3S2
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			9/6/23 14:21 ME334138.011	8/6/23 9:06 ME334138.012	8/6/23 10:45 ME334138.013	8/6/23 13:05 ME334138.014	8/6/23 14:09 ME334138.015
Nitrate/Nitrite Nitrogen, NO _x as N	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nitrite Nitrogen, NO ₂ as N	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nitrate Nitrogen, NO ₃ as N	mg/L	0.01	<0.010	<0.010	<0.010	<0.010	<0.010

PARAMETER	UOM	LOR	HSMB4D	HSMB4S	HSMB5D	HSMB-6D2	HSMB-6S
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			12/6/23 8:40 ME334138.016	12/6/23 10:25 ME334138.017	12/6/23 12:20 ME334138.018	13/6/23 8:25 ME334138.019	13/6/23 8:25 ME334138.020
Nitrate/Nitrite Nitrogen, NO _x as N	mg/L	0.01	0.09	<0.01	<0.01	<0.01	<0.01
Nitrite Nitrogen, NO ₂ as N	mg/L	0.01	0.05	<0.01	<0.01	<0.01	<0.01
Nitrate Nitrogen, NO ₃ as N	mg/L	0.01	0.042	<0.010	<0.010	<0.010	<0.010

PARAMETER	UOM	LOR	HSMB-7D	HSMB-7S	NB01S DUP	HSMB3S1 DUP	HSMB-6D2 DUP
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			9/6/23 9:44 ME334138.021	9/6/23 11:19 ME334138.022	5/6/23 12:40 ME334138.023	8/6/23 10:45 ME334138.026	13/6/23 8:25 ME334138.027
Nitrate/Nitrite Nitrogen, NO _x as N	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nitrite Nitrogen, NO ₂ as N	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nitrate Nitrogen, NO ₃ as N	mg/L	0.01	<0.010	<0.010	<0.010	<0.010	<0.010

Total Nitrogen by Persulphate Digestion UV-Vis [AN171] Tested: 13/6/2023

PARAMETER	UOM	LOR	NB01D	NB01S	NB02D	NB02S	NB03D
			WATER	WATER	WATER	WATER	WATER
			5/6/23 14:26 ME334138.001	5/6/23 12:40 ME334138.002	6/6/23 9:21 ME334138.003	6/6/23 10:30 ME334138.004	6/6/23 14:15 ME334138.005
Total Nitrogen (Persulphate Digestion)	mg/L	0.5	0.6	1.7	0.9	6.9	4.1
Total Kjeldahl Nitrogen (TKN) (Calculated)	mg/L	0.5	0.6	1.7	0.9	6.9	4.1

PARAMETER	UOM	LOR	NB04D(S)	NB05S	HSMB1S	HSMB1D	HSMB2D
			WATER	WATER	WATER	WATER	WATER
			6/6/23 15:48 ME334138.006	7/6/23 10:20 ME334138.007	7/6/23 11:27 ME334138.008	7/6/23 13:21 ME334138.009	7/6/23 14:53 ME334138.010
Total Nitrogen (Persulphate Digestion)	mg/L	0.5	1.3	2.6	5.3	<0.5	IS
Total Kjeldahl Nitrogen (TKN) (Calculated)	mg/L	0.5	1.3	2.6	5.3	<0.5	IS

PARAMETER	UOM	LOR	HSMB2S	HSMB3D1	HSMB3S1	HSMB3D2	HSMB3S2
			WATER	WATER	WATER	WATER	WATER
			9/6/23 14:21 ME334138.011	8/6/23 9:06 ME334138.012	8/6/23 10:45 ME334138.013	8/6/23 13:05 ME334138.014	8/6/23 14:09 ME334138.015
Total Nitrogen (Persulphate Digestion)	mg/L	0.5	4.5	0.8	2.5	<0.5	4.1
Total Kjeldahl Nitrogen (TKN) (Calculated)	mg/L	0.5	4.5	0.8	2.5	<0.5	4.1

PARAMETER	UOM	LOR	HSMB4D	HSMB4S	HSMB5D	HSMB-6D2	HSMB-6S
			WATER	WATER	WATER	WATER	WATER
			12/6/23 8:40 ME334138.016	12/6/23 10:25 ME334138.017	12/6/23 12:20 ME334138.018	13/6/23 8:25 ME334138.019	13/6/23 8:25 ME334138.020
Total Nitrogen (Persulphate Digestion)	mg/L	0.5	0.8	12	1.4	1.7	2.9
Total Kjeldahl Nitrogen (TKN) (Calculated)	mg/L	0.5	0.7	12	1.4	1.7	2.9

PARAMETER	UOM	LOR	HSMB-7D	HSMB-7S	NB01S DUP	HSMB3S1 DUP	HSMB-6D2 DUP
			WATER	WATER	WATER	WATER	WATER
			9/6/23 9:44 ME334138.021	9/6/23 11:19 ME334138.022	5/6/23 12:40 ME334138.023	8/6/23 10:45 ME334138.026	13/6/23 8:25 ME334138.027
Total Nitrogen (Persulphate Digestion)	mg/L	0.5	6.1	1.8	1.9	2.5	1.8
Total Kjeldahl Nitrogen (TKN) (Calculated)	mg/L	0.5	6.1	1.8	1.9	2.5	1.8

Dissolved Metals in Water by ICPMS [MA-1400.WW.09] Tested: 13/6/2023

PARAMETER	UOM	LOR	NB01D	NB01S	NB02D	NB02S	NB03D
			WATER	WATER	WATER	WATER	WATER
			5/6/23 14:26 ME334138.001	5/6/23 12:40 ME334138.002	6/6/23 9:21 ME334138.003	6/6/23 10:30 ME334138.004	6/6/23 14:15 ME334138.005
Aluminium	mg/L	0.001	<0.01 †	<0.025 †	<0.025 †	<0.1 †	<0.01 †
Arsenic	mg/L	0.0005	<0.001 †	<0.0025 †	<0.0025 †	<0.01 †	<0.001 †
Barium	mg/L	0.001	0.39	4.1	0.57	7.2	0.072
Beryllium	mg/L	0.001	<0.002 †	<0.005 †	<0.005 †	<0.02 †	<0.002 †
Boron	mg/L	0.001	0.28	0.21	0.33	0.24	0.21
Cadmium	mg/L	0.00005	<0.0002 †	<0.0005 †	<0.0005 †	<0.002 †	<0.0002 †
Chromium	mg/L	0.0005	<0.001 †	<0.0025 †	<0.0025 †	<0.01 †	<0.001 †
Cobalt	mg/L	0.0002	<0.0004 †	<0.001 †	<0.001 †	<0.004 †	<0.0004 †
Copper	mg/L	0.001	<0.002 †	<0.005 †	<0.005 †	0.025	<0.002 †
Lead	mg/L	0.0002	<0.0004 †	<0.001 †	0.0015	<0.004 †	<0.0004 †
Manganese	mg/L	0.0005	0.012	0.10	0.0074	<0.01 †	0.025
Molybdenum	mg/L	0.001	0.010	0.011	0.013	0.089	0.043
Mercury	mg/L	0.0001	0.0010	<0.0005 †	0.0013	<0.002 †	0.016
Nickel	mg/L	0.0005	<0.001 †	0.0029	<0.0025 †	0.029	0.0017
Selenium	mg/L	0.001	<0.002 †	<0.005 †	<0.005 †	<0.02 †	<0.002 †
Strontium	mg/L	0.001	0.91	9.8	1.3	26	0.15
Iron	mg/L	0.001	0.049	0.010	0.033	0.25	0.089
Zinc	mg/L	0.001	0.002	0.009	0.005	0.026	0.003
Calcium	mg/L	0.01	9.3	170	13	820	2.5
Magnesium	mg/L	0.01	1.7	46	2.8	<0.2 †	0.19
Sodium	mg/L	0.01	870	2000	1200	3900	400
Potassium	mg/L	0.01	12	63	19	130	20

PARAMETER	UOM	LOR	NB04D(S)	NB05S	HSMB1S	HSMB1D	HSMB2D
			WATER	WATER	WATER	WATER	WATER
			6/6/23 15:48 ME334138.006	7/6/23 10:20 ME334138.007	7/6/23 11:27 ME334138.008	7/6/23 13:21 ME334138.009	7/6/23 14:53 ME334138.010
Aluminium	mg/L	0.001	<0.025 †	0.064	<0.05 †	<0.001	IS
Arsenic	mg/L	0.0005	<0.0025 †	<0.0025 †	<0.005 †	<0.0005	IS
Barium	mg/L	0.001	2.4	1.0	3.4	0.54	IS
Beryllium	mg/L	0.001	<0.005 †	<0.005 †	<0.01 †	<0.001	IS
Boron	mg/L	0.001	0.26	0.31	0.095	0.017	IS
Cadmium	mg/L	0.00005	<0.0005 †	<0.0005 †	<0.001 †	<0.00005	IS
Chromium	mg/L	0.0005	<0.0025 †	<0.0025 †	<0.005 †	<0.0005	IS
Cobalt	mg/L	0.0002	<0.001 †	<0.001 †	<0.002 †	<0.0002	IS
Copper	mg/L	0.001	<0.005 †	<0.005 †	<0.01 †	<0.001	IS
Lead	mg/L	0.0002	<0.001 †	<0.001 †	<0.002 †	<0.0002	IS
Manganese	mg/L	0.0005	0.078	<0.0025 †	16	2.3	IS
Molybdenum	mg/L	0.001	0.013	0.10	<0.01 †	<0.001	IS
Mercury	mg/L	0.0001	<0.0005 †	0.0016	<0.001 †	<0.0001	IS
Nickel	mg/L	0.0005	<0.0025 †	<0.0025 †	<0.005 †	<0.0005	IS
Selenium	mg/L	0.001	<0.005 †	<0.005 †	<0.01 †	<0.001	IS
Strontium	mg/L	0.001	5.0	2.4	7.7	1.6	IS
Iron	mg/L	0.001	0.019	0.048	410	61	IS
Zinc	mg/L	0.001	0.006	0.006	0.041	0.002	IS
Calcium	mg/L	0.01	87	34	200	51	IS
Magnesium	mg/L	0.01	18	0.12	42	1.5	IS
Sodium	mg/L	0.01	2000	1900	2400	84	IS
Potassium	mg/L	0.01	30	64	590	29	IS

Dissolved Metals in Water by ICPMS [MA-1400.WW.09] Tested: 13/6/2023 (continued)

PARAMETER	UOM	LOR	HSMB2S	HSMB3D1	HSMB3S1	HSMB3D2	HSMB3S2
			WATER	WATER	WATER	WATER	WATER
			9/6/23 14:21 ME334138.011	8/6/23 9:06 ME334138.012	8/6/23 10:45 ME334138.013	8/6/23 13:05 ME334138.014	8/6/23 14:09 ME334138.015
Aluminium	mg/L	0.001	<0.025 †	<0.025 †	<0.05 †	<0.025 †	<0.1 †
Arsenic	mg/L	0.0005	<0.0025 †	<0.0025 †	<0.005 †	<0.0025 †	<0.01 †
Barium	mg/L	0.001	0.030	0.18	13	0.34	13
Beryllium	mg/L	0.001	<0.005 †	<0.005 †	<0.01 †	<0.005 †	<0.02 †
Boron	mg/L	0.001	0.29	0.25	0.060	0.21	0.069
Cadmium	mg/L	0.00005	<0.0005 †	<0.0005 †	<0.001 †	<0.0005 †	<0.002 †
Chromium	mg/L	0.0005	<0.0025 †	<0.0025 †	<0.005 †	<0.0025 †	<0.01 †
Cobalt	mg/L	0.0002	0.0011	<0.001 †	<0.002 †	<0.001 †	<0.004 †
Copper	mg/L	0.001	<0.005 †	<0.005 †	<0.01 †	<0.005 †	<0.02 †
Lead	mg/L	0.0002	0.0022	<0.001 †	<0.002 †	<0.001 †	<0.004 †
Manganese	mg/L	0.0005	<0.0025 †	0.012	16	0.018	7.1
Molybdenum	mg/L	0.001	0.023	<0.005 †	<0.01 †	0.008	<0.02 †
Mercury	mg/L	0.0001	<0.0005 †	<0.0005 †	<0.001 †	<0.0005 †	<0.002 †
Nickel	mg/L	0.0005	0.0053	<0.0025 †	<0.005 †	<0.0025 †	<0.01 †
Selenium	mg/L	0.001	<0.005 †	<0.005 †	<0.01 †	<0.005 †	<0.02 †
Strontium	mg/L	0.001	0.15	0.58	24	0.92	35
Iron	mg/L	0.001	0.19	0.023	310	0.25	240
Zinc	mg/L	0.001	0.006	<0.005 †	0.028	0.006	0.044
Calcium	mg/L	0.01	1.3	6.9	580	10	840
Magnesium	mg/L	0.01	0.15	1.3	110	2.0	180
Sodium	mg/L	0.01	1300	760	740	710	4800
Potassium	mg/L	0.01	120	52	260	170	410

PARAMETER	UOM	LOR	HSMB4D	HSMB4S	HSMB5D	HSMB-6D2	HSMB-6S
			WATER	WATER	WATER	WATER	WATER
			12/6/23 8:40 ME334138.016	12/6/23 10:25 ME334138.017	12/6/23 12:20 ME334138.018	13/6/23 8:25 ME334138.019	13/6/23 8:25 ME334138.020
Aluminium	mg/L	0.001	0.14	<0.05 †	<0.01 †	<0.025 †	<0.1 †
Arsenic	mg/L	0.0005	0.0014	<0.005 †	<0.001 †	<0.0025 †	<0.01 †
Barium	mg/L	0.001	0.19	3.5	0.10	0.93	12
Beryllium	mg/L	0.001	<0.002 †	<0.01 †	<0.002 †	<0.005 †	<0.02 †
Boron	mg/L	0.001	0.066	0.070	0.21	0.22	0.10
Cadmium	mg/L	0.00005	<0.0002 †	<0.001 †	<0.0002 †	<0.0005 †	<0.002 †
Chromium	mg/L	0.0005	<0.001 †	<0.005 †	<0.001 †	<0.0025 †	<0.01 †
Cobalt	mg/L	0.0002	<0.0004 †	<0.002 †	<0.0004 †	<0.001 †	<0.004 †
Copper	mg/L	0.001	<0.002 †	<0.01 †	<0.002 †	<0.005 †	<0.02 †
Lead	mg/L	0.0002	<0.0004 †	<0.002 †	<0.0004 †	<0.001 †	<0.004 †
Manganese	mg/L	0.0005	<0.001 †	4.2	0.0037	0.010	6.2
Molybdenum	mg/L	0.001	0.004	<0.01 †	0.003	0.019	<0.02 †
Mercury	mg/L	0.0001	<0.0002 †	<0.001 †	<0.0002 †	<0.0005 †	<0.002 †
Nickel	mg/L	0.0005	0.0013	<0.005 †	<0.001 †	<0.0025 †	<0.01 †
Selenium	mg/L	0.001	<0.002 †	<0.01 †	<0.002 †	<0.005 †	<0.02 †
Strontium	mg/L	0.001	1.1	14	0.27	2.2	27
Iron	mg/L	0.001	0.018	4.4	0.052	0.068	140
Zinc	mg/L	0.001	0.003	0.010	0.002	0.006	0.033
Calcium	mg/L	0.01	52	370	2.5	15	720
Magnesium	mg/L	0.01	<0.02 †	33	0.62	2.9	140
Sodium	mg/L	0.01	170	2000	630	1600	4400
Potassium	mg/L	0.01	160	2100	61	130	31

Dissolved Metals in Water by ICPMS [MA-1400.WW.09] Tested: 13/6/2023 (continued)

PARAMETER	UOM	LOR	HSMB-7D	HSMB-7S	NB01S DUP	HSMB3S1 DUP	HSMB-6D2 DUP
			WATER	WATER	WATER	WATER	WATER
			9/6/23 9:44 ME334138.021	9/6/23 11:19 ME334138.022	5/6/23 12:40 ME334138.023	8/6/23 10:45 ME334138.026	13/6/23 8:25 ME334138.027
Aluminium	mg/L	0.001	<0.025 †	<0.025 †	<0.025 †	<0.05 †	<0.025 †
Arsenic	mg/L	0.0005	<0.0025 †	<0.0025 †	<0.0025 †	<0.005 †	<0.0025 †
Barium	mg/L	0.001	0.72	2.9	4.1	13	0.92
Beryllium	mg/L	0.001	<0.005 †	<0.005 †	<0.005 †	<0.01 †	<0.005 †
Boron	mg/L	0.001	0.21	0.10	0.20	0.053	0.22
Cadmium	mg/L	0.00005	<0.0005 †	<0.0005 †	<0.0005 †	<0.001 †	<0.0005 †
Chromium	mg/L	0.0005	<0.0025 †	<0.0025 †	<0.0025 †	<0.005 †	<0.0025 †
Cobalt	mg/L	0.0002	0.0018	<0.001 †	<0.001 †	<0.002 †	<0.001 †
Copper	mg/L	0.001	<0.005 †	<0.005 †	<0.005 †	<0.01 †	<0.005 †
Lead	mg/L	0.0002	<0.001 †	<0.001 †	<0.001 †	<0.002 †	<0.001 †
Manganese	mg/L	0.0005	0.028	2.6	0.096	16	0.011
Molybdenum	mg/L	0.001	0.040	<0.005 †	0.011	<0.01 †	0.019
Mercury	mg/L	0.0001	<0.0005 †	<0.0005 †	<0.0005 †	<0.001 †	<0.0005 †
Nickel	mg/L	0.0005	0.0030	0.025	0.0049	<0.005 †	<0.0025 †
Selenium	mg/L	0.001	<0.005 †	<0.005 †	<0.005 †	<0.01 †	<0.005 †
Strontium	mg/L	0.001	2.6	5.5	9.8	20	2.2
Iron	mg/L	0.001	0.15	35	0.088	310	0.12
Zinc	mg/L	0.001	<0.005 †	0.006	0.006	0.028	0.005
Calcium	mg/L	0.01	17	190	170	590	15
Magnesium	mg/L	0.01	5.2	5.5	45	110	2.8
Sodium	mg/L	0.01	1800	1600	2000	3500	1600
Potassium	mg/L	0.01	330	300	65	260	130

USEPA8260B Volatile Organic Compounds in Water [USEPA 8260B] Tested: 8/6/2023

PARAMETER	UOM	LOR	NB01D	NB01S	NB02D	NB02S	NB03D
			WATER	WATER	WATER	WATER	WATER
			5/6/23 14:26 ME334138.001	5/6/23 12:40 ME334138.002	6/6/23 9:21 ME334138.003	6/6/23 10:30 ME334138.004	6/6/23 14:15 ME334138.005
Benzene	µg/L	1	1.2	3200	17	14	<1.0
Toluene	µg/L	1	1.5	1100	<1.0	2.2	<1.0
Ethylbenzene	µg/L	1	<1.0	57	<1.0	<1.0	<1.0
m&p-Xylenes	µg/L	1	<1.0	140	<1.0	1.3	<1.0
o-Xylene	µg/L	1	<1.0	61	<1.0	1.1	<1.0
Xylenes	µg/L	1	<1.0	200	<1.0	2.4	<1.0
Naphthalene (VOC)	µg/L	1	<1.0	<1.0	<1.0	<1.0	<1.0
Total BTEX	µg/L	1	2.8	4600	17	18	<1.0

PARAMETER	UOM	LOR	NB04D(S)	NB05S	HSMB1S	HSMB1D	HSMB2D
			WATER	WATER	WATER	WATER	WATER
			6/6/23 15:48 ME334138.006	7/6/23 10:20 ME334138.007	7/6/23 11:27 ME334138.008	7/6/23 13:21 ME334138.009	7/6/23 14:53 ME334138.010
Benzene	µg/L	1	<1.0	1.4	120	2.4	IS
Toluene	µg/L	1	2.2	6.0	12	<1.0	IS
Ethylbenzene	µg/L	1	<1.0	<1.0	<1.0	<1.0	IS
m&p-Xylenes	µg/L	1	<1.0	<1.0	2.9	<1.0	IS
o-Xylene	µg/L	1	<1.0	<1.0	1.2	<1.0	IS
Xylenes	µg/L	1	<1.0	<1.0	4.1	<1.0	IS
Naphthalene (VOC)	µg/L	1	<1.0	<1.0	<1.0	<1.0	IS
Total BTEX	µg/L	1	2.2	7.5	130	2.4	IS

PARAMETER	UOM	LOR	HSMB2S	HSMB3D1	HSMB3S1	HSMB3D2	HSMB3S2
			WATER	WATER	WATER	WATER	WATER
			9/6/23 14:21 ME334138.011	8/6/23 9:06 ME334138.012	8/6/23 10:45 ME334138.013	8/6/23 13:05 ME334138.014	8/6/23 14:09 ME334138.015
Benzene	µg/L	1	110	5.6	3.8	2.8	12
Toluene	µg/L	1	15	<1.0	<1.0	<1.0	2.6
Ethylbenzene	µg/L	1	<1.0	<1.0	<1.0	<1.0	<1.0
m&p-Xylenes	µg/L	1	<1.0	<1.0	<1.0	<1.0	<1.0
o-Xylene	µg/L	1	<1.0	<1.0	<1.0	<1.0	<1.0
Xylenes	µg/L	1	<1.0	<1.0	<1.0	<1.0	<1.0
Naphthalene (VOC)	µg/L	1	1.8	<1.0	<1.0	<1.0	1.2
Total BTEX	µg/L	1	130	5.6	3.8	2.8	15

PARAMETER	UOM	LOR	HSMB4D	HSMB4S	HSMB5D	HSMB-6D2	HSMB-6S
			WATER	WATER	WATER	WATER	WATER
			12/6/23 8:40 ME334138.016	12/6/23 10:25 ME334138.017	12/6/23 12:20 ME334138.018	13/6/23 8:25 ME334138.019	13/6/23 8:25 ME334138.020
Benzene	µg/L	1	4.8	300	11	<1.0	2.8
Toluene	µg/L	1	<1.0	27	1.3	<1.0	3.6
Ethylbenzene	µg/L	1	<1.0	<1.0	<1.0	<1.0	<1.0
m&p-Xylenes	µg/L	1	<1.0	<1.0	<1.0	<1.0	2.0
o-Xylene	µg/L	1	<1.0	<1.0	<1.0	<1.0	1.4
Xylenes	µg/L	1	<1.0	<1.0	<1.0	<1.0	3.4
Naphthalene (VOC)	µg/L	1	<1.0	1.4	<1.0	<1.0	<1.0
Total BTEX	µg/L	1	4.8	330	12	<1.0	9.8

USEPA8260B Volatile Organic Compounds in Water [USEPA 8260B] Tested: 8/6/2023 (continued)

PARAMETER	UOM	LOR	HSMB-7D	HSMB-7S	NB01S DUP	TRIP BLANK	TRIP SPIKE
			WATER -	WATER -	WATER -	WATER -	WATER -
			9/6/23 9:44 ME334138.021	9/6/23 11:19 ME334138.022	5/6/23 12:40 ME334138.023	5/6/2023 ME334138.024	5/6/2023 ME334138.025
Benzene	µg/L	1	10	<1.0	3300	<1.0	[94%]
Toluene	µg/L	1	1.5	<1.0	1100	<1.0	[118%]
Ethylbenzene	µg/L	1	<1.0	<1.0	59	<1.0	[112.4%]
m&p-Xylenes	µg/L	1	<1.0	<1.0	150	<1.0	[113%]
o-Xylene	µg/L	1	<1.0	<1.0	62	<1.0	[120%]
Xylenes	µg/L	1	<1.0	<1.0	210	<1.0	[115%]
Naphthalene (VOC)	µg/L	1	<1.0	<1.0	<1.0	<1.0	<1.0
Total BTEX	µg/L	1	12	<1.0	4700	<1.0	[112%]

PARAMETER	UOM	LOR	HSMB3S1 DUP	HSMB-6D2 DUP	TRIP BLANK
			WATER -	WATER -	WATER -
			8/6/23 10:45 ME334138.026	13/6/23 8:25 ME334138.027	13/6/2023 ME334138.028
Benzene	µg/L	1	4.1	<1.0	<1.0
Toluene	µg/L	1	<1.0	<1.0	<1.0
Ethylbenzene	µg/L	1	<1.0	<1.0	<1.0
m&p-Xylenes	µg/L	1	<1.0	<1.0	<1.0
o-Xylene	µg/L	1	<1.0	<1.0	<1.0
Xylenes	µg/L	1	<1.0	<1.0	<1.0
Naphthalene (VOC)	µg/L	1	<1.0	<1.0	<1.0
Total BTEX	µg/L	1	4.1	<1.0	<1.0

VPH in Water MA-30 [MA30-VPH] Tested: 8/6/2023

PARAMETER	UOM	LOR	NB01D	NB01S	NB02D	NB02S	NB03D
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			5/6/23 14:26 ME334138.001	5/6/23 12:40 ME334138.002	6/6/23 9:21 ME334138.003	6/6/23 10:30 ME334138.004	6/6/23 14:15 ME334138.005
C6-C10 (P&T)	µg/L	10	<10	5700	20	34	<10
C6-C10 (P&T) less BTEX (F1)	µg/L	10	<10	1200	<10	15	<10
C6-C9 (P&T)	µg/L	10	<10	6100	22	35	<10

PARAMETER	UOM	LOR	NB04D(S)	NB05S	HSMB1S	HSMB1D	HSMB2D
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			6/6/23 15:48 ME334138.006	7/6/23 10:20 ME334138.007	7/6/23 11:27 ME334138.008	7/6/23 13:21 ME334138.009	7/6/23 14:53 ME334138.010
C6-C10 (P&T)	µg/L	10	<10	<10	150	45	IS
C6-C10 (P&T) less BTEX (F1)	µg/L	10	<10	<10	19	42	IS
C6-C9 (P&T)	µg/L	10	<10	<10	160	<10	IS

PARAMETER	UOM	LOR	HSMB2S	HSMB3D1	HSMB3S1	HSMB3D2	HSMB3S2
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			9/6/23 14:21 ME334138.011	8/6/23 9:06 ME334138.012	8/6/23 10:45 ME334138.013	8/6/23 13:05 ME334138.014	8/6/23 14:09 ME334138.015
C6-C10 (P&T)	µg/L	10	210	10	13	10	53
C6-C10 (P&T) less BTEX (F1)	µg/L	10	83	<10	<10	<10	38
C6-C9 (P&T)	µg/L	10	170	11	<10	<10	31

PARAMETER	UOM	LOR	HSMB4D	HSMB4S	HSMB5D	HSMB-6D2	HSMB-6S
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			12/6/23 8:40 ME334138.016	12/6/23 10:25 ME334138.017	12/6/23 12:20 ME334138.018	13/6/23 8:25 ME334138.019	13/6/23 8:25 ME334138.020
C6-C10 (P&T)	µg/L	10	82	450	19	<10	<10
C6-C10 (P&T) less BTEX (F1)	µg/L	10	78	120	<10	<10	<10
C6-C9 (P&T)	µg/L	10	<10	460	12	<10	<10

PARAMETER	UOM	LOR	HSMB-7D	HSMB-7S	NB01S DUP	TRIP BLANK	TRIP SPIKE
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			9/6/23 9:44 ME334138.021	9/6/23 11:19 ME334138.022	5/6/23 12:40 ME334138.023	5/6/2023 ME334138.024	5/6/2023 ME334138.025
C6-C10 (P&T)	µg/L	10	12	<10	5900	<10	[88%]
C6-C10 (P&T) less BTEX (F1)	µg/L	10	<10	<10	1200	<10	-
C6-C9 (P&T)	µg/L	10	13	<10	6300	<10	[87%]

PARAMETER	UOM	LOR	HSMB3S1 DUP	HSMB-6D2 DUP	TRIP BLANK
			WATER	WATER	WATER
			-	-	-
			8/6/23 10:45 ME334138.026	13/6/23 8:25 ME334138.027	13/6/2023 ME334138.028
C6-C10 (P&T)	µg/L	10	<10	<10	<10
C6-C10 (P&T) less BTEX (F1)	µg/L	10	<10	<10	<10
C6-C9 (P&T)	µg/L	10	<10	<10	<10

TRH in Water MA-30.WW.05 Old & New Fractions mg/L [MA30] Tested: 23/6/2023

PARAMETER	UOM	LOR	NB01D	NB01S	NB02D	NB02S	NB03D
			WATER	WATER	WATER	WATER	WATER
			5/6/23 14:26 ME334138.001	5/6/23 12:40 ME334138.002	6/6/23 9:21 ME334138.003	6/6/23 10:30 ME334138.004	6/6/23 14:15 ME334138.005
Total TRH C10-C36	µg/L	50	<50	<50	<50	64	120
Total TRH C6-C36	µg/L	50	<50	6100	<50	99	120
Total TRH C6-C40 (F)	µg/L	50	<50	5700	<50	98	250
TRH C10-C14	µg/L	50	<50	<50	<50	64	120
TRH C15-C28	µg/L	50	<50	<50	<50	<50	<50
TRH C29-C36	µg/L	50	<50	<50	<50	<50	<50
TRH >C10-C16	µg/L	10	<10	<10	<10	64	250
TRH >C10-C16 less Naphthalene (F2)	µg/L	10	<10	<10	<10	64	250
TRH >C10-C40 Total (F)	µg/L	50	<50	<50	<50	64	250
TRH >C16-C34 (F3)	µg/L	50	<50	<50	<50	<50	<50
TRH >C34-C40 (F4)	µg/L	50	<50	<50	<50	<50	<50

PARAMETER	UOM	LOR	NB04D(S)	NB05S	HSMB1S	HSMB1D	HSMB2D
			WATER	WATER	WATER	WATER	WATER
			6/6/23 15:48 ME334138.006	7/6/23 10:20 ME334138.007	7/6/23 11:27 ME334138.008	7/6/23 13:21 ME334138.009	7/6/23 14:53 ME334138.010
Total TRH C10-C36	µg/L	50	<50	<50	2100	4100	IS
Total TRH C6-C36	µg/L	50	<50	<50	2300	4100	IS
Total TRH C6-C40 (F)	µg/L	50	<50	<50	2500	3700	IS
TRH C10-C14	µg/L	50	<50	<50	760	2700	IS
TRH C15-C28	µg/L	50	<50	<50	1400	1400	IS
TRH C29-C36	µg/L	50	<50	<50	<50	<50	IS
TRH >C10-C16	µg/L	10	<10	<10	1000	2400	IS
TRH >C10-C16 less Naphthalene (F2)	µg/L	10	<10	<10	1000	2400	IS
TRH >C10-C40 Total (F)	µg/L	50	<50	<50	2400	3600	IS
TRH >C16-C34 (F3)	µg/L	50	<50	<50	1400	1300	IS
TRH >C34-C40 (F4)	µg/L	50	<50	<50	<50	<50	IS

PARAMETER	UOM	LOR	HSMB2S	HSMB3D1	HSMB3S1	HSMB3D2	HSMB3S2
			WATER	WATER	WATER	WATER	WATER
			9/6/23 14:21 ME334138.011	8/6/23 9:06 ME334138.012	8/6/23 10:45 ME334138.013	8/6/23 13:05 ME334138.014	8/6/23 14:09 ME334138.015
Total TRH C10-C36	µg/L	50	2500	<50	1200	820	2100
Total TRH C6-C36	µg/L	50	2700	<50	1200	820	2100
Total TRH C6-C40 (F)	µg/L	50	2400	<50	810	750	1900
TRH C10-C14	µg/L	50	260	<50	680	590	1100
TRH C15-C28	µg/L	50	2200	<50	530	240	990
TRH C29-C36	µg/L	50	<50	<50	<50	<50	<50
TRH >C10-C16	µg/L	10	<10	<10	480	560	980
TRH >C10-C16 less Naphthalene (F2)	µg/L	10	<10	<10	480	560	970
TRH >C10-C40 Total (F)	µg/L	50	2200	<50	790	740	1900
TRH >C16-C34 (F3)	µg/L	50	2200	<50	310	190	910
TRH >C34-C40 (F4)	µg/L	50	<50	<50	<50	<50	<50

TRH in Water MA-30.WW.05 Old & New Fractions mg/L [MA30] Tested: 23/6/2023 (continued)

PARAMETER	UOM	LOR	HSMB4D	HSMB4S	HSMB5D	HSMB-6D2	HSMB-6S
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			12/6/23 8:40 ME334138.016	12/6/23 10:25 ME334138.017	12/6/23 12:20 ME334138.018	13/6/23 8:25 ME334138.019	13/6/23 8:25 ME334138.020
Total TRH C10-C36	µg/L	50	15000	1600	260	280	410
Total TRH C6-C36	µg/L	50	15000	2100	270	280	410
Total TRH C6-C40 (F)	µg/L	50	16000	1900	280	350	430
TRH C10-C14	µg/L	50	800	590	110	57	250
TRH C15-C28	µg/L	50	15000	1000	150	110	160
TRH C29-C36	µg/L	50	<50	<50	<50	110	<50
TRH >C10-C16	µg/L	10	660	550	120	73	270
TRH >C10-C16 less Naphthalene (F2)	µg/L	10	660	540	120	73	270
TRH >C10-C40 Total (F)	µg/L	50	15000	1400	260	350	430
TRH >C16-C34 (F3)	µg/L	50	15000	900	140	200	160
TRH >C34-C40 (F4)	µg/L	50	<50	<50	<50	67	<50

PARAMETER	UOM	LOR	HSMB-7D	HSMB-7S	NB01S DUP	HSMB3S1 DUP	HSMB-6D2 DUP
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			9/6/23 9:44 ME334138.021	9/6/23 11:19 ME334138.022	5/6/23 12:40 ME334138.023	8/6/23 10:45 ME334138.026	13/6/23 8:25 ME334138.027
Total TRH C10-C36	µg/L	50	220	280	200	920	200
Total TRH C6-C36	µg/L	50	230	280	6500	920	200
Total TRH C6-C40 (F)	µg/L	50	250	300	6100	950	200
TRH C10-C14	µg/L	50	64	91	100	460	<50
TRH C15-C28	µg/L	50	150	190	100	460	89
TRH C29-C36	µg/L	50	<50	<50	<50	<50	78
TRH >C10-C16	µg/L	10	83	110	120	520	45
TRH >C10-C16 less Naphthalene (F2)	µg/L	10	83	110	120	520	45
TRH >C10-C40 Total (F)	µg/L	50	240	300	220	950	200
TRH >C16-C34 (F3)	µg/L	50	150	190	96	430	160
TRH >C34-C40 (F4)	µg/L	50	<50	<50	<50	<50	<50

SVOC Compounds in Waters by GC-QQQ [MA8270] Tested: 9/6/2023

PARAMETER	UOM	LOR	NB01D	NB01S	NB02D	NB02S	NB03D
			WATER	WATER	WATER	WATER	WATER
			5/6/23 14:26 ME334138.001	5/6/23 12:40 ME334138.002	6/6/23 9:21 ME334138.003	6/6/23 10:30 ME334138.004	6/6/23 14:15 ME334138.005
Acenaphthene	µg/L	1	<1	<1	<1	<1	<1
Acenaphthylene	µg/L	1	<1	<1	<1	<1	<1
Anthracene	µg/L	1	<1	<1	<1	<1	<1
Benzo(a)anthracene	µg/L	1	<1	<1	<1	<1	<1
Benzo (a) pyrene	µg/L	1	<1	<1	<1	<1	<1
Benzo (b) fluoranthene	µg/L	1	<1	<1	<1	<1	<1
Benzo (e) pyrene	µg/L	1	<1	<1	<1	<1	<1
Benzo (ghi) perylene	µg/L	1	<1	<1	<1	<1	<1
Benzo (k) fluoranthene	µg/L	1	<1	<1	<1	<1	<1
Benzo (b+j+k) fluoranthene	µg/L	2	<2	<2	<2	<2	<2
Chrysene	µg/L	1	<1	<1	<1	<1	<1
Coronene	µg/L	1	<1	<1	<1	<1	<1
Dibenz (ah) anthracene	µg/L	1	<1	<1	<1	<1	<1
7,12-Dimethylbenz(a)anthracene	µg/L	1	<1	<1	<1	<1	<1
Fluoranthene	µg/L	1	<1	<1	<1	<1	<1
Fluorene	µg/L	1	<1	<1	<1	<1	<1
Indeno (1,2,3-cd) pyrene	µg/L	1	<1	<1	<1	<1	<1
Naphthalene	µg/L	1	<1	<1	<1	<1	<1
Perylene	µg/L	1	<1	<1	<1	<1	<1
Phenanthrene	µg/L	1	<1	<1	<1	<1	<1
Pyrene	µg/L	1	<1	<1	<1	<1	<1
3-Methylcholanthrene	µg/L	1	<1	<1	<1	<1	<1
4-Chloro-3-methylphenol	µg/L	1	<1	<1	<1	<1	<1
2-Chlorophenol	µg/L	1	<1	<1	<1	<1	<1
m&p-Cresol	µg/L	1	<1	8	<1	28	8
o-Cresol	µg/L	1	<1	1	<1	<1	1
2,4-Dichlorophenol	µg/L	1	<1	<1	<1	<1	<1
2,6-Dichlorophenol	µg/L	1	<1	<1	<1	<1	<1
2,4-Dimethylphenol	µg/L	1	<1	<1	<1	<1	<1
4,6-Dinitro-2-methylphenol	µg/L	1	<1	<1	<1	<1	<1
2,4-Dinitrophenol	µg/L	1	<1	<1	<1	<1	<1
Dinoseb	µg/L	1	<1	<1	<1	<1	<1
Hexachlorophene	µg/L	1	<1	<1	<1	<1	<1
2-Nitrophenol	µg/L	1	<1	<1	<1	<1	<1
4-Nitrophenol	µg/L	1	<1	<1	<1	<1	<1
Pentachlorophenol	µg/L	1	<1	<1	<1	<1	<1
Phenol	µg/L	1	<1	11	<1	6	12
2,3,4,6-Tetrachlorophenol	µg/L	1	<1	<1	<1	<1	<1
2,4,5-Trichlorophenol	µg/L	1	<1	<1	<1	<1	<1
2,4,6-Trichlorophenol	µg/L	1	<1	<1	<1	<1	<1

SVOC Compounds in Waters by GC-QQQ [MA8270] Tested: 9/6/2023 (continued)

PARAMETER	UOM	LOR	NB04D(S)	NB05S	HSMB1S	HSMB1D	HSMB2D
			WATER - 6/6/23 15:48 ME334138.006	WATER - 7/6/23 10:20 ME334138.007	WATER - 7/6/23 11:27 ME334138.008	WATER - 7/6/23 13:21 ME334138.009	WATER - 7/6/23 14:53 ME334138.010
Acenaphthene	µg/L	1	<1	<1	<1	<1	IS
Acenaphthylene	µg/L	1	<1	<1	<1	<1	IS
Anthracene	µg/L	1	<1	<1	<1	<1	IS
Benzo(a)anthracene	µg/L	1	<1	<1	<1	<1	IS
Benzo (a) pyrene	µg/L	1	<1	<1	<1	<1	IS
Benzo (b) fluoranthene	µg/L	1	<1	<1	<1	<1	IS
Benzo (e) pyrene	µg/L	1	<1	<1	<1	<1	IS
Benzo (ghi) perylene	µg/L	1	<1	<1	<1	<1	IS
Benzo (k) fluoranthene	µg/L	1	<1	<1	<1	<1	IS
Benzo (b+j+k) fluoranthene	µg/L	2	<2	<2	<2	<2	IS
Chrysene	µg/L	1	<1	<1	<1	<1	IS
Coronene	µg/L	1	<1	<1	<1	<1	IS
Dibenz (ah) anthracene	µg/L	1	<1	<1	<1	<1	IS
7,12-Dimethylbenz(a)anthracene	µg/L	1	<1	<1	<1	<1	IS
Fluoranthene	µg/L	1	<1	<1	<1	<1	IS
Fluorene	µg/L	1	<1	<1	<1	<1	IS
Indeno (1,2,3-cd) pyrene	µg/L	1	<1	<1	<1	<1	IS
Naphthalene	µg/L	1	1	<1	2	<1	IS
Perylene	µg/L	1	<1	<1	<1	<1	IS
Phenanthrene	µg/L	1	<1	<1	<1	<1	IS
Pyrene	µg/L	1	<1	<1	<1	<1	IS
3-Methylcholanthrene	µg/L	1	<1	<1	<1	<1	IS
4-Chloro-3-methylphenol	µg/L	1	<1	<1	<1	<1	IS
2-Chlorophenol	µg/L	1	<1	<1	<1	<1	IS
m&p-Cresol	µg/L	1	10	<1	7	6	IS
o-Cresol	µg/L	1	<1	<1	2	<1	IS
2,4-Dichlorophenol	µg/L	1	<1	<1	<1	<1	IS
2,6-Dichlorophenol	µg/L	1	<1	<1	<1	<1	IS
2,4-Dimethylphenol	µg/L	1	<1	<1	<1	<1	IS
4,6-Dinitro-2-methylphenol	µg/L	1	<1	<1	<1	<1	IS
2,4-Dinitrophenol	µg/L	1	<1	<1	<1	<1	IS
Dinoseb	µg/L	1	<1	<1	<1	<1	IS
Hexachlorophene	µg/L	1	<1	<1	<1	<1	IS
2-Nitrophenol	µg/L	1	<1	<1	<1	<1	IS
4-Nitrophenol	µg/L	1	<1	<1	<1	<1	IS
Pentachlorophenol	µg/L	1	<1	<1	<1	<1	IS
Phenol	µg/L	1	2	<1	14	3	IS
2,3,4,6-Tetrachlorophenol	µg/L	1	<1	<1	<1	<1	IS
2,4,5-Trichlorophenol	µg/L	1	<1	<1	<1	<1	IS
2,4,6-Trichlorophenol	µg/L	1	<1	<1	<1	<1	IS

SVOC Compounds in Waters by GC-QQQ [MA8270] Tested: 9/6/2023 (continued)

PARAMETER	UOM	LOR	HSMB2S	HSMB3D1	HSMB3S1	HSMB3D2	HSMB3S2
			WATER	WATER	WATER	WATER	WATER
			9/6/23 14:21 ME334138.011	8/6/23 9:06 ME334138.012	8/6/23 10:45 ME334138.013	8/6/23 13:05 ME334138.014	8/6/23 14:09 ME334138.015
Acenaphthene	µg/L	1	<1	<1	<1	<1	<1
Acenaphthylene	µg/L	1	<1	<1	<1	<1	<1
Anthracene	µg/L	1	<1	<1	<1	<1	<1
Benzo(a)anthracene	µg/L	1	<1	<1	<1	<1	<1
Benzo (a) pyrene	µg/L	1	<1	<1	<1	<1	<1
Benzo (b) fluoranthene	µg/L	1	<1	<1	<1	<1	<1
Benzo (e) pyrene	µg/L	1	<1	<1	<1	<1	<1
Benzo (ghi) perylene	µg/L	1	<1	<1	<1	<1	<1
Benzo (k) fluoranthene	µg/L	1	<1	<1	<1	<1	<1
Benzo (b+j+k) fluoranthene	µg/L	2	<2	<2	<2	<2	<2
Chrysene	µg/L	1	<1	<1	<1	<1	<1
Coronene	µg/L	1	<1	<1	<1	<1	<1
Dibenz (ah) anthracene	µg/L	1	<1	<1	<1	<1	<1
7,12-Dimethylbenz(a)anthracene	µg/L	1	<1	<1	<1	<1	<1
Fluoranthene	µg/L	1	<1	<1	<1	<1	<1
Fluorene	µg/L	1	<1	<1	<1	<1	<1
Indeno (1,2,3-cd) pyrene	µg/L	1	<1	<1	<1	<1	<1
Naphthalene	µg/L	1	2	<1	<1	<1	2
Perylene	µg/L	1	<1	<1	<1	<1	<1
Phenanthrene	µg/L	1	<1	<1	<1	<1	<1
Pyrene	µg/L	1	<1	<1	<1	<1	<1
3-Methylcholanthrene	µg/L	1	<1	<1	<1	<1	<1
4-Chloro-3-methylphenol	µg/L	1	<1	<1	<1	<1	<1
2-Chlorophenol	µg/L	1	<1	<1	<1	<1	<1
m&p-Cresol	µg/L	1	3	<1	2	<1	4
o-Cresol	µg/L	1	<1	<1	<1	<1	1
2,4-Dichlorophenol	µg/L	1	<1	<1	<1	<1	<1
2,6-Dichlorophenol	µg/L	1	<1	<1	<1	<1	<1
2,4-Dimethylphenol	µg/L	1	<1	<1	<1	<1	<1
4,6-Dinitro-2-methylphenol	µg/L	1	<1	<1	<1	<1	<1
2,4-Dinitrophenol	µg/L	1	<1	<1	<1	<1	<1
Dinoseb	µg/L	1	<1	<1	<1	<1	<1
Hexachlorophene	µg/L	1	<1	<1	<1	<1	<1
2-Nitrophenol	µg/L	1	<1	<1	<1	<1	<1
4-Nitrophenol	µg/L	1	<1	<1	<1	<1	<1
Pentachlorophenol	µg/L	1	<1	<1	<1	<1	<1
Phenol	µg/L	1	14	<1	10	<1	6
2,3,4,6-Tetrachlorophenol	µg/L	1	<1	<1	<1	<1	<1
2,4,5-Trichlorophenol	µg/L	1	<1	<1	<1	<1	<1
2,4,6-Trichlorophenol	µg/L	1	<1	<1	<1	<1	<1

SVOC Compounds in Waters by GC-QQQ [MA8270] Tested: 9/6/2023 (continued)

PARAMETER	UOM	LOR	HSMB4D	HSMB4S	HSMB5D	HSMB-6D2	HSMB-6S
			WATER	WATER	WATER	WATER	WATER
			12/6/23 8:40 ME334138.016	12/6/23 10:25 ME334138.017	12/6/23 12:20 ME334138.018	13/6/23 8:25 ME334138.019	13/6/23 8:25 ME334138.020
Acenaphthene	µg/L	1	<1	<1	<1	<1	<1
Acenaphthylene	µg/L	1	<1	<1	<1	<1	<1
Anthracene	µg/L	1	<1	<1	<1	<1	<1
Benzo(a)anthracene	µg/L	1	<1	<1	<1	<1	<1
Benzo (a) pyrene	µg/L	1	<1	<1	<1	<1	<1
Benzo (b) fluoranthene	µg/L	1	<1	<1	<1	<1	<1
Benzo (e) pyrene	µg/L	1	<1	<1	<1	<1	<1
Benzo (ghi) perylene	µg/L	1	<1	<1	<1	<1	<1
Benzo (k) fluoranthene	µg/L	1	<1	<1	<1	<1	<1
Benzo (b+j+k) fluoranthene	µg/L	2	<2	<2	<2	<2	<2
Chrysene	µg/L	1	<1	<1	<1	<1	<1
Coronene	µg/L	1	<1	<1	<1	<1	<1
Dibenz (ah) anthracene	µg/L	1	<1	<1	<1	<1	<1
7,12-Dimethylbenz(a)anthracene	µg/L	1	<1	<1	<1	<1	<1
Fluoranthene	µg/L	1	<1	<1	<1	<1	<1
Fluorene	µg/L	1	<1	<1	<1	<1	<1
Indeno (1,2,3-cd) pyrene	µg/L	1	<1	<1	<1	<1	<1
Naphthalene	µg/L	1	<1	2	<1	<1	<1
Perylene	µg/L	1	<1	<1	<1	<1	<1
Phenanthrene	µg/L	1	<1	<1	<1	<1	<1
Pyrene	µg/L	1	<1	<1	<1	<1	<1
3-Methylcholanthrene	µg/L	1	<1	<1	<1	<1	<1
4-Chloro-3-methylphenol	µg/L	1	<1	<1	<1	<1	<1
2-Chlorophenol	µg/L	1	<1	<1	<1	<1	<1
m&p-Cresol	µg/L	1	5	5	31	1	<1
o-Cresol	µg/L	1	<1	2	<1	<1	<1
2,4-Dichlorophenol	µg/L	1	<1	<1	<1	<1	<1
2,6-Dichlorophenol	µg/L	1	<1	<1	<1	<1	<1
2,4-Dimethylphenol	µg/L	1	<1	<1	<1	<1	<1
4,6-Dinitro-2-methylphenol	µg/L	1	<1	<1	<1	<1	<1
2,4-Dinitrophenol	µg/L	1	<1	<1	<1	<1	<1
Dinoseb	µg/L	1	<1	<1	<1	<1	<1
Hexachlorophene	µg/L	1	<1	<1	<1	<1	<1
2-Nitrophenol	µg/L	1	<1	<1	<1	<1	<1
4-Nitrophenol	µg/L	1	<1	<1	<1	<1	<1
Pentachlorophenol	µg/L	1	<1	<1	<1	<1	<1
Phenol	µg/L	1	<1	9	2	1	6
2,3,4,6-Tetrachlorophenol	µg/L	1	<1	<1	<1	<1	<1
2,4,5-Trichlorophenol	µg/L	1	<1	<1	<1	<1	<1
2,4,6-Trichlorophenol	µg/L	1	<1	<1	<1	<1	<1

SVOC Compounds in Waters by GC-QQQ [MA8270] Tested: 9/6/2023 (continued)

PARAMETER	UOM	LOR	HSMB-7D	HSMB-7S	NB01S DUP	HSMB3S1 DUP	HSMB-6D2 DUP
			WATER	WATER	WATER	WATER	WATER
			9/6/23 9:44 ME334138.021	9/6/23 11:19 ME334138.022	5/6/23 12:40 ME334138.023	8/6/23 10:45 ME334138.026	13/6/23 8:25 ME334138.027
Acenaphthene	µg/L	1	<1	<1	<1	<1	<1
Acenaphthylene	µg/L	1	<1	<1	<1	<1	<1
Anthracene	µg/L	1	<1	<1	<1	<1	<1
Benzo(a)anthracene	µg/L	1	<1	<1	<1	<1	<1
Benzo (a) pyrene	µg/L	1	<1	<1	<1	<1	<1
Benzo (b) fluoranthene	µg/L	1	<1	<1	<1	<1	<1
Benzo (e) pyrene	µg/L	1	<1	<1	<1	<1	<1
Benzo (ghi) perylene	µg/L	1	<1	<1	<1	<1	<1
Benzo (k) fluoranthene	µg/L	1	<1	<1	<1	<1	<1
Benzo (b+j+k) fluoranthene	µg/L	2	<2	<2	<2	<2	<2
Chrysene	µg/L	1	<1	<1	<1	<1	<1
Coronene	µg/L	1	<1	<1	<1	<1	<1
Dibenz (ah) anthracene	µg/L	1	<1	<1	<1	<1	<1
7,12-Dimethylbenz(a)anthracene	µg/L	1	<1	<1	<1	<1	<1
Fluoranthene	µg/L	1	<1	<1	<1	<1	<1
Fluorene	µg/L	1	<1	<1	<1	<1	<1
Indeno (1,2,3-cd) pyrene	µg/L	1	<1	<1	<1	<1	<1
Naphthalene	µg/L	1	<1	<1	<1	<1	<1
Perylene	µg/L	1	<1	<1	<1	<1	<1
Phenanthrene	µg/L	1	<1	<1	<1	<1	<1
Pyrene	µg/L	1	<1	<1	<1	<1	<1
3-Methylcholanthrene	µg/L	1	<1	<1	<1	<1	<1
4-Chloro-3-methylphenol	µg/L	1	<1	<1	<1	<1	<1
2-Chlorophenol	µg/L	1	<1	<1	<1	<1	<1
m&p-Cresol	µg/L	1	4	<1	9	<1	1
o-Cresol	µg/L	1	1	<1	1	<1	<1
2,4-Dichlorophenol	µg/L	1	<1	<1	<1	<1	<1
2,6-Dichlorophenol	µg/L	1	<1	<1	<1	<1	<1
2,4-Dimethylphenol	µg/L	1	<1	<1	<1	<1	<1
4,6-Dinitro-2-methylphenol	µg/L	1	<1	<1	<1	<1	<1
2,4-Dinitrophenol	µg/L	1	<1	<1	<1	<1	<1
Dinoseb	µg/L	1	<1	<1	<1	<1	<1
Hexachlorophene	µg/L	1	<1	<1	<1	<1	<1
2-Nitrophenol	µg/L	1	<1	<1	<1	<1	<1
4-Nitrophenol	µg/L	1	<1	<1	<1	<1	<1
Pentachlorophenol	µg/L	1	<1	<1	<1	<1	<1
Phenol	µg/L	1	4	2	12	8	<1
2,3,4,6-Tetrachlorophenol	µg/L	1	<1	<1	<1	<1	<1
2,4,5-Trichlorophenol	µg/L	1	<1	<1	<1	<1	<1
2,4,6-Trichlorophenol	µg/L	1	<1	<1	<1	<1	<1

General Gases in Waters MA-1105.WW.01 [MA1105] Tested: 8/6/2023

PARAMETER	UOM	LOR	NB01D	NB01S	NB02D	NB02S	NB03D
			WATER	WATER	WATER	WATER	WATER
			5/6/23 14:26 ME334138.001	5/6/23 12:40 ME334138.002	6/6/23 9:21 ME334138.003	6/6/23 10:30 ME334138.004	6/6/23 14:15 ME334138.005
Methane*	µg/L	1	31000	38000	17000	16000	5
Ethane*	µg/L	2	<2	<2	<2	<2	<2
Propane*	µg/L	2	<2	<2	<2	<2	<2
Butane*	µg/L	1	<1	<1	<1	<1	<1

PARAMETER	UOM	LOR	NB04D(S)	NB05S	HSMB1S	HSMB1D	HSMB2D
			WATER	WATER	WATER	WATER	WATER
			6/6/23 15:48 ME334138.006	7/6/23 10:20 ME334138.007	7/6/23 11:27 ME334138.008	7/6/23 13:21 ME334138.009	7/6/23 14:53 ME334138.010
Methane*	µg/L	1	14000	13000	26000	22000	IS
Ethane*	µg/L	2	<2	<2	<2	<2	IS
Propane*	µg/L	2	<2	<2	<2	<2	IS
Butane*	µg/L	1	<1	<1	<1	<1	IS

PARAMETER	UOM	LOR	HSMB2S	HSMB3D1	HSMB3S1	HSMB3D2	HSMB3S2
			WATER	WATER	WATER	WATER	WATER
			9/6/23 14:21 ME334138.011	8/6/23 9:06 ME334138.012	8/6/23 10:45 ME334138.013	8/6/23 13:05 ME334138.014	8/6/23 14:09 ME334138.015
Methane*	µg/L	1	6900	21000	10000	16000	17000
Ethane*	µg/L	2	<2	<2	<2	<2	<2
Propane*	µg/L	2	<2	<2	<2	<2	<2
Butane*	µg/L	1	<1	<1	<1	<1	<1

PARAMETER	UOM	LOR	HSMB4D	HSMB4S	HSMB5D	HSMB-6D2	HSMB-6S
			WATER	WATER	WATER	WATER	WATER
			12/6/23 8:40 ME334138.016	12/6/23 10:25 ME334138.017	12/6/23 12:20 ME334138.018	13/6/23 8:25 ME334138.019	13/6/23 8:25 ME334138.020
Methane*	µg/L	1	1500	65	20000	32000	26000
Ethane*	µg/L	2	<2	<2	<2	<2	<2
Propane*	µg/L	2	<2	<2	<2	<2	<2
Butane*	µg/L	1	<1	<1	<1	<1	<1

PARAMETER	UOM	LOR	HSMB-7D	HSMB-7S	NB01S DUP	HSMB3S1 DUP	HSMB-6D2 DUP
			WATER	WATER	WATER	WATER	WATER
			9/6/23 9:44 ME334138.021	9/6/23 11:19 ME334138.022	5/6/23 12:40 ME334138.023	8/6/23 10:45 ME334138.026	13/6/23 8:25 ME334138.027
Methane*	µg/L	1	18000	19000	1200	11000	31000
Ethane*	µg/L	2	<2	<2	<2	<2	<2
Propane*	µg/L	2	<2	<2	<2	<2	<2
Butane*	µg/L	1	<1	<1	<1	<1	<1

METHOD

METHODOLOGY SUMMARY

AN101	pH in Soil Sludge Sediment and Water: pH is measured electrometrically using a combination electrode (glass plus reference electrode) and is calibrated against 3 buffers purchased commercially. For soils, an extract with water is made at a ratio of 1:5 and the pH determined and reported on the extract. Reference APHA 4500-H+.
AN106	Conductivity and TDS by Calculation: Conductivity is measured by meter with temperature compensation and is calibrated against a standard solution of potassium chloride. Conductivity is generally reported as $\mu\text{mhos/cm}$ or $\mu\text{S/cm}$ @ 25°C. For soils, an extract with water is made at a ratio of 1:5 and the EC determined and reported on the extract, or calculated back to the as-received sample. Total Dissolved Salts can be estimated from conductivity using a conversion factor, which for natural waters, is in the range 0.55 to 0.75. SGS use 0.6. Reference APHA 2510 B.
AN106	Salinity may be calculated in terms of NaCl from the sample conductivity. This assumes all soluble salts present, measured by the conductivity, are present as NaCl.
AN113	Total Dissolved Solids: A well-mixed filtered sample of known volume is evaporated to dryness at 180°C and the residue weighed. Approximate methods for correlating chemical analysis with dissolved solids are available. Reference APHA 2540 C.
AN113	The Total Dissolved Solids residue may also be ignited at 550 C and volatile TDS (Organic TDS) and non-volatile TDS (Inorganic) can be determined.
AN135	Alkalinity (and forms of) by Titration: The sample is titrated with standard acid to pH 8.3 (P titre) and pH 4.5 (T titre) and permanent and/or total alkalinity calculated. The results are expressed as equivalents of calcium carbonate or recalculated as bicarbonate, carbonate and hydroxide. Reference APHA 2320. Internal Reference AN135
AN156	At an acidic pH, ferric ion (Fe^{3+}) forms an intense red colour with SCN^- which is suitable for colorimetric determination. Referenced to APHA 4500CNM.
AN-171	Organic and inorganic nitrogen compounds are transformed into nitrate according to by treatment with an oxidizing agent in a thermoreactor. In a solution, acidified with sulfuric and phosphoric acid, this nitrate reacts with 2,6-dimethylphenol (DMP) to form 4-nitro-2,6-dimethylphenol that is measured photometrically.
AN245	Anions by Ion Chromatography: A water sample is injected into an eluent stream that passes through the ion chromatographic system where the anions of interest ie Br, Cl, NO_2 , NO_3 and SO_4 are separated on their relative affinities for the active sites on the column packing material. Changes to the conductivity and the UV-visible absorbance of the eluent enable identification and quantitation of the anions based on their retention time and peak height or area. APHA 4110 B
AN274	Chloride by Discrete Analyse: Chloride reacts with mercuric thiocyanate forming a mercuric chloride complex. In the presence of ferric iron, highly coloured ferric thiocyanate is formed which is proportional to the chloride concentration. Reference APHA 4500Cl-
AN275	Sulfate by Discrete Analyse: sulfate is precipitated in an acidic medium with barium chloride. The resulting turbidity is measured photometrically at 405nm and compared with standard calibration solutions to determine the sulfate concentration in the sample. Reference APHA 4500-SO42-. Internal reference AN275.
AN-276	Nitrite is determined by diazotizing with sulphanilamide and coupling with N-(1-naphthyl) ethylenediamine dihydrochloride to form a highly coloured azo dye, which is measured at 540 nm. Nitrate is reduced to nitrite by vanadium(III) chloride and the nitrite (originally present plus reduced nitrate) is determined by diazotizing with sulphanilamide and coupling with N-(1-naphthyl) ethylenediamine dihydrochloride to form a highly coloured azo dye, which is measured at 540 nm. Nitrate concentrations are obtained by subtracting nitrite values, which are analysed prior.
AN280 (Cairns)	A filtered water sample containing ammonia (NH_3) or ammonium cations (NH_4^+) is reacted with alkaline phenol and hypochlorite in a buffered solution to form the blue indophenol colour. The absorbance is measured at 630nm and compared with calibration standards to obtain the concentration of ammonia in the sample.
AN-280 (Notting Hill)	Ammonia in solution reacts with hypochlorite ions from Sodium Dichloroisocyanate, and salicylate in the presence of Sodium Nitroprusside to form indophenol blue and measured at 660 nm by Discrete Analyser.
AN296	This method is applicable to the determination of free, total and weak acid dissociable cyanide in drinking water, soil and domestic and industrial waste of a variety of matrices by using San++ continuous flow analysis
Calculation	Free and Total Carbon Dioxide may be calculated using alkalinity forms only when the samples TDS is <500mg/L. If TDS is >500mg/L free or total carbon dioxide cannot be reported. APHA4500CO2 D.
EPA 8260B-01	This method is used to quantify Volatile Organic Compounds in aqueous samples using Gas Chromatography Mass Spectrometry coupled with a purge and trap sample concentrator. This method is based on USEPA 8260B (Volatile Organic Compounds by Gas Chromatography Mass Spectrometry GC/MS), using USEPA 5030B (Purge and Trap for aqueous samples).

EPA8260B

Aqueous samples are loaded onto the auto sampler in 40ml vials. A stream of helium is passed through a portion of the aqueous sample; the volatile components are 'purged' from the sample and are collected and concentrated on an adsorbent trap. The trap is rapidly heated and back-flushed with helium to 'desorb' the analytes onto the Gas Chromatographic column. The GC column separates the analytes and they are passed into the Mass Selective detector, which fragments the molecules and produces "mass spectra" of each compound.

Inorg-014

Cyanide amenable to chlorination in water by Envirolab, Chatswood, NSW.

MA1105

This method is intended for the analysis of C1-C4 hydrocarbons and permanent gases in water by gas chromatography coupled with flame ionisation detector.

A known volume of water is placed in a VOA vial, leaving a known volume of headspace. The sample is shaken to allow the analytes to partition between the water and the headspace and attain equilibrium. The headspace is analysed by GC-FID using manual injection. The original concentration of analyte in the sample can then be calculated using Henry's Law.

MA1127-02

This method covers the determination of fluoride by Flow Injection Analysis (FIA). Fluoride is determined potentiometrically using a combination of the fluoride electrode and the Lachat QuickChem Flow Injection Analyser. The fluoride electrode consists of a lanthanum fluoride crystal across which a potential is developed by fluoride ions. The reference cell is an Ag/AgCl/Cl⁻ cell. The reference junction is of the annular liquid-junction type and encloses the fluoride sensitive crystal.

MA-1400.09

Filtered sample is acidified and analysed by ICP-MS.

MA1567

This method reports a variety of field measurements taken at the time of field sampling with the appropriate field instrument.

MA-30

This method is used for the analysis of Total Recoverable Hydrocarbons (TRH). TRH is a generic term for all extractable organic compounds and includes all hydrocarbons and hydrocarbon derivatives that have between six and forty carbons per molecule i.e. compounds in the range >C5 to C40.

The reporting of Total Recoverable Hydrocarbons is done by grouping compounds of similar nature and behaviour into "fractions".

Samples are extracted into a solvent appropriate to the matrix. The extract is then analysed using a gas chromatograph with either a flame ionisation detector (GC-FID) or a mass spectrometer (GC-MS)

MA30-VPH

This method is used to quantify Total Petroleum Hydrocarbon (TPH) fractions in aqueous samples using Gas Chromatography Mass Spectrometry coupled with a purge and trap sample concentrator. This method is based on USEPA 8260B (Volatile Organic Compounds by Gas Chromatography Mass Spectrometry GC/MS), using USEPA 5030B (Purge and Trap for aqueous samples).

MA30-VPH

Aqueous samples are loaded onto the auto sampler in 40ml vials. A stream of helium is passed through a portion of the aqueous sample; the volatile components are 'purged' from the sample and are collected and concentrated on an adsorbent trap. The trap is rapidly heated and back-flushed with helium to 'desorb' the analytes onto the Gas Chromatographic column. The GC column separates the analytes and they are passed into the Mass Selective detector, which fragments the molecules and produces "mass spectra" of each compound.

MA8270

This method covers analytical procedures for the analysis of semi-volatile organic compounds (SVOC) including most neutral, acidic, and basic organic compounds based on the USEPA method 8270D. Samples are extracted into a solvent appropriate to the matrix and analysed using a gas chromatograph – triple quadrupole (GC-QQQ).

Total PAH calculated from individual analyte detections at or above the limit of reporting .

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
**	Indicative data, theoretical holding time exceeded.	NVL	Not validated.	LOR	Limit of Reporting.
***	Indicates that both * and ** apply.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the "Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.

Note that in terms of units of radioactivity:

- 1 Bq is equivalent to 27 pCi
- 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/en-gb/environment-health-and-safety.

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