BHP Billiton Canada Inc.
Operator of the EKATI Diamond Mine

BHP Billiton
#1102 4920-52nd Street
Yellowknife NT Canada X1A 3T1
Tel 867 669 9292 Fax 867 669 9293
bhpbilliton.com

19 January, 2012

Aboriginal Affairs and Northern Development Canada
South Mackenzie District Field Office
140 Bristol Avenue
#16 Yellowknife Airport
Yellowknife, NT X1A 3T2

Attention: Tracy Covey
Resource Management Officer III

RE: 2011 Pumping Summary for Cell E (1616-30)

Dear Mr. Covey:

This letter provides the summary of pumping activities for Cell E (1616-30) for the 2011 season.

The information includes:

a) *measured flow rates;*
b) *erosional issues encountered and mitigative actions taken (if required);*
c) *results of water quality monitoring; and*
d) *a summary of impacts to the environment.*

Pre-discharge water samples were collected from Cell E (1616-30) on 21 June 2011 and submitted to ALS Laboratories for analysis of the pre-approval suite of parameters. Approval was granted on 4 July 2011 and pumping commenced on 5 July 2011.

Pumping from Cell E (1616-30) to Leslie Lake continued until 23 November 2011. The pump ran continuously between 5 July 2011 and 23 November 2011. During the pumping, discharge samples were collected on the following dates:

- 11 July
- 18 July
- 25 July
- 2 August
- 8 August
- 14 August
- 24 August
- 29 August
- 5 September
- 12 September
- 19 September
- 26 September
- 3 October
- 10 October

- 17 October
- 24 October
- 31 October
- 7 November
- 10 November
- 14 November
- 17 November
- 21 November
- 23 November

The final elevation of Cell E on 23 November 2011 was 443.103 meters above sea level (masl).

Pumping Summary

Three pumps were used to pump water from Cell E (1616-30) to Leslie Lake in 2011:

Pump	Start Date	End Date	Volume (m^3)
11FM102	5 July 2011	31 July 2011	1,915,997.40
	16 September 2011	1 October 2011	
11FM103	5 July 2011	16 September 2011	5,531,306.85
	22 September 2011	24 November 2011	
11FM104	7 July 2011	31 July 2011	1,058,597.70
Total Volume for Cell E Pumps			**8,505,901.95**

A summary of the pumping rate, volume and discharge conditions for Pump 11FM102 is found below:

Inspection Date	Flow Rate m3/Hour	Volume (m3)	Discharge Observations (Erosion, clarity etc.)	Leaks/spills Y/N	Description of any leaks/spills
6-Jul-11	0	0.00			
7-Jul-11	2144	1,425.00	Clean, no erosion	N	NA
7-Jul-11	2175	19,787.50	Clean, no erosion	N	NA
8-Jul-11	2132	64,356.90	Clean, no erosion	N	NA
9-Jul-11	2147	108,449.70	Clean, no erosion	N	NA
10-Jul-11	2076	170,597.90	Clean, no erosion	N	NA
11-Jul-11	2155	22,155.20	Clean, no erosion	N	NA
12-Jul-11	2102	25,900.70	Clean, no erosion	N	NA
13-Jul-11	1550	325,517.50	Clean, no erosion	N	NA
14-Jul-11	1529	359,089.00	Clean, no erosion	N	NA
15-Jul-11	1510	384,044.40	Clean, no erosion	N	NA
16-Jul-11	1544	428,844.03	Clean, no erosion	N	NA
17-Jul-11	1551	455,059.67	Clean, no erosion	N	NA
18-Jul-11	1517	490,071.00	Clean, no erosion	N	NA

Inspection Date	Flow Rate m3/Hour	Volume (m3)	Discharge Observations (Erosion, clarity etc.)	Leaks/spills Y/N	Description of any leaks/spills
19-Jul-11	1452	525,164.10	Clean, no erosion	N	NA
20-Jul-11	3119	558,677.00	Clear, no erosion	N	NA
21-Jul-11	3069	643,247.10	Clear, no erosion	N	NA
22-Jul-11	3105	708,337.60	Clear, no erosion	N	NA
23-Jul-11	3032	769,606.50	Discharge is clear	N	NA
24-Jul-11	3069	855,735.40	Clear, no erosion	N	NA
25-Jul-11	3148	934,389.40	Clear, no erosion	N	NA
26-Jul-11	3172	990,065.90	ND	N	NA
27-Jul-11	2990	1,107,394.78	Clear, no erosion	N	NA
28-Jul-11	3051	1,159,870.00	Clear, no erosion	N	NA
29-Jul-11	3069	1,204,208.80	Clear, no erosion	N	NA
30-Jul-11	3023	1,280,625.20	Clear, no erosion	N	NA
31-Jul-11	2922	1,351,551.10	Clear, no erosion	N	NA
16-Sep-11	NA	1,388,235.30	Clear, no erosion	N	NA
17-Sep-11	1544	1,423,712.00	Clear, no erosion	N	NA
18-Sep-11	1538	1,463,507.10	Clear, no erosion	N	NA
19-Sep-11	946	1,498,855.00	Clear, no erosion	N	NA
20-Sep-11	ND	ND	ND	N	NA
21-Sep-11	2097	1593538.8	Clear, no erosion	N	NA
22-Sep-11	0	1,615,770.50	Not discharging	N	NA
23-Sep-11	1815	1,620,359.70	Clear	N	NA
24-Sep-11	850	1,655,197.00	Clear	N	NA
25-Sep-11	1990	1,682,043.40	Clear	N	NA
26-Sep-11	1731	1,730,408.20	Clear	N	NA
27-Sep-11	1866	1,776,368.50	Clear	N	NA
28-Sep-11	1723	1,806,743.30	Clear, no erosion	N	N/A
29-Sep-11	1732	1,858,063.40	Clear, no erosion	N	N/A
30-Sep-11	1557	1,882,718.40	Clear, no erosion	N	N/A
1-Oct-11	0	**1,915,997.40**			

ND – no data

A summary of the pumping rate, volume and discharge conditions for Pump 11FM103 is found below:

Inspection Date	Flow Rate m3/Hour	Volume (m3)	Discharge Observations (Erosion, clarity etc.)	Leaks/spills Y/N	Description of any leaks/spills
7-Jul-11	2160	1,451.00	Clean, no erosion	N	NA
7-Jul-11	2055	19,934.72	Clean, no erosion	N	NA
8-Jul-11	2102	63,544.24	Clean, no erosion	N	NA
9-Jul-11	1978	104,885.51	Clean, no erosion	N	NA
10-Jul-11	2017	162,899.00	Clean, no erosion	N	NA
11-Jul-11	2120	212,753.06	Clean, no erosion	N	NA
12-Jul-11	2115	250,223.90	Clean, no erosion	N	NA
13-Jul-11	1450	313,620.50	Clean, no erosion	N	NA
14-Jul-11	1575	346,891.00	Clean, no erosion	N	NA
15-Jul-11	1549	371,889.93	Clean, no erosion	N	NA
16-Jul-11	1539	417,811.24	Clean, no erosion	N	NA
17-Jul-11	1520	444,590.82	Clean, no erosion	N	NA
18-Jul-11	1518	480,175.04	Clean, no erosion	N	NA
19-Jul-11	1549	515,740.02	Clean, no erosion	N	NA
20-Jul-11	2830	581,485.00	Clear, no erosion	N	NA
21-Jul-11	2825	659,696.80	Clear, no erosion	N	NA
22-Jul-11	2856	719,592.75	Clear, no erosion	N	NA
23-Jul-11	2758	776,792.18	Discharge is clear	N	NA
24-Jul-11	2877	857,278.01	Clear, no erosion	N	NA
25-Jul-11	2877	931,156.47	Green	N	NA
26-Jul-11	2739	982,939.10	ND	N	NA
27-Jul-11	2865	1,061,167.80	Clear, no erosion	N	NA
28-Jul-11	2990	1,143,554.00	Clear, no erosion	N	NA
29-Jul-11	2950	1,186,916.62	Clear, no erosion	N	NA
30-Jul-11	2909	1,261,433.21	Clear, no erosion	N	NA
31-Jul-11	2928	1,329,733.48	Clear, no erosion	N	NA
1-Aug-11	1800	1,380,692.71	Clear, no erosion	N	NA
2-Aug-11	1829	1,416,885.95	Clear, no erosion	N	NA
3-Aug-11	1883	1,458,821.91	Clear, no erosion	N	NA
4-Aug-11	1827	1,505,609.02	Clear, no erosion	N	NA
5-Aug-11	1723	1,546,835.40	Clear, no erosion	N	NA
6-Aug-11	1745	1,589,128.20	Clear, no erosion	N	NA
7-Aug-11	1713	1,627,841.92	Clear, no erosion	N	NA

Inspection Date	Flow Rate m3/Hour	Volume (m3)	Discharge Observations (Erosion, clarity etc.)	Leaks/spills Y/N	Description of any leaks/spills
8-Aug-11	1734	1,663,445.73	Clear, no erosion	N	NA
9-Aug-11	1781	1,709,486.27	Clear, no erosion	N	NA
10-Aug-11	1745	1,746,580.44	Clear, no erosion	N	NA
11-Aug-11	1853	1,785,426.60	Clear, no erosion	N	NA
12-Aug-11	1809	1,830,589.21	Clear, no erosion	N	NA
13-Aug-11	1851	1,886,748.12	Clear, no erosion	N	NA
14-Aug-11	1818	1,919,036.35	Clear, no erosion	N	NA
15-Aug-11	1721	1,958,574.31	Clear, no erosion	N	NA
16-Aug-11	1739	2,007,070.91	Clear, no erosion	N	NA
17-Aug-11	1775	2,046,016.28	Clear, no erosion	N	NA
18-Aug-11	1753	2,087,979.15	Greenish	N	NA
19-Aug-11	1835	2,130,787.51	Clear, no erosion	N	NA
20-Aug-11	1806	2,167,407.14	Clear, no erosion	N	NA
21-Aug-11	1800	2,216,399.94	Clear, no erosion	N	NA
22-Aug-11	1800	2,216,399.94	Clear, no erosion	N	NA
23-Aug-11	1774	2,302,447.00	OK	N	NA
24-Aug-11	1850	2,337,503.00	Clear, no erosion	N	NA
25-Aug-11	1790	2,370,789.49	OK	N	NA
26-Aug-11	1746	2,414,315.63	Clear, no erosion	N	NA
27-Aug-11	1805	2,450,321.17	Clear, no erosion	N	NA
28-Aug-11	1659	2,508,069.23	ND	N	NA
29-Aug-11	1656	2,531,149.82	Clear, no erosion	N	NA
30-Aug-11	1487	2,576,452.94	Clear, no erosion	N	NA
31-Aug-11	1350	2,609,655.29	Clear, no erosion	N	NA
1-Sep-11	1450	2,638,106.95	Clear, no erosion	N	NA
2-Sep-11	1359	2,672,524.84	Clear, no erosion	N	NA
3-Sep-11	1252	2,704,224.01	Clear, no erosion	N	NA
4-Sep-11	1125	2,728,432.76	Clear, no erosion	N	NA
5-Sep-11	1083	2,757,144.05	Clear, no erosion	N	NA
6-Sep-11	1840	2,781,192.68	Clear, no erosion	N	NA
7-Sep-11	1864	2,834,171.49	Clear, no erosion	N	NA
8-Sep-11	2074	2,877,675.56	Clear, no erosion	N	NA
9-Sep-11	1810	2,916,753.99	Clear, no erosion	N	NA
10-Sep-11	1641	2,966,120.70	Clear, no erosion	N	NA
11-Sep-11	1608	3,002,281.31	Clear, no erosion	N	NA
12-Sep-11	1512	3,038,559.18	Clear, no erosion	N	NA

Inspection Date	Flow Rate m3/Hour	Volume (m3)	Discharge Observations (Erosion, clarity etc.)	Leaks/spills Y/N	Description of any leaks/spills
13-Sep-11	1494	3,077,584.81	Clear, no erosion	N	NA
14-Sep-11	1373	3,100,653.79	Clear, no erosion	N	NA
15-Sep-11	1940	3,154,734.75	Clear, no erosion	N	NA
16-Sep-11	1047	3,178,776.41	Clear, no erosion	N	NA
22-Sep-11	0	3,181,815.23	Not discharging	N	NA
2-Oct-11	1854	3,181,815.23	ND	N	NA
2-Oct-11	2338	3,183,930.25	Clear, no erosion	N	NA
3-Oct-11	1667	3,232,027.53	Clear, no erosion	N	NA
4-Oct-11	1826	3,261,695.45	Clear, no erosion	N	NA
5-Oct-11	1842	3,312,750.13	Clear, no erosion	N	NA
6-Oct-11	1843	3,348,078.01	Clear, no erosion	N	NA
7-Oct-11	1628	3,386,739.80	Clear, no erosion	N	NA
8-Oct-11	1746	3,440,021.49	Clear, no erosion	N	NA
9-Oct-11	1895	3,477,169.93	Clear, no erosion	N	NA
10-Oct-11	1934	3,517,839.76	Clear, no erosion	N	NA
11-Oct-11	1972	3,570,412.10	Clear, no erosion	N	NA
12-Oct-11	2143	3,616,547.75	Clear	N	NA
13-Oct-11	2162	3,666,847.77	Clear	N	NA
14-Oct-11	2064	3,702,726.00	Clear	N	NA
15-Oct-11	2000	3,763,399.47	Clear	N	NA
16-Oct-11	1956	3,808,453.37	Good	N	NA
17-Oct-11	1920	3,852,070.43	Good	N	NA
18-Oct-11	1841	3,894,918.20	Clear, no erosion	N	NA
19-Oct-11	1804	3,938,324.14	Clear, no erosion	N	NA
20-Oct-11	1812	3,974,649.50	Clear	N	NA
21-Oct-11	1770	4,013,407.20	Clear	N	NA
22-Oct-11	1865	4,064,888.77	NA	N	NA
23-Oct-11	1804	4,099,813.70	unable to see	N	NA
24-Oct-11	1831	4,148,772.68	Clear, iced over	N	NA
25-Oct-11	1872	4,190,522.67	Clear, iced over	N	NA
26-Oct-11	1918	4,226,980.03	Clear, iced over	N	NA
27-Oct-11	1840	4,281,890.00	Winter conditions - can't get to discharge	N	NA
28-Oct-11	1844	4,315,525.06	Clear, no erosion	N	NA
29-Oct-11	1862	4,369,630.50	Clear, ends of pipe completely covered by ice	N	NA

Inspection Date	Flow Rate m3/Hour	Volume (m3)	Discharge Observations (Erosion, clarity etc.)	Leaks/spills Y/N	Description of any leaks/spills
30-Oct-11	1919	4,409,068.00	Clear, no erosion	N	NA
31-Oct-11	1870	4,454,267.76	Clear, no erosion	N	NA
1-Nov-11	1871	4,495,315.22	Clear, no erosion	N	NA
2-Nov-11	1877	4,547,759.14	Clear	N	NA
5-Nov-11	1930	4,673,199.00	Frozen Over	N	NA
6-Nov-11	1972	4,718,345.00	Frozen Over	N	NA
7-Nov-11	1950	4,773,655.00	Clear	N	NA
8-Nov-11	1759	4,813,992.84	Clear	N	NA
9-Nov-11	2045	4,870,351.00	Not inspected due to ice	N	NA
10-Nov-11	1982	4,907,075.54	Not inspected due to ice	N	NA
11-Nov-11	1969	4,954,204.06	Not inspected due to ice	N	NA
12-Nov-11	1950	5,012,045.00	Not inspected due to ice	N	NA
13-Nov-11	1975	5,055,879.37	Not inspected due to ice	N	NA
14-Nov-11	1949	5,099,605.10	Not inspected due to ice	N	NA
15-Nov-11	1838	5,139,185.71	Not inspected due to ice	N	NA
16-Nov-11	1943	5,198,632.98	Clear, no erosion	N	NA
17-Nov-11	1797	5,230,271.59	Clear, no erosion	N	NA
18-Nov-11	1799	5,278,843.20	ND	N	NA
19-Nov-11	1871	5,322,959.39	ND	N	NA
20-Nov-11	1813	5,366,399.30	ND	N	NA
21-Nov-11	1935	5,398,856.59	Clear, no erosion	N	NA
22-Nov-11	1973	5,452,245.23	Clear	N	NA
23-Nov-11	1995	5,496,433.99	Clear	N	NA
24-Nov-11		**5,531,306.85**		N	NA

ND – No Data

A summary of the pumping rate, volume and discharge conditions for Pump 11FM104 is found below:

Inspection Date	Flow Rate m3/Hour	Volume (m3)	Discharge Observations (Erosion, clarity etc.)	Leaks/spills Y/N	Description of any leaks/spills
7-Jul-11	0	0.00	NA	Y	When pump was turned on -a leak at the pump pipe connection and was shutdown until they replaced the pump seal.
10-Jul-11	0	582.20	Not discharging	N	NA
11-Jul-11	0	582.20	Not discharging	N	NA
12-Jul-11	0	582.20	Not discharging	N	NA
13-Jul-11	3200	25,956.29	Clear, No Erosion	N	NA
14-Jul-11	3200	96,890.00	Clear, No Erosion	N	NA
15-Jul-11	3231	150,138.00	Clear, No Erosion	N	NA
16-Jul-11	3224	247,425.55	Clear, No Erosion	N	NA
17-Jul-11	3235	304,665.38	Clear, No Erosion	N	NA
18-Jul-11	3288	381,364.70	Clear, No Erosion	N	NA
19-Jul-11	3159	457,070.76	Clear, No Erosion	N	NA
20-Jul-11	3189	537,059.00	Clear, No Erosion	N	NA
21-Jul-11	3172	625,049.80	Clear, No Erosion	N	NA
22-Jul-11	3165	692,699.76	Clear, No Erosion	N	NA
23-Jul-11	0	702,003.62	Not discharging	N	NA
24-Jul-11	0	727,703.16	Not discharging	N	NA
25-Jul-11	0	727,703.16	Not discharging	N	NA
26-Jul-11	0	727,703.16	Not discharging	N	NA
27-Jul-11	3219	740,567.83	Clear, No Erosion	N	NA
28-Jul-11	3103	829,471.00	Clear, No Erosion	N	NA
29-Jul-11	3109	874,957.46	Clear, No Erosion	N	NA
30-Jul-11	3051	952,228.46	Clear, No Erosion	N	NA
31-Jul-11	2978	1,022,537.18	Clear, No Erosion	N	NA
31-Jul	0	**1,058,597.65**			

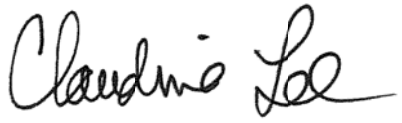
ND – No Data

Water Quality Monitoring

Results from the pre-approval and discharge samples indicate there were no impacts on the receiving environment during the pumping interval, as the water samples were below the Water Licence discharge criteria. The water quality monitoring data is attached.

We trust the information meets with your requirements at this time. Please contact the undersigned at 867-880-2232 should there be any questions or concerns with this matter.

Yours truly,
BHP Billiton Canada Inc.



for
Keith McLean
Environment Superintendent - Operations
EKATI Diamond Mine

cc: Jason Brennan – Aboriginal Affairs and Northern Development Canada
Bruce Hanna – Department of Fisheries and Oceans
Ryan Fequet – Wek'`eezhii Land and Water Board

Attached: Water Quality Data – Cell E (1616-30)
Laboratory Certificates of Analysis

Water Quality Data - Cell E (1616-30)

1616-30		W2009L2-001 Criteria		Pre-Approval	Discharge	Discharge	Discharge	Discharge	Discharge
Collection Date				21-Jun-2011	11-Jul-2011	18-Jul-2011	25-Jul-2011	2-Aug-2011	8-Aug-2011
Sample Number		Grab	Average	L1022350-1	L1031080-1	L1034607-1	L1038290-1	L1042744-1	L1042889-1
	Units								
Air Temperature	Deg C			20.1	25.0	14.7	22.0	15.0	19.0
Weather				Clear	Cloudy	Raining	Sunny	Partly Cloudy	Sunny
Wind Direction	Degree			90	250	150	270	49	112
Wind Speed	km/h			22	32	26	4	13	8
Field Temperature	Deg C			NC	16.8	15.1	16.27	14.75	16.42
Conductivity Field	uS/cm			NC	765	784	818	843	854
Field pH	pH			NC	7.97	8.18	8.18	8.1	8.47
Conductivity	uS/cm			835	747	761	818	816	846
Hardness (as CaCO3)	mg/L			169	150	149	157	149	159
pH	pH	6.0 - 9.0	6.0 - 9.0	7.62	7.87	7.79	7.66	7.82	7.71
Total Suspended Solids	mg/L	25	15	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
Total Dissolved Solids	mg/L			461	456	475	478	467	518
Turbidity	NTU			0.86	0.73	0.75	0.68	0.64	0.66
Alkalinity, Total (as CaCO3)	mg/L			43	38.3	39.3	40.4	41.6	41.9
Ammonia (as N)	mg/L	4	2	<0.0050	<0.0050	0.0113	0.0095	0.0075	0.0055
Chloride (Cl)	mg/L			142	127	135	141	146	149
Nitrate and Nitrite (as N)	mg/L			3.84	3.36	3.58	4.03	4.21	4.08
Nitrate (as N)	mg/L			3.84	3.35	3.57	4.01	4.19	4.04
Nitrite (as N)	mg/L			<0.0050	0.008	0.01	0.02	0.017	0.032
Orthophosphate-Dissolved (as P)	mg/L			<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus (P)-Total	mg/L			0.0061	0.006	0.0071	0.0073	0.0067	0.0059
Sulfate (SO4)	mg/L			122	109	115	122	120	122
Total Carbon	mg/L			12.5	11.4	10.8	12.1	11.4	12.6
Total Organic Carbon	mg/L			3.77	4.22	3.71	3.93	3.91	4.97
Aluminum (Al)-Total	mg/L	2	1	0.0351	0.0298	0.0205	0.0192	0.0262	0.0196
Antimony (Sb)-Total	mg/L			0.00118	0.00117	0.00116	0.00126	0.00125	0.00135
Arsenic (As)-Total	mg/L	1	0.5	0.00042	0.00045	0.00047	0.00054	0.00051	0.00062
Barium (Ba)-Total	mg/L			0.0882	0.0944	0.0753	0.0844	0.0763	0.0809
Beryllium (Be)-Total	mg/L			<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Total	mg/L			<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron (B)-Total	mg/L			0.023	0.028	0.028	0.029	0.029	0.031
Cadmium (Cd)-Total	mg/L			<0.000040	0.000068	<0.000030	<0.000025	<0.000040	<0.000030
Calcium (Ca)-Total	mg/L			38.8	34.7	34.3	36	34	36.3
Chromium (Cr)-Total	mg/L			<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Total	mg/L			<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Total	mg/L	0.2	0.1	0.00131	0.00156	0.00121	0.00135	0.00126	0.00146
Iron (Fe)-Total	mg/L			0.038	<0.030	<0.030	<0.030	<0.030	<0.030
Lead (Pb)-Total	mg/L			<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Total	mg/L			0.00507	0.0052	0.00502	0.00564	0.00569	0.0061
Magnesium (Mg)-Total	mg/L			17.6	15.3	15.3	16.4	15.5	16.6
Manganese (Mn)-Total	mg/L			0.00586	0.00395	0.00349	0.00356	0.0043	0.00457
Molybdenum (Mo)-Total	mg/L			0.077	0.071	0.0758	0.0811	0.0827	0.087
Nickel (Ni)-Total	mg/L	0.3	0.15	0.00556	0.00502	0.00457	0.00455	0.0046	0.0048
Phosphorus (P)-Total	mg/L			<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium (K)-Total	mg/L			28.1	25.4	25.9	28	27.9	29.5
Selenium (Se)-Total	mg/L			0.00021	0.00019	0.00021	0.00024	0.00023	0.00023
Silicon (Si)-Total	mg/L			0.41	0.279	0.305	0.238	0.27	0.293
Silver (Ag)-Total	mg/L			<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total	mg/L			86.7	82.1	83.7	91	86.4	95.2
Strontium (Sr)-Total	mg/L			0.74	0.67	0.668	0.725	0.772	0.77
Thallium (Tl)-Total	mg/L			0.000029	0.000033	0.000033	0.000035	0.000038	0.000038
Tin (Sn)-Total	mg/L			<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total	mg/L			<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Total	mg/L			0.000459	0.000477	0.000473	0.000502	0.000506	0.000536
Vanadium (V)-Total	mg/L			<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)-Total	mg/L			<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
BOD	mg/L		40	<5.0	NC	NC	NC	NC	NC
Oil and Grease	mg/L			<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Benzene	mg/L			<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Ethylbenzene	mg/L			<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Styrene	mg/L			<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Toluene	mg/L			<0.0010	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050
ortho-Xylene	mg/L			<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
meta- & para-Xylene	mg/L			<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Xylenes	mg/L			<0.00075	<0.00075	<0.00075	<0.00075	<0.00075	<0.00075
TVH (C5-C10)	mg/L			<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
TEH10-30	mg/L			<0.15	<0.15	<0.15	<0.16	<0.15	<0.15
TPH5-30	mg/L	5	3	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Diethylene Glycol	mg/L			NC	<5.0	<5.0	<5.0	<5.0	<5.0
Ethylene Glycol	mg/L			NC	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Propylene Glycol	mg/L			NC	<5.0	<5.0	<5.0	<5.0	<5.0

NC - data not collected

Water Quality Data - Cell E (1616-30)

1616-30		W2009L2-001 Criteria		Discharge	Discharge	Discharge	Discharge	Discharge	Discharge
Collection Date				14-Aug-2011	24-Aug-2011	29-Aug-2011	5-Sep-2011	12-Sep-2011	19-Sep-2011
Sample Number		Grab	Average	L1045930-1	L1051136-1	L1053212-1	L1055651-1	L1058050-1	L1063576-1
	Units								
Air Temperature	Deg C			15.8	NC	12.9	5.4	2.3	4.6
Weather				Overcast	NC	Clear	Fog	Cloudy	Fog
Wind Direction	Degree			150	NC	54	10	360	130
Wind Speed	km/h			4	NC	20	30	30	9
Field Temperature	Deg C			15	NC	NC	10.3	8.9	7.6
Conductivity Field	uS/cm			865	NC	NC	874	841	859
Field pH	pH			8.28	NC	NC	8.08	7.26	8.09
Conductivity	uS/cm			862	848	837	827	833	841
Hardness (as CaCO3)	mg/L			161	144	156	158	149	149
pH	pH	6.0 - 9.0	6.0 - 9.0	7.96	7.95	7.91	7.94	7.83	8.01
Total Suspended Solids	mg/L	25	15	<3.0	<3.0	4	<3.0	<3.0	3.2
Total Dissolved Solids	mg/L			519	509	497	512	509	510
Turbidity	NTU				1.14	0.83	1.68	1.24	0.99
Alkalinity, Total (as CaCO3)	mg/L			43.5	43.1	44.6	43.4	43.9	43.6
Ammonia (as N)	mg/L	4	2	0.0116	0.0162	0.0129	0.0095	0.0145	<0.0050
Chloride (Cl)	mg/L			150	140	142	141	142	138
Nitrate and Nitrite (as N)	mg/L			4.12	3.67	3.86	3.57	3.88	3.69
Nitrate (as N)	mg/L			4.1	3.67	3.84	3.56	3.87	3.68
Nitrite (as N)	mg/L			0.018	<0.010	0.021	0.0114	0.012	0.0134
Orthophosphate-Dissolved (as P)	mg/L			<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus (P)-Total	mg/L			0.0054	0.0049	0.005	0.0063	0.0066	0.0068
Sulfate (SO4)	mg/L			123	122	122	122	124	120
Total Carbon	mg/L			11.7	13	13.4	12.4	11.7	12.5
Total Organic Carbon	mg/L			5.56	5.2	4.7	5.4	5.19	2.73
Aluminum (Al)-Total	mg/L	2	1	0.0217	0.0449	0.0329	0.0731	0.0347	0.0328
Antimony (Sb)-Total	mg/L			0.00134	0.00119	0.00129	0.00127	0.00124	0.00125
Arsenic (As)-Total	mg/L	1	0.5	0.00061	0.00057	0.00056	0.00059	0.00052	0.00053
Barium (Ba)-Total	mg/L			0.0805	0.0746	0.0809	0.0838	0.0783	0.0758
Beryllium (Be)-Total	mg/L			<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Total	mg/L			<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron (B)-Total	mg/L			0.029	0.026	0.027	0.03	0.027	0.026
Cadmium (Cd)-Total	mg/L			<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	0.00002
Calcium (Ca)-Total	mg/L			37.4	33.1	36.1	36	33.8	33.7
Chromium (Cr)-Total	mg/L			<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Total	mg/L			<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Total	mg/L	0.2	0.1	0.0013	0.00131	0.00132	0.00136	0.00122	0.00136
Iron (Fe)-Total	mg/L			<0.030	0.035	<0.030	0.06	<0.030	<0.030
Lead (Pb)-Total	mg/L			<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Total	mg/L			0.00567	0.00561	0.00562	0.00665	0.0051	0.00422
Magnesium (Mg)-Total	mg/L			16.4	15	16	16.6	15.7	15.6
Manganese (Mn)-Total	mg/L			0.00493	0.00493	0.00484	0.00557	0.00497	0.0047
Molybdenum (Mo)-Total	mg/L			0.0881	0.0807	0.0887	0.0846	0.0797	0.0851
Nickel (Ni)-Total	mg/L	0.3	0.15	0.0047	0.00437	0.00447	0.00473	0.004	0.00432
Phosphorus (P)-Total	mg/L			<0.30	NC	NC	NC	NC	NC
Potassium (K)-Total	mg/L			29.6	25.9	29.2	29.4	28	28.5
Selenium (Se)-Total	mg/L			0.00028	0.00021	0.00024	0.00024	0.00021	0.00024
Silicon (Si)-Total	mg/L			0.272	0.278	0.179	0.263	0.132	0.158
Silver (Ag)-Total	mg/L			<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total	mg/L			95.5	84.6	96.7	94.2	89.2	87
Strontium (Sr)-Total	mg/L			0.748	0.695	0.739	0.763	0.704	0.72
Thallium (Tl)-Total	mg/L			0.000041	0.000037	0.000039	0.000039	0.000034	0.000036
Tin (Sn)-Total	mg/L			<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total	mg/L			<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Total	mg/L			0.00054	0.000528	0.000548	0.000563	0.000528	0.000555
Vanadium (V)-Total	mg/L			<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)-Total	mg/L			<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
BOD	mg/L		40	NC	NC	NC	NC	<5.0	NC
Oil and Grease	mg/L			<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Benzene	mg/L			<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Ethylbenzene	mg/L			<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Styrene	mg/L			<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Toluene	mg/L			<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
ortho-Xylene	mg/L			<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
meta- & para-Xylene	mg/L			<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Xylenes	mg/L			<0.00075	<0.00075	<0.00075	<0.00075	<0.00075	<0.00075
TVH (C5-C10)	mg/L			<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
TEH10-30	mg/L			<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
TPH5-30	mg/L	5	3	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Diethylene Glycol	mg/L			<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Ethylene Glycol	mg/L			<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Propylene Glycol	mg/L			<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

NC - data not collected

Water Quality Data - Cell E (1616-30)

1616-30		W2009L2-001 Criteria		Discharge	Discharge	Discharge	Discharge	Discharge	Discharge
Collection Date				26-Sep-2011	3-Oct-2011	10-Oct-2011	17-Oct-2011	24-Oct-2011	31-Oct-2011
Sample Number		Grab	Average	L1064541-1	L1069414-1	L1070509-1	L1073917-1	L1077796-1	L1080236-1
	Units								
Air Temperature	Deg C			1.9	-0.2	-4.2	-2.9	-7.2	-1.3
Weather				Fog	Cloudy	Cloudy	Cloudy	Cloudy	Overcast
Wind Direction	Degree			80	230	100	14	23	34
Wind Speed	km/h			17	18.5	33	30	11	15
Field Temperature	Deg C			6.1	3.9	2.3	1.8	0.3	0.3
Conductivity Field	uS/cm			834	813.4	838	852.8	NC	809.7
Field pH	pH			8.51	8.07	8.64	8.18	8.39	8.11
Conductivity	uS/cm			818	803	825	862	837	854
Hardness (as CaCO3)	mg/L			159	147	151	153	157	155
pH	pH	6.0 - 9.0	6.0 - 9.0	7.89	7.83	7.91	7.92	7.89	7.83
Total Suspended Solids	mg/L	25	15	4	<3.0	<3.0	<3.0	<3.0	3
Total Dissolved Solids	mg/L			477	438	478	473	493	491
Turbidity	NTU			3.64	1.32	1.57	1.1	0.85	0.73
Alkalinity, Total (as CaCO3)	mg/L			42.5	42.3	44.5	44.8	45.7	44.1
Ammonia (as N)	mg/L	4	2	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0065
Chloride (Cl)	mg/L			140	133	138	142	142	161
Nitrate and Nitrite (as N)	mg/L			3.49	3.34	3.49	3.65	3.93	4.15
Nitrate (as N)	mg/L			3.46	3.33	3.47	3.63	3.92	4.14
Nitrite (as N)	mg/L			0.022	0.0115	0.02	0.013	0.014	0.014
Orthophosphate-Dissolved (as P)	mg/L			<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus (P)-Total	mg/L			0.0085	0.0067	0.0067	0.0066	0.0103	0.0063
Sulfate (SO4)	mg/L			123	117	121	127	127	143
Total Carbon	mg/L			13.1	13.4	13.5	13	14.1	14.5
Total Organic Carbon	mg/L			4.3	5.19	4.92	4.89	4.84	4.66
Aluminum (Al)-Total	mg/L	2	1	0.182	0.0522	0.0391	0.0333	0.026	0.0239
Antimony (Sb)-Total	mg/L			0.00125	0.00118	0.00124	0.00127	0.00119	0.00123
Arsenic (As)-Total	mg/L	1	0.5	0.00058	0.00056	0.00054	0.00059	0.0006	0.0006
Barium (Ba)-Total	mg/L			0.0789	0.0734	0.0746	0.0765	0.0777	0.0794
Beryllium (Be)-Total	mg/L			<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Total	mg/L			<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron (B)-Total	mg/L			0.027	0.026	0.028	0.027	0.026	0.033
Cadmium (Cd)-Total	mg/L			<0.000030	0.000033	0.000023	<0.000040	<0.000040	<0.000040
Calcium (Ca)-Total	mg/L			36.4	34.3	34.7	35.5	35.5	35.8
Chromium (Cr)-Total	mg/L			0.00073	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Total	mg/L			0.00018	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Total	mg/L	0.2	0.1	0.00144	0.00138	0.00129	0.00138	0.00126	0.00136
Iron (Fe)-Total	mg/L			0.166	0.041	0.035	<0.030	<0.030	<0.030
Lead (Pb)-Total	mg/L			<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Total	mg/L			0.00519	0.00498	0.00467	0.00474	0.00532	0.00606
Magnesium (Mg)-Total	mg/L			16.7	14.9	15.6	15.5	16.6	15.9
Manganese (Mn)-Total	mg/L			0.00696	0.00478	0.00401	0.00363	0.00251	0.00245
Molybdenum (Mo)-Total	mg/L			0.0882	0.0796	0.083	0.0875	0.0826	0.0851
Nickel (Ni)-Total	mg/L	0.3	0.15	0.00554	0.00417	0.00444	0.00436	0.0043	0.00422
Phosphorus (P)-Total	mg/L			NC	NC	NC	NC	NC	NC
Potassium (K)-Total	mg/L			29.4	27.2	28	28.8	30.4	29.4
Selenium (Se)-Total	mg/L			0.00024	0.00022	0.00024	0.00025	0.00026	0.00024
Silicon (Si)-Total	mg/L			0.609	0.305	0.319	0.341	0.359	0.366
Silver (Ag)-Total	mg/L			<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total	mg/L			95.1	88.4	94.4	93.7	102	97.5
Strontium (Sr)-Total	mg/L			0.708	0.707	0.703	0.711	0.717	0.73
Thallium (Tl)-Total	mg/L			0.000035	0.000034	0.000035	0.000035	0.000032	0.000032
Tin (Sn)-Total	mg/L			<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total	mg/L			0.015	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Total	mg/L			0.000594	0.00057	0.000588	0.000626	0.000576	0.000585
Vanadium (V)-Total	mg/L			<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)-Total	mg/L			<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
BOD	mg/L		40	NC	NC	NC	NC	NC	NC
Oil and Grease	mg/L			<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Benzene	mg/L			<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Ethylbenzene	mg/L			<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Styrene	mg/L			<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Toluene	mg/L			<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
ortho-Xylene	mg/L			<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
meta- & para-Xylene	mg/L			<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Xylenes	mg/L			<0.00075	<0.00075	<0.00075	<0.00075	<0.00075	<0.00075
TVH (C5-C10)	mg/L			<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
TEH10-30	mg/L			<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
TPH5-30	mg/L	5	3	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Diethylene Glycol	mg/L			<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Ethylene Glycol	mg/L			<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Propylene Glycol	mg/L			<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

NC - data not collected

Water Quality Data - Cell E (1616-30)

1616-30		W2009L2-001 Criteria		Discharge	Discharge	Discharge	Discharge
Collection Date				7-Nov-2011	14-Nov-2011	21-Nov-2011	23-Nov-2011
Sample Number		Grab	Average	L1082977-1	L1086993-1	L1088426-1	L1089110-1
	Units						
Air Temperature	Deg C			-9.7	-17.6	-34.0	NC
Weather				Snow	Snow	Fog	NC
Wind Direction	Degree			14	6	NC	NC
Wind Speed	km/h			35	19	5	NC
Field Temperature	Deg C			0.5	1.94	0.2	NC
Conductivity Field	uS/cm			817.1	941	941	NC
Field pH	pH			6.99	7.55	8.05	NC
Conductivity	uS/cm			868	917	924	922
Hardness (as CaCO3)	mg/L			159	144	158	155
pH	pH	6.0 - 9.0	6.0 - 9.0	7.77	7.84	7.9	7.81
Total Suspended Solids	mg/L	25	15	<3.0	<3.0	<3.0	<3.0
Total Dissolved Solids	mg/L			500	517	527	529
Turbidity	NTU			1.31	0.61	1.26	1.13
Alkalinity, Total (as CaCO3)	mg/L			47.2	47.6	48.4	47.9
Ammonia (as N)	mg/L	4	2	0.0051	0.0123	0.0246	0.0212
Chloride (Cl)	mg/L			148	149	152	154
Nitrate and Nitrite (as N)	mg/L			3.88	4.24	4.36	4.12
Nitrate (as N)	mg/L			3.86	4.22	4.34	4.1
Nitrite (as N)	mg/L			0.016	0.017	0.014	0.015
Orthophosphate-Dissolved (as P)	mg/L			<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus (P)-Total	mg/L			0.0069	0.0081	0.0077	0.0082
Sulfate (SO4)	mg/L			133	133	136	139
Total Carbon	mg/L			13.8	14.3	13	15
Total Organic Carbon	mg/L			4.8	4.94	4.24	5.49
Aluminum (Al)-Total	mg/L	2	1	0.0225	0.0199	<0.024	0.0196
Antimony (Sb)-Total	mg/L			0.0013	0.0013	0.00135	0.00135
Arsenic (As)-Total	mg/L	1	0.5	0.00068	0.0007	0.00075	0.00072
Barium (Ba)-Total	mg/L			0.0802	0.0788	0.0793	0.0814
Beryllium (Be)-Total	mg/L			<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Total	mg/L			<0.00050	<0.00050	<0.00050	<0.00050
Boron (B)-Total	mg/L			0.034	0.034	0.036	0.034
Cadmium (Cd)-Total	mg/L			<0.000050	<0.000040	<0.000030	<0.000030
Calcium (Ca)-Total	mg/L			37	33	36.5	35.7
Chromium (Cr)-Total	mg/L			<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Total	mg/L			<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Total	mg/L	0.2	0.1	0.00132	0.00124	0.00138	0.00158
Iron (Fe)-Total	mg/L			<0.030	<0.030	<0.030	<0.030
Lead (Pb)-Total	mg/L			<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Total	mg/L			0.00566	0.00488	0.00574	0.00585
Magnesium (Mg)-Total	mg/L			16.3	15	16.3	16
Manganese (Mn)-Total	mg/L			0.00217	0.00298	0.00355	0.00354
Molybdenum (Mo)-Total	mg/L			0.0901	0.0873	0.0856	0.0891
Nickel (Ni)-Total	mg/L	0.3	0.15	0.00504	0.00477	0.00532	0.005
Phosphorus (P)-Total	mg/L			NC	NC	NC	NC
Potassium (K)-Total	mg/L			30.7	29.5	31.3	32.3
Selenium (Se)-Total	mg/L			0.00026	0.00028	0.00028	0.00028
Silicon (Si)-Total	mg/L			0.451	0.471	0.568	0.549
Silver (Ag)-Total	mg/L			<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total	mg/L			102	96.7	106	106
Strontium (Sr)-Total	mg/L			0.766	0.771	0.708	0.744
Thallium (Tl)-Total	mg/L			0.000023	0.000033	0.000035	0.000034
Tin (Sn)-Total	mg/L			<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total	mg/L			<0.010	<0.010	<0.010	<0.010
Uranium (U)-Total	mg/L			0.000641	0.000584	0.000609	0.000598
Vanadium (V)-Total	mg/L			<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)-Total	mg/L			<0.0030	<0.0030	<0.0030	0.003
BOD	mg/L		40	NC	NC	NC	NC
Oil and Grease	mg/L			<5.0	<5.0	<5.0	<5.0
Benzene	mg/L			<0.00050	<0.00050	<0.00050	<0.00050
Ethylbenzene	mg/L			<0.00050	<0.00050	<0.00050	<0.00050
Styrene	mg/L			<0.00050	<0.00050	<0.00050	<0.00050
Toluene	mg/L			<0.00050	<0.00050	<0.00050	<0.00050
ortho-Xylene	mg/L			<0.00050	<0.00050	<0.00050	<0.00050
meta- & para-Xylene	mg/L			<0.00050	<0.00050	<0.00050	<0.00050
Xylenes	mg/L			<0.00075	<0.00075	<0.00075	<0.00075
TVH (C5-C10)	mg/L			<0.10	<0.10	<0.10	<0.10
TEH10-30	mg/L			<0.15	<0.15	<0.15	<0.15
TPH5-30	mg/L	5	3	<0.25	<0.25	<0.25	<0.25
Diethylene Glycol	mg/L			<5.0	<5.0	<5.0	<5.0
Ethylene Glycol	mg/L			<5.0	<5.0	<5.0	<5.0
1,2-Propylene Glycol	mg/L			<5.0	<5.0	<5.0	<5.0

NC - data not collected

BHP BILLITON CANADA INC..
ATTN: DAVID G. BRUCE / RICHARD EHLERT DAVID
1102 - 4920 52ND STREET
YELLOWKNIFE NT X1A 3T1

Date Received: 23-JUN-11
Report Date: 30-JUN-11 17:33 (MT)
Version: FINAL

Client Phone: 867-880-2157

Certificate of Analysis

Lab Work Order #:	**L1022350**
Project P.O. #:	BHP2001
Job Reference:	68493
Legal Site Desc:	6200801716
C of C Numbers:	

Can Dang
Senior Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1022350-1	L1022350-2	L1022350-3	L1022350-4	
	Description	WATER	WATER	WATER	WATER	
	Sampled Date	21-JUN-11	21-JUN-11	21-JUN-11	21-JUN-11	
	Sampled Time	14:30	14:31	14:32	14:44	
	Client ID	1616-30_APPROVAL	1616-121	1616-494	1616-301	
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	835	<2.0	<2.0	832	
	Hardness (as CaCO3) (mg/L)	169	<0.50	<0.50	168	
	pH (pH)	7.62	5.59	5.59	7.69	
	Total Suspended Solids (mg/L)	<3.0	<3.0	5.8	5.8	
	Total Dissolved Solids (mg/L)	461	<10	<10	511	
	Turbidity (NTU)	0.86	<0.10	<0.10	0.90	
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	43.0	<2.0	<2.0	42.4	
	Ammonia (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	
	Chloride (Cl) (mg/L)	142	<0.50	<0.50	141	
	Nitrate and Nitrite (as N) (mg/L)	3.84	<0.0051	<0.0051	3.80	
	Nitrate (as N) (mg/L)	3.84	<0.0050	<0.0050	3.80	
	Nitrite (as N) (mg/L)	<0.0050	<0.0010	<0.0010	<0.0050	
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Phosphorus (P)-Total (mg/L)	0.0061	<0.0020	<0.0020	0.0061	
	Sulfate (SO4) (mg/L)	122	<0.50	<0.50	121	
Organic / Inorganic Carbon	Total Carbon (mg/L)	12.5	<0.50	<0.50	11.5	
	Total Organic Carbon (mg/L)	3.77	<0.50	<0.50	3.73	
Total Metals	Aluminum (Al)-Total (mg/L)	0.0351	<0.0030	<0.0030	0.0355	
	Antimony (Sb)-Total (mg/L)	0.00118	<0.00010	<0.00010	0.00120	
	Arsenic (As)-Total (mg/L)	0.00042	<0.00010	<0.00010	0.00043	
	Barium (Ba)-Total (mg/L)	0.0882	<0.000050	<0.000050	0.0879	
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Boron (B)-Total (mg/L)	0.023	<0.010	<0.010	0.024	
	Cadmium (Cd)-Total (mg/L)	<0.000040 DLM	<0.000010	<0.000010	<0.000040 DLM	
	Calcium (Ca)-Total (mg/L)	38.8	<0.050	<0.050	38.7	
	Chromium (Cr)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Copper (Cu)-Total (mg/L)	0.00131	<0.00050	<0.00050	0.00128	
	Iron (Fe)-Total (mg/L)	0.038	<0.030	<0.030	0.034	
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Total (mg/L)	0.00507	<0.00050	<0.00050	0.00541	
	Magnesium (Mg)-Total (mg/L)	17.6	<0.10	<0.10	17.4	
	Manganese (Mn)-Total (mg/L)	0.00586	<0.000050	<0.000050	0.00587	
	Molybdenum (Mo)-Total (mg/L)	0.0770	<0.000050	<0.000050	0.0759	
	Nickel (Ni)-Total (mg/L)	0.00556	<0.00050	<0.00050	0.00561	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1022350-1	L1022350-2	L1022350-3	L1022350-4	
	Description	WATER	WATER	WATER	WATER	
	Sampled Date	21-JUN-11	21-JUN-11	21-JUN-11	21-JUN-11	
	Sampled Time	14:30	14:31	14:32	14:44	
	Client ID	1616-30_APPROVAL	1616-121	1616-494	1616-301	
Grouping	**Analyte**					
WATER						
Total Metals	Phosphorus (P)-Total (mg/L)	<0.30	<0.30	<0.30	<0.30	
	Potassium (K)-Total (mg/L)	28.1	<2.0	<2.0	28.0	
	Selenium (Se)-Total (mg/L)	0.00021	<0.00010	<0.00010	0.00021	
	Silicon (Si)-Total (mg/L)	0.410	<0.050	<0.050	0.412	
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Total (mg/L)	86.7	<2.0	<2.0	86.3	
	Strontium (Sr)-Total (mg/L)	0.740	<0.00010	<0.00010	0.728	
	Thallium (Tl)-Total (mg/L)	0.000029	<0.000010	<0.000010	0.000028	
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	
	Uranium (U)-Total (mg/L)	0.000459	<0.000010	<0.000010	0.000449	
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	
Aggregate Organics	BOD (mg/L)	<5.0	<5.0	<5.0	<5.0	
	Oil and Grease (mg/L)	<5.0	<5.0	<5.0	<5.0	
Volatile Organic Compounds	Benzene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Ethylbenzene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Styrene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Toluene (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	ortho-Xylene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	meta- & para-Xylene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Xylenes (mg/L)	<0.00075	<0.00075	<0.00075	<0.00075	
	Surrogate: 4-Bromofluorobenzene (SS) (%)	100	96	96	89	
	Surrogate: 1,4-Difluorobenzene (SS) (%)	101	100	101	100	
Hydrocarbons	TVH (C5-C10) (mg/L)	<0.10	<0.10	<0.10	<0.10	
	TEH10-30 (mg/L)	<0.15	<0.15	<0.15	<0.15	
	TPH5-30 (mg/L)	<0.25	<0.25	<0.25	<0.25	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	APHA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-N+N-CALC-VA	Water	Nitrite & Nitrate in Water (Calculation)	EPA 300.0

Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

AS-T-CCMS-VA	Water	Total Arsenic in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

BOD5-VA	Water	Biochemical Oxygen Demand- 5 day	APHA 5210 B- "BIOCHEMICAL OXYGEN DEMAND"

This analysis is carried out using procedures adapted from APHA Method 5210 B - "Biochemical Oxygen Demand (BOD)". All forms of biochemical oxygen demand (BOD) are determined by diluting and incubating a sample for a specified time period, and measuring the oxygen depletion using a dissolved oxygen meter. Dissolved BOD (SOLUBLE) is determined by filtering the sample through a glass fibre filter prior to dilution. Carbonaceous BOD (CBOD) is determined by adding a nitrification inhibitor to the diluted sample prior to incubation.

BOD5-VA	Water	Biochemical Oxygen Demand- 5 day	APHA 5210 B- BIOCHEMICAL OXYGEN DEMAND

This analysis is carried out using procedures adapted from APHA Method 5210 B - "Biochemical Oxygen Demand (BOD)". All forms of biochemical oxygen demand (BOD) are determined by diluting and incubating a sample for a specified time period, and measuring the oxygen depletion using a dissolved oxygen meter. Dissolved BOD (SOLUBLE) is determined by filtering the sample through a glass fibre filter prior to dilution. Carbonaceous BOD (CBOD) is determined by adding a nitrification inhibitor to the diluted sample prior to incubation.

CARBONS-TC-VA	Water	Total carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

EPH-LL-SF-FID-VA	Water	EPH in Waters by GCFID	BCMOE EPH GCFID

This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999). The procedure involves extraction of the entire water sample with dichloromethane. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

Reference Information

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

MET-TOT-ICP-VA Water Total Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

OGG-SF-VA Water Oil & Grease by Gravimetric BCMOE GRAVIMETRIC

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Methods 3510 & 9071, published by the United States Environmental Protection Agency (EPA), "Standard Methods for the Examination of Water and Wastewater", 20th ed., Method 5520, published by the American Public Health Association, and "BC Environmental Laboratory Manual for the Analysis of Water, Wastewater, Sediment and Biological Materials," 5th ed., published by the B.C. Ministry of Environment, Lands & Parks, 1994. The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.

P-T-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-MAN-VA Water pH by Manual Meter APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

It is recommended that this analysis be conducted in the field.

PH-MAN-VA Water pH by Manual Meter APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SE-T-CCMS-VA Water Total Selenium in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

TDS-VA Water Total Dissolved Solids by Gravimetric APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-VA Water Total Suspended Solids by Gravimetric APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

Reference Information

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TVH-HSFID-VA	Water	TVH by headspace GCFID	EPA 8260B, BCMELP CSR METHOD

This procedure involves the headspace extraction of the sample prior to analysis for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID). The VH analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999).

VOC7-HSMS-VA	Water	BTEX/MTBE/Styrene by Headspace GCMS	EPA 8260, 5035A, 5021

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

VOC7/VOC-SURR-MS-VA	Water	VOC7 and/or VOC Surrogates for Waters	EPA 8260B, BCMELP CSR METHOD
XYLENES-CALC-VA	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero. The DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

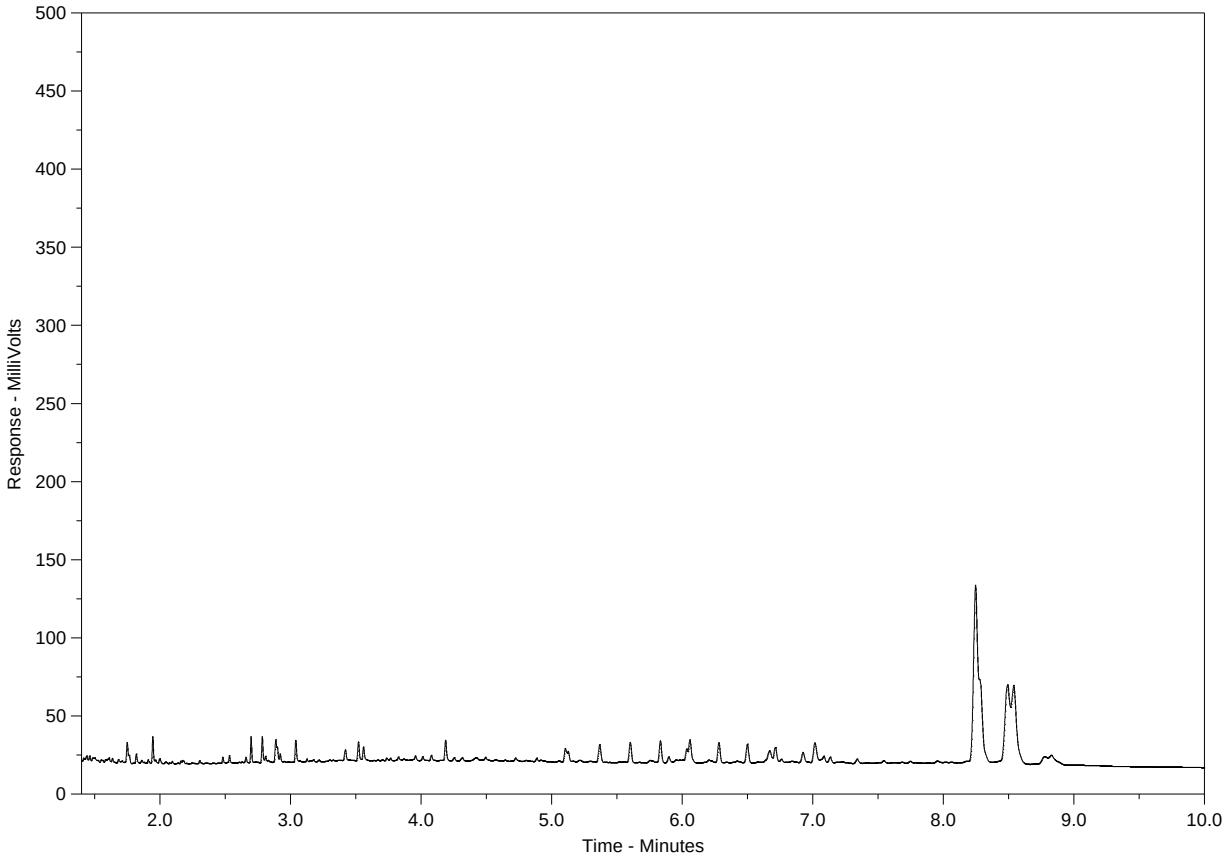
GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Hydrocarbon Distribution Report

ALS Sample ID: L1022350-L-1
Client Sample ID: 1616-30_APPROVAL



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

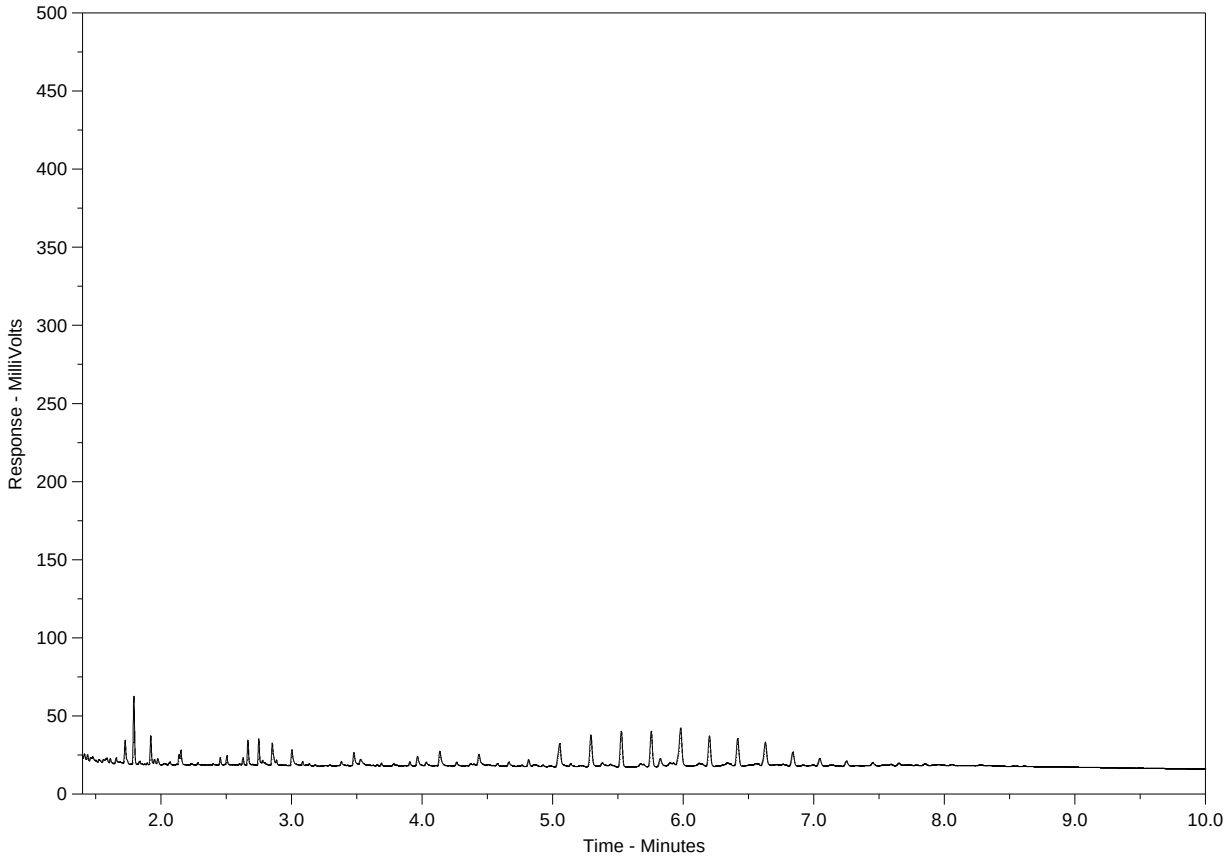
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Hydrocarbon Distribution Report

ALS Sample ID: L1022350-L-2
Client Sample ID: 1616-121



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

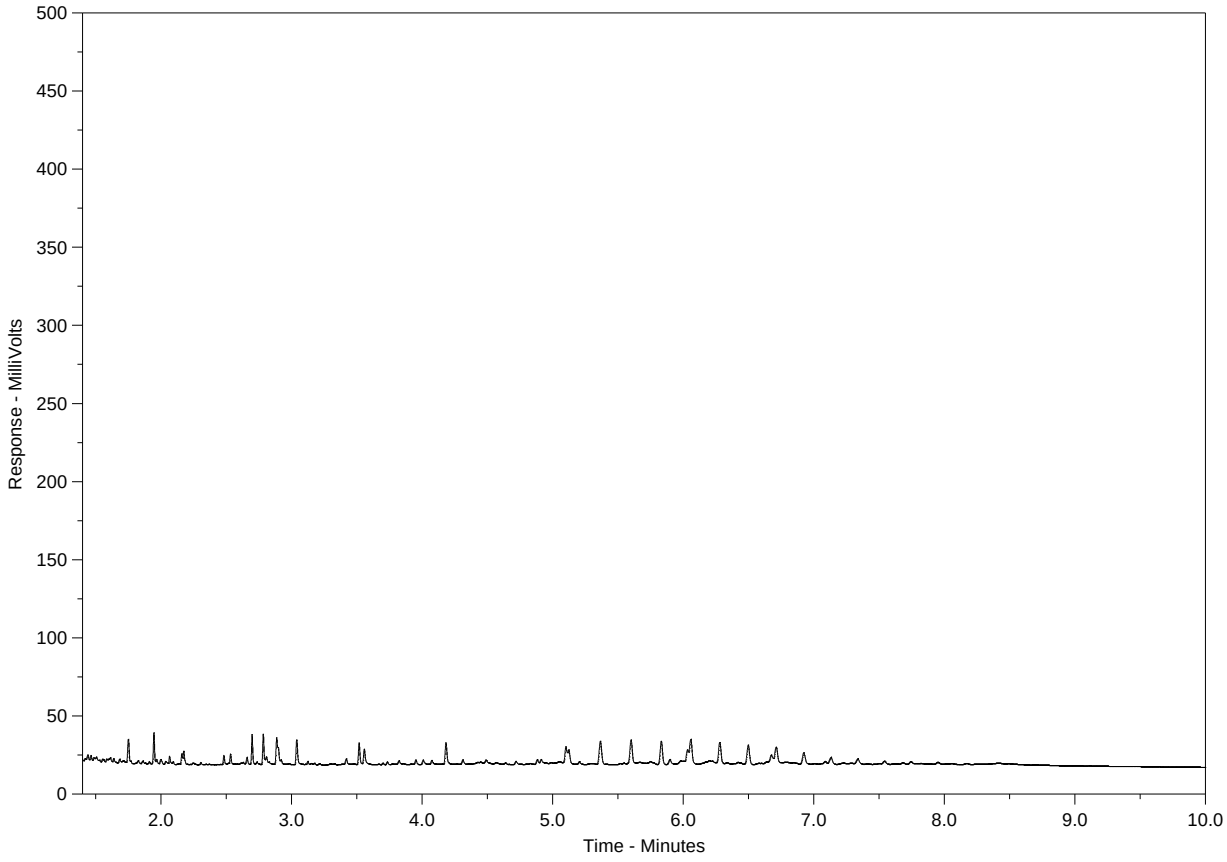
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Hydrocarbon Distribution Report

ALS Sample ID: L1022350-L-3
Client Sample ID: 1616-494



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

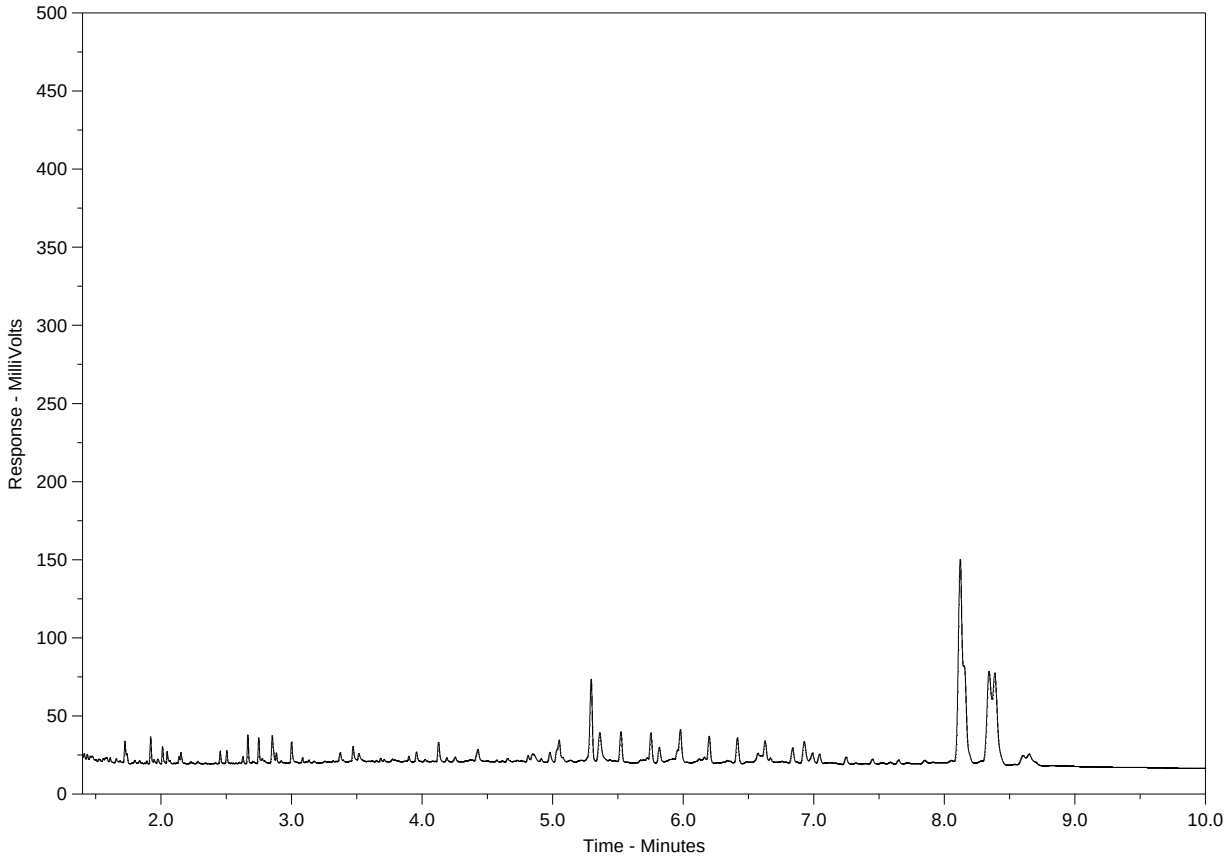
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Hydrocarbon Distribution Report

ALS Sample ID: L1022350-L-4
Client Sample ID: 1616-301



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

RUSH

Form 68493

bhpbilliton

Priority processing

8081 Lougheed Highway • Suite 100 • Burnaby,
Tel: 604-253-4188 Toll Free: 1-800-665-0243 FAX: 604-253-6700
ALS Contact: Can Dang

BHP Billiton Diamonds Inc.
1102 4920 52nd Street, Yellowknife, NT X1A 3T1
Tel: 867-880-2157 Fax: 867-880-4012
BHP Contacts: David Bruce/ Richard EhlertDavid

CHAIN OF CUSTODY FORM

L1022350

For Lab Use

FOR LAB USE ONLY

Station ID	Matrix	Date	Time	Init	As, Se By CCMS	BOD5	BTEX	Oil and Grease	SNP-0013 Major Ions	SNP-0013 Nutrients	SNP-0013 Physical Parameters	SNP-0013 Total Metals	TDS	Total Ammonia	Total Organic Carbon	TPH	TSS						
1616-30_Approval	Water	21-Jun-2011	02:30 PM	JP	1	1	1	1	1	1	1	1	1	1	1	1	BHP2						
1616-121	Water	21-Jun-2011	02:31 PM	JP	1	1	1	1	1	1	1	1	1	1	1	1	BHP2						
1616-494	Water	21-Jun-2011	02:32 PM	JP	1	1	1	1	1	1	1	1	1	1	1	1	BHP2						
1616-301	Water	21-Jun-2011	02:44 PM	JP	1	1	1	1	1	1	1	1	1	1	1	1	BHP2						

L1022350-COFC

Turn around Required: 1 Week rush for all results

Special Instructions (Billing details, QC reporting, etc):

Billing Code: BHP2001

Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by: RC	Date 23-6-11 Time 12:45

FOR LAB USE ONLY

Cooler seal intact upon receipt? ☑ Yes ☐ No ☐ N/A

Sample tempurature upon receipt: C.
Frozen? ☐ Yes ☑ No

Send Analytical Results to:

compliance.team@bhpbilliton.com;

6 coolers in total.

10·6, 5·9, 6, 7·9, 10·3 6·5

BHP BILLITON CANADA INC..
ATTN: David G. Bruce / Richard Ehlert David
1102 - 4920 52nd Street
Yellowknife NT X1A 3T1

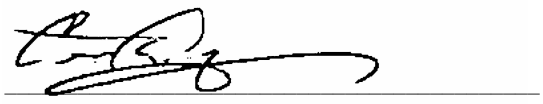
Date Received: 13-JUL-11
Report Date: 27-JUL-11 16:06 (MT)
Version: FINAL

Client Phone: 867-880-2157

Certificate of Analysis

Lab Work Order #: L1031080
Project P.O. #: BHP2001
Job Reference: 68533
Legal Site Desc: 6200801716
C of C Numbers: 68533

Comments: No glycols bottle was received for sample ID 1616-494. Glycols analysis could not be performed.



Can Dang
Senior Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1031080-1	L1031080-2	L1031080-3	L1031080-4	
	Description	WATER	WATER	WATER	WATER	
	Sampled Date	11-JUL-11	11-JUL-11	11-JUL-11	11-JUL-11	
	Sampled Time	16:04	16:04	16:04	16:15	
	Client ID	1616-30_DISCHARGE	1616-121	1616-494	1616-302	
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	747	<2.0	<2.0	748	
	Hardness (as CaCO3) (mg/L)	150	<0.50	<0.50	148	
	pH (pH)	7.87	5.74	5.71	7.80	
	Total Suspended Solids (mg/L)	<3.0	<3.0	<3.0	<3.0	
	Total Dissolved Solids (mg/L)	456	<10	<10	472	
	Turbidity (NTU)	0.73	<0.10	<0.10	0.74	
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	38.3	<2.0	<2.0	37.5	
	Ammonia (as N) (mg/L)	<0.0050	<0.0050	<0.0050	0.0077	
	Chloride (Cl) (mg/L)	127	<0.50	<0.50	127	
	Nitrate and Nitrite (as N) (mg/L)	3.36	<0.0051	<0.0051	3.36	
	Nitrate (as N) (mg/L)	3.35	<0.0050	<0.0050	3.35	
	Nitrite (as N) (mg/L)	0.0080	<0.0010	<0.0010	0.0084	
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Phosphorus (P)-Total (mg/L)	0.0060	<0.0020	<0.0020	0.0070	
	Sulfate (SO4) (mg/L)	109	<0.50	<0.50	109	
Organic / Inorganic Carbon	Total Carbon (mg/L)	11.4	<0.50	<0.50	11.8	
	Total Organic Carbon (mg/L)	4.22	0.87	<0.50	3.99	
Total Metals	Aluminum (Al)-Total (mg/L)	0.0298	<0.0030	<0.0030	0.0260	
	Antimony (Sb)-Total (mg/L)	0.00117	<0.00010	<0.00010	0.00116	
	Arsenic (As)-Total (mg/L)	0.00045	<0.00010	<0.00010	0.00043	
	Barium (Ba)-Total (mg/L)	0.0944	<0.000050	<0.000050	0.0841	
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Boron (B)-Total (mg/L)	0.028	<0.010	<0.010	0.027	
	Cadmium (Cd)-Total (mg/L)	0.000068	<0.000010	<0.000010	0.000031	
	Calcium (Ca)-Total (mg/L)	34.7	<0.050	<0.050	34.4	
	Chromium (Cr)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Copper (Cu)-Total (mg/L)	0.00156	<0.00050	<0.00050	0.00128	
	Iron (Fe)-Total (mg/L)	<0.030	<0.030	<0.030	<0.030	
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Total (mg/L)	0.00520	<0.00050	<0.00050	0.00524	
	Magnesium (Mg)-Total (mg/L)	15.3	<0.10	<0.10	15.1	
	Manganese (Mn)-Total (mg/L)	0.00395	<0.000050	<0.000050	0.00349	
	Molybdenum (Mo)-Total (mg/L)	0.0710	<0.000050	<0.000050	0.0719	
	Nickel (Ni)-Total (mg/L)	0.00502	<0.00050	<0.00050	0.00450	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1031080-1	L1031080-2	L1031080-3	L1031080-4	
	Description	WATER	WATER	WATER	WATER	
	Sampled Date	11-JUL-11	11-JUL-11	11-JUL-11	11-JUL-11	
	Sampled Time	16:04	16:04	16:04	16:15	
	Client ID	1616-30_DISCHARGE	1616-121	1616-494	1616-302	
Grouping	**Analyte**					
WATER						
Total Metals	Phosphorus (P)-Total (mg/L)	<0.30	<0.30	<0.30	<0.30	
	Potassium (K)-Total (mg/L)	25.4	<2.0	<2.0	25.2	
	Selenium (Se)-Total (mg/L)	0.00019	<0.00010	<0.00010	0.00018	
	Silicon (Si)-Total (mg/L)	0.279	<0.050	<0.050	0.279	
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Total (mg/L)	82.1	<2.0	<2.0	80.3	
	Strontium (Sr)-Total (mg/L)	0.670	<0.00010	<0.00010	0.681	
	Thallium (Tl)-Total (mg/L)	0.000033	<0.000010	<0.000010	0.000033	
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	
	Uranium (U)-Total (mg/L)	0.000477	<0.000010	<0.000010	0.000470	
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	
Aggregate Organics	Oil and Grease (mg/L)	<5.0	<5.0	<5.0	<5.0	
Volatile Organic Compounds	Benzene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Ethylbenzene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Styrene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Toluene (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	ortho-Xylene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	meta- & para-Xylene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Xylenes (mg/L)	<0.00075	<0.00075	<0.00075	<0.00075	
	Surrogate: 4-Bromofluorobenzene (SS) (%)	98	86	100	101	
	Surrogate: 1,4-Difluorobenzene (SS) (%)	98	99	100	100	
Hydrocarbons	TVH (C5-C10) (mg/L)	<0.10	<0.10	<0.10	<0.10	
	TEH10-30 (mg/L)	<0.15	<0.15	<0.15	<0.15	
	TPH5-30 (mg/L)	<0.25	<0.25	<0.25	<0.25	
Glycols	Diethylene Glycol (mg/L)	<5.0	<5.0		<5.0	
	Ethylene Glycol (mg/L)	<5.0	<5.0		<5.0	
	1,2-Propylene Glycol (mg/L)	<5.0	<5.0		<5.0	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
MB-LOR	Method Blank exceeds ALS DQO. LORs adjusted for samples with positive hits below 5 times blank level. Please contact ALS if re-analysis is required.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	APHA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-N+N-CALC-VA	Water	Nitrite & Nitrate in Water (Calculation)	EPA 300.0

Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

AS-T-CCMS-VA	Water	Total Arsenic in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

CARBONS-TC-VA	Water	Total carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

EPH-LL-SF-FID-VA	Water	EPH in Waters by GCFID	BCMOE EPH GCFID

This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999). The procedure involves extraction of the entire water sample with dichloromethane. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

GLY-WAT-FID-VA	Water	Glycols in Water by GCFID	SW-846, METHOD 8015B, EPA

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8015B, published by the United States Environmental Protection Agency (EPA). The procedure involves treatment of the sample with a strong base (NaOH) and benzoyl chloride to form the corresponding benzoate esters. The benzoate esters are then extracted with iso-octane and the extract is analyzed by capillary column gas chromatography with flame ionization detection (FID).

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

MET-TOT-ICP-VA	Water	Total Metals in Water by ICPOES	EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United

Reference Information

States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

OGG-SF-VA Water Oil & Grease by Gravimetric BCMOE (2010), EPA1664A

The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.

P-T-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-MAN-VA Water pH by Manual Meter APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

It is recommended that this analysis be conducted in the field.

PH-MAN-VA Water pH by Manual Meter APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SE-T-CCMS-VA Water Total Selenium in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

TDS-VA Water Total Dissolved Solids by Gravimetric APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TOC-TX Water Total Organic Carbon in Water EPA 415.1 TOTAL ORGANIC CARBON (TOC)

This analyis is carried out following EPA Method 415.1 - Total Organic Carbon in Water. Organic carbon in a sample is converted to carbon dioxide (CO2) by catalytic combustion or wet chemical oxidation. The CO2 formed can be measured directly by an infrared detector or converted to methane (CH4) and measured by a flame ionization detector.

TSS-VA Water Total Suspended Solids by Gravimetric APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TVH-HSFID-VA Water TVH by headspace GCFID EPA 8260B, BCMELP CSR METHOD

Reference Information

This procedure involves the headspace extraction of the sample prior to analysis for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID). The VH analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999).

VOC7-HSMS-VA	Water	BTEX/MTBE/Styrene by Headspace GCMS	EPA8260B, 5021

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

VOC7/VOC-SURR-MS-VA	Water	VOC7 and/or VOC Surrogates for Waters	EPA8260B, 5021
XYLENES-CALC-VA	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero. The DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA
TX	ALS ENVIRONMENTAL - HOUSTON, TEXAS, USA

Chain of Custody Numbers:

68533

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Short Holding Time P

Rush Processing

8081 Lougheed Highway • Suite 100 • Burnaby,
Tel: 604-253-4188 Toll Free: 1-800-665-0243 FAX: 604-253-6700
ALS Contact: Can Dang

SO: 38225

CHAIN OF CUSTODY FORM

Form 68533

BHP Billiton Diamonds Inc.
1102 4920 52nd Street, Yellowknife, NT X1A 3T1
Tel: 867-880-2157 Fax: 867-880-4012
BHP Contacts: David Bruce/ Richard EhlertDavid

bhpbilliton

L1031080

L1031080-COFC

For Lab Use

FOR LAB USE ONLY

Station ID	Matrix	Date	Time	Init	As, Se By CCMS	BTEX+TVH	Glycols	Oil and Grease	SNP-0013 Major Ions	SNP-0013 Nutrients	SNP-0013 Physical Parameters	SNP-0013 Total Metals	TDS	Total Ammonia	Total Organic Carbon	TPH	TSS							
1616-30_Discharge	Water	11-Jul-2011	04:04 PM	KJ	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP2						
1616-121	Water	11-Jul-2011	04:04 PM	KJ	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP2						
1616-494	Water	11-Jul-2011	04:04 PM	KJ	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP2						
1616-302	Water	11-Jul-2011	04:15 PM	KJ	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP2						

Turn around Required: Forward Results by 25 July 2001

Special Instructions (Billing details, QC reporting, etc):

Billing Code: BHP2001

Relinquished by:	Date / Time	Received by:	Date / Time
	11 July 2011 18:53	Walter	July 13, 11 (0-20
Relinquished by:	Date / Time	Received by:	Date / Time

FOR LAB USE ONLY

Cooler seal intact upon receipt? ☐ Yes ☐ No ☐ N/A

Sample tempurature upon receipt: 6.7 C.

Frozen? ☐ Yes ☐ No

Send Analytical Results to:

compliance.team@bhpbilliton.com;

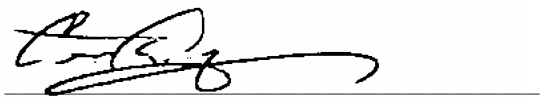
BHP BILLITON CANADA INC..
ATTN: David G. Bruce / Richard Ehlert David
1102 - 4920 52nd Street
Yellowknife NT X1A 3T1

Date Received: 21-JUL-11
Report Date: 02-AUG-11 11:40 (MT)
Version: FINAL

Client Phone: 867-880-2157

Certificate of Analysis

Lab Work Order #: L1034607
Project P.O. #: BHP2001
Job Reference: 68547
Legal Site Desc: 6200801716
C of C Numbers: 68547



Can Dang
Senior Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1034607-1				
	Description	WATER				
	Sampled Date	18-JUL-11				
	Sampled Time	10:25				
	Client ID	1616-30_DISCHARGE				
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	761				
	Hardness (as CaCO3) (mg/L)	149				
	pH (pH)	7.79				
	Total Suspended Solids (mg/L)	<3.0				
	Total Dissolved Solids (mg/L)	475				
	Turbidity (NTU)	0.75				
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	39.3				
	Ammonia (as N) (mg/L)	0.0113				
	Chloride (Cl) (mg/L)	135				
	Nitrate and Nitrite (as N) (mg/L)	3.58				
	Nitrate (as N) (mg/L)	3.57				
	Nitrite (as N) (mg/L)	0.010				
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010				
	Phosphorus (P)-Total (mg/L)	0.0071				
	Sulfate (SO4) (mg/L)	115				
Organic / Inorganic Carbon	Total Carbon (mg/L)	10.8				
	Total Organic Carbon (mg/L)	3.71				
Total Metals	Aluminum (Al)-Total (mg/L)	0.0205				
	Antimony (Sb)-Total (mg/L)	0.00116				
	Arsenic (As)-Total (mg/L)	0.00047				
	Barium (Ba)-Total (mg/L)	0.0753				
	Beryllium (Be)-Total (mg/L)	<0.00010				
	Bismuth (Bi)-Total (mg/L)	<0.00050				
	Boron (B)-Total (mg/L)	0.028				
	Cadmium (Cd)-Total (mg/L)	<0.000030 DLM				
	Calcium (Ca)-Total (mg/L)	34.3				
	Chromium (Cr)-Total (mg/L)	<0.00050				
	Cobalt (Co)-Total (mg/L)	<0.00010				
	Copper (Cu)-Total (mg/L)	0.00121				
	Iron (Fe)-Total (mg/L)	<0.030				
	Lead (Pb)-Total (mg/L)	<0.000050				
	Lithium (Li)-Total (mg/L)	0.00502				
	Magnesium (Mg)-Total (mg/L)	15.3				
	Manganese (Mn)-Total (mg/L)	0.00349				
	Molybdenum (Mo)-Total (mg/L)	0.0758				
	Nickel (Ni)-Total (mg/L)	0.00457				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1034607-1				
	Description	WATER				
	Sampled Date	18-JUL-11				
	Sampled Time	10:25				
	Client ID	1616-30_DISCHARGE				
Grouping	**Analyte**					
WATER						
Total Metals	Phosphorus (P)-Total (mg/L)	<0.30				
	Potassium (K)-Total (mg/L)	25.9				
	Selenium (Se)-Total (mg/L)	0.00021				
	Silicon (Si)-Total (mg/L)	0.305				
	Silver (Ag)-Total (mg/L)	<0.000010				
	Sodium (Na)-Total (mg/L)	83.7				
	Strontium (Sr)-Total (mg/L)	0.668				
	Thallium (Tl)-Total (mg/L)	0.000033				
	Tin (Sn)-Total (mg/L)	<0.00010				
	Titanium (Ti)-Total (mg/L)	<0.010				
	Uranium (U)-Total (mg/L)	0.000473				
	Vanadium (V)-Total (mg/L)	<0.0010				
	Zinc (Zn)-Total (mg/L)	<0.0030				
Aggregate Organics	Oil and Grease (mg/L)	<5.0				
Volatile Organic Compounds	Benzene (mg/L)	<0.00050				
	Ethylbenzene (mg/L)	<0.00050				
	Styrene (mg/L)	<0.00050				
	Toluene (mg/L)	<0.00050				
	ortho-Xylene (mg/L)	<0.00050				
	meta- & para-Xylene (mg/L)	<0.00050				
	Xylenes (mg/L)	<0.00075				
	Surrogate: 4-Bromofluorobenzene (SS) (%)	94				
	Surrogate: 1,4-Difluorobenzene (SS) (%)	97				
Hydrocarbons	TVH (C5-C10) (mg/L)	<0.10				
	TEH10-30 (mg/L)	<0.15				
	TPH5-30 (mg/L)	<0.25				
Glycols	Diethylene Glycol (mg/L)	<5.0				
	Ethylene Glycol (mg/L)	<5.0				
	1,2-Propylene Glycol (mg/L)	<5.0				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	APHA 310.2
This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.			
ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.
This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".			
ANIONS-N+N-CALC-VA	Water	Nitrite & Nitrate in Water (Calculation)	EPA 300.0
Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).			
ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0
This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.			
ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0
This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.			
ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.
This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".			
AS-T-CCMS-VA	Water	Total Arsenic in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A
This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).			
CARBONS-TC-VA	Water	Total carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".			
CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".			
EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.
This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.			
EPH-LL-SF-FID-VA	Water	EPH in Waters by GCFID	BCMOE EPH GCFID
This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999). The procedure involves extraction of the entire water sample with dichloromethane. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).			
GLY-WAT-FID-VA	Water	Glycols in Water by GCFID	SW-846, METHOD 8015B, EPA
This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8015B, published by the United States Environmental Protection Agency (EPA). The procedure involves treatment of the sample with a strong base (NaOH) and benzoyl chloride to form the corresponding benzoate esters. The benzoate esters are then extracted with iso-octane and the extract is analyzed by capillary column gas chromatography with flame ionization detection (FID).			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A
This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).			
MET-TOT-ICP-VA	Water	Total Metals in Water by ICPOES	EPA SW-846 3005A/6010B

Reference Information

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

OGG-SF-VA	Water	Oil & Grease by Gravimetric	BCMOE (2010), EPA1664A

The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.

P-T-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SE-T-CCMS-VA	Water	Total Selenium in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

TDS-VA	Water	Total Dissolved Solids by Gravimetric	APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TVH-HSFID-VA	Water	TVH by headspace GCFID	EPA 8260B, BCMELP CSR METHOD

This procedure involves the headspace extraction of the sample prior to analysis for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID). The VH analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999).

VOC7-HSMS-VA	Water	BTEX/MTBE/Styrene by Headspace GCMS	EPA8260B, 5021

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

VOC7/VOC-SURR-MS-VA	Water	VOC7 and/or VOC Surrogates for Waters	EPA8260B, 5021
XYLENES-CALC-VA	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero.

Reference Information

The DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

68547

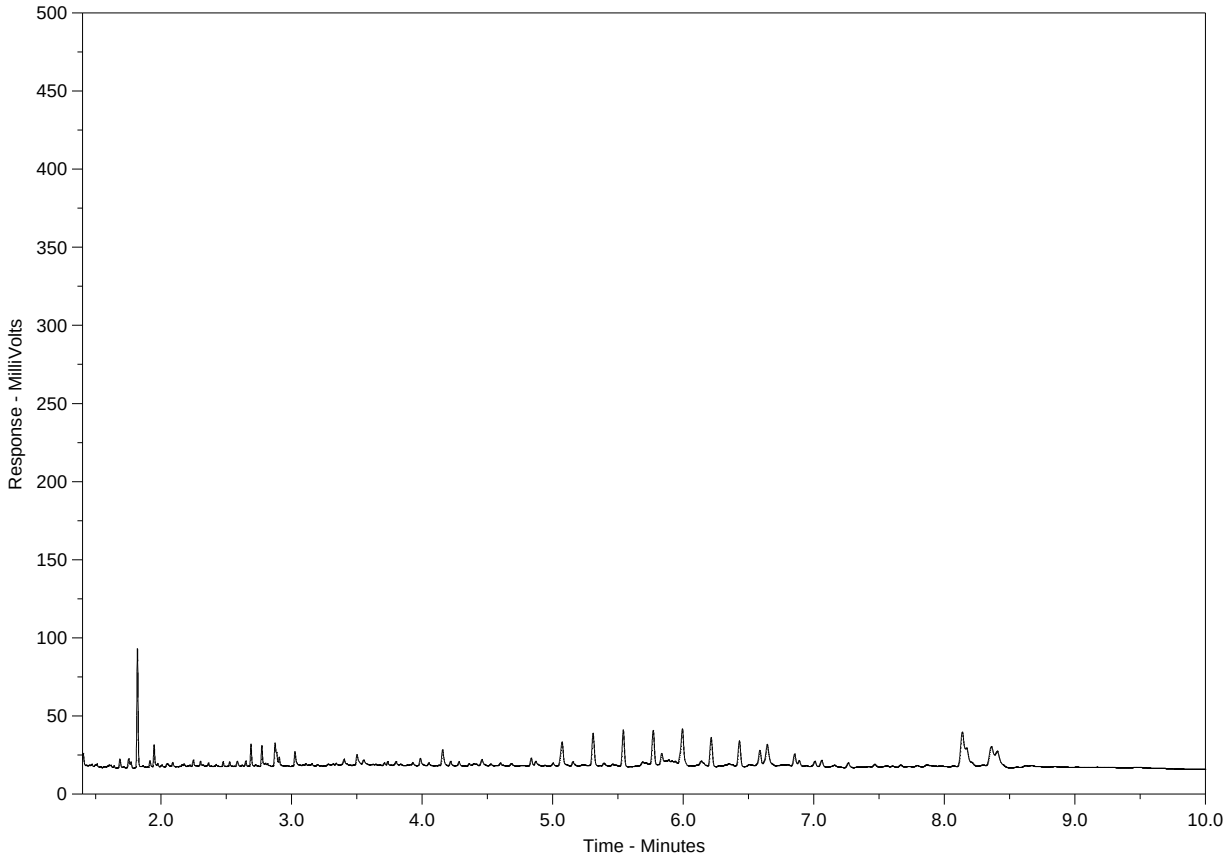
GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Hydrocarbon Distribution Report

ALS Sample ID: L1034607-L-1
Client Sample ID: 1616-30_DISCHARGE



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

L1034607

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

8081 Lougheed Highway • Suite 100 • Burnaby,
Tel: 604-253-4188 Toll Free: 1-800-665-0243 FAX: 604-253-6700
ALS Contact: Can Dang

Form 68547

bhpbilliton

BHP Billiton Diamonds Inc.
1102 4920 52nd Street, Yellowknife, NT X1A 3T1
Tel: 867-880-2157 Fax: 867-880-4012
BHP Contacts: David Bruce/ Richard EhlertDavid

CHAIN OF CUSTODY FORM

For Lab Use

FOR LAB USE ONLY

Station ID	Matrix	Date	Time	Init	As, Se By CCMS	BTEX+TVH	Glycols	Oil and Grease	SNP-0013 Major Ions	SNP-0013 Nutrients	SNP-0013 Physical Parameters	SNP-0013 Total Metals	TDS	Total Ammonia	Total Organic Carbon	TPH	TSS	
1616-30_Discharge	✓	Water	18-Jul-2011	10:25 AM	NA	1	1	1	1	1	1	1	1	1	1	1	1	BHP2

L1034607-COFC

Turn around Required: 1 Week Rush on All Results
Special Instructions (Billing details, QC reporting, etc):

Billing Code: BHP2001

Relinquished by:	Date / Time	Received by	Date / Time
	18 July 2011 15:26	Ryan D	July 21 11:15
Relinquished by:	Date / Time	Received by:	Date / Time

FOR LAB USE ONLY

Cooler seal intact upon receipt? ✓ Yes ☐ No ☐ N/A

Sample tempurature upon receipt: 10 C.

Frozen? ☐ Yes ☐ No

Send Analytical Results to:

compliance.team@bhpbilliton.com;

BHP BILLITON CANADA INC..
ATTN: David G. Bruce / Richard Ehlert David
1102 - 4920 52nd Street
Yellowknife NT X1A 3T1

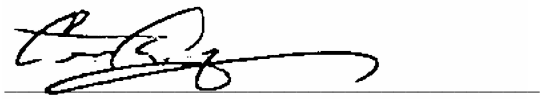
Date Received: 29-JUL-11
Report Date: 09-AUG-11 17:53 (MT)
Version: FINAL

Client Phone: 867-880-2157

Certificate of Analysis

Lab Work Order #: L1038290

Project P.O. #:	BHP2001
Job Reference:	68560
C of C Numbers:	68560
Legal Site Desc:	6200801716



Can Dang
Senior Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1038290-1				
	Description	WATER				
	Sampled Date	25-JUL-11				
	Sampled Time	16:45				
	Client ID	1616-30_DISCHARGE				
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	818				
	Hardness (as CaCO3) (mg/L)	157				
	pH (pH)	7.66				
	Total Suspended Solids (mg/L)	<3.0				
	Total Dissolved Solids (mg/L)	478				
	Turbidity (NTU)	0.68				
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	40.4				
	Ammonia (as N) (mg/L)	0.0095				
	Chloride (Cl) (mg/L)	141				
	Nitrate and Nitrite (as N) (mg/L)	4.03				
	Nitrate (as N) (mg/L)	4.01				
	Nitrite (as N) (mg/L)	0.020				
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010				
	Phosphorus (P)-Total (mg/L)	0.0073				
	Sulfate (SO4) (mg/L)	122				
Organic / Inorganic Carbon	Total Carbon (mg/L)	12.1				
	Total Organic Carbon (mg/L)	3.93				
Total Metals	Aluminum (Al)-Total (mg/L)	0.0192				
	Antimony (Sb)-Total (mg/L)	0.00126				
	Arsenic (As)-Total (mg/L)	0.00054				
	Barium (Ba)-Total (mg/L)	0.0844				
	Beryllium (Be)-Total (mg/L)	<0.00010				
	Bismuth (Bi)-Total (mg/L)	<0.00050				
	Boron (B)-Total (mg/L)	0.029				
	Cadmium (Cd)-Total (mg/L)	<0.000025 DLM				
	Calcium (Ca)-Total (mg/L)	36.0				
	Chromium (Cr)-Total (mg/L)	<0.00050				
	Cobalt (Co)-Total (mg/L)	<0.00010				
	Copper (Cu)-Total (mg/L)	0.00135				
	Iron (Fe)-Total (mg/L)	<0.030				
	Lead (Pb)-Total (mg/L)	<0.000050				
	Lithium (Li)-Total (mg/L)	0.00564				
	Magnesium (Mg)-Total (mg/L)	16.4				
	Manganese (Mn)-Total (mg/L)	0.00356				
	Molybdenum (Mo)-Total (mg/L)	0.0811				
	Nickel (Ni)-Total (mg/L)	0.00455				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1038290-1				
	Description	WATER				
	Sampled Date	25-JUL-11				
	Sampled Time	16:45				
	Client ID	1616-30_DISCHARGE				
Grouping	**Analyte**					
WATER						
Total Metals	Phosphorus (P)-Total (mg/L)	<0.30				
	Potassium (K)-Total (mg/L)	28.0				
	Selenium (Se)-Total (mg/L)	0.00024				
	Silicon (Si)-Total (mg/L)	0.238				
	Silver (Ag)-Total (mg/L)	<0.000010				
	Sodium (Na)-Total (mg/L)	91.0				
	Strontium (Sr)-Total (mg/L)	0.725				
	Thallium (Tl)-Total (mg/L)	0.000035				
	Tin (Sn)-Total (mg/L)	<0.00010				
	Titanium (Ti)-Total (mg/L)	<0.010				
	Uranium (U)-Total (mg/L)	0.000502				
	Vanadium (V)-Total (mg/L)	<0.0010				
	Zinc (Zn)-Total (mg/L)	<0.0030				
Aggregate Organics	Oil and Grease (mg/L)	<5.0				
Volatile Organic Compounds	Benzene (mg/L)	<0.00050				
	Ethylbenzene (mg/L)	<0.00050				
	Styrene (mg/L)	<0.00050				
	Toluene (mg/L)	<0.00050				
	ortho-Xylene (mg/L)	<0.00050				
	meta- & para-Xylene (mg/L)	<0.00050				
	Xylenes (mg/L)	<0.00075				
	Surrogate: 4-Bromofluorobenzene (SS) (%)	102				
	Surrogate: 1,4-Difluorobenzene (SS) (%)	101				
Hydrocarbons	TVH (C5-C10) (mg/L)	<0.10 DLB				
	TEH10-30 (mg/L)	<0.16				
	TPH5-30 (mg/L)	<0.25				
Glycols	Diethylene Glycol (mg/L)	<5.0				
	Ethylene Glycol (mg/L)	<5.0				
	1,2-Propylene Glycol (mg/L)	<5.0				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLB	Detection limit was raised due to detection of analyte at comparable level in Method Blank.
DLM	Detection Limit Adjusted For Sample Matrix Effects

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	APHA 310.2
This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.			
ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.
This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".			
ANIONS-N+N-CALC-VA	Water	Nitrite & Nitrate in Water (Calculation)	EPA 300.0
Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).			
ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0
This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.			
ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0
This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.			
ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.
This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".			
AS-T-CCMS-VA	Water	Total Arsenic in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A
This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).			
CARBONS-TC-VA	Water	Total carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".			
CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".			
EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.
This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.			
EPH-LL-SF-FID-VA	Water	EPH in Waters by GCFID	BCMOE EPH GCFID
This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999). The procedure involves extraction of the entire water sample with dichloromethane. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).			
GLY-WAT-FID-VA	Water	Glycols in Water by GCFID	SW-846, METHOD 8015B, EPA
This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8015B, published by the United States Environmental Protection Agency (EPA). The procedure involves treatment of the sample with a strong base (NaOH) and benzoyl chloride to form the corresponding benzoate esters. The benzoate esters are then extracted with iso-octane and the extract is analyzed by capillary column gas chromatography with flame ionization detection (FID).			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A
This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).			

Reference Information

MET-TOT-ICP-VA	Water	Total Metals in Water by ICPOES	EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

OGG-SF-VA	Water	Oil & Grease by Gravimetric	BCMOE (2010), EPA1664A

The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.

P-T-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SE-T-CCMS-VA	Water	Total Selenium in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

TDS-VA	Water	Total Dissolved Solids by Gravimetric	APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TVH-HSFID-VA	Water	TVH by headspace GCFID	EPA 8260B, BCMELP CSR METHOD

This procedure involves the headspace extraction of the sample prior to analysis for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID). The VH analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999).

VOC7-HSMS-VA	Water	BTEX/MTBE/Styrene by Headspace GCMS	EPA8260B, 5021

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

VOC7/VOC-SURR-MS-VA	Water	VOC7 and/or VOC Surrogates for Waters	EPA8260B, 5021
XYLENES-CALC-VA	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Calculation of Total Xylenes

Reference Information

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero. The DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

68560

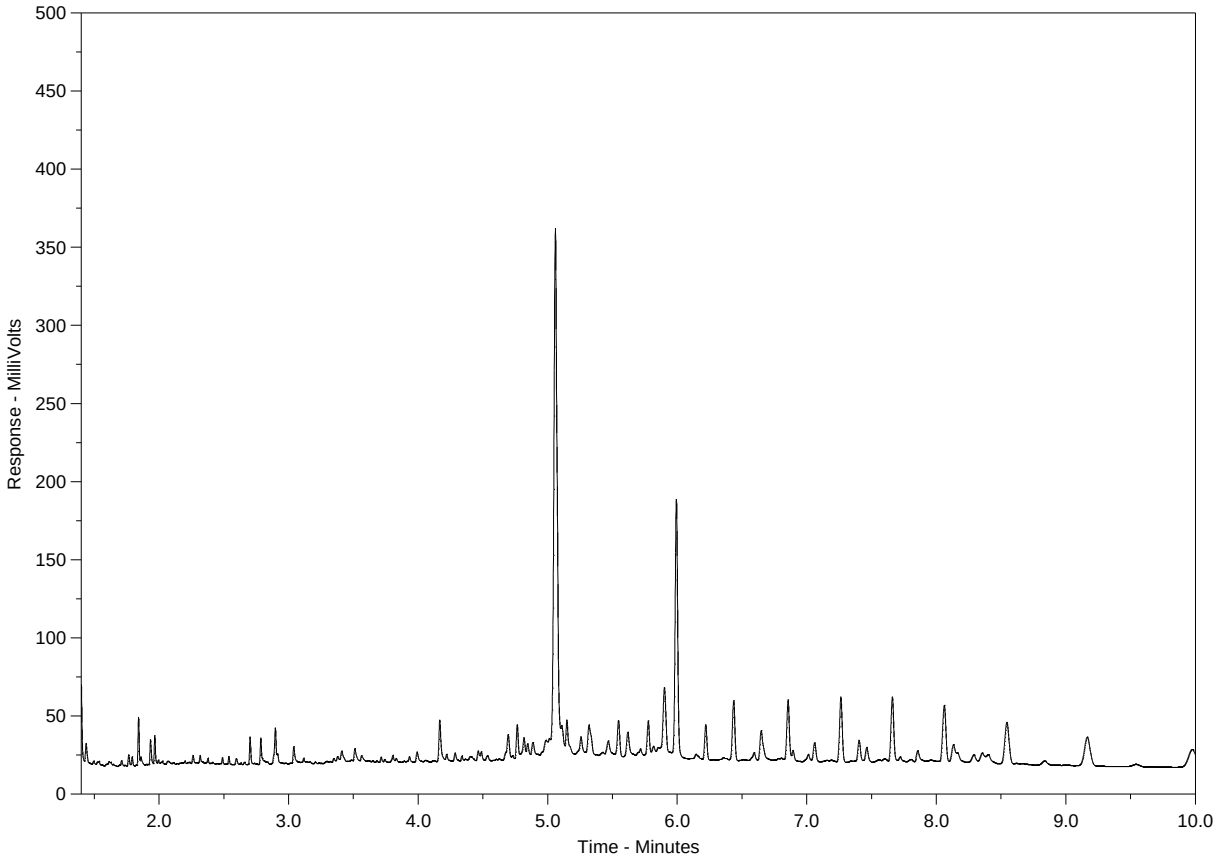
GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Hydrocarbon Distribution Report

ALS Sample ID: L1038290-L-1
Client Sample ID: 1616-30_DISCHARGE



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

L1038290

SO38239

Form 68560

bhpbilliton

BHP Billiton Diamonds Inc.
1102 4920 52nd Street, Yellowknife, NT X1A 3T1
Tel: 867-880-2157 Fax: 867-880-4012
BHP Contacts: David Bruce/ Richard EhlertDavid

8081 Lougheed Highway • Suite 100 • Burnaby,
Tel: 604-253-4188 Toll Free: 1-800-665-0243 FAX: 604-253-6700
ALS Contact: Can Dang

CHAIN OF CUSTODY FORM

FOR LAB USE ONLY

For Lab Use

Station ID	Matrix	Date	Time	Init	As, Se By CCMS	BTEX+TVH	Glycols	Oil and Grease	SNP-0013 Major Ions	SNP-0013 Nutrients	SNP-0013 Physical Parameters	SNP-0013 Total Metals	TDS	Total Ammonia	Total Organic Carbon	TPH	TSS							
1616-30_Discharge	Water	25-Jul-2011	04:45 PM	JP	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP2						

L1038290-COFC

Turn around Required: Regular two week turnaround

Special Instructions (Billing details, QC reporting, etc):

Billing Code: BHP2001

Relinquished by:	Date / Time	Received by:	Date / Time
		Ryan	July 29/11 9:50
Relinquished by:	Date / Time	Received by:	Date / Time

FOR LAB USE ONLY

Cooler seal intact upon receipt? ☐ Yes ☐ No ☐ N/A

Sample tempurature upon receipt: 15 C.

Frozen? ☐ Yes ☐ No

Send Analytical Results to:

compliance.team@bhpbilliton.com;

BHP BILLITON CANADA INC..
ATTN: David G. Bruce / Richard Ehlert David
1102 - 4920 52nd Street
Yellowknife NT X1A 3T1

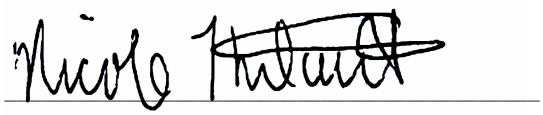
Date Received: 10-AUG-11
Report Date: 22-AUG-11 14:05 (MT)
Version: FINAL

Client Phone: 867-880-2157

Certificate of Analysis

Lab Work Order #: L1042744

Project P.O. #: BHP2001
Job Reference: 68573
C of C Numbers:
Legal Site Desc: 6200801716



Nicole Thibault
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1042744-1				
	Description	WATER				
	Sampled Date	02-AUG-11				
	Sampled Time	12:00				
	Client ID	1616-30_DISCHARGE				
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	816				
	Hardness (as CaCO3) (mg/L)	149				
	pH (pH)	7.82				
	Total Suspended Solids (mg/L)	<3.0				
	Total Dissolved Solids (mg/L)	467				
	Turbidity (NTU)	0.64				
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	41.6				
	Ammonia (as N) (mg/L)	0.0075				
	Chloride (Cl) (mg/L)	146				
	Nitrate and Nitrite (as N) (mg/L)	4.21				
	Nitrate (as N) (mg/L)	4.19				
	Nitrite (as N) (mg/L)	0.017				
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010				
	Phosphorus (P)-Total (mg/L)	0.0067				
	Sulfate (SO4) (mg/L)	120				
Organic / Inorganic Carbon	Total Carbon (mg/L)	11.4				
	Total Organic Carbon (mg/L)	3.91				
Total Metals	Aluminum (Al)-Total (mg/L)	0.0262				
	Antimony (Sb)-Total (mg/L)	0.00125				
	Arsenic (As)-Total (mg/L)	0.00051				
	Barium (Ba)-Total (mg/L)	0.0763				
	Beryllium (Be)-Total (mg/L)	<0.00010				
	Bismuth (Bi)-Total (mg/L)	<0.00050				
	Boron (B)-Total (mg/L)	0.029				
	Cadmium (Cd)-Total (mg/L)	<0.000040 DLM				
	Calcium (Ca)-Total (mg/L)	34.0				
	Chromium (Cr)-Total (mg/L)	<0.00050				
	Cobalt (Co)-Total (mg/L)	<0.00010				
	Copper (Cu)-Total (mg/L)	0.00126				
	Iron (Fe)-Total (mg/L)	<0.030				
	Lead (Pb)-Total (mg/L)	<0.000050				
	Lithium (Li)-Total (mg/L)	0.00569				
	Magnesium (Mg)-Total (mg/L)	15.5				
	Manganese (Mn)-Total (mg/L)	0.00430				
	Molybdenum (Mo)-Total (mg/L)	0.0827				
	Nickel (Ni)-Total (mg/L)	0.00460				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1042744-1				
	Description	WATER				
	Sampled Date	02-AUG-11				
	Sampled Time	12:00				
	Client ID	1616-30_DISCHARGE				
Grouping	**Analyte**					
WATER						
Total Metals	Phosphorus (P)-Total (mg/L)	<0.30				
	Potassium (K)-Total (mg/L)	27.9				
	Selenium (Se)-Total (mg/L)	0.00023				
	Silicon (Si)-Total (mg/L)	0.270				
	Silver (Ag)-Total (mg/L)	<0.000010				
	Sodium (Na)-Total (mg/L)	86.4				
	Strontium (Sr)-Total (mg/L)	0.772				
	Thallium (Tl)-Total (mg/L)	0.000038				
	Tin (Sn)-Total (mg/L)	<0.00010				
	Titanium (Ti)-Total (mg/L)	<0.010				
	Uranium (U)-Total (mg/L)	0.000506				
	Vanadium (V)-Total (mg/L)	<0.0010				
	Zinc (Zn)-Total (mg/L)	<0.0030				
Aggregate Organics	Oil and Grease (mg/L)	<5.0				
Volatile Organic Compounds	Benzene (mg/L)	<0.00050				
	Ethylbenzene (mg/L)	<0.00050				
	Styrene (mg/L)	<0.00050				
	Toluene (mg/L)	<0.00050				
	ortho-Xylene (mg/L)	<0.00050				
	meta- & para-Xylene (mg/L)	<0.00050				
	Xylenes (mg/L)	<0.00075				
	Surrogate: 4-Bromofluorobenzene (SS) (%)	103				
	Surrogate: 1,4-Difluorobenzene (SS) (%)	100				
Hydrocarbons	TVH (C5-C10) (mg/L)	<0.10				
	TEH10-30 (mg/L)	<0.15				
	TPH5-30 (mg/L)	<0.25				
Glycols	Diethylene Glycol (mg/L)	<5.0				
	Ethylene Glycol (mg/L)	<5.0				
	1,2-Propylene Glycol (mg/L)	<5.0				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit Adjusted For required dilution
DLM	Detection Limit Adjusted For Sample Matrix Effects
LCS-ND	Lab Control Sample recovery was slightly outside ALS DQO. Reported non-detect results for associated samples were unaffected.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	APHA 310.2
This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.			
ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.
This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".			
ANIONS-N+N-CALC-VA	Water	Nitrite & Nitrate in Water (Calculation)	EPA 300.0
Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).			
ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0
This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.			
ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0
This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.			
ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.
This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".			
AS-T-CCMS-VA	Water	Total Arsenic in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A
This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).			
CARBONS-TC-VA	Water	Total carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".			
CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".			
EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.
This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.			
EPH-LL-SF-FID-VA	Water	EPH in Waters by GCFID	BCMOE EPH GCFID
This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999). The procedure involves extraction of the entire water sample with dichloromethane. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).			
GLY-WAT-FID-VA	Water	Glycols in Water by GCFID	SW-846, METHOD 8015B, EPA
This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8015B, published by the United States Environmental Protection Agency (EPA). The procedure involves treatment of the sample with a strong base (NaOH) and benzoyl chloride to form the corresponding benzoate esters. The benzoate esters are then extracted with iso-octane and the extract is analyzed by capillary column gas chromatography with flame ionization detection (FID).			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A
This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method			

Reference Information

6020A).

MET-TOT-ICP-VA	Water	Total Metals in Water by ICPOES	EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

OGG-SF-VA	Water	Oil & Grease by Gravimetric	BCMOE (2010), EPA1664A

The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.

P-T-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SE-T-CCMS-VA	Water	Total Selenium in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

TDS-VA	Water	Total Dissolved Solids by Gravimetric	APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TVH-HSFID-VA	Water	TVH by headspace GCFID	EPA 8260B, BCMELP CSR METHOD

This procedure involves the headspace extraction of the sample prior to analysis for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID). The VH analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999).

VOC7-HSMS-VA	Water	BTEX/MTBE/Styrene by Headspace GCMS	EPA8260B, 5021

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

VOC7/VOC-SURR-MS-VA	Water	VOC7 and/or VOC Surrogates for Waters	EPA8260B, 5021

Reference Information

XYLENES-CALC-VA	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero. The DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

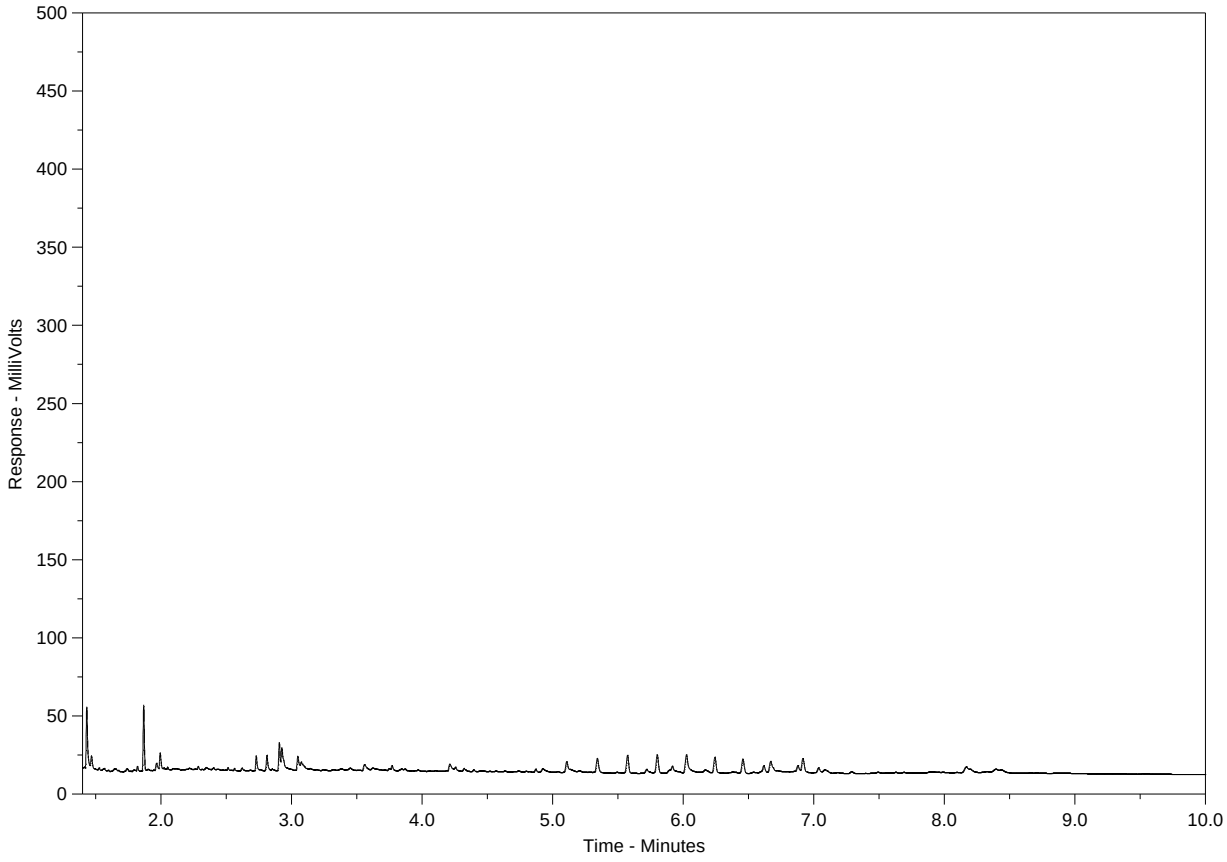
GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Hydrocarbon Distribution Report

ALS Sample ID: L1042744-L-1
Client Sample ID: 1616-30_DISCHARGE



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

8081 Lougheed Highway • Suite 100 • Burnaby,
Tel: 604-253-4188 Toll Free: 1-800-665-0243 FAX: 604-253-6700
ALS Contact: Can Dang

Form - 68573

BHP Billiton Diamonds Inc.
1102 4920 52nd Street, Yellowknife, NT X1A 3T1
Tel: 867-880-2157 Fax: 867-880-4012
BHP Contacts: David Bruce/ Richard EhlertDavid

SO: 386246

CHAIN OF CUSTODY FORM

L1042744

For Lab Use

Station ID	Matrix	Date	Time	Init	As, Se By CCMS	BTEX+TVH	Glycols	Oil and Grease	SNP-0013 Major Ions	SNP-0013 Nutrients	SNP-0013 Physical Parameters	SNP-0013 Total Metals	TDS	Total Ammonia	Total Organic Carbon	TPH	TSS					
1616-30_Discharge	Water	02-Aug-2011	12:00 PM	JH	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP2				

Short Holding Time

Rush Processing

L1042744-COFC

FOR LAB USE ONLY

Turn around Required: 2 day rush nitrate

Special Instructions (Billing details, QC reporting, etc):

Billing Code: BHP2001

Relinquished by:	Date / Time	Received by:	Date / Time
		Walker	Aug 10 2011 12:40
Relinquished by:	Date / Time	Received by:	Date / Time

FOR LAB USE ONLY

Cooler seal intact upon receipt? ☐ Yes ☐ No ☐ N/A

Sample tempurature upon receipt: 14.5 C.

Frozen? ☐ Yes ☐ No

Send Analytical Results to:

compliance.team@bhpbilliton.com;

BHP BILLITON CANADA INC..
ATTN: David G. Bruce / Richard Ehlert David
1102 - 4920 52nd Street
Yellowknife NT X1A 3T1

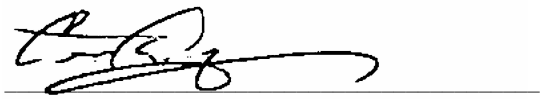
Date Received: 10-AUG-11
Report Date: 01-SEP-11 15:27 (MT)
Version: FINAL

Client Phone: 867-880-2157

Certificate of Analysis

Lab Work Order #: L1042889

Project P.O. #: BHP2001
Job Reference: 68589
C of C Numbers:
Legal Site Desc: 6200801716



Can Dang
Senior Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1042889-1	L1042889-2	L1042889-3	L1042889-4	
	Description	WATER	WATER	WATER	WATER	
	Sampled Date	08-AUG-11	08-AUG-11	08-AUG-11	08-AUG-11	
	Sampled Time	10:35	10:43	10:43	10:43	
	Client ID	1616-30_DISCHARGE	1616-121	1616-494	1616-302	
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	846	<2.0	<2.0	841	
	Hardness (as CaCO3) (mg/L)	159	<0.50	<0.50	157	
	pH (pH)	7.71	5.65	5.71	7.88	
	Total Suspended Solids (mg/L)	<3.0	<3.0	<3.0	3.1	
	Total Dissolved Solids (mg/L)	518	<10	<10	508	
	Turbidity (NTU)	0.66	<0.10	<0.10	0.64	
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	41.9	<2.0	<2.0	42.7	
	Ammonia (as N) (mg/L)	0.0055	0.0117	0.0087	0.0200	
	Chloride (Cl) (mg/L)	149	<0.50	<0.50	150	
	Nitrate and Nitrite (as N) (mg/L)	4.08	<0.0051	<0.0051	4.11	
	Nitrate (as N) (mg/L)	4.04	<0.0050	<0.0050	4.08	
	Nitrite (as N) (mg/L)	0.032	<0.0010	<0.0010	0.026	
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Phosphorus (P)-Total (mg/L)	0.0059	<0.0020	<0.0020	0.0057	
	Sulfate (SO4) (mg/L)	122	<0.50	<0.50	122	
Organic / Inorganic Carbon	Total Carbon (mg/L)	12.6	<0.50	<0.50	12.6	
	Total Organic Carbon (mg/L)	4.97	0.88	<0.50	4.75	
Total Metals	Aluminum (Al)-Total (mg/L)	0.0196	<0.0030	<0.0030	0.0216	
	Antimony (Sb)-Total (mg/L)	0.00135	<0.00010	<0.00010	0.00132	
	Arsenic (As)-Total (mg/L)	0.00062	<0.00010	<0.00010	0.00062	
	Barium (Ba)-Total (mg/L)	0.0809	<0.000050	<0.000050	0.0801	
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Boron (B)-Total (mg/L)	0.031	<0.010	<0.010	0.029	
	Cadmium (Cd)-Total (mg/L)	<0.000030 DLM	<0.000010	<0.000010	<0.000030 DLM	
	Calcium (Ca)-Total (mg/L)	36.3	<0.050	<0.050	36.0	
	Chromium (Cr)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Copper (Cu)-Total (mg/L)	0.00146	<0.00050	<0.00050	0.00135	
	Iron (Fe)-Total (mg/L)	<0.030	<0.030	<0.030	<0.030	
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Total (mg/L)	0.00610	<0.00050	<0.00050	0.00575	
	Magnesium (Mg)-Total (mg/L)	16.6	<0.10	<0.10	16.4	
	Manganese (Mn)-Total (mg/L)	0.00457	<0.000050	<0.000050	0.00383	
	Molybdenum (Mo)-Total (mg/L)	0.0870	<0.000050	<0.000050	0.0850	
	Nickel (Ni)-Total (mg/L)	0.00480	<0.00050	<0.00050	0.00476	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1042889-1	L1042889-2	L1042889-3	L1042889-4	
	Description	WATER	WATER	WATER	WATER	
	Sampled Date	08-AUG-11	08-AUG-11	08-AUG-11	08-AUG-11	
	Sampled Time	10:35	10:43	10:43	10:43	
	Client ID	1616-30_DISCHARGE	1616-121	1616-494	1616-302	
Grouping	**Analyte**					
WATER						
Total Metals	Phosphorus (P)-Total (mg/L)	<0.30	<0.30	<0.30	<0.30	
	Potassium (K)-Total (mg/L)	29.5	<2.0	<2.0	28.7	
	Selenium (Se)-Total (mg/L)	0.00023	<0.00010	<0.00010	0.00024	
	Silicon (Si)-Total (mg/L)	0.293	<0.050	<0.050	0.279	
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Total (mg/L)	95.2	<2.0	<2.0	93.0	
	Strontium (Sr)-Total (mg/L)	0.770	<0.00010	<0.00010	0.753	
	Thallium (Tl)-Total (mg/L)	0.000038	<0.000010	<0.000010	0.000037	
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	
	Uranium (U)-Total (mg/L)	0.000536	<0.000010	<0.000010	0.000528	
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	
Aggregate Organics	Oil and Grease (mg/L)	<5.0	<5.0	<5.0	<5.0	
Volatile Organic Compounds	Benzene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Ethylbenzene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Styrene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Toluene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	ortho-Xylene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	meta- & para-Xylene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Xylenes (mg/L)	<0.00075	<0.00075	<0.00075	<0.00075	
	Surrogate: 4-Bromofluorobenzene (SS) (%)	101	109	102	107	
	Surrogate: 1,4-Difluorobenzene (SS) (%)	101	101	100	101	
Hydrocarbons	TVH (C5-C10) (mg/L)	<0.10	<0.10	<0.10	<0.10	
	TEH10-30 (mg/L)	<0.15	<0.15	<0.15	<0.15	
	TPH5-30 (mg/L)	<0.25	<0.25	<0.25	<0.25	
Glycols	Diethylene Glycol (mg/L)	<5.0	<5.0	<5.0	<5.0	
	Ethylene Glycol (mg/L)	<5.0	<5.0	<5.0	<5.0	
	1,2-Propylene Glycol (mg/L)	<5.0	<5.0	<5.0	<5.0	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Cadmium (Cd)-Total	DLM	L1042889-1, -4
Laboratory Control Sample	1,2-Propylene Glycol	LCS-ND	L1042889-1, -2, -3, -4
Laboratory Control Sample	Diethylene Glycol	LCS-ND	L1042889-1, -2, -3, -4
Laboratory Control Sample	Ethylene Glycol	LCS-ND	L1042889-1, -2, -3, -4
Matrix Spike	Nitrate (as N)	MS-B	L1042889-1, -2, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects
LCS-ND	Lab Control Sample recovery was slightly outside ALS DQO. Reported non-detect results for associated samples were unaffected.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	APHA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-N+N-CALC-VA	Water	Nitrite & Nitrate in Water (Calculation)	EPA 300.0

Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

AS-T-CCMS-VA	Water	Total Arsenic in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

CARBONS-TC-VA	Water	Total carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

EPH-LL-SF-FID-VA	Water	EPH in Waters by GCFID	BCMOE EPH GCFID

This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999). The procedure involves extraction of the entire water sample with dichloromethane. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

GLY-WAT-FID-VA	Water	Glycols in Water by GCFID	SW-846, METHOD 8015B, EPA

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8015B, published by the United States Environmental Protection Agency (EPA). The procedure involves treatment of the sample with a strong base (NaOH) and benzoyl chloride to form the corresponding benzoate esters. The benzoate esters are then extracted with iso-octane and the extract is analyzed by capillary column gas chromatography with flame ionization detection (FID).

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

MET-TOT-ICP-VA Water Total Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

OGG-SF-VA Water Oil & Grease by Gravimetric BCMOE (2010), EPA1664A

The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.

P-T-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SE-T-CCMS-VA Water Total Selenium in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

TDS-VA Water Total Dissolved Solids by Gravimetric APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TOC-TX Water Total Organic Carbon in Water EPA 415.1 TOTAL ORGANIC CARBON (TOC)

This analyis is carried out following EPA Method 415.1 - Total Organic Carbon in Water. Organic carbon in a sample is converted to carbon dioxide (CO2) by catalytic combustion or wet chemical oxidation. The CO2 formed can be measured directly by an infrared detector or converted to methane (CH4) and measured by a flame ionization detector.

TSS-VA Water Total Suspended Solids by Gravimetric APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

Reference Information

TVH-HSFID-VA	Water	TVH by headspace GCFID	EPA 8260B, BCMELP CSR METHOD

This procedure involves the headspace extraction of the sample prior to analysis for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID). The VH analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999).

VOC7-HSMS-VA	Water	BTEX/MTBE/Styrene by Headspace GCMS	EPA8260B, 5021

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

VOC7/VOC-SURR-MS-VA	Water	VOC7 and/or VOC Surrogates for Waters	EPA8260B, 5021
XYLENES-CALC-VA	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero. The DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA
TX	ALS ENVIRONMENTAL - HOUSTON, TEXAS, USA

Chain of Custody Numbers:

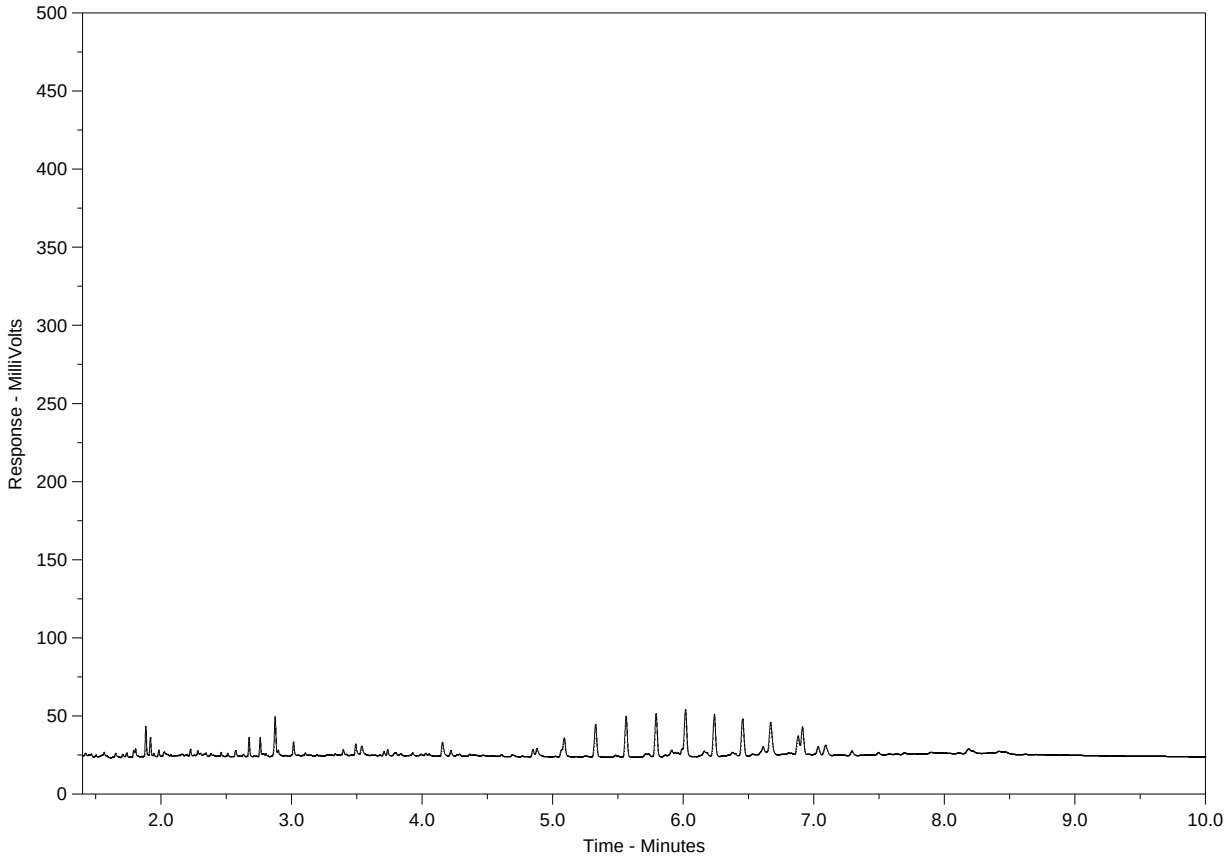
GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Hydrocarbon Distribution Report

ALS Sample ID: L1042889-L-1
Client Sample ID: 1616-30_DISCHARGE



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

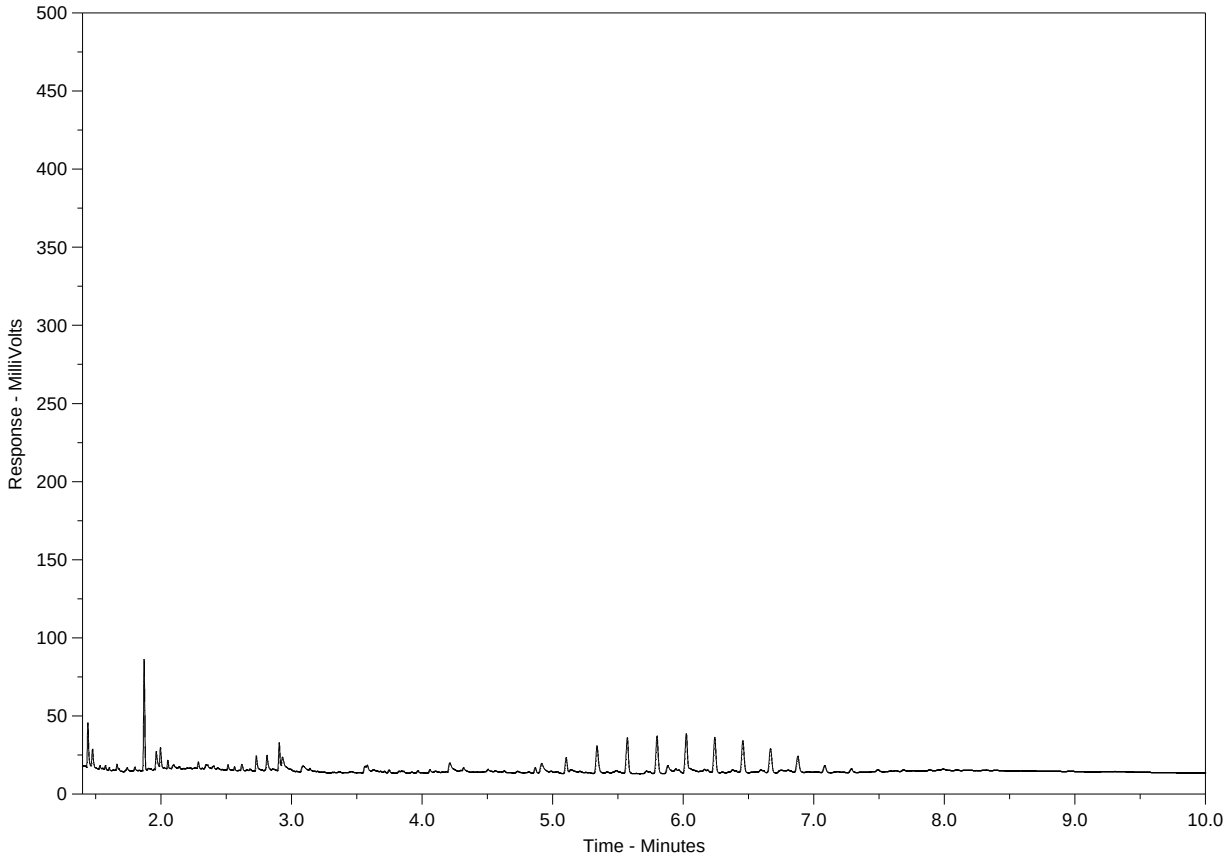
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Hydrocarbon Distribution Report

ALS Sample ID: L1042889-L-2
Client Sample ID: 1616-121



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

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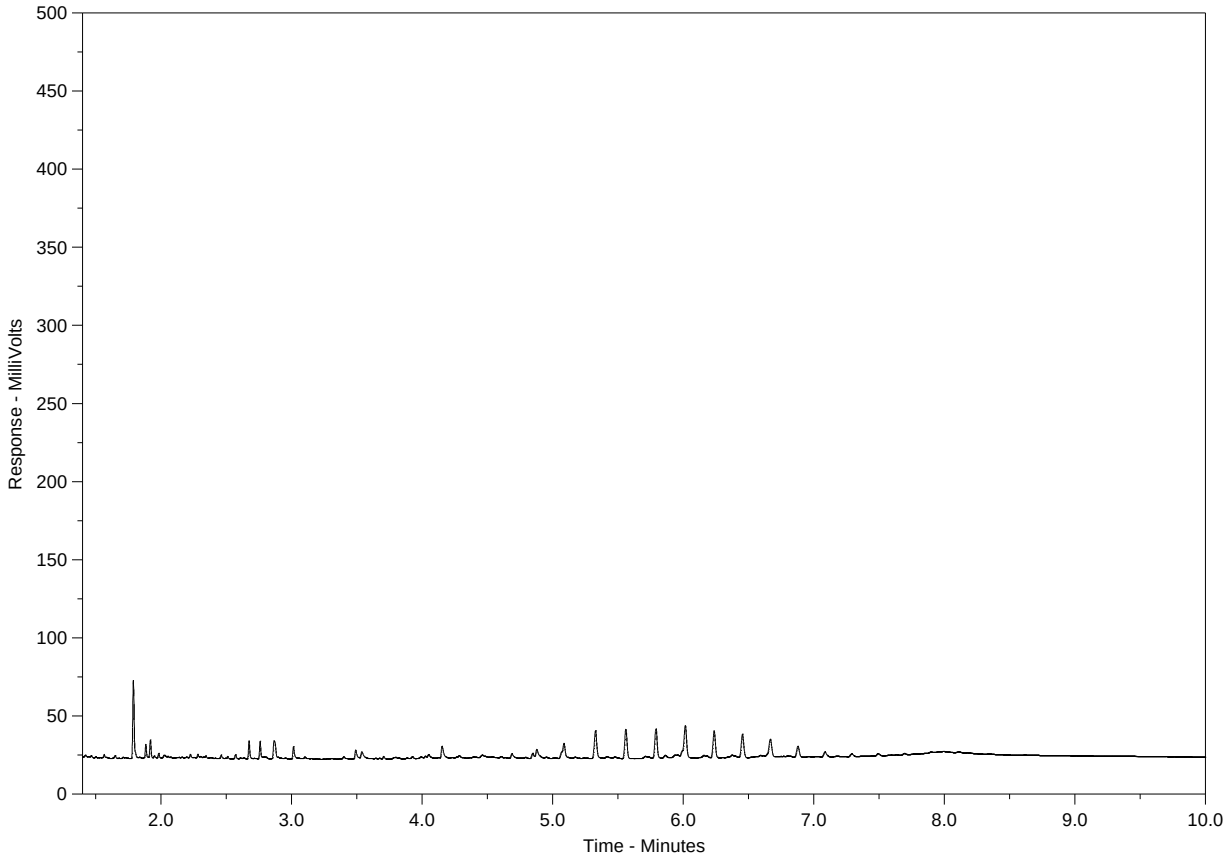
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Hydrocarbon Distribution Report

ALS Sample ID: L1042889-L-3
Client Sample ID: 1616-494



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

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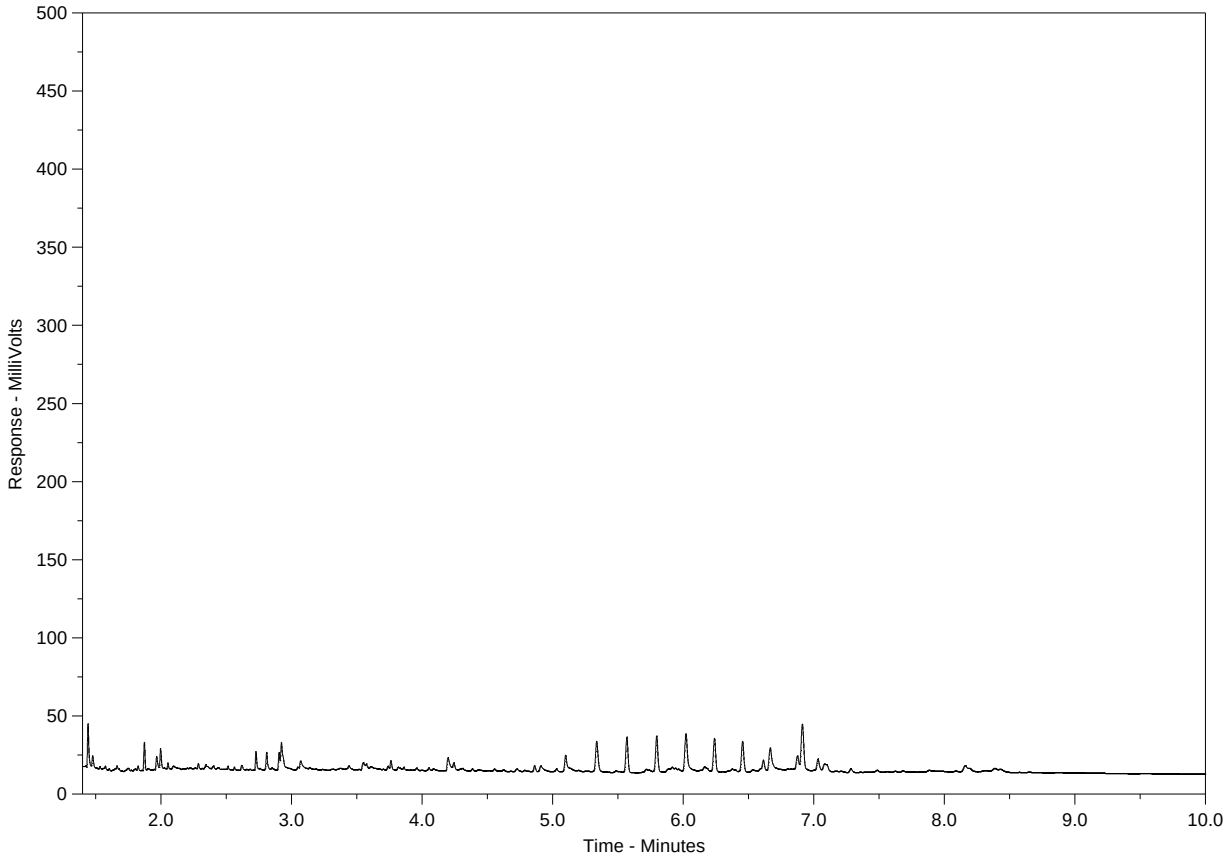
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Hydrocarbon Distribution Report

ALS Sample ID: L1042889-L-4
Client Sample ID: 1616-302



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

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The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

8081 Lougheed Highway • Suite 100 • Burnaby,
Tel: 604-253-4188 Toll Free: 1-800-665-0243 FAX: 604-253-6700
ALS Contact: Can Dang

SO#38253

Form 68589

BHP Billiton Diamonds Inc.
1102 4920 52nd Street, Yellowknife, NT X1A 3T1
Tel: 867-880-2157 Fax: 867-880-4012
BHP Contacts: David Bruce/ Richard EhlertDavid

CHAIN OF CUSTODY FORM

L1042889.

For Lab Use

FOR LAB USE ONLY

Station ID	Matrix	Date	Time	Init	As, Se By CCMS	BTEX+TVH	Glycols	Oil and Grease	SNP-0013 Major Ions	SNP-0013 Nutrients	SNP-0013 Physical Parameters	SNP-0013 Total Metals	TDS	Total Ammonia	Total Organic Carbon	TPH	TSS							
1616-30_Discharge	Water	08-Aug-2011	10:35 AM	SS	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP2						
1616-121	Water	08-Aug-2011	10:43 AM	SS	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP2						
1616-494	Water	08-Aug-2011	10:43 AM	SS	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP2						
1616-302	Water	08-Aug-2011	10:43 AM	SS	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP2						

Short Holding Time
Rush Processing

Turn around Required: Please rush all parameters 1 week TAT

Special Instructions (Billing details, QC reporting, etc):

Billing Code: BHP2001

Relinquished by:	Date / Time	Received by:	Date / Time
			Aug 10, 2011 12:15
Relinquished by:	Date / Time	Received by:	Date / Time

FOR LAB USE ONLY

Cooler seal intact upon receipt? ☐ Yes ☐ No ☐ N/A

Sample tempurature upon receipt: 11.9 C.

Frozen? ☐ Yes ☐ No

Send Analytical Results to:

compliance.team@bhpbilliton.com;

BHP BILLITON CANADA INC..
ATTN: David G. Bruce / Richard Ehlert David
1102 - 4920 52nd Street
Yellowknife NT X1A 3T1

Date Received: 17-AUG-11
Report Date: 03-OCT-11 16:41 (MT)
Version: FINAL REV. 2

Client Phone: 867-880-2157

Certificate of Analysis

Lab Work Order #: L1045930

Project P.O. #: BHP2001
Job Reference: 68600
C of C Numbers:
Legal Site Desc: 6200801716

Comments: ADDITIONAL 03-OCT-11 12:31

03-OCT-11:
Revision 2: This revision include additional Hardness. Hardness was calculated from the original metals analysis.

Can Dang
Senior Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1045930-1				
	Description	WATER				
	Sampled Date	14-AUG-11				
	Sampled Time	11:50				
	Client ID	1616-30_DISCHARGE				
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	862				
	Hardness (as CaCO3) (mg/L)	161				
	pH (pH)	7.96				
	Total Suspended Solids (mg/L)	<3.0				
	Total Dissolved Solids (mg/L)	519				
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	43.5				
	Ammonia (as N) (mg/L)	0.0116				
	Chloride (Cl) (mg/L)	150				
	Nitrate and Nitrite (as N) (mg/L)	4.12				
	Nitrate (as N) (mg/L)	4.10				
	Nitrite (as N) (mg/L)	0.018				
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010				
	Phosphorus (P)-Total (mg/L)	0.0054				
	Sulfate (SO4) (mg/L)	123				
Organic / Inorganic Carbon	Total Carbon (mg/L)	11.7				
	Total Organic Carbon (mg/L)	5.56				
Total Metals	Aluminum (Al)-Total (mg/L)	0.0217				
	Antimony (Sb)-Total (mg/L)	0.00134				
	Arsenic (As)-Total (mg/L)	0.00061				
	Barium (Ba)-Total (mg/L)	0.0805				
	Beryllium (Be)-Total (mg/L)	<0.00010				
	Bismuth (Bi)-Total (mg/L)	<0.00050				
	Boron (B)-Total (mg/L)	0.029				
	Cadmium (Cd)-Total (mg/L)	<0.000040 DLM				
	Calcium (Ca)-Total (mg/L)	37.4				
	Chromium (Cr)-Total (mg/L)	<0.00050				
	Cobalt (Co)-Total (mg/L)	<0.00010				
	Copper (Cu)-Total (mg/L)	0.00130				
	Iron (Fe)-Total (mg/L)	<0.030				
	Lead (Pb)-Total (mg/L)	<0.000050				
	Lithium (Li)-Total (mg/L)	0.00567				
	Magnesium (Mg)-Total (mg/L)	16.4				
	Manganese (Mn)-Total (mg/L)	0.00493				
	Molybdenum (Mo)-Total (mg/L)	0.0881				
	Nickel (Ni)-Total (mg/L)	0.00470				
	Phosphorus (P)-Total (mg/L)	<0.30				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1045930-1				
	Description	WATER				
	Sampled Date	14-AUG-11				
	Sampled Time	11:50				
	Client ID	1616-30_DISCHARGE				
Grouping	**Analyte**					
WATER						
Total Metals	Potassium (K)-Total (mg/L)	29.6				
	Selenium (Se)-Total (mg/L)	0.00028				
	Silicon (Si)-Total (mg/L)	0.272				
	Silver (Ag)-Total (mg/L)	<0.000010				
	Sodium (Na)-Total (mg/L)	95.5				
	Strontium (Sr)-Total (mg/L)	0.748				
	Thallium (Tl)-Total (mg/L)	0.000041				
	Tin (Sn)-Total (mg/L)	<0.00010				
	Titanium (Ti)-Total (mg/L)	<0.010				
	Uranium (U)-Total (mg/L)	0.000540				
	Vanadium (V)-Total (mg/L)	<0.0010				
	Zinc (Zn)-Total (mg/L)	<0.0030				
Aggregate Organics	Oil and Grease (mg/L)	<5.0				
Volatile Organic Compounds	Benzene (mg/L)	<0.00050				
	Ethylbenzene (mg/L)	<0.00050				
	Styrene (mg/L)	<0.00050				
	Toluene (mg/L)	<0.00050				
	ortho-Xylene (mg/L)	<0.00050				
	meta- & para-Xylene (mg/L)	<0.00050				
	Xylenes (mg/L)	<0.00075				
	Surrogate: 4-Bromofluorobenzene (SS) (%)	101				
	Surrogate: 1,4-Difluorobenzene (SS) (%)	101				
Hydrocarbons	TVH (C5-C10) (mg/L)	<0.10				
	TEH10-30 (mg/L)	<0.15				
	TPH5-30 (mg/L)	<0.25				
Glycols	Diethylene Glycol (mg/L)	<5.0				
	Ethylene Glycol (mg/L)	<5.0				
	1,2-Propylene Glycol (mg/L)	<5.0				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Cadmium (Cd)-Total	DLM	L1045930-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	APHA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

ANIONS-CL-IC-VA Water Chloride by Ion Chromatography APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-N+N-CALC-VA Water Nitrite & Nitrate in Water (Calculation) EPA 300.0

Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

ANIONS-NO2-IC-VA Water Nitrite in Water by Ion Chromatography EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA Water Nitrate in Water by Ion Chromatography EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA Water Sulfate by Ion Chromatography APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

AS-T-CCMS-VA Water Total Arsenic in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

CARBONS-TC-VA Water Total carbon by combustion APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CARBONS-TOC-VA Water Total organic carbon by combustion APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

EPH-LL-SF-FID-VA Water EPH in Waters by GCFID BCMOE EPH GCFID

This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999). The procedure involves extraction of the entire water sample with dichloromethane. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

GLY-WAT-FID-VA Water Glycols in Water by GCFID SW-846, METHOD 8015B, EPA

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8015B, published by the United States Environmental Protection Agency (EPA). The procedure involves treatment of the sample with a strong base (NaOH) and benzoyl chloride to form the corresponding benzoate esters. The benzoate esters are then extracted with iso-octane and the extract is analyzed by capillary column gas chromatography with flame ionization detection (FID).

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United

Reference Information

States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

MET-TOT-ICP-VA Water Total Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

OGG-SF-VA Water Oil & Grease by Gravimetric BCMOE (2010), EPA1664A

The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.

P-T-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SE-T-CCMS-VA Water Total Selenium in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

TDS-VA Water Total Dissolved Solids by Gravimetric APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-VA Water Total Suspended Solids by Gravimetric APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TVH-HSFID-VA Water TVH by headspace GCFID EPA 8260B, BCMELP CSR METHOD

This procedure involves the headspace extraction of the sample prior to analysis for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID). The VH analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999).

VOC7-HSMS-VA Water BTEX/MTBE/Styrene by Headspace GCMS EPA8260B, 5021

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

VOC7/VOC-SURR-MS-VA Water VOC7 and/or VOC Surrogates for Waters EPA8260B, 5021

XYLENES-CALC-VA Water Sum of Xylene Isomer Concentrations CALCULATION

Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero. The DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

Reference Information

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

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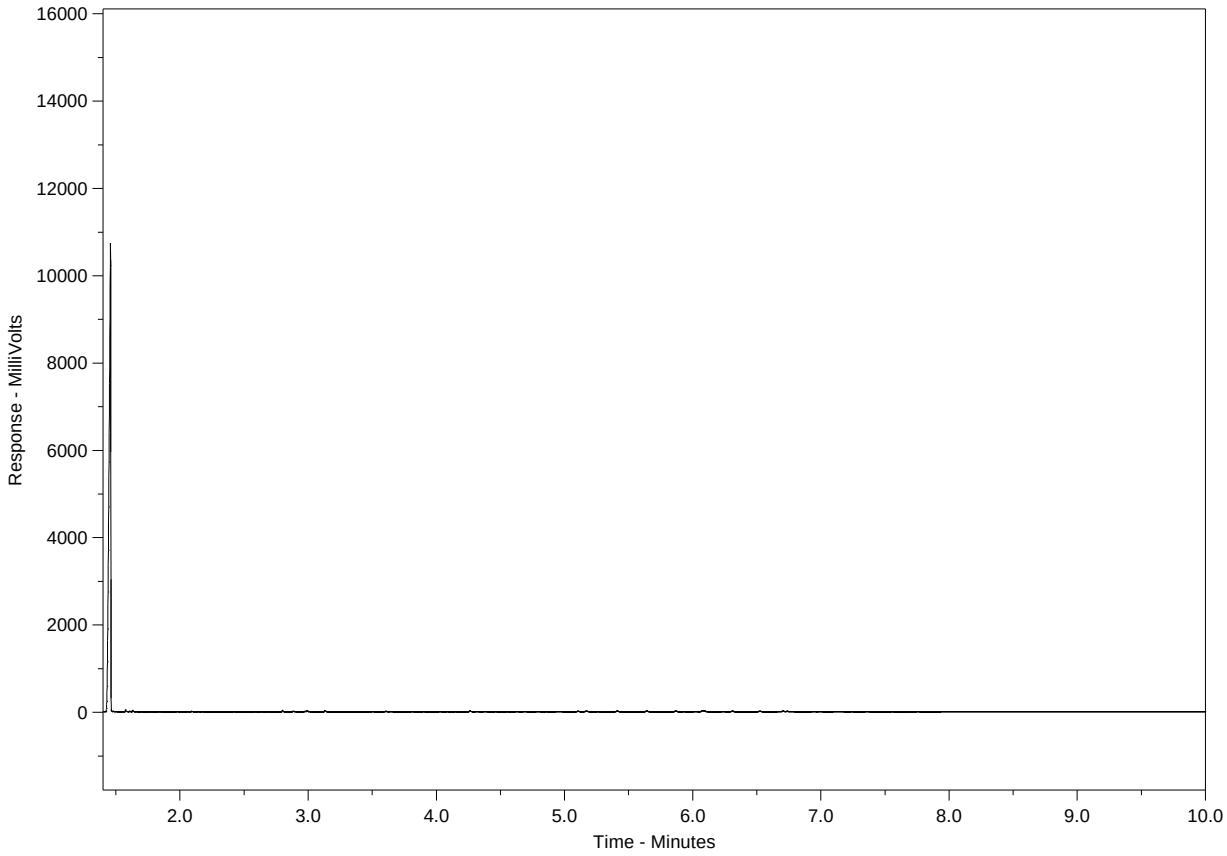
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Hydrocarbon Distribution Report

ALS Sample ID: L1045930-1
Client Sample ID: 1616-30_DISCHARGE



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F

Gasoline
Diesel / Jet Fuels
Motor Oils / Lube Oils / Grease

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Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

8081 Lougheed Highway • Suite 100 • Burnaby,
Tel: 604-253-4188 Toll Free: 1-800-665-0243 FAX: 604-253-6700
ALS Contact: Can Dang

Form 68600

BHP Billiton Diamonds Inc.
1102 4920 52nd Street, Yellowknife, NT X1A 3T1
Tel: 867-880-2157 Fax: 867-880-4012
BHP Contacts: David Bruce/ Richard EhlertDavid

CHAIN OF CUSTODY FORM

L1045930

For Lab Use

FOR LAB USE ONLY

Station ID	Matrix	Date	Time	Init	As, Se By CCMS	BTEX+TVH	Glycols	Oil and Grease	SNP-0013 Major Ions	SNP-0013 Nutrients	SNP-0013 Physical Parameters	SNP-0013 Total Metals	TDS	Total Ammonia	Total Organic Carbon	TPH	TSS							
1616-30_Discharge	Water	14-Aug-2011	11:50 AM	SS	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP20						

L1045930-COFC

Turn around Required: 1 week rush turnaround

Special Instructions (Billing details, QC reporting, etc):

Billing Code: BHP2001

Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by: JL	Date Aug 17/11 Time 10:50

FOR LAB USE ONLY

Cooler seal intact upon receipt? ☑ Yes ☐ No ☐ N/A

Sample tempurature upon receipt: 11 C.

Frozen? ☐ Yes ☑ No

Send Analytical Results to:

compliance.team@bhpbilliton.com;

BHP BILLITON CANADA INC..
ATTN: David G. Bruce / Richard Ehlert David
1102 - 4920 52nd Street
Yellowknife NT X1A 3T1

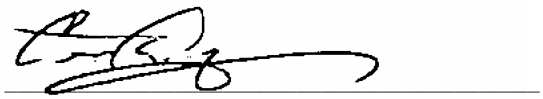
Date Received: 29-AUG-11
Report Date: 09-SEP-11 16:25 (MT)
Version: FINAL

Client Phone: 867-880-2157

Certificate of Analysis

Lab Work Order #: L1051136

Project P.O. #:	BHP2001
Job Reference:	68626
C of C Numbers:	68626
Legal Site Desc:	6200801716



Can Dang
Senior Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1051136-1				
	Description	WATER				
	Sampled Date	24-AUG-11				
	Sampled Time	16:45				
	Client ID	1616-30_DISCHARGE				
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	848				
	Hardness (as CaCO3) (mg/L)	144				
	pH (pH)	7.95				
	Total Suspended Solids (mg/L)	<3.0				
	Total Dissolved Solids (mg/L)	509				
	Turbidity (NTU)	1.14				
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	43.1				
	Ammonia (as N) (mg/L)	0.0162				
	Chloride (Cl) (mg/L)	140				
	Nitrate and Nitrite (as N) (mg/L)	3.67				
	Nitrate (as N) (mg/L)	3.67				
	Nitrite (as N) (mg/L)	<0.010				
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010				
	Phosphorus (P)-Total (mg/L)	0.0049				
	Sulfate (SO4) (mg/L)	122				
Organic / Inorganic Carbon	Total Carbon (mg/L)	13.0				
	Total Organic Carbon (mg/L)	5.20				
Total Metals	Aluminum (Al)-Total (mg/L)	0.0449				
	Antimony (Sb)-Total (mg/L)	0.00119				
	Arsenic (As)-Total (mg/L)	0.00057				
	Barium (Ba)-Total (mg/L)	0.0746				
	Beryllium (Be)-Total (mg/L)	<0.00010				
	Bismuth (Bi)-Total (mg/L)	<0.00050				
	Boron (B)-Total (mg/L)	0.026				
	Cadmium (Cd)-Total (mg/L)	<0.000040 DLM				
	Calcium (Ca)-Total (mg/L)	33.1				
	Chromium (Cr)-Total (mg/L)	<0.00050				
	Cobalt (Co)-Total (mg/L)	<0.00010				
	Copper (Cu)-Total (mg/L)	0.00131				
	Iron (Fe)-Total (mg/L)	0.035				
	Lead (Pb)-Total (mg/L)	<0.000050				
	Lithium (Li)-Total (mg/L)	0.00561				
	Magnesium (Mg)-Total (mg/L)	15.0				
	Manganese (Mn)-Total (mg/L)	0.00493				
	Molybdenum (Mo)-Total (mg/L)	0.0807				
	Nickel (Ni)-Total (mg/L)	0.00437				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1051136-1				
	Description	WATER				
	Sampled Date	24-AUG-11				
	Sampled Time	16:45				
	Client ID	1616-30_DISCHARGE				
Grouping	**Analyte**					
WATER						
Total Metals	Potassium (K)-Total (mg/L)	25.9				
	Selenium (Se)-Total (mg/L)	0.00021				
	Silicon (Si)-Total (mg/L)	0.278				
	Silver (Ag)-Total (mg/L)	<0.000010				
	Sodium (Na)-Total (mg/L)	84.6				
	Strontium (Sr)-Total (mg/L)	0.695				
	Thallium (Tl)-Total (mg/L)	0.000037				
	Tin (Sn)-Total (mg/L)	<0.00010				
	Titanium (Ti)-Total (mg/L)	<0.010				
	Uranium (U)-Total (mg/L)	0.000528				
	Vanadium (V)-Total (mg/L)	<0.0010				
	Zinc (Zn)-Total (mg/L)	<0.0030				
Aggregate Organics	Oil and Grease (mg/L)	<5.0				
Volatile Organic Compounds	Benzene (mg/L)	<0.00050				
	Ethylbenzene (mg/L)	<0.00050				
	Styrene (mg/L)	<0.00050				
	Toluene (mg/L)	<0.00050				
	ortho-Xylene (mg/L)	<0.00050				
	meta- & para-Xylene (mg/L)	<0.00050				
	Xylenes (mg/L)	<0.00075				
	Surrogate: 4-Bromofluorobenzene (SS) (%)	92				
	Surrogate: 1,4-Difluorobenzene (SS) (%)	100				
Hydrocarbons	TVH (C5-C10) (mg/L)	<0.10				
	TEH10-30 (mg/L)	<0.15				
	TPH5-30 (mg/L)	<0.25				
Glycols	Diethylene Glycol (mg/L)	<5.0				
	Ethylene Glycol (mg/L)	<5.0				
	1,2-Propylene Glycol (mg/L)	<5.0				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	APHA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-N+N-CALC-VA	Water	Nitrite & Nitrate in Water (Calculation)	EPA 300.0

Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

AS-T-CCMS-VA	Water	Total Arsenic in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

CARBONS-TC-VA	Water	Total carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

EPH-LL-SF-FID-VA	Water	EPH in Waters by GCFID	BCMOE EPH GCFID

This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999). The procedure involves extraction of the entire water sample with dichloromethane. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

GLY-WAT-FID-VA	Water	Glycols in Water by GCFID	SW-846, METHOD 8015B, EPA

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8015B, published by the United States Environmental Protection Agency (EPA). The procedure involves treatment of the sample with a strong base (NaOH) and benzoyl chloride to form the corresponding benzoate esters. The benzoate esters are then extracted with iso-octane and the extract is analyzed by capillary column gas chromatography with flame ionization detection (FID).

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

MET-TOT-ICP-VA	Water	Total Metals in Water by ICPOES	EPA SW-846 3005A/6010B

Reference Information

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

OGG-SF-VA	Water	Oil & Grease by Gravimetric	BCMOE (2010), EPA1664A

The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.

P-T-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SE-T-CCMS-VA	Water	Total Selenium in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

TDS-VA	Water	Total Dissolved Solids by Gravimetric	APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TVH-HSFID-VA	Water	TVH by headspace GCFID	EPA 8260B, BCMELP CSR METHOD

This procedure involves the headspace extraction of the sample prior to analysis for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID). The VH analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999).

VOC7-HSMS-VA	Water	BTEX/MTBE/Styrene by Headspace GCMS	EPA8260B, 5021

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

VOC7/VOC-SURR-MS-VA	Water	VOC7 and/or VOC Surrogates for Waters	EPA8260B, 5021
XYLENES-CALC-VA	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero.

Reference Information

The DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

68626

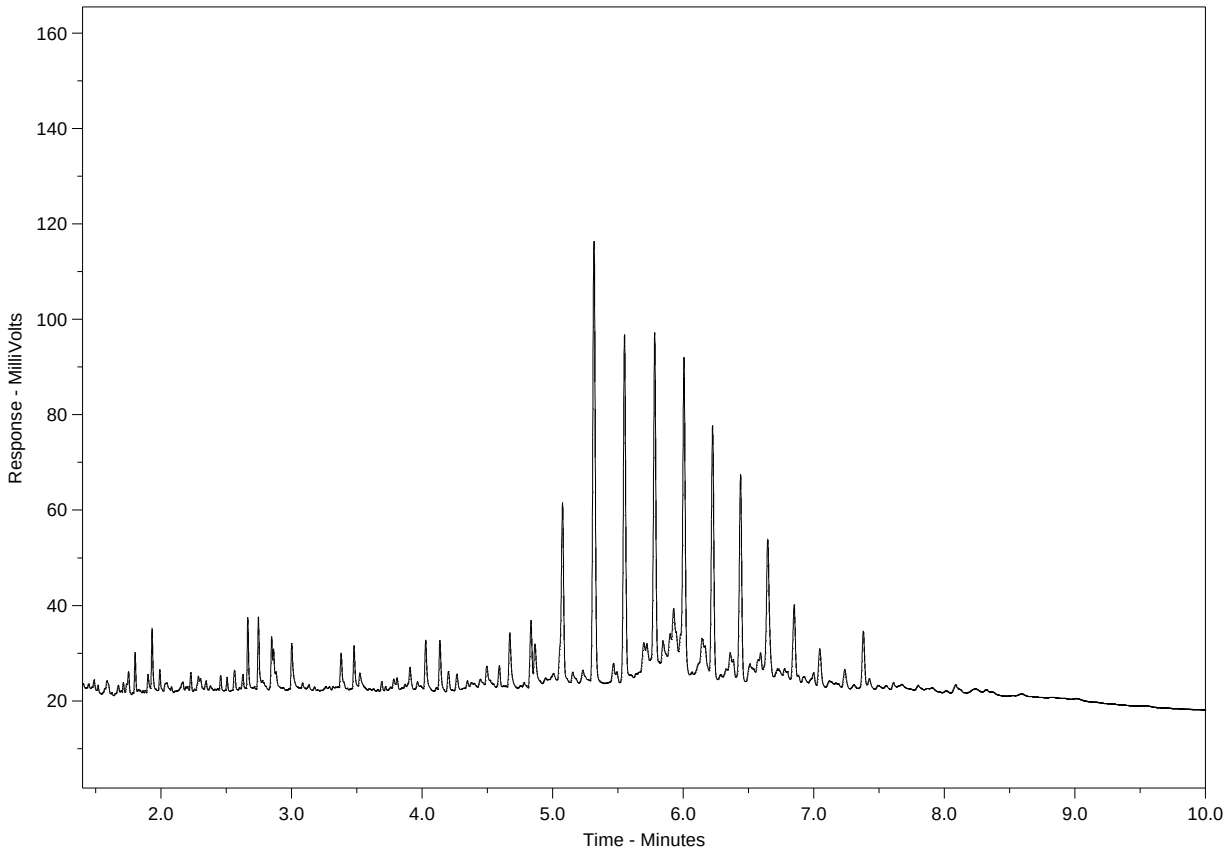
GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Hydrocarbon Distribution Report

ALS Sample ID: L1051136-1
Client Sample ID: 1616-30_DISCHARGE



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

S.O. 38271

4051136

Form 68626

bhpbilliton

8081 Lougheed Highway • Suite 100 • Burnaby,
Tel: 604-253-4188 Toll Free: 1-800-665-0243 FAX: 604-253-6700
ALS Contact: Can Dang

BHP Billiton Diamonds Inc.
1102 4920 52nd Street, Yellowknife, NT X1A 3T1
Tel: 867-880-2157 Fax: 867-880-4012
BHP Contacts: David Bruce/ Richard EhlertDavid

CHAIN OF CUSTODY FORM

For Lab Use

FOR LAB USE ONLY

Station ID	Matrix	Date	Time	Init	As, Se By CCMS	BTEX+TVH	Glycols	Oil and Grease	SNP-0013 Major Ions	SNP-0013 Nutrients	SNP-0013 Physical Parameters	SNP-0013 Total Metals	TDS	Total Ammonia	Total Organic Carbon	TPH	TSS							
1616-30_Discharge	Water	24-Aug-2011	04:45 PM	KN	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP2						

Turn around Required: Regular 2-week turnaround

Special Instructions (Billing details, QC reporting, etc):

Billing Code: BHP2001

Relinquished by:	Date	Received by:	Date
	Time		Time
Relinquished by:	Date	Received by:	Date Aug 29
	Time	RAN	Time 12:00

FOR LAB USE ONLY

Cooler seal intact upon receipt? ☐ Yes ☐ No ☐ N/A

Sample tempurature upon receipt: 17 C.

Frozen? ☐ Yes ☑ No

Send Analytical Results to:

compliance.team@bhpbilliton.com;

BHP BILLITON CANADA INC..
ATTN: David G. Bruce / Richard Ehlert David
1102 - 4920 52nd Street
Yellowknife NT X1A 3T1

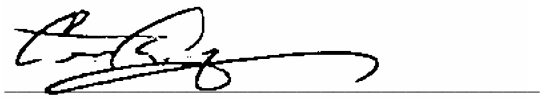
Date Received: 01-SEP-11
Report Date: 14-SEP-11 17:28 (MT)
Version: FINAL

Client Phone: 867-880-2157

Certificate of Analysis

Lab Work Order #: L1053212

Project P.O. #: BHP2001
Job Reference: 68635
C of C Numbers:
Legal Site Desc: 6200801716



Can Dang
Senior Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1053212-1				
	Description	WATER				
	Sampled Date	29-AUG-11				
	Sampled Time	18:25				
	Client ID	1616-30_DISCHARGE				
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	837				
	Hardness (as CaCO3) (mg/L)	156				
	pH (pH)	7.91				
	Total Suspended Solids (mg/L)	4.0				
	Total Dissolved Solids (mg/L)	497				
	Turbidity (NTU)	0.83				
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	44.6				
	Ammonia (as N) (mg/L)	0.0129				
	Chloride (Cl) (mg/L)	142				
	Nitrate and Nitrite (as N) (mg/L)	3.86				
	Nitrate (as N) (mg/L)	3.84				
	Nitrite (as N) (mg/L)	0.021				
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010				
	Phosphorus (P)-Total (mg/L)	0.0050				
	Sulfate (SO4) (mg/L)	122				
Organic / Inorganic Carbon	Total Carbon (mg/L)	13.4				
	Total Organic Carbon (mg/L)	4.70				
Total Metals	Aluminum (Al)-Total (mg/L)	0.0329				
	Antimony (Sb)-Total (mg/L)	0.00129				
	Arsenic (As)-Total (mg/L)	0.00056				
	Barium (Ba)-Total (mg/L)	0.0809				
	Beryllium (Be)-Total (mg/L)	<0.00010				
	Bismuth (Bi)-Total (mg/L)	<0.00050				
	Boron (B)-Total (mg/L)	0.027				
	Cadmium (Cd)-Total (mg/L)	<0.000040 DLM				
	Calcium (Ca)-Total (mg/L)	36.1				
	Chromium (Cr)-Total (mg/L)	<0.00050				
	Cobalt (Co)-Total (mg/L)	<0.00010				
	Copper (Cu)-Total (mg/L)	0.00132				
	Iron (Fe)-Total (mg/L)	<0.030				
	Lead (Pb)-Total (mg/L)	<0.000050				
	Lithium (Li)-Total (mg/L)	0.00562				
	Magnesium (Mg)-Total (mg/L)	16.0				
	Manganese (Mn)-Total (mg/L)	0.00484				
	Molybdenum (Mo)-Total (mg/L)	0.0887				
	Nickel (Ni)-Total (mg/L)	0.00447				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1053212-1
	Description	WATER
	Sampled Date	29-AUG-11
	Sampled Time	18:25
	Client ID	1616-30_DISCHARGE
Grouping	**Analyte**	
WATER		
Total Metals	Potassium (K)-Total (mg/L)	29.2
	Selenium (Se)-Total (mg/L)	0.00024
	Silicon (Si)-Total (mg/L)	0.179
	Silver (Ag)-Total (mg/L)	<0.000010
	Sodium (Na)-Total (mg/L)	96.7
	Strontium (Sr)-Total (mg/L)	0.739
	Thallium (Tl)-Total (mg/L)	0.000039
	Tin (Sn)-Total (mg/L)	<0.00010
	Titanium (Ti)-Total (mg/L)	<0.010
	Uranium (U)-Total (mg/L)	0.000548
	Vanadium (V)-Total (mg/L)	<0.0010
	Zinc (Zn)-Total (mg/L)	<0.0030
Aggregate Organics	Oil and Grease (mg/L)	<5.0
Volatile Organic Compounds	Benzene (mg/L)	<0.00050
	Ethylbenzene (mg/L)	<0.00050
	Styrene (mg/L)	<0.00050
	Toluene (mg/L)	<0.00050
	ortho-Xylene (mg/L)	<0.00050
	meta- & para-Xylene (mg/L)	<0.00050
	Xylenes (mg/L)	<0.00075
	Surrogate: 4-Bromofluorobenzene (SS) (%)	84
	Surrogate: 1,4-Difluorobenzene (SS) (%)	100
Hydrocarbons	TVH (C5-C10) (mg/L)	<0.10
	TEH10-30 (mg/L)	<0.15
	TPH5-30 (mg/L)	<0.25
Glycols	Diethylene Glycol (mg/L)	<5.0
	Ethylene Glycol (mg/L)	<5.0
	1,2-Propylene Glycol (mg/L)	<5.0

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	APHA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-N+N-CALC-VA	Water	Nitrite & Nitrate in Water (Calculation)	EPA 300.0

Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

AS-T-CCMS-VA	Water	Total Arsenic in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

CARBONS-TC-VA	Water	Total carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

EPH-LL-SF-FID-VA	Water	EPH in Waters by GCFID	BCMOE EPH GCFID

This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999). The procedure involves extraction of the entire water sample with dichloromethane. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

GLY-WAT-FID-VA	Water	Glycols in Water by GCFID	SW-846, METHOD 8015B, EPA

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8015B, published by the United States Environmental Protection Agency (EPA). The procedure involves treatment of the sample with a strong base (NaOH) and benzoyl chloride to form the corresponding benzoate esters. The benzoate esters are then extracted with iso-octane and the extract is analyzed by capillary column gas chromatography with flame ionization detection (FID).

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

MET-TOT-ICP-VA	Water	Total Metals in Water by ICPOES	EPA SW-846 3005A/6010B

Reference Information

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

OGG-SF-VA	Water	Oil & Grease by Gravimetric	BCMOE (2010), EPA1664A

The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.

P-T-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SE-T-CCMS-VA	Water	Total Selenium in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

TDS-VA	Water	Total Dissolved Solids by Gravimetric	APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TVH-HSFID-VA	Water	TVH by headspace GCFID	EPA 8260B, BCMELP CSR METHOD

This procedure involves the headspace extraction of the sample prior to analysis for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID). The VH analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999).

VOC7-HSMS-VA	Water	BTEX/MTBE/Styrene by Headspace GCMS	EPA8260B, 5021

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

VOC7/VOC-SURR-MS-VA	Water	VOC7 and/or VOC Surrogates for Waters	EPA8260B, 5021
XYLENES-CALC-VA	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero.

Reference Information

The DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

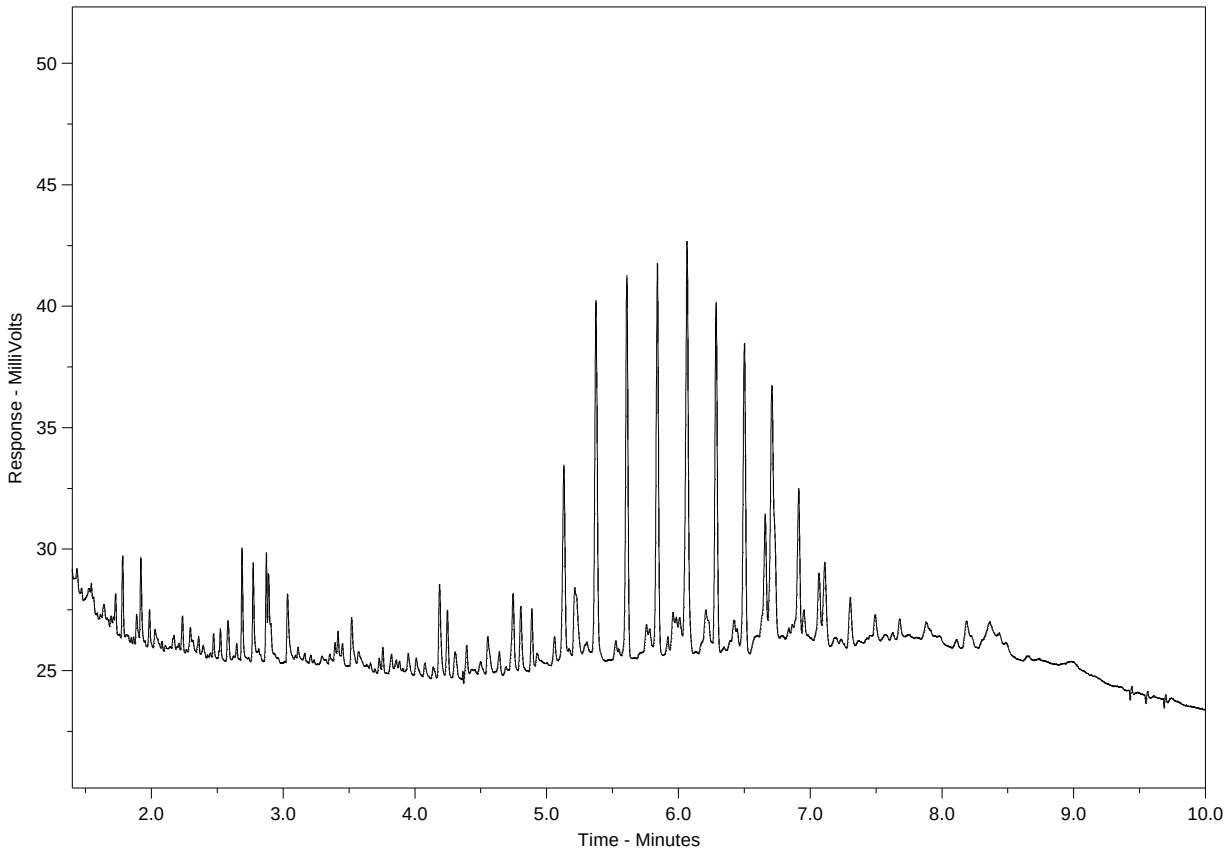
GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Hydrocarbon Distribution Report

ALS Sample ID: L1053212-L-1
Client Sample ID: 1616-30_DISCHARGE



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

SO38074

Form 68635

bhpbilliton

8081 Lougheed Highway • Suite 100 • Burnaby,
Tel: 604-253-4188 Toll Free: 1-800-665-0243 FAX: 604-253-6700
ALS Contact: Can Dang

BHP Billiton Diamonds Inc.
1102 4920 52nd Street, Yellowknife, NT X1A 3T1
Tel: 867-880-2157 Fax: 867-880-4012
BHP Contacts: David Bruce/ Richard EhlertDavid

CHAIN OF CUSTODY FORM

For Lab Use: L1053212

FOR LAB USE ONLY

Station ID	Matrix	Date	Time	Init	As, Se By CCMS	BTEX+TVH	Glycols	Oil and Grease	SNP-0013 Major Ions	SNP-0013 Nutrients	SNP-0013 Physical Parameters	SNP-0013 Total Metals	TDS	Total Ammonia	Total Organic Carbon	TPH	TSS	
1616-30_Discharge	Water	29-Aug-2011	06:25 PM	KN	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP2

L1053212-COFC

Turn around Required: 1 week rush turnaround

Special Instructions (Billing details, QC reporting, etc):

Billing Code: BHP2001

Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date: SEPT 1/2011 / Time

FOR LAB USE ONLY

Cooler seal intact upon receipt? ☑ Yes ☐ No ☐ N/A

Sample tempurature upon receipt: 6 °C.

Frozen? ☐ Yes ☑ No

Send Analytical Results to:

compliance.team@bhpbilliton.com;

BHP BILLITON CANADA INC..
ATTN: David G. Bruce / Richard Ehlert David
1102 - 4920 52nd Street
Yellowknife NT X1A 3T1

Date Received: 08-SEP-11
Report Date: 20-SEP-11 18:01 (MT)
Version: FINAL

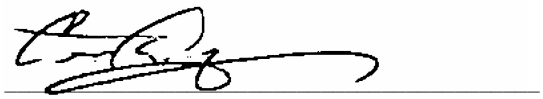
Client Phone: 867-880-2157

Certificate of Analysis

Lab Work Order #: L1055651

Project P.O. #:	BHP2001
Job Reference:	68651
C of C Numbers:	68651
Legal Site Desc:	6200801716

Comments: Please note the following conformances regarding the samples client identify as "1616-121" and "1616-494":
- The vials for Glycol analysis were not received;
- The bottles for Oil and Grease analysis were received;
- The chain of custody form requested Glycols analysis instead of Oil and grease analysis.
Oil and Grease analysis was performed on these sample instead of Glycols analysis as requested.



Can Dang
Senior Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1055651-1	L1055651-2	L1055651-3	L1055651-4	
	Description	WATER	WATER	WATER	WATER	
	Sampled Date	05-SEP-11	05-SEP-11	05-SEP-11	05-SEP-11	
	Sampled Time	12:24	12:25	12:26	12:36	
	Client ID	1616-30_DISCHARGE	1616-121	1616-494	1616-302	
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	827	<2.0	<2.0	823	
	Hardness (as CaCO3) (mg/L)	158	<0.50	<0.50	159	
	pH (pH)	7.94	6.07	5.65	7.91	
	Total Suspended Solids (mg/L)	<3.0	<3.0	<3.0	<3.0	
	Total Dissolved Solids (mg/L)	512	<10	<10	496	
	Turbidity (NTU)	1.68	<0.10	<0.10	1.79	
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	43.4	<2.0	<2.0	43.5	
	Ammonia (as N) (mg/L)	0.0095	<0.0050	0.0063	0.0111	
	Chloride (Cl) (mg/L)	141	<0.50	<0.50	143	
	Nitrate and Nitrite (as N) (mg/L)	3.57	<0.0051	<0.0051	3.66	
	Nitrate (as N) (mg/L)	3.56	<0.0050	<0.0050	3.66	
	Nitrite (as N) (mg/L)	0.0114	<0.0010	<0.0010	<0.010	
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Phosphorus (P)-Total (mg/L)	0.0063	<0.0020	<0.0020	0.0065	
	Sulfate (SO4) (mg/L)	122	<0.50	<0.50	122	
Organic / Inorganic Carbon	Total Carbon (mg/L)	12.4	<0.50	<0.50	12.3	
	Total Organic Carbon (mg/L)	5.40	1.03	<0.50	4.92	
Total Metals	Aluminum (Al)-Total (mg/L)	0.0731	<0.0030	<0.0030	0.0962	
	Antimony (Sb)-Total (mg/L)	0.00127	<0.00010	<0.00010	0.00125	
	Arsenic (As)-Total (mg/L)	0.00059	<0.00010	<0.00010	0.00056	
	Barium (Ba)-Total (mg/L)	0.0838	<0.000050	<0.000050	0.0845	
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Boron (B)-Total (mg/L)	0.030	<0.010	<0.010	0.029	
	Cadmium (Cd)-Total (mg/L)	<0.000040 DLM	<0.000010	<0.000010	<0.000040 DLM	
	Calcium (Ca)-Total (mg/L)	36.0	<0.050	<0.050	36.1	
	Chromium (Cr)-Total (mg/L)	<0.00050	<0.00050	<0.00050	0.00054	
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	0.00011	
	Copper (Cu)-Total (mg/L)	0.00136	<0.00050	<0.00050	0.00134	
	Iron (Fe)-Total (mg/L)	0.060	<0.030	<0.030	0.082	
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Total (mg/L)	0.00665	<0.00050	<0.00050	0.00655	
	Magnesium (Mg)-Total (mg/L)	16.6	<0.10	<0.10	16.6	
	Manganese (Mn)-Total (mg/L)	0.00557	<0.000050	<0.000050	0.00583	
	Molybdenum (Mo)-Total (mg/L)	0.0846	<0.000050	<0.000050	0.0848	
	Nickel (Ni)-Total (mg/L)	0.00473	<0.00050	<0.00050	0.00487	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1055651-1	L1055651-2	L1055651-3	L1055651-4	
	Description	WATER	WATER	WATER	WATER	
	Sampled Date	05-SEP-11	05-SEP-11	05-SEP-11	05-SEP-11	
	Sampled Time	12:24	12:25	12:26	12:36	
	Client ID	1616-30_DISCHARGE	1616-121	1616-494	1616-302	
Grouping	**Analyte**					
WATER						
Total Metals	Potassium (K)-Total (mg/L)	29.4	<2.0	<2.0	29.1	
	Selenium (Se)-Total (mg/L)	0.00024	<0.00010	<0.00010	0.00023	
	Silicon (Si)-Total (mg/L)	0.263	<0.050	<0.050	0.345	
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Total (mg/L)	94.2	<2.0	<2.0	94.0	
	Strontium (Sr)-Total (mg/L)	0.763	<0.00010	<0.00010	0.755	
	Thallium (Tl)-Total (mg/L)	0.000039	<0.000010	<0.000010	0.000037	
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	
	Uranium (U)-Total (mg/L)	0.000563	<0.000010	<0.000010	0.000561	
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	
Aggregate Organics	Oil and Grease (mg/L)	<5.0	<5.0	<5.0	<5.0	
Volatile Organic Compounds	Benzene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Ethylbenzene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Styrene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Toluene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	ortho-Xylene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	meta- & para-Xylene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Xylenes (mg/L)	<0.00075	<0.00075	<0.00075	<0.00075	
	Surrogate: 4-Bromofluorobenzene (SS) (%)	98	97	101	100	
	Surrogate: 1,4-Difluorobenzene (SS) (%)	100	100	99	99	
Hydrocarbons	TVH (C5-C10) (mg/L)	<0.10	<0.10	<0.10	<0.10	
	TEH10-30 (mg/L)	<0.15	<0.15	<0.15	<0.15	
	TPH5-30 (mg/L)	<0.25	<0.25	<0.25	<0.25	
Glycols	Diethylene Glycol (mg/L)	<5.0			<5.0	
	Ethylene Glycol (mg/L)	<5.0			<5.0	
	1,2-Propylene Glycol (mg/L)	<5.0			<5.0	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Laboratory Control Sample	1,2-Propylene Glycol	LCS-ND	L1055651-1, -4
Laboratory Control Sample	Diethylene Glycol	LCS-ND	L1055651-1, -4
Laboratory Control Sample	Ethylene Glycol	LCS-ND	L1055651-1, -4
Matrix Spike	Total Organic Carbon	MS-B	L1055651-1, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects
LCS-ND	Lab Control Sample recovery was slightly outside ALS DQO. Reported non-detect results for associated samples were unaffected.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	APHA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-N+N-CALC-VA	Water	Nitrite & Nitrate in Water (Calculation)	EPA 300.0

Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

AS-T-CCMS-VA	Water	Total Arsenic in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

CARBONS-TC-VA	Water	Total carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

EPH-LL-SF-FID-VA	Water	EPH in Waters by GCFID	BCMOE EPH GCFID

This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999). The procedure involves extraction of the entire water sample with dichloromethane. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

GLY-WAT-FID-VA	Water	Glycols in Water by GCFID	SW-846, METHOD 8015B, EPA

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8015B, published by the United States Environmental Protection Agency (EPA). The procedure involves treatment of the sample with a strong base (NaOH) and benzoyl chloride to form the corresponding benzoate esters. The benzoate esters are then extracted with iso-octane and the extract is analyzed by capillary column gas chromatography with flame ionization detection (FID).

Reference Information

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

MET-TOT-ICP-VA	Water	Total Metals in Water by ICPOES	EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

OGG-SF-VA	Water	Oil & Grease by Gravimetric	BCMOE (2010), EPA1664A

The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.

P-T-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SE-T-CCMS-VA	Water	Total Selenium in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

TDS-VA	Water	Total Dissolved Solids by Gravimetric	APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TVH-HSFID-VA	Water	TVH by headspace GCFID	EPA 8260B, BCMELP CSR METHOD

This procedure involves the headspace extraction of the sample prior to analysis for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID). The VH analysis is carried out in accordance with the British Columbia Ministry of

Reference Information

Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999).

VOC7-HSMS-VA	Water	BTEX/MTBE/Styrene by Headspace GCMS	EPA8260B, 5021

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

VOC7/VOC-SURR-MS-VA	Water	VOC7 and/or VOC Surrogates for Waters	EPA8260B, 5021
XYLENES-CALC-VA	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero. The DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

68651

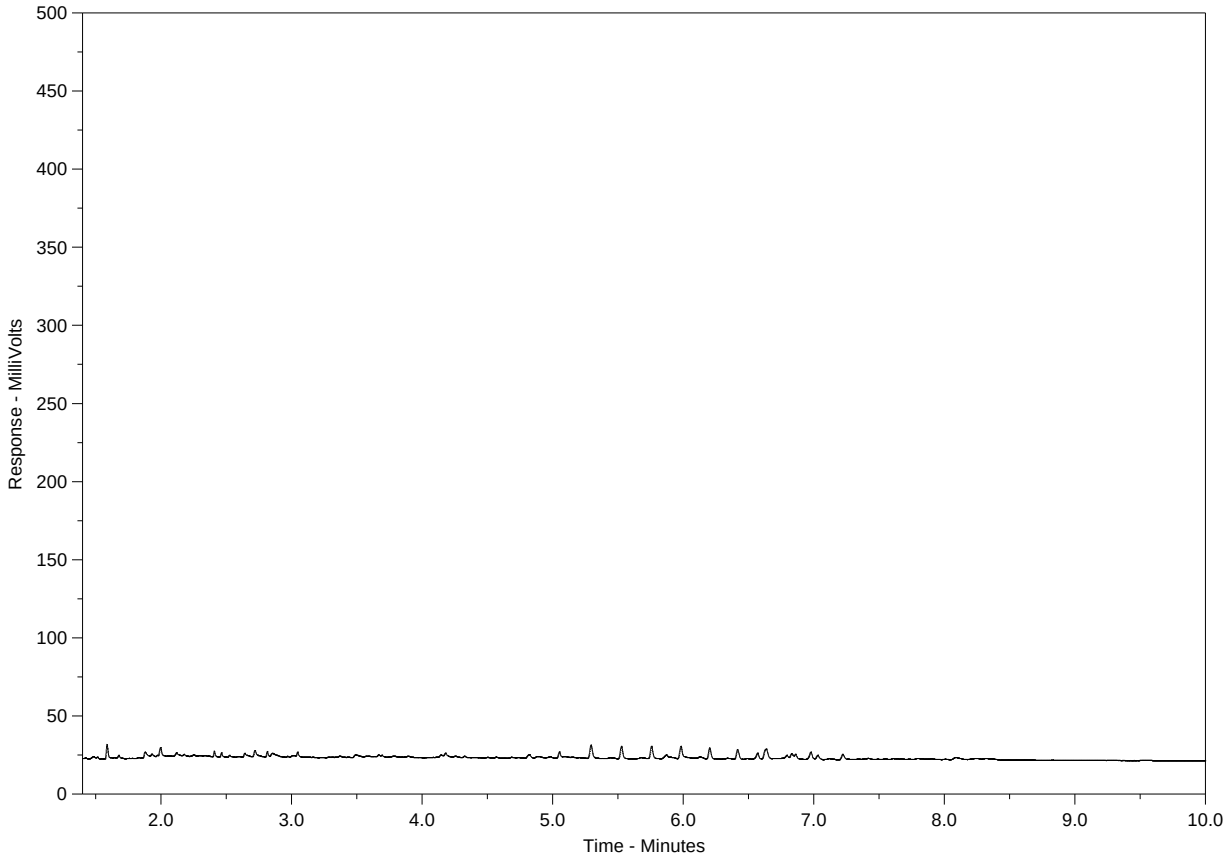
GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Hydrocarbon Distribution Report

ALS Sample ID: L1055651-L-1
Client Sample ID: 1616-30_DISCHARGE



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

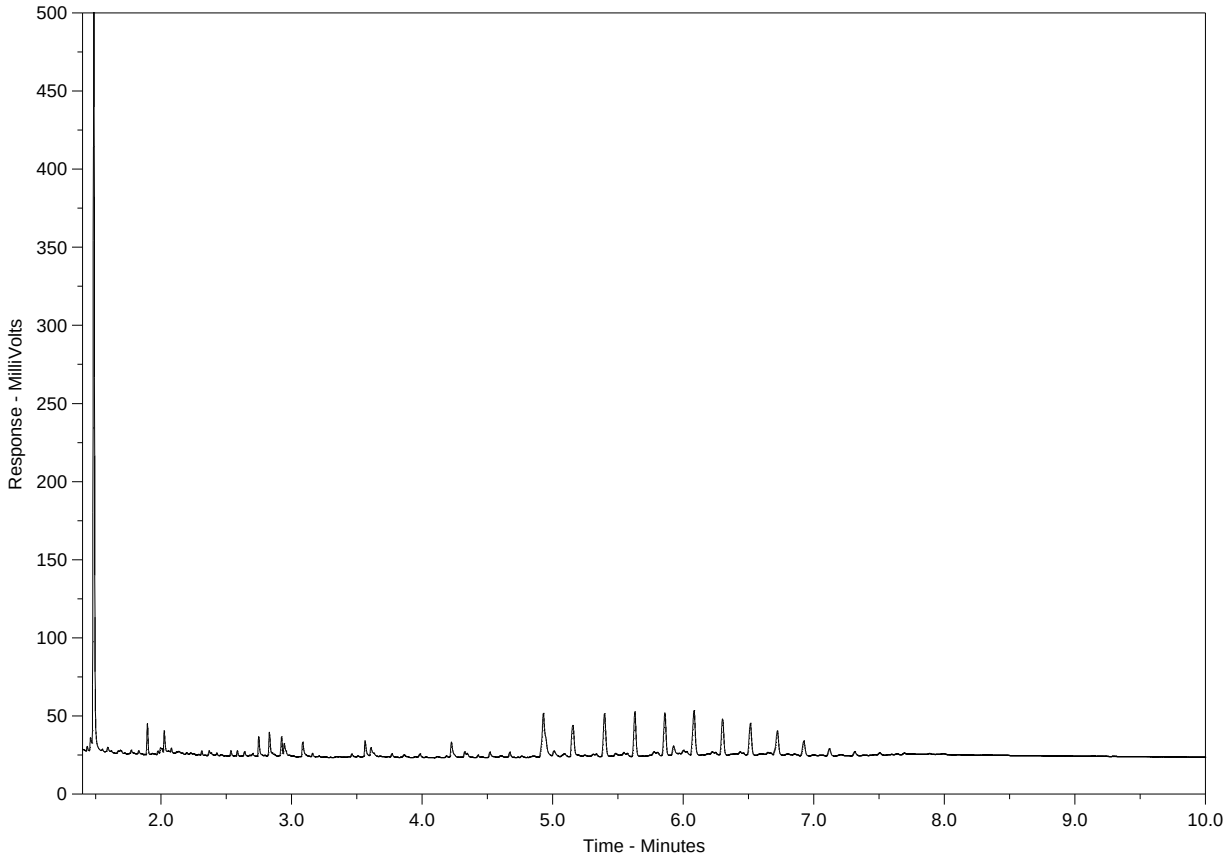
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Hydrocarbon Distribution Report

ALS Sample ID: L1055651-L-2
Client Sample ID: 1616-121



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

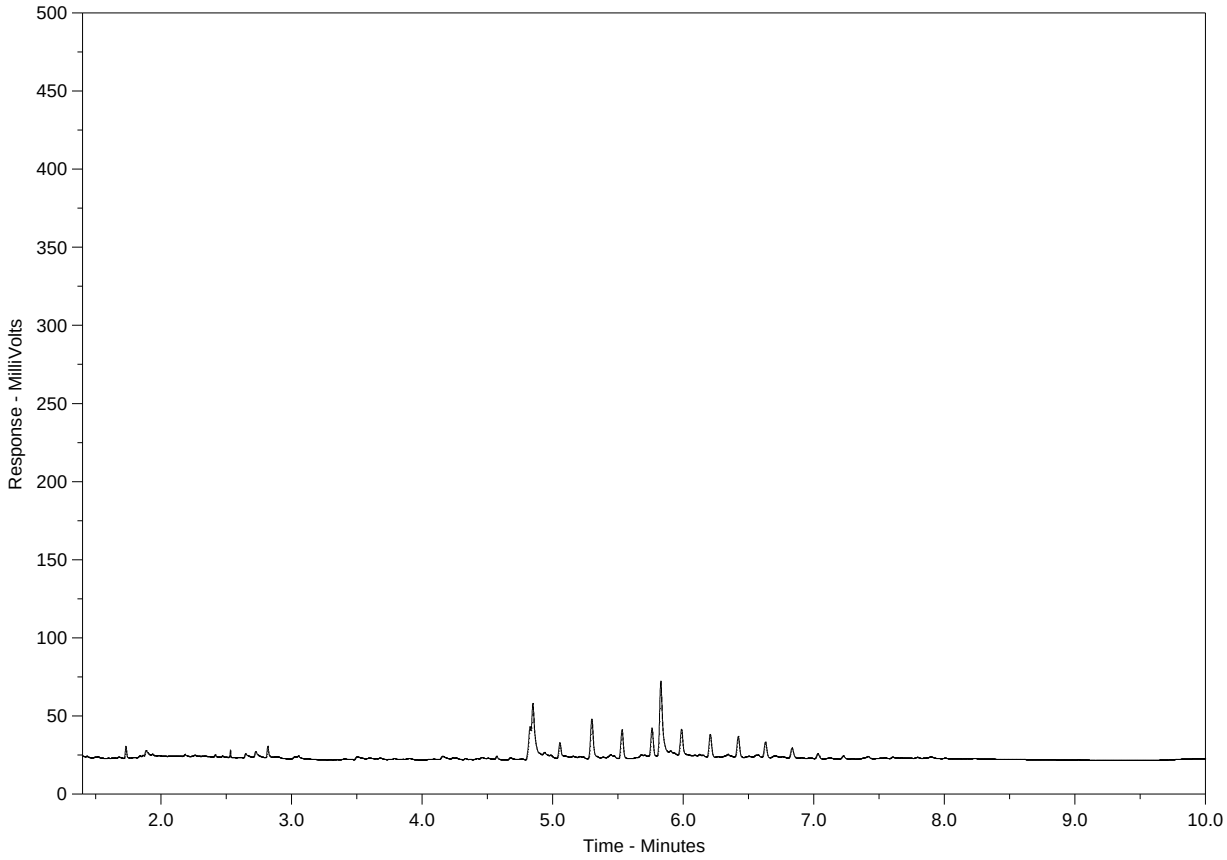
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Hydrocarbon Distribution Report

ALS Sample ID: L1055651-L-3
Client Sample ID: 1616-494



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

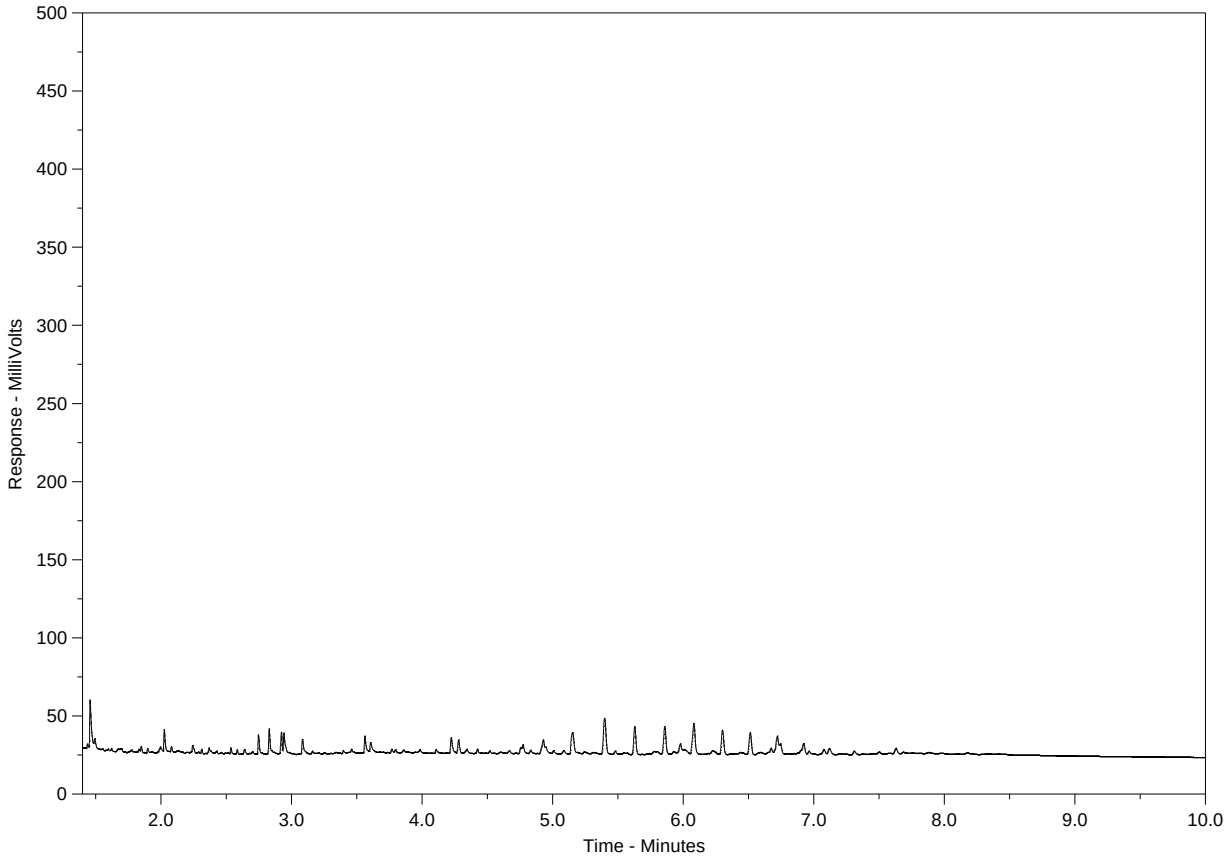
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Hydrocarbon Distribution Report

ALS Sample ID: L1055651-L-4
Client Sample ID: 1616-302



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

L1055651

Form 68651

SE: 38278

8081 Lougheed Highway • Suite 100 • Burnaby,
Tel: 604-253-4188 Toll Free: 1-800-665-0243 FAX: 604-253-6700
ALS Contact: Can Dang

CHAIN OF CUSTODY FORM

BHP Billiton Diamonds Inc.
1102 4920 52nd Street, Yellowknife, NT X1A 3T1
Tel: 867-880-2157 Fax: 867-880-4012
BHP Contacts: David Bruce/ Richard EhlertDavid

bhpbilliton

FOR LAB USE ONLY

For Lab Use

Station ID	Matrix	Date	Time	Init	As, Se By CCMS	BTEX+TVH	Glycols	Oil and Grease	SNP-0013 Major Ions	SNP-0013 Nutrients	SNP-0013 Physical Parameters	SNP-0013 Total Metals	TDS	Total Ammonia	Total Organic Carbon	TPH	TSS									
1616-30_Discharge	Water	05-Sep-2011	12:24 PM	KJ	1	1	1	1	1	1	1	1	1	1	1	1	BHP2									
1616-121	Water	05-Sep-2011	12:25 PM	KJ	1	1	1	[redacted]	1	1	1	1	1	1	1	1	BHP2									
1616-494	Water	05-Sep-2011	12:26 PM	KJ	1	1	1		1	1	1	1	1	1	1	1	BHP2									
1616-302	Water	05-Sep-2011	12:36 PM	KJ	1	1	1	1	1	1	1	1	1	1	1	1	BHP2									

L1055651-COFC

Turn around Required: RUSH. 1-week turnaroud. Forward results by 12 Sep 2011

Special Instructions (Billing details, QC reporting, etc):

Billing Code: BHP2001

Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date: Sept 8 / Time: 11:55

FOR LAB USE ONLY

Cooler seal intact upon receipt? ☐ Yes ☐ No ☐ N/A

Sample tempurature upon receipt: 3 C.

Frozen? ☐ Yes ☐ No

Send Analytical Results to:

compliance.team@bhpbilliton.com;

BHP BILLITON CANADA INC..
ATTN: David G. Bruce / Richard Ehlert David
1102 - 4920 52nd Street
Yellowknife NT X1A 3T1

Date Received: 14-SEP-11
Report Date: 29-SEP-11 18:59 (MT)
Version: FINAL

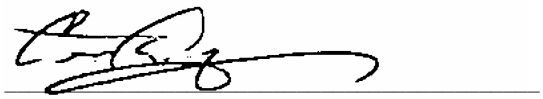
Client Phone: 867-880-2157

Certificate of Analysis

Lab Work Order #: L1058050

Project P.O. #:	BHP2001
Job Reference:	68665
C of C Numbers:	68665
Legal Site Desc:	6200801716

Comments:



Can Dang
Senior Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1058050-1				
	Description	WATER				
	Sampled Date	12-SEP-11				
	Sampled Time	14:06				
	Client ID	1616-30_QUARTERLY				
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	833				
	Hardness (as CaCO3) (mg/L)	149				
	pH (pH)	7.83				
	Total Suspended Solids (mg/L)	<3.0				
	Total Dissolved Solids (mg/L)	509				
	Turbidity (NTU)	1.24				
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	43.9				
	Ammonia (as N) (mg/L)	0.0145				
	Chloride (Cl) (mg/L)	142				
	Nitrate and Nitrite (as N) (mg/L)	3.88				
	Nitrate (as N) (mg/L)	3.87				
	Nitrite (as N) (mg/L)	0.012				
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010				
	Phosphorus (P)-Total (mg/L)	0.0066				
	Sulfate (SO4) (mg/L)	124				
Organic / Inorganic Carbon	Total Carbon (mg/L)	11.7				
	Total Organic Carbon (mg/L)	5.19				
Bacteriological Tests	Escherichia Coli (MPN/100mL)	<1				
	Total Coliforms (MPN/100mL)	31				
Total Metals	Aluminum (Al)-Total (mg/L)	0.0347				
	Antimony (Sb)-Total (mg/L)	0.00124				
	Arsenic (As)-Total (mg/L)	0.00052				
	Barium (Ba)-Total (mg/L)	0.0783				
	Beryllium (Be)-Total (mg/L)	<0.00010				
	Bismuth (Bi)-Total (mg/L)	<0.00050				
	Boron (B)-Total (mg/L)	0.027				
	Cadmium (Cd)-Total (mg/L)	<0.000040 DLM				
	Calcium (Ca)-Total (mg/L)	33.8				
	Chromium (Cr)-Total (mg/L)	<0.00050				
	Cobalt (Co)-Total (mg/L)	<0.00010				
	Copper (Cu)-Total (mg/L)	0.00122				
	Iron (Fe)-Total (mg/L)	<0.030				
	Lead (Pb)-Total (mg/L)	<0.000050				
	Lithium (Li)-Total (mg/L)	0.00510				
	Magnesium (Mg)-Total (mg/L)	15.7				
	Manganese (Mn)-Total (mg/L)	0.00497				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1058050-1				
	Description	WATER				
	Sampled Date	12-SEP-11				
	Sampled Time	14:06				
	Client ID	1616-30_QUARTERLY				
Grouping	**Analyte**					
WATER						
Total Metals	Molybdenum (Mo)-Total (mg/L)	0.0797				
	Nickel (Ni)-Total (mg/L)	0.00400				
	Potassium (K)-Total (mg/L)	28.0				
	Selenium (Se)-Total (mg/L)	0.00021				
	Silicon (Si)-Total (mg/L)	0.132				
	Silver (Ag)-Total (mg/L)	<0.000010				
	Sodium (Na)-Total (mg/L)	89.2				
	Strontium (Sr)-Total (mg/L)	0.704				
	Thallium (Tl)-Total (mg/L)	0.000034				
	Tin (Sn)-Total (mg/L)	<0.00010				
	Titanium (Ti)-Total (mg/L)	<0.010				
	Uranium (U)-Total (mg/L)	0.000528				
	Vanadium (V)-Total (mg/L)	<0.0010				
	Zinc (Zn)-Total (mg/L)	<0.0030				
Aggregate Organics	BOD (mg/L)	<5.0				
	Oil and Grease (mg/L)	<5.0				
Volatile Organic Compounds	Benzene (mg/L)	<0.00050				
	Ethylbenzene (mg/L)	<0.00050				
	Styrene (mg/L)	<0.00050				
	Toluene (mg/L)	<0.00050				
	ortho-Xylene (mg/L)	<0.00050				
	meta- & para-Xylene (mg/L)	<0.00050				
	Xylenes (mg/L)	<0.00075				
	Surrogate: 4-Bromofluorobenzene (SS) (%)	108				
	Surrogate: 1,4-Difluorobenzene (SS) (%)	99				
Hydrocarbons	TVH (C5-C10) (mg/L)	<0.10				
	TEH10-30 (mg/L)	<0.15				
	TPH5-30 (mg/L)	<0.25				
Glycols	Diethylene Glycol (mg/L)	<5.0				
	Ethylene Glycol (mg/L)	<5.0				
	1,2-Propylene Glycol (mg/L)	<5.0				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Benzene	MB-LOR	L1058050-1
Matrix Spike	Total Organic Carbon	MS-B	L1058050-1
Matrix Spike	Total Organic Carbon	MS-B	L1058050-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects
MB-LOR	Method Blank exceeds ALS DQO. LORs adjusted for samples with positive hits below 5 times blank level. Please contact ALS if re-analysis is required.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	APHA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-N+N-CALC-VA	Water	Nitrite & Nitrate in Water (Calculation)	EPA 300.0

Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

AS-T-CCMS-VA	Water	Total Arsenic in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

BOD5-VA	Water	Biochemical Oxygen Demand- 5 day	APHA 5210 B- "BIOCHEMICAL OXYGEN DEMAND"

This analysis is carried out using procedures adapted from APHA Method 5210 B - "Biochemical Oxygen Demand (BOD)". All forms of biochemical oxygen demand (BOD) are determined by diluting and incubating a sample for a specified time period, and measuring the oxygen depletion using a dissolved oxygen meter. Dissolved BOD (SOLUBLE) is determined by filtering the sample through a glass fibre filter prior to dilution. Carbonaceous BOD (CBOD) is determined by adding a nitrification inhibitor to the diluted sample prior to incubation.

BOD5-VA	Water	Biochemical Oxygen Demand- 5 day	APHA 5210 B- BIOCHEMICAL OXYGEN DEMAND

This analysis is carried out using procedures adapted from APHA Method 5210 B - "Biochemical Oxygen Demand (BOD)". All forms of biochemical oxygen demand (BOD) are determined by diluting and incubating a sample for a specified time period, and measuring the oxygen depletion using a dissolved oxygen meter. Dissolved BOD (SOLUBLE) is determined by filtering the sample through a glass fibre filter prior to dilution. Carbonaceous BOD (CBOD) is determined by adding a nitrification inhibitor to the diluted sample prior to incubation.

CARBONS-TC-VA	Water	Total carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

EPH-LL-SF-FID-VA	Water	EPH in Waters by GCFID	BCMOE EPH GCFID

Reference Information

This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999). The procedure involves extraction of the entire water sample with dichloromethane. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

GLY-WAT-FID-VA Water Glycols in Water by GCFID SW-846, METHOD 8015B, EPA

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8015B, published by the United States Environmental Protection Agency (EPA). The procedure involves treatment of the sample with a strong base (NaOH) and benzoyl chloride to form the corresponding benzoate esters. The benzoate esters are then extracted with iso-octane and the extract is analyzed by capillary column gas chromatography with flame ionization detection (FID).

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

MET-TOT-ICP-VA Water Total Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

OGG-SF-VA Water Oil & Grease by Gravimetric BCMOE (2010), EPA1664A

The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.

P-T-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SE-T-CCMS-VA Water Total Selenium in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

TC,EC-QT97-YL Water Total Coliform and E.coli APHA 9223

The analysis of Total Coliform (TC) & Escherichia coli (EC) is processed by Quanti-tray (QT): Two substrates, ONPG for TC detection and MUG for EC detection are used. The substrates are added to the 100 ml sample dispensed into the 51 well tray. The tray is incubated at 35 Celcius for 24 hours. A colour reaction develops to indicate a positve reaction (presence of TC, EC). The number of positive wells are counted and converted to Most Probable Number Units (MPNU) per 100 ml. This test is also called 'rapid MPN method', therefore, the MPN results are derived from a statistical table with a 95% confidence and report as MPN units. The QT detection limit for a negative result is reported as zero.

Reference Information

TDS-VA	Water	Total Dissolved Solids by Gravimetric	APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TVH-HSFID-VA	Water	TVH by headspace GCFID	EPA 8260B, BCMELP CSR METHOD

This procedure involves the headspace extraction of the sample prior to analysis for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID). The VH analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999).

VOC7-HSMS-VA	Water	BTEX/MTBE/Styrene by Headspace GCMS	EPA8260B, 5021

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

VOC7/VOC-SURR-MS-VA	Water	VOC7 and/or VOC Surrogates for Waters	EPA8260B, 5021
XYLENES-CALC-VA	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero. The DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA
YL	ALS ENVIRONMENTAL - YELLOWKNIFE, NW, CANADA

Chain of Custody Numbers:

68665

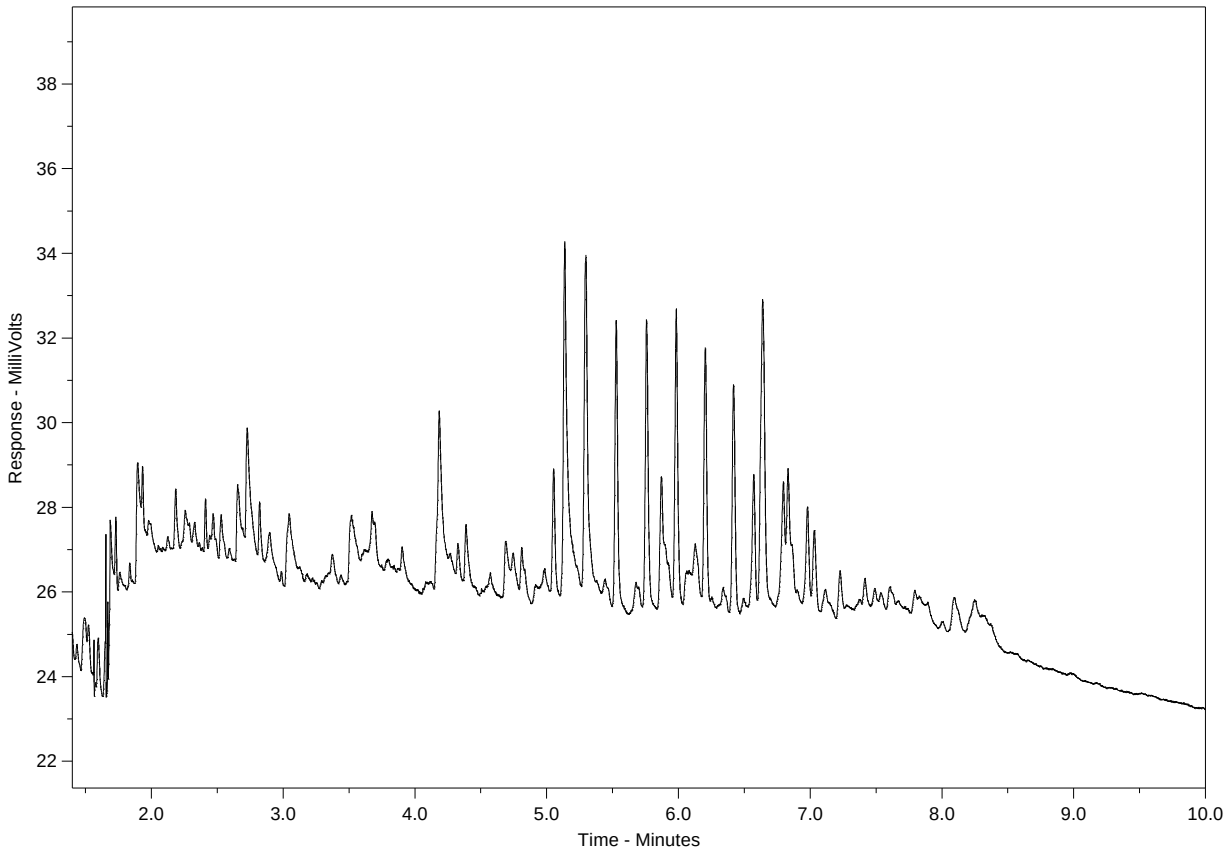
GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Hydrocarbon Distribution Report

ALS Sample ID: L1058050-1
Client Sample ID: 1616-30_QUARTERLY



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

BHP175

8081 Lougheed Highway • Suite 100 • Burnaby,
Tel: 604-253-4188 Toll Free: 1-800-665-0243 FAX: 604-253-6700
ALS Contact: Can Dang

S9.40088

Form 68665

BHP Billiton Diamonds Inc.
1102 4920 52nd Street, Yellowknife, NT X1A 3T1
Tel: 867-880-2157 Fax: 867-880-4012
BHP Contacts: David Bruce/ Richard EhlertDavid

CHAIN OF CUSTODY FORM

L1058050

For Lab Use

Station ID	Matrix	Date	Time	Init	As, Se By CCMS	BOD5	BTEX	BTEX+TVH	Escherichia coli	Glycols	Oil and Grease	pH	SNP-0013 Major Ions	SNP-0013 Nutrients	SNP-0013 Physical Parameters	SNP-0013 Total Metals	TDS	Total Ammonia	Total Coliforms	Total Organic Carbon	Total Phosphorus	TPH	TSS	
1616-30_Quarterly	Water	12-Sep-2011	02:06 PM	JP	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP2001

FOR LAB USE ONLY

L1058050-COFC

Turn around Required: Please rush the shipping of remaining sample to ALS Burnaby Attn:

Special Instructions (Billing details, QC reporting, etc):

Billing Code: BHP2001

Analyze Bacteriology at YK Lab, Please forward the remainder of sample to ALS burnaby Attn: Can Dang

Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by: RAN	Date: SEP 06 Time: 11:15

FOR LAB USE ONLY

Cooler seal intact upon receipt? ☑ Yes ☐ No ☐ N/A

Sample tempurature upon receipt: 9 C.

Frozen? ☐ Yes ☑ No

Send Analytical Results to:

compliance.team@bhpbilliton.com;

BHP BILLITON CANADA INC..
ATTN: David G. Bruce / Richard Ehlert David
1102 - 4920 52nd Street
Yellowknife NT X1A 3T1

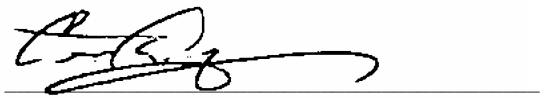
Date Received: 26-SEP-11
Report Date: 07-OCT-11 17:24 (MT)
Version: FINAL

Client Phone: 867-880-2157

Certificate of Analysis

Lab Work Order #: L1063576

Project P.O. #: BHP2001
Job Reference: 68673
C of C Numbers:
Legal Site Desc: 6200801716



Can Dang
Senior Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1063576-1				
	Description	WATER				
	Sampled Date	19-SEP-11				
	Sampled Time	13:10				
	Client ID	1616-30_DISCHARGE				
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	841				
	Hardness (as CaCO3) (mg/L)	149				
	pH (pH)	8.01				
	Total Suspended Solids (mg/L)	3.2				
	Total Dissolved Solids (mg/L)	510				
	Turbidity (NTU)	0.99				
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	43.6				
	Ammonia (as N) (mg/L)	<0.0050				
	Chloride (Cl) (mg/L)	138				
	Nitrate and Nitrite (as N) (mg/L)	3.69				
	Nitrate (as N) (mg/L)	3.68				
	Nitrite (as N) (mg/L)	0.0134				
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010				
	Phosphorus (P)-Total (mg/L)	0.0068				
	Sulfate (SO4) (mg/L)	120				
Organic / Inorganic Carbon	Total Carbon (mg/L)	12.5				
	Total Organic Carbon (mg/L)	2.73				
Total Metals	Aluminum (Al)-Total (mg/L)	0.0328				
	Antimony (Sb)-Total (mg/L)	0.00125				
	Arsenic (As)-Total (mg/L)	0.00053				
	Barium (Ba)-Total (mg/L)	0.0758				
	Beryllium (Be)-Total (mg/L)	<0.00010				
	Bismuth (Bi)-Total (mg/L)	<0.00050				
	Boron (B)-Total (mg/L)	0.026				
	Cadmium (Cd)-Total (mg/L)	0.000020				
	Calcium (Ca)-Total (mg/L)	33.7				
	Chromium (Cr)-Total (mg/L)	<0.00050				
	Cobalt (Co)-Total (mg/L)	<0.00010				
	Copper (Cu)-Total (mg/L)	0.00136				
	Iron (Fe)-Total (mg/L)	<0.030				
	Lead (Pb)-Total (mg/L)	<0.000050				
	Lithium (Li)-Total (mg/L)	0.00422				
	Magnesium (Mg)-Total (mg/L)	15.6				
	Manganese (Mn)-Total (mg/L)	0.00470				
	Molybdenum (Mo)-Total (mg/L)	0.0851				
	Nickel (Ni)-Total (mg/L)	0.00432				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1063576-1				
	Description	WATER				
	Sampled Date	19-SEP-11				
	Sampled Time	13:10				
	Client ID	1616-30_DISCHARGE				
Grouping	**Analyte**					
WATER						
Total Metals	Potassium (K)-Total (mg/L)	28.5				
	Selenium (Se)-Total (mg/L)	0.00024				
	Silicon (Si)-Total (mg/L)	0.158				
	Silver (Ag)-Total (mg/L)	<0.000010				
	Sodium (Na)-Total (mg/L)	87.0				
	Strontium (Sr)-Total (mg/L)	0.720				
	Thallium (Tl)-Total (mg/L)	0.000036				
	Tin (Sn)-Total (mg/L)	<0.00010				
	Titanium (Ti)-Total (mg/L)	<0.010				
	Uranium (U)-Total (mg/L)	0.000555				
	Vanadium (V)-Total (mg/L)	<0.0010				
	Zinc (Zn)-Total (mg/L)	<0.0030				
Aggregate Organics	Oil and Grease (mg/L)	<5.0				
Volatile Organic Compounds	Benzene (mg/L)	<0.00050				
	Ethylbenzene (mg/L)	<0.00050				
	Styrene (mg/L)	<0.00050				
	Toluene (mg/L)	<0.00050				
	ortho-Xylene (mg/L)	<0.00050				
	meta- & para-Xylene (mg/L)	<0.00050				
	Xylenes (mg/L)	<0.00075				
	Surrogate: 4-Bromofluorobenzene (SS) (%)	85				
	Surrogate: 1,4-Difluorobenzene (SS) (%)	100				
Hydrocarbons	TVH (C5-C10) (mg/L)	<0.10				
	TEH10-30 (mg/L)	<0.15				
	TPH5-30 (mg/L)	<0.25				
Glycols	Diethylene Glycol (mg/L)	<5.0				
	Ethylene Glycol (mg/L)	<5.0				
	1,2-Propylene Glycol (mg/L)	<5.0				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Total Organic Carbon	MS-B	L1063576-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	APHA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-N+N-CALC-VA	Water	Nitrite & Nitrate in Water (Calculation)	EPA 300.0

Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

AS-T-CCMS-VA	Water	Total Arsenic in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

CARBONS-TC-VA	Water	Total carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

EPH-LL-SF-FID-VA	Water	EPH in Waters by GCFID	BCMOE EPH GCFID

This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999). The procedure involves extraction of the entire water sample with dichloromethane. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

GLY-WAT-FID-VA	Water	Glycols in Water by GCFID	SW-846, METHOD 8015B, EPA

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8015B, published by the United States Environmental Protection Agency (EPA). The procedure involves treatment of the sample with a strong base (NaOH) and benzoyl chloride to form the corresponding benzoate esters. The benzoate esters are then extracted with iso-octane and the extract is analyzed by capillary column gas chromatography with flame ionization detection (FID).

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United

Reference Information

States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

MET-TOT-ICP-VA	Water	Total Metals in Water by ICPOES	EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

OGG-SF-VA	Water	Oil & Grease by Gravimetric	BCMOE (2010), EPA1664A

The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.

P-T-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SE-T-CCMS-VA	Water	Total Selenium in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

TDS-VA	Water	Total Dissolved Solids by Gravimetric	APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TVH-HSFID-VA	Water	TVH by headspace GCFID	EPA 8260B, BCMELP CSR METHOD

This procedure involves the headspace extraction of the sample prior to analysis for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID). The VH analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999).

VOC7-HSMS-VA	Water	BTEX/MTBE/Styrene by Headspace GCMS	EPA8260B, 5021

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

VOC7/VOC-SURR-MS-VA	Water	VOC7 and/or VOC Surrogates for Waters	EPA8260B, 5021

Reference Information

XYLENES-CALC-VA	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero. The DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

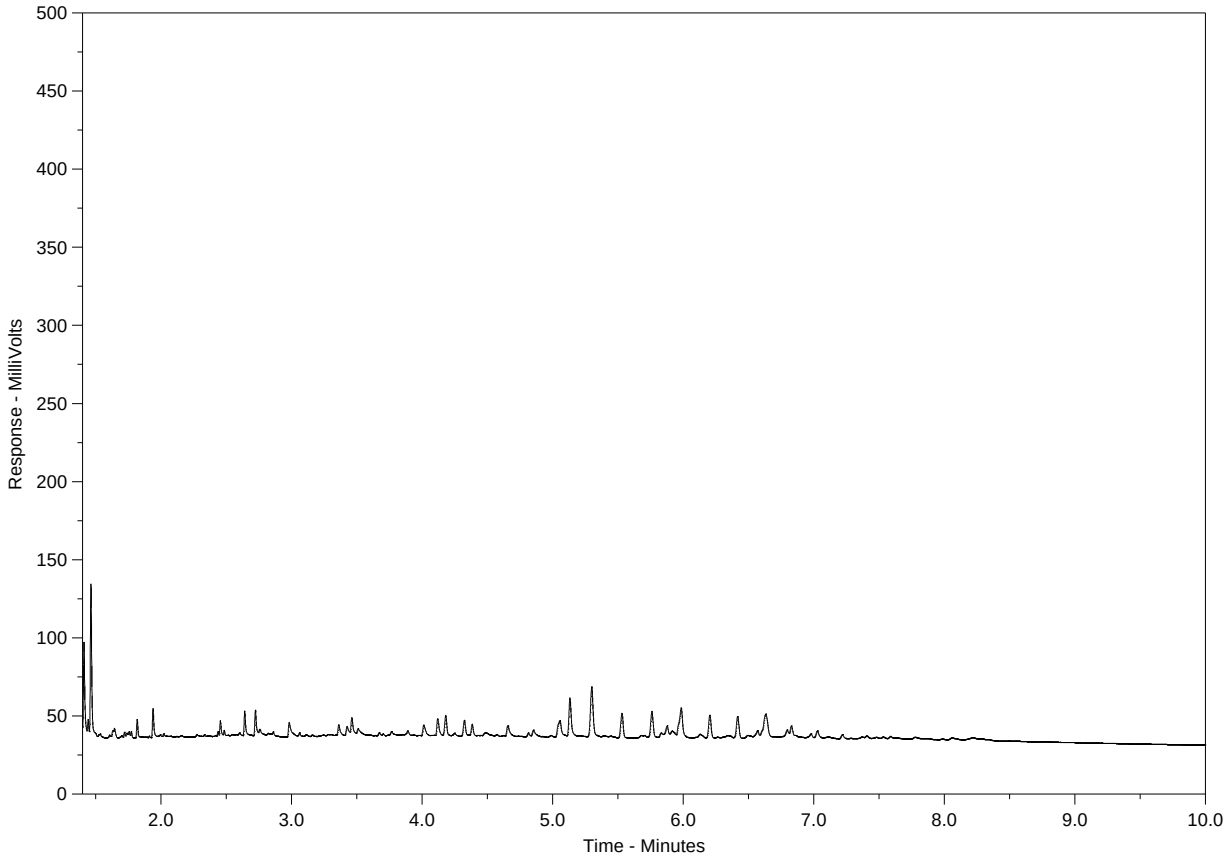
GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Hydrocarbon Distribution Report

ALS Sample ID: L1063576-L-1
Client Sample ID: 1616-30_DISCHARGE



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

L1063576

S.O. L/0097

8081 Lougheed Highway • Suite 100 • Burnaby,
Tel: 604-253-4188 Toll Free: 1-800-665-0243 FAX: 604-253-6700

ALS Contact: Can Di

CHAIN OF CUSTODY FORM

Form 68673

bhpbilliton

BHP Billiton Diamonds Inc.
1102 4920 52nd Street, Yellowknife, NT X1A 3T1
Tel: 867-880-2157 Fax: 867-880-4012
BHP Contacts: David Bruce/ Richard EhlertDavid

L1063576-COFC

For Lab Use

FOR LAB USE ONLY

Station ID	Matrix	Date	Time	Init	As, Se By CCMS	BTEX+TVH	Glycols	Oil and Grease	SNP-0013 Major Ions	SNP-0013 Nutrients	SNP-0013 Physical Parameters	SNP-0013 Total Metals	TDS	Total Ammonia	Total Organic Carbon	TPH	TSS									
1616-30_Discharge	Water	19-Sep-2011	~~12:00 PM~~ 1310pm	NA	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP2								

Turn around Required: Rush Nitrate Results. Regular 2 week turnaround for all other anal

Special Instructions (Billing details, QC reporting, etc):

Billing Code: BHP2001

Please Rush Nitrate Analysis

Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date / Time

FOR LAB USE ONLY

Cooler seal intact upon receipt? ☐ Yes ☐ No ☐ N/A

Sample tempurature upon receipt: 8 C.

Frozen? ☐ Yes ☑ No

Send Analytical Results to:

compliance.team@bhpbilliton.com;

BHP BILLITON CANADA INC..
ATTN: David G. Bruce / Richard Ehlert David
1102 - 4920 52nd Street
Yellowknife NT X1A 3T1

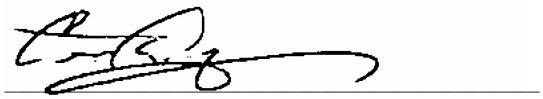
Date Received: 28-SEP-11
Report Date: 11-OCT-11 14:56 (MT)
Version: FINAL

Client Phone: 867-880-2157

Certificate of Analysis

Lab Work Order #: L1064541

Project P.O. #:	BHP2001
Job Reference:	68683
C of C Numbers:	68683
Legal Site Desc:	6200801716



Can Dang
Senior Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1064541-1
		Description	WATER
		Sampled Date	26-SEP-11
		Sampled Time	14:31
		Client ID	1616-30_DISCHARGE
Grouping	**Analyte**		
WATER			
Physical Tests	Conductivity (uS/cm)		818
	Hardness (as CaCO3) (mg/L)		159
	pH (pH)		7.89
	Total Suspended Solids (mg/L)		4.0
	Total Dissolved Solids (mg/L)		477
	Turbidity (NTU)		3.64
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)		42.5
	Ammonia (as N) (mg/L)		<0.0050
	Chloride (Cl) (mg/L)		140
	Nitrate and Nitrite (as N) (mg/L)		3.49
	Nitrate (as N) (mg/L)		3.46
	Nitrite (as N) (mg/L)		0.022
	Orthophosphate-Dissolved (as P) (mg/L)		<0.0010
	Phosphorus (P)-Total (mg/L)		0.0085
	Sulfate (SO4) (mg/L)		123
Organic / Inorganic Carbon	Total Carbon (mg/L)		13.1
	Total Organic Carbon (mg/L)		4.30
Total Metals	Aluminum (Al)-Total (mg/L)		0.182
	Antimony (Sb)-Total (mg/L)		0.00125
	Arsenic (As)-Total (mg/L)		0.00058
	Barium (Ba)-Total (mg/L)		0.0789
	Beryllium (Be)-Total (mg/L)		<0.00010
	Bismuth (Bi)-Total (mg/L)		<0.00050
	Boron (B)-Total (mg/L)		0.027
	Cadmium (Cd)-Total (mg/L)		<0.000030 DLM
	Calcium (Ca)-Total (mg/L)		36.4
	Chromium (Cr)-Total (mg/L)		0.00073
	Cobalt (Co)-Total (mg/L)		0.00018
	Copper (Cu)-Total (mg/L)		0.00144
	Iron (Fe)-Total (mg/L)		0.166
	Lead (Pb)-Total (mg/L)		<0.000050
	Lithium (Li)-Total (mg/L)		0.00519
	Magnesium (Mg)-Total (mg/L)		16.7
	Manganese (Mn)-Total (mg/L)		0.00696
	Molybdenum (Mo)-Total (mg/L)		0.0882
	Nickel (Ni)-Total (mg/L)		0.00554

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1064541-1				
	Description	WATER				
	Sampled Date	26-SEP-11				
	Sampled Time	14:31				
	Client ID	1616-30_DISCHARGE				
Grouping	**Analyte**					
WATER						
Total Metals	Potassium (K)-Total (mg/L)	29.4				
	Selenium (Se)-Total (mg/L)	0.00024				
	Silicon (Si)-Total (mg/L)	0.609				
	Silver (Ag)-Total (mg/L)	<0.000010				
	Sodium (Na)-Total (mg/L)	95.1				
	Strontium (Sr)-Total (mg/L)	0.708				
	Thallium (Tl)-Total (mg/L)	0.000035				
	Tin (Sn)-Total (mg/L)	<0.00010				
	Titanium (Ti)-Total (mg/L)	0.015				
	Uranium (U)-Total (mg/L)	0.000594				
	Vanadium (V)-Total (mg/L)	<0.0010				
	Zinc (Zn)-Total (mg/L)	<0.0030				
Aggregate Organics	Oil and Grease (mg/L)	<5.0				
Volatile Organic Compounds	Benzene (mg/L)	<0.00050				
	Ethylbenzene (mg/L)	<0.00050				
	Styrene (mg/L)	<0.00050				
	Toluene (mg/L)	<0.00050				
	ortho-Xylene (mg/L)	<0.00050				
	meta- & para-Xylene (mg/L)	<0.00050				
	Xylenes (mg/L)	<0.00075				
	Surrogate: 4-Bromofluorobenzene (SS) (%)	102				
	Surrogate: 1,4-Difluorobenzene (SS) (%)	100				
Hydrocarbons	TVH (C5-C10) (mg/L)	<0.10				
	TEH10-30 (mg/L)	<0.15				
	TPH5-30 (mg/L)	<0.25				
Glycols	Diethylene Glycol (mg/L)	<5.0				
	Ethylene Glycol (mg/L)	<5.0				
	1,2-Propylene Glycol (mg/L)	<5.0				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Aluminum (Al)-Total	DLA	L1064541-1
Duplicate	Antimony (Sb)-Total	DLA	L1064541-1
Duplicate	Beryllium (Be)-Total	DLA	L1064541-1
Duplicate	Bismuth (Bi)-Total	DLA	L1064541-1
Duplicate	Cadmium (Cd)-Total	DLA	L1064541-1
Duplicate	Cobalt (Co)-Total	DLA	L1064541-1
Duplicate	Lead (Pb)-Total	DLA	L1064541-1
Duplicate	Silver (Ag)-Total	DLA	L1064541-1
Duplicate	Thallium (Tl)-Total	DLA	L1064541-1
Duplicate	Tin (Sn)-Total	DLA	L1064541-1
Duplicate	Vanadium (V)-Total	DLA	L1064541-1
Duplicate	Selenium (Se)-Total	DLA	L1064541-1
Matrix Spike	Nitrate (as N)	MS-B	L1064541-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit Adjusted For required dilution
DLM	Detection Limit Adjusted For Sample Matrix Effects
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	APHA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-N+N-CALC-VA	Water	Nitrite & Nitrate in Water (Calculation)	EPA 300.0

Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

AS-T-CCMS-VA	Water	Total Arsenic in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

CARBONS-TC-VA	Water	Total carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

EPH-LL-SF-FID-VA	Water	EPH in Waters by GCFID	BCMOE EPH GCFID

Reference Information

This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999). The procedure involves extraction of the entire water sample with dichloromethane. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

GLY-WAT-FID-VA Water Glycols in Water by GCFID SW-846, METHOD 8015B, EPA

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8015B, published by the United States Environmental Protection Agency (EPA). The procedure involves treatment of the sample with a strong base (NaOH) and benzoyl chloride to form the corresponding benzoate esters. The benzoate esters are then extracted with iso-octane and the extract is analyzed by capillary column gas chromatography with flame ionization detection (FID).

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

MET-TOT-ICP-VA Water Total Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

OGG-SF-VA Water Oil & Grease by Gravimetric BCMOE (2010), EPA1664A

The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.

P-T-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SE-T-CCMS-VA Water Total Selenium in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

TDS-VA Water Total Dissolved Solids by Gravimetric APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-VA Water Total Suspended Solids by Gravimetric APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

Reference Information

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TVH-HSFID-VA	Water	TVH by headspace GCFID	EPA 8260B, BCMELP CSR METHOD

This procedure involves the headspace extraction of the sample prior to analysis for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID). The VH analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999).

VOC7-HSMS-VA	Water	BTEX/MTBE/Styrene by Headspace GCMS	EPA8260B, 5021

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

VOC7/VOC-SURR-MS-VA	Water	VOC7 and/or VOC Surrogates for Waters	EPA8260B, 5021
XYLENES-CALC-VA	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero. The DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

68683

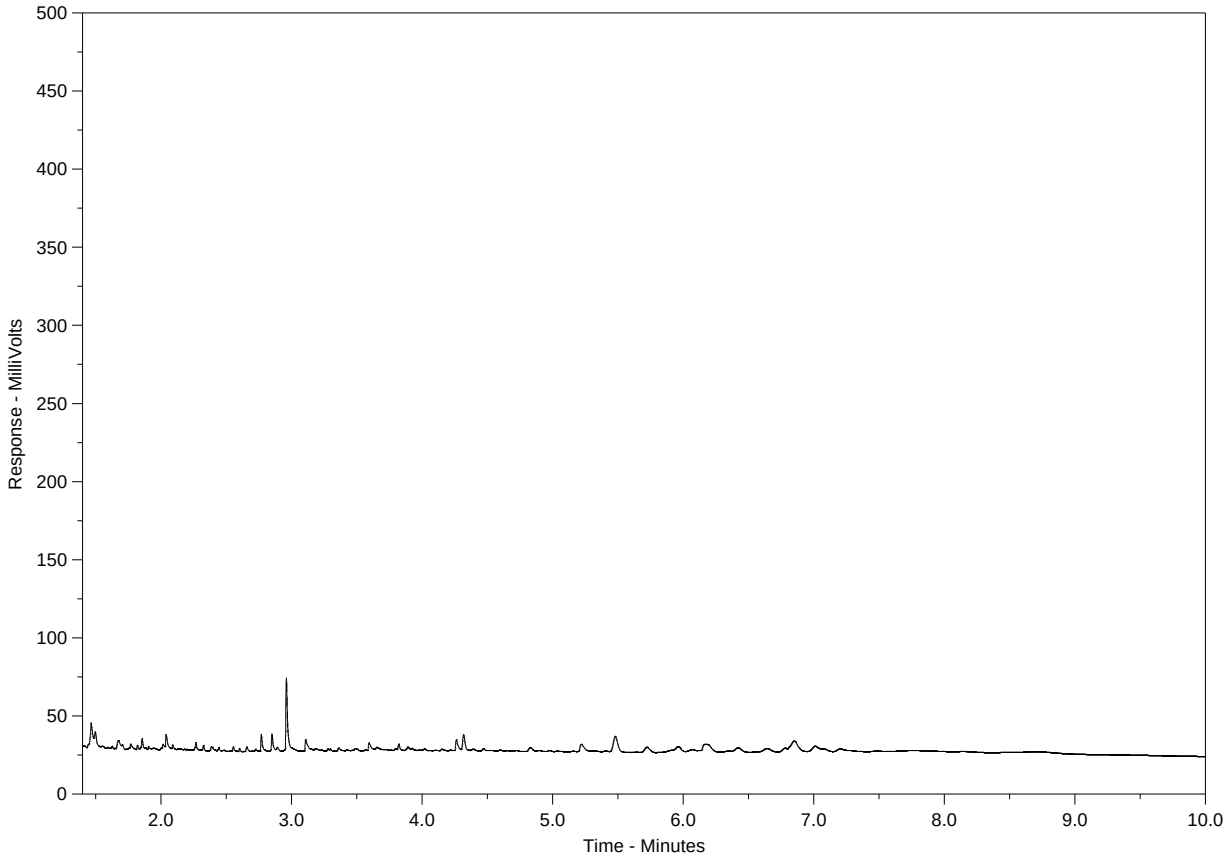
GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Hydrocarbon Distribution Report

ALS Sample ID: L1064541-1 LL
Client Sample ID: 1616-30_DISCHARGE



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

L1064541

SO: 401 01

ALS L
ANALYTICAL

8081 Lougheed Highway • Suite 100 • Burnaby,
Tel: 604-253-4188 Toll Free: 1-800-665-0243 FAX: 604-253-6700
ALS Contact: Can Dang

Form 68683

bhpbilliton

BHP Billiton Diamonds Inc.
1102 4920 52nd Street, Yellowknife, NT X1A 3T1
Tel: 867-880-2157 Fax: 867-880-4012
BHP Contacts: David Bruce/ Richard EhlertDavid

CHAIN OF CUSTODY FORM

For Lab Use

FOR LAB USE ONLY

Station ID	Matrix	Date	Time	Init	As, Se By CCMS	BTEX+TVH	Glycols	Oil and Grease	SNP-0013 Major Ions	SNP-0013 Nutrients	SNP-0013 Physical Parameters	SNP-0013 Total Metals	TDS	Total Ammonia	Total Organic Carbon	TPH	TSS						
1616-30_Discharge	Water	26-Sep-2011	02:31 PM	JH	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP2					

L1064541-COFC

Turn around Required: Please Rush Nitrate Analysis (2 Day Rush)

Special Instructions (Billing details, QC reporting, etc):

Billing Code: BHP2001

Please Rush Nitrate Analysis (2 Day Rush)

Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date 28/09/11 Time 10:14

FOR LAB USE ONLY

Cooler seal intact upon receipt? ☐ Yes ☐ No ☐ N/A

Sample tempurature upon receipt: 4.4 C.

Frozen? ☐ Yes ☐ No

Send Analytical Results to:

compliance.team@bhpbilliton.com;

BHP BILLITON CANADA INC..
ATTN: David G. Bruce / Richard Ehlert David
1102 - 4920 52nd Street
Yellowknife NT X1A 3T1

Date Received: 07-OCT-11
Report Date: 20-OCT-11 17:51 (MT)
Version: FINAL

Client Phone: 867-880-2157

Certificate of Analysis

Lab Work Order #: L1069414

Project P.O. #: BHP2001
Job Reference: 68699
C of C Numbers:
Legal Site Desc: 6200801716

Can Dang
Senior Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1069414-1	L1069414-2	L1069414-3	L1069414-4	L1069414-5
	Description	WATER	WATER	WATER	WATER	WATER
	Sampled Date	03-OCT-11	03-OCT-11	03-OCT-11	03-OCT-11	03-OCT-11
	Sampled Time	15:21	16:01	16:02	16:06	16:05
	Client ID	1616-30_DISCHARGE	1616-11	1616-121	1616-494	1616-103
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	803				
	Hardness (as CaCO3) (mg/L)	147				
	pH (pH)	7.83	6.69	5.60	5.69	6.65
	Total Suspended Solids (mg/L)	<3.0	<3.0	<3.0	<3.0	4.7
	Total Dissolved Solids (mg/L)	438				
	Turbidity (NTU)	1.32				
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	42.3				
	Ammonia (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Chloride (Cl) (mg/L)	133				
	Nitrate and Nitrite (as N) (mg/L)	3.34				
	Nitrate (as N) (mg/L)	3.33				
	Nitrite (as N) (mg/L)	0.0115				
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010				
	Phosphorus (P)-Total (mg/L)	0.0067				
	Sulfate (SO4) (mg/L)	117				
Organic / Inorganic Carbon	Total Carbon (mg/L)	13.4				
	Total Organic Carbon (mg/L)	5.19				
Total Metals	Aluminum (Al)-Total (mg/L)	0.0522				
	Antimony (Sb)-Total (mg/L)	0.00118				
	Arsenic (As)-Total (mg/L)	0.00056				
	Barium (Ba)-Total (mg/L)	0.0734				
	Beryllium (Be)-Total (mg/L)	<0.00010				
	Bismuth (Bi)-Total (mg/L)	<0.00050				
	Boron (B)-Total (mg/L)	0.026				
	Cadmium (Cd)-Total (mg/L)	0.000033				
	Calcium (Ca)-Total (mg/L)	34.3				
	Chromium (Cr)-Total (mg/L)	<0.00050				
	Cobalt (Co)-Total (mg/L)	<0.00010				
	Copper (Cu)-Total (mg/L)	0.00138				
	Iron (Fe)-Total (mg/L)	0.041				
	Lead (Pb)-Total (mg/L)	<0.000050				
	Lithium (Li)-Total (mg/L)	0.00498				
	Magnesium (Mg)-Total (mg/L)	14.9				
	Manganese (Mn)-Total (mg/L)	0.00478				
	Molybdenum (Mo)-Total (mg/L)	0.0796				
	Nickel (Ni)-Total (mg/L)	0.00417				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1069414-1	L1069414-2	L1069414-3	L1069414-4	L1069414-5
	Description	WATER	WATER	WATER	WATER	WATER
	Sampled Date	03-OCT-11	03-OCT-11	03-OCT-11	03-OCT-11	03-OCT-11
	Sampled Time	15:21	16:01	16:02	16:06	16:05
	Client ID	1616-30_DISCHARGE	1616-11	1616-121	1616-494	1616-103
Grouping	**Analyte**					
WATER						
Total Metals	Potassium (K)-Total (mg/L)	27.2				
	Selenium (Se)-Total (mg/L)	0.00022				
	Silicon (Si)-Total (mg/L)	0.305				
	Silver (Ag)-Total (mg/L)	<0.000010				
	Sodium (Na)-Total (mg/L)	88.4				
	Strontium (Sr)-Total (mg/L)	0.707				
	Thallium (Tl)-Total (mg/L)	0.000034				
	Tin (Sn)-Total (mg/L)	<0.00010				
	Titanium (Ti)-Total (mg/L)	<0.010				
	Uranium (U)-Total (mg/L)	0.000570				
	Vanadium (V)-Total (mg/L)	<0.0010				
	Zinc (Zn)-Total (mg/L)	<0.0030				
Aggregate Organics	Oil and Grease (mg/L)	<5.0				
Volatile Organic Compounds	Benzene (mg/L)	<0.00050				
	Ethylbenzene (mg/L)	<0.00050				
	Styrene (mg/L)	<0.00050				
	Toluene (mg/L)	<0.00050				
	ortho-Xylene (mg/L)	<0.00050				
	meta- & para-Xylene (mg/L)	<0.00050				
	Xylenes (mg/L)	<0.00075				
	Surrogate: 4-Bromofluorobenzene (SS) (%)	98.9				
	Surrogate: 1,4-Difluorobenzene (SS) (%)	102.1				
Hydrocarbons	TVH (C5-C10) (mg/L)	<0.10				
	TEH10-30 (mg/L)	<0.15				
	TPH5-30 (mg/L)	<0.25				
Glycols	Diethylene Glycol (mg/L)	<5.0				
	Ethylene Glycol (mg/L)	<5.0				
	1,2-Propylene Glycol (mg/L)	<5.0				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Laboratory Control Sample	1,2-Propylene Glycol	LCS-ND	L1069414-1
Laboratory Control Sample	Diethylene Glycol	LCS-ND	L1069414-1
Matrix Spike	Sulfate (SO4)	MS-B	L1069414-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
LCS-ND	Lab Control Sample recovery was slightly outside ALS DQO. Reported non-detect results for associated samples were unaffected.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	APHA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-N+N-CALC-VA	Water	Nitrite & Nitrate in Water (Calculation)	EPA 300.0

Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

AS-T-CCMS-VA	Water	Total Arsenic in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

CARBONS-TC-VA	Water	Total carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

EPH-LL-SF-FID-VA	Water	EPH in Waters by GCFID	BCMOE EPH GCFID

This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999). The procedure involves extraction of the entire water sample with dichloromethane. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

GLY-WAT-FID-VA	Water	Glycols in Water by GCFID	SW-846, METHOD 8015B, EPA

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8015B, published by the United States Environmental Protection Agency (EPA). The procedure involves treatment of the sample with a strong base (NaOH) and benzoyl chloride to form the corresponding benzoate esters. The benzoate esters are then extracted with iso-octane and the extract is analyzed by capillary column gas chromatography with flame ionization detection (FID).

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

Reference Information

MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

MET-TOT-ICP-VA	Water	Total Metals in Water by ICPOES	EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

OGG-SF-VA	Water	Oil & Grease by Gravimetric	BCMOE (2010), EPA1664A

The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.

P-T-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-MAN-VA	Water	pH by Manual Meter	APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

It is recommended that this analysis be conducted in the field.

PH-MAN-VA	Water	pH by Manual Meter	APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

It is recommended that this analysis be conducted in the field.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SE-T-CCMS-VA	Water	Total Selenium in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

TDS-VA	Water	Total Dissolved Solids by Gravimetric	APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

Reference Information

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TVH-HSFID-VA	Water	TVH by headspace GCFID	EPA 8260B, BCMELP CSR METHOD

This procedure involves the headspace extraction of the sample prior to analysis for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID). The VH analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999).

VOC7-HSMS-VA	Water	BTEX/MTBE/Styrene by Headspace GCMS	EPA8260B, 5021

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

VOC7/VOC-SURR-MS-VA	Water	VOC7 and/or VOC Surrogates for Waters	EPA8260B, 5021
XYLENES-CALC-VA	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero. The DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

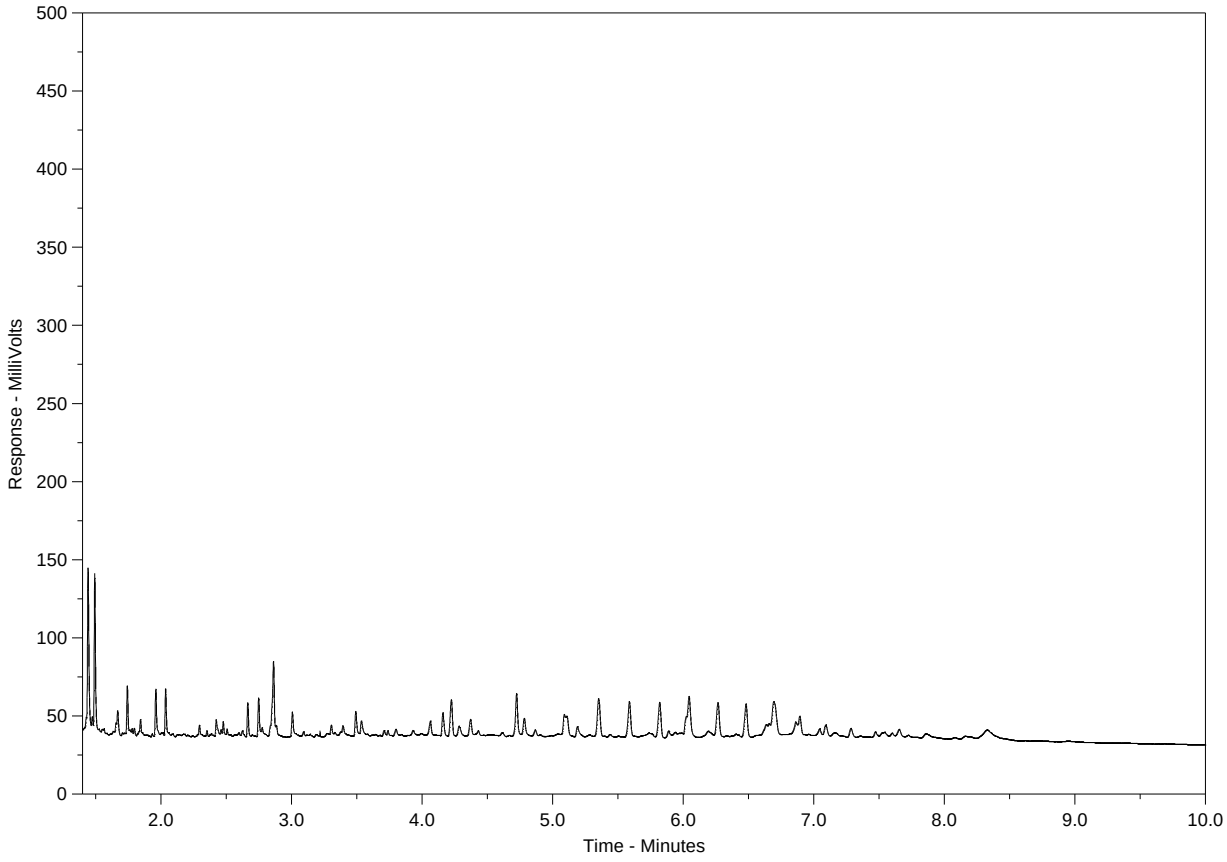
GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Hydrocarbon Distribution Report

ALS Sample ID: L1069414-1
Client Sample ID: 1616-30_DISCHARGE



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

8081 Lougheed Highway • Suite 100 • Burnaby,
Tel: 604-253-4188 Toll Free: 1-800-665-0243 FAX: 604-253-6700
ALS Contact: Can Dang

Sel:40034

CHAIN OF CUSTODY FORM

Form 68699

BHP Billiton Diamonds Inc.
1102 4920 52nd Street, Yellowknife, NT X1A 3T1
Tel: 867-880-2157 Fax: 867-880-4012
BHP Contacts: David Bruce/ Richard EhlertDavid

L1069414

For Lab Use

FOR LAB USE ONLY

Station ID	Matrix	Date	Time	Init	As, Se By CCMS	BTEX+TVH	Glycols	Oil and Grease	pH	SNP-0013 Major Ions	SNP-0013 Nutrients	SNP-0013 Physical Parameters	SNP-0013 Total Metals	TDS	Total Ammonia	Total Organic Carbon	TPH	TSS					
1616-30_Discharge	Water	03-Oct-2011	03:21 PM	KJ	1	1	1	1		1	1	1	1	1	1	1	1	1	BHP2				
1616-11	Water	03-Oct-2011	04:01 PM	KJ					1						1			1	BHP2				
1616-121	Water	03-Oct-2011	04:02 PM	KJ					1						1			1	BHP2				
1616-494	Water	03-Oct-2011	04:06 PM	KJ					1						1			1	BHP2				
1616-103	Water	03-Oct-2011	04:05 PM	KJ					1						1			1	BHP2				

L1069414-COFC

Changed to FREEZER Rack
5 Oct 2011
RE

Turn around Required: Regular 2-week turnaround. Forward results by 17 Oct 2011

Special Instructions (Billing details, QC reporting, etc):

Billing Code: BHP2001

Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by: RD	Date 05 OCT 11 / Time 0900

FOR LAB USE ONLY

Cooler seal intact upon receipt? ☑ Yes ☐ No ☐ N/A

Sample tempurature upon receipt: 5 C.

Frozen? ☐ Yes ☑ No

Send Analytical Results to:

compliance.team@bhpbilliton.com;

BHP BILLITON CANADA INC..
ATTN: David G. Bruce / Richard Ehlert David
1102 - 4920 52nd Street
Yellowknife NT X1A 3T1

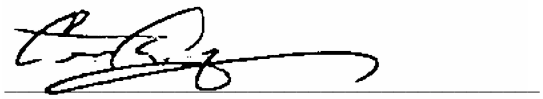
Date Received: 12-OCT-11
Report Date: 24-OCT-11 17:43 (MT)
Version: FINAL

Client Phone: 867-880-2157

Certificate of Analysis

Lab Work Order #: L1070509

Project P.O. #: BHP2001
Job Reference: 68700
C of C Numbers:
Legal Site Desc: 6200801716



Can Dang
Senior Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1070509-1 WATER 10-OCT-11 13:30 1616-30_DISCHARGE	L1070509-2 WATER 10-OCT-11 13:31 1616-121	L1070509-3 WATER 10-OCT-11 13:32 1616-494	L1070509-4 WATER 10-OCT-11 14:00 1616-302	
WATER						
Physical Tests	Conductivity (uS/cm)	825	<2.0	<2.0	825	
	Hardness (as CaCO3) (mg/L)	151	<0.50	<0.50	145	
	pH (pH)	7.91	5.61	5.74	7.91	
	Total Suspended Solids (mg/L)	<3.0	<3.0	<3.0	<3.0	
	Total Dissolved Solids (mg/L)	478	<10	<10	486	
	Turbidity (NTU)	1.57	0.20	<0.10	1.31	
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	44.5	<2.0	<2.0	44.4	
	Ammonia (as N) (mg/L)	<0.0050	<0.0050	0.0159	<0.0050	
	Chloride (Cl) (mg/L)	138	<0.50	<0.50	139	
	Nitrate and Nitrite (as N) (mg/L)	3.49	<0.0051	<0.0051	3.51	
	Nitrate (as N) (mg/L)	3.47	<0.0050	<0.0050	3.48	
	Nitrite (as N) (mg/L)	0.020	<0.0010	<0.0010	0.022	
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Phosphorus (P)-Total (mg/L)	0.0067	<0.0020	<0.0020	0.0068	
	Sulfate (SO4) (mg/L)	121	<0.50	<0.50	120	
Organic / Inorganic Carbon	Total Carbon (mg/L)	13.5	<0.50	<0.50	13.7	
	Total Organic Carbon (mg/L)	4.92	<0.50	<0.50	4.93	
Total Metals	Aluminum (Al)-Total (mg/L)	0.0391	<0.0030	<0.0030	0.0387	
	Antimony (Sb)-Total (mg/L)	0.00124	<0.00010	<0.00010	0.00117	
	Arsenic (As)-Total (mg/L)	0.00054	<0.00010	<0.00010	0.00052	
	Barium (Ba)-Total (mg/L)	0.0746	<0.000050	<0.000050	0.0720	
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Boron (B)-Total (mg/L)	0.028	<0.010	<0.010	0.027	
	Cadmium (Cd)-Total (mg/L)	0.000023	<0.000010	<0.000010	<0.000040 DLM	
	Calcium (Ca)-Total (mg/L)	34.7	<0.050	<0.050	33.5	
	Chromium (Cr)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Copper (Cu)-Total (mg/L)	0.00129	<0.00050	<0.00050	0.00135	
	Iron (Fe)-Total (mg/L)	0.035	<0.030	<0.030	0.031	
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Total (mg/L)	0.00467	<0.00050	<0.00050	0.00483	
	Magnesium (Mg)-Total (mg/L)	15.6	<0.10	<0.10	15.0	
	Manganese (Mn)-Total (mg/L)	0.00401	<0.000050	<0.000050	0.00405	
	Molybdenum (Mo)-Total (mg/L)	0.0830	<0.000050	<0.000050	0.0809	
	Nickel (Ni)-Total (mg/L)	0.00444	<0.00050	<0.00050	0.00430	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1070509-1	L1070509-2	L1070509-3	L1070509-4	
	Description	WATER	WATER	WATER	WATER	
	Sampled Date	10-OCT-11	10-OCT-11	10-OCT-11	10-OCT-11	
	Sampled Time	13:30	13:31	13:32	14:00	
	Client ID	1616-30_DISCHARGE	1616-121	1616-494	1616-302	
Grouping	**Analyte**					
WATER						
Total Metals	Potassium (K)-Total (mg/L)	28.0	<2.0	<2.0	27.0	
	Selenium (Se)-Total (mg/L)	0.00024	<0.00010	<0.00010	0.00023	
	Silicon (Si)-Total (mg/L)	0.319	<0.050	<0.050	0.278	
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Total (mg/L)	94.4	<2.0	<2.0	90.7	
	Strontium (Sr)-Total (mg/L)	0.703	<0.00010	<0.00010	0.685	
	Thallium (Tl)-Total (mg/L)	0.000035	<0.000010	<0.000010	0.000035	
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	
	Uranium (U)-Total (mg/L)	0.000588	<0.000010	<0.000010	0.000584	
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	
Aggregate Organics	Oil and Grease (mg/L)	<5.0	<5.0	<5.0	<5.0	
Volatile Organic Compounds	Benzene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Ethylbenzene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Styrene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Toluene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	ortho-Xylene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	meta- & para-Xylene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Xylenes (mg/L)	<0.00075	<0.00075	<0.00075	<0.00075	
	Surrogate: 4-Bromofluorobenzene (SS) (%)	97.6	96.7	95.0	98.6	
	Surrogate: 1,4-Difluorobenzene (SS) (%)	99.4	99.5	99.3	99.0	
Hydrocarbons	TVH (C5-C10) (mg/L)	<0.10	<0.10	<0.10	<0.10	
	TEH10-30 (mg/L)	<0.15	<0.15	<0.15	<0.15	
	TPH5-30 (mg/L)	<0.25	<0.25	<0.25	<0.25	
Glycols	Diethylene Glycol (mg/L)	<5.0			<5.0	
	Ethylene Glycol (mg/L)	<5.0			<5.0	
	1,2-Propylene Glycol (mg/L)	<5.0			<5.0	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Nitrate (as N)	MS-B	L1070509-1, -2, -3, -4
Matrix Spike	Sulfate (SO4)	MS-B	L1070509-1, -2, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	APHA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-N+N-CALC-VA	Water	Nitrite & Nitrate in Water (Calculation)	EPA 300.0

Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

AS-T-CCMS-VA	Water	Total Arsenic in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

CARBONS-TC-VA	Water	Total carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

EPH-LL-SF-FID-VA	Water	EPH in Waters by GCFID	BCMOE EPH GCFID

This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999). The procedure involves extraction of the entire water sample with dichloromethane. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

GLY-WAT-FID-VA	Water	Glycols in Water by GCFID	SW-846, METHOD 8015B, EPA

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8015B, published by the United States Environmental Protection Agency (EPA). The procedure involves treatment of the sample with a strong base (NaOH) and benzoyl chloride to form the corresponding benzoate esters. The benzoate esters are then extracted with iso-octane and the extract is analyzed by capillary column gas chromatography with flame ionization detection (FID).

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

Reference Information

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

MET-TOT-ICP-VA Water Total Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

OGG-SF-VA Water Oil & Grease by Gravimetric BCMOE (2010), EPA1664A

The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.

P-T-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-MAN-VA Water pH by Manual Meter APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

It is recommended that this analysis be conducted in the field.

PH-MAN-VA Water pH by Manual Meter APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SE-T-CCMS-VA Water Total Selenium in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

TDS-VA Water Total Dissolved Solids by Gravimetric APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-VA Water Total Suspended Solids by Gravimetric APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

Turbidity by Meter APHA 2130 Turbidity

Reference Information

TURBIDITY-VA	Water		

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TVH-HSFID-VA	Water	TVH by headspace GCFID	EPA 8260B, BCMELP CSR METHOD

This procedure involves the headspace extraction of the sample prior to analysis for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID). The VH analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999).

VOC7-HSMS-VA	Water	BTEX/MTBE/Styrene by Headspace GCMS	EPA8260B, 5021

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

VOC7/VOC-SURR-MS-VA	Water	VOC7 and/or VOC Surrogates for Waters	EPA8260B, 5021
XYLENES-CALC-VA	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero. The DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

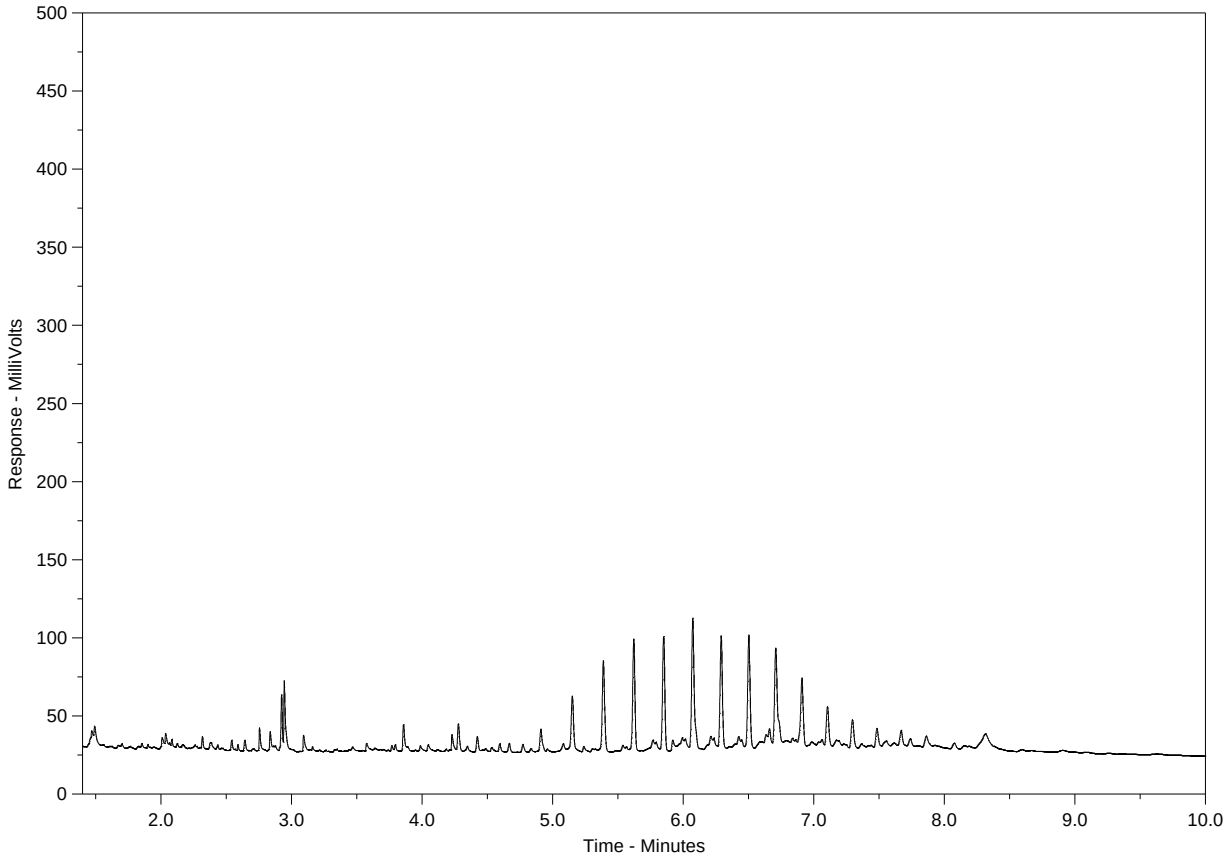
GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Hydrocarbon Distribution Report

ALS Sample ID: L1070509-L-1
Client Sample ID: 1616-30_DISCHARGE



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

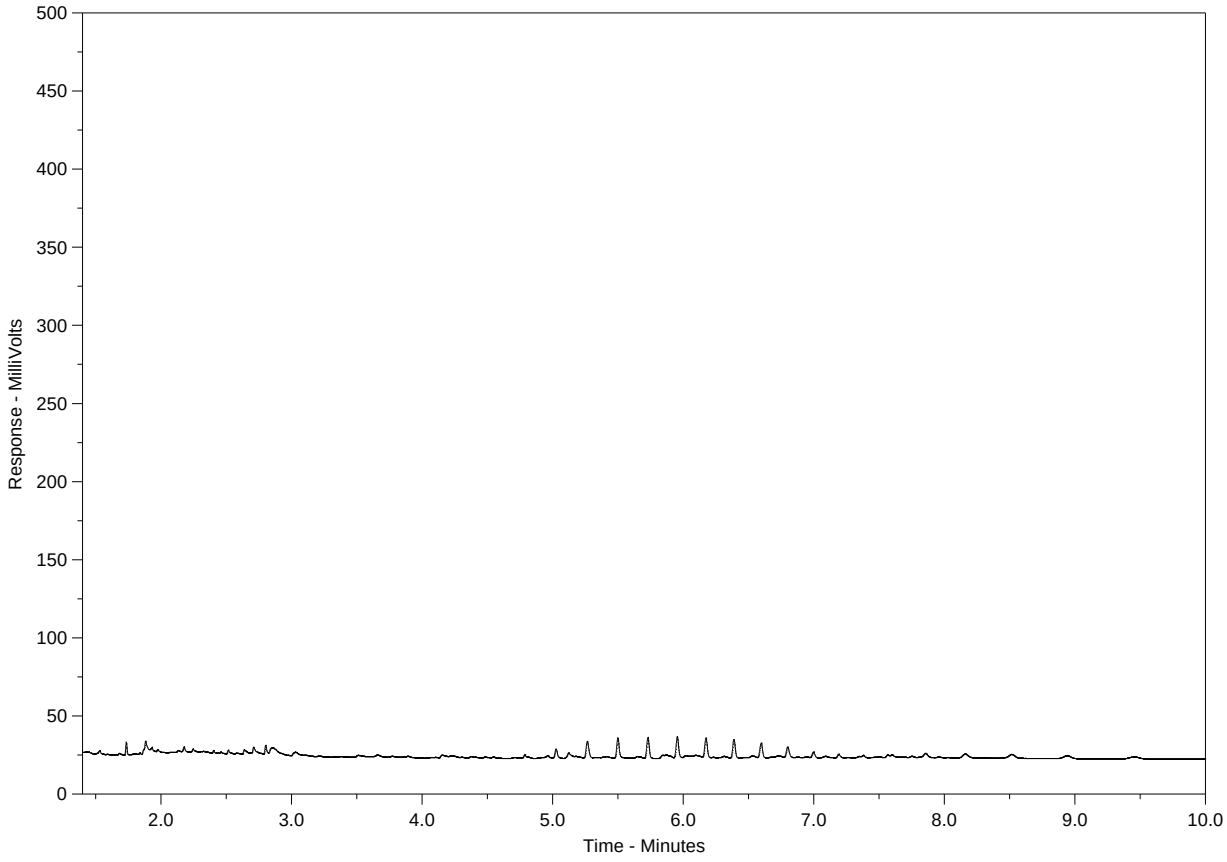
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Hydrocarbon Distribution Report

ALS Sample ID: L1070509-L-2
Client Sample ID: 1616-121



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

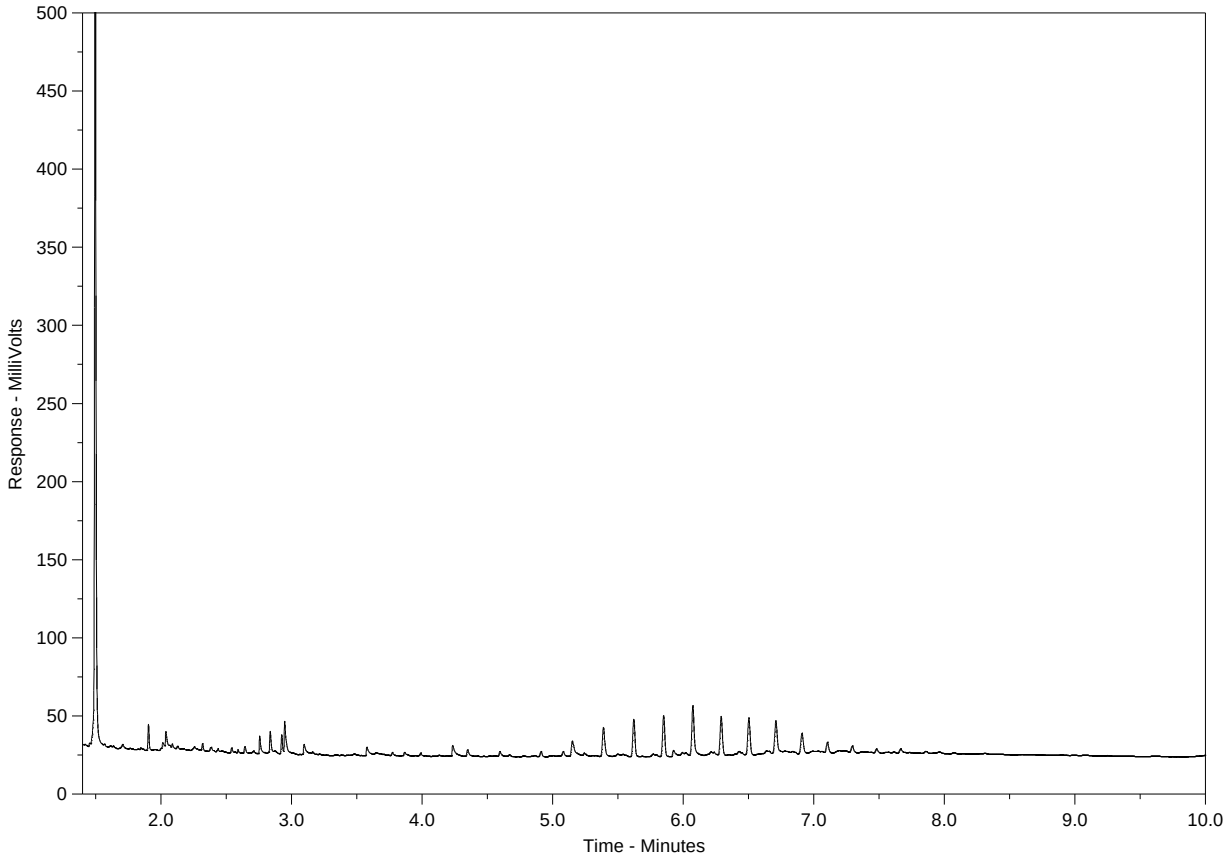
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Hydrocarbon Distribution Report

ALS Sample ID: L1070509-L-3
Client Sample ID: 1616-494



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

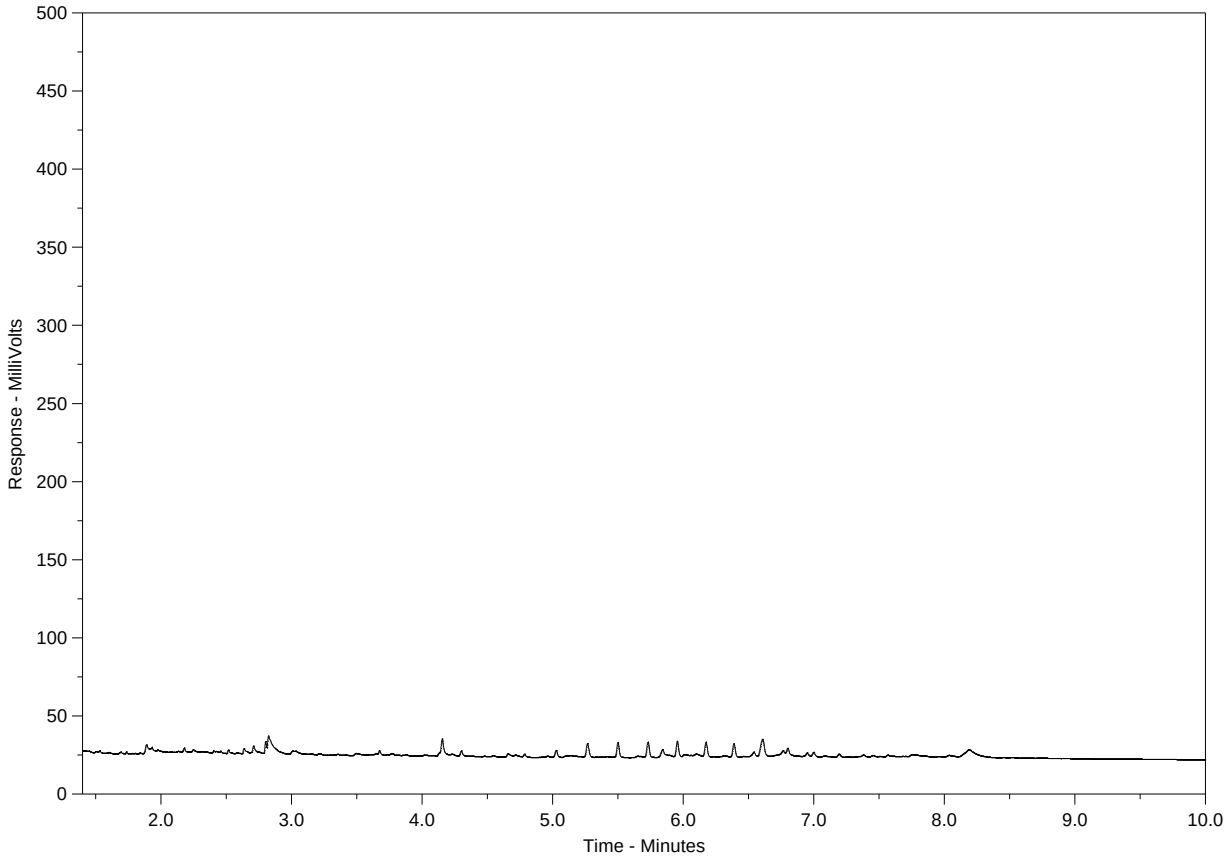
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Hydrocarbon Distribution Report

ALS Sample ID: L1070509-L-4
Client Sample ID: 1616-302



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

8081 Lougheed Highway • Suite 100 • Burnaby,
Tel: 604-253-4188 Toll Free: 1-800-665-0243 FAX: 604-253-6700
ALS Contact: Can Dang

Form 68700

BHP Billiton Diamonds Inc.
1102 4920 52nd Street, Yellowknife, NT X1A 3T1
Tel: 867-880-2157 Fax: 867-880-4012
BHP Contacts: David Bruce/ Richard EhlertDavid

CHAIN OF CUSTODY FORM

L1070509

For Lab Use

FOR LAB USE ONLY

Station ID		Matrix	Date	Time	Init	As, Se By CCMS	BTEX+TVH	Glycols	Oil and Grease	SNP-0013 Major Ions	SNP-0013 Nutrients	SNP-0013 Physical Parameters	SNP-0013 Total Metals	TDS	Total Ammonia	Total Organic Carbon	TPH	TSS							
1616-30_Discharge	✓	Water	10-Oct-2011	01:30 PM	HO	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP2						
1616-121	✓	Water	10-Oct-2011	01:31 PM	HO	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP2						
1616-494	✓	Water	10-Oct-2011	01:32 PM	HO	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP2						
1616-302	✓	Water	10-Oct-2011	02:00 PM	HO	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP2						

L1070509-COFC

Turn around Required: 2 Day Rush on Nitrate Analysis Please

Special Instructions (Billing details, QC reporting, etc):

Billing Code: BHP2001

Relinquished by:	Date / Time	Received by:	Date / Time
Harry O.	Date 10-Oct-11 Time 14:29	Brittany	Date Oct.12 Time 10:38
Joe P.	Date 10-Oct-11 Time 1430	Received by:	Date / Time

FOR LAB USE ONLY

Cooler seal intact upon receipt? ☒ Yes ☐ No ☐ N/A

Sample tempurature upon receipt: 14 C.

Frozen? ☐ Yes ☒ No

Send Analytical Results to:

compliance.team@bhpbilliton.com;

BHP BILLITON CANADA INC..
ATTN: David G. Bruce / Richard Ehlert David
1102 - 4920 52nd Street
Yellowknife NT X1A 3T1

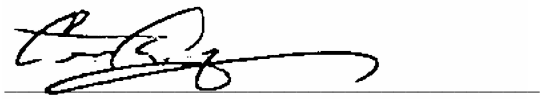
Date Received: 19-OCT-11
Report Date: 26-OCT-11 17:03 (MT)
Version: FINAL

Client Phone: 867-880-2157

Certificate of Analysis

Lab Work Order #: L1073917

Project P.O. #:	BHP2001
Job Reference:	68703
C of C Numbers:	68703
Legal Site Desc:	6200801716



Can Dang
Senior Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1073917-1				
	Description	WATER				
	Sampled Date	17-OCT-11				
	Sampled Time	15:00				
	Client ID	1616-30_DISCHARGE				
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	862				
	Hardness (as CaCO3) (mg/L)	153				
	pH (pH)	7.92				
	Total Suspended Solids (mg/L)	<3.0				
	Total Dissolved Solids (mg/L)	473				
	Turbidity (NTU)	1.10				
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	44.8				
	Ammonia (as N) (mg/L)	<0.0050				
	Chloride (Cl) (mg/L)	142				
	Nitrate and Nitrite (as N) (mg/L)	3.65				
	Nitrate (as N) (mg/L)	3.63				
	Nitrite (as N) (mg/L)	0.016				
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010				
	Phosphorus (P)-Total (mg/L)	0.0066				
	Sulfate (SO4) (mg/L)	127				
Organic / Inorganic Carbon	Total Carbon (mg/L)	13.0				
	Total Organic Carbon (mg/L)	4.89				
Total Metals	Aluminum (Al)-Total (mg/L)	0.0333				
	Antimony (Sb)-Total (mg/L)	0.00127				
	Arsenic (As)-Total (mg/L)	0.00059				
	Barium (Ba)-Total (mg/L)	0.0765				
	Beryllium (Be)-Total (mg/L)	<0.00010				
	Bismuth (Bi)-Total (mg/L)	<0.00050				
	Boron (B)-Total (mg/L)	0.027				
	Cadmium (Cd)-Total (mg/L)	<0.000040 DLM				
	Calcium (Ca)-Total (mg/L)	35.5				
	Chromium (Cr)-Total (mg/L)	<0.00050				
	Cobalt (Co)-Total (mg/L)	<0.00010				
	Copper (Cu)-Total (mg/L)	0.00138				
	Iron (Fe)-Total (mg/L)	<0.030				
	Lead (Pb)-Total (mg/L)	<0.000050				
	Lithium (Li)-Total (mg/L)	0.00474				
	Magnesium (Mg)-Total (mg/L)	15.5				
	Manganese (Mn)-Total (mg/L)	0.00363				
	Molybdenum (Mo)-Total (mg/L)	0.0875				
	Nickel (Ni)-Total (mg/L)	0.00436				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1073917-1				
	Description	WATER				
	Sampled Date	17-OCT-11				
	Sampled Time	15:00				
	Client ID	1616-30_DISCHARGE				
Grouping	**Analyte**					
WATER						
Total Metals	Potassium (K)-Total (mg/L)	28.8				
	Selenium (Se)-Total (mg/L)	0.00025				
	Silicon (Si)-Total (mg/L)	0.341				
	Silver (Ag)-Total (mg/L)	<0.000010				
	Sodium (Na)-Total (mg/L)	93.7				
	Strontium (Sr)-Total (mg/L)	0.711				
	Thallium (Tl)-Total (mg/L)	0.000035				
	Tin (Sn)-Total (mg/L)	<0.00010				
	Titanium (Ti)-Total (mg/L)	<0.010				
	Uranium (U)-Total (mg/L)	0.000626				
	Vanadium (V)-Total (mg/L)	<0.0010				
	Zinc (Zn)-Total (mg/L)	<0.0030				
Aggregate Organics	Oil and Grease (mg/L)	<5.0				
Volatile Organic Compounds	Benzene (mg/L)	<0.00050				
	Ethylbenzene (mg/L)	<0.00050				
	Styrene (mg/L)	<0.00050				
	Toluene (mg/L)	<0.00050				
	ortho-Xylene (mg/L)	<0.00050				
	meta- & para-Xylene (mg/L)	<0.00050				
	Xylenes (mg/L)	<0.00075				
	Surrogate: 4-Bromofluorobenzene (SS) (%)	95.0				
	Surrogate: 1,4-Difluorobenzene (SS) (%)	100.2				
Hydrocarbons	TVH (C5-C10) (mg/L)	<0.10				
	TEH10-30 (mg/L)	<0.15				
	TPH5-30 (mg/L)	<0.25				
Glycols	Diethylene Glycol (mg/L)	<5.0				
	Ethylene Glycol (mg/L)	<5.0				
	1,2-Propylene Glycol (mg/L)	<5.0				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Cadmium (Cd)-Total	DLM	L1073917-1
Method Blank	Silver (Ag)-Total	MB-LOR	L1073917-1
Method Blank	Tin (Sn)-Total	MB-LOR	L1073917-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects
MB-LOR	Method Blank exceeds ALS DQO. LORs adjusted for samples with positive hits below 5 times blank level. Please contact ALS if re-analysis is required.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	APHA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-N+N-CALC-VA	Water	Nitrite & Nitrate in Water (Calculation)	EPA 300.0

Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

AS-T-CCMS-VA	Water	Total Arsenic in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

CARBONS-TC-VA	Water	Total carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

EPH-LL-SF-FID-VA	Water	EPH in Waters by GCFID	BCMOE EPH GCFID

This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999). The procedure involves extraction of the entire water sample with dichloromethane. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

GLY-WAT-FID-VA	Water	Glycols in Water by GCFID	SW-846, METHOD 8015B, EPA

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8015B, published by the United States Environmental Protection Agency (EPA). The procedure involves treatment of the sample with a strong base (NaOH) and benzoyl chloride to form the corresponding benzoate esters. The benzoate esters are then extracted with iso-octane and the extract is analyzed by capillary column gas chromatography with flame ionization detection (FID).

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

MET-TOT-ICP-VA Water Total Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

OGG-SF-VA Water Oil & Grease by Gravimetric BCMOE (2010), EPA1664A

The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.

P-T-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SE-T-CCMS-VA Water Total Selenium in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

TDS-VA Water Total Dissolved Solids by Gravimetric APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-VA Water Total Suspended Solids by Gravimetric APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TVH-HSFID-VA Water TVH by headspace GCFID EPA 8260B, BCMELP CSR METHOD

This procedure involves the headspace extraction of the sample prior to analysis for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID). The VH analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Water by GC/FID" (Version 2.1, July

Reference Information

1999).

VOC7-HSMS-VA	Water	BTEX/MTBE/Styrene by Headspace GCMS	EPA8260B, 5021

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

VOC7/VOC-SURR-MS-VA	Water	VOC7 and/or VOC Surrogates for Waters	EPA8260B, 5021
XYLENES-CALC-VA	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero. The DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

68703

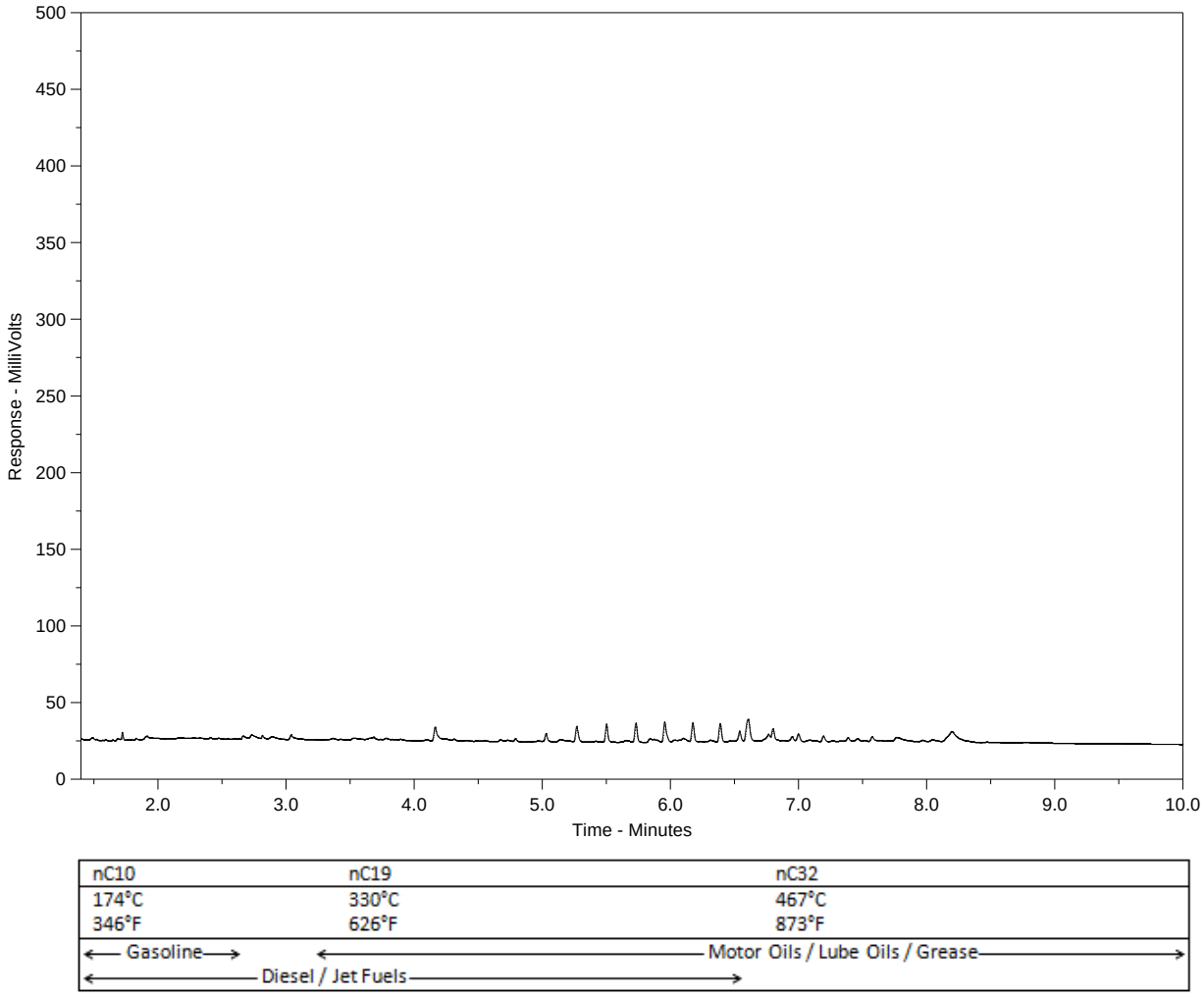
GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Hydrocarbon Distribution Report

ALS Sample ID: L1073917-L-1
Client Sample ID: 1616-30_DISCHARGE



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F

← Gasoline →
← Diesel / Jet Fuels →
← Motor Oils / Lube Oils / Grease →

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

SO 40039

L1073917

Form 68703

bhpbilliton

8081 Lougheed Highway • Suite 100 • Burnaby,
Tel: 604-253-4188 Toll Free: 1-800-665-0243 FAX: 604-253-6700
ALS Contact: Can Dang

BHP Billiton Diamonds Inc.
1102 4920 52nd Street, Yellowknife, NT X1A 3T1
Tel: 867-880-2157 Fax: 867-880-4012
BHP Contacts: David Bruce/ Richard EhlertDavid

CHAIN OF CUSTODY FORM

For Lab Use

FOR LAB USE ONLY

Station ID	Matrix	Date	Time	Init	As, Se By CCMS	BTEX+TVH	Glycols	Oil and Grease	SNP-0033 Major Ions	SNP-0013 Nutrients	SNP-0013 Physical Parameters	SNP-0013 Total Metals	TDS	Total Ammonia	Total Organic Carbon	TPH	TSS							
1616-30_Discharge	Water	17-Oct-2011	03:00 PM	JP	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP2						

L1073917-COFC

Turn around Required: 1 week rush turnaround

Special Instructions (Billing details, QC reporting, etc):

Billing Code: BHP2001

Relinquished by:	Date / Time	Received by:	Date / Time
		BP	Oct. 19 / 13:19
Relinquished by:	Date / Time	Received by:	Date / Time

FOR LAB USE ONLY

Cooler seal intact upon receipt? ☒ Yes ☐ No ☐ N/A

Sample tempurature upon receipt: 3 C.

Frozen? ☐ Yes ☒ No

Send Analytical Results to:

compliance.team@bhpbilliton.com;

BHP BILLITON CANADA INC..
ATTN: David G. Bruce / Richard Ehlert David
1102 - 4920 52nd Street
Yellowknife NT X1A 3T1

Date Received: 27-OCT-11
Report Date: 02-NOV-11 17:15 (MT)
Version: FINAL

Client Phone: 867-880-2157

Certificate of Analysis

Lab Work Order #: L1077796

Project P.O. #: BHP2001
Job Reference: 68704
C of C Numbers:
Legal Site Desc: 6200801716

Can Dang
Senior Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1077796-1				
	Description	WATER				
	Sampled Date	24-OCT-11				
	Sampled Time	16:05				
	Client ID	1616-30_DISCHARGE				
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	837				
	Hardness (as CaCO3) (mg/L)	157				
	pH (pH)	7.89				
	Total Suspended Solids (mg/L)	<3.0				
	Total Dissolved Solids (mg/L)	493				
	Turbidity (NTU)	0.85				
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	45.7				
	Ammonia (as N) (mg/L)	<0.0050				
	Chloride (Cl) (mg/L)	142				
	Nitrate and Nitrite (as N) (mg/L)	3.93				
	Nitrate (as N) (mg/L)	3.92				
	Nitrite (as N) (mg/L)	0.014				
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010				
	Phosphorus (P)-Total (mg/L)	0.0103				
	Sulfate (SO4) (mg/L)	127				
Organic / Inorganic Carbon	Total Carbon (mg/L)	14.1				
	Total Organic Carbon (mg/L)	4.84				
Total Metals	Aluminum (Al)-Total (mg/L)	0.0260				
	Antimony (Sb)-Total (mg/L)	0.00119				
	Arsenic (As)-Total (mg/L)	0.00060				
	Barium (Ba)-Total (mg/L)	0.0777				
	Beryllium (Be)-Total (mg/L)	<0.00010				
	Bismuth (Bi)-Total (mg/L)	<0.00050				
	Boron (B)-Total (mg/L)	0.026				
	Cadmium (Cd)-Total (mg/L)	<0.000040 DLM				
	Calcium (Ca)-Total (mg/L)	35.5				
	Chromium (Cr)-Total (mg/L)	<0.00050				
	Cobalt (Co)-Total (mg/L)	<0.00010				
	Copper (Cu)-Total (mg/L)	0.00126				
	Iron (Fe)-Total (mg/L)	<0.030				
	Lead (Pb)-Total (mg/L)	<0.000050				
	Lithium (Li)-Total (mg/L)	0.00532				
	Magnesium (Mg)-Total (mg/L)	16.6				
	Manganese (Mn)-Total (mg/L)	0.00251				
	Molybdenum (Mo)-Total (mg/L)	0.0826				
	Nickel (Ni)-Total (mg/L)	0.00430				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1077796-1				
	Description	WATER				
	Sampled Date	24-OCT-11				
	Sampled Time	16:05				
	Client ID	1616-30_DISCHARGE				
Grouping	**Analyte**					
WATER						
Total Metals	Potassium (K)-Total (mg/L)	30.4				
	Selenium (Se)-Total (mg/L)	0.00026				
	Silicon (Si)-Total (mg/L)	0.359				
	Silver (Ag)-Total (mg/L)	<0.000010				
	Sodium (Na)-Total (mg/L)	102				
	Strontium (Sr)-Total (mg/L)	0.717				
	Thallium (Tl)-Total (mg/L)	0.000032				
	Tin (Sn)-Total (mg/L)	<0.00010				
	Titanium (Ti)-Total (mg/L)	<0.010				
	Uranium (U)-Total (mg/L)	0.000576				
	Vanadium (V)-Total (mg/L)	<0.0010				
	Zinc (Zn)-Total (mg/L)	<0.0030				
Aggregate Organics	Oil and Grease (mg/L)	<5.0				
Volatile Organic Compounds	Benzene (mg/L)	<0.00050				
	Ethylbenzene (mg/L)	<0.00050				
	Styrene (mg/L)	<0.00050				
	Toluene (mg/L)	<0.00050				
	ortho-Xylene (mg/L)	<0.00050				
	meta- & para-Xylene (mg/L)	<0.00050				
	Xylenes (mg/L)	<0.00075				
	Surrogate: 4-Bromofluorobenzene (SS) (%)	99.5				
	Surrogate: 1,4-Difluorobenzene (SS) (%)	100.7				
Hydrocarbons	TVH (C5-C10) (mg/L)	<0.10				
	TEH10-30 (mg/L)	<0.15				
	TPH5-30 (mg/L)	<0.25				
Glycols	Diethylene Glycol (mg/L)	<5.0				
	Ethylene Glycol (mg/L)	<5.0				
	1,2-Propylene Glycol (mg/L)	<5.0				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Laboratory Control Sample	1,2-Propylene Glycol	LCS-H	L1077796-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects
LCS-H	Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	APHA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-N+N-CALC-VA	Water	Nitrite & Nitrate in Water (Calculation)	EPA 300.0

Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

AS-T-CCMS-VA	Water	Total Arsenic in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

CARBONS-TC-VA	Water	Total carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

EPH-LL-SF-FID-VA	Water	EPH in Waters by GCFID	BCMOE EPH GCFID

This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999). The procedure involves extraction of the entire water sample with dichloromethane. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

GLY-WAT-FID-VA	Water	Glycols in Water by GCFID	SW-846, METHOD 8015B, EPA

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8015B, published by the United States Environmental Protection Agency (EPA). The procedure involves treatment of the sample with a strong base (NaOH) and benzoyl chloride to form the corresponding benzoate esters. The benzoate esters are then extracted with iso-octane and the extract is analyzed by capillary column gas chromatography with flame ionization detection (FID).

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

Reference Information

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

MET-TOT-ICP-VA Water Total Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

OGG-SF-VA Water Oil & Grease by Gravimetric BCMOE (2010), EPA1664A

The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.

P-T-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SE-T-CCMS-VA Water Total Selenium in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

TDS-VA Water Total Dissolved Solids by Gravimetric APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-VA Water Total Suspended Solids by Gravimetric APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TVH-HSFID-VA Water TVH by headspace GCFID EPA 8260B, BCMELP CSR METHOD

This procedure involves the headspace extraction of the sample prior to analysis for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID). The VH analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999).

VOC7-HSMS-VA Water BTEX/MTBE/Styrene by Headspace GCMS EPA8260B, 5021

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph.

Reference Information

Target compound concentrations are measured using mass spectrometry detection.

VOC7/VOC-SURR-MS-VA	Water	VOC7 and/or VOC Surrogates for Waters	EPA8260B, 5021
XYLENES-CALC-VA	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero. The DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

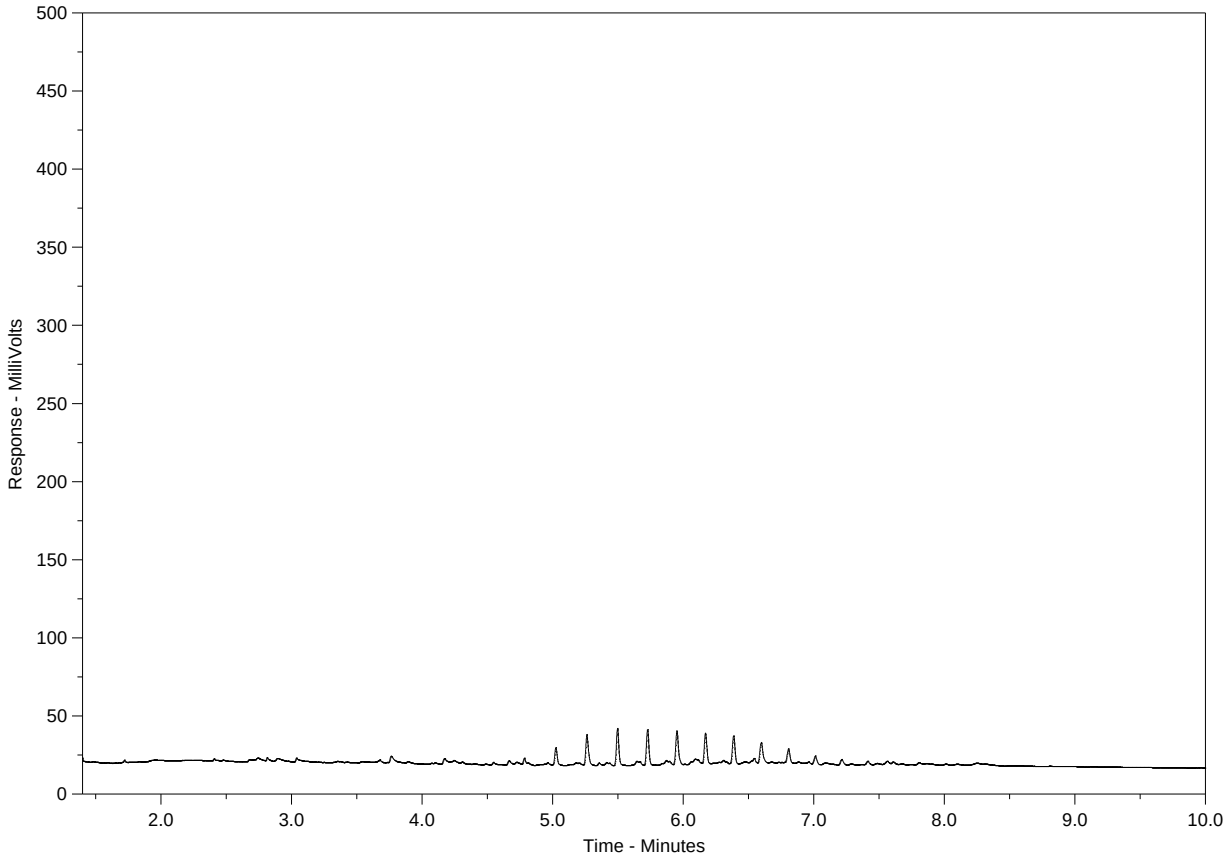
GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Hydrocarbon Distribution Report

ALS Sample ID: L1077796-L-1
Client Sample ID: 1616-30_DISCHARGE



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

8081 Lougheed Highway • Suite 100 • Burnaby,
Tel: 604-253-4188 Toll Free: 1-800-665-0243 FAX: 604-253-6700
ALS Contact: Can Dang

SO# 40042

Form 68704

BHP Billiton Diamonds Inc.
1102 4920 52nd Street, Yellowknife, NT X1A 3T1
Tel: 867-880-2157 Fax: 867-880-4012
BHP Contacts: David Bruce/ Richard EhlertDavid

bhpbilliton

CHAIN OF CUSTODY FORM

L1077796

For Lab Use

FOR LAB USE ONLY

Station ID	Matrix	Date	Time	Init	As, Se By CCMS	BTEX+TVH	Glycols	Oil and Grease	SNP-0013 Major Ions	SNP-0013 Nutrients	SNP-0013 Physical Parameters	SNP-0013 Total Metals	TDS	Total Ammonia	Total Organic Carbon	TPH	TSS					
1616-30_Discharge	Water	24-Oct-2011	04:05 PM	KJ	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP2				

L1077796-COFC

Turn around Required: 1 week RUSH TAT

Special Instructions (Billing details, QC reporting, etc):

Billing Code: BHP2001

Relinquished by:	Date / Time	Received by:	Date / Time
Refinquished by:	Date / Time	Received by: RYAN	Date 9CT 26 / Time 15:48

FOR LAB USE ONLY

Cooler seal intact upon receipt? ☑ Yes ☐ No ☐ N/A

Sample tempurature upon receipt: 6° C.

Frozen? ☐ Yes ☑ No

Send Analytical Results to:

compliance.team@bhpbilliton.com;

BHP BILLITON CANADA INC..
ATTN: David G. Bruce / Richard Ehlert David
1102 - 4920 52nd Street
Yellowknife NT X1A 3T1

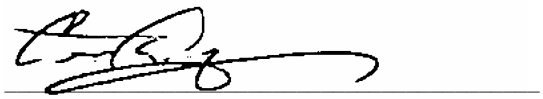
Date Received: 02-NOV-11
Report Date: 10-NOV-11 17:34 (MT)
Version: FINAL

Client Phone: 867-880-2157

Certificate of Analysis

Lab Work Order #: L1080236

Project P.O. #:	BHP2001
Job Reference:	68706
C of C Numbers:	68706
Legal Site Desc:	6200801716



Can Dang
Senior Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1080236-1
		Description	WATER
		Sampled Date	31-OCT-11
		Sampled Time	14:55
		Client ID	1616-30_DISCHARGE
Grouping	**Analyte**		
WATER			
Physical Tests	Conductivity (uS/cm)		854
	Hardness (as CaCO3) (mg/L)		155
	pH (pH)		7.83
	Total Suspended Solids (mg/L)		3.0
	Total Dissolved Solids (mg/L)		491
	Turbidity (NTU)		0.73
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)		44.1
	Ammonia (as N) (mg/L)		0.0065
	Chloride (Cl) (mg/L)		161
	Nitrate and Nitrite (as N) (mg/L)		4.15
	Nitrate (as N) (mg/L)		4.14
	Nitrite (as N) (mg/L)		0.014
	Orthophosphate-Dissolved (as P) (mg/L)		<0.0010
	Phosphorus (P)-Total (mg/L)		0.0063
	Sulfate (SO4) (mg/L)		143
Organic / Inorganic Carbon	Total Carbon (mg/L)		14.5
	Total Organic Carbon (mg/L)		4.66
Total Metals	Aluminum (Al)-Total (mg/L)		0.0239
	Antimony (Sb)-Total (mg/L)		0.00123
	Arsenic (As)-Total (mg/L)		0.00060
	Barium (Ba)-Total (mg/L)		0.0794
	Beryllium (Be)-Total (mg/L)		<0.00010
	Bismuth (Bi)-Total (mg/L)		<0.00050
	Boron (B)-Total (mg/L)		0.033
	Cadmium (Cd)-Total (mg/L)		<0.000040 DLM
	Calcium (Ca)-Total (mg/L)		35.8
	Chromium (Cr)-Total (mg/L)		<0.00050
	Cobalt (Co)-Total (mg/L)		<0.00010
	Copper (Cu)-Total (mg/L)		0.00136
	Iron (Fe)-Total (mg/L)		<0.030
	Lead (Pb)-Total (mg/L)		<0.000050
	Lithium (Li)-Total (mg/L)		0.00606
	Magnesium (Mg)-Total (mg/L)		15.9
	Manganese (Mn)-Total (mg/L)		0.00245
	Molybdenum (Mo)-Total (mg/L)		0.0851
	Nickel (Ni)-Total (mg/L)		0.00422

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1080236-1				
	Description	WATER				
	Sampled Date	31-OCT-11				
	Sampled Time	14:55				
	Client ID	1616-30_DISCHARGE				
Grouping	**Analyte**					
WATER						
Total Metals	Potassium (K)-Total (mg/L)	29.4				
	Selenium (Se)-Total (mg/L)	0.00024				
	Silicon (Si)-Total (mg/L)	0.366				
	Silver (Ag)-Total (mg/L)	<0.000010				
	Sodium (Na)-Total (mg/L)	97.5				
	Strontium (Sr)-Total (mg/L)	0.730				
	Thallium (Tl)-Total (mg/L)	0.000032				
	Tin (Sn)-Total (mg/L)	<0.00010				
	Titanium (Ti)-Total (mg/L)	<0.010				
	Uranium (U)-Total (mg/L)	0.000585				
	Vanadium (V)-Total (mg/L)	<0.0010				
	Zinc (Zn)-Total (mg/L)	<0.0030				
Aggregate Organics	Oil and Grease (mg/L)	<5.0				
Volatile Organic Compounds	Benzene (mg/L)	<0.00050				
	Ethylbenzene (mg/L)	<0.00050				
	Styrene (mg/L)	<0.00050				
	Toluene (mg/L)	<0.00050				
	ortho-Xylene (mg/L)	<0.00050				
	meta- & para-Xylene (mg/L)	<0.00050				
	Xylenes (mg/L)	<0.00075				
	Surrogate: 4-Bromofluorobenzene (SS) (%)	89.9				
	Surrogate: 1,4-Difluorobenzene (SS) (%)	99.0				
Hydrocarbons	TVH (C5-C10) (mg/L)	<0.10				
	TEH10-30 (mg/L)	<0.15				
	TPH5-30 (mg/L)	<0.25				
Glycols	Diethylene Glycol (mg/L)	<5.0				
	Ethylene Glycol (mg/L)	<5.0				
	1,2-Propylene Glycol (mg/L)	<5.0				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Cadmium (Cd)-Total	DLM	L1080236-1
Method Blank	Chromium (Cr)-Total	MB-LOR	L1080236-1
Method Blank	Manganese (Mn)-Total	MB-LOR	L1080236-1
Method Blank	Molybdenum (Mo)-Total	MB-LOR	L1080236-1
Method Blank	Nickel (Ni)-Total	MB-LOR	L1080236-1
Method Blank	Iron (Fe)-Total	MB-LOR	L1080236-1
Matrix Spike	Sulfate (SO4)	MS-B	L1080236-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects
MB-LOR	Method Blank exceeds ALS DQO. LORs adjusted for samples with positive hits below 5 times blank level. Please contact ALS if re-analysis is required.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	APHA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-N+N-CALC-VA	Water	Nitrite & Nitrate in Water (Calculation)	EPA 300.0

Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

AS-T-CCMS-VA	Water	Total Arsenic in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

CARBONS-TC-VA	Water	Total carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

EPH-LL-SF-FID-VA	Water	EPH in Waters by GCFID	BCMOE EPH GCFID

This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999). The procedure involves extraction of the entire water sample with dichloromethane. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

GLY-WAT-FID-VA	Water	Glycols in Water by GCFID	SW-846, METHOD 8015B, EPA

Reference Information

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8015B, published by the United States Environmental Protection Agency (EPA). The procedure involves treatment of the sample with a strong base (NaOH) and benzoyl chloride to form the corresponding benzoate esters. The benzoate esters are then extracted with iso-octane and the extract is analyzed by capillary column gas chromatography with flame ionization detection (FID).

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

MET-TOT-ICP-VA Water Total Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

OGG-SF-VA Water Oil & Grease by Gravimetric BCMOE (2010), EPA1664A

The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.

P-T-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SE-T-CCMS-VA Water Total Selenium in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

TDS-VA Water Total Dissolved Solids by Gravimetric APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-VA Water Total Suspended Solids by Gravimetric APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 Turbidity

Reference Information

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TVH-HSFID-VA	Water	TVH by headspace GCFID	EPA 8260B, BCMELP CSR METHOD

This procedure involves the headspace extraction of the sample prior to analysis for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID). The VH analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999).

VOC7-HSMS-VA	Water	BTEX/MTBE/Styrene by Headspace GCMS	EPA8260B, 5021

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

VOC7/VOC-SURR-MS-VA	Water	VOC7 and/or VOC Surrogates for Waters	EPA8260B, 5021
XYLENES-CALC-VA	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero. The DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

68706

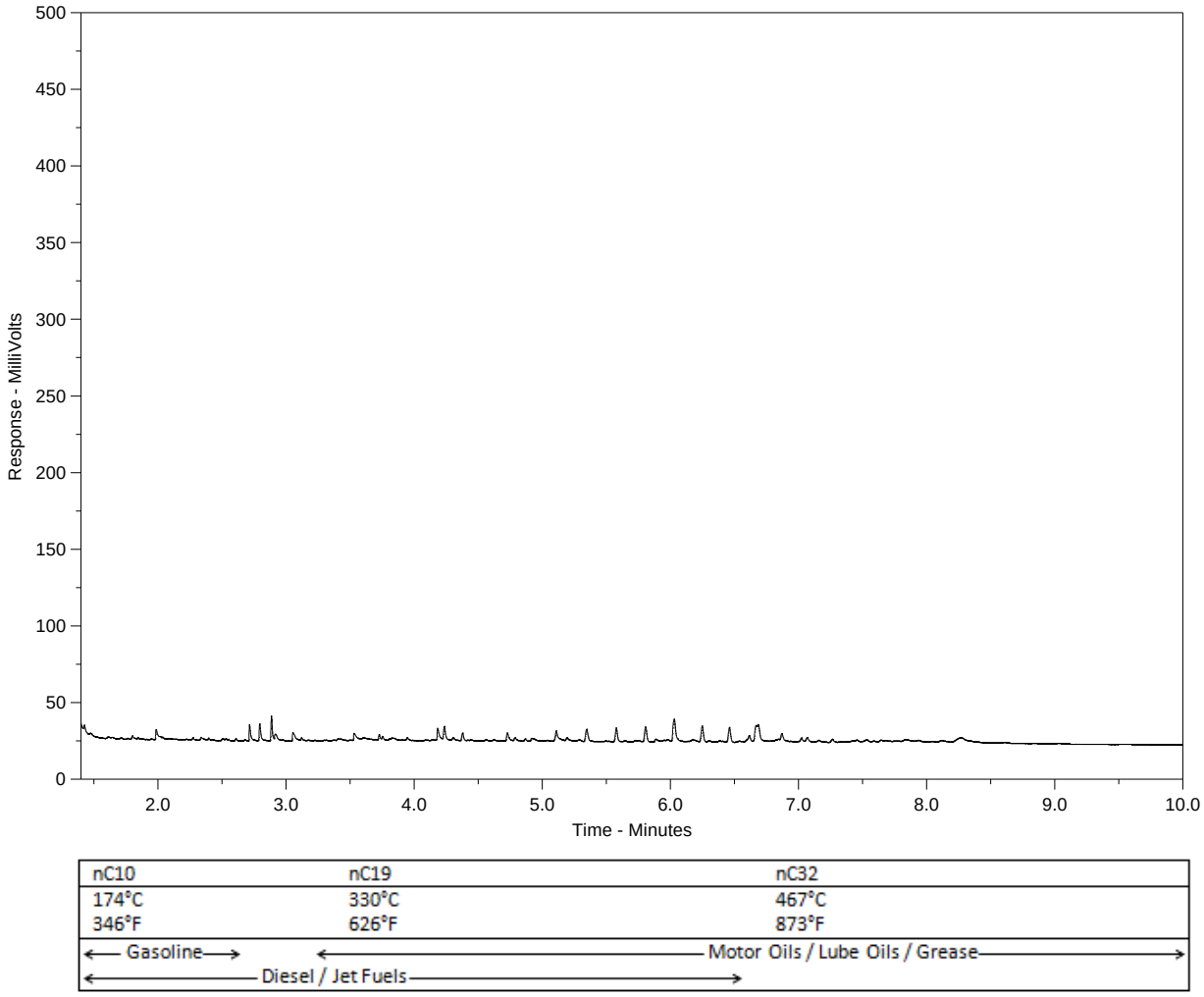
GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Hydrocarbon Distribution Report

ALS Sample ID: L1080236-1
Client Sample ID: 1616-30_DISCHARGE



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

L1080236

40043

AN

80

Tel: 60 :00

ALS C

* L 1 0 8 0 2 3 6 - C O F C *

Form - 68706

bhpbilliton

BHP Billiton Diamonds Inc.
1102 4920 52nd Street, Yellowknife, NT X1A 3T1
Tel: 867-880-2157 Fax: 867-880-4012
BHP Contacts: David Bruce/ Richard EhlertDavid

CHAIN OF CUSTODY FORM

For Lab Use

FOR LAB USE ONLY

Station ID	Matrix	Date	Time	Init	As, Se By CCMS	BTEX+TVH	Glycols	Oil and Grease	SNP-0013 Major Ions	SNP-0013 Nutrients	SNP-0013 Physical Parameters	SNP-0013 Total Metals	TDS	Total Ammonia	Total Organic Carbon	TPH	TSS							
1616-30_Discharge	Water	31-Oct-2011	03:20 PM	KJ	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP2						

Turn around Required: 1 week turnaround

Special Instructions (Billing details, QC reporting, etc):

Billing Code: BHP2001

Relinquished by:	Date: 31 Oct 11	Received by: Mani	Date: Nov 2
	Time		Time 14:55
Relinquished by:	Date	Received by:	Date
	Time		Time

FOR LAB USE ONLY

Cooler seal intact upon receipt? ☐ Yes ☐ No ☐ N/A

Sample tempurature upon receipt: 6 C.

Frozen? ☐ Yes ☐ No

Send Analytical Results to:

compliance.team@bhpbilliton.com;

BHP BILLITON CANADA INC..
ATTN: David G. Bruce / Richard Ehlert David
1102 - 4920 52nd Street
Yellowknife NT X1A 3T1

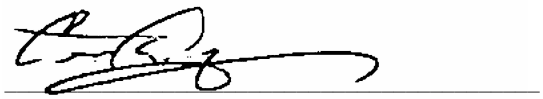
Date Received: 09-NOV-11
Report Date: 17-NOV-11 17:47 (MT)
Version: FINAL

Client Phone: 867-880-2157

Certificate of Analysis

Lab Work Order #: L1082977

Project P.O. #:	BHP2001
Job Reference:	68709
C of C Numbers:	68709
Legal Site Desc:	6200801716



Can Dang
Senior Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1082977-1				
	Description	WATER				
	Sampled Date	07-NOV-11				
	Sampled Time	14:00				
	Client ID	1616-30_DISCHARGE				
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	868				
	Hardness (as CaCO3) (mg/L)	159				
	pH (pH)	7.77				
	Total Suspended Solids (mg/L)	<3.0				
	Total Dissolved Solids (mg/L)	500				
	Turbidity (NTU)	1.31				
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	47.2				
	Ammonia (as N) (mg/L)	0.0051				
	Chloride (Cl) (mg/L)	148				
	Nitrate and Nitrite (as N) (mg/L)	3.88				
	Nitrate (as N) (mg/L)	3.86				
	Nitrite (as N) (mg/L)	0.016				
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010				
	Phosphorus (P)-Total (mg/L)	0.0069				
	Sulfate (SO4) (mg/L)	133				
Organic / Inorganic Carbon	Total Carbon (mg/L)	13.8				
	Total Organic Carbon (mg/L)	4.80				
Total Metals	Aluminum (Al)-Total (mg/L)	0.0225				
	Antimony (Sb)-Total (mg/L)	0.00130				
	Arsenic (As)-Total (mg/L)	0.00068				
	Barium (Ba)-Total (mg/L)	0.0802				
	Beryllium (Be)-Total (mg/L)	<0.00010				
	Bismuth (Bi)-Total (mg/L)	<0.00050				
	Boron (B)-Total (mg/L)	0.034				
	Cadmium (Cd)-Total (mg/L)	<0.000050 DLM				
	Calcium (Ca)-Total (mg/L)	37.0				
	Chromium (Cr)-Total (mg/L)	<0.00050				
	Cobalt (Co)-Total (mg/L)	<0.00010				
	Copper (Cu)-Total (mg/L)	0.00132				
	Iron (Fe)-Total (mg/L)	<0.030				
	Lead (Pb)-Total (mg/L)	<0.000050				
	Lithium (Li)-Total (mg/L)	0.00566				
	Magnesium (Mg)-Total (mg/L)	16.3				
	Manganese (Mn)-Total (mg/L)	0.00217				
	Molybdenum (Mo)-Total (mg/L)	0.0901				
	Nickel (Ni)-Total (mg/L)	0.00504				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1082977-1				
	Description	WATER				
	Sampled Date	07-NOV-11				
	Sampled Time	14:00				
	Client ID	1616-30_DISCHARGE				
Grouping	**Analyte**					
WATER						
Total Metals	Potassium (K)-Total (mg/L)	30.7				
	Selenium (Se)-Total (mg/L)	0.00026				
	Silicon (Si)-Total (mg/L)	0.451				
	Silver (Ag)-Total (mg/L)	<0.000010				
	Sodium (Na)-Total (mg/L)	102				
	Strontium (Sr)-Total (mg/L)	0.766				
	Thallium (Tl)-Total (mg/L)	0.000023				
	Tin (Sn)-Total (mg/L)	<0.00010				
	Titanium (Ti)-Total (mg/L)	<0.010				
	Uranium (U)-Total (mg/L)	0.000641				
	Vanadium (V)-Total (mg/L)	<0.0010				
	Zinc (Zn)-Total (mg/L)	<0.0030				
Aggregate Organics	Oil and Grease (mg/L)	<5.0				
Volatile Organic Compounds	Benzene (mg/L)	<0.00050				
	Ethylbenzene (mg/L)	<0.00050				
	Styrene (mg/L)	<0.00050				
	Toluene (mg/L)	<0.00050				
	ortho-Xylene (mg/L)	<0.00050				
	meta- & para-Xylene (mg/L)	<0.00050				
	Xylenes (mg/L)	<0.00075				
	Surrogate: 4-Bromofluorobenzene (SS) (%)	94.3				
	Surrogate: 1,4-Difluorobenzene (SS) (%)	100.1				
Hydrocarbons	TVH (C5-C10) (mg/L)	<0.10				
	TEH10-30 (mg/L)	<0.15				
	TPH5-30 (mg/L)	<0.25				
Glycols	Diethylene Glycol (mg/L)	<5.0				
	Ethylene Glycol (mg/L)	<5.0				
	1,2-Propylene Glycol (mg/L)	<5.0				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Cadmium (Cd)-Total	DLM	L1082977-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	APHA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-N+N-CALC-VA	Water	Nitrite & Nitrate in Water (Calculation)	EPA 300.0

Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

AS-T-CCMS-VA	Water	Total Arsenic in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

CARBONS-TC-VA	Water	Total carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

EPH-LL-SF-FID-VA	Water	EPH in Waters by GCFID	BCMOE EPH GCFID

This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999). The procedure involves extraction of the entire water sample with dichloromethane. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

GLY-WAT-FID-VA	Water	Glycols in Water by GCFID	SW-846, METHOD 8015B, EPA

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8015B, published by the United States Environmental Protection Agency (EPA). The procedure involves treatment of the sample with a strong base (NaOH) and benzoyl chloride to form the corresponding benzoate esters. The benzoate esters are then extracted with iso-octane and the extract is analyzed by capillary column gas chromatography with flame ionization detection (FID).

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United

Reference Information

States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

MET-TOT-ICP-VA Water Total Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

OGG-SF-VA Water Oil & Grease by Gravimetric BCMOE (2010), EPA1664A

The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.

P-T-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SE-T-CCMS-VA Water Total Selenium in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

TDS-VA Water Total Dissolved Solids by Gravimetric APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-VA Water Total Suspended Solids by Gravimetric APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TVH-HSFID-VA Water TVH by headspace GCFID EPA 8260B, BCMELP CSR METHOD

This procedure involves the headspace extraction of the sample prior to analysis for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID). The VH analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999).

VOC7-HSMS-VA Water BTEX/MTBE/Styrene by Headspace GCMS EPA8260B, 5021

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

VOC7/VOC-SURR-MS-VA Water VOC7 and/or VOC Surrogates for Waters EPA8260B, 5021

Reference Information

XYLENES-CALC-VA	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero. The DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

68709

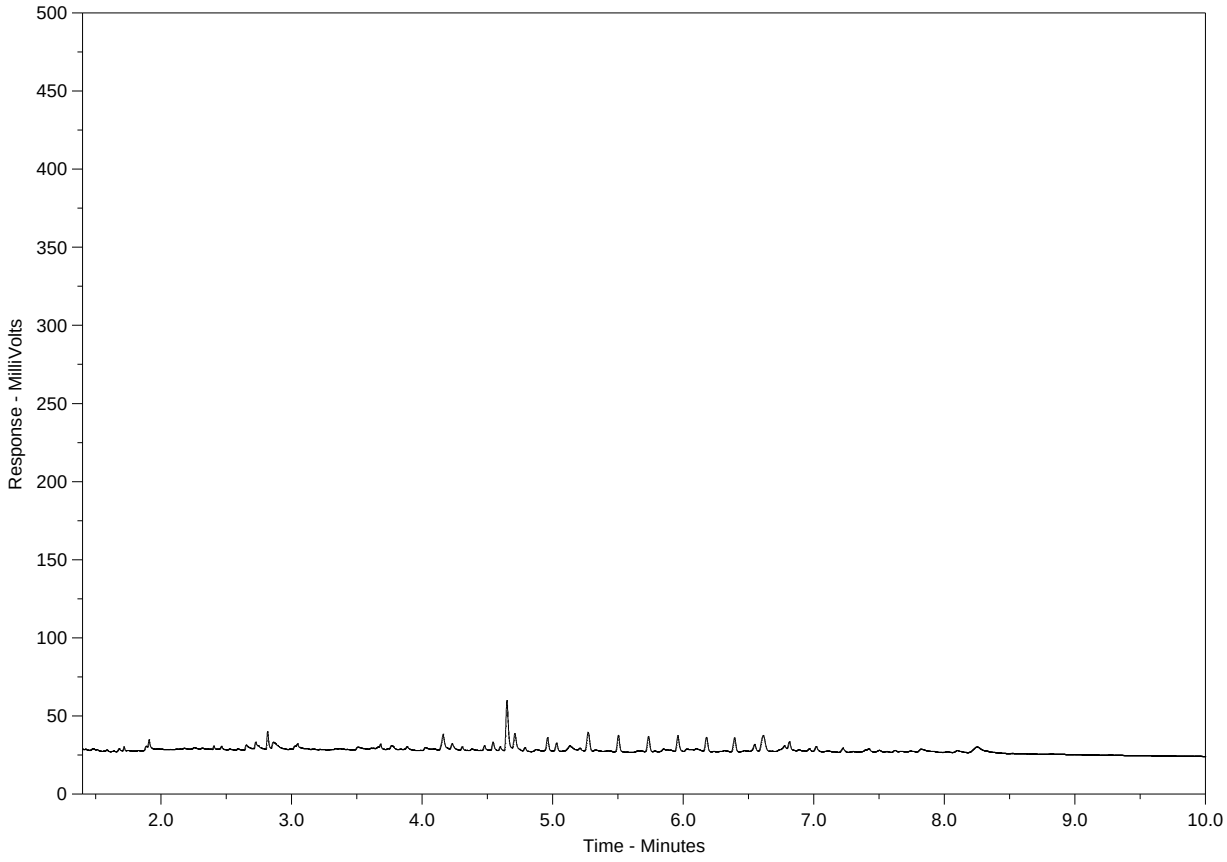
GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Hydrocarbon Distribution Report

ALS Sample ID: L1082977-L-1
Client Sample ID: 1616-30_DISCHARGE



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

L1082977

S.O. 40044

8081 Lougheed Highway • Suite 100 • Burnaby,
Tel: 604-253-4188 Toll Free: 1-800-665-0243 FAX: 604-253-6700
ALS Contact: Can Dang

Form 68709

bhpbilliton

BHP Billiton Diamonds Inc.
1102 4920 52nd Street, Yellowknife, NT X1A 3T1
Tel: 867-880-2157 Fax: 867-880-4012
BHP Contacts: David Bruce/ Richard EhlertDavid

CHAIN OF CUSTODY FORM

FOR LAB USE ONLY

For Lab Use	Station ID	Matrix	Date	Time	Init	As, Se By CCMS	BTEX+TVH	Glycols	Oil and Grease	SNP-0013 Major Ions	SNP-0013 Nutrients	SNP-0013 Physical Parameters	SNP-0013 Total Metals	TDS	Total Ammonia	Total Organic Carbon	TPH	TSS						
	1616-30_Discharge	Water	07-Nov-2011	02:00 PM	NA	1	1	1	1	1	1	1	1	1	1	1	1	BHP2						

Turn around Required: 2-day RUSH nitrate analysis; remainder of analyses 1-week RUSH.

Special Instructions (Billing details, QC reporting, etc):

Billing Code: BHP2001

Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date 9/Nov/11 Time 11:30

FOR LAB USE ONLY

Cooler seal intact upon receipt? ☐ Yes ☐ No ☐ N/A

Sample tempurature upon receipt: 5.6 C.

Frozen? ☐ Yes ☐ No

Send Analytical Results to:

compliance.team@bhpbilliton.com;

BHP BILLITON CANADA INC..
ATTN: David G. Bruce / Richard Ehlert David
1102 - 4920 52nd Street
Yellowknife NT X1A 3T1

Date Received: 21-NOV-11
Report Date: 01-DEC-11 16:38 (MT)
Version: FINAL

Client Phone: 867-880-2157

Certificate of Analysis

Lab Work Order #: L1086993

Project P.O. #: BHP2001
Job Reference: 68713
C of C Numbers:
Legal Site Desc: 6200801716

Can Dang
Senior Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1086993-1				
	Description	WATER				
	Sampled Date	14-NOV-11				
	Sampled Time	14:55				
	Client ID	1616-30_DISCHARGE				
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	917				
	Hardness (as CaCO3) (mg/L)	144				
	pH (pH)	7.84				
	Total Suspended Solids (mg/L)	<3.0				
	Total Dissolved Solids (mg/L)	517				
	Turbidity (NTU)	0.61				
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	47.6				
	Ammonia (as N) (mg/L)	0.0123				
	Chloride (Cl) (mg/L)	149				
	Nitrate and Nitrite (as N) (mg/L)	4.24				
	Nitrate (as N) (mg/L)	4.22				
	Nitrite (as N) (mg/L)	0.017				
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010				
	Phosphorus (P)-Total (mg/L)	0.0081				
	Sulfate (SO4) (mg/L)	133				
Organic / Inorganic Carbon	Total Carbon (mg/L)	14.3				
	Total Organic Carbon (mg/L)	4.94				
Total Metals	Aluminum (Al)-Total (mg/L)	0.0199				
	Antimony (Sb)-Total (mg/L)	0.00130				
	Arsenic (As)-Total (mg/L)	0.00070				
	Barium (Ba)-Total (mg/L)	0.0788				
	Beryllium (Be)-Total (mg/L)	<0.00010				
	Bismuth (Bi)-Total (mg/L)	<0.00050				
	Boron (B)-Total (mg/L)	0.034				
	Cadmium (Cd)-Total (mg/L)	<0.000040 DLM				
	Calcium (Ca)-Total (mg/L)	33.0				
	Chromium (Cr)-Total (mg/L)	<0.00050				
	Cobalt (Co)-Total (mg/L)	<0.00010				
	Copper (Cu)-Total (mg/L)	0.00124				
	Iron (Fe)-Total (mg/L)	<0.030				
	Lead (Pb)-Total (mg/L)	<0.000050				
	Lithium (Li)-Total (mg/L)	0.00488				
	Magnesium (Mg)-Total (mg/L)	15.0				
	Manganese (Mn)-Total (mg/L)	0.00298				
	Molybdenum (Mo)-Total (mg/L)	0.0873				
	Nickel (Ni)-Total (mg/L)	0.00477				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1086993-1				
	Description	WATER				
	Sampled Date	14-NOV-11				
	Sampled Time	14:55				
	Client ID	1616-30_DISCHARGE				
Grouping	**Analyte**					
WATER						
Total Metals	Potassium (K)-Total (mg/L)	29.5				
	Selenium (Se)-Total (mg/L)	0.00028				
	Silicon (Si)-Total (mg/L)	0.471				
	Silver (Ag)-Total (mg/L)	<0.000010				
	Sodium (Na)-Total (mg/L)	96.7				
	Strontium (Sr)-Total (mg/L)	0.771				
	Thallium (Tl)-Total (mg/L)	0.000033				
	Tin (Sn)-Total (mg/L)	<0.00010				
	Titanium (Ti)-Total (mg/L)	<0.010				
	Uranium (U)-Total (mg/L)	0.000584				
	Vanadium (V)-Total (mg/L)	<0.0010				
	Zinc (Zn)-Total (mg/L)	<0.0030				
Aggregate Organics	Oil and Grease (mg/L)	<5.0				
Volatile Organic Compounds	Benzene (mg/L)	<0.00050				
	Ethylbenzene (mg/L)	<0.00050				
	Styrene (mg/L)	<0.00050				
	Toluene (mg/L)	<0.00050				
	ortho-Xylene (mg/L)	<0.00050				
	meta- & para-Xylene (mg/L)	<0.00050				
	Xylenes (mg/L)	<0.00075				
	Surrogate: 4-Bromofluorobenzene (SS) (%)	94.6				
	Surrogate: 1,4-Difluorobenzene (SS) (%)	99.8				
Hydrocarbons	TVH (C5-C10) (mg/L)	<0.10				
	TEH10-30 (mg/L)	<0.15				
	TPH5-30 (mg/L)	<0.25				
Glycols	Diethylene Glycol (mg/L)	<5.0				
	Ethylene Glycol (mg/L)	<5.0				
	1,2-Propylene Glycol (mg/L)	<5.0				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	APHA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-N+N-CALC-VA	Water	Nitrite & Nitrate in Water (Calculation)	EPA 300.0

Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

AS-T-CCMS-VA	Water	Total Arsenic in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

CARBONS-TC-VA	Water	Total carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

EPH-LL-SF-FID-VA	Water	EPH in Waters by GCFID	BCMOE EPH GCFID

This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999). The procedure involves extraction of the entire water sample with dichloromethane. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

GLY-WAT-FID-VA	Water	Glycols in Water by GCFID	SW-846, METHOD 8015B, EPA

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8015B, published by the United States Environmental Protection Agency (EPA). The procedure involves treatment of the sample with a strong base (NaOH) and benzoyl chloride to form the corresponding benzoate esters. The benzoate esters are then extracted with iso-octane and the extract is analyzed by capillary column gas chromatography with flame ionization detection (FID).

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

MET-TOT-ICP-VA	Water	Total Metals in Water by ICPOES	EPA SW-846 3005A/6010B

Reference Information

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

OGG-SF-VA	Water	Oil & Grease by Gravimetric	BCMOE (2010), EPA1664A

The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.

P-T-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SE-T-CCMS-VA	Water	Total Selenium in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

TDS-VA	Water	Total Dissolved Solids by Gravimetric	APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TVH-HSFID-VA	Water	TVH by headspace GCFID	EPA 8260B, BCMELP CSR METHOD

This procedure involves the headspace extraction of the sample prior to analysis for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID). The VH analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999).

VOC7-HSMS-VA	Water	BTEX/MTBE/Styrene by Headspace GCMS	EPA8260B, 5021

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

VOC7/VOC-SURR-MS-VA	Water	VOC7 and/or VOC Surrogates for Waters	EPA8260B, 5021
XYLENES-CALC-VA	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero.

Reference Information

The DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

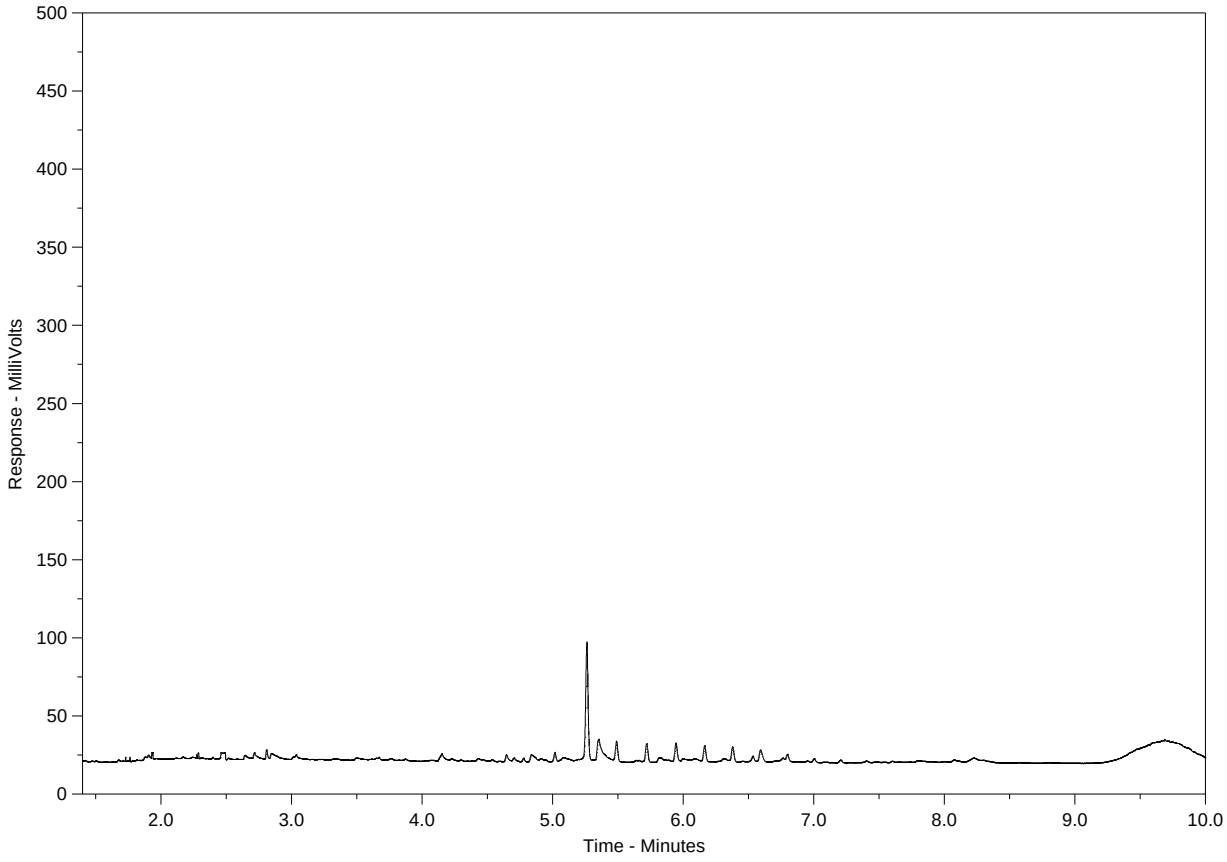
GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Hydrocarbon Distribution Report

ALS Sample ID: L1086993-L-1
Client Sample ID: 1616-30_DISCHARGE



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

8081 Lougheed Highway • Suite 100 • Burnaby,
Tel: 604-253-4188 Toll Free: 1-800-665-0243 FAX: 604-253-6700
ALS Contact: Can Dang

Form 68713

BHP Billiton Diamonds Inc.
1102 4920 52nd Street, Yellowknife, NT X1A 3T1
Tel: 867-880-2157 Fax: 867-880-4012
BHP Contacts: David Bruce/ Richard EhlertDavid

CHAIN OF CUSTODY FORM

L1086993

For Lab Use

FOR LAB USE ONLY

Station ID	Matrix	Date	Time	Init	As, Se By CCMS	BTEX+TVH	Glycols	Oil and Grease	SNP-0013 Major Ions	SNP-0013 Nutrients	SNP-0013 Physical Parameters	SNP-0013 Total Metals	TDS	Total Ammonia	Total Organic Carbon	TPH	TSS							
1616-30_Discharge	Water	14-Nov-2011	02:55 PM	NA	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP2						

L1086993-COFC

Turn around Required: 2-day Rush for Nitrate Analysis

Special Instructions (Billing details, QC reporting, etc):

Billing Code: BHP2001

One BTEX Bottle Broke During sampling,.only one in shipment

Relinquished by:	Date 17-Nov-11	Received by: Brittany	Date Nov. 22/11
	Time 15:40		Time 12:42
Relinquished by:	Date	Received by:	Date
	Time		Time

FOR LAB USE ONLY

Cooler seal intact upon receipt? ☐ Yes ☐ No ☐ N/A

Sample tempurature upon receipt: 9 C.

Frozen? ☐ Yes ☐ No

Send Analytical Results to:

compliance.team@bhpbilliton.com;

BHP BILLITON CANADA INC..
ATTN: David G. Bruce / Richard Ehlert David
1102 - 4920 52nd Street
Yellowknife NT X1A 3T1

Date Received: 24-NOV-11
Report Date: 06-DEC-11 17:36 (MT)
Version: FINAL

Client Phone: 867-880-2157

Certificate of Analysis

Lab Work Order #: L1088426

Project P.O. #: BHP2001
Job Reference: 68717
C of C Numbers:
Legal Site Desc: 6200801716

Can Dang
Senior Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1088426-1				
	Description	WATER				
	Sampled Date	21-NOV-11				
	Sampled Time	14:35				
	Client ID	1616-30_DISCHARGE				
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	924				
	Hardness (as CaCO3) (mg/L)	158				
	pH (pH)	7.90				
	Total Suspended Solids (mg/L)	<3.0				
	Total Dissolved Solids (mg/L)	527				
	Turbidity (NTU)	1.26				
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	48.4				
	Ammonia (as N) (mg/L)	0.0246				
	Chloride (Cl) (mg/L)	152				
	Nitrate and Nitrite (as N) (mg/L)	4.36				
	Nitrate (as N) (mg/L)	4.34				
	Nitrite (as N) (mg/L)	0.014				
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010				
	Phosphorus (P)-Total (mg/L)	0.0077				
	Sulfate (SO4) (mg/L)	136				
Organic / Inorganic Carbon	Total Carbon (mg/L)	13.0				
	Total Organic Carbon (mg/L)	4.24				
Total Metals	Aluminum (Al)-Total (mg/L)	<0.024 DLB				
	Antimony (Sb)-Total (mg/L)	0.00135				
	Arsenic (As)-Total (mg/L)	0.00075				
	Barium (Ba)-Total (mg/L)	0.0793				
	Beryllium (Be)-Total (mg/L)	<0.00010				
	Bismuth (Bi)-Total (mg/L)	<0.00050				
	Boron (B)-Total (mg/L)	0.036				
	Cadmium (Cd)-Total (mg/L)	<0.000030 DLM				
	Calcium (Ca)-Total (mg/L)	36.5				
	Chromium (Cr)-Total (mg/L)	<0.00050				
	Cobalt (Co)-Total (mg/L)	<0.00010				
	Copper (Cu)-Total (mg/L)	0.00138				
	Iron (Fe)-Total (mg/L)	<0.030				
	Lead (Pb)-Total (mg/L)	<0.000050				
	Lithium (Li)-Total (mg/L)	0.00574				
	Magnesium (Mg)-Total (mg/L)	16.3				
	Manganese (Mn)-Total (mg/L)	0.00355				
	Molybdenum (Mo)-Total (mg/L)	0.0856				
	Nickel (Ni)-Total (mg/L)	0.00532				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1088426-1				
	Description	WATER				
	Sampled Date	21-NOV-11				
	Sampled Time	14:35				
	Client ID	1616-30_DISCHARGE				
Grouping	**Analyte**					
WATER						
Total Metals	Potassium (K)-Total (mg/L)	31.3				
	Selenium (Se)-Total (mg/L)	0.00028				
	Silicon (Si)-Total (mg/L)	0.568				
	Silver (Ag)-Total (mg/L)	<0.000010				
	Sodium (Na)-Total (mg/L)	106				
	Strontium (Sr)-Total (mg/L)	0.708				
	Thallium (Tl)-Total (mg/L)	0.000035				
	Tin (Sn)-Total (mg/L)	<0.00010				
	Titanium (Ti)-Total (mg/L)	<0.010				
	Uranium (U)-Total (mg/L)	0.000609				
	Vanadium (V)-Total (mg/L)	<0.0010				
	Zinc (Zn)-Total (mg/L)	<0.0030				
Aggregate Organics	Oil and Grease (mg/L)	<5.0				
Volatile Organic Compounds	Benzene (mg/L)	<0.00050				
	Ethylbenzene (mg/L)	<0.00050				
	Styrene (mg/L)	<0.00050				
	Toluene (mg/L)	<0.00050				
	ortho-Xylene (mg/L)	<0.00050				
	meta- & para-Xylene (mg/L)	<0.00050				
	Xylenes (mg/L)	<0.00075				
	Surrogate: 4-Bromofluorobenzene (SS) (%)	109.8				
	Surrogate: 1,4-Difluorobenzene (SS) (%)	100.3				
Hydrocarbons	TVH (C5-C10) (mg/L)	<0.10				
	TEH10-30 (mg/L)	<0.15				
	TPH5-30 (mg/L)	<0.25				
Glycols	Diethylene Glycol (mg/L)	<5.0				
	Ethylene Glycol (mg/L)	<5.0				
	1,2-Propylene Glycol (mg/L)	<5.0				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Aluminum (Al)-Total	MB-LOR	L1088426-1
Method Blank	Chromium (Cr)-Total	MB-LOR	L1088426-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLB	Detection limit was raised due to detection of analyte at comparable level in Method Blank.
DLM	Detection Limit Adjusted For Sample Matrix Effects
MB-LOR	Method Blank exceeds ALS DQO. LORs adjusted for samples with positive hits below 5 times blank level. Please contact ALS if re-analysis is required.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	APHA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-N+N-CALC-VA	Water	Nitrite & Nitrate in Water (Calculation)	EPA 300.0

Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

AS-T-CCMS-VA	Water	Total Arsenic in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

CARBONS-TC-VA	Water	Total carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

EPH-LL-SF-FID-VA	Water	EPH in Waters by GCFID	BCMOE EPH GCFID

This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999). The procedure involves extraction of the entire water sample with dichloromethane. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

GLY-WAT-FID-VA	Water	Glycols in Water by GCFID	SW-846, METHOD 8015B, EPA

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8015B, published by the United States Environmental Protection Agency (EPA). The procedure involves treatment of the sample with a strong base (NaOH) and benzoyl chloride to form the corresponding benzoate esters. The benzoate esters are then extracted with iso-octane and the extract is analyzed by capillary column gas chromatography with flame ionization detection (FID).

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

MET-TOT-ICP-VA Water Total Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

OGG-SF-VA Water Oil & Grease by Gravimetric BCMOE (2010), EPA1664A

The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.

P-T-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SE-T-CCMS-VA Water Total Selenium in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

TDS-VA Water Total Dissolved Solids by Gravimetric APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-VA Water Total Suspended Solids by Gravimetric APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TVH-HSFID-VA Water TVH by headspace GCFID EPA 8260B, BCMELP CSR METHOD

This procedure involves the headspace extraction of the sample prior to analysis for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID). The VH analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Water by GC/FID" (Version 2.1, July

Reference Information

1999).

VOC7-HSMS-VA	Water	BTEX/MTBE/Styrene by Headspace GCMS	EPA8260B, 5021

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

VOC7/VOC-SURR-MS-VA	Water	VOC7 and/or VOC Surrogates for Waters	EPA8260B, 5021
XYLENES-CALC-VA	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero. The DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

SO 40050

Form 68717

bhpbilliton

BHP Billiton Diamonds Inc.
1102 4920 52nd Street, Yellowknife, NT X1A 3T1
Tel: 867-880-2157 Fax: 867-880-4012
BHP Contacts: David Bruce/ Richard EhlertDavid

253-6700

CHAIN OF CUSTODY FORM

L1088426-COFC

For Lab Use L1088426

FOR LAB USE ONLY

Station ID	Matrix	Date	Time	Init	As, Se By CCMS	BTEX+TVH	Glycols	Oil and Grease	SNP-0013 Major Ions	SNP-0013 Nutrients	SNP-0013 Physical Parameters	SNP-0013 Total Metals	TDS	Total Ammonia	Total Organic Carbon	TPH	TSS	
1616-30_Discharge	Water	21-Nov-2011	02:35 PM	KJ	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP2

Turn around Required: rush 2 day nitrate

Special Instructions (Billing details, QC reporting, etc):

Billing Code: BHP2001

Relinquished by:	Date / Time	Received by:	Date / Time
KJ	Date Nov 21 11 / Time 16 20		
Relinquished by:	Date / Time	Received by:	Date 25/11/11 / Time 11:06

FOR LAB USE ONLY

Cooler seal intact upon receipt? ☐ Yes ☐ No ☐ N/A

Sample tempurature upon receipt: 5.5 C.

Frozen? ☐ Yes ☐ No

Send Analytical Results to:

compliance.team@bhpbilliton.com;

BHP BILLITON CANADA INC..
ATTN: David G. Bruce / Richard Ehlert David
1102 - 4920 52nd Street
Yellowknife NT X1A 3T1

Date Received: 25-NOV-11
Report Date: 02-DEC-11 16:36 (MT)
Version: FINAL

Client Phone: 867-880-2157

Certificate of Analysis

Lab Work Order #: L1089110

Project P.O. #:	6200801716
Job Reference:	68718
C of C Numbers:	68718
Legal Site Desc:	BHP2001

Comments: There were no vials for Glycols analysis were received for the samples ALS identify as L1089110-2 and L1089110-3.

Can Dang
Senior Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1089110-1	L1089110-2	L1089110-3	L1089110-4	
	Description	WATER	WATER	WATER	WATER	
	Sampled Date	23-NOV-11	23-NOV-11	23-NOV-11	23-NOV-11	
	Sampled Time	14:55	14:51	15:00	15:05	
	Client ID	1616-30_DISCHARGE	1616-121	1616-494	1616-302	
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	922	<2.0	<2.0	933	
	Hardness (as CaCO3) (mg/L)	155	<0.50	<0.50	154	
	pH (pH)	7.81	5.73	5.70	7.83	
	Total Suspended Solids (mg/L)	<3.0	<3.0	<3.0	<3.0	
	Total Dissolved Solids (mg/L)	529	<10	<10	531	
	Turbidity (NTU)	1.13	<0.10	<0.10	0.75	
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	47.9	<2.0	<2.0	48.0	
	Ammonia (as N) (mg/L)	0.0212	<0.0050	<0.0050	0.0203	
	Chloride (Cl) (mg/L)	154	<0.50	<0.50	155	
	Nitrate and Nitrite (as N) (mg/L)	4.12	<0.0051	<0.0051	4.15	
	Nitrate (as N) (mg/L)	4.10	<0.0050	<0.0050	4.13	
	Nitrite (as N) (mg/L)	0.015	<0.0010	<0.0010	0.015	
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Phosphorus (P)-Total (mg/L)	0.0082	<0.0020	<0.0020	0.0079	
	Sulfate (SO4) (mg/L)	139	<0.50	<0.50	139	
Organic / Inorganic Carbon	Total Carbon (mg/L)	15.0	<0.50	<0.50	15.2	
	Total Organic Carbon (mg/L)	5.49	0.59 RRV	<0.50	4.75	
Total Metals	Aluminum (Al)-Total (mg/L)	0.0196	<0.0030	<0.0030	0.0182	
	Antimony (Sb)-Total (mg/L)	0.00135	<0.00010	<0.00010	0.00131	
	Arsenic (As)-Total (mg/L)	0.00072	<0.00010	<0.00010	0.00074	
	Barium (Ba)-Total (mg/L)	0.0814	<0.000050	<0.000050	0.0813	
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Boron (B)-Total (mg/L)	0.034	<0.010	<0.010	0.036	
	Cadmium (Cd)-Total (mg/L)	<0.000030 DLM	<0.000010	<0.000010	<0.000030 DLM	
	Calcium (Ca)-Total (mg/L)	35.7	<0.050	<0.050	35.7	
	Chromium (Cr)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Copper (Cu)-Total (mg/L)	0.00158	<0.00050	<0.00050	0.00117	
	Iron (Fe)-Total (mg/L)	<0.030	<0.030	<0.030	<0.030	
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Total (mg/L)	0.00585	<0.00050	<0.00050	0.00583	
	Magnesium (Mg)-Total (mg/L)	16.0	<0.10	<0.10	15.8	
	Manganese (Mn)-Total (mg/L)	0.00354	<0.000050	<0.000050	0.00351	
	Molybdenum (Mo)-Total (mg/L)	0.0891	<0.000050	<0.000050	0.0881	
	Nickel (Ni)-Total (mg/L)	0.00500	<0.00050	<0.00050	0.00503	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1089110-1	L1089110-2	L1089110-3	L1089110-4	
	Description	WATER	WATER	WATER	WATER	
	Sampled Date	23-NOV-11	23-NOV-11	23-NOV-11	23-NOV-11	
	Sampled Time	14:55	14:51	15:00	15:05	
	Client ID	1616-30_DISCHARGE	1616-121	1616-494	1616-302	
Grouping	**Analyte**					
WATER						
Total Metals	Potassium (K)-Total (mg/L)	32.3	<2.0	<2.0	31.6	
	Selenium (Se)-Total (mg/L)	0.00028	<0.00010	<0.00010	0.00028	
	Silicon (Si)-Total (mg/L)	0.549	<0.050	<0.050	0.541	
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Total (mg/L)	106	<2.0	<2.0	103	
	Strontium (Sr)-Total (mg/L)	0.744	<0.00010	<0.00010	0.746	
	Thallium (Tl)-Total (mg/L)	0.000034	<0.000010	<0.000010	0.000034	
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	
	Uranium (U)-Total (mg/L)	0.000598	<0.000010	<0.000010	0.000588	
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Zinc (Zn)-Total (mg/L)	0.0030	<0.0030	<0.0030	<0.0030	
Aggregate Organics	Oil and Grease (mg/L)	<5.0	<5.0	<5.0	<5.0	
Volatile Organic Compounds	Benzene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Ethylbenzene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Styrene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Toluene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	ortho-Xylene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	meta- & para-Xylene (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Xylenes (mg/L)	<0.00075	<0.00075	<0.00075	<0.00075	
	Surrogate: 4-Bromofluorobenzene (SS) (%)	96.1	91.9	98.0	100.2	
	Surrogate: 1,4-Difluorobenzene (SS) (%)	101.5	100.5	100.3	100.5	
Hydrocarbons	TVH (C5-C10) (mg/L)	<0.10	<0.10	<0.10	<0.10	
	TEH10-30 (mg/L)	<0.15	<0.15	<0.15	<0.15	
	TPH5-30 (mg/L)	<0.25	<0.25	<0.25	<0.25	
Glycols	Diethylene Glycol (mg/L)	<5.0			<5.0	
	Ethylene Glycol (mg/L)	<5.0			<5.0	
	1,2-Propylene Glycol (mg/L)	<5.0			<5.0	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Sulfate (SO4)	MS-B	L1089110-1, -2, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	APHA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

ANIONS-N+N-CALC-VA	Water	Nitrite & Nitrate in Water (Calculation)	EPA 300.0

Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.

ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0

This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.

This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

AS-T-CCMS-VA	Water	Total Arsenic in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

CARBONS-TC-VA	Water	Total carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

EPH-LL-SF-FID-VA	Water	EPH in Waters by GCFID	BCMOE EPH GCFID

This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999). The procedure involves extraction of the entire water sample with dichloromethane. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

GLY-WAT-FID-VA	Water	Glycols in Water by GCFID	SW-846, METHOD 8015B, EPA

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8015B, published by the United States Environmental Protection Agency (EPA). The procedure involves treatment of the sample with a strong base (NaOH) and benzoyl chloride to form the corresponding benzoate esters. The benzoate esters are then extracted with iso-octane and the extract is analyzed by capillary column gas chromatography with flame ionization detection (FID).

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	APHA 3030 B&E / EPA SW-846 6020A

Reference Information

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

MET-TOT-ICP-VA Water Total Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

OGG-SF-VA Water Oil & Grease by Gravimetric BCMOE (2010), EPA1664A

The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.

P-T-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PO4-DO-COL-VA Water Diss. Orthophosphate in Water by Colour APHA 4500-P Phosphorous

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

SE-T-CCMS-VA Water Total Selenium in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modifed from EPA Method 6020A).

TDS-VA Water Total Dissolved Solids by Gravimetric APHA 2540 C - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

TSS-VA Water Total Suspended Solids by Gravimetric APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA Water Turbidity by Meter APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TVH-HSFID-VA Water TVH by headspace GCFID EPA 8260B, BCMELP CSR METHOD

This procedure involves the headspace extraction of the sample prior to analysis for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID). The VH analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999).

VOC7-HSMS-VA Water BTEX/MTBE/Styrene by Headspace GCMS EPA8260B, 5021

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph.

Reference Information

Target compound concentrations are measured using mass spectrometry detection.

VOC7/VOC-SURR-MS-VA	Water	VOC7 and/or VOC Surrogates for Waters	EPA8260B, 5021
XYLENES-CALC-VA	Water	Sum of Xylene Isomer Concentrations	CALCULATION

Calculation of Total Xylenes

Total Xylenes is the sum of the concentrations of the ortho, meta, and para Xylene isomers. Results below detection limit (DL) are treated as zero. The DL for Total Xylenes is set to a value no less than the square root of the sum of the squares of the DLs of the individual Xylenes.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

68718

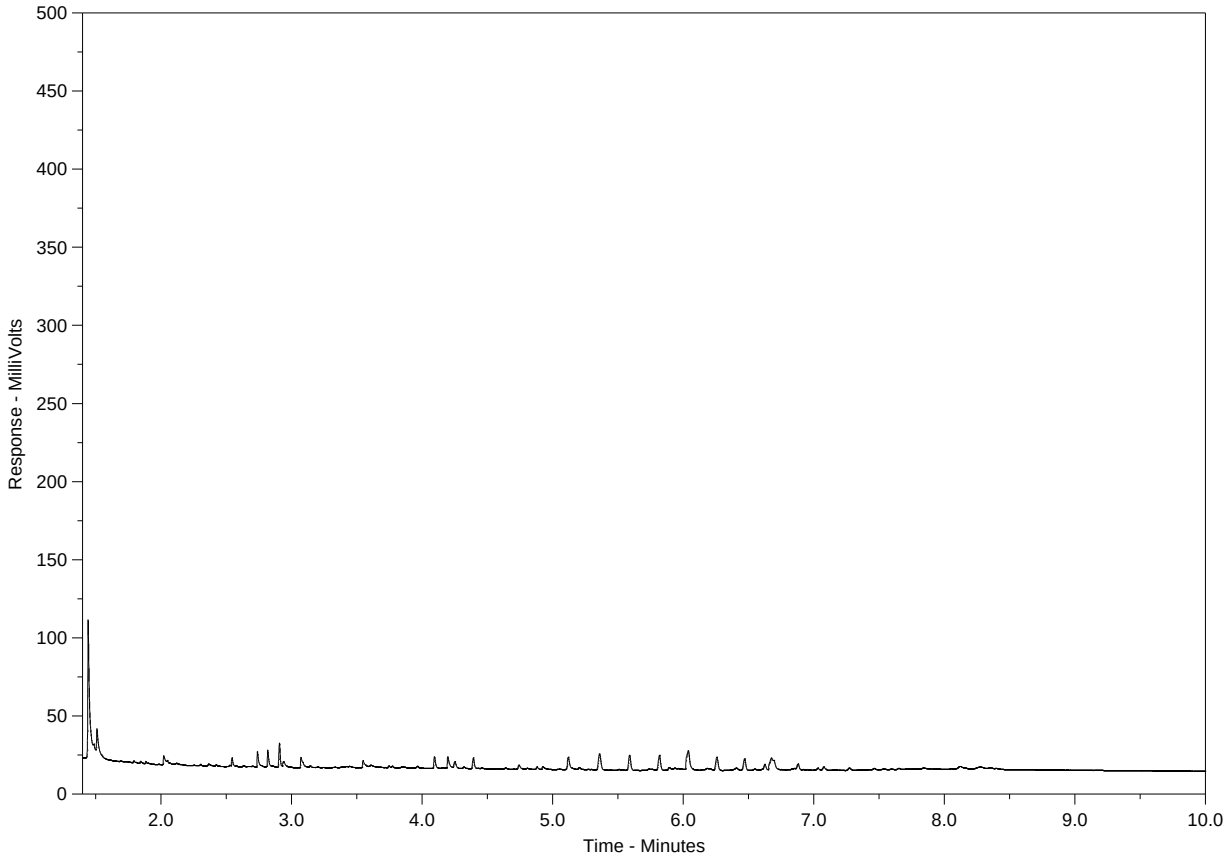
GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Hydrocarbon Distribution Report

ALS Sample ID: L1089110-1
Client Sample ID: 1616-30_DISCHARGE



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

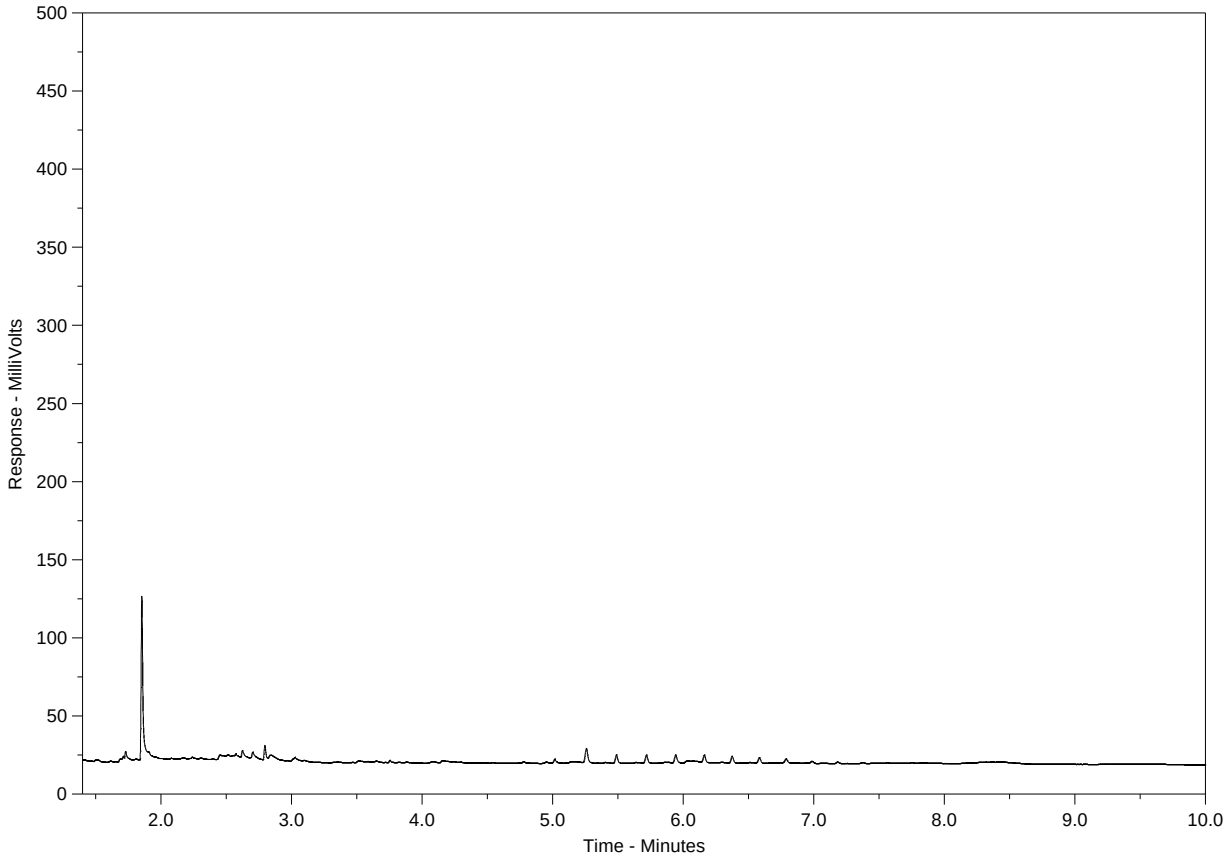
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Hydrocarbon Distribution Report

ALS Sample ID: L1089110-2
Client Sample ID: 1616-121



nC10	nC19	nC32
174°C	330°C	467°C
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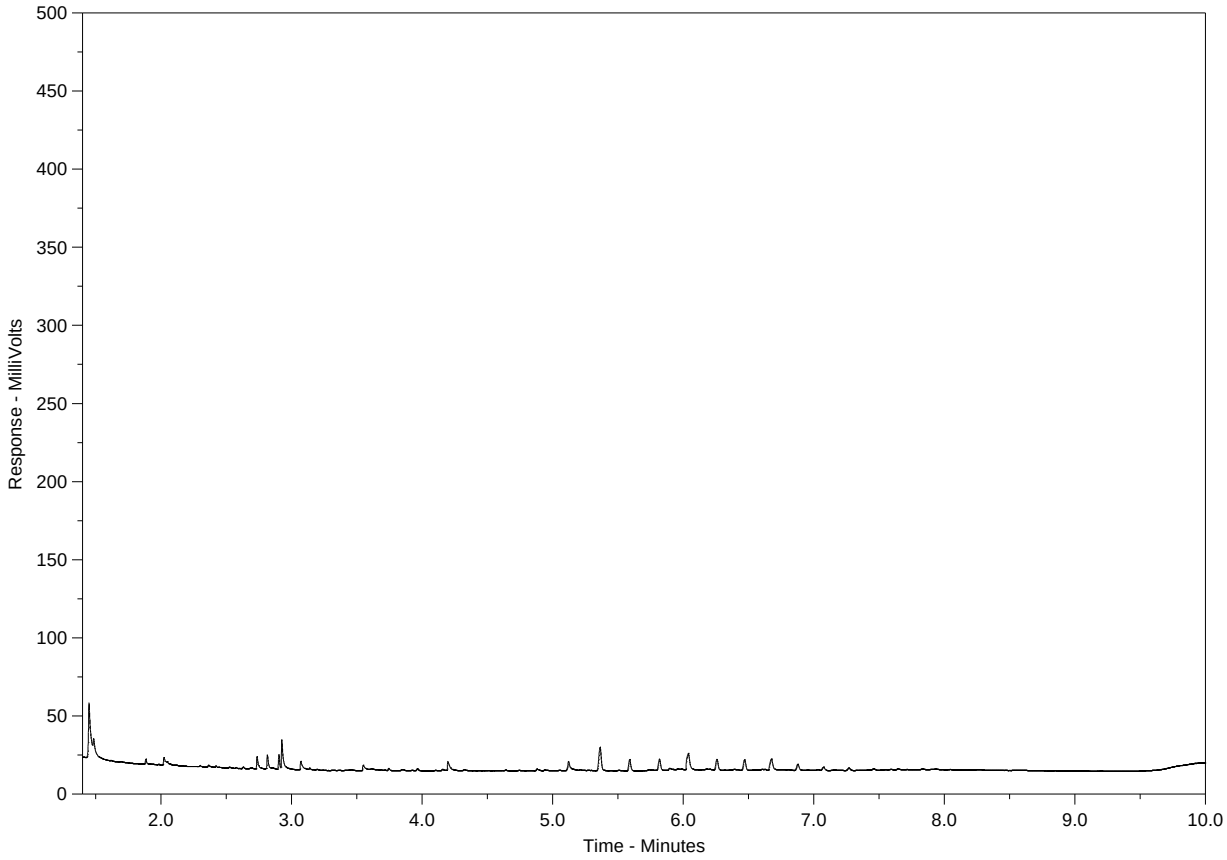
A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Hydrocarbon Distribution Report

ALS Sample ID: L1089110-3
Client Sample ID: 1616-494



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

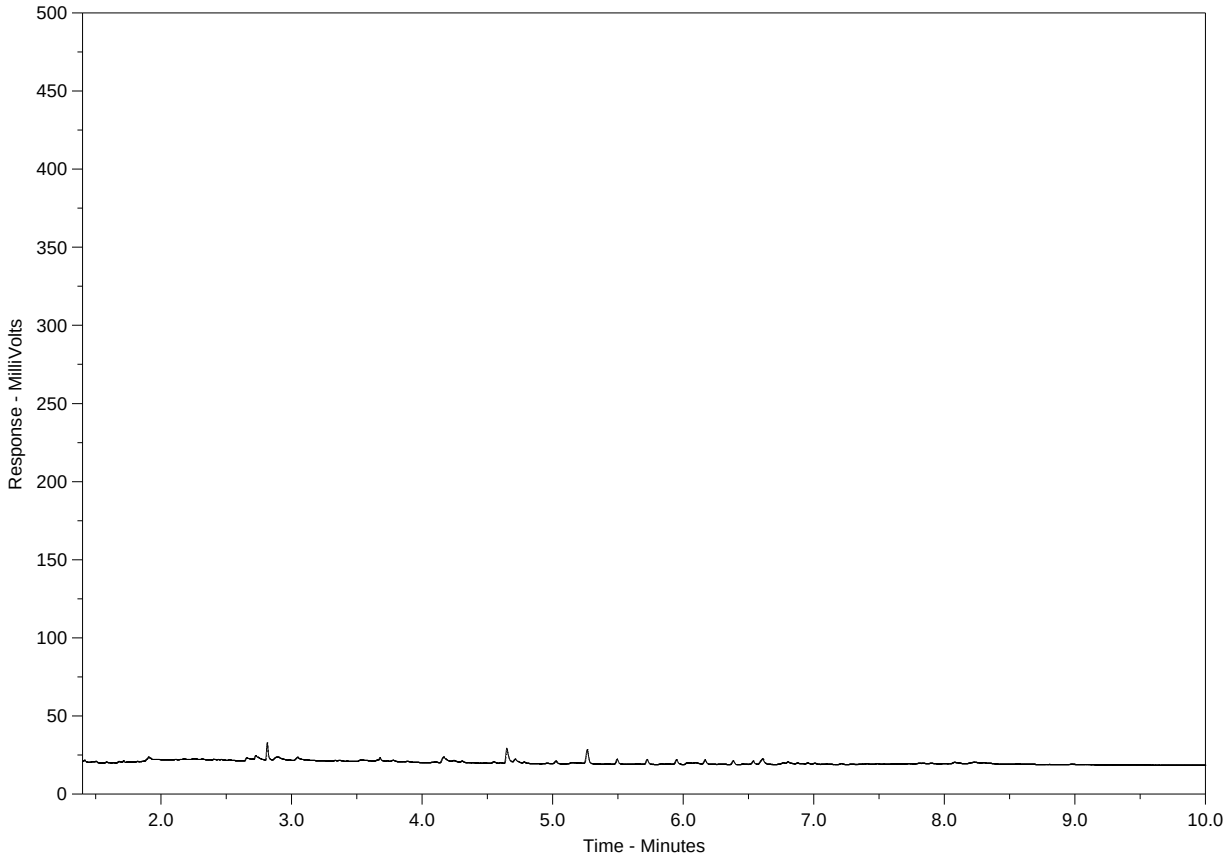
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Hydrocarbon Distribution Report

ALS Sample ID: L1089110-4
Client Sample ID: 1616-302



nC10	nC19	nC32
174°C	330°C	467°C
346°F	626°F	873°F
← Gasoline →	← Motor Oils / Lube Oils / Grease →	
← Diesel / Jet Fuels →		

The EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample. For further interpretation, a current library of reference products is available on www.alsglobal.com or upon request.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples by as much as 0.5 minutes.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the response scale at the left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

8081 Lougheed Highway • Suite 100 • Burnaby,
Tel: 604-253-4188 Toll Free: 1-800-665-0243 FAX: 604-253-6700
ALS Contact: Can Dang

L1089110

SO: 40051

CHAIN OF CUSTODY FORM

Form 68718

bhpbilliton

BHP Billiton Diamonds Inc.
1102 4920 52nd Street, Yellowknife, NT X1A 3T1
Tel: 867-880-2157 Fax: 867-880-4012
BHP Contacts: David Bruce/ Richard EhlertDavid

FOR LAB USE ONLY

For Lab Use

Station ID	Matrix	Date	Time	Init	As, Se By CCMS	BTEX+TVH	Glycols	Oil and Grease	SNP-0013 Major Ions	SNP-0013 Nutrients	SNP-0013 Physical Parameters	SNP-0013 Total Metals	TDS	Total Ammonia	Total Organic Carbon	TPH	TSS							
1616-30_Discharge	Water	23-Nov-2011	02:55 PM	KJ	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP2						
1616-121	Water	23-Nov-2011	02:55 PM	KJ	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP2						
1616-494	Water	23-Nov-2011	03:00 PM	KJ	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP2						
1616-302	Water	23-Nov-2011	03:05 PM	KJ	1	1	1	1	1	1	1	1	1	1	1	1	1	BHP2						

L1089110-COFC

Turn around Required: RUSH analysis turnarond times. Please see comments below.

Special Instructions (Billing details, QC reporting, etc):

Billing Code: BHP2001

2-day RUSH analysis for nitrates. Forward results by 25 NOV 2011. 1-week RUSH analysis for all other parameters. Forward results by 30 NOV 2011.

Relinquished by:	Date / Time	Received by:	Date / Time
KJ	Nov 23 2011 17:10		
		Walt	Nov 25/11

FOR LAB USE ONLY

Cooler seal intact upon receipt? ☐ Yes ☐ No ☐ N/A

Sample tempurature upon receipt: 7.6 C. 18.9

Frozen? ☐ Yes ☐ No

Send Analytical Results to:

compliance.team@bhpbilliton.com;