



## Surface Water Monitoring – Field Sheet

Client:		Location ID: SW10				
Project:		Job No.:				
Location:		Date: 18.2.20				
Undertaken By:		Time:				
<b>Surface Water Details</b>						
<input type="checkbox"/> Natural		<input type="checkbox"/> Man-made	<input type="checkbox"/> Unknown			
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
Comments (e.g. sheen, colour, odour, sediment load):						
DRY						
<b>SAMPLING DETAILS</b>			Sample ID:			
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						



## Surface Water Monitoring – Field Sheet

Client:		Location ID: SW06				
Project:		Job No.:				
Location:		Date: 19.2.20				
Undertaken By:		Time:				
<b>Surface Water Details</b>						
<input type="checkbox"/> Natural		<input type="checkbox"/> Man-made	<input type="checkbox"/> Unknown			
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
3311	25.1	2152	7.17	89.7	7.33	68.4
Comments (e.g. sheen, colour, odour, sediment load):						
low sed no sheen, clear, no odour						
<b>SAMPLING DETAILS</b>			Sample ID:			
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

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## Surface Water Monitoring – Field Sheet

Client:		Location ID: SW11				
Project:		Job No.:				
Location:		Date:				
Undertaken By:		Time: 18.2.20				
<b>Surface Water Details</b>						
<input type="checkbox"/> Natural		<input type="checkbox"/> Man-made	<input type="checkbox"/> Unknown			
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm mg/L)	pH	DO %Sat	DO (ppm mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
Comments (e.g. sheen, colour, odour, sediment load):						
<b>SAMPLING DETAILS</b>			Sample ID:			
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments: DRY						



## Surface Water Monitoring – Field Sheet

Client:		Location ID: Southern 3				
Project:		Job No.:				
Location:		Date: 19.2.20				
Undertaken By:		Time:				
<b>Surface Water Details</b>						
<input type="checkbox"/> Natural		<input type="checkbox"/> Man-made	<input type="checkbox"/> Unknown			
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm mg/L)	pH	DO %Sat	DO (ppm mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
Comments (e.g. sheen, colour, odour, sediment load): DRY						
<b>SAMPLING DETAILS</b>			Sample ID:			
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						



### Surface Water Monitoring – Field Sheet

Client:		Location ID: <i>WRM North St65</i>				
Project:		Job No.:				
Location:		Date: <i>17-2-20</i>				
Undertaken By:		Time:				
Surface Water Details						
<input type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
WATER PARAMETERS						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm mg/L)	pH	DO %Sat	DO (ppm mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
Comments (e.g. sheen, colour, odour, sediment load):						
SAMPLING DETAILS				Sample ID:		
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments: <i>DRY</i>						



### Surface Water Monitoring – Field Sheet

Client:		Location ID: <i>NORTHERN 5</i>				
Project:		Job No.:				
Location:		Date: <i>17-2-20</i>				
Undertaken By:		Time:				
Surface Water Details						
<input type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
WATER PARAMETERS						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm mg/L)	pH	DO %Sat	DO (ppm mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
<i>2015</i>	<i>23.2</i>	<i>1309</i>	<i>7.27</i>	<i>42.4</i>	<i>3.62</i>	<i>9.7</i>
Comments (e.g. sheen, colour, odour, sediment load): <i>no sheen, light green, no odour, low sed</i>						
SAMPLING DETAILS				Sample ID:		
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

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## Surface Water Monitoring – Field Sheet

Client:		Location ID: SW08				
Project:		Job No.:				
Location:		Date:				
Undertaken By:		Time:				
Surface Water Details						
<input type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
WATER PARAMETERS						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
947	21.3	616	6.34	67.8	6.00	54.1
Comments (e.g. sheen, colour, odour, sediment load):						
SAMPLING DETAILS						
Time:		Vol. Removed:		L		Sample ID:
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):		No of Sample Containers:				
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

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## Surface Water Monitoring – Field Sheet

Client:		Location ID: SW07				
Project:		Job No.:				
Location:		Date:				
Undertaken By:		Time:				
Surface Water Details						
<input type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
WATER PARAMETERS						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
946	21.3	615	6.34	68.3	6.04	4.70
Comments (e.g. sheen, colour, odour, sediment load):						
SAMPLING DETAILS						
Time:		Vol. Removed:		L		Sample ID:
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):		No of Sample Containers:				
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

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# Surface Water Monitoring – Field Sheet

Client:		Location ID: <i>Northern S</i>				
Project:		Job No.:				
Location:		Date:				
Undertaken By:		Time: <i>1613</i>				
Surface Water Details						
<input type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
WATER PARAMETERS						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
<i>1982</i>	<i>25.8</i>	<i>1288</i>	<i>7.79</i>	<i>94.1</i>	<i>7.62</i>	<i>49.3</i>
Comments (e.g. sheen, colour, odour, sediment load): <i>clear-brown, no odour, no sheen, low-no sed.</i>						
SAMPLING DETAILS				Sample ID:		
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

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# Surface Water Monitoring – Field Sheet

Client:		Location ID:				
Project:		Job No.:				
Location:		Date:				
Undertaken By:		Time:				
Surface Water Details						
<input type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
WATER PARAMETERS						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
<i>3007</i>	<i>27.8</i>	<i>1955</i>	<i>7.97</i>	<i>138.5</i>	<i>10.79</i>	<i>0.4</i>
Comments (e.g. sheen, colour, odour, sediment load):						
SAMPLING DETAILS				Sample ID:		
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

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### Surface Water Monitoring – Field Sheet

Client:		Location ID: <i>Northern 4</i>				
Project:		Job No.:				
Location:		Date:				
Undertaken By:		Time:				
Surface Water Details						
<input type="checkbox"/> Natural <input type="checkbox"/> Man-made <input type="checkbox"/> Unknown						
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
WATER PARAMETERS						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
<i>1534</i>	<i>20.1</i>	<i>9447</i>	<i>8.71</i>	<i>52.7</i>	<i>4.53</i>	<i>-174.2</i>
Comments (e.g. sheen, colour, odour, sediment load):						
<div style="text-align: right;"><i>NTU</i></div>						
SAMPLING DETAILS				Sample ID:		
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						



### Surface Water Monitoring – Field Sheet

Client:		Location ID: <i>Northern 3</i>				
Project:		Job No.:				
Location:		Date:				
Undertaken By:		Time:				
Surface Water Details						
<input type="checkbox"/> Natural <input type="checkbox"/> Man-made <input type="checkbox"/> Unknown						
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
WATER PARAMETERS						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
Comments (e.g. sheen, colour, odour, sediment load):						
<div style="text-align: center;"><i>DRY.</i></div>						
SAMPLING DETAILS				Sample ID:		
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

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## Surface Water Monitoring – Field Sheet

Client:		Location ID: SW09				
Project:		Job No.:				
Location:		Date:				
Undertaken By:		Time:				
Surface Water Details						
<input checked="" type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
WATER PARAMETERS						
EC ( $\mu\text{S/cm}$ )	Temp. ( $^{\circ}\text{C}$ )	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}\text{C}$	-	+/- 10%	+/- 10%	+/- 10%	-
780	22.7	530	6.71	1.9	0.16	-179.4
Comments (e.g. sheen, colour, odour, sediment load): no odour, no sheen, clear, low sed						
SAMPLING DETAILS				Sample ID:		
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

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## Surface Water Monitoring – Field Sheet

Client:		Location ID: North Creek 2				
Project:		Job No.:				
Location:		Date:				
Undertaken By:		Time:				
Surface Water Details						
<input type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
WATER PARAMETERS						
EC ( $\mu\text{S/cm}$ )	Temp. ( $^{\circ}\text{C}$ )	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}\text{C}$	-	+/- 10%	+/- 10%	+/- 10%	-
834	20.9	<del>759</del> 512	6.14	6.77	6.03	46.0
Comments (e.g. sheen, colour, odour, sediment load): no odour, no sheen, clear, low sed						
SAMPLING DETAILS				Sample ID:		
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

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# Surface Water Monitoring – Field Sheet

Client:		Location ID: <i>JT01</i>				
Project:		Job No.:				
Location:		Date:				
Undertaken By:		Time:				
<b>Surface Water Details</b>						
<input type="checkbox"/> Natural <input type="checkbox"/> Man-made <input type="checkbox"/> Unknown						
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
<i>4962</i>	<i>21.7</i>	<i>3225</i>	<i>6.74</i>	<i>600</i>	<i>5.19</i>	<i>-149</i>
Comments (e.g. sheen, colour, odour, sediment load):						
<i>F002</i>						
<b>SAMPLING DETAILS</b>				Sample ID:		
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

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# Surface Water Monitoring – Field Sheet

Client:		Location ID: <i>SW06</i>				
Project:		Job No.:				
Location:		Date: <i>1713</i>				
Undertaken By:		Time:				
<b>Surface Water Details</b>						
<input type="checkbox"/> Natural <input type="checkbox"/> Man-made <input type="checkbox"/> Unknown						
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
<i>3030</i>	<i>22.8</i>	<i>2057</i>	<i>7.30</i>	<i>88.8</i>	<i>7.59</i>	<i>-34</i>
Comments (e.g. sheen, colour, odour, sediment load):						
<i>clear - brown, no odour, no sheen, no sed.</i>						
<b>SAMPLING DETAILS</b>				Sample ID:		
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

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## Surface Water Monitoring – Field Sheet

Client:		Location ID: <i>SW07</i>				
Project:		Job No.:				
Location:		Date: <i>20/4</i>				
Undertaken By:		Time:				
<b>Surface Water Details</b>						
<input type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu\text{S/cm}$ )	Temp. ( $^{\circ}\text{C}$ )	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}\text{C}$	-	+/- 10%	+/- 10%	+/- 10%	-
<i>949</i>	<i>17.9</i>	<i>617</i>	<i>6.49</i>	<i>98.7</i>	<i>9.35</i>	<i>99.1</i>
Comments (e.g. sheen, colour, odour, sediment load):						
<b>SAMPLING DETAILS</b>					Sample ID:	
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

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## Surface Water Monitoring – Field Sheet

Client:		Location ID: <i>SW08</i>				
Project:		Job No.:				
Location:		Date: <i>20/4</i>				
Undertaken By:		Time:				
<b>Surface Water Details</b>						
<input type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu\text{S/cm}$ )	Temp. ( $^{\circ}\text{C}$ )	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}\text{C}$	-	+/- 10%	+/- 10%	+/- 10%	-
<i>949</i>	<i>17.9</i>	<i>617</i>	<i>6.46</i>	<i>98.9</i>	<i>9.37</i>	<i>100.2</i>
Comments (e.g. sheen, colour, odour, sediment load):						
<b>SAMPLING DETAILS</b>					Sample ID:	
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

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## Surface Water Monitoring – Field Sheet

Client:		Location ID: <i>North Creek 2</i>				
Project:		Job No.:				
Location:		Date: <i>20/4</i>				
Undertaken By:		Time:				
<b>Surface Water Details</b>						
<input type="checkbox"/> Natural <input type="checkbox"/> Man-made <input type="checkbox"/> Unknown						
Comment:						
Type of Water Body (eg. River, Drain): <i>Tributary</i>						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu\text{S/cm}$ )	Temp. ( $^{\circ}\text{C}$ )	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}\text{C}$	-	+/- 10%	+/- 10%	+/- 10%	-
<i>819</i>	<i>17.7</i>	<i>535</i>	<i>5.85</i>	<i>95.0</i>	<i>9.05</i>	<i>193.3</i>
Comments (e.g. sheen, colour, odour, sediment load): <i>cloudy, brown, no odour, no sheen, low-mud sed.</i>						
<b>SAMPLING DETAILS</b>				Sample ID: <i>North Creek 2</i>		
Time:	Vol. Removed:	L	No of Sample Containers: <i>5</i>			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

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## Surface Water Monitoring – Field Sheet

Client:		Location ID: <i>SW10</i>				
Project:		Job No.:				
Location:		Date: <i>20/4</i>				
Undertaken By:		Time:				
<b>Surface Water Details</b>						
<input type="checkbox"/> Natural <input type="checkbox"/> Man-made <input type="checkbox"/> Unknown						
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu\text{S/cm}$ )	Temp. ( $^{\circ}\text{C}$ )	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}\text{C}$	-	+/- 10%	+/- 10%	+/- 10%	-
Comments (e.g. sheen, colour, odour, sediment load): <i>Dry - did not sample.</i>						
<b>SAMPLING DETAILS</b>				Sample ID:		
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						



### Surface Water Monitoring – Field Sheet

Client: MRWA		Location ID: Southern 4				
Project: Bore Low Sampling		Job No.:				
Location:		Date:				
Undertaken By:		Time:				
<b>Surface Water Details</b>						
<input type="checkbox"/> Natural		<input type="checkbox"/> Man-made	<input type="checkbox"/> Unknown			
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu\text{S/cm}$ )	Temp. ( $^{\circ}\text{C}$ )	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}\text{C}$	-	+/- 10%	+/- 10%	+/- 10%	-
15714	18.2	10216	8.74	15.3	1.36	38.3
Comments (e.g. sheen, colour, odour, sediment load): clear yellow, no odour, no sheen, no odour, low sed.						
<b>SAMPLING DETAILS</b>			Sample ID:			
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

NW  
30.86



### Surface Water Monitoring – Field Sheet

Client:		Location ID: Southern 3				
Project:		Job No.:				
Location:		Date:				
Undertaken By:		Time:				
<b>Surface Water Details</b>						
<input type="checkbox"/> Natural		<input type="checkbox"/> Man-made	<input type="checkbox"/> Unknown			
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu\text{S/cm}$ )	Temp. ( $^{\circ}\text{C}$ )	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}\text{C}$	-	+/- 10%	+/- 10%	+/- 10%	-
Comments (e.g. sheen, colour, odour, sediment load): Dry						
<b>SAMPLING DETAILS</b>			Sample ID:			
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						



### Surface Water Monitoring – Field Sheet

Client: <i>MRWA</i>	Location ID: <i>SW06</i>
Project: <i>6137041</i>	Job No.: <i>6137041</i>
Location: <i>BORR</i>	Date: <i>2014</i>
Undertaken By:	Time:

#### Surface Water Details

Natural       Man-made       Unknown

Comment:

Type of Water Body (eg. River, Drain):

Dimensions of Water Body (size, shape, depth):

#### WATER PARAMETERS

EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
<i>2835</i>	<i>21.2</i>	<i>1840</i>	<i>6.85</i>	<i>100.3</i>	<i>8.83</i>	<i>50.0</i>

*NTU*  
*25.26*

Comments (e.g. sheen, colour, odour, sediment load):

#### SAMPLING DETAILS

Time:	Vol. Removed: <i>L</i>	Sample ID:	No of Sample Containers:
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Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered       Duplicate Samples       Duplicate Sample ID:

Comments:



### Surface Water Monitoring – Field Sheet

Client: <i>MRWA</i>	Location ID: <i>North Creek 4</i>
Project: <i>6137041</i>	Job No.:
Location: <i>BORR</i>	Date: <i><del>2014</del> 22/4</i>
Undertaken By:	Time:

#### Surface Water Details

Natural       Man-made       Unknown

Comment:

Type of Water Body (eg. River, Drain):

Dimensions of Water Body (size, shape, depth):

#### WATER PARAMETERS

EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
<i>2330</i>	<i>20.0</i>	<i>1514</i>	<i>7.45</i>	<i>27.2</i>	<i>2.45</i>	<i>9.7</i>

*NTU*  
*5.03*

Comments (e.g. sheen, colour, odour, sediment load): *Clear, slight biological(?) sheen, no odour, low sed.*

#### SAMPLING DETAILS

Time:	Vol. Removed: <i>L</i>	Sample ID: <i>North Creek 4</i>	No of Sample Containers: <i>5</i>
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Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered       Duplicate Samples       Duplicate Sample ID:

Comments:



## Surface Water Monitoring – Field Sheet

Client: MRWA	Location ID: Northern 5
Project: BARR GW Sampling	Job No.:
Location:	Date: 20/4
Undertaken By:	Time:

### Surface Water Details

Natural       Man-made       Unknown

Comment:

Type of Water Body (eg. River, Drain):

Dimensions of Water Body (size, shape, depth):

### WATER PARAMETERS

EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
1687	20.1	1096	7.6	95.6	8.64	28.4

N/A

11.64

Comments (e.g. sheen, colour, odour, sediment load):

### SAMPLING DETAILS

Sample ID:

Time:      Vol. Removed:      L      No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered       Duplicate Samples       Duplicate Sample ID:

Comments:



## Surface Water Monitoring – Field Sheet

Client:	Location ID: SW09
Project:	Job No.:
Location:	Date: 20/4
Undertaken By:	Time:

### Surface Water Details

Natural       Man-made       Unknown

Comment:

Type of Water Body (eg. River, Drain):

Dimensions of Water Body (size, shape, depth):

### WATER PARAMETERS

EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
	21.3	637	6.66	51.2	4.54	73.2

N/A

8  
62.81

Comments (e.g. sheen, colour, odour, sediment load):

### SAMPLING DETAILS

Sample ID:

Time:      Vol. Removed:      L      No of Sample Containers:

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered       Duplicate Samples       Duplicate Sample ID:

Comments:



## Surface Water Monitoring – Field Sheet

Client:		Location ID: <i>SW11</i>				
Project:		Job No.: <i>2014</i>				
Location:		Date:				
Undertaken By:		Time:				
<b>Surface Water Details</b>						
<input type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
Comments (e.g. sheen, colour, odour, sediment load): <i>Dry - could not sample.</i>						
<b>SAMPLING DETAILS</b>			Sample ID:			
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						



## Surface Water Monitoring – Field Sheet

Client:		Location ID: <i>MT01</i>				
Project:		Job No.:				
Location:		Date:				
Undertaken By:		Time:				
<b>Surface Water Details</b>						
<input type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
Comments (e.g. sheen, colour, odour, sediment load): <i>dry - could not sample.</i>						
<b>SAMPLING DETAILS</b>			Sample ID:			
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						



## Surface Water Monitoring – Field Sheet

Client: MRWA		Location ID: JTD1				
Project: Bore Gw Sampling		Job No.:				
Location:		Date:				
Undertaken By:		Time:				
<b>Surface Water Details</b>						
<input type="checkbox"/> Natural		<input type="checkbox"/> Man-made				
		<input type="checkbox"/> Unknown				
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
3872	14.1	2516	6.65	65.7	6.14	28.4
Comments (e.g. sheen, colour, odour, sediment load):						
FD02						
<b>SAMPLING DETAILS</b>				Sample ID:		
Time:		Vol. Removed: L		No of Sample Containers:		
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered <input type="checkbox"/>		Duplicate Samples <input type="checkbox"/>		Duplicate Sample ID:		
Comments:						

NTU  
6.00



## Surface Water Monitoring – Field Sheet

Client:		Location ID: Northern 3				
Project:		Job No.:				
Location:		Date: 22/4				
Undertaken By:		Time: ~ 1:00				
<b>Surface Water Details</b>						
<input type="checkbox"/> Natural		<input type="checkbox"/> Man-made				
		<input type="checkbox"/> Unknown				
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
20898	24.3	13584	4.38	99.3	7.75	236.4
Comments (e.g. sheen, colour, odour, sediment load):						
water level has dropped significantly. Only 1-2cm water present						
<b>SAMPLING DETAILS</b>				Sample ID: High sed.		
Time:		Vol. Removed: L		No of Sample Containers:		
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered <input type="checkbox"/>		Duplicate Samples <input type="checkbox"/>		Duplicate Sample ID:		
Comments:						

NTU

171.55

brown-clear,  
no odour  
no sheen.



## Surface Water Monitoring – Field Sheet

Client:		Location ID: <i>Northen 3</i>				
Project: <i>GW/SW Monitoring</i>		Job No.: <i>6137041</i>				
Location: <i>BORR</i>		Date: <i>20-5-20</i>				
Undertaken By:		Time: <i>1:30</i>				
<b>Surface Water Details</b>						
<input checked="" type="checkbox"/> Natural <input type="checkbox"/> Man-made <input type="checkbox"/> Unknown						
Comment:						
Type of Water Body (eg. River, Drain): <i>Lake/Wetland</i>						
Dimensions of Water Body (size, shape, depth): <i>150m x 35m</i>						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
<i>22735</i>	<i>21.8</i>	<i>4763.647</i>	<i>7.82</i>	<i>134.6</i>	<i>10.90</i>	<i>-71.2</i>
Comments (e.g. sheen, colour, odour, sediment load): <i>clear, no sheen, no odour, no suspended sed (but sed @ bottom)</i>						
<b>SAMPLING DETAILS</b>				Sample ID: <i>Northen 3</i>		
Time: <i>1:30</i>	Vol. Removed:	L	No of Sample Containers: <i>5</i>			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved): <i>P 2 x p 3 3 x up</i>						
Field Filtered	<input checked="" type="checkbox"/>	Duplicate Samples	<input checked="" type="checkbox"/>	Duplicate Sample ID:		
Comments: <i>FD03</i>						



## Surface Water Monitoring – Field Sheet

Client: <i>MRWA</i>		Location ID: <i>Southern 4</i>				
Project: <i>GW/SW Monitoring</i>		Job No.: <i>6137041</i>				
Location: <i>BORR</i>		Date: <i>21/5</i>				
Undertaken By:		Time: <i>8:00</i>				
<b>Surface Water Details</b>						
<input checked="" type="checkbox"/> Natural <input type="checkbox"/> Man-made <input type="checkbox"/> Unknown						
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
<i>15283</i>	<i>12.6</i>	<i>9933.773</i>	<i>9.20</i>	<i>126.9</i>	<i>12.76</i>	<i>71.6</i>
Comments (e.g. sheen, colour, odour, sediment load): <i>clear-cloudy, no odour, mod sed, no sheen</i>						
<b>SAMPLING DETAILS</b>				Sample ID: <i>southern 4</i>		
Time:	Vol. Removed:	L	No of Sample Containers: <i>5</i>			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						





### Surface Water Monitoring – Field Sheet

Client: MAWA		Location ID: JTO1				
Project: GW/SW Monitoring		Job No.: 6137041				
Location: BORR		Date: 20/05/20				
Undertaken By: SI		Time: 10.00				
<b>Surface Water Details</b>						
<input checked="" type="checkbox"/> Natural <input type="checkbox"/> Man-made <input type="checkbox"/> Unknown						
Comment:						
Type of Water Body (eg. River, Drain): River						
Dimensions of Water Body (size, shape, depth): <del>11m</del> 5m wide, 1m deep						
<b>WATER PARAMETERS</b>						
EC (µS/cm)	Temp. (°C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2°C	-	+/- 10%	+/- 10%	+/- 10%	-
6378	13.3	4167.75	6.68	79.1	8.10	90.6
Comments (e.g. sheen, colour, odour, sediment load):						
Film on surface, brown colour, some suspended sediment						
<b>SAMPLING DETAILS</b>			Sample ID: JTO1			
Time: 10.00am	Vol. Removed:	L	No of Sample Containers: 5			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
P   2xR   3xVR						
Field Filtered	<input checked="" type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						



### Surface Water Monitoring – Field Sheet

Client: MAWA		Location ID: Northern 5				
Project:		Job No.: 6137041				
Location:		Date: 20/5				
Undertaken By:		Time: 11:30am				
<b>Surface Water Details</b>						
<input type="checkbox"/> Natural <input type="checkbox"/> Man-made <input type="checkbox"/> Unknown						
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC (µS/cm)	Temp. (°C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2°C	-	+/- 10%	+/- 10%	+/- 10%	-
<del>5575</del>	<del>13.5</del>	<del>3624.572</del>	<del>6.05</del>	<del>89.7</del>	<del>9.18</del>	<del>187.1</del>
1069	14.9	694.918	7.28	46.3	4.67	123.5
Comments (e.g. sheen, colour, odour, sediment load):						
clear, bacterial sheen no odour, low sed.						
<b>SAMPLING DETAILS</b>			Sample ID: Northern 5			
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						



## Surface Water Monitoring – Field Sheet

Client: MRWA		Location ID: North Creek 2				
Project: GL/SW Program		Job No.: 6137041				
Location: BARR		Date: 2/15				
Undertaken By: DS/CI		Time: 10:50				
<b>Surface Water Details</b>						
<input checked="" type="checkbox"/> Natural		<input type="checkbox"/> Man-made	<input type="checkbox"/> Unknown			
Comment:						
Type of Water Body (eg. River, Drain): River tributary						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC (µS/cm)	Temp. (°C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2°C	-	+/- 10%	+/- 10%	+/- 10%	-
841	13.0	546.832	7.49	89.3	9.37	8.0
Comments (e.g. sheen, colour, odour, sediment load): clear, no odour, no sheen, low sed.						
<b>SAMPLING DETAILS</b>			Sample ID: North Creek 2			
Time:	Vol. Removed:	L	No of Sample Containers: 5			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

NTU 1.6  
NRU 115.6



## Surface Water Monitoring – Field Sheet

Client: MRWA		Location ID: SW09				
Project:		Job No.: 6137041				
Location:		Date: 2/15				
Undertaken By:		Time: 12:00				
<b>Surface Water Details</b>						
<input type="checkbox"/> Natural		<input type="checkbox"/> Man-made	<input type="checkbox"/> Unknown			
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC (µS/cm)	Temp. (°C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2°C	-	+/- 10%	+/- 10%	+/- 10%	-
720	11.9	467.92	6.76	60.2	6.50	2106
Comments (e.g. sheen, colour, odour, sediment load): clear, no odour, bacterial sheen, low sed						
<b>SAMPLING DETAILS</b>			Sample ID: SW09			
Time:	Vol. Removed:	L	No of Sample Containers: 5			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input checked="" type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						



## Surface Water Monitoring – Field Sheet

Client: <i>MRWA</i>		Location ID: <i>SW06</i>				
Project: <i>GW ISW monitoring</i>		Job No.: <i>6137041</i>				
Location: <i>BORR</i>		Date: <i>19.5</i>				
Undertaken By:		Time: <i>10:05 am</i>				
Surface Water Details						
<input checked="" type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
WATER PARAMETERS						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
<i>3026</i>	<i>11.4</i>	<i>1966.600</i>	<i>6.77</i>	<i>45.6</i>	<i>4.92</i>	<i>31.0</i>
Comments (e.g. sheen, colour, odour, sediment load): <i>clear, no odour, no sheen, low-mod sediment</i>						
SAMPLING DETAILS				Sample ID: <i>SW06</i>		
Time:	Vol. Removed:	L	No of Sample Containers: <i>5</i>			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/qp = unreserved):						
Field Filtered	<input checked="" type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

NTU

9.8



## Surface Water Monitoring – Field Sheet

Client: <i>MRWA</i>		Location ID: <i>North Creek 4</i>				
Project: <i>GW/SW Sampling</i>		Job No.: <i>6137041</i>				
Location: <i>BORR</i>		Date: <i>19.5.20</i>				
Undertaken By: <i>DS + SE</i>		Time: <i>11:17</i>				
Surface Water Details						
<input checked="" type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
WATER PARAMETERS						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
<i>2639</i>	<i>11.0</i>	<i>1715.294</i>	<i>7.21</i>	<i>73.2</i>	<i>8.00</i>	<i>71.0</i>
Comments (e.g. sheen, colour, odour, sediment load): <i>clear, no odour, slight bacterial(?) sheen</i>						
SAMPLING DETAILS				Sample ID: <i>North Creek 4</i>		
Time:	Vol. Removed:	L	No of Sample Containers: <i>5</i>			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/qp = unreserved):						
Field Filtered	<input checked="" type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

NTU

9.1



### Surface Water Monitoring – Field Sheet

Client: MRWA		Location ID: <i>WRM NORTH S</i>				
Project: Surface Water Monitoring - BORR		Job No.: 6137041				
Location:		Date: <i>18.5.20</i>				
Undertaken By:		Time: <i>15.01</i>				
<b>Surface Water Details</b>						
<input checked="" type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain): <i>pond</i>						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
Comments (e.g. sheen, colour, odour, sediment load):						
<i>DRY</i>						
<b>SAMPLING DETAILS</b>				Sample ID:		
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						
<i>DRY - NOT SAMPLED</i>						



### Surface Water Monitoring – Field Sheet

Client: MRWA		Location ID: <i>SW01</i>				
Project: Surface Water Monitoring - BORR		Job No.: 6137041				
Location:		Date: <i>19/5</i>				
Undertaken By:		Time: <i>8:00am</i>				
<b>Surface Water Details</b>						
<input type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
—	—	—	—	—	—	—
Comments (e.g. sheen, colour, odour, sediment load):						
<i>DRY - could not sample</i>						
<b>SAMPLING DETAILS</b>				Sample ID:		
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						



## Surface Water Monitoring – Field Sheet

Client: MRWA		Location ID: SW11				
Project: Surface Water Monitoring - BORR		Job No.: 6137041				
Location:		Date: 18-5-20				
Undertaken By: 10 + DS		Time: 10:32				
<b>Surface Water Details</b>						
<input checked="" type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain): Pond.						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC (µS/cm)	Temp. (°C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2°C	-	+/- 10%	+/- 10%	+/- 10%	-
Comments (e.g. sheen, colour, odour, sediment load):						
DRY						
<b>SAMPLING DETAILS</b>				Sample ID:		
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						
DRY - NOT SAMPLED.						



## Surface Water Monitoring – Field Sheet

Client: MRWA		Location ID: SW10				
Project: Surface Water Monitoring - BORR		Job No.: 6137041				
Location:		Date: 18-5-20				
Undertaken By:		Time: 12:50				
<b>Surface Water Details</b>						
<input checked="" type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain): stream / Brook						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC (µS/cm)	Temp. (°C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2°C	-	+/- 10%	+/- 10%	+/- 10%	-
Comments (e.g. sheen, colour, odour, sediment load):						
DRY						
<b>SAMPLING DETAILS</b>				Sample ID:		
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						
DRY - NOT SAMPLED						



Surface Water Monitoring – Field Sheet

Client: <i>MRWA</i>	Location ID: <i>SW08</i>
Project: <i>GWISW Sampling</i>	Job No.: <i>6137041</i>
Location: <i>BORR</i>	Date: <i>2/1/15</i>
Undertaken By:	Time: <i>~12:30</i>

Surface Water Details

Natural       Man-made       Unknown

Comment:

Type of Water Body (eg. River, Drain):

Dimensions of Water Body (size, shape, depth):

WATER PARAMETERS

EC (μS/cm)	Temp. (°C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2°C	-	+/- 10%	+/- 10%	+/- 10%	-
<i>855</i>	<i>13.2</i>	<i>555.661</i>	<i>6.64</i>	<i>93.4</i>	<i>9.78</i>	<i>86.8</i>

NTU  
3.2

Comments (e.g. sheen, colour, odour, sediment load): *clear, no odour, no sheen, low sed*

SAMPLING DETAILS

Sample ID: *SW08*

Time:      Vol. Removed:      L      No of Sample Containers: *5*

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered       Duplicate Samples       Duplicate Sample ID:

Comments:



Surface Water Monitoring – Field Sheet

Client: <i>MRWA</i>	Location ID: <i><del>SW08</del> SW07</i>
Project: <i>GWISW Sampling</i>	Job No.: <i>6137041</i>
Location: <i>BORR</i>	Date: <i>2/1/15</i>
Undertaken By: <i>DS/SL</i>	Time: <i>~1:00</i>

Surface Water Details

Natural       Man-made       Unknown

Comment:

Type of Water Body (eg. River, Drain):

Dimensions of Water Body (size, shape, depth):

WATER PARAMETERS

EC (μS/cm)	Temp. (°C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2°C	-	+/- 10%	+/- 10%	+/- 10%	-
<i>855</i>	<i>13.3</i>	<i>555.581</i>	<i>6.55</i>	<i>93.8</i>	<i>9.80</i>	<i>79.3</i>

NTU  
2.3

Comments (e.g. sheen, colour, odour, sediment load): *clear, no odour, no sheen, low sed*

SAMPLING DETAILS

Sample ID: *SW07*

Time:      Vol. Removed:      L      No of Sample Containers: *5*

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered       Duplicate Samples       Duplicate Sample ID:

Comments:



## Surface Water Monitoring – Field Sheet

Client:		Location ID: <i>North Creek 4</i>					
Project:		Job No.:					
Location:		Date: <i>18/6</i>					
Undertaken By:		Time: <i>~9:30am</i>					
<b>Surface Water Details</b>							
<input type="checkbox"/> Natural <input type="checkbox"/> Man-made <input type="checkbox"/> Unknown							
Comment:							
Type of Water Body (eg. River, Drain):							
Dimensions of Water Body (size, shape, depth):							
<b>WATER PARAMETERS</b>							
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)	
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-	
<i>1818</i>	<i>13.5</i>	<i>1181.558</i>	<i>6.89</i>	<i>53.3</i>	<i>5.57</i>	<i>153.1</i>	
Comments (e.g. sheen, colour, odour, sediment load): <i>clear-light brown, no odour, no sheen, low sed.</i>							
<b>SAMPLING DETAILS</b>				Sample ID:			
Time:		Vol. Removed:		L		No of Sample Containers:	
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):							
Field Filtered		Duplicate Samples		Duplicate Sample ID:			
<input type="checkbox"/>		<input type="checkbox"/>					
Comments:							

NTU

*73.2*



## Surface Water Monitoring – Field Sheet

Client:		Location ID: <i>Southern 4</i>					
Project:		Job No.: <i>6137041</i>					
Location:		Date: <i>18/6</i>					
Undertaken By:		Time:					
<b>Surface Water Details</b>							
<input type="checkbox"/> Natural <input type="checkbox"/> Man-made <input type="checkbox"/> Unknown							
Comment:							
Type of Water Body (eg. River, Drain):							
Dimensions of Water Body (size, shape, depth):							
<b>WATER PARAMETERS</b>							
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)	
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-	
<i>13625</i>	<i>13.5</i>	<i>3856.79</i>	<i>8.54</i>	<i>23.1</i>	<i>2.26</i>	<i>119.6</i>	
Comments (e.g. sheen, colour, odour, sediment load): <i>clear-light brown, no odour, no sheen, low sed.</i>							
<b>SAMPLING DETAILS</b>				Sample ID:			
Time:		Vol. Removed:		L		No of Sample Containers:	
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):							
Field Filtered		Duplicate Samples		Duplicate Sample ID:			
<input type="checkbox"/>		<input type="checkbox"/>					
Comments:							

NTU

*43.6*



### Surface Water Monitoring – Field Sheet

Client: MRWA			Location ID: SW07			
Project: Surface Water Monitoring - BORR			Job No.: 6137041			
Location:			Date: 15.6.20			
Undertaken By:			Time:			
<b>Surface Water Details</b>						
<input checked="" type="checkbox"/> Natural			<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown	
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC (µS/cm)	Temp. (°C)	TDS (ppm mg/L)	pH	DO %Sat	DO (ppm mg/L)	Eh (mV)
+/- 10%	+/- 0.2°C	-	+/- 10%	+/- 10%	+/- 10%	-
970	14.8	630.723	6.31	91.4	9.23	110.8
Comments (e.g. sheen, colour, odour, sediment load): clear, no odour, no sheen, low sed.						
<b>SAMPLING DETAILS</b>			Sample ID: SW07			
Time:	Vol. Removed:	L	No of Sample Containers: 5			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

NTU  
7.1



### Surface Water Monitoring – Field Sheet

Client: MRWA			Location ID: SW08			
Project: Surface Water Monitoring - BORR			Job No.: 6137041			
Location:			Date: 15.6.20			
Undertaken By:			Time:			
<b>Surface Water Details</b>						
<input checked="" type="checkbox"/> Natural			<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown	
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC (µS/cm)	Temp. (°C)	TDS (ppm mg/L)	pH	DO %Sat	DO (ppm mg/L)	Eh (mV)
+/- 10%	+/- 0.2°C	-	+/- 10%	+/- 10%	+/- 10%	-
971	14.8	630.921	6.39	91.6	9.26	106.8
Comments (e.g. sheen, colour, odour, sediment load): clear, no sheen, no odour, low sed.						
<b>SAMPLING DETAILS</b>			Sample ID: SW08			
Time:	Vol. Removed:	L	No of Sample Containers: 5			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

NTU  
7.1





### Surface Water Monitoring – Field Sheet

Client: MRWA		Location ID: <i>Northern 5</i>				
Project: Surface Water Monitoring - BORR		Job No.: 6137041				
Location:		Date: <i>15.6.20</i>				
Undertaken By:		Time:				
<b>Surface Water Details</b>						
<input checked="" type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
<i>693</i>	<i>16.1</i>	<i>450.193</i>	<i>7.12</i>	<i>53.2</i>	<i>5.23</i>	<i>89.5</i>
Comments (e.g. sheen, colour, odour, sediment load): <i>clear, no odour, no sheen, low sed.</i>						
<b>SAMPLING DETAILS</b>				Sample ID:		
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

*NTU 12.5*



### Surface Water Monitoring – Field Sheet

Client: MRWA		Location ID:				
Project: Surface Water Monitoring - BORR		Job No.: 6137041				
Location:		Date:				
Undertaken By:		Time:				
<b>Surface Water Details</b>						
<input type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
Comments (e.g. sheen, colour, odour, sediment load):						
<b>SAMPLING DETAILS</b>				Sample ID:		
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						



### Surface Water Monitoring – Field Sheet

Client: MRWA		Location ID: <i>W2M North 5</i>				
Project: Surface Water Monitoring - BORR		Job No.: 6137041				
Location:		Date: <i>15.6.20</i>				
Undertaken By:		Time:				
<b>Surface Water Details</b>						
<input type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm mg/L)	pH	DO %Sat	DO (ppm mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
Comments (e.g. sheen, colour, odour, sediment load): <i>DRY</i>						
<i>looked from centenary road.</i>						
<b>SAMPLING DETAILS</b>				Sample ID:		
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						



### Surface Water Monitoring – Field Sheet

Client: MRWA		Location ID: <i>SW11</i>				
Project: Surface Water Monitoring - BORR		Job No.: 6137041				
Location:		Date: <i>16.6.20</i>				
Undertaken By:		Time: <i>~ 9am</i>				
<b>Surface Water Details</b>						
<input type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm mg/L)	pH	DO %Sat	DO (ppm mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
Comments (e.g. sheen, colour, odour, sediment load):						
<i>DRY - could not sample.</i>						
<b>SAMPLING DETAILS</b>				Sample ID:		
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						



### Surface Water Monitoring – Field Sheet

Client: MRWA		Location ID: <i>Five Mile Brook</i>				
Project: Surface Water Monitoring - BORR		Job No.: 6137041				
Location:		Date: <i>16.6.20</i>				
Undertaken By:		Time:				
<b>Surface Water Details</b>						
<input checked="" type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
Comments (e.g. sheen, colour, odour, sediment load):						
<i>- DRY -</i>						
<b>SAMPLING DETAILS</b>				Sample ID:		
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						



### Surface Water Monitoring – Field Sheet

Client: MRWA		Location ID:				
Project: Surface Water Monitoring - BORR		Job No.: 6137041				
Location:		Date:				
Undertaken By:		Time:				
<b>Surface Water Details</b>						
<input type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
Comments (e.g. sheen, colour, odour, sediment load):						
<b>SAMPLING DETAILS</b>				Sample ID:		
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						



### Surface Water Monitoring – Field Sheet

Client: <i>MRWA</i>		Location ID: <i>JTO1</i>				
Project: <i>GW / SW Monitoring</i>		Job No.: <i>6137041</i>				
Location:		Date: <i>17/6</i>				
Undertaken By:		Time: <i>~9am</i>				
<b>Surface Water Details</b>						
<input checked="" type="checkbox"/> Natural <input type="checkbox"/> Man-made <input type="checkbox"/> Unknown						
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
<i>45.91</i>	<i>13.4</i>	<i>2984.104</i>	<i>6.63</i>	<i>72.2</i>	<i>7.43</i>	<i>63.9</i>
Comments (e.g. sheen, colour, odour, sediment load): <i>clear, no odour</i> <i>no sheen low sed.</i>						
<b>SAMPLING DETAILS</b>				Sample ID: <i>JTO1</i>		
Time:	Vol. Removed:	L	No of Sample Containers: <i>5</i>			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

*NTM*  
*12.7*



### Surface Water Monitoring – Field Sheet

Client:		Location ID:				
Project:		Job No.:				
Location:		Date:				
Undertaken By:		Time:				
<b>Surface Water Details</b>						
<input type="checkbox"/> Natural <input type="checkbox"/> Man-made <input type="checkbox"/> Unknown						
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
Comments (e.g. sheen, colour, odour, sediment load):						
<b>SAMPLING DETAILS</b>				Sample ID:		
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						



### Surface Water Monitoring – Field Sheet

Client: <i>MRWA</i>		Location ID: <i>MT01</i>				
Project: <i>GW/SW Sampling</i>		Job No.: <i>6137041</i>				
Location: <i>BORR</i>		Date: <i>17/6</i>				
Undertaken By:		Time: <i>2:00</i>				
<b>Surface Water Details</b>						
<input checked="" type="checkbox"/> Natural <input type="checkbox"/> Man-made <input type="checkbox"/> Unknown						
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
<i>347.7</i>	<i>15.9</i>	<i>255.994</i>	<i>6.49</i>	<i>104.1</i>	<i>10.30</i>	<i>142.0</i>
Comments (e.g. sheen, colour, odour, sediment load): <i>clear-brown, no odour, no sheen, low-mod red</i>						
<b>SAMPLING DETAILS</b>				Sample ID: <i>MT01</i>		
Time:		Vol. Removed: <i>L</i>		No of Sample Containers: <i>5</i>		
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered <input type="checkbox"/>		Duplicate Samples <input type="checkbox"/>		Duplicate Sample ID:		
Comments:						



### Surface Water Monitoring – Field Sheet

Client:		Location ID:				
Project:		Job No.:				
Location:		Date:				
Undertaken By:		Time:				
<b>Surface Water Details</b>						
<input type="checkbox"/> Natural <input type="checkbox"/> Man-made <input type="checkbox"/> Unknown						
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
Comments (e.g. sheen, colour, odour, sediment load):						
<b>SAMPLING DETAILS</b>				Sample ID:		
Time:		Vol. Removed: <i>L</i>		No of Sample Containers:		
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered <input type="checkbox"/>		Duplicate Samples <input type="checkbox"/>		Duplicate Sample ID:		
Comments:						

*NTM*

*9.7*



### Surface Water Monitoring – Field Sheet

Client: <i>MRWA</i>		Location ID: <i>SW06</i>				
Project:		Job No.: <i>6137041</i>				
Location:		Date: <i>17/6</i>				
Undertaken By:		Time: <i>~12</i>				
<b>Surface Water Details</b>						
<input type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
<i>2338</i>	<i>13.2</i>	<i>1519.925</i>	<i>6.86</i>	<i>42.7</i>	<i>4.44</i>	<i>0.4</i>
Comments (e.g. sheen, colour, odour, sediment load):						
<b>SAMPLING DETAILS</b>				Sample ID:		
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
<i>FD03 taken here</i>						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
				<i>FD03</i>		
Comments:						

NTU  
169.2



### Surface Water Monitoring – Field Sheet

Client: <i>MRWA</i>		Location ID: <i>Northern 3</i>				
Project:		Job No.: <i>6137041</i>				
Location:		Date: <i>17/6/20</i>				
Undertaken By:		Time: <i>~1</i>				
<b>Surface Water Details</b>						
<input checked="" type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
<i>18610</i>	<i>15.3</i>	<i>2106.141</i>	<i>6.55</i>	<i>96.1</i>	<i>8.99</i>	<i>73.4</i>
Comments (e.g. sheen, colour, odour, sediment load):						
<i>clear, no odour no sheen, low sed</i>						
<b>SAMPLING DETAILS</b>				Sample ID: <i>Northern 3</i>		
Time:	Vol. Removed:	L	No of Sample Containers: <i>5</i>			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

NTU  
3.9



### Surface Water Monitoring – Field Sheet

Client: MRWA		Location ID: <i>North Creek 2</i>				
Project: Surface Water Monitoring - BORR		Job No.: 6137041				
Location:		Date: <i>15.6.20</i>				
Undertaken By:		Time: <i>9:30am</i>				
<b>Surface Water Details</b>						
<input checked="" type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain): <i>River</i>						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
<i>928</i>	<i>14.5</i>	<i>603.09</i>	<i>6.84</i>	<i>86.4</i>	<i>8.78</i>	<i>100.4</i>
Comments (e.g. sheen, colour, odour, sediment load): <i>clear, no odour, no sheen, low sed.</i>						
<b>SAMPLING DETAILS</b>			Sample ID: <i>North Creek 2</i>			
Time:	Vol. Removed:	L	No of Sample Containers: <i>5</i>			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved): <i>forgot syringe - could not field filter - need to filter at lab.</i>						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

*NTU*  
*7.5*



### Surface Water Monitoring – Field Sheet

Client: MRWA		Location ID: <i>SW09</i>				
Project: Surface Water Monitoring - BORR		Job No.: 6137041				
Location:		Date: <i>15.6</i>				
Undertaken By:		Time: <i>10:20am</i>				
<b>Surface Water Details</b>						
<input type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
<i>623</i>	<i>15.1</i>	<i>404.871</i>	<i>6.66</i>	<i>17.3</i>	<i>1.72</i>	<i>24.4</i>
Comments (e.g. sheen, colour, odour, sediment load): <i>clear, no odour, no sheen, low-mod sediment</i>						
<b>SAMPLING DETAILS</b>			Sample ID:			
Time:	Vol. Removed:	L	No of Sample Containers: <i>5</i>			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

*NTU*  
*87.7*



Surface Water Monitoring – Field Sheet

Client: MRWA		Location ID: MTO1				
Project: Surface Water Monitoring - BORR		Job No.: 6137041				
Location: NORTH		Date: 22.7.20				
Undertaken By: IO + TC		Time: 8:50				
Surface Water Details						
<input checked="" type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
WATER PARAMETERS						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
290.1	11.6	189	7.03	50.5	5.53	105.9
Comments (e.g. sheen, colour, odour, sediment load):						
no sheen/odour, low sed, light brown.						
SAMPLING DETAILS				Sample ID: MTO1		
Time:	Vol. Removed:	L	No of Sample Containers: 5			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input checked="" type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

NTU  
8.99



Surface Water Monitoring – Field Sheet

Client: MRWA		Location ID: SW06				
Project: Surface Water Monitoring - BORR		Job No.: 6137041				
Location: NORTH		Date: 21.7.20				
Undertaken By: IO/TC		Time: 15:56				
Surface Water Details						
<input checked="" type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
WATER PARAMETERS						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
867	14.2	564	7.07	83.3	8.52	63.6
Comments (e.g. sheen, colour, odour, sediment load):						
good - no sheen/odour, light brown, low sed						
SAMPLING DETAILS				Sample ID: SW06		
Time:	Vol. Removed:	L	No of Sample Containers: 5			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input checked="" type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

NTU  
22.89





### Surface Water Monitoring – Field Sheet

Client: MRWA		Location ID: SW08				
Project: Surface Water Monitoring - BORR		Job No.: 6137041				
Location: CENTRAL		Date: 20.7.20				
Undertaken By: IO/TC		Time: 12.39				
<b>Surface Water Details</b>						
<input checked="" type="checkbox"/> Natural <input type="checkbox"/> Man-made <input type="checkbox"/> Unknown						
Comment:						
Type of Water Body (eg. River, Drain): RIVER						
Dimensions of Water Body (size, shape, depth): 10m						
<b>WATER PARAMETERS</b>						
EC (µS/cm)	Temp. (°C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2°C	-	+/- 10%	+/- 10%	+/- 10%	-
558	12.4	363	6.88	89.1	9.50	91.2
Comments (e.g. sheen, colour, odour, sediment load): no sheen/odour, dark brown, mod sed.						
<b>SAMPLING DETAILS</b>			Sample ID: SW08			
Time:	Vol. Removed:	L	No of Sample Containers: 5			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input checked="" type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

NTU

16.68



### Surface Water Monitoring – Field Sheet

Client: MRWA		Location ID: SW07				
Project: Surface Water Monitoring - BORR		Job No.: 6137041				
Location: CENTRAL		Date: 20.7.20				
Undertaken By: IO/TC		Time: 12:48				
<b>Surface Water Details</b>						
<input checked="" type="checkbox"/> Natural <input type="checkbox"/> Man-made <input type="checkbox"/> Unknown						
Comment:						
Type of Water Body (eg. River, Drain): RIVER						
Dimensions of Water Body (size, shape, depth): 10m						
<b>WATER PARAMETERS</b>						
EC (µS/cm)	Temp. (°C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2°C	-	+/- 10%	+/- 10%	+/- 10%	-
558	12.5	363	6.85	89.4	9.52	112.6
Comments (e.g. sheen, colour, odour, sediment load): no sheen/odour, dark brown, mod sed.						
<b>SAMPLING DETAILS</b>			Sample ID: SW07			
Time:	Vol. Removed:	L	No of Sample Containers: 5			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input checked="" type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

NTU

16.9



### Surface Water Monitoring – Field Sheet

Client: MRWA			Location ID: SW09			
Project: Surface Water Monitoring - BORR			Job No.: 6137041			
Location: Central			Date: 20.7.20			
Undertaken By: IO/TC			Time: 10.57			
Surface Water Details						
<input checked="" type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
WATER PARAMETERS						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
684	11.5	445	6.65	<del>11.0</del> 2.1	0.23	-109.5
Comments (e.g. sheen, colour, odour, sediment load):						
no sheen / odour, light brown, low sed.						
SAMPLING DETAILS			Sample ID: SW09			
Time:	Vol. Removed:	L	No of Sample Containers: 5			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input checked="" type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

NTU  
175.52



### Surface Water Monitoring – Field Sheet

Client: MRWA			Location ID: NORTH CREEK 2			
Project: Surface Water Monitoring - BORR			Job No.: 6137041			
Location: CENTRAL			Date: 20.7.20			
Undertaken By: IO/TC			Time: 11:30			
Surface Water Details						
<input checked="" type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain): RIVER						
Dimensions of Water Body (size, shape, depth): 20m.						
WATER PARAMETERS						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
550	12.3	357	6.98	89.3	9.53	92.7
Comments (e.g. sheen, colour, odour, sediment load):						
no sheen / odour, dark brown, mod sed						
SAMPLING DETAILS			Sample ID: NORTH CREEK 2			
Time:	Vol. Removed:	L	No of Sample Containers: 5			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input checked="" type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

NTU  
19.64



### Surface Water Monitoring – Field Sheet

Client: MRWA		Location ID: SW10				
Project: Surface Water Monitoring - BORR		Job No.: 6137041				
Location: SOUTH		Date: 23.7.20				
Undertaken By: IO/TC		Time: 15:25				
<b>Surface Water Details</b>						
<input checked="" type="checkbox"/> Natural <input type="checkbox"/> Man-made <input type="checkbox"/> Unknown						
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC (µS/cm)	Temp. (°C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2°C	-	+/- 10%	+/- 10%	+/- 10%	-
1016	17.5	660	6.87	77.8	7.42	22.1
Comments (e.g. sheen, colour, odour, sediment load):						
no sheen / odour, brown, low sed						
<b>SAMPLING DETAILS</b>				Sample ID: SW10		
Time:	Vol. Removed:	L	No of Sample Containers: 11			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input checked="" type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

NTU

13.73



### Surface Water Monitoring – Field Sheet

Client: MRWA		Location ID:				
Project: Surface Water Monitoring - BORR		Job No.: 6137041				
Location:		Date:				
Undertaken By:		Time:				
<b>Surface Water Details</b>						
<input type="checkbox"/> Natural <input type="checkbox"/> Man-made <input type="checkbox"/> Unknown						
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC (µS/cm)	Temp. (°C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2°C	-	+/- 10%	+/- 10%	+/- 10%	-
Comments (e.g. sheen, colour, odour, sediment load):						
<b>SAMPLING DETAILS</b>				Sample ID:		
Time:	Vol. Removed:	L	No of Sample Containers:			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						



Surface Water Monitoring – Field Sheet

Client: MRWA		Location ID: <b>NORTHERN 3</b>				
Project: Surface Water Monitoring - BORR		Job No.: 6137041				
Location: <b>NORTH</b>		Date: <b>22.7.20</b>				
Undertaken By: <b>IO + TC</b>		Time: <b>12:36</b>				
Surface Water Details						
<input checked="" type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
WATER PARAMETERS						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
<b>11490</b>	<b>17.8</b>	<b>7468</b>	<b>5.14</b>	<b>133.7</b>	<b>12.23</b>	<b>245.7</b>
Comments (e.g. sheen, colour, odour, sediment load):						
<b>no sheen / odour, light brown, low sedts.</b>						
SAMPLING DETAILS				Sample ID: <b>NORTHERN 3</b>		
Time:	Vol. Removed:	L	No of Sample Containers: <b>5</b>			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input checked="" type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

NTU  
7.73



Surface Water Monitoring – Field Sheet

Client: MRWA		Location ID: <b>JTO1</b>				
Project: Surface Water Monitoring - BORR		Job No.: 6137041				
Location: <b>NORTH</b>		Date: <b>22.7.20</b>				
Undertaken By: <b>IO TC</b>		Time: <b>10:32</b>				
Surface Water Details						
<input checked="" type="checkbox"/> Natural		<input type="checkbox"/> Man-made		<input type="checkbox"/> Unknown		
Comment:						
Type of Water Body (eg. River, Drain): <b>RWER</b>						
Dimensions of Water Body (size, shape, depth):						
WATER PARAMETERS						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
<b>1093</b>	<b>13.2</b>	<b>710</b>	<b>6.76</b>	<b>83.1</b>	<b>8.70</b>	<b>27.1</b>
Comments (e.g. sheen, colour, odour, sediment load):						
<b>no sheen, odour, low sedts, light brown.</b>						
SAMPLING DETAILS				Sample ID: <b>JTO1</b>		
Time:	Vol. Removed:	L	No of Sample Containers: <b>5</b>			
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input checked="" type="checkbox"/>	Duplicate Samples	<input type="checkbox"/>	Duplicate Sample ID:		
Comments:						

NTU  
25.68



# Surface Water Monitoring – Field Sheet

Client: MRWA	Location ID: NORTH CREEK 4
Project: Surface Water Monitoring - BORR	Job No.: 6137041
Location: NORTH	Date: 22.7.20
Undertaken By: IO + TC	Time: 16:40

## Surface Water Details

Natural       Man-made       Unknown

Comment:

Type of Water Body (eg. River, Drain): CREEK

Dimensions of Water Body (size, shape, depth):

## WATER PARAMETERS

EC ( $\mu\text{S}/\text{cm}$ )	Temp. ( $^{\circ}\text{C}$ )	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}\text{C}$	-	+/- 10%	+/- 10%	+/- 10%	-
997	15.8	648		103.5	10.23	126.7

NTU  
9.5

Comments (e.g. sheen, colour, odour, sediment load):

no sheen/odour, light brown, low sed.

## SAMPLING DETAILS

Sample ID: NORTH CREEK 4

Time:      Vol. Removed: L      No of Sample Containers: 11

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered       Duplicate Samples       Duplicate Sample ID:

Comments:

internal lab QA/QC completed



# Surface Water Monitoring – Field Sheet

Client: MRWA	Location ID: WRM NORTH 3
Project: Surface Water Monitoring - BORR	Job No.: 6137041
Location: CENTRAL	Date: 20.7.20
Undertaken By: IO/TC	Time: 13:54

**Surface Water Details**

Natural       Man-made       Unknown

Comment:

Type of Water Body (eg. River, Drain):

Dimensions of Water Body (size, shape, depth):

**WATER PARAMETERS**

EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
1656	14.1	1079	6.33	84.8	8.68	72.4

NTU  
18.7

Comments (e.g. sheen, colour, odour, sediment load):

no sheen/odour, light brown, low sed.

**SAMPLING DETAILS**

Sample ID: WRM NORTH 3

Time:      Vol. Removed:      L      No of Sample Containers: 11

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered       Duplicate Samples       Duplicate Sample ID: ~~WRM NORTH~~

Comments: WFD01



# Surface Water Monitoring – Field Sheet

Client: MRWA	Location ID: CENTENARY Rd
Project: Surface Water Monitoring - BORR	Job No.: 6137041 CUIVERT
Location: SOUTH	Date: 23.7.20
Undertaken By: IO + TC	Time: 14:29

## Surface Water Details

Natural       Man-made       Unknown

Comment:

Type of Water Body (eg. River, Drain):

Dimensions of Water Body (size, shape, depth):

## WATER PARAMETERS

EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
124.2	14.3	807	6.51	45.4	4.55	47.9

NTU

20.57

Comments (e.g. sheen, colour, odour, sediment load):

no sheen / odour, low sed, brown.

## SAMPLING DETAILS

Sample ID: Centenary Rd Culvert

Time:      Vol. Removed:      L      No of Sample Containers: 9

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered       Duplicate Samples       Duplicate Sample ID:

Comments:



# Surface Water Monitoring – Field Sheet

Client: MRWA		Location ID: <i>NORTHERN 5</i>				
Project: Surface Water Monitoring - BORR		Job No.: 6137041				
Location: <i>CENTRAL</i>		Date: <i>20.7.20</i>				
Undertaken By: <i>IO/TC</i>		Time: <i>14:58</i>				
<b>Surface Water Details</b>						
<input checked="" type="checkbox"/> Natural <input type="checkbox"/> Man-made <input type="checkbox"/> Unknown						
Comment:						
Type of Water Body (eg. River, Drain):						
Dimensions of Water Body (size, shape, depth):						
<b>WATER PARAMETERS</b>						
EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
<i>724</i>	<i>14.2</i>	<i>471</i>	<i>6.93</i>	<i>33.9</i>	<i>3.45</i>	<i>84.6</i>
Comments (e.g. sheen, colour, odour, sediment load):						
<i>NO sheen / odour, colourless, v. low sed's.</i>						
<b>SAMPLING DETAILS</b>				Sample ID: <i>NORTHERN 5</i>		
Time:	Vol. Removed:		L	No of Sample Containers: <i>5</i>		
Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):						
Field Filtered	<input checked="" type="checkbox"/>	Duplicate Samples		<input type="checkbox"/>	Duplicate Sample ID:	
Comments:						

NTU

20.01





# Surface Water Monitoring – Field Sheet

Client: MRWA	Location ID: SOUTHERN 3
Project: Surface Water Monitoring - BORR	Job No.: 6137041
Location: SOUTH	Date: 23.7.20
Undertaken By: IO + TC	Time: 10:11

**Surface Water Details**

Natural                       Man-made                       Unknown

Comment:

Type of Water Body (eg. River, Drain):

Dimensions of Water Body (size, shape, depth):

**WATER PARAMETERS**

EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
1932	14.2	1256	7.13	75.1	7.67	58.6

NTU  
8.5k

Comments (e.g. sheen, colour, odour, sediment load):

no sheen / odour, light brown, low sed

<b>SAMPLING DETAILS</b>	Sample ID: SOUTHERN 3
Time:	Vol. Removed: L      No of Sample Containers: 5

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/up = unpreserved):

Field Filtered       Duplicate Samples       Duplicate Sample ID: WFD04

Comments:



# Surface Water Monitoring – Field Sheet

Client: MRWA	Location ID: SOUTHERN 4
Project: Surface Water Monitoring - BORR	Job No.: 6137041
Location:	Date: 23.7.20
Undertaken By:	Time: 9:15

## Surface Water Details

Natural                       Man-made                       Unknown

Comment:

Type of Water Body (eg. River, Drain):

Dimensions of Water Body (size, shape, depth):

## WATER PARAMETERS

EC ( $\mu$ S/cm)	Temp. ( $^{\circ}$ C)	TDS (ppm/mg/L)	pH	DO %Sat	DO (ppm/mg/L)	Eh (mV)
+/- 10%	+/- 0.2 $^{\circ}$ C	-	+/- 10%	+/- 10%	+/- 10%	-
6095	14.3	3960	7.70	91.2	9.16	76.4

NTU  
9.58

Comments (e.g. sheen, colour, odour, sediment load):

no sheen / odour, light brown, low sedts.

## SAMPLING DETAILS

Sample ID: SOUTHERN 4

Time:                      Vol. Removed:                      L                      No of Sample Containers: 5

Type of Sample Containers (i.e. P = Plastic/G = Glass/V = Vial, volume and p = preserved/unpreserved):

Field Filtered                       Duplicate Samples                       Duplicate Sample ID:

Comments:

Table C – 1 Groundwater water quality field observations

WELL	SAMPLED DATE	pH	EC	DO	DO (%)	Eh (mV)	TEMP	TDS (mg/L)
			(µS/cm)	(mg/L)			(°C)	
BH9.2	21/08/2019	5.85	1578	3	31.9	136.7	18.1	1026
	17/09/2019	5.84	2141	1.9	20.4	177	18.7	1392
	23/10/2019	3.93	7864	0.18	2	276.9	19.3	5112
	19/11/2019	4.1	8259	0.27	3	206.8	19.3	5368
	17/12/2019	4.02	7884	0.1	1.2	204.8	20.5	5125
	21/01/2020	3.67	8634	0.13	1.5	233.5	20.5	5612
	19/02/2020	3.64	7,947	1.05	12	202.4	20.3	5,165
	19/03/2020	3.24	8,000	1.03	10	40	20.1	5,197
	20/04/2020	3.62	7,880	1.27	14.3	270.1	20	5,122
	18/05/2020	3.48	8,125	0.42	5	312.5	19.8	5,280.01
	17/06/2020	3.38	8,625	0.3	3.5	308.4	19.7	3,606.31
	21/07/2020	6.26	801	4.77	51.2	106.6	18.7	520
BH11.1	20/08/2019	6.68	1593	0.71	7.7	-43.6	18.6	1035
	17/09/2019	6.73	1548	0.16	1.7	-72.7	19.4	1006
	23/10/2019	6.95	1615	0.21	2.3	-89.3	19.1	1049
	19/11/2019	6.5	1704	0.43	4.8	-50.8	20	1108
	18/12/2019	6.74	1521	0.1	1.1	-103	19.7	989
	22/01/2020	6.56	1689	0.12	1.3	-94.1	21.4	1098
	20/02/2020	6.53	1,636	1.06	12.1	-157.7	21.4	1,063
	19/03/2020	6.06	2,315	0.34	3.9	-175.9	21.4	1,505
	20/04/2020	5.91	2,772	1.18	13.6	-54.8	21.1	1,799
	20/05/2020	6.06	2,823	0.28	3.2	-31.5	20.8	1,839.80
	17/06/2020	6.04	3,258	0.45	5.1	-23	20.1	2,117.84
	22/07/2020	6.21	2,529	0.18	1.9	-112.1	19.6	1,648
BH32.1	16/09/2019	4.61	7072	0.16	1.7	9.3	19.3	4596
	24/10/2019	4.54	6250	0.17	1.9	288.6	19.1	4068
	16/12/2019	5.57	1166	0.08	0.8	62.7	19.9	758
	20/01/2020	5.27	1296	0.14	1.4	89.2	20.4	842
	22/08/2019	4.48	5520	0.81	8.8	230	18.5	3588
	18/11/2019	4.16	6702	0.32	3.6	162.5	20.1	4345
	17/02/2020	5.31	1,220	1.04	11.4	-29.2	19.9	793
	19/03/2020	4.98	1,230	0.2	2.2	-87	19.8	800
	20/04/2020	5.33	1,218	1.28	13.9	100	19.8	792
	21/05/2020	5.54	1,264	0.18	2	80	19.7	821.594
	15/06/2020	5.43	1,340	0.21	2.4	78.4	19.6	870.722
	20/07/2020	5.36	1,243	0.35	3.7	66.8	19.8	804
BORR MW04	21/08/2019	6.67	3403	0.56	6	-48.1	18.2	2211
	18/09/2019	6.77	3075	0.15	1.6	-94.7	17.9	1998

WELL	SAMPLED DATE	pH	EC	DO	DO (%S)	Eh (mV)	TEMP	TDS (mg/L)
			(µS/cm)	(mg/L)			(°C)	
	28/10/2019	6.63	4334	0.32	3.5	-22.9	19.2	2817
	20/11/2019	6.59	4360	0.35	3.9	-32	18.8	2834
	16/12/2019	6.68	4040	0.09	1	-63.7	19.2	2626
	20/01/2020	6.47	4536	0.09	0.9	-44.1	19.9	2942
	18/02/2020	6.46	4,476	1.05	11.4	-53.8	18.9	2,910
	19/03/2020	6.54	4,148	0.29	3.2	-71.7	19.2	2,687
	20/04/2020	6.5	4,416	1.18	12.9	-100.7	19	2,871
	18/05/2020	6.67	4,050	0.17	1.8	-125.1	18.8	2,630.20
	16/06/2020	6.66	4,176	0.15	1.6	-41.7	18.5	2,705.23
	27/07/2020	6.52	3,826	0.25	2.7	-34	18.9	2,486
BORR MW05	21/08/2019	6.32	1015	0.64	7	-43	19.6	660
	19/09/2019	6.52	1071	0.2	2.2	-87.7	19.8	696
	28/10/2019	6.54	1340	0.53	6	-47.9	20.8	880
	20/11/2019	6.46	1311	0.3	3.3	-76.2	20.4	851
	16/12/2019	6.67	1134	0.11	1.2	-82.4	20.7	737
	20/01/2020	6.32	1237	0.37	4.3	-29.9	21.9	805
	18/02/2020	6.41	1,294	1.08	12	-109.6	21	841
	19/03/2020	6.34	1,304	0.35	4	-174	21.6	848
	20/04/2020	6.48	1,314	1.16	13.1	-135.9	21.3	854
	18/05/2020	6.46	1,344	0.27	3.1	-127.8	21	871.088
	16/06/2020	6.45	1,209	0.21	2.4	-73.9	21	782.312
23/07/2020	6.43	493.6	0.7	7.9	-48.8	20.6	321	
BORR MW06	21/08/2019	6.26	501	1.47	16	-18.9	19.1	323
	18/09/2019	6.43	402	1.35	14.8	-26.4	19.7	262
	28/10/2019	7	927	0.38	4.3	-140.7	20.3	603
	20/11/2019	6.59	882	0.3	3.3	-78.6	20.1	571
	16/12/2019	6.38	846	0.09	1.1	-76.8	20.9	550
	20/01/2020	6.12	396	0.15	1.8	-65.8	22.1	257
	18/02/2020	6.57	414.3	1.01	11.4	-141.1	21.6	268
	19/03/2020	6.34	448.2	0.32	3.7	-194.9	21.7	291
	20/04/2020	6.39	698	1.1	12.6	-114.2	21.7	443
	18/05/2020	7.38	1,048	0.15	1.9	-200.1	21.1	698.1
	16/06/2020	6.98	780	0.16	1.8	-115	21.2	508.372
27/07/2020	6.79	758	0.22	2.4	-126.8	20.5	501	
BORR MW07	22/08/2019	6.2	933	5.22	56.3	105.4	18.9	606
	18/09/2019	6.28	508	6.92	76.3	83.6	20	330
BORR MW08a	22/08/2019	5.7	626	0.75	7.9	43.5	18	407
	18/09/2019	5.82	530	0.15	1.6	-37.4	18.4	345
	28/10/2019	6.05	585	0.39	4.1	-48.9	19	381

WELL	SAMPLED DATE	pH	EC	DO	DO (%S)	Eh (mV)	TEMP	TDS (mg/L)
			(µS/cm)	(mg/L)			(°C)	
	21/11/2019	5.95	621	0.29	3.1	-56.7	18.7	403
	19/12/2019	5.98	602	0.08	0.9	-39.4	18.5	391
	20/01/2020	5.58	600	0.05	0.7	-31.2	21	390
	18/02/2020	5.83	535	1.02	11.3	-83.6	20.5	348
	19/03/2020	5.84	535	0.32	3.5	-161.7	20.9	348
	20/04/2020	5.9	561	1.08	12.1	-92	20.8	364
	18/05/2020	5.95	640	0.5	5.9	-80	20.5	411
	16/06/2020	5.85	654	0.11	1.1	-61.3	20.4	424
BORR MW09	22/08/2019	5.61	404	3.8	40.1	157.6	18	263
	18/09/2019	5.91	401	3.89	41.3	136.8	18.2	262
	23/10/2019	6.07	301	3.87	41.4	178.2	18.5	195
	21/11/2019	5.92	213	3.59	38.4	51.6	19	139
	19/12/2019	6.07	216	1.69	18.8	70.6	20.6	141
	21/01/2020	6.06	242	1.88	21.4	78.9	21.6	158
	18/02/2020	5.91	173.4	2.54	29	97.5	22.3	113
	19/03/2020	6.12	186.7	0.82	9.4	-6	22.5	121
	20/04/2020	6.05	206.1	1.34	15.4	-42.2	22.3	134
	21/05/2020	6.02	270.3	0.79	9.1	54.7	22.4	176
	16/06/2020	5.96	298.9	0.55	6.2	45.1	21	194
	27/07/2020	5.62	678	2.81	31.1	169.7	20.3	441
BORR MW10	22/08/2019	5.72	631	0.67	6.8	13.8	16.4	407
	18/09/2019	6.09	450	0.16	1.7	-2.4	16.6	293
	23/10/2019	5.83	441	0.14	1.5	4.4	17.4	286
	21/11/2019	5.68	439	0.25	2.6	16	18.7	285
	19/12/2019	5.79	468	0.07	0.8	-8.1	19.6	304
	21/01/2020	5.67	510	0.27	3.1	-48.8	22	332
	18/02/2020	5.67	519	1.02	11.8	-68.2	22.6	336
	19/03/2020	5.97	639	0.49	5.7	-149.9	22.6	414
	20/04/2020	5.7	708	1.22	14	-78.6	22	439
	21/05/2020	5.86	762	0.55	6.2	3.4	21.5	500
	16/06/2020	5.75	694	0.86	9.5	24	19.9	451
23/07/2020	5.76	590	0.39	4.1	20.3	18.1	382	
BORR MW11	21/08/2019	6.9	3934	1.07	11	45.4	16.3	2553
	19/09/2019	7.04	2494	0.69	7.2	-57.5	17.3	1627
	23/10/2019	6.93	13072	0.57	6.3	32.4	17.9	3498
	20/11/2019	6.91	20925	0.61	7.1	60.1	18.9	13601
	16/12/2019	7.21	23917	0.19	2.2	-16.3	19.2	15546
	16/06/2020	7.33	13,750	3.49	40	60	19.6	3,907

WELL	SAMPLED DATE	pH	EC	DO	DO (%S)	Eh (mV)	TEMP	TDS (mg/L)
			(µS/cm)	(mg/L)			(°C)	
	27/07/2020	6.69	3.46	3.46	36.4	42.3	17.6	965
BORR MW12	21/08/2019	6	647	1.26	13	57.8	16.8	420
	18/09/2019	6.26	526	0.33	3.5	-2	17.7	342
	22/10/2019	6.19	560	0.19	2.1	-3.1	18.9	364
	20/11/2019	6.21	583	0.26	2.8	-16.2	18.8	379
	19/12/2019	6.46	534	0.09	1	-21.5	19.7	347
	22/01/2020	6.06	590	0.11	1.2	-49.8	21.9	383
	19/02/2020	6.17	594	1.03	11.9	-45.6	22.5	386
	19/03/2020	6.24	609	0.27	3.1	-150.5	22.9	390
	20/04/2020	6.57	617	1.2	13.8	86.2	22.1	399
	21/05/2020	6.18	538	0.41	4.5	13.1	20.4	350
	18/06/2020	6.72	950	0.49	5.5	-69.9	20.2	604
	23/07/2020	6.14	600	1.8	19.3	53	18.3	390
	BORR MW13	19/08/2019	6.37	890	0.99	10	57	15.7
16/09/2019		6.43	811	0.18	1.9	75.7	17.1	527
21/10/2019		6.31	721	0.35	3.6	54.2	17.8	468
20/11/2019		6.13	756	0.2	2.2	15.8	19.1	491
16/12/2019		6.27	804	0.09	1.1	-42.1	20.7	523
20/01/2020		6.08	962	1.8	0.15	-93.1	23.1	625
17/02/2020		6.18	904	1.18	14.1	-119.7	24.3	587
19/03/2020		6.23	949	1.84	22.8	-28.6	24.5	616
20/04/2020		6.58	932	2.75	31.9	-14.3	22.8	600
21/05/2020		6.73	1,009	1.35	14.9	51.3	20.3	660
15/06/2020		6.55	947	0.95	9.9	99.1	19.1	617
20/07/2020		6.4	724	1.02	10.7	106.9	18.6	471
BORR MW15	19/08/2019	5.67	145	1.17	12	-2.3	16.4	94
	16/09/2019	5.88	154	0.12	1.2	-79.1	17.6	100
	21/10/2019	5.98	188	0.37	4	-56.8	19	122
	19/11/2019	5.59	202	0.32	3.5	-1.5	20.1	131
	16/12/2019	5.86	185	0.07	0.9	-35.4	22	120
	20/01/2020	5.68	210	0.16	1.9	-29.1	24.2	137
	17/02/2020	5.84	175.8	0.88	10.4	-142.2	23.9	114
	19/03/2020	5.7	156.2	0.24	2.8	-214	24.1	102
	20/04/2020	6.05	164.9	1.18	13.8	-48.4	22.8	106
	20/05/2020	5.9	204.5	0.19	2.1	-35.6	21.1	133
	15/06/2020	5.67	222.3	0.3	3.5	121	19.8	145
20/07/2020	5.48	182.6	0.88	9.2	60.2	17.8	119	
BORR MW18	19/08/2019	4.54	253	3.7	38.3	236.8	16.4	165
	16/09/2019	4.69	232	4.43	46	259.8	17.1	150

WELL	SAMPLED DATE	pH	EC	DO	DO (%S)	Eh (mV)	TEMP	TDS (mg/L)
			(µS/cm)	(mg/L)			(°C)	
	21/10/2019	4.55	260	5.31	56.4	200.1	18.2	170
	18/11/2019	4.44	317	4.68	51.6	97.1	20	206
	17/12/2019	5.12	323	2.69	29.8	183.7	20.5	210
	22/01/2020	4.59	412	2.27	26	276.4	22.2	268
	17/02/2020	4.46	423.3	1.83	21.2	215.7	22.9	275
	19/03/2020	4.47	431.9	0.77	9	134	23.3	280
	20/04/2020	5.21	443	2.86	334	126.9	22.9	288
	20/05/2020	4.71	434	0.86	9.7	324.4	21.4	282
	15/06/2020	4.66	413.6	3.6	39.8	306.7	20.2	268
	20/07/2020	4.66	315	6.12	64.8	278.9	18	205
<b>BORR MW19</b>	19/08/2019	6.15	2364	2.94	28.7	112.2	13.9	1532
	16/09/2019	6.25	2512	0.51	5.4	43.3	17.1	1633
	18/11/2019	6.68	12343	0.4	4.8	-98.7	22.8	7990
	20/05/2020	6.99	8,868	4.23	49.9	43	21.4	5,769
	23/07/2020	5.92	2,032	0.22	2.4	-49.1	19.6	1,324
<b>BORR MW19b</b>	19/08/2019	5.66	2376	0.69	7.4	7.5	18.2	1544
	16/09/2019	5.93	2307	0.16	1.8	-89.1	19.3	1500
	21/10/2019	5.84	2445	0.25	2.7	-48	20	1590
	18/11/2019	5.75	2298	0.21	2.4	-86.4	21	1493
	17/12/2019	5.93	1968	0.08	1	14.3	21.2	1279
	22/01/2020	5.76	2300	0.12	1.4	-13.2	20.9	1497
	17/02/2020	5.83	2,153	0.99	11.1	-90	20.8	1,399
	19/03/2020	5.78	2,335	0.37	4.2	-181.7	20.9	1,517
	20/04/2020	5.79	2,279	1.13	12.6	-22.8	20.8	1,481
	20/05/2020	5.75	2,375	0.56	6.3	-10.5	20.9	1,547
	15/06/2020	5.66	2,522	0.2	2.3	-50.6	20.5	1,639
23/07/2020	6.5	1,109	4.4	44.7	99.3	16	699	
<b>BORR MW20</b>	19/08/2019	5.46	5407	1.13	12.1	171.3	17.8	3513
	16/09/2019	5.56	4315	0.27	2.9	149.4	18.8	2805
	21/10/2019	5.73	4452	0.36	4	76.7	19.6	2894
	21/11/2019	5.59	4275	0.22	2.5	67.4	20.1	2778
	17/12/2019	5.73	4082	0.07	0.8	71.3	21.2	2653
	22/01/2020	5.55	4527	0.15	1.7	85.8	20.5	2943
	18/02/2020	5.67	4,236	1.06	12	44.7	20.7	2,753
	19/03/2020	5.44	4,343	0.33	3.8	-3.4	21.2	2,823
	20/04/2020	5.74	4,224	1.25	14	23.1	20	2,746
	20/05/2020	5.68	4,417	0.36	4	78	19.7	2,871
	15/06/2020	5.5	6,294	0.24	2.7	127.9	19.7	4,060
	23/07/2020	5.55	6,809	0.63	7.2	139.6	18.4	4,426

WELL	SAMPLED DATE	pH	EC	DO	DO (%S)	Eh (mV)	TEMP	TDS (mg/L)
			(µS/cm)	(mg/L)			(°C)	
BORR MW22	19/08/2019	6.52	620	3.43	33.8	11.4	14.3	402
	16/09/2019	6.55	670	2.63	27.9	29.4	17.8	436
	18/06/2020	6.63	575	5.49	56.7	88	16.8	378
	22/07/2020	5.75	2,252	2.71	30.7	191.4	21	1,446
BORR MW22b	19/08/2019	5.41	13543	0.56	6.4	-88.9	19.3	8801
	16/09/2019	5.6	12759	0.16	1.9	-82.2	20.3	8295
	24/10/2019	5.55	13720	0.15	1.8	-24.5	20.8	8918
	18/11/2019	5.33	13387	0.33	3.9	-84	21.5	8700
	17/12/2019	5.61	12540	0.11	1.4	-36.1	22.6	8151
	23/01/2020	5.53	13864	0.17	2	-38.5	22.6	9011
	20/02/2020	5.74	12,714	1.02	12.1	-102.7	21.6	8,263
	19/03/2020	5.49	13,052	0.27	3.2	-145.4	22.1	8,486
	20/04/2020	5.43	13,186	1.11	13.1	-24.5	21.1	8,571
	19/05/2020	5.62	13,549	0.22	2.6	-49.5	20.8	3,809
	18/06/2020	6.28	1,730	3.98	43.9	99.8	20	1,114
	22/07/2020	6.56	598	1.05	10.9	81.2	16.6	389
	BORR MW24	20/08/2019	4.12	1882	2.16	23.9	324.6	19.7
17/09/2019		4.29	1766	1.87	20.8	391.4	20.3	1148
22/10/2019		4.38	1881	2.06	23.3	302.7	21	1223
20/11/2019		4.28	1831	1.55	17.4	253.6	20.9	1189
18/12/2019		4.47	1766	0.94	11	190.8	22.9	1148
23/01/2020		4.27	1877	0.94	10.7	369.9	21.4	1219
20/02/2020		4.43	1,804	1.91	21.5	301.7	21.2	1,172
19/03/2020		4.22	1,795	1.63	17.4	183.9	20.6	1,167
20/04/2020		4.6	1,790	2.71	30.8	315.1	20.7	1,163
20/05/2020		4.61	1,948	1.68	19.1	296.7	21.2	1,254
17/06/2020		4.5	2,153	1.7	19	289.3	20	1,389
22/07/2020	4.02	1,982	1.8	20.2	373.4	20.7	1,288	
BORR MW25	21/08/2019	5.48	3736	0.6	6.5	60.7	18.6	2428
	17/09/2019	5.59	3657	0.13	1.4	-43.4	18.7	2377
	23/10/2019	5.81	3900	0.25	2.7	-21.1	19.5	2535
	19/11/2019	5.53	3647	0.29	3.2	-19.9	19	2370
	17/12/2019	5.79	3612	0.12	1.3	-70.6	20.3	2348
	23/01/2020	5.56	3997	0.11	1.26	-13.6	19	2598
	19/02/2020	5.59	3,743	1.12	12.3	-54.3	19.4	2,433
	19/03/2020	5.34	3,723	0.35	3.9	-119.4	19.7	2,420
	20/04/2020	5.64	3,698	1.45	16.5	-20.8	18.9	2,405
	20/05/2020	5.52	3,833	0.48	5.3	20.4	18.8	2,492
17/06/2020	5.46	4,080	0.59	6.3	85.8	18.3	2,652	



WELL	SAMPLED DATE	pH	EC	DO	DO (%S)	Eh (mV)	TEMP	TDS (mg/L)
			( $\mu$ S/cm)	(mg/L)			( $^{\circ}$ C)	
	22/07/2020	5.67	1,446	0.29	3.2	114.6	19.7	940
BORR MW29	21/08/2019	5.02	969	0.6	6.4	80.4	18.1	630
	17/09/2019	5.19	867	0.19	2	-110.9	18.8	563
	24/10/2019	5.19	860	0.14	1.5	-42.8	19.7	559
	19/11/2019	5.12	782	0.33	3.7	-58.9	19.5	508
	18/12/2019	5.33	711	0.08	0.9	-24.6	19.7	462
	21/01/2020	5.07	811	0.12	1.4	3.8	21	527
	19/02/2020	5.04	973	1.07	12	-64.1	20.7	632
	19/03/2020	4.86	1,115	0.38	4.1	-149.7	20.2	725
	20/04/2020	5.26	886	13.4	1.22	-112.5	19.9	576
	19/05/2020	5.51	839	0.36	3.9	-290	19.3	548
	17/06/2020	5.61	954	0.27	2.9	-100	19.3	620
	21/07/2020	5.39	957	0.22	2.4	-179.6	19.3	622
	BORR MW31	21/08/2019	5.17	275	0.91	9.6	51	17
17/09/2019		5.38	262	0.17	1.8	4.6	18.4	170
24/10/2019		5.33	265	0.16	1.7	-23.5	18.7	172
19/11/2019		5.25	271	0.28	2.9	-66	19.7	176
18/12/2019		5.41	266	0.14	1.5	-26.1	20	173
21/01/2020		5.13	287	0.13	1.4	-9.8	21	187
19/02/2020		5.4	262.5	1.11	12.4	-113.2	21.1	171
19/03/2020		5.17	263.1	0.38	4.4	-188.3	21.1	171
20/04/2020		5.35	270	1.31	14.7	-85.5	20.9	178
19/05/2020		5.48	286.2	0.17	1.9	-330.5	20	186
17/06/2020		5.3	311.7	0.41	4.8	-6.1	19.9	203
21/07/2020		5.2	284.1	0.34	3.8	12.2	18.8	185
BORR MW32	20/08/2019	5.21	317	0.7	7.3	-15.7	17.5	206
	17/09/2019	5.64	311	0.2	2.1	-100.4	18.2	202
	24/10/2019	5.61	298	0.24	2.6	-14.6	18.8	193
	19/11/2019	5.59	370	0.36	4	-74.6	20.4	240
	18/12/2019	5.64	314	0.11	1.2	-22.3	19.4	204
	21/01/2020	5.45	304	0.13	1.5	-18.8	21.6	197
	19/02/2020	5.5	296.5	1.08	12.1	-84.6	20.9	192
	19/03/2020	5.47	299.7	0.39	4.3	-191.2	20.9	195
	20/04/2020	5.65	284.5	1.25	13.7	-92	20.2	183
	18/05/2020	5.62	350	0.36	3.9	-94	19.8	220
	17/06/2020	5.76	341	0.6	6.5	20.1	18.5	219
21/07/2020	5.57	386.1	0.37	3.8	38.9	17.8	252	
BORR_MW37	21/08/2019	5.35	3524	0.58	6.4	48.2	18.9	2291
	17/09/2019	5.43	3432	0.15	1.6	-14	20	2224

WELL	SAMPLED DATE	pH	EC	DO	DO (%S)	Eh (mV)	TEMP	TDS (mg/L)
			(µS/cm)	(mg/L)			(°C)	
	23/10/2019	5.49	3562	0.21	2.3	44.2	19.9	2315
	19/11/2019	5.33	3451	0.31	3.5	80.4	20.8	2243
	18/12/2019	5.53	3381	0.1	1.1	49.2	20.7	2198
	21/01/2020	5.29	3681	0.1	1.2	94.1	21.2	2392
	19/02/2020	5.21	3,524	1	11.3	137	20.8	2,291
	19/03/2020	5.16	3,573	1.76	19.8	19	20.5	2,323
	20/04/2020	5.25	3,550	1.26	14.1	132	20.1	2,300
	18/05/2020	5.18	3,689	0.45	4.9	130.6	20.1	2,397
	17/06/2020	5.08	3,943	0.53	5.9	151.9	19.9	2,564
	21/07/2020	4.97	3,548	0.17	1.9	167.2	20	2,306
BORR_MW39	20/08/2019	5.16	369	0.63	6.7	191.5	18.8	240
	17/09/2019	5.28	289	0.18	1.9	186.6	20	188
	23/10/2019	5.35	295	0.24	2.6	208.3	20.2	191
	19/11/2019	5.1	306	0.39	4.4	120.2	20.4	199
	18/12/2019	5.32	310	0.17	1.9	180.1	20.9	201
	22/01/2020	4.88	304	0.14	1.55	220.4	20.6	197
	20/02/2020	5.15	295.3	1.09	12.2	201	20.9	192
	19/03/2020	5.14	315	0.38	4.3	110.3	20.6	205
	20/04/2020	5.32	345.2	1.35	14.8	122.8	20.1	226
	20/05/2020	5.24	339	0.52	5.8	200.8	19.7	220
	17/06/2020	5.24	426.9	0.25	2.7	192.9	19	278
22/07/2020	5.15	252.2	1.92	21	197.3	19.5	164	
BORR MW46	21/08/2019	6.25	236	4.89	52.6	93	18.7	153
	19/09/2019	5.71	576	0.16	1.7	16.3	19.5	374
	24/10/2019	5.56	535	0.27	3	58	20.3	348
	20/11/2019	5.85	432	1.63	17.9	33.5	20.1	281
	19/12/2019	5.97	418	0.54	6.1	8.2	21	272
	20/01/2020	5.42	446	0.29	3.2	51.2	23.1	290
	18/02/2020	5.52	407.9	1.05	12	39.7	22.2	265
	19/03/2020	5.49	478.5	0.39	4.5	-37.5	23.1	311
	23/04/2020	5.57	508	1.22	13.9	34.8	22.3	331
	18/05/2020	5.3	443.1	0.31	3.6	97.1	22	288
	16/06/2020	5.21	560	0.56	6.3	100	21.2	365
23/07/2020	5.88	311.2	3.21	35.3	82.7	19.8	202	
MR MW05	22/08/2019	5.62	23681	0.62	7.1	58.9	17.5	5385
	19/09/2019	5.79	22813	0.16	1.8	-30.9	17.6	14828
	28/10/2019	5.3	23746	0.45	5.3	-13.9	18.9	5436
	21/11/2019	5.61	22500	0.18	2.1	-26	18.6	14623
	19/12/2019	5.78	21532	0.16	1.9	-43.5	18.5	13996

WELL	SAMPLED DATE	pH	EC	DO	DO (%S)	Eh (mV)	TEMP	TDS (mg/L)
			( $\mu$ S/cm)	(mg/L)			( $^{\circ}$ C)	
	21/01/2020	5.55	25192	0.13	1.5	-75.8	19.5	6371
	18/02/2020	5.59	25,052	11.2	0.91	-80.2	20.8	16,280
	19/03/2020	5.48	23,228	0.33	4.1	-139	20	15,098
	20/04/2020	5.65	22,805	3.85	46.2	53.5	20.5	14,825
	21/05/2020	5.6	23,330	2.66	31.4	99.2	19.3	5,141
	16/06/2020	5.4	24,669	1.41	17	159.8	19.7	6,035
	27/07/2020	5.3	22,584	0.74	8.8	101.8	19.3	14,679

Notes

DO – dissolved oxygen

EC – electrical conductivity

Eh – reduction-oxidation potential

$^{\circ}$ C – degrees Celsius

mg/L – milligrams per litre

$\mu$ S/cm – micro Siemens per centimetre

mV – millivolts

Table C - 2 Surface water quality field observations

LOCATION	SAMPLED DATE	pH	EC (µS/cm)	DO (mg/L)	DO (%S)	Eh(mV)	TEMP(°C)	TDS (mg/L)	TURBIDITY (NTU)
JT01	20/08/2019	6.8	2513	9.84	91.5	119.3	11.7	1633	4.3
	17/09/2019	6.73	2073	1.47	15.3	109.9	17	1347	9.1
	22/10/2019	6.48	3474	7.73	89.2	55.9	21.8	2258	-999
	20/11/2019	6.46	3023	0.78	8.8	84	21.1	1965	10.4
	18/12/2019	6.57	3571	2.9	35.1	47.1	24.5	2321	14
	22/01/2020	6.56	4097	6.9	81.1	93.5	22.8	2663	11.5
	20/02/2020	6.65	10,504	6.44	77.8	-0.1	23.2	6,786	13.83
	19/03/2020	6.74	4,962	5.19	60	-149	21.7	3,225	4.55
	20/04/2020	6.65	3,872	6.14	65.7	28.4	18.1	2,516	6
	20/05/2020	6.68	6,378	8.1	79.1	90.6	13.3	4,148	11
	17/06/2020	6.63	4,591	7.43	72.2	63.9	13.4	2,984	12.7
	22/07/2020	6.76	1,093	8.7	83.1	27.1	13.2	710	25.68
MT01	20/08/2019	6.44	282	6.88	59.3	149.9	8.8	183	1.8
	17/09/2019	6.43	286	3.61	35.2	109.4	14.3	186	103.4
	24/10/2019	6.44	293	3.57	38.4	50.1	16.7	190	-999
	19/11/2019	6.39	354	5.41	63.9	37.3	23.6	230	47.9
	18/12/2019	6.75	634	6.01	73.2	44.4	25.1	412	65.5
	23/01/2020	6.27	1805	1.11	13.3	33	23.9	1173	576.9
	15/06/2020	6.49	347.7	10.3	104.1	142	15.9	256	9.7
	22/07/2020	7.03	290.1	5.53	50.5	105.9	11.6	189	8.99
North Creek 2	22/08/2019	6.59	821	9.07	81.6	136.2	10.5	534	
	16/09/2019	7	677	8.45	85.7	56.6	15.9	440	7.5
	24/10/2019	6.97	889	8.96	97.4	39.2	19.3	578	-999
	18/11/2019	6.53	869	7.49	84.9	65.7	21.7	565	2.9
	16/12/2019	6.8	796	4.72	54.9	46.7	22.8	517	14.2
	20/01/2020	6.29	887	7	81.1	113.2	22.5	577	5.5
	17/02/2020	6	840	6.69	75.2	128.3	21.5	546	4.84
	19/03/2020	6.14	834	6.03	67.7	46	20.9	542	4.79
	20/04/2020	5.85	819	9.05	95	193.3	17.7	535	5.28
	21/05/2020	7.49	841	9.37	89.3	8	13	547	1.6
	15/06/2020	6.84	928	8.78	86.4	100.4	14.5	603	7.5
20/07/2020	6.98	550	9.53	89.3	92.7	12.3	357	19.64	
North Creek 4	19/08/2019	7.24	1197	8.2	78.1	77	12.6	778	23
	16/09/2019	7.48	1148	10.39	115.6	96.6	20.4	746	20.2
	28/10/2019	7.04	3480	9.44	109	179.5	22	2262	-999
	18/11/2019	7.01	3281	9.29	114.7	68.1	25.5	2126	2.5
	17/12/2019	6.9	2916	5.03	64.6	63.2	27.8	1895	5.1
	22/01/2020	7.16	3084	10.145	120.2	121.3	23.4	2004	1.5

LOCATION	SAMPLED DATE	pH	EC (µS/cm)	DO (mg/L)	DO (%S)	Eh(mV)	TEMP(°C)	TDS (mg/L)	TURBIDITY (NTU)
	20/02/2020	7.06	3,349	5.5	62.9	12.3	21.6	2,177	9.7
	19/03/2020	7.97	3,007	10.79	1,385	-0.4	27.8	1,959	5.08
	20/04/2020	7.45	2,330	2.45	27.2	9.7	20	1,514	5.03
	19/05/2020	7.21	2,639	8	73.2	71	11	1,715	9.1
	18/06/2020	6.89	1,818	5.57	53.3	153.1	13.5	1,182	73.2
	22/07/2020		997	10.23	103.5	126.7	15.8	648	9.55
Northern 3	20/08/2019	5.47	9816	7.69	81.1	215.2	16.2	6381	5.5
	17/09/2019	5.26	8947	9.1	104.8	251.3	20.8	5816	5.3
	22/10/2019	4.59	11215	7.88	103.8	283.9	27.7	7290	-999
	20/11/2019	4.44	11353	9.14	112	274.3	23.8	7380	0.5
	18/12/2019	4.4	30290	4.92	75.8	301.3	33.1	19689	7.2
	20/04/2020	4.38	20,898	9.95	99.3	236.4	24.3	13,584	171.55
	20/05/2020	7.82	22,735	10.9	134.6	71.2	21.8	4,764	4.4
	17/06/2020	6.55	18,610	8.99	96.1	73.4	15.3	2,106	3.9
22/07/2020	5.14	11,490	12.23	133.7	245.7	17.8	7,468	7.73	
Northern 5	19/08/2019	7.02	616	8.02	83.6	196.8	17.2	400	5.5
	16/09/2019	7.15	918	7.5	80.6	84.1	18.8	597	10.3
	24/10/2019	7.38	1095	3.51	37.3	81.2	17.4	711	-999
	21/11/2019	7.13	1104	3.9	44.4	63.4	21.7	718	5.8
	17/12/2019	7.41	1294	3.27	39.2	36.4	24.1	841	8
	21/01/2020	7.3	1849	7.81	96.8	106.9	26	1202	3.8
	17/02/2020	7.27	2,015	3.62	42.4	9.7	23.2	1,309	6.89
	19/03/2020	7.79	1,982	7.62	94.1	49.3	25.8	1,288	11.24
	20/04/2020	7.6	1,687	8.64	95.6	28.4	20.1	1,096	11.64
	20/05/2020	7.28	1,069	4.67	46.3	123.5	14.9	695	12.5
	15/06/2020	7.12	693	5.23	53.2	89.5	16.1	450	12.5
20/07/2020	6.93	724	3.45	33.9	84.6	14.2	471	20.01	
Southern 3	21/08/2019	7.76	1607	8.99	91.9	60.9	16.2	1044	4
	18/09/2019	7.17	2586	4.6	47.2	80.5	16.1	1680	2.1
	22/10/2019	7.3	3961	2.43	26.8	9.8	19.5	2574	-999
	20/11/2019	8.62	6472	8.62	91.3	64.5	17.1	4206	22.5
	23/07/2020	7.13	1,932	7.67	75.1	58.6	14.2	1,256	8.56
Southern 4	21/08/2019	7.26	6148	6.95	69.6	140.6	14.5	3996	
	18/09/2019	7.24	5698	3.71	38.8	25.8	16.4	3702	2.8
	22/10/2019	7.86	7083	8.6	97.3	96.9	20.3	1604	-999
	20/11/2019	7.21	7975	1.52	17.1	9.6	19.6	5184	7.2
	19/12/2019	8.74	9528	5.83	71.1	19.9	23.7	6193	17.7
	22/01/2020	8.81	12485	6.06	73	74.9	22.8	8119	30.3
	19/02/2020	8.06	13,536	5.18	62	-0.6	22.1	8,798	9.09

LOCATION	SAMPLED DATE	pH	EC (µS/cm)	DO (mg/L)	DO (%S)	Eh(mV)	TEMP(°C)	TDS (mg/L)	TURBIDITY (NTU)
	19/03/2020	8.71	14,534	4.53	52.7	-174.2	20.1	9,447	21.21
	20/04/2020	8.74	15,714	1.36	15.3	38.3	18.2	10,216	30.86
	21/05/2020	9.2	15,283	12.76	126.9	71.6	12.6	9,934	46.1
	18/06/2020	8.54	13,625	2.26	23.1	119.6	13.5	3,857	43.6
	23/07/2020	7.7	6,095	9.16	91.2	76.4	14.3	3,960	9.58
SW06	21/08/2019	7.01	1688	9.28	83.4	93.4	10.4	1097	24.4
	17/09/2019	7.19	2044	9.43	107.1	68.5	21.3	1329	38.3
	23/10/2019	7.45	3607	9.3	105.2	75.2	20.9	2344	-999
	19/11/2019	7.14	3240	9.22	111.1	54.8	24.1	2106	8.5
	18/12/2019	7.18	3255	5.5	68.9	85.8	26.3	2116	6.3
	21/01/2020	6.73	3085	6.34	75.2	75.6	23.4	2005	1.1
	19/02/2020	7.17	3,311	7.33	89.7	68.4	25.1	2,152	5.59
	19/03/2020	7.3	3,030	7.59	88.8	-34	22.8	2,057	80.59
	20/04/2020	6.85	2,835	8.83	100.3	50	21.2	1,840	25.26
	19/05/2020	6.77	3,026	4.92	45.6	31	11.4	1,967	9.8
	17/06/2020	6.86	2,338	4.44	42.7	0.4	13.2	1,520	169.2
	21/07/2020	7.07	867	83.3	83.3	63.6	14.2	564	22.89
	SW07	22/08/2019	6.85	828	9.05	82.3	96.6	11	538
16/09/2019		6.86	694	8.44	86.4	80.4	16.4	451	8.5
23/10/2019		7.02	976	8.61	94	47.7	19.4	634	-999
18/11/2019		6.68	1124	8.82	102.4	36	22.8	730	3.9
16/12/2019		6.74	1006	6.22	74.5	535.5	24.4	654	9.1
20/01/2020		6.4	1171	8.24	97.3	102.7	23.5	717	9.4
17/02/2020		6.51	1,432	7.32	83.9	60.4	22.3	931	6.47
19/03/2020		6.34	946	6.04	68.3	4.7	21.3	615	9.77
20/04/2020		6.49	949	9.35	98.7	99.1	17.9	617	305
21/05/2020		6.55	855	9.8	93.8	79.3	13.3	556	2.3
15/06/2020		6.37	970	9.23	91.4	110.8	14.8	631	7.1
20/07/2020		6.85	558	9.52	89.4	112.6	12.5	363	16.9
SW08	22/08/2019	6.82	828	9.04	82.1	90.5	11	539	6.8
	16/09/2019	6.92	693	8.42	86.2	78.5	16.4	450	8.5
	23/10/2019	7.27	987	8.7	95.2	38	19.6	642	-999
	18/11/2019	6.68	1126	8.86	102.9	23	22.8	732	3.9
	16/12/2019	6.74	1006	7.3	88.7	49.2	24.6	654	10.5
	20/01/2020	6.41	1174	8.09	95.3	111.7	23.3	763	8.2
	17/02/2020	6.52	1,443	7.13	81.8	70.1	22.4	938	5.22
	19/03/2020	6.34	947	6	67.8	54.1	21.3	616	1,340
	20/04/2020	6.46	949	9.37	98.9	100.2	17.9	619	333.64
	21/05/2020	6.64	855	9.78	93.4	86.8	13.2	555	3.2

LOCATION	SAMPLED DATE	pH	EC (µS/cm)	DO (mg/L)	DO (%S)	Eh(mV)	TEMP(°C)	TDS (mg/L)	TURBIDITY (NTU)	
	15/06/2020	6.39	971	9.26	91.6	106.8	14.8	631	7.1	
	20/07/2020	6.88	558	9.5	89.1	91.2	12.4	363	16.68	
SW09	22/08/2019	6.58	594	0.89	8.4	5.4	12.3	386	28.3	
	16/09/2019	6.6	531	0.02	0.2	-45.2	17.6	345	78.1	
	24/10/2019	6.88	701	6.25	60.4	25.7	19.8	455	-999	
	18/11/2019	6.63	561	1.06	12.1	68.5	21.4	365	5.6	
	16/12/2019	6.74	951	4.04	42.5	70.8	23.9	618	72.6	
	20/01/2020	6.87	1205	4.39	51.7	156.8	23.2	783	9.8	
	17/02/2020	7.62	1,240	1.74	19.4	-1.8	20.9	806	1,424.44	
	19/03/2020	6.71	780	0.16	1.9	-179.4	22.7	530	114.02	
	20/04/2020	6.06		4.54	51.2	73.2	21.3	637	62.81	
	21/05/2020	6.76	720	6.5	60.2	21.6	11.9	468	115.6	
	15/06/2020	6.66	623	1.72	17.3	24.4	15.1	405	87.7	
	20/07/2020	6.65	684	0.23	2.1	-109.5	11.5	445	275.52	
	SW10	22/08/2019	7.12	1028	7.14	71.1	103.9	15.1	668	2.2
		17/09/2019	7.18	771	6.73	72.4	63.4	18.8	501	2.2
23/07/2020		6.87	1,016	7.42	77.8	22.1	17.5	660	13.73	
SW11	21/08/2019	7.37	280.2	10.08	105	60.1	17.2	182	11	
	18/09/2019	8.43	2786	14.73	167.7	81	21.8	181	7.1	
	27/07/2020	7.02	336.8	10.29	113.3	62	20	219	739.94	
WRM North Site 5	20/08/2019	6.44	1017	9.78	85	109.4	9	661	16.4	
	17/09/2019	6.29	2478	8.36	84.6	137.8	15.4	1611	49.3	
	22/10/2019	6.55	4130	1.39	16.2	-110.9	22.3	2686	-999	
	20/11/2019	7.53	7796	4.1	47.4	-81.8	21.3	5069	169.2	
	27/07/2020	6.25	1277	6.55	67.9	-10.9	16.9	830	35.05	

Notes

DO – dissolved oxygen  
 EC – electrical conductivity  
 Eh – reduction-oxidation potential  
 °C – degrees Celsius

mg/L – milligrams per litre  
 µS/cm – micro Siemens per centimetre  
 mV – millivolts

# Summary tables of field and analytical results

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Appendix D Table 1  
Groundwater Field Parameters

Field Parameters									
	pH (Field)	Electrical conductivity (field)	Dissolved Oxygen (Field)	DO (%S) (Field)	Redox (Field)	Temperature (Field)	TDS (Field)		
EQL	pH Units	µS/cm	mg/L	%S	mV	°C	mg/L		
<b>Location Code</b>	<b>Date</b>								
	19/03/2020	5.49	478.5	0.39	4.5	-37.5	23.1	311	
	23/04/2020	5.57	508	1.22	13.9	34.8	22.3	331	
	18/05/2020	5.3	443.1	0.31	3.6	97.1	22	288.055	
	16/06/2020	5.21	560	0.56	6.3	100	21.2	365.02	
	23/07/2020	5.88	311.2	3.21	35.3	82.7	19.8	202	
MR MW05	22/08/2019	5.62	23,681	0.62	7.1	58.9	17.5	5,385.02	
	19/09/2019	5.79	22,813	0.16	1.8	-30.9	17.6	14,828	
	28/10/2019	5.3	23,746	0.45	5.3	-13.9	18.9	5,435.52	
	21/11/2019	5.61	22,500	0.18	2.1	-26	18.6	14,623	
	19/12/2019	5.78	21,532	0.16	1.9	-43.5	18.5	13,995.80	
	21/01/2020	5.55	25,192	0.13	1.5	-75.8	19.5	6,371.20	
	18/02/2020	5.59	25,052	0.91	11.2	-80.2	20.8	16,280	
	19/03/2020	5.48	23,228	0.33	4.1	-139	20	15,098	
	20/04/2020	5.65	22,805	3.85	46.2	53.5	20.5	14,825	
	21/05/2020	5.6	23,330	2.66	31.4	99.2	19.3	5,141.28	
	16/06/2020	5.4	24,669	1.41	17	159.8	19.7	6,035.21	
	27/07/2020	5.3	22,584	0.74	8.8	101.8	19.3	14,679	
			144.6	0.05	0	0.15	-330.5	13.9	93.99
			25192	6.92	0	76.3	391.4	24.5	16280





Appendix D Table 2  
Surface Water Field Parameters

Bunbury Outer Ring Road

Field Parameters									
	pH (Field)	Electrical conductivity (field)	Dissolved Oxygen (Field)	DO (%S) (Field)	Redox (Field)	Temperature (Field)	TDS (Field)	Turbidity (Field)(OLD)	
	pH Units	µS/cm	mg/L	%S	mV	°C	mg/L	NTU	
EQL									
ANZECC 2000 SW Aust. Lowland River	6.5-8			80-120					
<b>Location Code</b>	<b>Date</b>								
SW08	20/01/2020	6.4	1,171	8.24	97.3	102.7	23.5	716.9	9.4
	17/02/2020	6.51	1,432	7.32	83.9	60.4	22.3	931	6.47
	19/03/2020	6.34	946	6.04	68.3	4.7	21.3	615	9.77
	20/04/2020	6.49	949	9.35	98.7	99.1	17.9	617	305
	21/05/2020	6.55	855	9.8	93.8	79.3	13.3	555.581	2.3
	15/06/2020	6.37	970	9.23	91.4	110.8	14.8	630.723	7.1
	20/07/2020	6.85	558	9.52	89.4	112.6	12.5	363	16.9
	22/08/2019	6.82	828	9.04	82.1	90.5	11	538.99	6.8
	16/09/2019	6.92	693	8.42	86.2	78.5	16.4	450	8.5
	23/10/2019	7.27	987	8.7	95.2	38	19.6	641.701	
	18/11/2019	6.68	1,126	8.86	102.9	23	22.8	732	3.95
	16/12/2019	6.74	1,006	7.3	88.7	49.2	24.6	653.9	10.5
	20/01/2020	6.41	1,174	8.09	95.3	111.7	23.3	762.9	8.2
	17/02/2020	6.52	1,443	7.13	81.8	70.1	22.4	938	5.22
	19/03/2020	6.34	947	6	67.8	54.1	21.3	616	1,340
	20/04/2020	6.46	949	9.37	98.9	100.2	17.9	619	333.64
	21/05/2020	6.64	855	9.78	93.4	86.8	13.2	555.661	3.2
15/06/2020	6.39	971	9.26	91.6	106.8	14.8	630.921	7.1	
20/07/2020	6.88	558	9.5	89.1	91.2	12.4	363	16.68	
SW09	22/08/2019	6.58	594	0.89	8.4	5.4	12.3	386.06	28.3
	16/09/2019	6.6	531	0.02	0.2	-45.2	17.6	345	78.1
	24/10/2019	6.88	701	6.25	60.4	25.7	19.8	455.241	
	18/11/2019	6.63	561	1.06	12.1	68.5	21.4	365	5.6
	16/12/2019	6.74	951	4.04	42.5	70.8	23.9	618.15	72.6
	20/01/2020	6.87	1,205	4.39	51.7	156.8	23.2	782.9	9.8
	17/02/2020	7.62	1,240	1.74	19.4	-1.8	20.9	806	1,424.44
	19/03/2020	6.71	780	0.16	1.9	-179.4	22.7	530	114.02
	20/04/2020	6.06		4.54	51.2	73.2	21.3	637	62.81
	21/05/2020	6.76	720	6.5	60.2	21.6	11.9	467.921	115.6
	15/06/2020	6.66	623	1.72	17.3	24.4	15.1	404.871	87.7
	20/07/2020	6.65	684	0.23	2.1	-109.5	11.5	445	275.52
	22/08/2019	7.12	1,028	7.14	71.1	103.9	15.1	668.11	2.2
SW10	17/09/2019	7.18	771	6.73	72.4	63.4	18.8	501	2.15
	23/07/2020	6.87	1,016	7.42	77.8	22.1	17.5	660	13.73
	21/08/2019	7.37	280.2	10.08	105	60.1	17.2	182.144	11
SW11	18/09/2019	8.43	2,786	14.73	167.7	81	21.8	181	7.14
	27/07/2020	7.02	336.8	10.29	113.3	62	20	219	739.94
	20/08/2019	6.44	1,017	9.78	85	109.4	9	660.95	16.4
WRM North Site 5	17/09/2019	6.29	2,478	8.36	84.6	137.8	15.4	1,611	49.25
	22/10/2019	6.55	4,130	1.39	16.2	-110.9	22.3	2,686.28	
	20/11/2019	7.53	7,796	4.1	47.4	-81.8	21.3	5,069	169.16
	27/07/2020	6.25	1,277	6.55	67.9	-10.9	16.9	830	35.05
		4.38	280.2	0.02	0.2	-179.4	8.8	181	0.5
	9.2	30290	14.73	1385	535.5	33.1	19688.5	1424.44	















Appendix D Table 3  
Groundwater Analytical Results

	Inorganics			Acidity & Alkalinity					Major Ions										
	pH (Lab)	Electrical conductivity (lab)	Total Dissolved Solids	Alkalinity (Carbonate as CaCO3)	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Hydroxide as CaCO3)	Alkalinity (total as CaCO3)	Acidity (as CaCO3)	Calcium (filtered)	Magnesium (filtered)	Potassium (filtered)	Sodium (filtered)	Chloride	Sulfate (filtered)	Cations Total	Anions Total	Ionic Balance	Sulfide	Ammonium (as N)
	pH Units	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	%	mg/L	mg/L	
EQL	0.01	1	10	1	1	1	1	1	1	1	1	1	1	0.01	0.01	0.01	0.1	0.01	
ANZECC 2000 Irrigation - Short-term Trigger Values																			
DER 2014 Non-potable Groundwater Use (NPUG)													250	1,000					
DER 2014 Non-potable Groundwater Use (NPUG) & 10x WHO 2008 TRH Values													250	1,000					
<b>Location Code</b>	<b>Date</b>	<b>Lab Report Number</b>																	
Number of Detects	298	298	298	0	269	0	269	297	278	286	264	298	298	264	298	298	284	43	239
Minimum Detect	3.24	130	74	ND	1	ND	1	6	1	1	1	13	9	1	1.09	1.09	0.02	0.1	0.02
Maximum Detect	7.93	24,600	17,400	ND	1,860	ND	1,860	3,630	206	803	84	4,830	8,630	1,140	263	269	11	1.9	5.8















Appendix D Table 3  
Groundwater Analytical Results

	Inorganics			Nutrients						Metals									
	pH (Lab)	Electrical conductivity (lab)	Total Dissolved Solids	Ammonia as N	Nitrogen (Total Oxidised) (as N)	Nitrogen (Total)	Kjeldahl Nitrogen Total	Reactive Phosphorus as P	Phosphorus (Total)	Aluminium	Aluminium (filtered)	Arsenic (filtered)	Cadmium (filtered)	Chromium (III+VI) (filtered)	Chromium (hexavalent)	Chromium (hexavalent) (filtered)	Cobalt (filtered)	Copper (filtered)	Iron
	pH Units	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL	0.01	1	10	0.01	0.01	0.1	0.1	0.01	0.01	0.01	0.01	0.001	0.0001	0.001	0.01	0.01	0.001	0.001	0.05
ANZECC 2000 Irrigation - Short-term Trigger Values						25			0.8	20	20	2	0.05	1		0.1	5	10	
DER 2014 Non-potable Groundwater Use (NPUG)				0.411						0.2	0.2	0.1	0.02		0.5	0.5		20	0.3
DER 2014 Non-potable Groundwater Use (NPUG) & 10x WHO 2008 TRH Values									0.2	0.2	0.1	0.02		0.5	0.5		20	0.3	
<b>Location Code</b>	<b>Date</b>	<b>Lab Report Number</b>																	
Number of Detects	298	298	298	251	130	284	284	53	239	298	275	114	23	90	0	0	133	277	295
Minimum Detect	3.24	130	74	0.01	0.01	0.1	0.1	0.01	0.01	0.02	0.01	0.001	0.0001	0.001	ND	ND	0.001	0.001	0.05
Maximum Detect	7.93	24,600	17,400	5.8	23.3	26	13.8	1.03	1.53	97	34.2	0.018	0.0006	0.01	ND	ND	1.58	0.109	75.7













Appendix D Table 3  
Groundwater Analytical Results

Bunbury Outer Ring Road

	Inorganics									BTEXN							TF		
	pH (Lab)	Electrical conductivity (lab)	Total Dissolved Solids	Iron (filtered)	Lead (filtered)	Manganese (filtered)	Nickel (filtered)	Selenium (filtered)	Zinc (filtered)	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX (Sum of Total) - Lab Calc	F1 (C6-C10 minus BTEX)	C6-C10 Fraction	F2 (>C10-C16 minus Naphthalene)
	pH Units	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	0.01	1	10	0.05	0.001	0.001	0.001	0.01	0.005	1	2	2	2	2	2	1	20	20	100
ANZECC 2000 Irrigation - Short-term Trigger Values				10	5	10	2	0.05	5										
DER 2014 Non-potable Groundwater Use (NPUG)					0.1	5	0.2	0.1	3	10	25	3			20				
DER 2014 Non-potable Groundwater Use (NPUG) & 10x WHO 2008 TRH Values					0.1	5	0.2	0.1	3	10	25	3			20				1,000
<b>Location Code</b>	<b>Date</b>	<b>Lab Report Number</b>																	
Number of Detects	298	298	298	272	94	296	277	1	285	0	0	0	0	0	0	0	0	0	4
Minimum Detect	3.24	130	74	0.05	0.001	0.001	0.001	0.01	0.005	ND	ND	ND	ND	ND	ND	ND	ND	ND	150
Maximum Detect	7.93	24,600	17,400	74.2	0.027	1.36	1.71	0.01	0.793	ND	ND	ND	ND	ND	ND	ND	ND	ND	290















Appendix D Table 3  
Groundwater Analytical Results

	Inorganics			PH - NEPM 2013				TRH - NEPM 1999					PAHs - standard 16	
	pH (Lab)	Electrical conductivity (lab)	Total Dissolved Solids	> C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	> C10-C40 (Sum of Total)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 (Sum of Total)	Naphthalene	
	pH Units	µS/cm	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
EQI	0.01	1	10	100	100	100	100	20	50	100	50	50	5	
ANZECC 2000 Irrigation - Short-term Trigger Values														
DER 2014 Non-potable Groundwater Use (NPUG)														
DER 2014 Non-potable Groundwater Use (NPUG) & 10x WHO 2008 TRH Values					900	900								
<b>Location Code</b>	<b>Date</b>	<b>Lab Report Number</b>												
Number of Detects		298	298	298	4	15	0	16	0	8	14	2	19	0
Minimum Detect		3.24	130	74	150	100	ND	100	ND	60	110	50	60	ND
Maximum Detect		7.93	24,600	17,400	290	290	ND	580	ND	340	280	120	640	ND





Appendix D Table 4  
Surface Water Analytical Results

Bunbury Outer Ring Road

		Inorganics			Acidity & Alkalinity					Calcium (filtered) mg/L	Magnesium (filtered) mg/L	Potassium (filtered) mg/L	
		pH (Lab)	Electrical conductivity (lab) µS/cm	Total Dissolved Solids mg/L	Alkalinity (Carbonate as CaCO <sub>3</sub> ) mg/L	Alkalinity (Bicarbonate as CaCO <sub>3</sub> ) mg/L	Alkalinity (Hydroxide as CaCO <sub>3</sub> ) mg/L	Alkalinity (total as CaCO <sub>3</sub> ) mg/L	Acidity (as CaCO <sub>3</sub> ) mg/L				
		pH Units											
EQL		0.01	1	10	1	1	1	1	1	1	1	1	
	ANZECC 2000 FW Slight-Mod. Disturbed												
	ANZECC 2000 SW Aust. Lowland River	6.5-8											
	23/10/2019	EP1910998	7.41	898	484	<1	37	<1	37	7	10	22	5
	18/11/2019	EP1912183	7.31	1,040	590	<1	35	<1	35	9	13	27	7
	20/01/2020	EP2000762	7.02	1,080	572	<1	24	<1	24	8	8	26	8
	17/02/2020	EP2001737	7.13	1,360	857	<1	30	<1	30	7	15	38	9
	16/03/2020	EP2002914	7.13	886	542	<1	22	<1	22	8	7	19	9
	20/04/2020	EP2004114	7.24	1,230	704	<1	24	<1	24	28	12	32	8
	21/05/2020	EP2005328	7.02	802	462	<1	13	<1	13	7	6	16	7
	15/06/2020	EP2006304	7.09	854	492	<1	17	<1	17	7	8	18	6
	20/07/2020	EP2007640	7.57	566	329	<1	37	<1	37	4	8	11	3
SW09	22/08/2019	EP1908496	6.98	524	322	<1	92	<1	92	33	21	10	11
	16/09/2019	EP1909465	6.66	482	331	<1	80	<1	80	16	17	9	11
	24/10/2019	EP1910998	7.57	640	390	<1	110	<1	110	8	13	8	7
	18/11/2019	EP1912183	7.50	732	458	<1	138	<1	138	16	16	10	8
	20/01/2020	EP2000762	7.46	1,100	580	<1	187	<1	187	18	15	13	10
	17/02/2020	EP2001737	7.48	1,170	698	<1	246	<1	246	13	15	13	10
	16/03/2020	EP2002914	7.51	770	499	<1	123	<1	123	10	18	14	22
	20/04/2020	EP2004114	7.40	1,050	616	<1	129	<1	129	17	19	15	22
	21/05/2020	EP2005328	7.38	708	402	<1	74	<1	74	11	16	9	13
	15/06/2020	EP2006304	7.35	680	417	<1	102	<1	102	13	23	11	9
	20/07/2020	EP2007640	7.26	406	313	<1	79	<1	79	14	19	9	8
SW10	22/08/2019	EP1908496	7.57	1,160	769	<1	79	<1	79	9	45	28	35
	18/09/2019	EP1909602	7.55	748	550	<1	65	<1	65	9	30	17	17
	23/07/2020	EP2007775	7.33	974	736	<1	50	<1	50	4	36	24	32
SW11	21/08/2019	EP1908496	7.55	262	164	<1	57	<1	57	5	12	6	2
	18/09/2019	EP1909602	7.02	348	269	<1	77	<1	77	27	9	6	2
	27/07/2020	EP2007909	7.74	313	286	<1	69	<1	69	4	12	6	3
WRM North Site 5	20/08/2019	EP1908386	7.40	918	591	<1	40	<1	40	9	16	21	12
	17/09/2019	EP1909465	7.17	2,520	1,690	<1	63	<1	63	7	37	64	22
	20/11/2019	EP1912321	7.50	7,960	5,780	<1	370	<1	370	29	100	217	66
	27/07/2020	EP2007909	7.28	848	636	<1	34	<1	34	7	17	23	7
<b>Statistics</b>													
Number of Results			131	131	131	131	131	131	131	131	131	131	131
Number of Detects			131	131	131	5	126	0	126	120	131	131	131
Minimum Detect			4.09	183	164	14	5	ND	5	2	5	4	2
Maximum Detect			8.79	30,600	19,400	142	370	ND	385	177	442	712	137







Appendix D Table 4  
Surface Water Analytical Results

Bunbury Outer Ring Road

		Inorganics			Major Ions							Ammonium (as N)	
		pH (Lab)	Electrical conductivity (lab)	Total Dissolved Solids	Sodium (filtered)	Chloride	Sulfate (filtered)	Cations Total	Anions Total	Ionic Balance	Sulfide		
		pH Units	µS/cm	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	%	mg/L		mg/L
EQL		0.01	1	10	1	1	1	0.01	0.01	0.01	0.1	0.01	
	ANZECC 2000 FW Slight-Mod. Disturbed												
	ANZECC 2000 SW Aust. Lowland River	6.5-8											
	23/10/2019	EP1910998	7.41	898	484	139	269	29	8.48	8.93	2.57	<0.1	0.04
	18/11/2019	EP1912183	7.31	1,040	590	163	346	34	10.1	11.2	4.82	<0.1	<0.01
	20/01/2020	EP2000762	7.02	1,080	572	156	363	28	9.53	11.3	8.51	<0.1	<0.01
	17/02/2020	EP2001737	7.13	1,360	857	194	464	33	12.5	14.4	6.80	<0.1	<0.01
	16/03/2020	EP2002914	7.13	886	542	136	274	29	8.06	8.77	4.24	<0.1	<0.01
	20/04/2020	EP2004114	7.24	1,230	704	179	395	36	11.2	12.4	4.87	<0.1	0.02
	21/05/2020	EP2005328	7.02	802	462	122	264	36	7.10	8.46	8.70	<0.1	<0.01
	15/06/2020	EP2006304	7.09	854	492	125	245	37	7.47	8.02	3.55	<0.1	0.03
	20/07/2020	EP2007640	7.57	566	329	82	143	26	4.95	5.31	3.57	<0.1	0.02
SW09	22/08/2019	EP1908496	6.98	524	322	67	93	8	5.07	4.63	4.52	<0.1	<0.01
	16/09/2019	EP1909465	6.66	482	331	70	116	3	4.92	4.93	0.18	<0.1	<0.01
	24/10/2019	EP1910998	7.57	640	390	95	140	4	5.62	6.23	5.16	<0.1	<0.01
	18/11/2019	EP1912183	7.50	732	458	132	187	<30	7.57	8.03	2.98	<0.1	<0.01
	20/01/2020	EP2000762	7.46	1,100	580	198	295	<10	10.7	12.0	6.03	<0.1	<0.01
	17/02/2020	EP2001737	7.48	1,170	698	224	320	<10	11.8	13.9	8.25	<0.1	<0.01
	16/03/2020	EP2002914	7.51	770	499	111	182	<1	7.44	7.59	1.00	<0.1	<0.01
	20/04/2020	EP2004114	7.40	1,050	616	168	223	8	10.0	9.03	5.34	<0.1	<0.01
	21/05/2020	EP2005328	7.38	708	402	122	206	8	7.18	7.46	1.90	<0.1	<0.01
	15/06/2020	EP2006304	7.35	680	417	85	147	10	5.98	6.39	3.33	<0.1	<0.01
	20/07/2020	EP2007640	7.26	406	313	50	82	<1	4.07	3.89	2.22	<0.1	0.03
SW10	22/08/2019	EP1908496	7.57	1,160	769	130	287	38	11.1	10.5	2.94	<0.1	<0.01
	18/09/2019	EP1909602	7.55	748	550	92	206	14	7.33	7.40	0.46	<0.1	<0.01
	23/07/2020	EP2007775	7.33	974	736	119	280	61	9.77	10.2	2.01	<0.1	0.08
SW11	21/08/2019	EP1908496	7.55	262	164	34	28	30	2.62	2.55	1.34	<0.1	<0.01
	18/09/2019	EP1909602	7.02	348	269	42	54	10	2.82	3.27	7.37	<0.1	0.09
	27/07/2020	EP2007909	7.74	313	286	43	53	<2	3.04	2.87	2.81	<0.1	<0.01
WRM North Site 5	20/08/2019	EP1908386	7.40	918	591	143	252	63	9.05	9.22	0.91	<0.1	0.03
	17/09/2019	EP1909465	7.17	2,520	1,690	397	742	122	24.9	24.7	0.43	<0.1	0.02
	20/11/2019	EP1912321	7.50	7,960	5,780	1,270	2,570	<10	79.8	79.9	0.07	<0.1	0.14
	27/07/2020	EP2007909	7.28	848	636	124	251	44	8.31	8.68	2.13	<0.1	<0.01
<b>Statistics</b>													
Number of Results			131	131	131	131	131	131	131	131	127	131	131
Number of Detects			131	131	131	131	131	118	131	131	127	0	75
Minimum Detect			4.09	183	164	25	28	1	2.12	1.78	0.07	ND	0.02
Maximum Detect			8.79	30,600	19,400	5,540	12,000	1,300	316	366	9.27	ND	7.58





Appendix D Table 4  
Surface Water Analytical Results

Bunbury Outer Ring Road

		Inorganics			Nutrients								
		pH (Lab)	Electrical conductivity (lab)	Total Dissolved Solids	Ammonia as N	Nitrogen (Total Oxidised) (as N)	Nitrogen (Total)	Kjeldahl Nitrogen Total	Reactive Phosphorus as P	Phosphorus (Total)	Aluminium	Aluminium (filtered)	
		pH Units	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
EQL		0.01	1	10	0.01	0.01	0.1	0.1	0.01	0.01	0.01	0.01	
	ANZECC 2000 FW Slight-Mod. Disturbed				0.9						0.055	0.055	
	ANZECC 2000 SW Aust. Lowland River	6.5-8			0.08	0.15	1.2			0.065			
	23/10/2019	EP1910998	7.41	898	484	0.04	0.12	0.3	0.2	0.01	0.03	0.10	0.02
	18/11/2019	EP1912183	7.31	1,040	590	<0.01	<0.01	0.3	0.3	<0.01	<0.01	0.08	0.02
	20/01/2020	EP2000762	7.02	1,080	572	<0.01	<0.01	0.2	0.2	<0.01	<0.01	0.04	0.01
	17/02/2020	EP2001737	7.13	1,360	857	0.01	0.02	0.3	0.3	0.02	0.07	0.06	<0.01
	16/03/2020	EP2002914	7.13	886	542	<0.01	<0.01	0.4	0.4	0.01	0.04	0.05	0.02
	20/04/2020	EP2004114	7.24	1,230	704	0.02	0.04	0.5	0.5	<0.01	0.06	0.10	<0.01
	21/05/2020	EP2005328	7.02	802	462	<0.01	0.07	<0.1	<0.1	<0.01	<0.01	0.06	0.02
	15/06/2020	EP2006304	7.09	854	492	0.03	0.10	0.3	0.2	<0.01	0.03	0.14	0.02
	20/07/2020	EP2007640	7.57	566	329	0.02	1.31	1.8	0.5	<0.01	0.02	1.45	0.17
SW09	22/08/2019	EP1908496	6.98	524	322	<0.02	<0.01	2.9	2.9	0.02	0.32	11.7	0.11
	16/09/2019	EP1909465	6.66	482	331	0.01	<0.01	6.3	6.3	0.03	0.74	22.6	0.09
	24/10/2019	EP1910998	7.57	640	390	<0.01	0.01	0.9	0.9	0.02	0.04	0.21	0.06
	18/11/2019	EP1912183	7.50	732	458	<0.01	0.01	1.1	1.1	0.01	0.07	0.18	0.04
	20/01/2020	EP2000762	7.46	1,100	580	<0.01	<0.01	0.8	0.8	<0.01	0.05	0.11	0.04
	17/02/2020	EP2001737	7.48	1,170	698	<0.02	<0.01	1.6	1.6	0.02	0.20	0.87	0.05
	16/03/2020	EP2002914	7.51	770	499	<0.02	<0.01	1.3	1.3	0.02	0.09	0.15	0.08
	20/04/2020	EP2004114	7.40	1,050	616	<0.01	<0.01	4.3	4.3	0.04	0.57	0.67	0.02
	21/05/2020	EP2005328	7.38	708	402	<0.01	<0.01	1.1	1.1	<0.01	0.10	1.15	0.04
	15/06/2020	EP2006304	7.35	680	417	0.01	<0.01	1.7	1.7	0.02	0.16	2.86	0.13
	20/07/2020	EP2007640	7.26	406	313	0.03	<0.01	2.4	2.4	0.04	0.16	1.41	0.27
SW10	22/08/2019	EP1908496	7.57	1,160	769	<0.01	<0.01	3.3	3.3	0.50	0.51	0.08	0.09
	18/09/2019	EP1909602	7.55	748	550	<0.01	<0.01	3.3	3.3	0.65	0.67	0.10	0.12
	23/07/2020	EP2007775	7.33	974	736	0.08	0.01	5.0	5.0	0.64	1.09	0.14	0.10
SW11	21/08/2019	EP1908496	7.55	262	164	<0.01	<0.01	1.0	1.0	<0.01	0.02	0.34	0.18
	18/09/2019	EP1909602	7.02	348	269	0.10	<0.01	2.0	2.0	0.01	0.05	0.78	0.09
	27/07/2020	EP2007909	7.74	313	286	<0.01	<0.01	1.8	1.8	0.01	0.08	0.08	0.04
WRM North Site 5	20/08/2019	EP1908386	7.40	918	591	0.03	<0.01	3.9	3.9	0.37	0.60	1.09	0.10
	17/09/2019	EP1909465	7.17	2,520	1,690	0.02	<0.01	6.7	6.7	0.23	0.81	2.58	0.05
	20/11/2019	EP1912321	7.50	7,960	5,780	0.14	<0.01	50.9	50.9	2.23	15.5	37.2	0.03
	27/07/2020	EP2007909	7.28	848	636	<0.01	<0.01	3.0	3.0	0.35	0.51	0.43	0.11
<b>Statistics</b>													
Number of Results		131	131	131	131	131	131	131	131	131	131	131	
Number of Detects		131	131	131	94	72	127	126	71	118	131	121	
Minimum Detect		4.09	183	164	0.01	0.01	0.1	0.1	0.01	0.01	0.02	0.01	
Maximum Detect		8.79	30,600	19,400	7.58	3.84	50.9	50.9	2.23	15.5	37.2	2.57	





Appendix D Table 4  
Surface Water Analytical Results

Bunbury Outer Ring Road

			Inorganics			Metals							
			pH (Lab)	Electrical conductivity (lab)	Total Dissolved Solids	Arsenic (filtered)	Cadmium (filtered)	Chromium (III+VI) (filtered)	Cobalt (filtered)	Copper (filtered)	Iron	Iron (filtered)	Lead (filtered)
			pH Units	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
<b>EQL</b>			0.01	1	10	0.001	0.0001	0.001	0.001	0.001	0.05	0.05	0.001
<i>ANZECC 2000 FW Slight-Mod. Disturbed</i>						<b>0.013</b>	<b>0.0002</b>	<b>0.001</b>		<b>0.0014</b>			<b>0.0034</b>
<i>ANZECC 2000 SW Aust. Lowland River</i>			6.5-8										
	23/10/2019	EP1910998	7.41	898	484	<0.001	<0.0001	<0.001	0.002	<b>0.009</b>	1.56	0.16	<0.001
	18/11/2019	EP1912183	7.31	1,040	590	<0.001	<0.0001	<0.001	0.001	<b>0.018</b>	1.90	0.18	0.001
	20/01/2020	EP2000762	7.02	1,080	572	<0.001	<0.0001	<0.001	0.001	<b>0.008</b>	1.92	0.09	<0.001
	17/02/2020	EP2001737	7.13	1,360	857	<0.001	<0.0001	<0.001	<0.001	<0.001	1.94	0.13	<0.001
	16/03/2020	EP2002914	7.13	886	542	<0.001	<0.0001	<0.001	<0.001	<b>0.007</b>	2.05	0.47	<0.001
	20/04/2020	EP2004114	7.24	1,230	704	<0.001	<0.0001	<0.001	<0.001	<b>0.007</b>	1.52	<0.05	<0.001
	21/05/2020	EP2005328	7.02	802	462	<0.001	<0.0001	<0.001	0.001	<b>0.017</b>	0.82	0.22	0.001
	15/06/2020	EP2006304	7.09	854	492	<0.001	<0.0001	<0.001	0.001	<b>0.017</b>	1.48	0.20	<0.001
	20/07/2020	EP2007640	7.57	566	329	<0.001	<0.0001	<0.001	<0.001	<b>0.002</b>	1.49	0.39	<0.001
SW09	22/08/2019	EP1908496	6.98	524	322	0.001	<0.0001	0.001	<0.001	<b>0.023</b>	42.8	3.61	0.001
	16/09/2019	EP1909465	6.66	482	331	0.002	<0.0001	<0.001	<0.001	<b>0.015</b>	69.7	7.62	<0.001
	24/10/2019	EP1910998	7.57	640	390	<0.001	<0.0001	<0.001	<0.001	<b>0.008</b>	3.30	0.57	0.001
	18/11/2019	EP1912183	7.50	732	458	0.001	<0.0001	0.001	<0.001	<b>0.022</b>	5.31	0.84	0.001
	20/01/2020	EP2000762	7.46	1,100	580	0.001	<0.0001	<0.001	<0.001	<b>0.016</b>	3.10	0.78	<0.001
	17/02/2020	EP2001737	7.48	1,170	698	0.001	<0.0001	0.001	<0.001	<b>0.013</b>	10.2	1.13	<0.001
	16/03/2020	EP2002914	7.51	770	499	0.002	<0.0001	<b>0.003</b>	<0.001	0.001	3.34	1.81	<0.001
	20/04/2020	EP2004114	7.40	1,050	616	<0.001	<0.0001	<0.001	<0.001	<b>0.006</b>	4.86	1.05	<0.001
	21/05/2020	EP2005328	7.38	708	402	<0.001	<0.0001	<0.001	<0.001	<b>0.012</b>	2.80	0.89	<0.001
	15/06/2020	EP2006304	7.35	680	417	<0.001	<0.0001	0.001	<0.001	<0.001	6.58	2.26	<0.001
	20/07/2020	EP2007640	7.26	406	313	0.001	<0.0001	<b>0.002</b>	0.001	<b>0.044</b>	10.9	6.76	<0.001
SW10	22/08/2019	EP1908496	7.57	1,160	769	<0.001	0.0002	<0.001	<0.001	<b>0.026</b>	0.97	0.91	0.002
	18/09/2019	EP1909602	7.55	748	550	<0.001	<0.0001	<0.001	<0.001	<b>0.015</b>	1.05	1.07	<0.001
	23/07/2020	EP2007775	7.33	974	736	<0.001	<0.0001	<0.001	<0.001	<b>0.002</b>	2.52	1.43	<0.001
SW11	21/08/2019	EP1908496	7.55	262	164	<0.001	<0.0001	<0.001	<0.001	<b>0.022</b>	0.52	0.28	<0.001
	18/09/2019	EP1909602	7.02	348	269	0.001	<0.0001	<0.001	<0.001	<b>0.009</b>	1.58	0.51	<0.001
	27/07/2020	EP2007909	7.74	313	286	<0.001	<0.0001	<0.001	<0.001	<b>0.034</b>	0.82	0.49	<0.001
WRM North Site 5	20/08/2019	EP1908386	7.40	918	591	<0.001	0.0001	<0.001	0.003	<b>0.027</b>	2.01	0.48	0.003
	17/09/2019	EP1909465	7.17	2,520	1,690	<0.001	<0.0001	<0.001	<0.001	<b>0.014</b>	3.92	0.52	0.001
	20/11/2019	EP1912321	7.50	7,960	5,780	0.010	<0.0001	<0.001	0.005	<b>0.019</b>	93.4	1.56	0.001
	27/07/2020	EP2007909	7.28	848	636	<0.001	<0.0001	<0.001	<0.001	<b>0.004</b>	0.99	1.12	<0.001

<b>Statistics</b>												
Number of Results	131	131	131	131	131	131	131	131	131	131	131	131
Number of Detects	131	131	131	28	13	17	44	123	131	125	43	
Minimum Detect	4.09	183	164	0.001	0.0001	0.001	0.001	0.001	0.15	0.05	0.001	
Maximum Detect	8.79	30,600	19,400	0.01	0.002	0.005	0.14	0.05	93.4	9.02	0.021	





Appendix D Table 4  
Surface Water Analytical Results

Bunbury Outer Ring Road

		Inorganics						BTEXN					
		pH (Lab)	Electrical conductivity (lab)	Total Dissolved Solids	Manganese (filtered)	Nickel (filtered)	Selenium (filtered)	Zinc (filtered)	Benzene	Toluene	Ethylbenzene	Xylene (o)	
		pH Units	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	
EQL		0.01	1	10	0.001	0.001	0.01	0.005	1	2	2	2	
ANZECC 2000 FW Slight-Mod. Disturbed					1.9	0.011	0.005	0.008	950			350	
ANZECC 2000 SW Aust. Lowland River		6.5-8											
	23/10/2019	EP1910998	7.41	898	484	0.073	0.020	<0.01	0.124	<1	<2	<2	<2
	18/11/2019	EP1912183	7.31	1,040	590	0.107	0.018	<0.01	0.093	<1	<2	<2	<2
	20/01/2020	EP2000762	7.02	1,080	572	0.106	0.008	<0.01	0.036	<1	<2	<2	<2
	17/02/2020	EP2001737	7.13	1,360	857	0.119	<0.001	<0.01	0.005	<1	<2	<2	<2
	16/03/2020	EP2002914	7.13	886	542	0.102	0.003	<0.01	0.034	<1	<2	<2	<2
	20/04/2020	EP2004114	7.24	1,230	704	0.052	0.002	<0.01	0.043				
	21/05/2020	EP2005328	7.02	802	462	0.063	0.005	<0.01	0.060				
	15/06/2020	EP2006304	7.09	854	492	0.056	0.007	<0.01	0.046				
	20/07/2020	EP2007640	7.57	566	329	0.014	<0.001	<0.01	<0.005				
SW09	22/08/2019	EP1908496	6.98	524	322	0.102	0.022	<0.01	0.112	<1	<2	<2	<2
	16/09/2019	EP1909465	6.66	482	331	0.125	0.008	<0.01	0.066	<1	3	<2	<2
	24/10/2019	EP1910998	7.57	640	390	0.014	0.014	<0.01	0.120	<1	<2	<2	<2
	18/11/2019	EP1912183	7.50	732	458	0.045	0.014	<0.01	0.054	<1	<2	<2	<2
	20/01/2020	EP2000762	7.46	1,100	580	0.045	0.009	<0.01	0.057	<1	<2	<2	<2
	17/02/2020	EP2001737	7.48	1,170	698	0.118	0.011	<0.01	0.044	<1	<2	<2	<2
	16/03/2020	EP2002914	7.51	770	499	0.082	0.001	<0.01	0.011	<1	<2	<2	<2
	20/04/2020	EP2004114	7.40	1,050	616	0.034	<0.001	<0.01	0.010				
	21/05/2020	EP2005328	7.38	708	402	0.046	0.003	<0.01	0.038				
	15/06/2020	EP2006304	7.35	680	417	0.012	<0.001	<0.01	0.008				
	20/07/2020	EP2007640	7.26	406	313	0.210	0.005	<0.01	0.040				
SW10	22/08/2019	EP1908496	7.57	1,160	769	0.012	0.016	<0.01	0.113	<1	<2	<2	<2
	18/09/2019	EP1909602	7.55	748	550	0.011	0.011	<0.01	0.105	<1	<2	<2	<2
	23/07/2020	EP2007775	7.33	974	736	0.015	0.003	<0.01	0.010	<1	<2	<2	<2
SW11	21/08/2019	EP1908496	7.55	262	164	0.004	0.011	<0.01	0.054	<1	<2	<2	<2
	18/09/2019	EP1909602	7.02	348	269	0.012	0.008	<0.01	0.027	<1	<2	<2	<2
	27/07/2020	EP2007909	7.74	313	286	0.009	0.004	<0.01	0.017				
WRM North Site 5	20/08/2019	EP1908386	7.40	918	591	0.028	0.032	<0.01	0.208	<1	<2	<2	<2
	17/09/2019	EP1909465	7.17	2,520	1,690	0.118	0.007	<0.01	0.060	<1	<2	<2	<2
	20/11/2019	EP1912321	7.50	7,960	5,780	3.72	0.032	<0.01	0.067	<1	<2	<2	<2
	27/07/2020	EP2007909	7.28	848	636	0.035	0.001	<0.01	0.009				
<b>Statistics</b>													
Number of Results			131	131	131	131	131	131	131	86	86	86	86
Number of Detects			131	131	131	131	119	0	125	0	1	0	0
Minimum Detect			4.09	183	164	0.004	0.001	ND	0.005	ND	3	ND	ND
Maximum Detect			8.79	30,600	19,400	8.16	0.062	ND	0.247	ND	3	ND	ND







Appendix D Table 4  
Surface Water Analytical Results

Bunbury Outer Ring Road

		Inorganics			TRH - NEPM 2013								
		pH (Lab)	Electrical conductivity (lab)	Total Dissolved Solids	Xylene (m & p)	Xylene Total	BTEX (Sum of Total) - Lab Calc	F1 (C6-C10 minus BTEX)	C6-C10 Fraction	F2 (>C10-C16 minus Naphthalene)	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	
		pH Units	µS/cm	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
EQL		0.01	1	10	2	2	1	20	20	100	100	100	
	ANZECC 2000 FW Slight-Mod. Disturbed												
	ANZECC 2000 SW Aust. Lowland River	6.5-8											
	23/10/2019	EP1910998	7.41	898	484	<2	<2	<1	<20	<20	<100	<100	<100
	18/11/2019	EP1912183	7.31	1,040	590	<2	<2	<1	<20	<20	<100	<100	<100
	20/01/2020	EP2000762	7.02	1,080	572	<2	<2	<1	<20	<20	<100	<100	<100
	17/02/2020	EP2001737	7.13	1,360	857	<2	<2	<1	<20	<20	<100	<100	<100
	16/03/2020	EP2002914	7.13	886	542	<2	<2	<1	<20	<20	<100	<100	<100
	20/04/2020	EP2004114	7.24	1,230	704								
	21/05/2020	EP2005328	7.02	802	462								
	15/06/2020	EP2006304	7.09	854	492								
	20/07/2020	EP2007640	7.57	566	329								
SW09	22/08/2019	EP1908496	6.98	524	322	<2	<2	<1	<20	<20	140	140	420
	16/09/2019	EP1909465	6.66	482	331	<2	<2	3	<20	<20	<100	<100	400
	24/10/2019	EP1910998	7.57	640	390	<2	<2	<1	<20	<20	<100	<100	<100
	18/11/2019	EP1912183	7.50	732	458	<2	<2	<1	<20	<20	<100	<100	<100
	20/01/2020	EP2000762	7.46	1,100	580	<2	<2	<1	<20	<20	<100	<100	140
	17/02/2020	EP2001737	7.48	1,170	698	<2	<2	<1	<20	<20	<100	<100	190
	16/03/2020	EP2002914	7.51	770	499	<2	<2	<1	<20	<20	<100	<100	340
	20/04/2020	EP2004114	7.40	1,050	616								
	21/05/2020	EP2005328	7.38	708	402								
	15/06/2020	EP2006304	7.35	680	417								
	20/07/2020	EP2007640	7.26	406	313								
SW10	22/08/2019	EP1908496	7.57	1,160	769	<2	<2	<1	<20	<20	<100	<100	<100
	18/09/2019	EP1909602	7.55	748	550	<2	<2	<1	<20	<20	<100	<100	<100
	23/07/2020	EP2007775	7.33	974	736	<2	<2	<1	<20	<20	<100	<100	<100
SW11	21/08/2019	EP1908496	7.55	262	164	<2	<2	<1	<20	<20	<100	<100	<100
	18/09/2019	EP1909602	7.02	348	269	<2	<2	<1	<20	<20	<100	<100	130
	27/07/2020	EP2007909	7.74	313	286								
WRM North Site 5	20/08/2019	EP1908386	7.40	918	591	<2	<2	<1	<20	<20	<100	<100	<100
	17/09/2019	EP1909465	7.17	2,520	1,690	<2	<2	<1	<20	<20	<100	<100	<100
	20/11/2019	EP1912321	7.50	7,960	5,780	<2	<2	<1	<20	<20	220	220	1,640
	27/07/2020	EP2007909	7.28	848	636								
<b>Statistics</b>													
Number of Results			131	131	131	86	86	86	86	86	86	86	86
Number of Detects			131	131	131	0	0	1	0	0	2	2	23
Minimum Detect			4.09	183	164	ND	ND	3	ND	ND	140	140	110
Maximum Detect			8.79	30,600	19,400	ND	ND	3	ND	ND	220	220	2,520





Appendix D Table 4  
Surface Water Analytical Results

Bunbury Outer Ring Road

			Inorganics			TRH - NEPM 1999						
			pH (Lab)	Electrical conductivity (lab)	Total Dissolved Solids	F4 (>C34-C40 Fraction)	>C10-C40 (Sum of Total)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 (Sum of Total)
			pH Units	µS/cm	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL			0.01	1	10	100	100	20	50	100	50	50
ANZECC 2000 FW Slight-Mod. Disturbed												
ANZECC 2000 SW Aust. Lowland River			6.5-8									
	23/10/2019	EP1910998	7.41	898	484	<100	<100	<20	<50	<100	<50	<50
	18/11/2019	EP1912183	7.31	1,040	590	<100	<100	<20	<50	<100	<50	<50
	20/01/2020	EP2000762	7.02	1,080	572	<100	<100	<20	<50	<100	<50	<50
	17/02/2020	EP2001737	7.13	1,360	857	<100	<100	<20	<50	<100	<50	<50
	16/03/2020	EP2002914	7.13	886	542	<100	<100	<20	<50	<100	<50	<50
	20/04/2020	EP2004114	7.24	1,230	704							
	21/05/2020	EP2005328	7.02	802	462							
	15/06/2020	EP2006304	7.09	854	492							
	20/07/2020	EP2007640	7.57	566	329							
SW09	22/08/2019	EP1908496	6.98	524	322	<100	560	<20	100	350	140	590
	16/09/2019	EP1909465	6.66	482	331	<100	400	<20	<50	330	110	440
	24/10/2019	EP1910998	7.57	640	390	<100	<100	<20	<50	<100	<50	<50
	18/11/2019	EP1912183	7.50	732	458	<100	<100	<20	<50	<100	<50	<50
	20/01/2020	EP2000762	7.46	1,100	580	<100	140	<20	<50	110	<50	110
	17/02/2020	EP2001737	7.48	1,170	698	<100	190	<20	<50	140	70	210
	16/03/2020	EP2002914	7.51	770	499	<100	340	<20	<50	320	60	380
	20/04/2020	EP2004114	7.40	1,050	616							
	21/05/2020	EP2005328	7.38	708	402							
	15/06/2020	EP2006304	7.35	680	417							
	20/07/2020	EP2007640	7.26	406	313							
SW10	22/08/2019	EP1908496	7.57	1,160	769	<100	<100	<20	<50	<100	<50	<50
	18/09/2019	EP1909602	7.55	748	550	<100	<100	<20	<50	<100	<50	<50
	23/07/2020	EP2007775	7.33	974	736	<100	<100	<20	<50	<100	<50	<50
SW11	21/08/2019	EP1908496	7.55	262	164	<100	<100	<20	<50	<100	<50	<50
	18/09/2019	EP1909602	7.02	348	269	<100	130	<20	<50	<100	<50	<50
	27/07/2020	EP2007909	7.74	313	286							
WRM North Site 5	20/08/2019	EP1908386	7.40	918	591	<100	<100	<20	<50	<100	<50	<50
	17/09/2019	EP1909465	7.17	2,520	1,690	<100	<100	<20	<50	<100	<50	<50
	20/11/2019	EP1912321	7.50	7,960	5,780	350	2,210	<20	120	1,090	800	2,010
	27/07/2020	EP2007909	7.28	848	636							

Statistics

Number of Results	131	131	131	86	86	86	86	86	86	86	86
Number of Detects	131	131	131	2	23	0	3	18	13	19	
Minimum Detect	4.09	183	164	280	110	ND	60	100	50	60	
Maximum Detect	8.79	30,600	19,400	350	2,800	ND	120	1,290	1,400	2,690	





Appendix D Table 4  
Surface Water Analytical Results

Bunbury Outer Ring Road

			Inorganics			PAHs - standard 16						
			pH (Lab)	Electrical conductivity (lab)	Total Dissolved Solids	Naphthalene	Azinphos methyl	Bolstar (Sulprofos)	Bromophos-ethyl	Carbophenothion	Azinphos Ethyl	Chlorfenvinphos
			pH Units	µS/cm	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL			0.01	1	10	5	0.02	0.05	0.1	0.02	0.02	
	ANZECC 2000 FW Slight-Mod. Disturbed					16	0.1					
	ANZECC 2000 SW Aust. Lowland River		6.5-8									
		EP1910998	7.41	898	484	<5	<0.02	<0.05	<0.10	<0.02	<0.02	
		EP1912183	7.31	1,040	590	<5	<0.02	<0.05	<0.10	<0.02	<0.02	
		EP2000762	7.02	1,080	572	<5	<0.02	<0.05	<0.10	<0.02	<0.02	
		EP2001737	7.13	1,360	857	<5	<0.02	<0.05	<0.10	<0.02	<0.02	
		EP2002914	7.13	886	542	<5	<0.02	<0.05	<0.10	<0.02	<0.02	
		EP2004114	7.24	1,230	704							
		EP2005328	7.02	802	462							
		EP2006304	7.09	854	492							
		EP2007640	7.57	566	329							
SW09		EP1908496	6.98	524	322	<5	<0.02	<0.05	<0.10	<0.02	<0.02	
		EP1909465	6.66	482	331	<5	<0.02	<0.05	<0.10	<0.02	<0.02	
		EP1910998	7.57	640	390	<5	<0.02	<0.05	<0.10	<0.02	<0.02	
		EP1912183	7.50	732	458	<5	<0.02	<0.05	<0.10	<0.02	<0.02	
		EP2000762	7.46	1,100	580	<5	<0.02	<0.05	<0.10	<0.02	<0.02	
		EP2001737	7.48	1,170	698	<5	<0.02	<0.05	<0.10	<0.02	<0.02	
		EP2002914	7.51	770	499	<5	<0.02	<0.05	<0.10	<0.02	<0.02	
		EP2004114	7.40	1,050	616							
		EP2005328	7.38	708	402							
		EP2006304	7.35	680	417							
		EP2007640	7.26	406	313							
SW10		EP1908496	7.57	1,160	769	<5	<0.02	<0.05	<0.10	<0.02	<0.02	
		EP1909602	7.55	748	550	<5	<0.02	<0.05	<0.10	<0.02	<0.02	
		EP2007775	7.33	974	736	<5	<0.02	<0.05	<0.10	<0.02	<0.02	
SW11		EP1908496	7.55	262	164	<5	<0.02	<0.05	<0.10	<0.02	<0.02	
		EP1909602	7.02	348	269	<5	<0.02	<0.05	<0.10	<0.02	<0.02	
		EP2007909	7.74	313	286							
WRM North Site 5		EP1908386	7.40	918	591	<5	<0.02	<0.05	<0.10	<0.02	<0.02	
		EP1909465	7.17	2,520	1,690	<5	<0.02	<0.05	<0.10	<0.02	<0.02	
		EP1912321	7.50	7,960	5,780	<5	<0.02	<0.05	<0.10	<0.02	<0.02	
		EP2007909	7.28	848	636							

Statistics

Number of Results	131	131	131	86	85	85	85	85	85	85
Number of Detects	131	131	131	0	0	0	0	0	0	0
Minimum Detect	4.09	183	164	ND	ND	ND	ND	ND	ND	ND
Maximum Detect	8.79	30,600	19,400	ND	ND	ND	ND	ND	ND	ND





Appendix D Table 4  
Surface Water Analytical Results

Bunbury Outer Ring Road

			Inorganics										
			pH (Lab)	Electrical conductivity (lab)	Total Dissolved Solids	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Demeton-S-methyl	Diazinon	Dichlorvos
			pH Units	µS/cm	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL			0.01	1	10	0.02	0.2	0.01	0.02	0.02	0.02	0.01	0.2
ANZECC 2000 FW Slight-Mod. Disturbed						0.01						0.01	
ANZECC 2000 SW Aust. Lowland River			6.5-8										
			7.41	898	484	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.20
			7.31	1,040	590	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.20
			7.02	1,080	572	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.20
			7.13	1,360	857	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.20
			7.13	886	542	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.20
			7.24	1,230	704								
			7.02	802	462								
			7.09	854	492								
			7.57	566	329								
SW09			6.98	524	322	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.20
			6.66	482	331	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.20
			7.57	640	390	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.20
			7.50	732	458	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.20
			7.46	1,100	580	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.20
			7.48	1,170	698	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.20
			7.51	770	499	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.20
			7.40	1,050	616								
			7.38	708	402								
			7.35	680	417								
			7.26	406	313								
SW10			7.57	1,160	769	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.20
			7.55	748	550	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.20
			7.33	974	736	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.20
SW11			7.55	262	164	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.20
			7.02	348	269	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.20
			7.74	313	286								
WRM North Site 5			7.40	918	591	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.20
			7.17	2,520	1,690	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.20
			7.50	7,960	5,780	<0.02	<0.2	<0.01	<0.02	<0.02	<0.02	<0.01	<0.20
			7.28	848	636								
<b>Statistics</b>													
Number of Results			131	131	131	85	85	85	85	85	85	85	85
Number of Detects			131	131	131	0	0	0	0	0	0	0	0
Minimum Detect			4.09	183	164	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Detect			8.79	30,600	19,400	ND	ND	ND	ND	ND	ND	ND	ND







Appendix D Table 4  
Surface Water Analytical Results

Bunbury Outer Ring Road

			Inorganics			OP Pesticides							
			pH (Lab)	Electrical conductivity (lab)	Total Dissolved Solids	Dimethoate	Disulfoton	EPN	Ethion	Ethoprop	Fenamiphos	Fenitrothion	Fensulfotiothion
			pH Units	µS/cm	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL			0.01	1	10	0.02	0.05	0.05	0.02	0.01	0.01	2	0.01
ANZECC 2000 FW Slight-Mod. Disturbed						0.15						0.2	
ANZECC 2000 SW Aust. Lowland River			6.5-8										
	23/10/2019	EP1910998	7.41	898	484	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01
	18/11/2019	EP1912183	7.31	1,040	590	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01
	20/01/2020	EP2000762	7.02	1,080	572	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01
	17/02/2020	EP2001737	7.13	1,360	857	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01
	16/03/2020	EP2002914	7.13	886	542	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01
	20/04/2020	EP2004114	7.24	1,230	704								
	21/05/2020	EP2005328	7.02	802	462								
	15/06/2020	EP2006304	7.09	854	492								
	20/07/2020	EP2007640	7.57	566	329								
SW09	22/08/2019	EP1908496	6.98	524	322	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01
	16/09/2019	EP1909465	6.66	482	331	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01
	24/10/2019	EP1910998	7.57	640	390	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01
	18/11/2019	EP1912183	7.50	732	458	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01
	20/01/2020	EP2000762	7.46	1,100	580	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01
	17/02/2020	EP2001737	7.48	1,170	698	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01
	16/03/2020	EP2002914	7.51	770	499	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01
	20/04/2020	EP2004114	7.40	1,050	616								
	21/05/2020	EP2005328	7.38	708	402								
	15/06/2020	EP2006304	7.35	680	417								
	20/07/2020	EP2007640	7.26	406	313								
SW10	22/08/2019	EP1908496	7.57	1,160	769	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01
	18/09/2019	EP1909602	7.55	748	550	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01
	23/07/2020	EP2007775	7.33	974	736	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01
SW11	21/08/2019	EP1908496	7.55	262	164	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01
	18/09/2019	EP1909602	7.02	348	269	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01
	27/07/2020	EP2007909	7.74	313	286								
WRM North Site 5	20/08/2019	EP1908386	7.40	918	591	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01
	17/09/2019	EP1909465	7.17	2,520	1,690	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01
	20/11/2019	EP1912321	7.50	7,960	5,780	<0.02	<0.05	<0.05	<0.02	<0.01	<0.01	<2	<0.01
	27/07/2020	EP2007909	7.28	848	636								

Statistics													
Number of Results	131	131	131	85	85	85	85	85	85	85	85	85	85
Number of Detects	131	131	131	0	0	0	0	0	0	0	0	0	0
Minimum Detect	4.09	183	164	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Detect	8.79	30,600	19,400	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND





Appendix D Table 4  
Surface Water Analytical Results

Bunbury Outer Ring Road

			Inorganics										
			pH (Lab)	Electrical conductivity (lab)	Total Dissolved Solids	Fenthion	Malathion	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Omethoate	Parathion	Phorate
			pH Units	µS/cm	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL			0.01	1	10	0.05	0.02	0.5	0.02	0.02	0.01	0.2	0.1
ANZECC 2000 FW Slight-Mod. Disturbed							0.05					0.004	
ANZECC 2000 SW Aust. Lowland River			6.5-8										
	23/10/2019	EP1910998	7.41	898	484	<0.05	<0.02	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1
	18/11/2019	EP1912183	7.31	1,040	590	<0.05	<0.02	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1
	20/01/2020	EP2000762	7.02	1,080	572	<0.05	<0.02	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1
	17/02/2020	EP2001737	7.13	1,360	857	<0.05	<0.02	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1
	16/03/2020	EP2002914	7.13	886	542	<0.05	<0.02	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1
	20/04/2020	EP2004114	7.24	1,230	704								
	21/05/2020	EP2005328	7.02	802	462								
	15/06/2020	EP2006304	7.09	854	492								
	20/07/2020	EP2007640	7.57	566	329								
SW09	22/08/2019	EP1908496	6.98	524	322	<0.05	<0.02	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1
	16/09/2019	EP1909465	6.66	482	331	<0.05	<0.02	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1
	24/10/2019	EP1910998	7.57	640	390	<0.05	<0.02	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1
	18/11/2019	EP1912183	7.50	732	458	<0.05	<0.02	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1
	20/01/2020	EP2000762	7.46	1,100	580	<0.05	<0.02	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1
	17/02/2020	EP2001737	7.48	1,170	698	<0.05	<0.02	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1
	16/03/2020	EP2002914	7.51	770	499	<0.05	<0.02	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1
	20/04/2020	EP2004114	7.40	1,050	616								
	21/05/2020	EP2005328	7.38	708	402								
	15/06/2020	EP2006304	7.35	680	417								
	20/07/2020	EP2007640	7.26	406	313								
SW10	22/08/2019	EP1908496	7.57	1,160	769	<0.05	<0.02	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1
	18/09/2019	EP1909602	7.55	748	550	<0.05	<0.02	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1
	23/07/2020	EP2007775	7.33	974	736	<0.05	<0.02	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1
SW11	21/08/2019	EP1908496	7.55	262	164	<0.05	<0.02	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1
	18/09/2019	EP1909602	7.02	348	269	<0.05	<0.02	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1
	27/07/2020	EP2007909	7.74	313	286								
WRM North Site 5	20/08/2019	EP1908386	7.40	918	591	<0.05	<0.02	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1
	17/09/2019	EP1909465	7.17	2,520	1,690	<0.05	<0.02	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1
	20/11/2019	EP1912321	7.50	7,960	5,780	<0.05	<0.02	<0.5	<0.02	<0.02	<0.01	<0.2	<0.1
	27/07/2020	EP2007909	7.28	848	636								

Statistics

Number of Results	131	131	131	85	85	85	85	85	85	85	85	85
Number of Detects	131	131	131	0	0	0	0	0	0	0	0	0
Minimum Detect	4.09	183	164	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Detect	8.79	30,600	19,400	ND	ND	ND	ND	ND	ND	ND	ND	ND





Appendix D Table 4  
Surface Water Analytical Results

			Inorganics										
			pH (Lab)	Electrical conductivity (lab)	Total Dissolved Solids	Pirimphos-ethyl	Pirimphos-methyl	Profenofos	Prothiofos	Ronnel	Sulfotepp	Terbufos	Trichloronate
			pH Units	µS/cm	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
<b>EQL</b>			0.01	1	10	0.01	0.01	0.01	0.1	10	0.005	0.01	0.5
<i>ANZECC 2000 FW Slight-Mod. Disturbed</i>													
<i>ANZECC 2000 SW Aust. Lowland River</i>			6.5-8										
	23/10/2019	EP1910998	7.41	898	484	<0.01	<0.01	<0.01	<0.1	<10	<0.005	<0.01	<0.5
	18/11/2019	EP1912183	7.31	1,040	590	<0.01	<0.01	<0.01	<0.1	<10	<0.005	<0.01	<0.5
	20/01/2020	EP2000762	7.02	1,080	572	<0.01	<0.01	<0.01	<0.1	<10	<0.005	<0.01	<0.5
	17/02/2020	EP2001737	7.13	1,360	857	<0.01	<0.01	<0.01	<0.1	<10	<0.005	<0.01	<0.5
	16/03/2020	EP2002914	7.13	886	542	<0.01	<0.01	<0.01	<0.1	<10	<0.005	<0.01	<0.5
	20/04/2020	EP2004114	7.24	1,230	704								
	21/05/2020	EP2005328	7.02	802	462								
	15/06/2020	EP2006304	7.09	854	492								
	20/07/2020	EP2007640	7.57	566	329								
SW09	22/08/2019	EP1908496	6.98	524	322	<0.01	<0.01	<0.01	<0.1	<10	<0.005	<0.01	<0.5
	16/09/2019	EP1909465	6.66	482	331	<0.01	<0.01	<0.01	<0.1	<10	<0.005	<0.01	<0.5
	24/10/2019	EP1910998	7.57	640	390	<0.01	<0.01	<0.01	<0.1	<10	<0.005	<0.01	<0.5
	18/11/2019	EP1912183	7.50	732	458	<0.01	<0.01	<0.01	<0.1	<10	<0.005	<0.01	<0.5
	20/01/2020	EP2000762	7.46	1,100	580	<0.01	<0.01	<0.01	<0.1	<10	<0.005	<0.01	<0.5
	17/02/2020	EP2001737	7.48	1,170	698	<0.01	<0.01	<0.01	<0.1	<10	<0.005	<0.01	<0.5
	16/03/2020	EP2002914	7.51	770	499	<0.01	<0.01	<0.01	<0.1	<10	<0.005	<0.01	<0.5
	20/04/2020	EP2004114	7.40	1,050	616								
	21/05/2020	EP2005328	7.38	708	402								
	15/06/2020	EP2006304	7.35	680	417								
	20/07/2020	EP2007640	7.26	406	313								
SW10	22/08/2019	EP1908496	7.57	1,160	769	<0.01	<0.01	<0.01	<0.1	<10	<0.005	<0.01	<0.5
	18/09/2019	EP1909602	7.55	748	550	<0.01	<0.01	<0.01	<0.1	<10	<0.005	<0.01	<0.5
	23/07/2020	EP2007775	7.33	974	736	<0.01	<0.01	<0.01	<0.1	<10	<0.005	<0.01	<0.5
SW11	21/08/2019	EP1908496	7.55	262	164	<0.01	<0.01	<0.01	<0.1	<10	<0.005	<0.01	<0.5
	18/09/2019	EP1909602	7.02	348	269	<0.01	<0.01	<0.01	<0.1	<10	<0.005	<0.01	<0.5
	27/07/2020	EP2007909	7.74	313	286								
WRM North Site 5	20/08/2019	EP1908386	7.40	918	591	<0.01	<0.01	<0.01	<0.1	<10	<0.005	<0.01	<0.5
	17/09/2019	EP1909465	7.17	2,520	1,690	<0.01	<0.01	<0.01	<0.1	<10	<0.005	<0.01	<0.5
	20/11/2019	EP1912321	7.50	7,960	5,780	<0.01	<0.01	<0.01	<0.1	<10	<0.005	<0.01	<0.5
	27/07/2020	EP2007909	7.28	848	636								

<b>Statistics</b>												
Number of Results	131	131	131	85	85	85	85	85	85	85	85	85
Number of Detects	131	131	131	0	0	0	0	0	0	0	0	0
Minimum Detect	4.09	183	164	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Detect	8.79	30,600	19,400	ND	ND	ND	ND	ND	ND	ND	ND	ND





Appendix D Table 4  
Surface Water Analytical Results

Bunbury Outer Ring Road

			Inorganics			Tetrachlorvinphos	Demeton-O & Demeton-S	Pesticides			Herbicides
			pH (Lab)	Electrical conductivity (lab)	Total Dissolved Solids			Temephos	Trichlorfon	Triazophos	Glyphosate
			pH Units	µS/cm	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQI			0.01	1	10	0.01	0.02	0.02	0.02	0.005	10
			6.5-8								370
			7.41	898	484	<0.01	<0.02	<0.02	<0.02	<0.005	<10
			7.31	1,040	590	<0.01	<0.02	<0.02	<0.02	<0.005	<10
			7.02	1,080	572	<0.01	<0.02	<0.02	<0.02	<0.005	<10
			7.13	1,360	857	<0.01	<0.02	<0.02	<0.02	<0.005	<10
			7.13	886	542	<0.01	<0.02	<0.02	<0.02	<0.005	<10
			7.24	1,230	704						
			7.02	802	462						
			7.09	854	492						
			7.57	566	329						
SW09			6.98	524	322	<0.01	<0.02	<0.02	<0.02	<0.005	<10
			6.66	482	331	<0.01	<0.02	<0.02	<0.02	<0.005	<10
			7.57	640	390	<0.01	<0.02	<0.02	<0.02	<0.005	<10
			7.50	732	458	<0.01	<0.02	<0.02	<0.02	<0.005	<10
			7.46	1,100	580	<0.01	<0.02	<0.02	<0.02	<0.005	<10
			7.48	1,170	698	<0.01	<0.02	<0.02	<0.02	<0.005	<10
			7.51	770	499	<0.01	<0.02	<0.02	<0.02	<0.005	<10
			7.40	1,050	616						
			7.38	708	402						
			7.35	680	417						
			7.26	406	313						
SW10			7.57	1,160	769	<0.01	<0.02	<0.02	<0.02	<0.005	<10
			7.55	748	550	<0.01	<0.02	<0.02	<0.02	<0.005	<10
			7.33	974	736	<0.01	<0.02	<0.02	<0.02	<0.005	<10
SW11			7.55	262	164	<0.01	<0.02	<0.02	<0.02	<0.005	<10
			7.02	348	269	<0.01	<0.02	<0.02	<0.02	<0.005	<10
			7.74	313	286						
WRM North Site 5			7.40	918	591	<0.01	<0.02	<0.02	<0.02	<0.005	<10
			7.17	2,520	1,690	<0.01	<0.02	<0.02	<0.02	<0.005	<10
			7.50	7,960	5,780	<0.01	<0.02	<0.02	<0.02	<0.005	<10
			7.28	848	636						

Statistics											
Number of Results			131	131	131	85	85	85	85	85	85
Number of Detects			131	131	131	0	0	0	0	0	0
Minimum Detect			4.09	183	164	ND	ND	ND	ND	ND	ND
Maximum Detect			8.79	30,600	19,400	ND	ND	ND	ND	ND	ND





	Unit	EQL	Date	19/08/2019	19/08/2019	19/08/2019	20/08/2019	20/08/2019	20/08/2019	21/08/2019	21/08/2019	21/08/2019	21/08/2019	22/08/2019	22/08/2019	22/08/2019	22/08/2019		
			Field ID	FB01	RB01	TB01	FB02	RB02	TB02	FB03	RB03	TBW670	TBW675	TBW677	FB06	RB04	TBW673	TBW674	TBW676
			Lab Report Number	EP1908386	EP1908386	EP1908386	EP1908386	EP1908386	EP1908386	EP1908496	EP1908496	EP1908496	EP1908496	EP1908496	EP1908496	EP1908496	EP1908496	EP1908496	EP1908496
Metals																			
Arsenic	mg/L	0.001		<0.001				<0.001			<0.001					<0.001			
Cadmium	mg/L	0.0001		<0.0001				<0.0001			<0.0001					<0.0001			
Chromium (III+VI)	mg/L	0.001		<0.001				<0.001			<0.001					<0.001			
Copper	mg/L	0.001		0.009				0.008			<0.001					<0.001			
Lead	mg/L	0.001		<0.001				<0.001			<0.001					<0.001			
Nickel	mg/L	0.001		<0.001				<0.001			<0.001					<0.001			
Zinc	mg/L	0.005		<0.005				<0.005			<0.005					<0.005			
BTEXN																			
Benzene	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Toluene	µg/L	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Ethylbenzene	µg/L	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Xylene (o)	µg/L	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Xylene (m & p)	µg/L	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Xylene Total	µg/L	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
BTEX (Sum of Total) - Lab Calc	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
TRH - NEPM 2013																			
F1 (C6-C10 minus BTEX)	µg/L	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	
C6-C10 Fraction	µg/L	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	
>C10-C16 Fraction	µg/L	100																	
F3 (>C16-C34 Fraction)	µg/L	100																	
F4 (>C34-C40 Fraction)	µg/L	100																	
>C10-C40 (Sum of Total)	µg/L	100																	
TRH - NEPM 1999																			
C6-C9 Fraction	µg/L	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	
C10-C14 Fraction	µg/L	50																	
C15-C28 Fraction	µg/L	100																	
C29-C36 Fraction	µg/L	50																	
C10-C36 (Sum of Total)	µg/L	50																	
PAHs																			
Naphthalene	µg/L	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	



	Unit	EQL	Date	22/08/2019	22/08/2019	16/09/2019	16/09/2019	16/09/2019	16/09/2019	16/09/2019	16/09/2019	17/09/2019	17/09/2019	17/09/2019	17/09/2019	18/09/2019	18/09/2019	18/09/2019	18/09/2019	19/09/2019	19/09/2019	
			Field ID	TBW678	TBW679	FB01	RB01	TBW 825	TBW 827	TBW 833	FB02	RB02	TBW829	TBW831	FB03	RB03	TBW830	TBW832	FB04	RB04		
			Lab Report Number	EP1908496	EP1908496	EP1909465	EP1909465	EP1909465	EP1909465	EP1909465	EP1909465	EP1909465	EP1909465	EP1909465	EP1909465	EP1909602	EP1909602	EP1909602	EP1909602	EP1909602	EP1909602	EP1909602
<b>Metals</b>																						
Arsenic	mg/L	0.001					<0.001						<0.001						<0.001			<0.001
Cadmium	mg/L	0.0001					<0.0001						<0.0001						<0.0001			<0.0001
Chromium (III+VI)	mg/L	0.001					<0.001						<0.001						<0.001			<0.001
Copper	mg/L	0.001					<0.001						<0.001						<0.001			<0.001
Lead	mg/L	0.001					<0.001						<0.001						<0.001			<0.001
Nickel	mg/L	0.001					<0.001						<0.001						<0.001			<0.001
Zinc	mg/L	0.005					<0.005						<0.005						0.006			<0.005
<b>BTEXN</b>																						
Benzene	µg/L	1	<1	<1	<1		<1	<1	<1	<1	<1		<1	<1	<1			<1	<1	<1		
Toluene	µg/L	2	<2	<2	<2		<2	<2	<2	<2	<2		<2	<2	<2			<2	<2	<2		
Ethylbenzene	µg/L	2	<2	<2	<2		<2	<2	<2	<2	<2		<2	<2	<2			<2	<2	<2		
Xylene (o)	µg/L	2	<2	<2	<2		<2	<2	<2	<2	<2		<2	<2	<2			<2	<2	<2		
Xylene (m & p)	µg/L	2	<2	<2	<2		<2	<2	<2	<2	<2		<2	<2	<2			<2	<2	<2		
Xylene Total	µg/L	2	<2	<2	<2		<2	<2	<2	<2	<2		<2	<2	<2			<2	<2	<2		
BTEX (Sum of Total) - Lab Calc	µg/L	1	<1	<1	<1		<1	<1	<1	<1	<1		<1	<1	<1			<1	<1	<1		
<b>TRH - NEPM 2013</b>																						
F1 (C6-C10 minus BTEX)	µg/L	20	<20	<20	<20		<20	<20	<20	<20	<20		<20	<20	<20			<20	<20	<20		
C6-C10 Fraction	µg/L	20	<20	<20	<20		<20	<20	<20	<20	<20		<20	<20	<20			<20	<20	<20		
>C10-C16 Fraction	µg/L	100																				
F3 (>C16-C34 Fraction)	µg/L	100																				
F4 (>C34-C40 Fraction)	µg/L	100																				
>C10-C40 (Sum of Total)	µg/L	100																				
<b>TRH - NEPM 1999</b>																						
C6-C9 Fraction	µg/L	20	<20	<20	<20		<20	<20	<20	<20	<20		<20	<20	<20			<20	<20	<20		
C10-C14 Fraction	µg/L	50																				
C15-C28 Fraction	µg/L	100																				
C29-C36 Fraction	µg/L	50																				
C10-C36 (Sum of Total)	µg/L	50																				
<b>PAHs</b>																						
Naphthalene	µg/L	5	<5	<5	<5		<5	<5	<5	<5	<5		<5	<5	<5			<5	<5	<5		



		Date	19/09/2019	10/10/2019	21/10/2019	21/10/2019	21/10/2019	22/10/2019	22/10/2019	22/10/2019	23/10/2019	23/10/2019	23/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	28/10/2019
		Field ID	TBW828	FB01	FB01	RB01	TBW 965	FB01	RB02	TBW 958	FB03	RB03	TBW 961	FB04	RB04	TBW 957	TBW 962	TBW 963	FB05
		Lab Report Number	EP1909602	EP1910455	EP1910866	EP1910866	EP1910866	EP1910866	EP1910866	EP1910866	EP1910998	EP1910998	EP1910998	EP1910998	EP1910998	EP1910998	EP1910998	EP1910998	EP1911129
	Unit	EQL																	
<b>Metals</b>																			
Arsenic	mg/L	0.001				<0.001				<0.001		<0.001			<0.001				
Cadmium	mg/L	0.0001				<0.0001				<0.0001		<0.0001			<0.0001				
Chromium (III+VI)	mg/L	0.001				<0.001				<0.001		<0.001			<0.001				
Copper	mg/L	0.001				<0.001				<0.001		<0.001			<0.001				
Lead	mg/L	0.001				<0.001				<0.001		<0.001			<0.001				
Nickel	mg/L	0.001				<0.001				<0.001		<0.001			<0.001				
Zinc	mg/L	0.005				<0.005				<0.005		<0.005			<0.005				
<b>BTEXN</b>																			
Benzene	µg/L	1	<1	<1			<1	<1		<1	<1		<1	<1		<1	<1	<1	<1
Toluene	µg/L	2	<2	<2			<2	<2		<2	<2		<2	<2		<2	<2	<2	<2
Ethylbenzene	µg/L	2	<2	<2			<2	<2		<2	<2		<2	<2		<2	<2	<2	<2
Xylene (o)	µg/L	2	<2	<2			<2	<2		<2	<2		<2	<2		<2	<2	<2	<2
Xylene (m & p)	µg/L	2	<2	<2			<2	<2		<2	<2		<2	<2		<2	<2	<2	<2
Xylene Total	µg/L	2	<2	<2			<2	<2		<2	<2		<2	<2		<2	<2	<2	<2
BTEX (Sum of Total) - Lab Calc	µg/L	1	<1	<1			<1	<1		<1	<1		<1	<1		<1	<1	<1	<1
<b>TRH - NEPM 2013</b>																			
F1 (C6-C10 minus BTEX)	µg/L	20	<20	<20			<20	<20		<20	<20		<20	<20		<20	<20	<20	<20
C6-C10 Fraction	µg/L	20	<20	<20			<20	<20		<20	<20		<20	<20		<20	<20	<20	<20
>C10-C16 Fraction	µg/L	100			<100														
F3 (>C16-C34 Fraction)	µg/L	100			<100														
F4 (>C34-C40 Fraction)	µg/L	100			<100														
>C10-C40 (Sum of Total)	µg/L	100			<100														
<b>TRH - NEPM 1999</b>																			
C6-C9 Fraction	µg/L	20	<20	<20			<20	<20		<20	<20		<20	<20		<20	<20	<20	<20
C10-C14 Fraction	µg/L	50			<50														
C15-C28 Fraction	µg/L	100			<100														
C29-C36 Fraction	µg/L	50			<50														
C10-C36 (Sum of Total)	µg/L	50			<50														
<b>PAHs</b>																			
Naphthalene	µg/L	5	<5	<5			<5	<5		<5	<5		<5	<5		<5	<5	<5	<5



	Unit	EQL	Date																	
			28/10/2019		18/11/2019		18/11/2019		19/11/2019		19/11/2019		19/11/2019		20/11/2019		20/11/2019		21/11/2019	
			Field ID	RB05	TBW 964	FB01	RB01	TBW 1140	FB02	RB02	TBW 1133	TBW 1134	TBW 1136	FB03	RB03	TBW 1132	TBW 1137	FB04	RB04	TBW 1139
Lab Report Number	EP1911129	EP1911129	EP1912183	EP1912183	EP1912183	EP1912183	EP1912183	EP1912183	EP1912183	EP1912183	EP1912183	EP1912321	EP1912321	EP1912321	EP1912321	EP1912321	EP1912321	EP1912321		
<b>Metals</b>																				
Arsenic	mg/L	0.001	<0.001			<0.001			<0.001					<0.001				<0.001		
Cadmium	mg/L	0.0001	<0.0001			<0.0001			<0.0001					<0.0001				<0.0001		
Chromium (III+VI)	mg/L	0.001	<0.001			<0.001			<0.001					<0.001				<0.001		
Copper	mg/L	0.001	<0.001			<0.001			<0.001					<0.001				<0.001		
Lead	mg/L	0.001	<0.001			<0.001			<0.001					<0.001				<0.001		
Nickel	mg/L	0.001	<0.001			<0.001			<0.001					<0.001				<0.001		
Zinc	mg/L	0.005	<0.005			<0.005			<0.005					<0.005				<0.005		
<b>BTEXN</b>																				
Benzene	µg/L	1	<1	<1		<1	<1		<1	<1	<1	<1		<1	<1	<1		<1		
Toluene	µg/L	2	<2	<2		<2	<2		<2	<2	<2	<2		<2	<2	<2		<2		
Ethylbenzene	µg/L	2	<2	<2		<2	<2		<2	<2	<2	<2		<2	<2	<2		<2		
Xylene (o)	µg/L	2	<2	<2		<2	<2		<2	<2	<2	<2		<2	<2	<2		<2		
Xylene (m & p)	µg/L	2	<2	<2		<2	<2		<2	<2	<2	<2		<2	<2	<2		<2		
Xylene Total	µg/L	2	<2	<2		<2	<2		<2	<2	<2	<2		<2	<2	<2		<2		
BTEX (Sum of Total) - Lab Calc	µg/L	1	<1	<1		<1	<1		<1	<1	<1	<1		<1	<1	<1		<1		
<b>TRH - NEPM 2013</b>																				
F1 (C6-C10 minus BTEX)	µg/L	20	<20	<20		<20	<20		<20	<20	<20	<20		<20	<20	<20		<20		
C6-C10 Fraction	µg/L	20	<20	<20		<20	<20		<20	<20	<20	<20		<20	<20	<20		<20		
>C10-C16 Fraction	µg/L	100																		
F3 (>C16-C34 Fraction)	µg/L	100																		
F4 (>C34-C40 Fraction)	µg/L	100																		
>C10-C40 (Sum of Total)	µg/L	100																		
<b>TRH - NEPM 1999</b>																				
C6-C9 Fraction	µg/L	20	<20	<20		<20	<20		<20	<20	<20	<20		<20	<20	<20		<20		
C10-C14 Fraction	µg/L	50																		
C15-C28 Fraction	µg/L	100																		
C29-C36 Fraction	µg/L	50																		
C10-C36 (Sum of Total)	µg/L	50																		
<b>PAHs</b>																				
Naphthalene	µg/L	5	<5	<5		<5	<5		<5	<5	<5	<5		<5	<5	<5		<5		



	Unit	EQL	Date	16/12/2019	16/12/2019	16/12/2019	16/12/2019	17/12/2019	17/12/2019	17/12/2019	18/12/2019	18/12/2019	18/12/2019	18/12/2019	19/12/2019	19/12/2019	19/12/2019	20/01/2020	20/01/2020	20/01/2020
			Field ID	FB01	RB01	TBW1234	TBW1243	FB02	RB02	TBW1239	FB03	RB03	TBW 1235	TBW 1236	FB04	RB04	TBW1249	FB01	RB01	TB01
			Lab Report Number	EP1913499	EP1913499	EP1913499	EP1913499	EP1913499	EP1913499	EP1913499	EP1913499	EP1913643	EP1913643	EP1913643	EP1913643	EP1913643	EP1913643	EP1913643	EP2000762	EP2000762
<b>Metals</b>																				
Arsenic	mg/L	0.001			<0.001					<0.001					<0.001					<0.001
Cadmium	mg/L	0.0001			<0.0001					<0.0001					<0.0001					<0.0001
Chromium (III+VI)	mg/L	0.001			<0.001					<0.001					<0.001					<0.001
Copper	mg/L	0.001			<0.001					<0.001					<0.001					<0.001
Lead	mg/L	0.001			<0.001					<0.001					<0.001					<0.001
Nickel	mg/L	0.001			<0.001					<0.001					<0.001					<0.001
Zinc	mg/L	0.005			<0.005					<0.005					<0.005					<0.005
<b>BTEXN</b>																				
Benzene	µg/L	1	<1		<1	<1	<1	<1		<1	<1		<1	<1	<1		<1	<1		<1
Toluene	µg/L	2	<2		<2	<2	<2	<2		<2	<2		<2	<2	<2		<2	<2		<2
Ethylbenzene	µg/L	2	<2		<2	<2	<2	<2		<2	<2		<2	<2	<2		<2	<2		<2
Xylene (o)	µg/L	2	<2		<2	<2	<2	<2		<2	<2		<2	<2	<2		<2	<2		<2
Xylene (m & p)	µg/L	2	<2		<2	<2	<2	<2		<2	<2		<2	<2	<2		<2	<2		<2
Xylene Total	µg/L	2	<2		<2	<2	<2	<2		<2	<2		<2	<2	<2		<2	<2		<2
BTEX (Sum of Total) - Lab Calc	µg/L	1	<1		<1	<1	<1	<1		<1	<1		<1	<1	<1		<1	<1		<1
<b>TRH - NEPM 2013</b>																				
F1 (C6-C10 minus BTEX)	µg/L	20	<20		<20	<20	<20	<20		<20	<20		<20	<20	<20		<20	<20		<20
C6-C10 Fraction	µg/L	20	<20		<20	<20	<20	<20		<20	<20		<20	<20	<20		<20	<20		<20
>C10-C16 Fraction	µg/L	100																		
F3 (>C16-C34 Fraction)	µg/L	100																		
F4 (>C34-C40 Fraction)	µg/L	100																		
>C10-C40 (Sum of Total)	µg/L	100																		
<b>TRH - NEPM 1999</b>																				
C6-C9 Fraction	µg/L	20	<20		<20	<20	<20	<20		<20	<20		<20	<20	<20		<20	<20		<20
C10-C14 Fraction	µg/L	50																		
C15-C28 Fraction	µg/L	100																		
C29-C36 Fraction	µg/L	50																		
C10-C36 (Sum of Total)	µg/L	50																		
<b>PAHs</b>																				
Naphthalene	µg/L	5	<5		<5	<5	<5	<5		<5	<5		<5	<5	<5		<5	<5		<5



		Date	21/01/2020	22/01/2020	23/01/2020	23/01/2020	23/01/2020	17/02/2020	17/02/2020	17/02/2020	18/02/2020	19/02/2020	20/02/2020	20/02/2020	20/02/2020	20/02/2020	16/03/2020	16/03/2020	
		Field ID	FB02	FB03	FB04	RB02	TB02	FB01	TBW079	TBW083	FB02	FB03	FB04	RB01	RB02	TBW081	TBW082	FB01	RB01
		Lab Report Number	EP2000762	EP2000814	EP2000814	EP2000814	EP2000814	EP2001737	EP2001737	EP2001737	EP2001737	EP2001851	EP2001851	EP2001851	EP2001851	EP2001851	EP2001851	EP2002914	EP2002914
	Unit	EQL																	
<b>Metals</b>																			
Arsenic	mg/L	0.001				<0.001								<0.001	<0.001				<0.001
Cadmium	mg/L	0.0001				<0.0001								<0.0001	<0.0001				<0.0001
Chromium (III+VI)	mg/L	0.001				<0.001								<0.001	<0.001				<0.001
Copper	mg/L	0.001				<0.001								<0.001	<0.001				<0.001
Lead	mg/L	0.001				<0.001								<0.001	<0.001				<0.001
Nickel	mg/L	0.001				<0.001								<0.001	0.003				<0.001
Zinc	mg/L	0.005				<0.005								<0.005	<0.005				<0.005
<b>BTEXN</b>																			
Benzene	µg/L	1	<1	<1	<1		<1	<1	<1	<1	<1	<1	<1			<1	<1	<1	
Toluene	µg/L	2	<2	<2	<2		<2	<2	<2	<2	<2	<2	<2			<2	<2	<2	
Ethylbenzene	µg/L	2	<2	<2	<2		<2	<2	<2	<2	<2	<2	<2			<2	<2	<2	
Xylene (o)	µg/L	2	<2	<2	<2		<2	<2	<2	<2	<2	<2	<2			<2	<2	<2	
Xylene (m & p)	µg/L	2	<2	<2	<2		<2	<2	<2	<2	<2	<2	<2			<2	<2	<2	
Xylene Total	µg/L	2	<2	<2	<2		<2	<2	<2	<2	<2	<2	<2			<2	<2	<2	
BTEX (Sum of Total) - Lab Calc	µg/L	1	<1	<1	<1		<1	<1	<1	<1	<1	<1	<1			<1	<1	<1	
<b>TRH - NEPM 2013</b>																			
F1 (C6-C10 minus BTEX)	µg/L	20	<20	<20	<20		<20	<20	<20	<20	<20	<20	<20			<20	<20	<20	
C6-C10 Fraction	µg/L	20	<20	<20	<20		<20	<20	<20	<20	<20	<20	<20			<20	<20	<20	
>C10-C16 Fraction	µg/L	100																	
F3 (>C16-C34 Fraction)	µg/L	100																	
F4 (>C34-C40 Fraction)	µg/L	100																	
>C10-C40 (Sum of Total)	µg/L	100																	
<b>TRH - NEPM 1999</b>																			
C6-C9 Fraction	µg/L	20	<20	<20	<20		<20	<20	<20	<20	<20	<20	<20			<20	<20	<20	
C10-C14 Fraction	µg/L	50																	
C15-C28 Fraction	µg/L	100																	
C29-C36 Fraction	µg/L	50																	
C10-C36 (Sum of Total)	µg/L	50																	
<b>PAHs</b>																			
Naphthalene	µg/L	5	<5	<5	<5		<5	<5	<5	<5	<5	<5	<5			<5	<5	<5	



	Unit	EQL	Date	16/03/2020	17/03/2020	17/03/2020	17/03/2020	18/03/2020	18/03/2020	19/03/2020	19/03/2020	19/03/2020	20/04/2020	20/04/2020	20/04/2020	21/04/2020	21/04/2020	22/04/2020	22/04/2020	
			Field ID	TBW137	FB02	RB02	TBW146	FB03	RB03	FB04	RB04	TB02	FB01	TBW293	TBW296	FB02	RB01	FB03	RB02	TBW 294
			Lab Report Number	EP2002914	EP2002914	EP2002914	EP2002914	EP2002968	EP2002968	EP2002968	EP2002968	EP2002968	EP2004114	EP2004114	EP2004114	EP2004114	EP2004114	EP2004114	EP2004276	EP2004276
<b>Metals</b>																				
Arsenic	mg/L	0.001			<0.001			<0.001		<0.001						<0.001		<0.001		
Cadmium	mg/L	0.0001			<0.0001			<0.0001		<0.0001						<0.0001		<0.0001		
Chromium (III+VI)	mg/L	0.001			<0.001	0.001		<0.001		<0.001						<0.001		<0.001		
Copper	mg/L	0.001			<0.001			<0.001		<0.001						<0.001		<0.001		
Lead	mg/L	0.001			<0.001	0.001		<0.001		<0.001						<0.001		<0.001		
Nickel	mg/L	0.001			<0.001	0.001		<0.001		<0.001						<0.001		<0.001		
Zinc	mg/L	0.005			<0.005			<0.005		<0.005						<0.005		<0.005		
<b>BTEXN</b>																				
Benzene	µg/L	1	<1	<1		<1	<1			<1		<1	<1	<1	<1			<1		<1
Toluene	µg/L	2	<2	<2		<2	<2			<2		<2	<2	<2	<2			<2		<2
Ethylbenzene	µg/L	2	<2	<2		<2	<2			<2		<2	<2	<2	<2			<2		<2
Xylene (o)	µg/L	2	<2	<2		<2	<2			<2		<2	<2	<2	<2			<2		<2
Xylene (m & p)	µg/L	2	<2	<2		<2	<2			<2		<2	<2	<2	<2			<2		<2
Xylene Total	µg/L	2	<2	<2		<2	<2			<2		<2	<2	<2	<2			<2		<2
BTEX (Sum of Total) - Lab Calc	µg/L	1	<1	<1		<1	<1			<1		<1	<1	<1	<1			<1		<1
<b>TRH - NEPM 2013</b>																				
F1 (C6-C10 minus BTEX)	µg/L	20	<20	<20		<20	<20			<20		<20	<20	<20	<20			<20		<20
C6-C10 Fraction	µg/L	20	<20	<20		<20	<20			<20		<20	<20	<20	<20			<20		<20
>C10-C16 Fraction	µg/L	100																		
F3 (>C16-C34 Fraction)	µg/L	100																		
F4 (>C34-C40 Fraction)	µg/L	100																		
>C10-C40 (Sum of Total)	µg/L	100																		
<b>TRH - NEPM 1999</b>																				
C6-C9 Fraction	µg/L	20	<20	<20		<20	<20			<20		<20	<20	<20	<20			<20		<20
C10-C14 Fraction	µg/L	50																		
C15-C28 Fraction	µg/L	100																		
C29-C36 Fraction	µg/L	50																		
C10-C36 (Sum of Total)	µg/L	50																		
<b>PAHs</b>																				
Naphthalene	µg/L	5	<5	<5		<5	<5			<5		<5	<5	<5	<5			<5		<5



		Date	23/04/2020	23/04/2020	23/04/2020	18/05/2020	19/05/2020	20/05/2020	20/05/2020	20/05/2020	21/05/2020	21/05/2020	21/05/2020	15/06/2020	16/06/2020	17/06/2020	17/06/2020	17/06/2020	18/06/2020
		Field ID	FB04	RB03	TBW 292	RB01	RB02	FB03	RB03	TBW421	FB04	RB04	TBW413	RB01	RB02	FB03	RB03	TBW499	FB04
		Lab Report Number	EP2004276	EP2004276	EP2004276	EP2005242	EP2005242	EP2005328	EP2005328	EP2005328	EP2005328	EP2005328	EP2005328	EP2006304	EP2006304	EP2006334	EP2006334	EP2006334	EP2006334
	Unit	EQL																	
<b>Metals</b>																			
Arsenic	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium (III+VI)	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
<b>BTEXN</b>																			
Benzene	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	µg/L	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Ethylbenzene	µg/L	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Xylene (o)	µg/L	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Xylene (m & p)	µg/L	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Xylene Total	µg/L	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
BTEX (Sum of Total) - Lab Calc	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
<b>TRH - NEPM 2013</b>																			
F1 (C6-C10 minus BTEX)	µg/L	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
C6-C10 Fraction	µg/L	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
>C10-C16 Fraction	µg/L	100																	
F3 (>C16-C34 Fraction)	µg/L	100																	
F4 (>C34-C40 Fraction)	µg/L	100																	
>C10-C40 (Sum of Total)	µg/L	100																	
<b>TRH - NEPM 1999</b>																			
C6-C9 Fraction	µg/L	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
C10-C14 Fraction	µg/L	50																	
C15-C28 Fraction	µg/L	100																	
C29-C36 Fraction	µg/L	50																	
C10-C36 (Sum of Total)	µg/L	50																	
<b>PAHs</b>																			
Naphthalene	µg/L	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5





	Unit	EQL	Date	18/06/2020	18/06/2020	20/07/2020	20/07/2020	20/07/2020	21/07/2020	21/07/2020	21/07/2020	22/07/2020	22/07/2020	22/07/2020	23/07/2020	23/07/2020	23/07/2020	27/07/2020	27/07/2020
			Field ID	RB04	TBW497	FB01	RB01	TB01 (TBW21)	FB02	RB02	TB02 (TBW618)	FB03	RB03	TB03 (TBW620)	FB04	RB04	TB04 (TBW619)	FB05	RB05
			Lab Report Number	EP2006334	EP2006334	EP2007638	EP2007638	EP2007638	EP2007638	EP2007640	EP2007640	EP2007775	EP2007775	EP2007775	EP2007775	EP2007769	EP2007769	EP2007908	EP2007908
<b>Metals</b>																			
Arsenic	mg/L	0.001	<0.001																<0.001
Cadmium	mg/L	0.0001	<0.0001																<0.0001
Chromium (III+VI)	mg/L	0.001	<0.001																<0.001
Copper	mg/L	0.001	<0.001																<0.001
Lead	mg/L	0.001	<0.001																<0.001
Nickel	mg/L	0.001	<0.001																<0.001
Zinc	mg/L	0.005	<0.005																<0.005
<b>BTEXN</b>																			
Benzene	µg/L	1		<1	<1														<1
Toluene	µg/L	2		<2	<2														<2
Ethylbenzene	µg/L	2		<2	<2														<2
Xylene (o)	µg/L	2		<2	<2														<2
Xylene (m & p)	µg/L	2		<2	<2														<2
Xylene Total	µg/L	2		<2	<2														<2
BTEX (Sum of Total) - Lab Calc	µg/L	1		<1	<1														<1
<b>TRH - NEPM 2013</b>																			
F1 (C6-C10 minus BTEX)	µg/L	20		<20	<20														<20
C6-C10 Fraction	µg/L	20		<20	<20														<20
>C10-C16 Fraction	µg/L	100																	
F3 (>C16-C34 Fraction)	µg/L	100																	
F4 (>C34-C40 Fraction)	µg/L	100																	
>C10-C40 (Sum of Total)	µg/L	100																	
<b>TRH - NEPM 1999</b>																			
C6-C9 Fraction	µg/L	20		<20	<20														<20
C10-C14 Fraction	µg/L	50																	
C15-C28 Fraction	µg/L	100																	
C29-C36 Fraction	µg/L	50																	
C10-C36 (Sum of Total)	µg/L	50																	
<b>PAHs</b>																			
Naphthalene	µg/L	5		<5	<5														<5



		Date	27/07/2020
		Field ID	TB05
		Lab Report Number	EP2007908
	Unit	EQL	
<b>Metals</b>			
Arsenic	mg/L	0.001	
Cadmium	mg/L	0.0001	
Chromium (III+VI)	mg/L	0.001	
Copper	mg/L	0.001	
Lead	mg/L	0.001	
Nickel	mg/L	0.001	
Zinc	mg/L	0.005	
<b>BTEXN</b>			
Benzene	µg/L	1	<1
Toluene	µg/L	2	<2
Ethylbenzene	µg/L	2	<2
Xylene (o)	µg/L	2	<2
Xylene (m & p)	µg/L	2	<2
Xylene Total	µg/L	2	<2
BTEX (Sum of Total) - Lab Calc	µg/L	1	<1
<b>TRH - NEPM 2013</b>			
F1 (C6-C10 minus BTEX)	µg/L	20	<20
C6-C10 Fraction	µg/L	20	<20
>C10-C16 Fraction	µg/L	100	
F3 (>C16-C34 Fraction)	µg/L	100	
F4 (>C34-C40 Fraction)	µg/L	100	
>C10-C40 (Sum of Total)	µg/L	100	
<b>TRH - NEPM 1999</b>			
C6-C9 Fraction	µg/L	20	<20
C10-C14 Fraction	µg/L	50	
C15-C28 Fraction	µg/L	100	
C29-C36 Fraction	µg/L	50	
C10-C36 (Sum of Total)	µg/L	50	
<b>PAHs</b>			
Naphthalene	µg/L	5	<5







	Unit	EQL	Date	19/08/2019	19/08/2019		21/08/2019	21/08/2019		19/08/2019	19/08/2019		20/08/2019	20/08/2019		16/09/2019	16/09/2019		16/09/2019	16/09/2019
			Field ID	BORR_MW19	FD01		BORR_MW04	FD03		BORR_MW19	FS01		SW01	FD02		BORR MW18	FD01		BORR MW18	FS01
			Lab Report Number	EP1908386	EP1908386	RPD	EP1908496	EP1908496	RPD	EP1908386	672975	RPD	EP1908386	EP1908386	RPD	EP1909465	EP1909465	RPD	EP1909465	678265
Triazophos	µg/L	0.005											<0.005	<0.005	0					
Herbicides																				
Glyphosate	µg/L	10											<10	<10	0					

\*RPDs have only been considered where a concentration is greater than 1 times the EQL.

\*\*Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 81 (1 - 10 x EQL); 50 (10 - 30 x EQL); 30 (> 30 x EQL) )

\*\*\*Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory







	Unit	EQL	17/09/2019		RPD	17/09/2019		RPD	23/10/2019		RPD	23/10/2019		RPD	24/10/2019		RPD	24/10/2019		RPD
			Field ID	Lab Report Number		Field ID	Lab Report Number		Field ID	Lab Report Number		Field ID	Lab Report Number		Field ID	Lab Report Number		Field ID	Lab Report Number	
			BORR MW32	FD02		JT01	FD03		BORR_MW37	FD02		SW06	FD01		BH32.1	FD03		BH32.1	FS01	
			EP1909465	EP1909465		EP1909465	EP1909465		EP1910998	EP1910998		EP1910998	EP1910998		EP1910998	EP1910998		EP1910998	685136	
Triazophos	µg/L	0.005				<0.005	<0.005	0				<0.005	<0.005	0						
Herbicides																				
Glyphosate	µg/L	10				<10	<10	0				<10	<10	0						

\*RPDs have only been considered where a concentration is greater than 1  
 \*\*Elevated RPDs are highlighted as per QAQC Profile settings (Accepted)  
 \*\*\*Interlab Duplicates are matched on a per compound basis as met









	Unit	EQL	18/11/2019		18/11/2019		19/11/2019		19/11/2019		17/12/2019		17/12/2019		18/12/2019		19/12/2019				
			Date	Field ID	Date	Field ID	Date	Field ID	Date	Field ID	Date	Field ID	Date	Field ID	Date	Field ID	Date	Field ID			
			Lab Report Number		Lab Report Number		Lab Report Number		Lab Report Number		Lab Report Number		Lab Report Number		Lab Report Number		Lab Report Number				
			EP1912183	EP1912183	RPD	EP1912183	689319	RPD	EP1912183	EP1912183	RPD	EP1912183	EP1912183	RPD	EP1913499	EP1913499	RPD	EP1913643	EP1913643	RPD	
Triazophos	µg/L	0.005										<0.005	<0.005	0					<0.005	<0.005	0
Herbicides																					
Glyphosate	µg/L	10										<10	<10	0					<10	<10	0

\*RPDs have only been considered where a concentration is greater than the EQL  
 \*\*Elevated RPDs are highlighted as per QAQC Profile settings (Accession Number)  
 \*\*\*Interlab Duplicates are matched on a per compound basis as met/







	Unit	EQL	Date	19/12/2019	19/12/2019		19/12/2019	19/12/2019		20/01/2020	20/01/2020		21/01/2020	21/01/2020		22/01/2020	22/01/2020		22/01/2020	22/01/2020		
			Field ID	BORRMW12	FD03		BORRMW12	FS01		BORR_MW05	FD01		BORR_MW12	FD03		BORR_MW12	FD03		BORR_MW12	FS01		
			Lab Report Number	EP1913643	EP1913643	RPD	EP1913643	695412	RPD	EP2000762	EP2000762	RPD	EP2000762	EP2000762	RPD	EP2000814	EP2000814	RPD	EP2000814	698442	RPD	
Triazophos	µg/L	0.005											<0.005	<0.005	0							
Herbicides																						
Glyphosate	µg/L	10											<10	<10	0							

\*RPDs have only been considered where a concentration is greater 1  
 \*\*Elevated RPDs are highlighted as per QAQC Profile settings (Acce  
 \*\*\*Interlab Duplicates are matched on a per compound basis as meti









Appendix G Table 6  
Duplicates

	Unit	EQL	17/02/2020		RPD	17/02/2020		RPD	18/02/2020		RPD	18/02/2020		RPD	16/03/2020		RPD	17/03/2020		RPD	
			Field ID	BORR_MW13		FD02	North Creek 2		FD01	BORR_MW10		FD03	BORR_MW10		FS01	BORR_MW13		FD01	BH11.1		FD03
			Lab Report Number	EP2001737		EP2001737	EP2001737		EP2001737	EP2001737		EP2001737	EP2001737		702937	EP2002914		EP2002914	EP2002914		EP2002914
Triazophos	µg/L	0.005				<0.005	<0.005	0													
Herbicides																					
Glyphosate	µg/L	10				<10	<10	0													

\*RPDs have only been considered where a concentration is greater than 10% of the RPD  
 \*\*Elevated RPDs are highlighted as per QAQC Profile settings (Accepted)  
 \*\*\*Interlab Duplicates are matched on a per compound basis as met







	Unit	EQL	17/03/2020		RPD	17/03/2020		RPD	21/04/2020		RPD	21/04/2020		RPD	22/04/2020		RPD	23/04/2020		RPD	18/05/2020	
			Field ID	FS01		JT01	FD02		BH32.1	FD01		BH32.1	FS01		JT01	FD02		BORR MW13	FD03		BORR MW05	
			Lab Report Number	EP2002914		708662	EP2002914		EP2002914	EP2004114		EP2004114	EP2004114		715089	EP2004276		EP2004276	EP2004276		EP2004276	EP2005242
Triazophos	µg/L	0.005				<0.005	<0.005	0														
Herbicides																						
Glyphosate	µg/L	10				<10	<10	0														

\*RPDs have only been considered where a concentration is greater than the EQL  
 \*\*Elevated RPDs are highlighted as per QAQC Profile settings (Accepted)  
 \*\*\*Interlab Duplicates are matched on a per compound basis as met







	Unit	EQL	Date			18/05/2020	18/05/2020			20/05/2020	20/05/2020			20/05/2020	20/05/2020			15/06/2020	15/06/2020			15/06/2020	15/06/2020			17/06/2020	
			Field ID	FD01	BORR MW05	FS01	BORR_MW19b	FD02	Northern 3	FD03	BORR_MW19b	FD01	BORR_MW19b	FS01	BORR_MW19b	FS01	BORR_MW19b	FS01	BORR_MW19b	FS01	BORR_MW19b	FS01	BORR_MW19b	FS01	BORR_MW19b	FS01	BORR_MW39
			Lab Report Number	EP2005242	RPD	EP2005242	720880	RPD	EP2005328	EP2005328	RPD	EP2005328	EP2005328	RPD	EP2006304	EP2006304	RPD	EP2006304	EP2006304	RPD	EP2006304	726271	RPD	EP2006304	726271	RPD	EP2006334
Triazophos	µg/L	0.005																									
Herbicides																											
Glyphosate	µg/L	10																									

\*RPDs have only been considered where a concentration is greater than 1  
 \*\*Elevated RPDs are highlighted as per QAQC Profile settings (Accepted)  
 \*\*\*Interlab Duplicates are matched on a per compound basis as met









	Unit	EQL	17/06/2020		17/06/2020		20/07/2020		20/07/2020		20/07/2020		20/07/2020		21/07/2020		21/07/2020		
			Field ID	FD02	SW06	FD03	BORR MW37	WFD03	BORR MW37	WFS02	WRM NORTH 3	WFD01	BORR MW32	WFD02	BORR MW32	WFD02			
			Lab Report Number	EP2006334	RPD	EP2006334	EP2006334	RPD	EP2007640	EP2007640	RPD	EP2007640	733336	RPD	EP2007638	EP2007638	RPD	EP2007638	EP2007638
Triazophos	µg/L	0.005																	
Herbicides																			
Glyphosate	µg/L	10																	

\*RPDs have only been considered where a concentration is greater than the EQL  
 \*\*Elevated RPDs are highlighted as per QAQC Profile settings (Accepted)  
 \*\*\*Interlab Duplicates are matched on a per compound basis as met



Appendix G Table 6  
Duplicates

Lab Report Number	Date	Unit	EQL								
			20/07/2020	23/07/2020		23/07/2020	27/07/2020		27/07/2020		
			WFS01	SOUTHERN 3		WFD04	BORR MW09		WFD05		
Lab Report Number	Date	Unit	733336	RPD	EP2007769	EP2007769	RPD	EP2007908	EP2007908	RPD	
Inorganics											
pH (Lab)	pH Units	0.01	6.2	0	7.66	7.74	1	6.64	6.57	1	
Electrical conductivity (lab)	µS/cm	1	370	1	1,870	1,880	1	599	578	4	
Total Dissolved Solids	mg/L	10	250	2	1,170	1,170	0	446	434	3	
Ammonium Ion	mg/L	0.01	0.55								
Sulfate as S	mg/L	5	<5								
Acidity & Alkalinity											
Alkalinity (Carbonate as CaCO3)	mg/L	1			<1	<1	0	<1	<1	0	
Alkalinity (Bicarbonate as CaCO3)	mg/L	1			98	99	1	9	8	12	
Alkalinity (Hydroxide as CaCO3)	mg/L	1			<1	<1	0	<1	<1	0	
Alkalinity (total as CaCO3)	mg/L	1	26	4	98	99	1	9	8	12	
Acidity (as CaCO3)	mg/L	1	28	15	9	10	11	15	13	14	
Major Ions											
Calcium	mg/L	0.5									
Calcium (filtered)	mg/L	0.5			26	27	4	45	47	4	
Magnesium	mg/L	0.5									
Magnesium (filtered)	mg/L	0.5			42	43	2	8	8	0	
Potassium	mg/L	0.5									
Potassium (filtered)	mg/L	0.5			14	14	0	11	11	0	
Sodium	mg/L	0.5	69								
Sodium (filtered)	mg/L	0.5			308	310	1	45	45	0	
Chloride	mg/L	1	98	2	527	528	0	170	166	2	
Sulfate	mg/L	5									
Sulfate (filtered)	mg/L	1			122	121	1	40	39	3	
Cations Total	meq/L	0.01			18.5	18.7	1	5.14	5.24	2	
Anions Total	meq/L	0.01			19.4	19.4	0	5.81	5.65	3	
Ionic Balance	%	0.01			2.26	1.74	26	6.08	3.78	<b>47</b>	
Sulfide	mg/L	0.05	0.10	0	<0.1	<0.1	0	<0.1	<0.1	0	
Nutrients											
Ammonium (as N)	mg/L	0.01			0.04	0.03	29	<0.01	0.02	67	
Ammonia as N	mg/L	0.01	0.52	<b>31</b>	0.04	0.03	29	<0.01	0.02	67	
Nitrate (as N)	mg/L	0.02									
Nitrite (as N)	mg/L	0.02									
Nitrogen (Total Oxidised) (as N)	mg/L	0.01	<0.05	0	<0.01	<0.01	0	1.05	1.16	10	
Nitrogen (Total)	mg/L	0.1	0.6	29	4.4	4.4	0	1.4	1.5	7	
Reactive Phosphorus as P	mg/L	0.01			0.67	0.68	1	<0.01	<0.01	0	
Phosphorous filterable reactive (P)	µg/L	10									
Phosphorous filterable reactive (P) (filtered)	µg/L	10	20								
Phosphate total (P)	µg/L	10									
Kjeldahl Nitrogen Total	mg/L	0.1	0.6	29	4.4	4.4	0	0.3	0.3	0	
Nitrogen (Organic)	mg/L	0.2									
Phosphorus (Total)	mg/L	0.01	0.01	0	0.88	0.88	0	0.02	0.01	67	
Metals											
Aluminium	mg/L	0.01	1.8	8	0.21	0.22	5	0.18	0.17	6	
Aluminium (filtered)	mg/L	0.01	0.81	1	0.18	0.18	0	<0.01	<0.01	0	
Arsenic	mg/L	0.001									
Arsenic (filtered)	mg/L	0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0	
Cadmium	mg/L	0.0002									
Cadmium (filtered)	mg/L	0.0001	<0.0002	0	<0.0001	<0.0001	0	<0.0001	<0.0001	0	
Chromium (III+VI)	mg/L	0.001									
Chromium (III+VI) (filtered)	mg/L	0.001	<0.001	0	0.001	0.001	0	<0.001	<0.001	0	
Cobalt	mg/L	0.001									
Cobalt (filtered)	mg/L	0.001			<0.001	<0.001	0	<0.001	<0.001	0	
Copper	mg/L	0.001									
Copper (filtered)	mg/L	0.001			0.004	0.005	22	<0.001	<0.001	0	
Iron	mg/L	0.05	0.91	2	1.04	1.03	1	0.05	<0.05	0	
Iron (filtered)	mg/L	0.05	0.68	<b>52</b>	0.86	0.89	3	<0.05	<0.05	0	
Lead	mg/L	0.001									
Lead (filtered)	mg/L	0.001			<0.001	<0.001	0	<0.001	<0.001	0	
Manganese	mg/L	0.005									
Manganese (filtered)	mg/L	0.001	<0.005	0	0.060	0.060	0	<0.001	<0.001	0	
Mercury	mg/L	0.0001									
Mercury (filtered)	mg/L	0.0001									
Nickel	mg/L	0.001									
Nickel (filtered)	mg/L	0.001	<0.001	0	0.002	0.002	0	<0.001	0.002	67	
Selenium	mg/L	0.001									
Selenium (filtered)	mg/L	0.001	<0.001	0	<0.01	<0.01	0	<0.01	<0.01	0	
Zinc	mg/L	0.005									



Appendix G Table 6  
Duplicates

	Unit	EQL	Date									
			20/07/2020		23/07/2020		23/07/2020		27/07/2020		27/07/2020	
			Field ID		SOUTHERN 3		WFD04		BARR MW09		WFD05	
Lab Report Number	733336		RPD	EP2007769	EP2007769	RPD	EP2007908	EP2007908	RPD			
Zinc (filtered)	mg/L	0.005	<0.005	0	0.022	0.021	5	<0.005	0.008	46		
<b>BTEXN</b>												
Benzene	µg/L	1	<1	0				<1	<1	0		
Toluene	µg/L	1	<1	0				<2	<2	0		
Ethylbenzene	µg/L	1	<1	0				<2	<2	0		
Xylene (o)	µg/L	1	<1	0				<2	<2	0		
Xylene (m & p)	µg/L	2	<2	0				<2	<2	0		
Xylene Total	µg/L	2	<3	0				<2	<2	0		
Naphthalene (BTEXN)	µg/L	10	<10									
BTEX (Sum of Total) - Lab Calc	µg/L	1						<1	<1	0		
<b>TRH - NEPM 2013</b>												
F1 (C6-C10 minus BTEX)	µg/L	20	<20	0				<20	<20	0		
C6-C10 Fraction	µg/L	20	<20	0				<20	<20	0		
F2 (>C10-C16 minus Naphthalene)	µg/L	50	<50	0				<100	<100	0		
>C10-C16 Fraction	µg/L	50	<50	0				<100	<100	0		
F3 (>C16-C34 Fraction)	µg/L	100	<100	0				<100	<100	0		
F4 (>C34-C40 Fraction)	µg/L	100	<100	0				<100	<100	0		
>C10-C40 (Sum of Total)	µg/L	100	<100	0				<100	<100	0		
<b>TRH - NEPM 1999</b>												
C6-C9 Fraction	µg/L	20	<20	0				<20	<20	0		
C10-C14 Fraction	µg/L	50	60	18				<50	<50	0		
C15-C28 Fraction	µg/L	100	<100	0				<100	<100	0		
C29-C36 Fraction	µg/L	50	<100	0				<50	<50	0		
C10-C36 (Sum of Total)	µg/L	50	<100	0				<50	<50	0		
<b>PAHs</b>												
Naphthalene	µg/L	5						<5	<5	0		
<b>SVOCs</b>												
Sulfate	µg/L	0.005										
<b>OP Pesticides</b>												
Azinphos methyl	µg/L	0.02										
Bolstar (Sulprofos)	µg/L	0.05										
Bromophos-ethyl	µg/L	0.1										
Carbophenothion	µg/L	0.02										
Azinphos Ethyl	µg/L	0.02										
Chlorfenvinphos	µg/L	0.02										
Chlorpyrifos	µg/L	0.02										
Chlorpyrifos-methyl	µg/L	0.2										
Coumaphos	µg/L	0.01										
Demeton-O	µg/L	0.02										
Demeton-S	µg/L	0.02										
Demeton-S-methyl	µg/L	0.02										
Diazinon	µg/L	0.01										
Dichlorvos	µg/L	0.2										
Dimethoate	µg/L	0.02										
Disulfoton	µg/L	0.05										
EPN	µg/L	0.05										
Ethion	µg/L	0.02										
Ethoprop	µg/L	0.01										
Fenamiphos	µg/L	0.01										
Fenitrothion	µg/L	2										
Fensulfothion	µg/L	0.01										
Fenthion	µg/L	0.05										
Malathion	µg/L	0.02										
Methyl parathion	µg/L	0.5										
Mevinphos (Phosdrin)	µg/L	0.02										
Monocrotophos	µg/L	0.02										
Omethoate	µg/L	0.01										
Parathion	µg/L	0.2										
Phorate	µg/L	0.1										
Pirimphos-ethyl	µg/L	0.01										
Pirimphos-methyl	µg/L	0.01										
Profenofos	µg/L	0.01										
Prothiofos	µg/L	0.1										
Ronnel	µg/L	10										
Terbufos	µg/L	0.01										
Trichloronate	µg/L	0.5										
Tetrachlorvinphos	µg/L	0.01										
<b>Pesticides</b>												
Demeton-O & Demeton-S	µg/L	0.02										
Temephos	µg/L	0.02										
Trichlorfon	µg/L	0.02										



Appendix G Table 6  
Duplicates

		Date	20/07/2020		23/07/2020	23/07/2020		27/07/2020	27/07/2020	
		Field ID	WFS01		SOUTHERN 3	WFD04		BORR MW09	WFD05	
		Lab Report Number	733336	RPD	EP2007769	EP2007769	RPD	EP2007908	EP2007908	RPD
	Unit	EQL								
Triazophos	µg/L	0.005								
Herbicides										
Glyphosate	µg/L	10								

\*RPDs have only been considered where a concentration is greater than the EQL  
 \*\*Elevated RPDs are highlighted as per QAQC Profile settings (Accepted)  
 \*\*\*Interlab Duplicates are matched on a per compound basis as met

# Laboratory documentation and results

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## CERTIFICATE OF ANALYSIS

**Work Order** : **EP1908386**  
**Client** : **GHD PTY LTD**  
**Contact** : **MS VICKI DAVIES**  
**Address** : **999 HAY STREET**  
**PERTH WA, AUSTRALIA 6000**  
**Telephone** : **----**  
**Project** : **6137041**  
**Order number** : **6137041**  
**C-O-C number** : **----**  
**Sampler** : **DOMINIQUE SHUTTLEWORTH, Emily Evans**  
**Site** : **----**  
**Quote number** : **EP/489/19 V4**  
**No. of samples received** : **27**  
**No. of samples analysed** : **27**

**Page** : 1 of 25  
**Laboratory** : Environmental Division Perth  
**Contact** : Marnie Thomsett  
**Address** : 26 Rigali Way Wangara WA Australia 6065  
**Telephone** : 08 9406 1311  
**Date Samples Received** : 21-Aug-2019 12:45  
**Date Analysis Commenced** : 21-Aug-2019  
**Issue Date** : 30-Aug-2019 17:27



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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
Daniel Fisher	Inorganics Analyst	Perth Inorganics, Wangara, WA
David Viner	SENIOR LAB TECH	Perth Organics, Wangara, WA
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP204 and EP234-1 conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- EP234: Poor matrix spike recovery for particular compounds due to matrix interferences.
- ED041G (Turbidimetric Sulfate): LOR raised on sample #15 and #17 due to possible sample matrix interference.
- EG020T: Positive result for copper for samples EP1908386-012, 025 has been confirmed by re-digestion and re-analysis.
- EK061G/EK067G (TKN/TP): LOR for samples EP1908386-003 and -009 raised due to possible sample matrix interference.
- EK085: Sulfide LOR raised for sample #2 due to possible sample matrix interference (muddy).
- TDS by method EA-015 may bias high for sample #2 and #23 due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- EA015H (Total Dissolved Solids): TDS for sample #15-17, #19, #22 and #24 biasing high due to possible sample matrix interferences.
- Ionic Balance out of acceptable limits for sample #2 due to analytes not quantified in this report.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- Ionic balances were calculated using: major anions - chloride, alkalinity, sulfate and NOx; and major cations - calcium, magnesium, potassium and sodium for #3.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW13	BORR_MW14	BORR_MW18	BORR_MW19	BORR_MW19b
Client sampling date / time				19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908386-001	EP1908386-002	EP1908386-003	EP1908386-004	EP1908386-005	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	7.38	6.55	4.80	6.98	6.52	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	842	326	219	2290	2290	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	540	2970	158	1350	1440	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	321	108	<1	46	44	
Total Alkalinity as CaCO3	----	1	mg/L	321	108	<1	46	44	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	30	126	22	20	45	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	69	63	14	81	40	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	64	21	34	664	674	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	15	<1	11	46	16	
Magnesium	7439-95-4	1	mg/L	14	4	4	69	51	
Sodium	7440-23-5	1	mg/L	174	53	19	315	369	
Potassium	7440-09-7	1	mg/L	2	5	7	8	4	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.05	----	0.35	0.01	0.04	
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	<0.001	<0.001	0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	0.0002	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.001	----	<0.001	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	0.004	<0.001	0.003	
Copper	7440-50-8	0.001	mg/L	0.019	----	0.018	0.002	0.022	
Lead	7439-92-1	0.001	mg/L	<0.001	----	0.001	<0.001	0.001	
Manganese	7439-96-5	0.001	mg/L	0.011	----	0.144	0.005	0.170	
Nickel	7440-02-0	0.001	mg/L	0.014	----	0.019	<0.001	0.019	
Selenium	7782-49-2	0.01	mg/L	<0.01	----	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.043	----	0.134	0.015	0.121	
Iron	7439-89-6	0.05	mg/L	1.81	----	<0.05	<0.05	6.86	



**Analytical Results**

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW13	BORR_MW14	BORR_MW18	BORR_MW19	BORR_MW19b
Client sampling date / time					19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00
Compound	CAS Number	LOR	Unit		EP1908386-001	EP1908386-002	EP1908386-003	EP1908386-004	EP1908386-005
					Result	Result	Result	Result	Result
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L		0.68	177	1.90	0.39	9.75
Iron	7439-89-6	0.05	mg/L		3.41	364	1.00	0.24	17.0
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L		0.13	0.02	<0.01	<0.01	0.02
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L		0.13	0.02	<0.01	<0.01	0.02
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L		0.09	0.22	8.48	1.73	<0.01
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		1.2	13.2	1.7	0.6	0.1
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L		1.3	13.4	10.2	2.3	0.1
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L		0.01	30.6	<0.05	<0.01	<0.01
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L		<0.1	<100	<0.1	<0.1	<0.1
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L		----	----	1.86	----	----
∅ Total Anions	----	0.01	meq/L		9.66	4.06	----	21.3	20.7
∅ Total Cations	----	0.01	meq/L		9.52	2.76	1.88	21.9	21.1
∅ Ionic Balance	----	0.01	%		----	----	0.74	----	----
∅ Ionic Balance	----	0.01	%		0.70	----	----	1.26	1.01
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	170	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		<100	180	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	80	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	430	<50	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW13	BORR_MW14	BORR_MW18	BORR_MW19	BORR_MW19b
Client sampling date / time				19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908386-001	EP1908386-002	EP1908386-003	EP1908386-004	EP1908386-005	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	180	<100	<100	<100	
>C16 - C34 Fraction	----	100	µg/L	<100	220	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	400	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	180	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	96.9	80.5	93.4	81.8	84.6	
Toluene-D8	2037-26-5	2	%	99.3	114	101	99.8	114	
4-Bromofluorobenzene	460-00-4	2	%	80.7	68.8	79.5	70.1	69.3	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Northern 5	BORR_MW20	North Creek 4	BORR_MW22	BORR_MW22b
Client sampling date / time				19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908386-006	EP1908386-007	EP1908386-008	EP1908386-009	EP1908386-010	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	7.88	6.56	7.65	7.18	6.54	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	586	5250	1130	534	13100	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	329	3010	665	336	8140	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	89	34	48	30	64	
Total Alkalinity as CaCO3	----	1	mg/L	89	34	48	30	64	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	7	37	<1	<1	80	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	25	86	37	66	419	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	120	1570	355	107	4170	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	25	48	21	7	129	
Magnesium	7439-95-4	1	mg/L	12	120	30	12	327	
Sodium	7440-23-5	1	mg/L	84	836	172	86	2260	
Potassium	7440-09-7	1	mg/L	5	4	5	2	5	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.06	0.03	0.09	0.23	0.05	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.002	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0001	0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.013	0.001	<0.001	0.136	
Copper	7440-50-8	0.001	mg/L	0.017	0.017	0.030	0.038	0.006	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.002	0.003	0.001	
Manganese	7439-96-5	0.001	mg/L	0.091	0.168	0.261	0.008	0.554	
Nickel	7440-02-0	0.001	mg/L	0.014	0.015	0.014	0.012	0.078	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.109	0.077	0.111	0.103	0.138	
Iron	7439-89-6	0.05	mg/L	0.25	0.98	0.50	0.12	20.7	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Northern 5	BORR_MW20	North Creek 4	BORR_MW22	BORR_MW22b
Client sampling date / time				19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908386-006	EP1908386-007	EP1908386-008	EP1908386-009	EP1908386-010	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.42	5.02	1.44	2.63	1.76	
Iron	7439-89-6	0.05	mg/L	1.05	10.2	3.37	1.56	23.2	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.04	<0.01	0.03	<0.01	0.20	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.04	<0.01	0.03	<0.01	0.20	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.22	0.74	0.49	2.89	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.6	0.3	0.9	0.8	0.5	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.8	1.0	1.4	3.7	0.5	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.48	0.02	0.04	<0.02	0.10	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.44	<0.01	0.02	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	5.68	46.8	11.7	4.99	128	
∅ Total Cations	----	0.01	meq/L	6.02	48.7	11.1	5.13	132	
∅ Ionic Balance	----	0.01	%	2.85	2.07	2.70	1.35	1.60	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	170	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	140	<100	<100	280	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	310	<50	<50	280	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	150	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Northern 5	BORR_MW20	North Creek 4	BORR_MW22	BORR_MW22b
Client sampling date / time				19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908386-006	EP1908386-007	EP1908386-008	EP1908386-009	EP1908386-010	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	150	<100	<100	280	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	300	<100	<100	280	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	150	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	<10	----	<10	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	----	<0.02	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	----	<0.02	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	----	<0.10	----	----	
Carbofenthion	786-19-6	0.02	µg/L	<0.02	----	<0.02	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	----	<0.02	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	----	<0.02	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	----	<0.2	----	----	
Coumaphos	56-72-4	0.01	µg/L	<0.01	----	<0.01	----	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	----	<0.02	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	----	<0.02	----	----	
Demeton-O	298-03-3	0.02	µg/L	<0.02	----	<0.02	----	----	
Demeton-S	126-75-0	0.02	µg/L	<0.02	----	<0.02	----	----	
Diazinon	333-41-5	0.01	µg/L	<0.01	----	<0.01	----	----	
Dichlorvos	62-73-7	0.20	µg/L	<0.20	----	<0.20	----	----	
Dimethoate	60-51-5	0.02	µg/L	<0.02	----	<0.02	----	----	
Disulfoton	298-04-4	0.05	µg/L	<0.05	----	<0.05	----	----	
Ethion	563-12-2	0.02	µg/L	<0.02	----	<0.02	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Northern 5	BORR_MW20	North Creek 4	BORR_MW22	BORR_MW22b
Client sampling date / time					19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00
Compound	CAS Number	LOR	Unit		EP1908386-006	EP1908386-007	EP1908386-008	EP1908386-009	EP1908386-010
					Result	Result	Result	Result	Result
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L		<0.05	----	<0.05	----	----
Ethoprophos	13194-48-4	0.01	µg/L		<0.01	----	<0.01	----	----
Fenamiphos	22224-92-6	0.01	µg/L		<0.01	----	<0.01	----	----
Fenchlorphos (Ronnell)	299-84-3	10	µg/L		<10	----	<10	----	----
Fenitrothion	122-14-5	2	µg/L		<2	----	<2	----	----
Fensulfothion	115-90-2	0.01	µg/L		<0.01	----	<0.01	----	----
Fenthion	55-38-9	0.05	µg/L		<0.05	----	<0.05	----	----
Malathion	121-75-5	0.02	µg/L		<0.02	----	<0.02	----	----
Mevinphos	7786-34-7	0.02	µg/L		<0.02	----	<0.02	----	----
Monocrotophos	6923-22-4	0.02	µg/L		<0.02	----	<0.02	----	----
Omethoate	1113-02-6	0.01	µg/L		<0.01	----	<0.01	----	----
Parathion	56-38-2	0.2	µg/L		<0.2	----	<0.2	----	----
Parathion-methyl	298-00-0	0.5	µg/L		<0.5	----	<0.5	----	----
Phorate	298-02-2	0.1	µg/L		<0.1	----	<0.1	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L		<0.01	----	<0.01	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L		<0.01	----	<0.01	----	----
Profenofos	41198-08-7	0.01	µg/L		<0.01	----	<0.01	----	----
Prothiofos	34643-46-4	0.1	µg/L		<0.1	----	<0.1	----	----
Sulfotep	3689-24-5	0.005	µg/L		<0.005	----	<0.005	----	----
Sulprofos	35400-43-2	0.05	µg/L		<0.05	----	<0.05	----	----
Terbufos	13071-79-9	0.01	µg/L		<0.01	----	<0.01	----	----
Temephos	3383-96-8	0.02	µg/L		<0.02	----	<0.02	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L		<0.01	----	<0.01	----	----
Triazophos	24017-47-8	0.005	µg/L		<0.005	----	<0.005	----	----
Trichlorfon	52-68-6	0.02	µg/L		<0.02	----	<0.02	----	----
Trichloronate	327-98-0	0.5	µg/L		<0.5	----	<0.5	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%		68.8	82.6	97.3	88.4	95.5
Toluene-D8	2037-26-5	2	%		115	106	101	101	98.3
4-Bromofluorobenzene	460-00-4	2	%		70.0	75.1	80.8	79.8	81.1



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FD01	RB01	TB01	FB01	SW01
Client sampling date / time				19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	20-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908386-011	EP1908386-012	EP1908386-013	EP1908386-014	EP1908386-015	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	<b>7.03</b>	----	----	----	<b>6.84</b>	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	<b>2350</b>	----	----	----	<b>258</b>	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	<b>1380</b>	----	----	----	<b>232</b>	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<b>46</b>	----	----	----	<b>26</b>	
Total Alkalinity as CaCO3	----	1	mg/L	<b>46</b>	----	----	----	<b>26</b>	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	<b>16</b>	----	----	----	<b>11</b>	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<b>84</b>	----	----	----	<25	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	<b>680</b>	----	----	----	<b>58</b>	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	<b>48</b>	----	----	----	<b>8</b>	
Magnesium	7439-95-4	1	mg/L	<b>71</b>	----	----	----	<b>5</b>	
Sodium	7440-23-5	1	mg/L	<b>323</b>	----	----	----	<b>42</b>	
Potassium	7440-09-7	1	mg/L	<b>8</b>	----	----	----	<b>4</b>	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	<0.01	----	----	----	<b>0.35</b>	
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	<b>0.001</b>	
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	<0.001	
Copper	7440-50-8	0.001	mg/L	<b>0.001</b>	----	----	----	<b>0.017</b>	
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	<b>0.001</b>	
Manganese	7439-96-5	0.001	mg/L	<b>0.004</b>	----	----	----	<b>0.017</b>	
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	<b>0.009</b>	
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	<0.01	
Zinc	7440-66-6	0.005	mg/L	<b>0.013</b>	----	----	----	<b>0.049</b>	
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	<b>1.16</b>	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FD01	RB01	TB01	FB01	SW01
Client sampling date / time				19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	20-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908386-011	EP1908386-012	EP1908386-013	EP1908386-014	EP1908386-015	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.89	----	----	----	0.38	
Arsenic	7440-38-2	0.001	mg/L	----	<0.001	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	----	<0.0001	----	----	----	
Chromium	7440-47-3	0.001	mg/L	----	<0.001	----	----	----	
Copper	7440-50-8	0.001	mg/L	----	0.009	----	----	----	
Nickel	7440-02-0	0.001	mg/L	----	<0.001	----	----	----	
Lead	7439-92-1	0.001	mg/L	----	<0.001	----	----	----	
Zinc	7440-66-6	0.005	mg/L	----	<0.005	----	----	----	
Iron	7439-89-6	0.05	mg/L	0.56	----	----	----	1.46	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.03	----	----	----	<0.01	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.03	----	----	----	<0.01	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	1.64	----	----	----	0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.6	----	----	----	2.4	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	2.2	----	----	----	2.4	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.02	----	----	----	0.20	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	----	----	----	0.12	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	----	----	----	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	21.8	----	----	----	2.16	
∅ Total Cations	----	0.01	meq/L	22.5	----	----	----	2.74	
∅ Ionic Balance	----	0.01	%	1.45	----	----	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	----	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	<50	
C15 - C28 Fraction	----	100	µg/L	<100	----	----	----	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FD01	RB01	TB01	FB01	SW01
Client sampling date / time				19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	20-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908386-011	EP1908386-012	EP1908386-013	EP1908386-014	EP1908386-015	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>									
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	----	----	----	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	----	----	----	<100	
>C16 - C34 Fraction	----	100	µg/L	<100	----	----	----	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	----	----	----	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	----	----	----	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	----	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	----	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	----	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	----	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	----	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	----	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	----	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	----	----	----	<10	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	----	----	----	<0.02	
Azinphos-methyl	86-50-0	0.02	µg/L	----	----	----	----	<0.02	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	----	----	----	<0.10	
Carbofenthion	786-19-6	0.02	µg/L	----	----	----	----	<0.02	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	----	----	----	<0.02	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	----	----	----	<0.02	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	----	----	----	<0.2	
Coumaphos	56-72-4	0.01	µg/L	----	----	----	----	<0.01	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	----	----	----	<0.02	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	----	----	----	<0.02	



## Analytical Results

Sub-Matrix: <b>WATER</b> (Matrix: <b>WATER</b> )				Client sample ID	FD01	RB01	TB01	FB01	SW01
Client sampling date / time					19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	20-Aug-2019 00:00
Compound	CAS Number	LOR	Unit		EP1908386-011	EP1908386-012	EP1908386-013	EP1908386-014	EP1908386-015
					Result	Result	Result	Result	Result
<b>EP234A: OP Pesticides - Continued</b>									
Demeton-O	298-03-3	0.02	µg/L		----	----	----	----	<0.02
Demeton-S	126-75-0	0.02	µg/L		----	----	----	----	<0.02
Diazinon	333-41-5	0.01	µg/L		----	----	----	----	<0.01
Dichlorvos	62-73-7	0.20	µg/L		----	----	----	----	<0.20
Dimethoate	60-51-5	0.02	µg/L		----	----	----	----	<0.02
Disulfoton	298-04-4	0.05	µg/L		----	----	----	----	<0.05
Ethion	563-12-2	0.02	µg/L		----	----	----	----	<0.02
EPN	2104-64-5	0.05	µg/L		----	----	----	----	<0.05
Ethoprophos	13194-48-4	0.01	µg/L		----	----	----	----	<0.01
Fenamiphos	22224-92-6	0.01	µg/L		----	----	----	----	<0.01
Fenchlorphos (Ronnol)	299-84-3	10	µg/L		----	----	----	----	<10
Fenitrothion	122-14-5	2	µg/L		----	----	----	----	<2
Fensulfothion	115-90-2	0.01	µg/L		----	----	----	----	<0.01
Fenthion	55-38-9	0.05	µg/L		----	----	----	----	<0.05
Malathion	121-75-5	0.02	µg/L		----	----	----	----	<0.02
Mevinphos	7786-34-7	0.02	µg/L		----	----	----	----	<0.02
Monocrotophos	6923-22-4	0.02	µg/L		----	----	----	----	<0.02
Omethoate	1113-02-6	0.01	µg/L		----	----	----	----	<0.01
Parathion	56-38-2	0.2	µg/L		----	----	----	----	<0.2
Parathion-methyl	298-00-0	0.5	µg/L		----	----	----	----	<0.5
Phorate	298-02-2	0.1	µg/L		----	----	----	----	<0.1
Pirimiphos-ethyl	23505-41-1	0.01	µg/L		----	----	----	----	<0.01
Pirimiphos-methyl	29232-93-7	0.01	µg/L		----	----	----	----	<0.01
Profenofos	41198-08-7	0.01	µg/L		----	----	----	----	<0.01
Prothiofos	34643-46-4	0.1	µg/L		----	----	----	----	<0.1
Sulfotep	3689-24-5	0.005	µg/L		----	----	----	----	<0.005
Sulprofos	35400-43-2	0.05	µg/L		----	----	----	----	<0.05
Terbufos	13071-79-9	0.01	µg/L		----	----	----	----	<0.01
Temephos	3383-96-8	0.02	µg/L		----	----	----	----	<0.02
Tetrachlorvinphos	22248-79-9	0.01	µg/L		----	----	----	----	<0.01
Triazophos	24017-47-8	0.005	µg/L		----	----	----	----	<0.005
Trichlorfon	52-68-6	0.02	µg/L		----	----	----	----	<0.02
Trichloronate	327-98-0	0.5	µg/L		----	----	----	----	<0.5
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%		64.0	----	77.5	64.5	67.4



### Analytical Results

Sub-Matrix: <b>WATER</b> (Matrix: <b>WATER</b> )				Client sample ID	FD01	RB01	TB01	FB01	SW01
Client sampling date / time				19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	19-Aug-2019 00:00	20-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908386-011	EP1908386-012	EP1908386-013	EP1908386-014	EP1908386-015	
				Result	Result	Result	Result	Result	
<b>EP080S: TPH(V)/BTEX Surrogates - Continued</b>									
<b>Toluene-D8</b>	2037-26-5	2	%	<b>114</b>	----	<b>117</b>	<b>117</b>	<b>112</b>	
<b>4-Bromofluorobenzene</b>	460-00-4	2	%	<b>69.4</b>	----	<b>67.6</b>	<b>70.4</b>	<b>69.6</b>	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	WRM_NORTH_SITE_5	BORR_MW32	BORR_MW15	BORR_MW24	Northern_3
Client sampling date / time				20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908386-016	EP1908386-017	EP1908386-018	EP1908386-019	EP1908386-020	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	7.40	5.56	6.63	4.94	5.65	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	918	341	130	1780	9710	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	591	264	74	1440	5660	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	40	44	12	<1	<1	
Total Alkalinity as CaCO3	----	1	mg/L	40	44	12	<1	<1	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	9	58	14	50	12	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	63	<10	7	40	378	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	252	64	28	550	3050	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	16	3	4	1	86	
Magnesium	7439-95-4	1	mg/L	21	6	3	12	206	
Sodium	7440-23-5	1	mg/L	143	46	17	348	1640	
Potassium	7440-09-7	1	mg/L	12	3	5	<1	42	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.10	1.15	0.39	0.20	0.10	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	0.0001	<0.0001	0.0001	<0.0001	0.0002	
Chromium	7440-47-3	0.001	mg/L	<0.001	0.002	<0.001	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	0.003	0.001	<0.001	0.007	0.019	
Copper	7440-50-8	0.001	mg/L	0.027	0.006	0.009	0.041	0.024	
Lead	7439-92-1	0.001	mg/L	0.003	0.001	0.002	0.003	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.028	0.011	0.007	0.007	1.41	
Nickel	7440-02-0	0.001	mg/L	0.032	0.010	0.013	0.016	0.017	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.208	0.064	0.118	0.128	0.089	
Iron	7439-89-6	0.05	mg/L	0.48	2.40	1.52	0.08	0.16	



**Analytical Results**

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		WRM_NORTH_SITE_5	BORR_MW32	BORR_MW15	BORR_MW24	Northern_3
Client sampling date / time				20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00
Compound	CAS Number	LOR	Unit	EP1908386-016	EP1908386-017	EP1908386-018	EP1908386-019	EP1908386-020
				Result	Result	Result	Result	Result
<b>EG020T: Total Metals by ICP-MS</b>								
Aluminium	7429-90-5	0.01	mg/L	1.09	20.2	3.27	72.9	0.24
Iron	7439-89-6	0.05	mg/L	2.01	4.96	5.95	56.5	0.60
<b>EK055G: Ammonia as N by Discrete Analyser</b>								
Ammonia as N	7664-41-7	0.01	mg/L	0.03	5.80	0.38	0.02	1.10
<b>EK055G-NH4: Ammonium as N by DA</b>								
Ammonium as N	14798-03-9_N	0.01	mg/L	0.03	5.80	0.38	0.02	1.10
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.17	0.04	0.14
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	3.9	13.8	1.5	1.9	1.9
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>								
^ Total Nitrogen as N	----	0.1	mg/L	3.9	13.8	1.7	1.9	2.0
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>								
Total Phosphorus as P	----	0.01	mg/L	0.60	1.48	0.08	0.34	0.02
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.37	0.07	<0.01	<0.01	<0.01
<b>EK085M: Sulfide as S2-</b>								
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	0.1	<0.1	<0.1	<0.1
<b>EN055: Ionic Balance</b>								
∅ Total Anions	----	0.01	meq/L	9.22	2.68	1.18	16.3	93.9
∅ Total Cations	----	0.01	meq/L	9.05	2.72	1.31	16.2	93.6
∅ Ionic Balance	----	0.01	%	0.91	0.68	5.56	0.53	0.13
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	270	<50	340	<50
C15 - C28 Fraction	----	100	µg/L	<100	180	<100	250	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	450	<50	640	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	<100	250	<100	290	<100



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	WRM_NORTH_SITE_5	BORR_MW32	BORR_MW15	BORR_MW24	Northern_3
Client sampling date / time				20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00
Compound	CAS Number	LOR	Unit	EP1908386-016	EP1908386-017	EP1908386-018	EP1908386-019	EP1908386-020	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	200	<100	290	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	450	<100	580	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	250	<100	290	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	<10	----	----	----	<10	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	----	----	----	<0.02	
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	----	----	----	<0.02	
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	----	----	----	<0.10	
Carbofenthion	786-19-6	0.02	µg/L	<0.02	----	----	----	<0.02	
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	----	----	----	<0.02	
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	----	----	----	<0.02	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	----	----	----	<0.2	
Coumaphos	56-72-4	0.01	µg/L	<0.01	----	----	----	<0.01	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	----	----	----	<0.02	
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	----	----	----	<0.02	
Demeton-O	298-03-3	0.02	µg/L	<0.02	----	----	----	<0.02	
Demeton-S	126-75-0	0.02	µg/L	<0.02	----	----	----	<0.02	
Diazinon	333-41-5	0.01	µg/L	<0.01	----	----	----	<0.01	
Dichlorvos	62-73-7	0.20	µg/L	<0.20	----	----	----	<0.20	
Dimethoate	60-51-5	0.02	µg/L	<0.02	----	----	----	<0.02	
Disulfoton	298-04-4	0.05	µg/L	<0.05	----	----	----	<0.05	
Ethion	563-12-2	0.02	µg/L	<0.02	----	----	----	<0.02	



## Analytical Results

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

Client sample ID

				WRM_NORTH_SITE_5	BORR_MW32	BORR_MW15	BORR_MW24	Northern_3
Client sampling date / time				20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00
Compound	CAS Number	LOR	Unit	EP1908386-016	EP1908386-017	EP1908386-018	EP1908386-019	EP1908386-020
				Result	Result	Result	Result	Result
<b>EP234A: OP Pesticides - Continued</b>								
EPN	2104-64-5	0.05	µg/L	<0.05	----	----	----	<0.05
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	----	----	----	<0.01
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	----	----	----	<0.01
Fenchlorphos (Ronnell)	299-84-3	10	µg/L	<10	----	----	----	<10
Fenitrothion	122-14-5	2	µg/L	<2	----	----	----	<2
Fensulfothion	115-90-2	0.01	µg/L	<0.01	----	----	----	<0.01
Fenthion	55-38-9	0.05	µg/L	<0.05	----	----	----	<0.05
Malathion	121-75-5	0.02	µg/L	<0.02	----	----	----	<0.02
Mevinphos	7786-34-7	0.02	µg/L	<0.02	----	----	----	<0.02
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	----	----	----	<0.02
Omethoate	1113-02-6	0.01	µg/L	<0.01	----	----	----	<0.01
Parathion	56-38-2	0.2	µg/L	<0.2	----	----	----	<0.2
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	----	----	----	<0.5
Phorate	298-02-2	0.1	µg/L	<0.1	----	----	----	<0.1
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	----	----	----	<0.01
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	----	----	----	<0.01
Profenofos	41198-08-7	0.01	µg/L	<0.01	----	----	----	<0.01
Prothiofos	34643-46-4	0.1	µg/L	<0.1	----	----	----	<0.1
Sulfotep	3689-24-5	0.005	µg/L	<0.005	----	----	----	<0.005
Sulprofos	35400-43-2	0.05	µg/L	<0.05	----	----	----	<0.05
Terbufos	13071-79-9	0.01	µg/L	<0.01	----	----	----	<0.01
Temephos	3383-96-8	0.02	µg/L	<0.02	----	----	----	<0.02
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	----	----	----	<0.01
Triazophos	24017-47-8	0.005	µg/L	<0.005	----	----	----	<0.005
Trichlorfon	52-68-6	0.02	µg/L	<0.02	----	----	----	<0.02
Trichloronate	327-98-0	0.5	µg/L	<0.5	----	----	----	<0.5
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	2	%	<b>63.6</b>	<b>103</b>	<b>80.1</b>	<b>81.0</b>	<b>67.7</b>
Toluene-D8	2037-26-5	2	%	<b>112</b>	<b>97.9</b>	<b>118</b>	<b>117</b>	<b>117</b>
4-Bromofluorobenzene	460-00-4	2	%	<b>69.9</b>	<b>79.8</b>	<b>68.8</b>	<b>66.6</b>	<b>70.2</b>





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW03	BH11.1	BORR_MW39	FD02	RB02
Client sampling date / time				20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908386-021	EP1908386-022	EP1908386-023	EP1908386-024	EP1908386-025	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	7.48	7.48	5.85	6.95	----	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	2390	1480	345	262	----	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	1420	858	834	228	----	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	41	161	17	26	----	
Total Alkalinity as CaCO3	----	1	mg/L	41	161	17	26	----	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	3	20	36	16	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	56	92	63	<1	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	756	343	53	58	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	40	7	<1	8	----	
Magnesium	7439-95-4	1	mg/L	76	19	<1	5	----	
Sodium	7440-23-5	1	mg/L	332	293	72	41	----	
Potassium	7440-09-7	1	mg/L	4	16	<1	4	----	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.04	0.02	0.17	0.33	----	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	0.001	----	
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----	
Copper	7440-50-8	0.001	mg/L	0.020	0.015	0.013	0.002	----	
Lead	7439-92-1	0.001	mg/L	0.001	<0.001	<0.001	<0.001	----	
Manganese	7439-96-5	0.001	mg/L	0.081	0.285	0.044	0.015	----	
Nickel	7440-02-0	0.001	mg/L	0.020	0.008	0.010	<0.001	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----	
Zinc	7440-66-6	0.005	mg/L	0.093	0.043	0.067	0.007	----	
Iron	7439-89-6	0.05	mg/L	0.18	8.71	0.18	1.18	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW03	BH11.1	BORR_MW39	FD02	RB02
Client sampling date / time				20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908386-021	EP1908386-022	EP1908386-023	EP1908386-024	EP1908386-025	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.10	0.38	19.9	0.45	----	
Arsenic	7440-38-2	0.001	mg/L	----	----	----	----	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	----	<0.0001	
Chromium	7440-47-3	0.001	mg/L	----	----	----	----	<0.001	
Copper	7440-50-8	0.001	mg/L	----	----	----	----	0.008	
Nickel	7440-02-0	0.001	mg/L	----	----	----	----	<0.001	
Lead	7439-92-1	0.001	mg/L	----	----	----	----	<0.001	
Zinc	7440-66-6	0.005	mg/L	----	----	----	----	<0.005	
Iron	7439-89-6	0.05	mg/L	0.79	29.9	21.2	1.53	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.01	0.19	0.01	<0.01	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	<0.01	0.19	<0.01	<0.01	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.25	<0.01	<0.01	0.01	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.4	0.4	0.4	2.5	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.6	0.4	0.4	2.5	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	<0.01	1.53	0.19	0.21	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.07	<0.01	0.13	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	23.3	14.8	3.15	2.16	----	
∅ Total Cations	----	0.01	meq/L	22.8	15.1	3.13	2.70	----	
∅ Ionic Balance	----	0.01	%	1.12	0.87	0.23	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	----	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	----	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	----	



### Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		SW03	BH11.1	BORR_MW39	FD02	RB02
Client sampling date / time		20-Aug-2019 00:00		20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00
Compound	CAS Number	LOR	Unit	EP1908386-021	EP1908386-022	EP1908386-023	EP1908386-024	EP1908386-025
				Result	Result	Result	Result	Result
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>								
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	----
<b>EP080: BTEXN</b>								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	----
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	----
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	----
<b>EP204: Glyphosate and AMPA</b>								
Glyphosate	1071-83-6	10	µg/L	<10	----	----	<10	----
<b>EP234A: OP Pesticides</b>								
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	----	----	<0.02	----
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	----	----	<0.02	----
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	----	----	<0.10	----
Carbofenothion	786-19-6	0.02	µg/L	<0.02	----	----	<0.02	----
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	----	----	<0.02	----
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	----	----	<0.02	----
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	----	----	<0.2	----
Coumaphos	56-72-4	0.01	µg/L	<0.01	----	----	<0.01	----
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	----	----	<0.02	----
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	----	----	<0.02	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW03	BH11.1	BORR_MW39	FD02	RB02
Client sampling date / time				20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908386-021	EP1908386-022	EP1908386-023	EP1908386-024	EP1908386-025	
				Result	Result	Result	Result	Result	
<b>EP234A: OP Pesticides - Continued</b>									
Demeton-O	298-03-3	0.02	µg/L	<0.02	----	----	<0.02	----	
Demeton-S	126-75-0	0.02	µg/L	<0.02	----	----	<0.02	----	
Diazinon	333-41-5	0.01	µg/L	<0.01	----	----	<0.01	----	
Dichlorvos	62-73-7	0.20	µg/L	<0.20	----	----	<0.20	----	
Dimethoate	60-51-5	0.02	µg/L	<0.02	----	----	<0.02	----	
Disulfoton	298-04-4	0.05	µg/L	<0.05	----	----	<0.05	----	
Ethion	563-12-2	0.02	µg/L	<0.02	----	----	<0.02	----	
EPN	2104-64-5	0.05	µg/L	<0.05	----	----	<0.05	----	
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	----	----	<0.01	----	
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	----	----	<0.01	----	
Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	----	----	<10	----	
Fenitrothion	122-14-5	2	µg/L	<2	----	----	<2	----	
Fensulfothion	115-90-2	0.01	µg/L	<0.01	----	----	<0.01	----	
Fenthion	55-38-9	0.05	µg/L	<0.05	----	----	<0.05	----	
Malathion	121-75-5	0.02	µg/L	<0.02	----	----	<0.02	----	
Mevinphos	7786-34-7	0.02	µg/L	<0.02	----	----	<0.02	----	
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	----	----	<0.02	----	
Omethoate	1113-02-6	0.01	µg/L	<0.01	----	----	<0.01	----	
Parathion	56-38-2	0.2	µg/L	<0.2	----	----	<0.2	----	
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	----	----	<0.5	----	
Phorate	298-02-2	0.1	µg/L	<0.1	----	----	<0.1	----	
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	----	----	<0.01	----	
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	----	----	<0.01	----	
Profenofos	41198-08-7	0.01	µg/L	<0.01	----	----	<0.01	----	
Prothiofos	34643-46-4	0.1	µg/L	<0.1	----	----	<0.1	----	
Sulfotep	3689-24-5	0.005	µg/L	<0.005	----	----	<0.005	----	
Sulprofos	35400-43-2	0.05	µg/L	<0.05	----	----	<0.05	----	
Terbufos	13071-79-9	0.01	µg/L	<0.01	----	----	<0.01	----	
Temephos	3383-96-8	0.02	µg/L	<0.02	----	----	<0.02	----	
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	----	----	<0.01	----	
Triazophos	24017-47-8	0.005	µg/L	<0.005	----	----	<0.005	----	
Trichlorfon	52-68-6	0.02	µg/L	<0.02	----	----	<0.02	----	
Trichloronate	327-98-0	0.5	µg/L	<0.5	----	----	<0.5	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	95.3	79.8	101	77.2	----	



**Analytical Results**

Sub-Matrix: <b>WATER</b> (Matrix: <b>WATER</b> )				Client sample ID	SW03	BH11.1	BORR_MW39	FD02	RB02
Client sampling date / time				20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00	20-Aug-2019 00:00
Compound	CAS Number	LOR	Unit	EP1908386-021	EP1908386-022	EP1908386-023	EP1908386-024	EP1908386-025	EP1908386-025
				Result	Result	Result	Result	Result	Result
<b>EP080S: TPH(V)/BTEX Surrogates - Continued</b>									
<b>Toluene-D8</b>	2037-26-5	2	%	<b>98.7</b>	<b>108</b>	<b>97.6</b>	<b>112</b>	<b>----</b>	<b>----</b>
<b>4-Bromofluorobenzene</b>	460-00-4	2	%	<b>79.2</b>	<b>71.9</b>	<b>81.0</b>	<b>71.4</b>	<b>----</b>	<b>----</b>



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB02	FB02	----	----	----
Client sampling date / time				20-Aug-2019 00:00	20-Aug-2019 00:00	----	----	----	
Compound	CAS Number	LOR	Unit	EP1908386-026	EP1908386-027	-----	-----	-----	
				Result	Result	----	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	----	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	----	----	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	----	----	----	
Toluene	108-88-3	2	µg/L	<2	<2	----	----	----	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	----	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	----	----	----	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	----	----	----	
^ Total Xylenes	----	2	µg/L	<2	<2	----	----	----	
^ Sum of BTEX	----	1	µg/L	<1	<1	----	----	----	
Naphthalene	91-20-3	5	µg/L	<5	<5	----	----	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	80.8	69.2	----	----	----	
Toluene-D8	2037-26-5	2	%	114	112	----	----	----	
4-Bromofluorobenzene	460-00-4	2	%	70.9	68.7	----	----	----	



## Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	61	141
Toluene-D8	2037-26-5	73	126
4-Bromofluorobenzene	460-00-4	60	125

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1908386	Page	: 1 of 16
Client	: GHD PTY LTD	Laboratory	: Environmental Division Perth
Contact	: MS VICKI DAVIES	Telephone	: 08 9406 1311
Project	: 6137041	Date Samples Received	: 21-Aug-2019
Site	:	Issue Date	: 30-Aug-2019
Sampler	: DOMINIQUE SHUTTLEWORTH, Emily Evans	No. of samples received	: 27
Order number	: 6137041	No. of samples analysed	: 27

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.





**Outliers : Quality Control Samples**

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	EP1908374--001	Anonymous	Nitrite + Nitrate as N	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP234A: OP Pesticides	ES1926824--001	Anonymous	Malathion	121-75-5	54.0 %	70-130%	Recovery less than lower data quality objective
EP234A: OP Pesticides	ES1926824--001	Anonymous	Omethoate	1113-02-6	54.0 %	70-130%	Recovery less than lower data quality objective

**Outliers : Analysis Holding Time Compliance**

Matrix: **WATER**

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EA005P: pH by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural</b>							
BORR_MW13, BORR_MW18, BORR_MW19b, BORR_MW20, BORR_MW22, FD01	BORR_MW14, BORR_MW19, Northern 5, North Creek 4, BORR_MW22b,	----	----	----	22-Aug-2019	19-Aug-2019	3
<b>Clear Plastic Bottle - Natural</b>							
SW01, BORR_MW32, BORR_MW24, SW03, BORR_MW39,	WRM_NORTH_SITE_5, BORR_MW15, Northern_3, BH11.1, FD02	----	----	----	22-Aug-2019	20-Aug-2019	2
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
<b>Amber Glass Bottle - Unpreserved</b>							
FB02		28-Aug-2019	27-Aug-2019	1	28-Aug-2019	27-Aug-2019	1
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>							
<b>Amber Glass Bottle - Unpreserved</b>							
FB02		28-Aug-2019	27-Aug-2019	1	28-Aug-2019	27-Aug-2019	1
<b>EP080: BTEXN</b>							
<b>Amber Glass Bottle - Unpreserved</b>							
FB02		28-Aug-2019	27-Aug-2019	1	28-Aug-2019	27-Aug-2019	1

**Outliers : Frequency of Quality Control Samples**

Matrix: **WATER**



Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
TRH - Semivolatile Fraction	0	28	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>					
TRH - Semivolatile Fraction	0	28	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA005P: pH by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA005-P)</b>								
BORR_MW13, BORR_MW18, BORR_MW19b, BORR_MW20, BORR_MW22, FD01	BORR_MW14, BORR_MW19, Northern 5, North Creek 4, BORR_MW22b,	19-Aug-2019	----	----	----	22-Aug-2019	19-Aug-2019	*
<b>Clear Plastic Bottle - Natural (EA005-P)</b>								
SW01, BORR_MW32, BORR_MW24, SW03, BORR_MW39,	WRM_NORTH_SITE_5, BORR_MW15, Northern_3, BH11.1, FD02	20-Aug-2019	----	----	----	22-Aug-2019	20-Aug-2019	*



Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA010P: Conductivity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA010-P)</b> BORR_MW13, BORR_MW18, BORR_MW19b, BORR_MW20, BORR_MW22, FD01	BORR_MW14, BORR_MW19, Northern 5, North Creek 4, BORR_MW22b,	19-Aug-2019	----	----	----	22-Aug-2019	16-Sep-2019	✓
<b>Clear Plastic Bottle - Natural (EA010-P)</b> SW01, BORR_MW32, BORR_MW24, SW03, BORR_MW39,	WRM_NORTH_SITE_5, BORR_MW15, Northern_3, BH11.1, FD02	20-Aug-2019	----	----	----	22-Aug-2019	17-Sep-2019	✓
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
<b>Clear Plastic Bottle - Natural (EA015H)</b> BORR_MW13, BORR_MW18, BORR_MW19b, BORR_MW20, BORR_MW22, FD01	BORR_MW14, BORR_MW19, Northern 5, North Creek 4, BORR_MW22b,	19-Aug-2019	----	----	----	26-Aug-2019	26-Aug-2019	✓
<b>Clear Plastic Bottle - Natural (EA015H)</b> SW01, BORR_MW32, BORR_MW24, SW03, BORR_MW39,	WRM_NORTH_SITE_5, BORR_MW15, Northern_3, BH11.1, FD02	20-Aug-2019	----	----	----	23-Aug-2019	27-Aug-2019	✓
<b>ED037P: Alkalinity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (ED037-P)</b> BORR_MW13, BORR_MW18, BORR_MW19b, BORR_MW20, BORR_MW22, FD01	BORR_MW14, BORR_MW19, Northern 5, North Creek 4, BORR_MW22b,	19-Aug-2019	----	----	----	22-Aug-2019	02-Sep-2019	✓
<b>Clear Plastic Bottle - Natural (ED037-P)</b> SW01, BORR_MW32, BORR_MW24, SW03, BORR_MW39,	WRM_NORTH_SITE_5, BORR_MW15, Northern_3, BH11.1, FD02	20-Aug-2019	----	----	----	22-Aug-2019	03-Sep-2019	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>ED038A: Acidity</b>								
<b>Clear Plastic Bottle - Natural (ED038)</b> BORR_MW13, BORR_MW18, BORR_MW19b, BORR_MW20, BORR_MW22, FD01	BORR_MW14, BORR_MW19, Northern 5, North Creek 4, BORR_MW22b,	19-Aug-2019	----	----	----	22-Aug-2019	02-Sep-2019	✓
<b>Clear Plastic Bottle - Natural (ED038)</b> SW01, BORR_MW32, BORR_MW24, SW03, BORR_MW39,	WRM_NORTH_SITE_5, BORR_MW15, Northern_3, BH11.1, FD02	20-Aug-2019	----	----	----	22-Aug-2019	03-Sep-2019	✓
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
<b>Clear Plastic Bottle - Natural (ED041G)</b> BORR_MW13, BORR_MW18, BORR_MW19b, BORR_MW20, BORR_MW22, FD01	BORR_MW14, BORR_MW19, Northern 5, North Creek 4, BORR_MW22b,	19-Aug-2019	----	----	----	21-Aug-2019	16-Sep-2019	✓
<b>Clear Plastic Bottle - Natural (ED041G)</b> SW01, BORR_MW32, BORR_MW24, SW03, BORR_MW39,	WRM_NORTH_SITE_5, BORR_MW15, Northern_3, BH11.1, FD02	20-Aug-2019	----	----	----	21-Aug-2019	17-Sep-2019	✓
<b>ED045G: Chloride by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Natural (ED045G)</b> BORR_MW13, BORR_MW18, BORR_MW19b, BORR_MW20, BORR_MW22, FD01	BORR_MW14, BORR_MW19, Northern 5, North Creek 4, BORR_MW22b,	19-Aug-2019	----	----	----	21-Aug-2019	16-Sep-2019	✓
<b>Clear Plastic Bottle - Natural (ED045G)</b> SW01, BORR_MW32, BORR_MW24, SW03, BORR_MW39,	WRM_NORTH_SITE_5, BORR_MW15, Northern_3, BH11.1, FD02	20-Aug-2019	----	----	----	21-Aug-2019	17-Sep-2019	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>ED093F: Dissolved Major Cations</b>								
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> BORR_MW13, BORR_MW19, Northern 5, North Creek 4, BORR_MW22b,	BORR_MW18, BORR_MW19b, BORR_MW20, BORR_MW22, FD01	19-Aug-2019	----	----	----	23-Aug-2019	16-Sep-2019	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> SW01, BORR_MW32, BORR_MW24, SW03, BORR_MW39,	WRM_NORTH_SITE_5, BORR_MW15, Northern_3, BH11.1, FD02	20-Aug-2019	----	----	----	23-Aug-2019	17-Sep-2019	✓
<b>Clear Plastic Bottle - Nitric Acid; Filtered (ED093F)</b> BORR_MW14		19-Aug-2019	----	----	----	23-Aug-2019	16-Sep-2019	✓
<b>EG020F: Dissolved Metals by ICP-MS</b>								
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> BORR_MW13, BORR_MW19, Northern 5, North Creek 4, BORR_MW22b,	BORR_MW18, BORR_MW19b, BORR_MW20, BORR_MW22, FD01	19-Aug-2019	----	----	----	23-Aug-2019	15-Feb-2020	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> SW01, BORR_MW32, BORR_MW24, SW03, BORR_MW39,	WRM_NORTH_SITE_5, BORR_MW15, Northern_3, BH11.1, FD02	20-Aug-2019	----	----	----	23-Aug-2019	16-Feb-2020	✓
<b>EG020T: Total Metals by ICP-MS</b>								
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> BORR_MW13, BORR_MW18, BORR_MW19b, BORR_MW20, BORR_MW22, FD01,	BORR_MW14, BORR_MW19, Northern 5, North Creek 4, BORR_MW22b, RB01	19-Aug-2019	22-Aug-2019	15-Feb-2020	✓	22-Aug-2019	15-Feb-2020	✓
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> SW01, BORR_MW32, BORR_MW24, SW03, BORR_MW39, RB02	WRM_NORTH_SITE_5, BORR_MW15, Northern_3, BH11.1, FD02,	20-Aug-2019	22-Aug-2019	16-Feb-2020	✓	22-Aug-2019	16-Feb-2020	✓



Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK055G: Ammonia as N by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> BORR_MW13, BORR_MW18, BORR_MW19b, BORR_MW20, BORR_MW22, FD01	BORR_MW14, BORR_MW19, Northern 5, North Creek 4, BORR_MW22b,	19-Aug-2019	----	----	----	21-Aug-2019	16-Sep-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> SW01, BORR_MW32, BORR_MW24, SW03, BORR_MW39,	WRM_NORTH_SITE_5, BORR_MW15, Northern_3, BH11.1, FD02	20-Aug-2019	----	----	----	21-Aug-2019	17-Sep-2019	✓
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> BORR_MW13, BORR_MW18, BORR_MW19b, BORR_MW20, BORR_MW22, FD01	BORR_MW14, BORR_MW19, Northern 5, North Creek 4, BORR_MW22b,	19-Aug-2019	----	----	----	21-Aug-2019	16-Sep-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> SW01, BORR_MW32, BORR_MW24, SW03, BORR_MW39,	WRM_NORTH_SITE_5, BORR_MW15, Northern_3, BH11.1, FD02	20-Aug-2019	----	----	----	21-Aug-2019	17-Sep-2019	✓
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> BORR_MW13, BORR_MW18, BORR_MW19b, BORR_MW20, BORR_MW22, FD01	BORR_MW14, BORR_MW19, Northern 5, North Creek 4, BORR_MW22b,	19-Aug-2019	26-Aug-2019	16-Sep-2019	✓	27-Aug-2019	16-Sep-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> SW01, BORR_MW32, BORR_MW24, SW03, BORR_MW39,	WRM_NORTH_SITE_5, BORR_MW15, Northern_3, BH11.1, FD02	20-Aug-2019	26-Aug-2019	17-Sep-2019	✓	27-Aug-2019	17-Sep-2019	✓



Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b>								
BORR_MW13, BORR_MW18, BORR_MW19b, BORR_MW20, BORR_MW22, FD01	BORR_MW14, BORR_MW19, Northern 5, North Creek 4, BORR_MW22b,	19-Aug-2019	26-Aug-2019	16-Sep-2019	✓	27-Aug-2019	16-Sep-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b>								
SW01, BORR_MW32, BORR_MW24, SW03, BORR_MW39,	WRM_NORTH_SITE_5, BORR_MW15, Northern_3, BH11.1, FD02	20-Aug-2019	26-Aug-2019	17-Sep-2019	✓	27-Aug-2019	17-Sep-2019	✓
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>								
<b>Clear Plastic Bottle - Natural (EK071G)</b>								
BORR_MW13, BORR_MW18, BORR_MW19b, BORR_MW20, BORR_MW22, FD01	BORR_MW14, BORR_MW19, Northern 5, North Creek 4, BORR_MW22b,	19-Aug-2019	----	----	----	21-Aug-2019	21-Aug-2019	✓
<b>Clear Plastic Bottle - Natural (EK071G)</b>								
SW01, BORR_MW32, BORR_MW24, SW03, BORR_MW39,	WRM_NORTH_SITE_5, BORR_MW15, Northern_3, BH11.1, FD02	20-Aug-2019	----	----	----	21-Aug-2019	22-Aug-2019	✓
<b>EK085M: Sulfide as S2-</b>								
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b>								
BORR_MW13, BORR_MW18, BORR_MW19b, BORR_MW20, BORR_MW22, FD01	BORR_MW14, BORR_MW19, Northern 5, North Creek 4, BORR_MW22b,	19-Aug-2019	----	----	----	23-Aug-2019	26-Aug-2019	✓
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b>								
SW01, BORR_MW32, BORR_MW24, SW03, BORR_MW39,	WRM_NORTH_SITE_5, BORR_MW15, Northern_3, BH11.1, FD02	20-Aug-2019	----	----	----	27-Aug-2019	27-Aug-2019	✓



Matrix: **WATER** Evaluation: ✘ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BORR_MW13, BORR_MW18, BORR_MW19b, BORR_MW20, BORR_MW22, FD01	BORR_MW14, BORR_MW19, Northern 5, North Creek 4, BORR_MW22b,	19-Aug-2019	22-Aug-2019	26-Aug-2019	✔	23-Aug-2019	01-Oct-2019	✔	
<b>Amber Glass Bottle - Unpreserved (EP071)</b> SW01, BORR_MW32, BORR_MW24, SW03, BORR_MW39,	WRM_NORTH_SITE_5, BORR_MW15, Northern_3, BH11.1, FD02	20-Aug-2019	22-Aug-2019	27-Aug-2019	✔	23-Aug-2019	01-Oct-2019	✔	
<b>Amber Glass Bottle - Unpreserved (EP080)</b> FB02		20-Aug-2019	28-Aug-2019	27-Aug-2019	✘	28-Aug-2019	27-Aug-2019	✘	
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BORR_MW13, BORR_MW18, BORR_MW19b, BORR_MW20, BORR_MW22, FD01, FB01	BORR_MW14, BORR_MW19, Northern 5, North Creek 4, BORR_MW22b, TB01,	19-Aug-2019	28-Aug-2019	02-Sep-2019	✔	28-Aug-2019	02-Sep-2019	✔	
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> SW01, BORR_MW32, BORR_MW24, SW03, BORR_MW39, TB02	WRM_NORTH_SITE_5, BORR_MW15, Northern_3, BH11.1, FD02,	20-Aug-2019	28-Aug-2019	03-Sep-2019	✔	28-Aug-2019	03-Sep-2019	✔	





Matrix: **WATER** Evaluation: ✘ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>								
<b>Amber Glass Bottle - Unpreserved (EP071)</b>								
BORR_MW13, BORR_MW18, BORR_MW19b, BORR_MW20, BORR_MW22, FD01	BORR_MW14, BORR_MW19, Northern 5, North Creek 4, BORR_MW22b,	19-Aug-2019	22-Aug-2019	26-Aug-2019	✔	23-Aug-2019	01-Oct-2019	✔
<b>Amber Glass Bottle - Unpreserved (EP071)</b>								
SW01, BORR_MW32, BORR_MW24, SW03, BORR_MW39,	WRM_NORTH_SITE_5, BORR_MW15, Northern_3, BH11.1, FD02	20-Aug-2019	22-Aug-2019	27-Aug-2019	✔	23-Aug-2019	01-Oct-2019	✔
<b>Amber Glass Bottle - Unpreserved (EP080)</b>								
FB02		20-Aug-2019	28-Aug-2019	27-Aug-2019	✘	28-Aug-2019	27-Aug-2019	✘
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
BORR_MW13, BORR_MW18, BORR_MW19b, BORR_MW20, BORR_MW22, FD01, FB01	BORR_MW14, BORR_MW19, Northern 5, North Creek 4, BORR_MW22b, TB01,	19-Aug-2019	28-Aug-2019	02-Sep-2019	✔	28-Aug-2019	02-Sep-2019	✔
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
SW01, BORR_MW32, BORR_MW24, SW03, BORR_MW39, TB02	WRM_NORTH_SITE_5, BORR_MW15, Northern_3, BH11.1, FD02,	20-Aug-2019	28-Aug-2019	03-Sep-2019	✔	28-Aug-2019	03-Sep-2019	✔



Matrix: WATER

Evaluation: ✘ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080: BTEXN</b>								
<b>Amber Glass Bottle - Unpreserved (EP080)</b> FB02	20-Aug-2019	28-Aug-2019	27-Aug-2019	✘	28-Aug-2019	27-Aug-2019	✘	
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BORR_MW13, BORR_MW18, BORR_MW19b, BORR_MW20, BORR_MW22, FD01, FB01	BORR_MW14, BORR_MW19, Northern 5, North Creek 4, BORR_MW22b, TB01,	19-Aug-2019	28-Aug-2019	02-Sep-2019	✔	28-Aug-2019	02-Sep-2019	✔
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> SW01, BORR_MW32, BORR_MW24, SW03, BORR_MW39, TB02	WRM_NORTH_SITE_5, BORR_MW15, Northern_3, BH11.1, FD02,	20-Aug-2019	28-Aug-2019	03-Sep-2019	✔	28-Aug-2019	03-Sep-2019	✔
<b>EP204: Glyphosate and AMPA</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b> Northern 5,	North Creek 4	19-Aug-2019	----	----	----	23-Aug-2019	02-Sep-2019	✔
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b> SW01, Northern_3, FD02	WRM_NORTH_SITE_5, SW03,	20-Aug-2019	----	----	----	23-Aug-2019	03-Sep-2019	✔
<b>EP234A: OP Pesticides</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> Northern 5,	North Creek 4	19-Aug-2019	----	----	----	26-Aug-2019	26-Aug-2019	✔
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> SW01, Northern_3, FD02	WRM_NORTH_SITE_5, SW03,	20-Aug-2019	----	----	----	26-Aug-2019	27-Aug-2019	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Laboratory Duplicates (DUP)</b>							
Acidity as Calcium Carbonate	ED038	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	4	39	10.26	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	3	27	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	4	32	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	4	38	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	4	39	10.26	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	3	28	10.71	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	2	15	13.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	3	26	11.54	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	4	32	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	32	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	4	32	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	38	10.53	10.53	✔	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	21	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	4	38	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	21	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	28	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	25	12.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Acidity as Calcium Carbonate	ED038	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	4	39	10.26	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	27	7.41	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	4	32	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	38	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	39	5.13	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	28	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	15	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	26	15.38	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	32	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	32	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	32	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	38	10.53	10.53	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Alkalinity by PC Titrator	ED037-P	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	38	5.26	5.26	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Ammonia as N by Discrete analyser	EK055G	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	28	0.00	5.00	*	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3)  Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3)  Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ammonium as N	EK055G-NH4	WATER	Ammonium in the sample is reported as the ionised / unionised fractions by the use of a nomograph and the initial pH and Temperature. Ammonia is determined by direct colorimetry by Discrete Analyser according to APHA 4500-NH3 G. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Sulfide as S2-	EK085	WATER	In house: Referenced to APHA 4500-S2- D. Sulfide species present in water samples are immediately precipitated when collected in pretreated caustic/zinc acetate preserved sample containers. The sulphides are coloured using methylene blue indicator. Non-detects may be screened by comparison against a standard at half-LOR, otherwise samples are measured using UV-VIS detection at 664nm. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatle Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Glyphosate and AMPA	EP204	WATER	In house: Pre-column derivatisation LCMS (ES in negative mode). Water samples are derivatised with 9-fluorenyl methoxycarbonyl chloroformate (FMOCl) in alkaline condition. The derivatives of glyphosate and AMPA are separated by a C8 column and determined by MS.
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CHAIN OF CUSTODY RECORD  
AND ANALYSIS REQUEST



GHD  
Level 10, 999 Hay Street  
Perth WA 6000

PO Box 3106  
Perth WA 6832

Reception Ph: 08 6222 8222

Project ID (as per ESdat set up; no spaces): 6137041  
 PO Number (to be invoiced): 6137041  
 Laboratory: ALS Laboratory  
 Address: 26 Bialli Way, Nangara WA  
 Laboratory Contact: Marnie Ross Thompson

Laboratory Quote No.: EP/489/19 v3  
 Turnaround Time Standard

Job Manager (Invoice) & GHD accounts: Vicki Davies  
 Email Address (Results): vicki.davies@ghd.com  
emily.evans@ghd.com

GHD Sample ID	Lab Sample ID	Date	Time	Container				Analyses										Remarks						
				Sample Matrix - Soil/S Sludge/Water/Air	Type - Bottle/Jar/ Vial (Bag/Cellular/Plastic)	Preservative (Unpreserved/HCl/ H2SO4/HNO3/Other)	No	As per AS/NZS 4380 EP/489/19 v3	As per AS/NZS 4380 EP/489/19 v3	Total Metals	TRH16-CA/ STEYN									HOLD				
BORR-MW13	1	19/8/19		W	B		8	✓																
BORR-MW14	2	19/8/19		W	B		8	✓																too turbid to field filter - please filter at lab
BORR-MW18	3	19/8/19		W	B		8	✓																
BORR-MW19	4	19/8/19		W	B		8	✓																
BORR-MW19b	5	19/8/19		W	B		8	✓																
Northern 5	6	19/8/19		W	B		10		✓															
BORR-MW20	7	19/08/19		W	B		8	✓																
North Creek 4	8	19/8/19		W	B		10		✓															
BORR-MW22	9	19/8/19		W	B		8	✓																
BORR-MW22b	10	19/8/19		W	B		8	✓																
FD01	11	19/8/19		W	B		8	✓																
RB01	12	19/8/19		W	B		1		✓															
TB01	13	19/8/19		W	B		1		✓															
FB01	14	19/8/19		W	B		1		✓															
FS01	MGT	19/8/19		W	B		8																	FWD EUROFINIS

Environmental Division  
Perth  
Work Order Reference  
**EP1908386**

Telephone: +61-8-9406 1301

Sampled by: Emily Evans + Dom Shuttleworth Date/Time: 19/08/19 Relinquished by: Emily Evans + Ian Oglesby Date/Time: 20/08/19  
 Received by: MP Date/Time: 21/8/19 Relinquished by: Date/Time:

1245



CHAIN OF CUSTODY RECORD  
AND ANALYSIS REQUEST



GHD  
Level 10, 999 Hay Street  
Perth WA 6000  
PO Box 3106  
Perth WA 6832

Reception Ph: 08 6222 8222

Project ID (as per ESdat set up; no spaces) 6137041 PO Number (to be invoiced) 6137041  
 Laboratory: ALB  
 Address:  
 Laboratory Contact:

Laboratory Quote No. EP148919 V3 Turnaround Time Standard  
 Job Manager (Invoice) & GHD accounts VICKI DAVIES Email Address (Results)

GHD Sample ID	Lab Sample ID	Date	Time	Sample Matrix (Soil/Sediment/Water/Air)	Container				Analyses							Remarks		
					Type (Bottle/Jar/Vial/Bag/Glass/Plastic)	Preservative (Unpreserved/HCl/H2SO4/HNO3/Other)	No	SW SUITE	GW SUITE	<del>XXXXXXXXXX</del>	<del>XXXXXXXXXX</del>	Rin suite	transport suite	field suite	HOLD			
SW01	15	20/8/19	—	W	B		10	X										
WRM_NORTH_SITE_516		11	—	W	B		10	X										
BORR_MW32	17	11	—	W	B		8		X									
BORR_MW15	16	11	—	W	B		8		X									
BORR_MW24	14	11	—	W	B		8		X									
northern_3	26	11	—	W	B		10	X										
SW03	21	11	—	W	B		10	X										
BH11.1	22	11	—	W	B		8		X									
BORR_MW39	23	11	—	W	B		8		X									
FD02	24	11	—	W	B		10	X										
RB02	25	11	—	W	B		1					X						
TB02	26	11	—	W	V		1						X					
FB02	27	11	—	W	V		1							X				

Sampled by: lan Oglesby + Emily Evans Date/Time: 20.8.19 Relinquished by: lan Oglesby + Emily Evans Date/Time: 20.8.19  
 Received by: MD Date/Time: 21/8/19 Relinquished by: Date/Time:

1245

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>EP1908496</b> <b>Client</b> : <b>GHD PTY LTD</b> <b>Contact</b> : <b>MS VICKI DAVIES</b> <b>Address</b> : <b>999 HAY STREET</b> <b>PERTH WA, AUSTRALIA 6000</b>  <b>Telephone</b> : ---- <b>Project</b> : <b>6137041</b> <b>Order number</b> : <b>6137041 (08.0831)</b> <b>C-O-C number</b> : ---- <b>Sampler</b> : <b>DOMINIQUE SHUTTLEWORTH, Emily Evans</b> <b>Site</b> : ---- <b>Quote number</b> : <b>EP/489/19 V4</b> <b>No. of samples received</b> : <b>46</b> <b>No. of samples analysed</b> : <b>39</b>	<b>Page</b> : 1 of 31 <b>Laboratory</b> : Environmental Division Perth <b>Contact</b> : Marnie Thomsett <b>Address</b> : 26 Rigali Way Wangara WA Australia 6065  <b>Telephone</b> : 08 9406 1311 <b>Date Samples Received</b> : 23-Aug-2019 12:20 <b>Date Analysis Commenced</b> : 23-Aug-2019 <b>Issue Date</b> : 03-Sep-2019 18:47
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
David Viner	SENIOR LAB TECH	Perth Organics, Wangara, WA
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- Glyphosate and OP pesticide analysis conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- EK055G (Ammonia) LOR raised for sample #19 and #25 due to possible sample matrix interference.
- EG020: It is recognised that total aluminium concentration is less than dissolved for sample EP1908496-029. However, the difference is within experimental variation of the methods.
- ED041G (Sulfate Turbidimetric): LOR for sample EP1908496-028 raised due to possible sample matrix interference.
- ED041G (Sulfate Turbidimetric): LOR for sample EP1908496-001 raised due to possible sample matrix interference.
- EG020T: High result for aluminium, iron for samples EP1908496-007, 008 has been confirmed by re-digestion and re-analysis.
- EG020F: Results for nickel, zinc for samples EP1908496-007, 008 have been confirmed by re-analysis.
- TDS by method EA-015 may bias high for sample #27 and #28 due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- EA015H (Total Dissolved Solids): TDS for sample #1 and #20 biasing high due to possible sample matrix interferences.
- Ionic Balance out of acceptable limits for sample #30 due to analytes not quantified in this report.
- Ionic Balance out of acceptable limits for sample #11, #22, #25 and #26 due to analytes not quantified in this report.
- Ionic Balance out of acceptable limits for sample #28 due to analytes not quantified in this report.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW31	BORR_MW29	SW6 (proposed)	BORR_MW37	BH9.2
Client sampling date / time				21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908496-001	EP1908496-002	EP1908496-003	EP1908496-004	EP1908496-005	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	5.81	5.79	7.56	6.23	6.78	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	259	926	1630	3370	1520	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	221	636	1030	2020	937	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	15	10	66	55	53	
Total Alkalinity as CaCO3	----	1	mg/L	15	10	66	55	53	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	40	41	8	76	15	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<10	153	35	74	49	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	50	167	427	917	403	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	4	26	36	16	34	
Magnesium	7439-95-4	1	mg/L	5	31	50	69	68	
Sodium	7440-23-5	1	mg/L	38	107	200	546	156	
Potassium	7440-09-7	1	mg/L	4	9	9	2	<1	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	1.81	0.56	0.08	0.02	0.03	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	0.002	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.002	0.002	<0.001	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	0.044	0.005	
Copper	7440-50-8	0.001	mg/L	0.011	0.007	0.036	0.007	0.031	
Lead	7439-92-1	0.001	mg/L	0.002	<0.001	0.002	<0.001	0.002	
Manganese	7439-96-5	0.001	mg/L	0.012	0.022	0.053	0.479	0.012	
Nickel	7440-02-0	0.001	mg/L	0.019	0.020	0.014	0.026	0.021	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.130	0.081	0.097	0.047	0.163	
Iron	7439-89-6	0.05	mg/L	1.56	1.82	0.33	12.9	0.14	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW31	BORR_MW29	SW6 (proposed)	BORR_MW37	BH9.2
Client sampling date / time				21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908496-001	EP1908496-002	EP1908496-003	EP1908496-004	EP1908496-005	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	5.34	2.39	1.49	2.66	4.28	
Iron	7439-89-6	0.05	mg/L	3.26	2.30	2.66	15.0	10.9	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.88	0.57	0.03	<0.01	0.01	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.88	0.57	0.03	<0.01	<0.01	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.02	<0.01	0.16	<0.01	0.55	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.8	1.3	1.5	<0.1	0.2	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	1.8	1.3	1.7	<0.1	0.8	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	0.17	<0.01	<0.01	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.04	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	0.3	1.2	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	1.71	8.10	14.1	28.5	13.4	
∅ Total Cations	----	0.01	meq/L	2.37	8.73	14.8	30.3	14.1	
∅ Ionic Balance	----	0.01	%	----	3.78	2.59	3.01	2.29	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW31	BORR_MW29	SW6 (proposed)	BORR_MW37	BH9.2
Client sampling date / time				21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908496-001	EP1908496-002	EP1908496-003	EP1908496-004	EP1908496-005	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	----	<10	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	----	<0.02	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	----	----	<0.02	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	----	<0.10	----	----	
Carbofenthiion	786-19-6	0.02	µg/L	----	----	<0.02	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	----	<0.02	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	----	<0.02	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	----	<0.2	----	----	
Coumaphos	56-72-4	0.01	µg/L	----	----	<0.01	----	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	----	<0.02	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	----	<0.02	----	----	
Demeton-O	298-03-3	0.02	µg/L	----	----	<0.02	----	----	
Demeton-S	126-75-0	0.02	µg/L	----	----	<0.02	----	----	
Diazinon	333-41-5	0.01	µg/L	----	----	<0.01	----	----	
Dichlorvos	62-73-7	0.20	µg/L	----	----	<0.20	----	----	
Dimethoate	60-51-5	0.02	µg/L	----	----	<0.02	----	----	
Disulfoton	298-04-4	0.05	µg/L	----	----	<0.05	----	----	
Ethion	563-12-2	0.02	µg/L	----	----	<0.02	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW31	BORR_MW29	SW6 (proposed)	BORR_MW37	BH9.2
Client sampling date / time				21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908496-001	EP1908496-002	EP1908496-003	EP1908496-004	EP1908496-005	
				Result	Result	Result	Result	Result	
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L	----	----	<0.05	----	----	
Ethoprophos	13194-48-4	0.01	µg/L	----	----	<0.01	----	----	
Fenamiphos	22224-92-6	0.01	µg/L	----	----	<0.01	----	----	
Fenchlorphos (Ronnel)	299-84-3	10	µg/L	----	----	<10	----	----	
Fenitrothion	122-14-5	2	µg/L	----	----	<2	----	----	
Fensulfothion	115-90-2	0.01	µg/L	----	----	<0.01	----	----	
Fenthion	55-38-9	0.05	µg/L	----	----	<0.05	----	----	
Malathion	121-75-5	0.02	µg/L	----	----	<0.02	----	----	
Mevinphos	7786-34-7	0.02	µg/L	----	----	<0.02	----	----	
Monocrotophos	6923-22-4	0.02	µg/L	----	----	<0.02	----	----	
Omethoate	1113-02-6	0.01	µg/L	----	----	<0.01	----	----	
Parathion	56-38-2	0.2	µg/L	----	----	<0.2	----	----	
Parathion-methyl	298-00-0	0.5	µg/L	----	----	<0.5	----	----	
Phorate	298-02-2	0.1	µg/L	----	----	<0.1	----	----	
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	----	----	<0.01	----	----	
Pirimiphos-methyl	29232-93-7	0.01	µg/L	----	----	<0.01	----	----	
Profenofos	41198-08-7	0.01	µg/L	----	----	<0.01	----	----	
Prothiofos	34643-46-4	0.1	µg/L	----	----	<0.1	----	----	
Sulfotep	3689-24-5	0.005	µg/L	----	----	<0.005	----	----	
Sulprofos	35400-43-2	0.05	µg/L	----	----	<0.05	----	----	
Terbufos	13071-79-9	0.01	µg/L	----	----	<0.01	----	----	
Temephos	3383-96-8	0.02	µg/L	----	----	<0.02	----	----	
Tetrachlorvinphos	22248-79-9	0.01	µg/L	----	----	<0.01	----	----	
Triazophos	24017-47-8	0.005	µg/L	----	----	<0.005	----	----	
Trichlorfon	52-68-6	0.02	µg/L	----	----	<0.02	----	----	
Trichloronate	327-98-0	0.5	µg/L	----	----	<0.5	----	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	100	106	110	114	119	
Toluene-D8	2037-26-5	2	%	107	106	99.4	96.6	94.7	
4-Bromofluorobenzene	460-00-4	2	%	93.3	91.1	97.5	94.0	89.6	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW25	BORR_MW04	FD03	SW11	BORR_MW05
Client sampling date / time				21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908496-006	EP1908496-007	EP1908496-008	EP1908496-009	EP1908496-010	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.19	7.29	7.31	7.55	6.73	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	3490	3160	3190	262	938	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	2100	2080	2020	164	666	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	58	253	250	57	68	
Total Alkalinity as CaCO3	----	1	mg/L	58	253	250	57	68	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	60	31	30	5	22	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	94	166	167	30	84	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	954	744	733	28	191	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	27	150	158	12	23	
Magnesium	7439-95-4	1	mg/L	56	49	50	6	16	
Sodium	7440-23-5	1	mg/L	592	429	438	34	144	
Potassium	7440-09-7	1	mg/L	4	5	5	2	6	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.03	<0.01	0.02	0.18	0.13	
Arsenic	7440-38-2	0.001	mg/L	0.002	0.002	0.003	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	
Cobalt	7440-48-4	0.001	mg/L	0.036	<0.001	0.001	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.006	<0.001	0.007	0.022	0.004	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.421	0.127	0.136	0.004	0.014	
Nickel	7440-02-0	0.001	mg/L	0.026	<0.001	0.013	0.011	0.005	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.059	0.007	0.098	0.054	0.068	
Iron	7439-89-6	0.05	mg/L	6.19	5.20	5.71	0.28	0.86	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW25	BORR_MW04	FD03	SW11	BORR_MW05
Client sampling date / time				21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908496-006	EP1908496-007	EP1908496-008	EP1908496-009	EP1908496-010	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	5.20	13.4	10.3	0.34	15.4	
Iron	7439-89-6	0.05	mg/L	10.7	40.7	33.9	0.52	5.09	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.19	0.19	<0.01	0.02	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	<0.01	0.19	0.19	<0.01	0.02	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.02	<0.01	<0.01	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	0.4	0.3	1.0	1.7	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	<0.1	0.4	0.3	1.0	1.7	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.02	0.29	0.24	0.02	0.12	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	30.0	29.5	29.1	2.55	8.50	
∅ Total Cations	----	0.01	meq/L	31.8	30.3	31.2	2.62	8.88	
∅ Ionic Balance	----	0.01	%	2.88	1.35	3.36	1.34	2.22	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	190	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	190	<50	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	190	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW25	BORR_MW04	FD03	SW11	BORR_MW05
Client sampling date / time				21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908496-006	EP1908496-007	EP1908496-008	EP1908496-009	EP1908496-010	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	190	<100	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	190	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	----	----	<10	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	----	----	<0.02	----	
Azinphos-methyl	86-50-0	0.02	µg/L	----	----	----	<0.02	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	----	----	<0.10	----	
Carbofenothion	786-19-6	0.02	µg/L	----	----	----	<0.02	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	----	----	<0.02	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	----	----	<0.02	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	----	----	<0.2	----	
Coumaphos	56-72-4	0.01	µg/L	----	----	----	<0.01	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	----	----	<0.02	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	----	----	<0.02	----	
Demeton-O	298-03-3	0.02	µg/L	----	----	----	<0.02	----	
Demeton-S	126-75-0	0.02	µg/L	----	----	----	<0.02	----	
Diazinon	333-41-5	0.01	µg/L	----	----	----	<0.01	----	
Dichlorvos	62-73-7	0.20	µg/L	----	----	----	<0.20	----	
Dimethoate	60-51-5	0.02	µg/L	----	----	----	<0.02	----	
Disulfoton	298-04-4	0.05	µg/L	----	----	----	<0.05	----	
Ethion	563-12-2	0.02	µg/L	----	----	----	<0.02	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW25	BORR_MW04	FD03	SW11	BORR_MW05
Client sampling date / time				21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908496-006	EP1908496-007	EP1908496-008	EP1908496-009	EP1908496-010	
				Result	Result	Result	Result	Result	
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L	----	----	----	<0.05	----	
Ethoprophos	13194-48-4	0.01	µg/L	----	----	----	<0.01	----	
Fenamiphos	22224-92-6	0.01	µg/L	----	----	----	<0.01	----	
Fenchlorphos (Rannel)	299-84-3	10	µg/L	----	----	----	<10	----	
Fenitrothion	122-14-5	2	µg/L	----	----	----	<2	----	
Fensulfothion	115-90-2	0.01	µg/L	----	----	----	<0.01	----	
Fenthion	55-38-9	0.05	µg/L	----	----	----	<0.05	----	
Malathion	121-75-5	0.02	µg/L	----	----	----	<0.02	----	
Mevinphos	7786-34-7	0.02	µg/L	----	----	----	<0.02	----	
Monocrotophos	6923-22-4	0.02	µg/L	----	----	----	<0.02	----	
Omethoate	1113-02-6	0.01	µg/L	----	----	----	<0.01	----	
Parathion	56-38-2	0.2	µg/L	----	----	----	<0.2	----	
Parathion-methyl	298-00-0	0.5	µg/L	----	----	----	<0.5	----	
Phorate	298-02-2	0.1	µg/L	----	----	----	<0.1	----	
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	----	----	----	<0.01	----	
Pirimiphos-methyl	29232-93-7	0.01	µg/L	----	----	----	<0.01	----	
Profenofos	41198-08-7	0.01	µg/L	----	----	----	<0.01	----	
Prothiofos	34643-46-4	0.1	µg/L	----	----	----	<0.1	----	
Sulfotep	3689-24-5	0.005	µg/L	----	----	----	<0.005	----	
Sulprofos	35400-43-2	0.05	µg/L	----	----	----	<0.05	----	
Terbufos	13071-79-9	0.01	µg/L	----	----	----	<0.01	----	
Temephos	3383-96-8	0.02	µg/L	----	----	----	<0.02	----	
Tetrachlorvinphos	22248-79-9	0.01	µg/L	----	----	----	<0.01	----	
Triazophos	24017-47-8	0.005	µg/L	----	----	----	<0.005	----	
Trichlorfon	52-68-6	0.02	µg/L	----	----	----	<0.02	----	
Trichloronate	327-98-0	0.5	µg/L	----	----	----	<0.5	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	121	121	125	127	128	
Toluene-D8	2037-26-5	2	%	96.4	93.4	94.7	92.0	99.4	
4-Bromofluorobenzene	460-00-4	2	%	91.5	90.3	89.2	90.8	93.5	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW06	RB03	FB03	TBW670	TBW675
Client sampling date / time				21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908496-011	EP1908496-012	EP1908496-013	EP1908496-014	EP1908496-015	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.96	----	----	----	----	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	438	----	----	----	----	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	302	----	----	----	----	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	49	----	----	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	49	----	----	----	----	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	13	----	----	----	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	43	----	----	----	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	65	----	----	----	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	30	----	----	----	----	
Magnesium	7439-95-4	1	mg/L	10	----	----	----	----	
Sodium	7440-23-5	1	mg/L	45	----	----	----	----	
Potassium	7440-09-7	1	mg/L	8	----	----	----	----	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.14	----	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----	
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	0.025	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	0.002	----	----	----	----	
Manganese	7439-96-5	0.001	mg/L	0.041	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	0.014	----	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	0.126	----	----	----	----	
Iron	7439-89-6	0.05	mg/L	2.38	----	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW06	RB03	FB03	TBW670	TBW675
Client sampling date / time				21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908496-011	EP1908496-012	EP1908496-013	EP1908496-014	EP1908496-015	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	2.41	----	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	----	<0.001	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	----	<0.0001	----	----	----	
Chromium	7440-47-3	0.001	mg/L	----	<0.001	----	----	----	
Copper	7440-50-8	0.001	mg/L	----	<0.001	----	----	----	
Nickel	7440-02-0	0.001	mg/L	----	<0.001	----	----	----	
Lead	7439-92-1	0.001	mg/L	----	<0.001	----	----	----	
Zinc	7440-66-6	0.005	mg/L	----	<0.005	----	----	----	
Iron	7439-89-6	0.05	mg/L	4.38	----	----	----	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.13	----	----	----	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.13	----	----	----	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.56	----	----	----	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.7	----	----	----	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	1.3	----	----	----	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.06	----	----	----	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	----	----	----	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	----	----	----	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	3.71	----	----	----	----	
∅ Total Cations	----	0.01	meq/L	4.48	----	----	----	----	
∅ Ionic Balance	----	0.01	%	9.45	----	----	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	----	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	----	
C15 - C28 Fraction	----	100	µg/L	<100	----	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW06	RB03	FB03	TBW670	TBW675
Client sampling date / time				21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908496-011	EP1908496-012	EP1908496-013	EP1908496-014	EP1908496-015	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>									
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	----	----	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	----	----	----	----	
>C16 - C34 Fraction	----	100	µg/L	<100	----	----	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	----	----	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	----	----	----	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	----	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	----	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	----	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	----	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	----	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	----	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	----	<5	<5	<5	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	131	----	136	136	129	
Toluene-D8	2037-26-5	2	%	91.4	----	91.4	92.6	89.8	
4-Bromofluorobenzene	460-00-4	2	%	91.0	----	88.5	89.6	85.2	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW677	BORR_MW11	BORR_MW46	Southern 4	BORR_MW12
Client sampling date / time				21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908496-016	EP1908496-019	EP1908496-020	EP1908496-021	EP1908496-022	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	----	7.74	6.78	7.76	6.70	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	----	4150	216	6230	579	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	----	2490	234	3640	376	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	535	91	121	28	
Total Alkalinity as CaCO3	----	1	mg/L	----	535	91	121	28	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	----	34	19	17	12	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	152	8	103	35	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	----	896	9	1700	122	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	----	56	34	59	7	
Magnesium	7439-95-4	1	mg/L	----	92	2	135	14	
Sodium	7440-23-5	1	mg/L	----	676	13	963	82	
Potassium	7440-09-7	1	mg/L	----	12	<1	27	7	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	0.06	0.09	0.06	0.04	
Arsenic	7440-38-2	0.001	mg/L	----	0.002	<0.001	0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	----	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	----	0.001	<0.001	0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	----	0.001	0.001	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	----	0.025	0.041	0.022	0.005	
Lead	7439-92-1	0.001	mg/L	----	<0.001	0.002	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	----	0.224	0.084	0.041	0.012	
Nickel	7440-02-0	0.001	mg/L	----	0.020	0.012	0.009	0.006	
Selenium	7782-49-2	0.01	mg/L	----	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	----	0.099	0.104	0.059	0.029	
Iron	7439-89-6	0.05	mg/L	----	0.38	0.38	0.36	1.98	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW677	BORR_MW11	BORR_MW46	Southern 4	BORR_MW12
Client sampling date / time				21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908496-016	EP1908496-019	EP1908496-020	EP1908496-021	EP1908496-022	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	7.21	15.2	0.21	0.83	
Iron	7439-89-6	0.05	mg/L	----	35.1	6.44	0.43	5.03	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	----	<0.02	<0.01	0.17	0.19	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	----	<0.01	<0.01	0.17	0.19	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	----	0.01	0.28	0.08	1.36	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	2.3	0.2	3.1	1.0	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	----	2.3	0.5	3.2	2.4	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	----	0.76	0.01	0.16	0.09	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	0.01	<0.01	0.09	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	----	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	----	39.1	2.24	52.5	4.73	
∅ Total Cations	----	0.01	meq/L	----	40.1	2.43	56.6	5.25	
∅ Ionic Balance	----	0.01	%	----	1.20	4.03	3.77	5.19	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	----	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	----	<100	<100	120	<100	
C29 - C36 Fraction	----	50	µg/L	----	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	<50	<50	120	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	----	<100	<100	<100	<100	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW677	BORR_MW11	BORR_MW46	Southern 4	BORR_MW12
Client sampling date / time				21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908496-016	EP1908496-019	EP1908496-020	EP1908496-021	EP1908496-022	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	----	<100	<100	<b>150</b>	<100	
>C34 - C40 Fraction	----	100	µg/L	----	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	----	<100	<100	<b>150</b>	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	----	----	<10	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	----	----	<0.02	----	
Azinphos-methyl	86-50-0	0.02	µg/L	----	----	----	<0.02	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	----	----	<0.10	----	
Carbofention	786-19-6	0.02	µg/L	----	----	----	<0.02	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	----	----	<0.02	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	----	----	<0.02	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	----	----	<0.2	----	
Coumaphos	56-72-4	0.01	µg/L	----	----	----	<0.01	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	----	----	<0.02	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	----	----	<0.02	----	
Demeton-O	298-03-3	0.02	µg/L	----	----	----	<0.02	----	
Demeton-S	126-75-0	0.02	µg/L	----	----	----	<0.02	----	
Diazinon	333-41-5	0.01	µg/L	----	----	----	<0.01	----	
Dichlorvos	62-73-7	0.20	µg/L	----	----	----	<0.20	----	
Dimethoate	60-51-5	0.02	µg/L	----	----	----	<0.02	----	
Disulfoton	298-04-4	0.05	µg/L	----	----	----	<0.05	----	
Ethion	563-12-2	0.02	µg/L	----	----	----	<0.02	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW677	BORR_MW11	BORR_MW46	Southern 4	BORR_MW12
Client sampling date / time					21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00	21-Aug-2019 00:00
Compound	CAS Number	LOR	Unit	EP1908496-016	EP1908496-019	EP1908496-020	EP1908496-021	EP1908496-022	
				Result	Result	Result	Result	Result	
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L	----	----	----	<0.05	----	
Ethoprophos	13194-48-4	0.01	µg/L	----	----	----	<0.01	----	
Fenamiphos	22224-92-6	0.01	µg/L	----	----	----	<0.01	----	
Fenchlorphos (Rannel)	299-84-3	10	µg/L	----	----	----	<10	----	
Fenitrothion	122-14-5	2	µg/L	----	----	----	<2	----	
Fensulfothion	115-90-2	0.01	µg/L	----	----	----	<0.01	----	
Fenthion	55-38-9	0.05	µg/L	----	----	----	<0.05	----	
Malathion	121-75-5	0.02	µg/L	----	----	----	<0.02	----	
Mevinphos	7786-34-7	0.02	µg/L	----	----	----	<0.02	----	
Monocrotophos	6923-22-4	0.02	µg/L	----	----	----	<0.02	----	
Omethoate	1113-02-6	0.01	µg/L	----	----	----	<0.01	----	
Parathion	56-38-2	0.2	µg/L	----	----	----	<0.2	----	
Parathion-methyl	298-00-0	0.5	µg/L	----	----	----	<0.5	----	
Phorate	298-02-2	0.1	µg/L	----	----	----	<0.1	----	
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	----	----	----	<0.01	----	
Pirimiphos-methyl	29232-93-7	0.01	µg/L	----	----	----	<0.01	----	
Profenofos	41198-08-7	0.01	µg/L	----	----	----	<0.01	----	
Prothiofos	34643-46-4	0.1	µg/L	----	----	----	<0.1	----	
Sulfotep	3689-24-5	0.005	µg/L	----	----	----	<0.005	----	
Sulprofos	35400-43-2	0.05	µg/L	----	----	----	<0.05	----	
Terbufos	13071-79-9	0.01	µg/L	----	----	----	<0.01	----	
Temephos	3383-96-8	0.02	µg/L	----	----	----	<0.02	----	
Tetrachlorvinphos	22248-79-9	0.01	µg/L	----	----	----	<0.01	----	
Triazophos	24017-47-8	0.005	µg/L	----	----	----	<0.005	----	
Trichlorfon	52-68-6	0.02	µg/L	----	----	----	<0.02	----	
Trichloronate	327-98-0	0.5	µg/L	----	----	----	<0.5	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	134	137	135	136	132	
Toluene-D8	2037-26-5	2	%	91.9	92.2	95.6	92.9	90.3	
4-Bromofluorobenzene	460-00-4	2	%	85.2	87.8	88.1	84.2	86.1	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID			Southern 3	BH32.1	SW09	North Creek 2	BORR_MW07
		Client sampling date / time			21-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00
Compound	CAS Number	LOR	Unit	EP1908496-023	EP1908496-024	EP1908496-025	EP1908496-026	EP1908496-027	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	7.94	4.61	6.98	7.27	6.84	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	1530	5040	524	785	513	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	1030	3200	322	390	386	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	120	<1	92	42	40	
Total Alkalinity as CaCO3	----	1	mg/L	120	<1	92	42	40	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	9	68	33	6	20	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	95	477	8	26	78	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	362	1280	93	185	84	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	23	6	21	11	13	
Magnesium	7439-95-4	1	mg/L	31	99	10	19	12	
Sodium	7440-23-5	1	mg/L	254	925	67	117	69	
Potassium	7440-09-7	1	mg/L	11	2	11	4	3	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.24	3.97	0.11	0.07	0.07	
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.007	0.001	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	0.0001	0.0004	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.001	0.005	0.001	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.955	<0.001	0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.019	0.029	0.023	0.025	0.012	
Lead	7439-92-1	0.001	mg/L	0.001	0.006	0.001	0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.007	0.174	0.102	0.033	0.008	
Nickel	7440-02-0	0.001	mg/L	0.010	1.04	0.022	0.014	0.013	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.075	0.112	0.112	0.095	0.036	
Iron	7439-89-6	0.05	mg/L	0.71	4.53	3.61	0.33	0.05	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Southern 3	BH32.1	SW09	North Creek 2	BORR_MW07
Client sampling date / time				21-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00
Compound	CAS Number	LOR	Unit	EP1908496-023	EP1908496-024	EP1908496-025	EP1908496-026	EP1908496-027	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.27	5.59	11.7	0.24	97.0	
Iron	7439-89-6	0.05	mg/L	0.85	11.5	42.8	1.13	49.3	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.02	<0.01	<0.02	<0.01	<0.01	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.02	<0.01	<0.01	<0.01	<0.01	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.02	<0.01	<0.01	0.35	0.03	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	4.7	0.3	2.9	0.4	<0.1	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	4.7	0.3	2.9	0.8	<0.1	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.21	0.06	0.32	<0.01	0.09	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.07	<0.01	0.02	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	14.6	46.0	4.63	6.60	4.79	
∅ Total Cations	----	0.01	meq/L	15.0	48.7	5.07	7.30	4.71	
∅ Ionic Balance	----	0.01	%	1.49	2.84	4.52	5.07	0.82	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	100	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	350	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	140	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	590	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	140	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Southern 3	BH32.1	SW09	North Creek 2	BORR_MW07
Client sampling date / time				21-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00
Compound	CAS Number	LOR	Unit	EP1908496-023	EP1908496-024	EP1908496-025	EP1908496-026	EP1908496-027	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	420	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	560	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	140	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	<10	----	<10	<10	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	----	<0.02	<0.02	----	
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	----	<0.02	<0.02	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	----	<0.10	<0.10	----	
Carbofenthiion	786-19-6	0.02	µg/L	<0.02	----	<0.02	<0.02	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	----	<0.02	<0.02	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	----	<0.02	<0.02	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	----	<0.2	<0.2	----	
Coumaphos	56-72-4	0.01	µg/L	<0.01	----	<0.01	<0.01	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	----	<0.02	<0.02	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	----	<0.02	<0.02	----	
Demeton-O	298-03-3	0.02	µg/L	<0.02	----	<0.02	<0.02	----	
Demeton-S	126-75-0	0.02	µg/L	<0.02	----	<0.02	<0.02	----	
Diazinon	333-41-5	0.01	µg/L	<0.01	----	<0.01	<0.01	----	
Dichlorvos	62-73-7	0.20	µg/L	<0.20	----	<0.20	<0.20	----	
Dimethoate	60-51-5	0.02	µg/L	<0.02	----	<0.02	<0.02	----	
Disulfoton	298-04-4	0.05	µg/L	<0.05	----	<0.05	<0.05	----	
Ethion	563-12-2	0.02	µg/L	<0.02	----	<0.02	<0.02	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Southern 3	BH32.1	SW09	North Creek 2	BORR_MW07
Client sampling date / time					21-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00
Compound	CAS Number	LOR	Unit	EP1908496-023	EP1908496-024	EP1908496-025	EP1908496-026	EP1908496-027	
				Result	Result	Result	Result	Result	
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L	<0.05	----	<0.05	<0.05	----	
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	----	<0.01	<0.01	----	
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	----	<0.01	<0.01	----	
Fenchlorphos (Rannel)	299-84-3	10	µg/L	<10	----	<10	<10	----	
Fenitrothion	122-14-5	2	µg/L	<2	----	<2	<2	----	
Fensulfothion	115-90-2	0.01	µg/L	<0.01	----	<0.01	<0.01	----	
Fenthion	55-38-9	0.05	µg/L	<0.05	----	<0.05	<0.05	----	
Malathion	121-75-5	0.02	µg/L	<0.02	----	<0.02	<0.02	----	
Mevinphos	7786-34-7	0.02	µg/L	<0.02	----	<0.02	<0.02	----	
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	----	<0.02	<0.02	----	
Omethoate	1113-02-6	0.01	µg/L	<0.01	----	<0.01	<0.01	----	
Parathion	56-38-2	0.2	µg/L	<0.2	----	<0.2	<0.2	----	
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	----	<0.5	<0.5	----	
Phorate	298-02-2	0.1	µg/L	<0.1	----	<0.1	<0.1	----	
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	----	<0.01	<0.01	----	
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	----	<0.01	<0.01	----	
Profenofos	41198-08-7	0.01	µg/L	<0.01	----	<0.01	<0.01	----	
Prothiofos	34643-46-4	0.1	µg/L	<0.1	----	<0.1	<0.1	----	
Sulfotep	3689-24-5	0.005	µg/L	<0.005	----	<0.005	<0.005	----	
Sulprofos	35400-43-2	0.05	µg/L	<0.05	----	<0.05	<0.05	----	
Terbufos	13071-79-9	0.01	µg/L	<0.01	----	<0.01	<0.01	----	
Temephos	3383-96-8	0.02	µg/L	<0.02	----	<0.02	<0.02	----	
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	----	<0.01	<0.01	----	
Triazophos	24017-47-8	0.005	µg/L	<0.005	----	<0.005	<0.005	----	
Trichlorfon	52-68-6	0.02	µg/L	<0.02	----	<0.02	<0.02	----	
Trichloronate	327-98-0	0.5	µg/L	<0.5	----	<0.5	<0.5	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	99.4	63.2	74.6	87.1	80.3	
Toluene-D8	2037-26-5	2	%	90.7	112	75.7	102	102	
4-Bromofluorobenzene	460-00-4	2	%	84.9	68.8	78.6	77.3	75.0	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW08a	SW10	BORR_MW09	BORR_MW10	MR_MW05
Client sampling date / time				22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908496-028	EP1908496-029	EP1908496-030	EP1908496-031	EP1908496-032	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.10	7.57	6.59	6.49	6.43	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	578	1160	430	516	22600	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	474	769	280	382	13900	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	40	79	11	28	130	
Total Alkalinity as CaCO3	----	1	mg/L	40	79	11	28	130	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	34	9	9	28	78	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<10	38	31	57	1050	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	145	287	91	96	7320	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	20	45	34	15	187	
Magnesium	7439-95-4	1	mg/L	13	28	8	15	668	
Sodium	7440-23-5	1	mg/L	72	130	36	52	3760	
Potassium	7440-09-7	1	mg/L	9	35	10	6	43	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.30	0.09	0.03	0.11	0.06	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	0.001	0.016	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0002	<0.0001	<0.0001	0.0001	
Chromium	7440-47-3	0.001	mg/L	0.001	<0.001	<0.001	0.002	0.004	
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.002	
Copper	7440-50-8	0.001	mg/L	0.012	0.026	0.028	0.011	0.013	
Lead	7439-92-1	0.001	mg/L	<0.001	0.002	<0.001	<0.001	0.002	
Manganese	7439-96-5	0.001	mg/L	0.058	0.012	0.003	0.014	0.186	
Nickel	7440-02-0	0.001	mg/L	0.015	0.016	0.015	0.016	0.014	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.075	0.113	0.118	0.066	0.119	
Iron	7439-89-6	0.05	mg/L	1.88	0.91	<0.05	2.74	18.1	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW08a	SW10	BORR_MW09	BORR_MW10	MR_MW05
Client sampling date / time				22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908496-028	EP1908496-029	EP1908496-030	EP1908496-031	EP1908496-032	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	7.92	0.08	1.81	5.73	22.7	
Iron	7439-89-6	0.05	mg/L	3.10	0.97	0.48	7.22	46.6	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.23	<0.01	<0.01	0.30	0.23	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.23	<0.01	<0.01	0.30	0.23	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.73	0.02	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.8	3.3	0.2	1.2	2.0	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	1.8	3.3	0.9	1.2	2.0	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.82	0.51	0.01	0.06	0.09	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.58	0.50	<0.01	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	4.89	10.5	3.43	4.45	231	
∅ Total Cations	----	0.01	meq/L	5.43	11.1	4.18	4.40	229	
∅ Ionic Balance	----	0.01	%	5.24	2.94	9.78	0.63	0.43	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	280	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	280	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW08a	SW10	BORR_MW09	BORR_MW10	MR_MW05
Client sampling date / time					22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00
Compound	CAS Number	LOR	Unit	EP1908496-028	EP1908496-029	EP1908496-030	EP1908496-031	EP1908496-032	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	230	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	230	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	<10	----	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	<0.02	----	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	----	<0.02	----	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	<0.10	----	----	----	
Carbofenthion	786-19-6	0.02	µg/L	----	<0.02	----	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	<0.02	----	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	<0.02	----	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	<0.2	----	----	----	
Coumaphos	56-72-4	0.01	µg/L	----	<0.01	----	----	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	<0.02	----	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	<0.02	----	----	----	
Demeton-O	298-03-3	0.02	µg/L	----	<0.02	----	----	----	
Demeton-S	126-75-0	0.02	µg/L	----	<0.02	----	----	----	
Diazinon	333-41-5	0.01	µg/L	----	<0.01	----	----	----	
Dichlorvos	62-73-7	0.20	µg/L	----	<0.20	----	----	----	
Dimethoate	60-51-5	0.02	µg/L	----	<0.02	----	----	----	
Disulfoton	298-04-4	0.05	µg/L	----	<0.05	----	----	----	
Ethion	563-12-2	0.02	µg/L	----	<0.02	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW08a	SW10	BORR_MW09	BORR_MW10	MR_MW05
Client sampling date / time					22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00
Compound	CAS Number	LOR	Unit		EP1908496-028	EP1908496-029	EP1908496-030	EP1908496-031	EP1908496-032
					Result	Result	Result	Result	Result
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L	----	<0.05	----	----	----	----
Ethoprophos	13194-48-4	0.01	µg/L	----	<0.01	----	----	----	----
Fenamiphos	22224-92-6	0.01	µg/L	----	<0.01	----	----	----	----
Fenchlorphos (Ronnell)	299-84-3	10	µg/L	----	<10	----	----	----	----
Fenitrothion	122-14-5	2	µg/L	----	<2	----	----	----	----
Fensulfothion	115-90-2	0.01	µg/L	----	<0.01	----	----	----	----
Fenthion	55-38-9	0.05	µg/L	----	<0.05	----	----	----	----
Malathion	121-75-5	0.02	µg/L	----	<0.02	----	----	----	----
Mevinphos	7786-34-7	0.02	µg/L	----	<0.02	----	----	----	----
Monocrotophos	6923-22-4	0.02	µg/L	----	<0.02	----	----	----	----
Omethoate	1113-02-6	0.01	µg/L	----	<0.01	----	----	----	----
Parathion	56-38-2	0.2	µg/L	----	<0.2	----	----	----	----
Parathion-methyl	298-00-0	0.5	µg/L	----	<0.5	----	----	----	----
Phorate	298-02-2	0.1	µg/L	----	<0.1	----	----	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	----	<0.01	----	----	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L	----	<0.01	----	----	----	----
Profenofos	41198-08-7	0.01	µg/L	----	<0.01	----	----	----	----
Prothiofos	34643-46-4	0.1	µg/L	----	<0.1	----	----	----	----
Sulfotep	3689-24-5	0.005	µg/L	----	<0.005	----	----	----	----
Sulprofos	35400-43-2	0.05	µg/L	----	<0.05	----	----	----	----
Terbufos	13071-79-9	0.01	µg/L	----	<0.01	----	----	----	----
Temephos	3383-96-8	0.02	µg/L	----	<0.02	----	----	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L	----	<0.01	----	----	----	----
Triazophos	24017-47-8	0.005	µg/L	----	<0.005	----	----	----	----
Trichlorfon	52-68-6	0.02	µg/L	----	<0.02	----	----	----	----
Trichloronate	327-98-0	0.5	µg/L	----	<0.5	----	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	87.1	74.9	78.6	90.6	79.5	
Toluene-D8	2037-26-5	2	%	99.4	102	104	102	103	
4-Bromofluorobenzene	460-00-4	2	%	77.6	80.9	73.3	78.9	75.6	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB04	FB06	TBW679	TBW678	TBW676
Client sampling date / time				22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1908496-033	EP1908496-036	EP1908496-037	EP1908496-038	EP1908496-039	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	----	<20	<20	<20	<20	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	----	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	----	<20	<20	<20	<20	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	----	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	----	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	----	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	----	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	----	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	----	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	----	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	----	<5	<5	<5	<5	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	----	72.2	88.4	82.2	85.7	
Toluene-D8	2037-26-5	2	%	----	116	104	104	103	
4-Bromofluorobenzene	460-00-4	2	%	----	67.7	74.5	74.4	74.2	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		TBW674	TBW673	SW07	SW08	----
Client sampling date / time				22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	----
Compound	CAS Number	LOR	Unit	EP1908496-040	EP1908496-041	EP1908496-042	EP1908496-043	-----
				Result	Result	Result	Result	----
<b>EA005P: pH by PC Titrator</b>								
pH Value	----	0.01	pH Unit	----	----	7.43	7.41	----
<b>EA010P: Conductivity by PC Titrator</b>								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	779	792	----
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
Total Dissolved Solids @180°C	----	10	mg/L	----	----	408	398	----
<b>ED037P: Alkalinity by PC Titrator</b>								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	<1	<1	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	<1	<1	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	42	43	----
Total Alkalinity as CaCO3	----	1	mg/L	----	----	42	43	----
<b>ED038A: Acidity</b>								
Acidity as CaCO3	----	1	mg/L	----	----	<1	<1	----
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	27	27	----
<b>ED045G: Chloride by Discrete Analyser</b>								
Chloride	16887-00-6	1	mg/L	----	----	195	198	----
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	----	----	10	10	----
Magnesium	7439-95-4	1	mg/L	----	----	19	19	----
Sodium	7440-23-5	1	mg/L	----	----	120	120	----
Potassium	7440-09-7	1	mg/L	----	----	4	4	----
<b>EG020F: Dissolved Metals by ICP-MS</b>								
Aluminium	7429-90-5	0.01	mg/L	----	----	0.05	0.06	----
Arsenic	7440-38-2	0.001	mg/L	----	----	<0.001	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L	----	----	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	----	----	<0.001	<0.001	----
Cobalt	7440-48-4	0.001	mg/L	----	----	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L	----	----	<0.001	0.014	----
Lead	7439-92-1	0.001	mg/L	----	----	<0.001	<0.001	----
Manganese	7439-96-5	0.001	mg/L	----	----	0.030	0.032	----
Nickel	7440-02-0	0.001	mg/L	----	----	0.001	0.011	----
Selenium	7782-49-2	0.01	mg/L	----	----	<0.01	<0.01	----
Zinc	7440-66-6	0.005	mg/L	----	----	<0.005	0.040	----
Iron	7439-89-6	0.05	mg/L	----	----	0.33	0.37	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW674	TBW673	SW07	SW08	----
Client sampling date / time				22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	----	
Compound	CAS Number	LOR	Unit	EP1908496-040	EP1908496-041	EP1908496-042	EP1908496-043	-----	
				Result	Result	Result	Result	----	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	0.25	0.31	----	
Iron	7439-89-6	0.05	mg/L	----	----	1.25	1.46	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	----	----	<0.01	<0.01	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	----	----	<0.01	<0.01	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	----	----	0.35	0.35	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	----	0.3	1.0	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	----	----	0.6	1.4	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	----	----	<0.01	0.10	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	----	<0.01	<0.01	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	----	----	<0.1	<0.1	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	----	----	6.90	7.01	----	
∅ Total Cations	----	0.01	meq/L	----	----	7.38	7.38	----	
∅ Ionic Balance	----	0.01	%	----	----	3.38	2.63	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	----	
C10 - C14 Fraction	----	50	µg/L	----	----	<50	<50	----	
C15 - C28 Fraction	----	100	µg/L	----	----	<100	<100	----	
C29 - C36 Fraction	----	50	µg/L	----	----	<50	<50	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	----	<50	<50	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	----	
>C10 - C16 Fraction	----	100	µg/L	----	----	<100	<100	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW674	TBW673	SW07	SW08	----
Client sampling date / time				22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	----	
Compound	CAS Number	LOR	Unit	EP1908496-040	EP1908496-041	EP1908496-042	EP1908496-043	-----	
				Result	Result	Result	Result	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	----	----	<100	<100	----	
>C34 - C40 Fraction	----	100	µg/L	----	----	<100	<100	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	----	----	<100	<100	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	----	<100	<100	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	----	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	----	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	----	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	----	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	----	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	----	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	----	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	----	<10	<10	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	----	<0.02	<0.02	----	
Azinphos-methyl	86-50-0	0.02	µg/L	----	----	<0.02	<0.02	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	----	<0.10	<0.10	----	
Carbofenthiion	786-19-6	0.02	µg/L	----	----	<0.02	<0.02	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	----	<0.02	<0.02	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	----	<0.02	<0.02	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	----	<0.2	<0.2	----	
Coumaphos	56-72-4	0.01	µg/L	----	----	<0.01	<0.01	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	----	<0.02	<0.02	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	----	<0.02	<0.02	----	
Demeton-O	298-03-3	0.02	µg/L	----	----	<0.02	<0.02	----	
Demeton-S	126-75-0	0.02	µg/L	----	----	<0.02	<0.02	----	
Diazinon	333-41-5	0.01	µg/L	----	----	<0.01	<0.01	----	
Dichlorvos	62-73-7	0.20	µg/L	----	----	<0.20	<0.20	----	
Dimethoate	60-51-5	0.02	µg/L	----	----	<0.02	<0.02	----	
Disulfoton	298-04-4	0.05	µg/L	----	----	<0.05	<0.05	----	
Ethion	563-12-2	0.02	µg/L	----	----	<0.02	<0.02	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW674	TBW673	SW07	SW08	----
Client sampling date / time					22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	22-Aug-2019 00:00	----
Compound	CAS Number	LOR	Unit		EP1908496-040	EP1908496-041	EP1908496-042	EP1908496-043	-----
					Result	Result	Result	Result	----
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L		----	----	<0.05	<0.05	----
Ethoprophos	13194-48-4	0.01	µg/L		----	----	<0.01	<0.01	----
Fenamiphos	22224-92-6	0.01	µg/L		----	----	<0.01	<0.01	----
Fenchlorphos (Ronnell)	299-84-3	10	µg/L		----	----	<10	<10	----
Fenitrothion	122-14-5	2	µg/L		----	----	<2	<2	----
Fensulfothion	115-90-2	0.01	µg/L		----	----	<0.01	<0.01	----
Fenthion	55-38-9	0.05	µg/L		----	----	<0.05	<0.05	----
Malathion	121-75-5	0.02	µg/L		----	----	<0.02	<0.02	----
Mevinphos	7786-34-7	0.02	µg/L		----	----	<0.02	<0.02	----
Monocrotophos	6923-22-4	0.02	µg/L		----	----	<0.02	<0.02	----
Omethoate	1113-02-6	0.01	µg/L		----	----	<0.01	<0.01	----
Parathion	56-38-2	0.2	µg/L		----	----	<0.2	<0.2	----
Parathion-methyl	298-00-0	0.5	µg/L		----	----	<0.5	<0.5	----
Phorate	298-02-2	0.1	µg/L		----	----	<0.1	<0.1	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L		----	----	<0.01	<0.01	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L		----	----	<0.01	<0.01	----
Profenofos	41198-08-7	0.01	µg/L		----	----	<0.01	<0.01	----
Prothiofos	34643-46-4	0.1	µg/L		----	----	<0.1	<0.1	----
Sulfotep	3689-24-5	0.005	µg/L		----	----	<0.005	<0.005	----
Sulprofos	35400-43-2	0.05	µg/L		----	----	<0.05	<0.05	----
Terbufos	13071-79-9	0.01	µg/L		----	----	<0.01	<0.01	----
Temephos	3383-96-8	0.02	µg/L		----	----	<0.02	<0.02	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L		----	----	<0.01	<0.01	----
Triazophos	24017-47-8	0.005	µg/L		----	----	<0.005	<0.005	----
Trichlorfon	52-68-6	0.02	µg/L		----	----	<0.02	<0.02	----
Trichloronate	327-98-0	0.5	µg/L		----	----	<0.5	<0.5	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%		84.8	79.4	70.7	79.0	----
Toluene-D8	2037-26-5	2	%		105	108	107	103	----
4-Bromofluorobenzene	460-00-4	2	%		74.6	74.0	71.2	74.6	----



## Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	61	141
Toluene-D8	2037-26-5	73	126
4-Bromofluorobenzene	460-00-4	60	125





QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1908496	Page	: 1 of 18
Client	: GHD PTY LTD	Laboratory	: Environmental Division Perth
Contact	: MS VICKI DAVIES	Telephone	: 08 9406 1311
Project	: 6137041	Date Samples Received	: 23-Aug-2019
Site	: ----	Issue Date	: 03-Sep-2019
Sampler	: DOMINIQUE SHUTTLEWORTH, Emily Evans	No. of samples received	: 46
Order number	: 6137041 (08.0831)	No. of samples analysed	: 39

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



**Outliers : Quality Control Samples**

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
EP204: Glyphosate and AMPA	EB1922044--001	Anonymous	<b>Glyphosate</b>	1071-83-6	Not Determined	----	<b>MS recovery not determined, background level greater than or equal to 4x spike level.</b>

**Outliers : Analysis Holding Time Compliance**

Matrix: **WATER**

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EA005P: pH by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural</b>							
BORR_MW31, SW6 (proposed), BH9.2, BORR_MW04, SW11, BORR_MW06, BORR_MW46, BORR_MW12,	BORR_MW29, BORR_MW37, BORR_MW25, FD03, BORR_MW05, BORR_MW11, Southern 4, Southern 3	----	----	----	26-Aug-2019	21-Aug-2019	<b>5</b>
<b>Clear Plastic Bottle - Natural</b>							
BH32.1, North Creek 2, BORR_MW08a, BORR_MW09, MR_MW05, SW08	SW09, BORR_MW07, SW10, BORR_MW10, SW07,	----	----	----	26-Aug-2019	22-Aug-2019	<b>4</b>
<b>EP234A: OP Pesticides</b>							
<b>Amber Bottle Unpreserved for Specialist Organics</b>							
SW6 (proposed), Southern 4,	SW11, Southern 3	----	----	----	29-Aug-2019	28-Aug-2019	<b>1</b>

**Outliers : Frequency of Quality Control Samples**

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
TRH - Semivolatile Fraction	2	27	7.41	10.00	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>					
TRH - Semivolatile Fraction	1	27	3.70	5.00	NEPM 2013 B3 & ALS QC Standard



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EA005P: pH by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural (EA005-P)</b> BORR_MW31, SW6 (proposed), BH9.2, BORR_MW04, SW11, BORR_MW06, BORR_MW46, BORR_MW12, BORR_MW29, BORR_MW37, BORR_MW25, FD03, BORR_MW05, BORR_MW11, Southern 4, Southern 3	21-Aug-2019	----	----	----	26-Aug-2019	21-Aug-2019	*
<b>Clear Plastic Bottle - Natural (EA005-P)</b> BH32.1, North Creek 2, BORR_MW08a, BORR_MW09, MR_MW05, SW08, SW09, BORR_MW07, SW10, BORR_MW10, SW07,	22-Aug-2019	----	----	----	26-Aug-2019	22-Aug-2019	*
<b>EA010P: Conductivity by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural (EA010-P)</b> BORR_MW31, SW6 (proposed), BH9.2, BORR_MW04, SW11, BORR_MW06, BORR_MW46, BORR_MW12, BORR_MW29, BORR_MW37, BORR_MW25, FD03, BORR_MW05, BORR_MW11, Southern 4, Southern 3	21-Aug-2019	----	----	----	26-Aug-2019	18-Sep-2019	✓
<b>Clear Plastic Bottle - Natural (EA010-P)</b> BH32.1, North Creek 2, BORR_MW08a, BORR_MW09, MR_MW05, SW08, SW09, BORR_MW07, SW10, BORR_MW10, SW07,	22-Aug-2019	----	----	----	26-Aug-2019	19-Sep-2019	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
<b>Clear Plastic Bottle - Natural (EA015H)</b> BORR_MW31, SW6 (proposed), BH9.2, BORR_MW04, SW11, BORR_MW06, BORR_MW46, BORR_MW12,	BORR_MW29, BORR_MW37, BORR_MW25, FD03, BORR_MW05, BORR_MW11, Southern 4, Southern 3	21-Aug-2019	----	----	----	28-Aug-2019	28-Aug-2019	✓
<b>Clear Plastic Bottle - Natural (EA015H)</b> BH32.1, North Creek 2, BORR_MW08a, BORR_MW09, MR_MW05, SW08	SW09, BORR_MW07, SW10, BORR_MW10, SW07,	22-Aug-2019	----	----	----	29-Aug-2019	29-Aug-2019	✓
<b>ED037P: Alkalinity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (ED037-P)</b> BORR_MW31, SW6 (proposed), BH9.2, BORR_MW04, SW11, BORR_MW06, BORR_MW46, BORR_MW12,	BORR_MW29, BORR_MW37, BORR_MW25, FD03, BORR_MW05, BORR_MW11, Southern 4, Southern 3	21-Aug-2019	----	----	----	26-Aug-2019	04-Sep-2019	✓
<b>Clear Plastic Bottle - Natural (ED037-P)</b> BH32.1, North Creek 2, BORR_MW08a, BORR_MW09, MR_MW05, SW08	SW09, BORR_MW07, SW10, BORR_MW10, SW07,	22-Aug-2019	----	----	----	26-Aug-2019	05-Sep-2019	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>ED038A: Acidity</b>								
<b>Clear Plastic Bottle - Natural (ED038)</b> BORR_MW31, SW6 (proposed), BH9.2, BORR_MW04, SW11, BORR_MW06, BORR_MW46, BORR_MW12,	BORR_MW29, BORR_MW37, BORR_MW25, FD03, BORR_MW05, BORR_MW11, Southern 4, Southern 3	21-Aug-2019	----	----	----	27-Aug-2019	04-Sep-2019	✓
<b>Clear Plastic Bottle - Natural (ED038)</b> BH32.1, North Creek 2, BORR_MW08a, BORR_MW09, MR_MW05, SW08	SW09, BORR_MW07, SW10, BORR_MW10, SW07,	22-Aug-2019	----	----	----	27-Aug-2019	05-Sep-2019	✓
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
<b>Clear Plastic Bottle - Natural (ED041G)</b> BORR_MW31, SW6 (proposed), BH9.2, BORR_MW04, SW11, BORR_MW06, BORR_MW46, BORR_MW12,	BORR_MW29, BORR_MW37, BORR_MW25, FD03, BORR_MW05, BORR_MW11, Southern 4, Southern 3	21-Aug-2019	----	----	----	23-Aug-2019	18-Sep-2019	✓
<b>Clear Plastic Bottle - Natural (ED041G)</b> BH32.1, North Creek 2, BORR_MW08a, BORR_MW09, MR_MW05, SW08	SW09, BORR_MW07, SW10, BORR_MW10, SW07,	22-Aug-2019	----	----	----	23-Aug-2019	19-Sep-2019	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>ED045G: Chloride by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Natural (ED045G)</b> BORR_MW31, SW6 (proposed), BH9.2, BORR_MW04, SW11, BORR_MW06, BORR_MW46, BORR_MW12,	BORR_MW29, BORR_MW37, BORR_MW25, FD03, BORR_MW05, BORR_MW11, Southern 4, Southern 3	21-Aug-2019	----	----	----	23-Aug-2019	18-Sep-2019	✓
<b>Clear Plastic Bottle - Natural (ED045G)</b> BH32.1, North Creek 2, BORR_MW08a, BORR_MW09, MR_MW05, SW08	SW09, BORR_MW07, SW10, BORR_MW10, SW07,	22-Aug-2019	----	----	----	23-Aug-2019	19-Sep-2019	✓
<b>ED093F: Dissolved Major Cations</b>								
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> BORR_MW31, SW6 (proposed), BH9.2, BORR_MW04, SW11, BORR_MW06, BORR_MW46, BORR_MW12,	BORR_MW29, BORR_MW37, BORR_MW25, FD03, BORR_MW05, BORR_MW11, Southern 4, Southern 3	21-Aug-2019	----	----	----	26-Aug-2019	18-Sep-2019	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> BH32.1, North Creek 2, BORR_MW08a, BORR_MW09, MR_MW05, SW08	SW09, BORR_MW07, SW10, BORR_MW10, SW07,	22-Aug-2019	----	----	----	26-Aug-2019	19-Sep-2019	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EG020F: Dissolved Metals by ICP-MS</b>							
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> BORR_MW31, SW6 (proposed), BH9.2, BORR_MW04, SW11, BORR_MW06, BORR_MW46, BORR_MW12, BORR_MW29, BORR_MW37, BORR_MW25, FD03, BORR_MW05, BORR_MW11, Southern 4, Southern 3	21-Aug-2019	----	----	----	26-Aug-2019	17-Feb-2020	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> BH32.1, North Creek 2, BORR_MW08a, BORR_MW09, MR_MW05, SW08, SW09, BORR_MW07, SW10, BORR_MW10, SW07,	22-Aug-2019	----	----	----	26-Aug-2019	18-Feb-2020	✓
<b>EG020T: Total Metals by ICP-MS</b>							
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> BORR_MW31, SW6 (proposed), BH9.2, BORR_MW04, SW11, BORR_MW06, BORR_MW11, Southern 4, Southern 3, BORR_MW29, BORR_MW37, BORR_MW25, FD03, BORR_MW05, RB03, BORR_MW46, BORR_MW12,	21-Aug-2019	26-Aug-2019	17-Feb-2020	✓	26-Aug-2019	17-Feb-2020	✓
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> BH32.1, North Creek 2, BORR_MW08a, BORR_MW09, MR_MW05, SW07, SW09, BORR_MW07, SW10, BORR_MW10, RB04, SW08,	22-Aug-2019	26-Aug-2019	18-Feb-2020	✓	26-Aug-2019	18-Feb-2020	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EK055G: Ammonia as N by Discrete Analyser</b>							
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> BORR_MW31, SW6 (proposed), BH9.2, BORR_MW04, SW11, BORR_MW06, BORR_MW46, BORR_MW12, BORR_MW29, BORR_MW37, BORR_MW25, FD03, BORR_MW05, BORR_MW11, Southern 4, Southern 3	21-Aug-2019	----	----	----	23-Aug-2019	18-Sep-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> BH32.1, North Creek 2, BORR_MW08a, BORR_MW09, MR_MW05, SW08, SW09, BORR_MW07, SW10, BORR_MW10, SW07,	22-Aug-2019	----	----	----	23-Aug-2019	19-Sep-2019	✓
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>							
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> BORR_MW31, SW6 (proposed), BH9.2, BORR_MW04, SW11, BORR_MW06, BORR_MW46, BORR_MW12, BORR_MW29, BORR_MW37, BORR_MW25, FD03, BORR_MW05, BORR_MW11, Southern 4, Southern 3	21-Aug-2019	----	----	----	23-Aug-2019	18-Sep-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> BH32.1, North Creek 2, BORR_MW08a, BORR_MW09, MR_MW05, SW08, SW09, BORR_MW07, SW10, BORR_MW10, SW07,	22-Aug-2019	----	----	----	23-Aug-2019	19-Sep-2019	✓





Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> BORR_MW31, SW6 (proposed), BH9.2, BORR_MW04, SW11, BORR_MW06, BORR_MW46, BORR_MW12,	BORR_MW29, BORR_MW37, BORR_MW25, FD03, BORR_MW05, BORR_MW11, Southern 4, Southern 3	21-Aug-2019	28-Aug-2019	18-Sep-2019	✓	28-Aug-2019	18-Sep-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> BH32.1, North Creek 2, BORR_MW08a, BORR_MW09, MR_MW05, SW08	SW09, BORR_MW07, SW10, BORR_MW10, SW07,	22-Aug-2019	28-Aug-2019	19-Sep-2019	✓	28-Aug-2019	19-Sep-2019	✓
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> BORR_MW31, SW6 (proposed), BH9.2, BORR_MW04, SW11, BORR_MW06, BORR_MW46, BORR_MW12,	BORR_MW29, BORR_MW37, BORR_MW25, FD03, BORR_MW05, BORR_MW11, Southern 4, Southern 3	21-Aug-2019	28-Aug-2019	18-Sep-2019	✓	28-Aug-2019	18-Sep-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> BH32.1, North Creek 2, BORR_MW08a, BORR_MW09, MR_MW05, SW08	SW09, BORR_MW07, SW10, BORR_MW10, SW07,	22-Aug-2019	28-Aug-2019	19-Sep-2019	✓	28-Aug-2019	19-Sep-2019	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>								
<b>Clear Plastic Bottle - Natural (EK071G)</b> BORR_MW31, SW6 (proposed), BH9.2, BORR_MW04, SW11, BORR_MW06, BORR_MW46, BORR_MW12,	BORR_MW29, BORR_MW37, BORR_MW25, FD03, BORR_MW05, BORR_MW11, Southern 4, Southern 3	21-Aug-2019	----	----	----	23-Aug-2019	23-Aug-2019	✓
<b>Clear Plastic Bottle - Natural (EK071G)</b> BH32.1, North Creek 2, BORR_MW08a, BORR_MW09, MR_MW05, SW08	SW09, BORR_MW07, SW10, BORR_MW10, SW07,	22-Aug-2019	----	----	----	23-Aug-2019	24-Aug-2019	✓
<b>EK085M: Sulfide as S2-</b>								
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> BORR_MW31, SW6 (proposed), BH9.2, BORR_MW04, SW11, BORR_MW06, BORR_MW46, BORR_MW12,	BORR_MW29, BORR_MW37, BORR_MW25, FD03, BORR_MW05, BORR_MW11, Southern 4, Southern 3	21-Aug-2019	----	----	----	27-Aug-2019	28-Aug-2019	✓
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> BH32.1, North Creek 2, BORR_MW08a, BORR_MW09, MR_MW05, SW08	SW09, BORR_MW07, SW10, BORR_MW10, SW07,	22-Aug-2019	----	----	----	29-Aug-2019	29-Aug-2019	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BORR_MW31, SW6 (proposed), BH9.2, BORR_MW04, SW11	BORR_MW29, BORR_MW37, BORR_MW25, FD03,	21-Aug-2019	26-Aug-2019	28-Aug-2019	✓	28-Aug-2019	05-Oct-2019	✓	
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BORR_MW05, BORR_MW11, Southern 4, Southern 3	BORR_MW06, BORR_MW46, BORR_MW12,	21-Aug-2019	27-Aug-2019	28-Aug-2019	✓	28-Aug-2019	06-Oct-2019	✓	
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BH32.1, North Creek 2, BORR_MW08a, BORR_MW09, MR_MW05, SW08	SW09, BORR_MW07, SW10, BORR_MW10, SW07,	22-Aug-2019	27-Aug-2019	29-Aug-2019	✓	28-Aug-2019	06-Oct-2019	✓	
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BORR_MW31, SW6 (proposed), BH9.2, BORR_MW04, SW11, BORR_MW06, TBW670, TBW677, BORR_MW46, BORR_MW12,	BORR_MW29, BORR_MW37, BORR_MW25, FD03, BORR_MW05, FB03, TBW675, BORR_MW11, Southern 4, Southern 3	21-Aug-2019	30-Aug-2019	04-Sep-2019	✓	30-Aug-2019	04-Sep-2019	✓	
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BH32.1, North Creek 2, BORR_MW08a, BORR_MW09, MR_MW05, TBW679, TBW676, TBW673, SW08	SW09, BORR_MW07, SW10, BORR_MW10, FB06, TBW678, TBW674, SW07,	22-Aug-2019	30-Aug-2019	05-Sep-2019	✓	30-Aug-2019	05-Sep-2019	✓	



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>								
<b>Amber Glass Bottle - Unpreserved (EP071)</b>								
BORR_MW31, SW6 (proposed), BH9.2, BORR_MW04, SW11	BORR_MW29, BORR_MW37, BORR_MW25, FD03,	21-Aug-2019	26-Aug-2019	28-Aug-2019	✓	28-Aug-2019	05-Oct-2019	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b>								
BORR_MW05, BORR_MW11, Southern 4, Southern 3	BORR_MW06, BORR_MW46, BORR_MW12,	21-Aug-2019	27-Aug-2019	28-Aug-2019	✓	28-Aug-2019	06-Oct-2019	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b>								
BH32.1, North Creek 2, BORR_MW08a, BORR_MW09, MR_MW05, SW08	SW09, BORR_MW07, SW10, BORR_MW10, SW07,	22-Aug-2019	27-Aug-2019	29-Aug-2019	✓	28-Aug-2019	06-Oct-2019	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
BORR_MW31, SW6 (proposed), BH9.2, BORR_MW04, SW11, BORR_MW06, TBW670, TBW677, BORR_MW46, BORR_MW12,	BORR_MW29, BORR_MW37, BORR_MW25, FD03, BORR_MW05, FB03, TBW675, BORR_MW11, Southern 4, Southern 3	21-Aug-2019	30-Aug-2019	04-Sep-2019	✓	30-Aug-2019	04-Sep-2019	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
BH32.1, North Creek 2, BORR_MW08a, BORR_MW09, MR_MW05, TBW679, TBW676, TBW673, SW08	SW09, BORR_MW07, SW10, BORR_MW10, FB06, TBW678, TBW674, SW07,	22-Aug-2019	30-Aug-2019	05-Sep-2019	✓	30-Aug-2019	05-Sep-2019	✓



Matrix: WATER

Evaluation: ✘ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080: BTEXN</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BORR_MW31, SW6 (proposed), BH9.2, BORR_MW04, SW11, BORR_MW06, TBW670, TBW677, BORR_MW46, BORR_MW12,	BORR_MW29, BORR_MW37, BORR_MW25, FD03, BORR_MW05, FB03, TBW675, BORR_MW11, Southern 4, Southern 3	21-Aug-2019	30-Aug-2019	04-Sep-2019	✔	30-Aug-2019	04-Sep-2019	✔
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BH32.1, North Creek 2, BORR_MW08a, BORR_MW09, MR_MW05, TBW679, TBW676, TBW673, SW08	SW09, BORR_MW07, SW10, BORR_MW10, FB06, TBW678, TBW674, SW07,	22-Aug-2019	30-Aug-2019	05-Sep-2019	✔	30-Aug-2019	05-Sep-2019	✔
<b>EP204: Glyphosate and AMPA</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b> SW6 (proposed), Southern 4,	SW11, Southern 3	21-Aug-2019	----	----	----	28-Aug-2019	04-Sep-2019	✔
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b> SW09, SW10, SW08	North Creek 2, SW07,	22-Aug-2019	----	----	----	28-Aug-2019	05-Sep-2019	✔
<b>EP234A: OP Pesticides</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> SW6 (proposed), Southern 4,	SW11, Southern 3	21-Aug-2019	----	----	----	29-Aug-2019	28-Aug-2019	✘
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> SW09, SW10, SW08	North Creek 2, SW07,	22-Aug-2019	----	----	----	29-Aug-2019	29-Aug-2019	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaural	Actual	Expected	Evaluation	
<b>Laboratory Duplicates (DUP)</b>							
Acidity as Calcium Carbonate	ED038	6	60	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	6	54	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	4	38	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	4	36	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	4	39	10.26	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	10	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	4	39	10.26	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	2	12	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	33	12.12	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	4	38	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	38	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	6	50	12.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	6	55	10.91	10.53	✔	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	27	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	3	29	10.34	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	27	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	27	7.41	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	37	10.81	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Acidity as Calcium Carbonate	ED038	3	60	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	6	54	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	4	38	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	36	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	39	5.13	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	10	10.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	39	5.13	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	12	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	33	12.12	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	38	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	38	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	3	50	6.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	6	55	10.91	10.53	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Alkalinity by PC Titrator	ED037-P	3	54	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	3	50	6.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	55	5.45	5.26	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	27	3.70	5.00	*	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3)  Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3)  Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.





Analytical Methods	Method	Matrix	Method Descriptions
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ammonium as N	EK055G-NH4	WATER	Ammonium in the sample is reported as the ionised / unionised fractions by the use of a nomograph and the initial pH and Temperature. Ammonia is determined by direct colorimetry by Discrete Analyser according to APHA 4500-NH3 G. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Sulfide as S2-	EK085	WATER	In house: Referenced to APHA 4500-S2- D. Sulfide species present in water samples are immediately precipitated when collected in pretreated caustic/zinc acetate preserved sample containers. The sulphides are coloured using methylene blue indicator. Non-detects may be screened by comparison against a standard at half-LOR, otherwise samples are measured using UV-VIS detection at 664nm. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatle Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Glyphosate and AMPA	EP204	WATER	In house: Pre-column derivatisation LCMS (ES in negative mode). Water samples are derivatised with 9-fluorenyl methoxycarbonyl chloroformate (Fmoc) in alkaline condition. The derivatives of glyphosate and AMPA are separated by a C8 column and determined by MS.
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CHAIN OF CUSTODY RECORD  
AND ANALYSIS REQUEST



GHD  
Level 10, 999 Hay Street  
Perth WA 6000  
PO Box 3106  
Perth WA 6832

Reception Ph: 08 6222 8222

Page 1 of 3

Project ID (as per ESdat set up; no spaces) **6137041** PO Number (to be invoiced) **6137041 (08.0831)**  
 Laboratory: **ALS laboratories**  
 Address: **26 Rigali Way, Wangara, WA**  
 Laboratory Contact: **Nanette Thompson**

Laboratory Quote No. **EP/489/19 V3** Turnaround Time **Standard**  
 Job Manager (Invoice) & GHD accounts **vicki.davies** Email Address (Results) **vicki.davies@ghd.com**  
**emily.evans@ghd.com**

GHD Sample ID	Lab Sample ID	Date	Time	Sample Matrix: Soil/SL/Sediment/Water/Air	Container				No	AS per Lab Quote EP/489/19	Analyses										HOLD	Remarks		
					Type: B-Bottle/P-Jar/Vial/Bag/C-Glass/Plastic	Preservative: Unpreserved/HCl/H2SO4/HNO3/Other																		
1	BORR-MW31	21/8/19		W	B			8	X															groundwater suite (g.w)
2	BORR-mw29	21/8/19		W	B			8	X															g.w
3	SN06 (proposed)	21/08/19		W	B			10	X															Surface water suite (S.W)
4	BORR-MW37	21/08/19		W	B			8	X															g.w
5	BH#9.2	21/08/19		W	B			8	X															g.w
6	BORR-MW25	21/08/19		W	B			8	X															g.w
7	BORR-MW04	21/08/19		W	B			8	X															g.w
8	FD03	21/08/19		W	B			8	X															g.w
9	SW11	21/08/19		W	B			11	X															S.W
10	BORR-MW05	21/08/19		W	B			8	X															g.w
11	BORR-MW06	21/08/19		W	B			8	X															g.w
12	RB03	21/08/19		W	B			1	X															rinse suite
13	FB03	21/08/19		W	B			1	X															field blank suite
14	TBW670	21/08/19		W	B			1	X															trip blank suite
15	TBW675	21/08/19		W	B			1	X															trip blank suite
16	TBW677	21/08/19		W	B			1	X															trip blank suite
17	TBS200	21/08/19		S	J			1	X															X

Environmental Division  
Perth  
Work Order Reference  
**EP1908496**



Telephone: +61-8-9406 1301

Sampled by: **Dom Shuttleworth + Emily Evans** Date/Time: **21/8 - 22/8** Relinquished by: **Dom Shuttleworth + Emily Evans** Date/Time: **21-22/8/19**  
 Received by: **NO** Date/Time: **23/8/19** Relinquished by: Date/Time:

1220

**CHAIN OF CUSTODY RECORD  
AND ANALYSIS REQUEST**



GHD  
Level 10, 999 Hay Street  
Perth WA 6000

PO Box 3106  
Perth WA 6832

Reception Ph: 08 6222 8222

<b>Project ID</b> (as per ESdat set up; no spaces) 6137041	<b>PO Number</b> (to be invoiced) 6137041 (08.0831)	<b>Laboratory:</b> ALS laboratories
		<b>Address:</b> 26 Rigali way, Wangara, WA
		<b>Laboratory Contact:</b> Marie Thompson

<b>Laboratory Quote No.</b> EP/489/19 v3	<b>Turnaround Time</b> Standard	<b>Container</b>	<b>Analyses</b>	<b>Remarks</b>
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<b>Job Manager (Invoice) &amp; GHD accounts</b> vicki davies	<b>Email Address (Results)</b> vicki.davies@ghd.com emily.evans@ghd.com
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GHD Sample ID	Lab Sample ID	Date	Time	Sample Matrix S-Soil/SL Storage/Water/Air	Type B-Bottle/Larv/Vial/Pag/C-Glass/P-Plastic	Preservative Unpreserved/HCl/H2SO4/HNO3/Other	No	As per Lab quote EP/489/19	Analyses										HOLD	Remarks			
18 TBS202		21/8/19		S	J		1														X	—	
<del>BORR-MW04</del>		<del>21/08/19</del>		<del>W</del>	<del>B</del>		<del>9</del>																
19 BORR-MW11		21/08/19		W	B		8	X															groundwater suite (g.w)
20 BORR-MW46		21/08/19		W	B		8	X															g.w
21 Southern 4		21/08/19		W	B		10	X															surface water suite (s.w)
22 BORR-MW12		21/08/19		W	B		8	X															g.w
23 Southern 3		21/08/19		W	B		10	X															s.w
24 B132.1		22/08/19		W	B		8	X															g.w
25 SN09		22/08/19		W	B		10	X															s.w
26 NORTH Creek 2		22/08/19		W	B		10	X															s.w
27 <del>MW04 BORR-MW04</del>		<del>22/08/19</del>		<del>W</del>	<del>B</del>		<del>8</del>	<del>X</del>															g.w
28 BORR-MW08a		22/08/19		W	B		8	X															g.w
29 SN10		22/08/19		W	B		10	X															s.w
30 BORR-MW09		22/08/19		W	B		8	X															g.w
31 BORR-MW10		22/08/19		W	B		8	X															g.w
32 MR-MW05		22/08/19		W	B		8	X															g.w
33 RB04		22/08/19		W	B		1	X															rinsate suite

<b>Sampled by:</b> Dan Shutteworth + Emily Evans	<b>Date/Time:</b> 21/8 - 22/8	<b>Relinquished by:</b> Dan Shutteworth + Emily Evans	<b>Date/Time:</b> 21/8 - 22/8
<b>Received by:</b> <i>M</i>	<b>Date/Time:</b> 23/8/19	<b>Relinquished by:</b>	<b>Date/Time:</b>

1220

**CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST**



GHD  
Level 10, 999 Hay Street  
Perth WA 6000  
PO Box 3106  
Perth WA 6832

Reception Ph: 08 6222 8222

Project ID (as per ESDat set up; no spaces) <b>6137041</b>	PO Number (to be invoiced) <b>6137041 (08.0831)</b>	Laboratory: <b>ALS Laboratories</b> Address: <b>25 Rigali Way, Wangara, WA</b> Laboratory Contact: <b>Marnie Thompson</b>
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Laboratory Quote No. <b>EP/489/19 v3</b>	Turnaround Time Standard						
Job Manager (Invoice) & GHD accounts vicci.davies	Email Address (Results) vicci.davies@ghd.com emily.evans@ghd.com						

GHD Sample ID	Lab Sample ID	Date	Time	Sample Matrix - Soil / Slurry / Water / Air	Container			No	Analyses															HOLD	Remarks	
					Type - Bottle / Jar / Vial / Bag / Glass / Plastic	Preservative - Unpreserved / HCl / H2SO4 / HNO3 / Other																				
34 FB04		21/08/19		W	B			1	X																	field blank
35 FB05		22/08/19		W	B			1	X																	blank suite
36 FB06		22/08/19		W	B			1	X																	(only analyse as needed per lab quote)
37 <del>TBN674</del> TBN679		22/08/19		W	B			1	X																	} trip blank suite as per lab quote
38 TBN678		22/08/19		W	B			1	X																	
39 <del>TBN676</del>		22/08/19		W	B			1	X																	
40 TBN674		22/08/19		W	B			1	X																	
41 TBN673		22/08/19		W	B			1	X																	
42 SW07		22/8/19		W	B			10	X																	
43 SW08		22/8/19		W	B			10	X																	
44 TBS198				S	J			1	X																	
45 TBS199				S	J			1	X																	
46 TBS201				S	J			1	X																	

Sampled by: <b>Dom Shuttleworth + Emily Evans</b>	Date/Time: <b>21/8 - 22/8</b>	Relinquished by: <b>Dom Shuttleworth + Emily Evans</b>	Date/Time: <b>21/8 - 22/8</b>
Received by: <b>MD</b>	Date/Time: <b>23/8/19</b>	Relinquished by:	Date/Time:

1220

GHD Pty Ltd WA  
999 Hay Street Perth  
Perth  
WA 6004



NATA Accredited  
Accreditation Number 1261  
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing  
The results of the tests, calibrations and/or  
measurements included in this document are traceable  
to Australian/national standards.

**Attention:** Vicki Davies

**Report** 672975-W  
Project name  
Project ID 6137041  
Received Date Aug 21, 2019

Client Sample ID			FS01
Sample Matrix			Water
Eurofins Sample No.			M19-Au34641
Date Sampled			Aug 19, 2019
Test/Reference	LOR	Unit	
Acidity (as CaCO <sub>3</sub> )	10	mg/L	37
Ammonia (as N)	0.01	mg/L	< 0.01
Chloride	1	mg/L	820
Conductivity (at 25°C)	1	uS/cm	2300
Nitrate & Nitrite (as N)	0.05	mg/L	2.0
pH (at 25°C)	0.1	pH Units	6.7
Phosphate total (as P)	0.01	mg/L	0.02
Phosphorus reactive (as P)	0.01	mg/L	< 0.01
Sulphate (as SO <sub>4</sub> )	5	mg/L	76
Sulphide (as S)	0.05	mg/L	< 0.05
Total Dissolved Solids Dried at 180°C ± 2°C	10	mg/L	1200
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2
Total Nitrogen (as N)	0.2	mg/L	2.1
<b>Alkalinity (speciated)</b>			
Total Alkalinity (as CaCO <sub>3</sub> )	20	mg/L	51
<b>Heavy Metals</b>			
Aluminium	0.05	mg/L	0.94
Aluminium (filtered)	0.05	mg/L	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001
Cadmium (filtered)	0.0002	mg/L	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001
Cobalt (filtered)	0.001	mg/L	< 0.001
Copper (filtered)	0.001	mg/L	0.015
Iron	0.05	mg/L	0.87
Iron (filtered)	0.05	mg/L	< 0.05
Lead (filtered)	0.001	mg/L	0.001
Manganese (filtered)	0.005	mg/L	0.007
Nickel (filtered)	0.001	mg/L	0.009
Selenium (filtered)	0.001	mg/L	< 0.001
Zinc (filtered)	0.005	mg/L	0.059
<b>Alkali Metals</b>			
Calcium (filtered)	0.5	mg/L	41
Magnesium (filtered)	0.5	mg/L	71
Potassium (filtered)	0.5	mg/L	7.3
Sodium (filtered)	0.5	mg/L	310

**Sample History**

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

<b>Description</b>	<b>Testing Site</b>	<b>Extracted</b>	<b>Holding Time</b>
Acidity (as CaCO <sub>3</sub> ) - Method: LTM-INO-4210 Acidity	Melbourne	Aug 23, 2019	14 Days
Ammonia (as N) - Method: LTM-INO-4200 Ammonia by Discrete Analyser	Melbourne	Aug 23, 2019	28 Days
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Aug 23, 2019	28 Days
Conductivity (at 25°C) - Method: LTM-INO-4030 Conductivity	Melbourne	Aug 23, 2019	28 Days
Nitrate & Nitrite (as N) - Method: LTM-INO-4120 Analysis of NO <sub>x</sub> NO <sub>2</sub> NH <sub>3</sub> by FIA	Melbourne	Aug 23, 2019	28 Days
pH (at 25°C) - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Aug 23, 2019	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorus	Melbourne	Aug 23, 2019	28 Days
Phosphorus reactive (as P) - Method: APHA 4500-P	Melbourne	Aug 23, 2019	2 Days
Sulphate (as SO <sub>4</sub> ) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Aug 23, 2019	28 Days
Sulphide (as S) - Method: APHA 4500-S C & D - Sulphide	Melbourne	Aug 23, 2019	7 Days
Total Dissolved Solids Dried at 180°C ± 2°C - Method: LTM-INO-4170 Total Dissolved Solids in Water	Melbourne	Aug 26, 2019	7 Days
Total Kjeldahl Nitrogen (as N) - Method: LTM-INO-4310 TKN in Waters & Soils by FIA	Melbourne	Aug 23, 2019	7 Days
Alkalinity (speciated) - Method: LTM-INO-4250 Alkalinity by Electrometric Titration	Melbourne	Aug 23, 2019	14 Days
Heavy Metals - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Melbourne	Aug 26, 2019	180 Days
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Melbourne	Aug 23, 2019	180 Days
Alkali Metals (filtered) - Method: USEPA 6010 Heavy Metals	Melbourne	Aug 23, 2019	180 Days

<b>Company Name:</b> GHD Pty Ltd WA	<b>Order No.:</b> 6137041	<b>Received:</b> Aug 21, 2019 3:19 PM
<b>Address:</b> 999 Hay Street Perth Perth WA 6004	<b>Report #:</b> 672975	<b>Due:</b> Aug 28, 2019
	<b>Phone:</b> 08 6222 8222	<b>Priority:</b> 5 Day
	<b>Fax:</b> 08 9429 6555	<b>Contact Name:</b> Ian Oglesby
<b>Project Name:</b>		
<b>Project ID:</b> 6137041		

Eurofins Analytical Services Manager : Robert Johnston

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Ammonia (as N)	Arsenic (filtered)	Cadmium (filtered)	Calcium (filtered)	Chloride	Chromium (filtered)	Cobalt (filtered)	Conductivity (at 25°C)	Copper (filtered)	Iron	Iron (filtered)	Lead (filtered)	Magnesium (filtered)	Manganese (filtered)	Nickel (filtered)	Nitrate & Nitrite (as N)	pH (at 25°C)	Phosphate total (as P)	Phosphorus reactive (as P)	Potassium (filtered)	Selenium (filtered)	Sodium (filtered)	Sulphate (as SO4)	Sulphide (as S)	Total Alkalinity (as CaCO3)	Total Dissolved Solids Dried at 180°C ± 2°C	Total Kjeldahl Nitrogen (as N)	Total Nitrogen (as N)	Zinc (filtered)					
<b>Melbourne Laboratory - NATA Site # 1254 &amp; 14271</b>						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
<b>Sydney Laboratory - NATA Site # 18217</b>																																										
<b>Brisbane Laboratory - NATA Site # 20794</b>																																										
<b>Perth Laboratory - NATA Site # 23736</b>																																										
<b>External Laboratory</b>																																										
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																					
1	FS01	Aug 19, 2019		Water	M19-Au34641	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
<b>Test Counts</b>						1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	



**Internal Quality Control Review and Glossary**
**General**

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

**Holding Times**

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

**\*\*NOTE:** pH duplicates are reported as a range NOT as RPD

**Units**

**mg/kg:** milligrams per kilogram

**mg/L:** milligrams per litre

**ug/L:** micrograms per litre

**ppm:** Parts per million

**ppb:** Parts per billion

**%:** Percentage

**org/100mL:** Organisms per 100 millilitres

**NTU:** Nephelometric Turbidity Units

**MPN/100mL:** Most Probable Number of organisms per 100 millilitres

**Terms**

<b>Dry</b>	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
<b>LOR</b>	Limit of Reporting.
<b>SPIKE</b>	Addition of the analyte to the sample and reported as percentage recovery.
<b>RPD</b>	Relative Percent Difference between two Duplicate pieces of analysis.
<b>LCS</b>	Laboratory Control Sample - reported as percent recovery.
<b>CRM</b>	Certified Reference Material - reported as percent recovery.
<b>Method Blank</b>	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
<b>Surr - Surrogate</b>	The addition of a like compound to the analyte target and reported as percentage recovery.
<b>Duplicate</b>	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
<b>USEPA</b>	United States Environmental Protection Agency
<b>APHA</b>	American Public Health Association
<b>TCLP</b>	Toxicity Characteristic Leaching Procedure
<b>COC</b>	Chain of Custody
<b>SRA</b>	Sample Receipt Advice
<b>QSM</b>	US Department of Defense Quality Systems Manual Version 5.3
<b>CP</b>	Client Parent - QC was performed on samples pertaining to this report
<b>NCP</b>	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
<b>TEQ</b>	Toxic Equivalency Quotient

**QC - Acceptance Criteria**

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

**QC Data General Comments**

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

**Quality Control Results**

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code	
<b>Method Blank</b>							
Acidity (as CaCO <sub>3</sub> )	mg/L	< 10		10	Pass		
Ammonia (as N)	mg/L	< 0.01		0.01	Pass		
Chloride	mg/L	< 1		1	Pass		
Nitrate & Nitrite (as N)	mg/L	< 0.05		0.05	Pass		
Phosphate total (as P)	mg/L	< 0.01		0.01	Pass		
Phosphorus reactive (as P)	mg/L	< 0.01		0.01	Pass		
Sulphate (as SO <sub>4</sub> )	mg/L	< 5		5	Pass		
Sulphide (as S)	mg/L	< 0.05		0.05	Pass		
Total Dissolved Solids Dried at 180°C ± 2°C	mg/L	< 10		10	Pass		
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2		0.2	Pass		
Total Nitrogen (as N)	mg/L	< 0.2		0.2	Pass		
<b>Method Blank</b>							
<b>Heavy Metals</b>							
Aluminium	mg/L	< 0.05		0.05	Pass		
Iron	mg/L	< 0.05		0.05	Pass		
<b>Method Blank</b>							
<b>Alkali Metals</b>							
Calcium (filtered)	mg/L	< 0.5		0.5	Pass		
Magnesium (filtered)	mg/L	< 0.5		0.5	Pass		
Potassium (filtered)	mg/L	< 0.5		0.5	Pass		
Sodium (filtered)	mg/L	< 0.5		0.5	Pass		
<b>LCS - % Recovery</b>							
Ammonia (as N)	%	100		70-130	Pass		
Chloride	%	106		70-130	Pass		
Nitrate & Nitrite (as N)	%	101		70-130	Pass		
Phosphate total (as P)	%	92		70-130	Pass		
Phosphorus reactive (as P)	%	119		70-130	Pass		
Sulphate (as SO <sub>4</sub> )	%	104		70-130	Pass		
Sulphide (as S)	%	92		70-130	Pass		
Total Dissolved Solids Dried at 180°C ± 2°C	%	93		70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	99		70-130	Pass		
Total Nitrogen (as N)	%	99		70-130	Pass		
<b>LCS - % Recovery</b>							
<b>Alkalinity (speciated)</b>							
Total Alkalinity (as CaCO <sub>3</sub> )	%	99		70-130	Pass		
<b>LCS - % Recovery</b>							
<b>Heavy Metals</b>							
Aluminium	%	101		80-120	Pass		
Iron	%	93		80-120	Pass		
<b>LCS - % Recovery</b>							
<b>Alkali Metals</b>							
Calcium (filtered)	%	98		70-130	Pass		
Magnesium (filtered)	%	93		70-130	Pass		
Potassium (filtered)	%	96		70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
<b>Spike - % Recovery</b>							
				Result 1			
Ammonia (as N)	B19-Au34218	NCP	%	98	70-130	Pass	
Chloride	M19-Au33322	NCP	%	70	70-130	Pass	
Nitrate & Nitrite (as N)	B19-Au34218	NCP	%	101	70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Sulphate (as SO <sub>4</sub> )	M19-Au33261	NCP	%	87			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M19-Au33317	NCP	%	83			70-130	Pass	
Total Nitrogen (as N)	M19-Au33317	NCP	%	83			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Alkalinity (speciated)</b>				Result 1					
Total Alkalinity (as CaCO <sub>3</sub> )	B19-Au33073	NCP	%	112			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Heavy Metals</b>				Result 1					
Aluminium (filtered)	B19-Au34975	NCP	%	94			75-125	Pass	
Arsenic (filtered)	B19-Au34975	NCP	%	98			70-130	Pass	
Cadmium (filtered)	B19-Au34975	NCP	%	83			70-130	Pass	
Chromium (filtered)	B19-Au34975	NCP	%	88			70-130	Pass	
Cobalt (filtered)	B19-Au34975	NCP	%	86			75-125	Pass	
Copper (filtered)	B19-Au34975	NCP	%	80			70-130	Pass	
Iron (filtered)	B19-Au34975	NCP	%	85			70-130	Pass	
Lead (filtered)	B19-Au34975	NCP	%	85			70-130	Pass	
Manganese (filtered)	B19-Au34975	NCP	%	88			70-130	Pass	
Nickel (filtered)	B19-Au34975	NCP	%	83			70-130	Pass	
Selenium (filtered)	B19-Au34975	NCP	%	86			70-130	Pass	
Zinc (filtered)	B19-Au34975	NCP	%	83			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Alkali Metals</b>				Result 1					
Calcium (filtered)	B19-Au30072	NCP	%	112			70-130	Pass	
Magnesium (filtered)	B19-Au30072	NCP	%	118			70-130	Pass	
Potassium (filtered)	B19-Au30072	NCP	%	108			70-130	Pass	
Sodium (filtered)	B19-Au30072	NCP	%	117			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Duplicate</b>									
				Result 1	Result 2	RPD			
Acidity (as CaCO <sub>3</sub> )	B19-Au34979	NCP	mg/L	< 10	< 10	<1	30%	Pass	
Ammonia (as N)	B19-Au34218	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Chloride	S19-Au32916	NCP	mg/L	1800	2000	11	30%	Pass	
Conductivity (at 25°C)	B19-Au33072	NCP	uS/cm	11000	11000	<1	30%	Pass	
Nitrate & Nitrite (as N)	B19-Au34218	NCP	mg/L	0.05	0.05	2.0	30%	Pass	
pH (at 25°C)	B19-Au33072	NCP	pH Units	7.4	7.4	pass	30%	Pass	
Sulphate (as SO <sub>4</sub> )	S19-Au32916	NCP	mg/L	17	18	8.0	30%	Pass	
Sulphide (as S)	M19-Au34641	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	M19-Au29219	NCP	mg/L	810	820	2.0	30%	Pass	
<b>Duplicate</b>									
<b>Alkalinity (speciated)</b>				Result 1	Result 2	RPD			
Total Alkalinity (as CaCO <sub>3</sub> )	B19-Au33072	NCP	mg/L	1000	1000	<1	30%	Pass	
<b>Duplicate</b>									
<b>Heavy Metals</b>				Result 1	Result 2	RPD			
Aluminium (filtered)	B19-Au34975	NCP	mg/L	0.05	0.06	4.0	30%	Pass	
Arsenic (filtered)	B19-Au34975	NCP	mg/L	0.001	0.001	3.0	30%	Pass	
Cadmium (filtered)	B19-Au34975	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	B19-Au34975	NCP	mg/L	0.002	0.002	6.0	30%	Pass	
Cobalt (filtered)	B19-Au34975	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	B19-Au34975	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron (filtered)	M19-Au28828	NCP	mg/L	67	59	12	30%	Pass	
Lead (filtered)	B19-Au34975	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	B19-Au34975	NCP	mg/L	0.011	0.011	1.0	30%	Pass	
Nickel (filtered)	B19-Au34975	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	

<b>Duplicate</b>								
<b>Heavy Metals</b>				Result 1	Result 2	RPD		
Selenium (filtered)	B19-Au34975	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	B19-Au34975	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
<b>Duplicate</b>								
<b>Alkali Metals</b>				Result 1	Result 2	RPD		
Calcium (filtered)	B19-Au30072	NCP	mg/L	83	82	2.0	30%	Pass
Magnesium (filtered)	B19-Au30072	NCP	mg/L	110	110	2.0	30%	Pass
Potassium (filtered)	B19-Au30072	NCP	mg/L	6.9	7.0	1.0	30%	Pass
Sodium (filtered)	B19-Au30072	NCP	mg/L	600	580	3.0	30%	Pass

**Comments****Sample Integrity**

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	No
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

**Authorised By**

Robert Johnston	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Julie Kay	Senior Analyst-Inorganic (VIC)

**Glenn Jackson**  
**General Manager**

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

\* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

**CHAIN OF CUSTODY RECORD  
AND ANALYSIS REQUEST**



GHD  
Level 10, 999 Hay Street  
Perth WA 6000

PO Box 3106  
Perth WA 6832

Project ID (as per ESDot set up; no spaces) **613T041**

Laboratory: **613T041**

Reception Ph: 08 6222 8222

Laboratory Quote No. **ALS EP/489/19 V3**

Turnaround Time  
Standard

Address:

Analyses

Remarks

Job Manager (Invoice) & GHD accounts  
**Vicki Davies**  
Email Address (Results)  
**vicki.davies@ghd.com**  
**emily.evans@ghd.com**

Laboratory Contact:

Container

Sample Matrix

GHD Sample ID

Lab Sample ID

Date

Time

Sample Matrix S-Soil/ SL-  
Sludge/ W-Water/ A-Air

Type B-Bottle/J-Jar/V-  
Vial/Bag/G-Glass/P-Plastic

Preservative  
Unpreserved/ HCl/  
H2SO4/HNO3/Other

Container

Analyses

Remarks

**TS01**

**19/8/19**

**W**

**B**

**No**

**8**

**X**

**GW SUITE**

**HOLD**

**Please see emailed @note.**

Sampled by:

Date/Time:

Relinquished by:

Date/Time:

Received by:

Date/Time:

Relinquished by:

Date/Time:

**ND-ALS**

**2/8/19**

**1245**

## Robert Johnston

**To:** Ian Oglesby  
**Subject:** RE: 6137041 - Sample (FS01)

**From:** Ian Oglesby [<mailto:Ian.Oglesby@ghd.com>]  
**Sent:** Wednesday, 21 August 2019 8:51 AM  
**To:** Robert Johnston  
**Cc:** [Emily.Evans@ghd.com](mailto:Emily.Evans@ghd.com)  
**Subject:** 6137041 - Sample (FS01)

Hi Rob

Hopefully you'll receive a sample today from ALS, the sample is FS01 for 6137041. The GW suite of analysis is attached below (if it isn't provided).

Parameter	ALS Code	Technique/ Method Reference	Limit Of Reporting (LOR)
TRH/BTEXN	W-04	USEPA 8015A, USEPA 8260B	1 - 100 µg/L
Acid Sulphate Soil GW Suite - Extended Cl, SO <sub>4</sub> , Alkalinity, Acidity, pH, E.C., TDS, Dissolved Ca, Mg, Na, K, Fe, Mn, Al by ICP-AES or MS. Total N, TKN, NO <sub>x</sub> , Ammonia, Total & Reactive P; Total Al & Fe; Sulfide; Dissolved As, Cd, Co, Cu, Pb, Fe, Mn, Al, Cr, Ni, Se, Zn by ICPMS	ASSGW-2	Various	0.0001 - 10 mg/L, 0.01 pH Unit, 1 µS/cm, 0.01 %, 0.01 meq/L
Ammonium as N	EK055G- NH4	Calculation	0.01 mg/L

Any questions, please let me know.

Many thanks,

**Ian Oglesby**  
Environmental Scientist – Contaminated Sites

**GHD**

*Proudly employee owned*

T: + 61 8 9721 0730 | M: +61 477 714 160 | E: [ian.oglesby@ghd.com](mailto:ian.oglesby@ghd.com)

10 Victoria Street, Bunbury WA 6230 Australia | [www.ghd.com](http://www.ghd.com)

Connect



Rob Johnston 21/8/19 15:19 Eurofins

## CERTIFICATE OF ANALYSIS

<b>Work Order</b>	<b>: EP1909465</b>	<b>Page</b>	<b>: 1 of 35</b>
<b>Client</b>	<b>: GHD PTY LTD</b>	<b>Laboratory</b>	<b>: Environmental Division Perth</b>
<b>Contact</b>	<b>: MS VICKI DAVIES</b>	<b>Contact</b>	<b>: Marnie Thomsett</b>
<b>Address</b>	<b>: 999 HAY STREET PERTH WA, AUSTRALIA 6000</b>	<b>Address</b>	<b>: 26 Rigali Way Wangara WA Australia 6065</b>
<b>Telephone</b>	<b>: ----</b>	<b>Telephone</b>	<b>: 08 9406 1311</b>
<b>Project</b>	<b>: 6137041</b>	<b>Date Samples Received</b>	<b>: 18-Sep-2019 11:30</b>
<b>Order number</b>	<b>: 6137041(08.0831)</b>	<b>Date Analysis Commenced</b>	<b>: 18-Sep-2019</b>
<b>C-O-C number</b>	<b>: ----</b>	<b>Issue Date</b>	<b>: 03-Oct-2019 10:53</b>
<b>Sampler</b>	<b>: DOMINIQUE SHUTTLEWORTH, Emily Evans</b>		
<b>Site</b>	<b>: ----</b>		
<b>Quote number</b>	<b>: EP/489/19 V4</b>		
<b>No. of samples received</b>	<b>: 41</b>		
<b>No. of samples analysed</b>	<b>: 41</b>		



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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
Daniel Fisher	Inorganics Analyst	Perth Inorganics, Wangara, WA
David Viner	SENIOR LAB TECH	Perth Organics, Wangara, WA
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW





## General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP234: Poor matrix spike recovery for particular compounds due to matrix interferences.
- ED041G (Turbidimetric Sulfate): LOR raised on sample #22 and #23 due to possible sample matrix interference.
- EG020F: Results for aluminium, copper, nickel, zinc for samples EP1909465-005, 013, 022, 023, 029, 031 have been confirmed by re-analysis.
- EA015H (Total Dissolved Solids): TDS for sample #21, #27, #28 and 34 may be biasing high due to possible sample matrix interferences.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW13	North Creek 2	BH32.1	BORR MW15	BORR MW18
Client sampling date / time				16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909465-001	EP1909465-002	EP1909465-003	EP1909465-004	EP1909465-005	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.73	7.20	4.38	6.13	5.00	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	763	655	6990	149	207	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	491	368	4170	88	156	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	243	49	<1	17	<1	
Total Alkalinity as CaCO3	----	1	mg/L	243	49	<1	17	<1	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	19	3	63	10	11	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	76	26	511	8	13	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	69	187	2220	29	29	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	12	9	9	4	11	
Magnesium	7439-95-4	1	mg/L	12	15	174	3	4	
Sodium	7440-23-5	1	mg/L	162	107	1220	17	17	
Potassium	7440-09-7	1	mg/L	2	3	2	4	8	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.04	0.10	5.52	0.19	0.84	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.014	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0006	<0.0001	0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.006	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.001	1.58	<0.001	0.004	
Copper	7440-50-8	0.001	mg/L	0.013	0.017	0.013	0.012	0.003	
Lead	7439-92-1	0.001	mg/L	0.001	<0.001	0.006	0.006	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.012	0.056	0.253	0.004	0.195	
Nickel	7440-02-0	0.001	mg/L	0.010	0.009	1.71	0.009	0.006	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.050	0.064	0.124	0.061	<0.005	
Iron	7439-89-6	0.05	mg/L	1.94	0.70	12.1	0.90	<0.05	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW13	North Creek 2	BH32.1	BORR MW15	BORR MW18
Client sampling date / time				16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909465-001	EP1909465-002	EP1909465-003	EP1909465-004	EP1909465-005	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.45	0.43	10.2	1.01	1.10	
Iron	7439-89-6	0.05	mg/L	2.86	2.08	23.8	4.57	0.24	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.10	0.01	<0.01	0.63	<0.01	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.10	<0.01	<0.01	0.63	<0.01	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.62	0.28	<0.01	0.09	9.12	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.1	0.4	0.6	1.2	2.0	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	1.7	0.7	0.6	1.3	11.1	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.02	0.02	0.24	0.02	<0.01	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	8.38	6.80	73.3	1.32	1.09	
∅ Total Cations	----	0.01	meq/L	8.68	6.41	67.9	1.29	1.82	
∅ Ionic Balance	----	0.01	%	1.76	2.88	3.81	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	110	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	110	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW13	North Creek 2	BH32.1	BORR MW15	BORR MW18
Client sampling date / time				16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909465-001	EP1909465-002	EP1909465-003	EP1909465-004	EP1909465-005	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	140	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	140	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	<10	----	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	<0.02	----	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	----	<0.02	----	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	<0.10	----	----	----	
Carbofenthion	786-19-6	0.02	µg/L	----	<0.02	----	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	<0.02	----	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	<0.02	----	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	<0.2	----	----	----	
Coumaphos	56-72-4	0.01	µg/L	----	<0.01	----	----	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	<0.02	----	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	<0.02	----	----	----	
Demeton-O	298-03-3	0.02	µg/L	----	<0.02	----	----	----	
Demeton-S	126-75-0	0.02	µg/L	----	<0.02	----	----	----	
Diazinon	333-41-5	0.01	µg/L	----	<0.01	----	----	----	
Dichlorvos	62-73-7	0.20	µg/L	----	<0.20	----	----	----	
Dimethoate	60-51-5	0.02	µg/L	----	<0.02	----	----	----	
Disulfoton	298-04-4	0.05	µg/L	----	<0.05	----	----	----	
Ethion	563-12-2	0.02	µg/L	----	<0.02	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW13	North Creek 2	BH32.1	BORR MW15	BORR MW18
Client sampling date / time					16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EP1909465-001	EP1909465-002	EP1909465-003	EP1909465-004	EP1909465-005	
				Result	Result	Result	Result	Result	
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L	----	<0.05	----	----	----	
Ethoprophos	13194-48-4	0.01	µg/L	----	<0.01	----	----	----	
Fenamiphos	22224-92-6	0.01	µg/L	----	<0.01	----	----	----	
Fenchlorphos (Ronnell)	299-84-3	10	µg/L	----	<10	----	----	----	
Fenitrothion	122-14-5	2	µg/L	----	<2	----	----	----	
Fensulfothion	115-90-2	0.01	µg/L	----	<0.01	----	----	----	
Fenthion	55-38-9	0.05	µg/L	----	<0.05	----	----	----	
Malathion	121-75-5	0.02	µg/L	----	<0.02	----	----	----	
Mevinphos	7786-34-7	0.02	µg/L	----	<0.02	----	----	----	
Monocrotophos	6923-22-4	0.02	µg/L	----	<0.02	----	----	----	
Omethoate	1113-02-6	0.01	µg/L	----	<0.01	----	----	----	
Parathion	56-38-2	0.2	µg/L	----	<0.2	----	----	----	
Parathion-methyl	298-00-0	0.5	µg/L	----	<0.5	----	----	----	
Phorate	298-02-2	0.1	µg/L	----	<0.1	----	----	----	
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	----	<0.01	----	----	----	
Pirimiphos-methyl	29232-93-7	0.01	µg/L	----	<0.01	----	----	----	
Profenofos	41198-08-7	0.01	µg/L	----	<0.01	----	----	----	
Prothiofos	34643-46-4	0.1	µg/L	----	<0.1	----	----	----	
Sulfotep	3689-24-5	0.005	µg/L	----	<0.005	----	----	----	
Sulprofos	35400-43-2	0.05	µg/L	----	<0.05	----	----	----	
Terbufos	13071-79-9	0.01	µg/L	----	<0.01	----	----	----	
Temephos	3383-96-8	0.02	µg/L	----	<0.02	----	----	----	
Tetrachlorvinphos	22248-79-9	0.01	µg/L	----	<0.01	----	----	----	
Triazophos	24017-47-8	0.005	µg/L	----	<0.005	----	----	----	
Trichlorfon	52-68-6	0.02	µg/L	----	<0.02	----	----	----	
Trichloronate	327-98-0	0.5	µg/L	----	<0.5	----	----	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	116	116	119	120	114	
Toluene-D8	2037-26-5	2	%	91.7	93.0	91.9	92.7	91.3	
4-Bromofluorobenzene	460-00-4	2	%	111	112	112	112	110	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID				
				Northern 5	SW07	SW08	SW09	BORR MW22
Client sampling date / time				16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EP1909465-006	EP1909465-007	EP1909465-008	EP1909465-009	EP1909465-010
				Result	Result	Result	Result	Result
<b>EA005P: pH by PC Titrator</b>								
pH Value	----	0.01	pH Unit	7.51	7.22	7.23	6.66	6.73
<b>EA010P: Conductivity by PC Titrator</b>								
Electrical Conductivity @ 25°C	----	1	µS/cm	866	647	650	482	614
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
Total Dissolved Solids @180°C	----	10	mg/L	497	378	372	331	365
<b>ED037P: Alkalinity by PC Titrator</b>								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	143	47	48	80	26
Total Alkalinity as CaCO3	----	1	mg/L	143	47	48	80	26
<b>ED038A: Acidity</b>								
Acidity as CaCO3	----	1	mg/L	6	5	4	16	6
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	35	26	26	3	86
<b>ED045G: Chloride by Discrete Analyser</b>								
Chloride	16887-00-6	1	mg/L	206	192	189	116	137
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	36	9	8	17	2
Magnesium	7439-95-4	1	mg/L	17	15	14	9	8
Sodium	7440-23-5	1	mg/L	121	108	102	70	117
Potassium	7440-09-7	1	mg/L	6	3	3	11	<1
<b>EG020F: Dissolved Metals by ICP-MS</b>								
Aluminium	7429-90-5	0.01	mg/L	0.04	0.07	0.09	0.09	0.06
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	0.002	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.001	0.001	<0.001	0.001
Copper	7440-50-8	0.001	mg/L	0.012	0.013	0.013	0.015	0.010
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese	7439-96-5	0.001	mg/L	0.135	0.058	0.054	0.125	0.006
Nickel	7440-02-0	0.001	mg/L	0.010	0.008	0.005	0.008	0.006
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	0.042	0.066	0.063	0.066	0.050
Iron	7439-89-6	0.05	mg/L	0.29	0.52	0.57	7.62	0.06



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Northern 5	SW07	SW08	SW09	BORR MW22
Client sampling date / time				16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909465-006	EP1909465-007	EP1909465-008	EP1909465-009	EP1909465-010	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.22	0.42	0.17	22.6	1.31	
Iron	7439-89-6	0.05	mg/L	1.25	2.71	1.48	69.7	1.26	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.09	0.01	0.01	0.01	0.01	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.09	<0.01	<0.01	<0.01	<0.01	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.19	0.28	0.34	<0.01	0.19	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.9	0.3	0.4	6.3	0.3	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	1.1	0.6	0.7	6.3	0.5	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.38	0.01	0.01	0.74	0.03	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.28	<0.01	<0.01	0.03	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	9.40	6.90	6.83	4.93	6.17	
∅ Total Cations	----	0.01	meq/L	8.61	6.46	6.06	4.92	5.85	
∅ Ionic Balance	----	0.01	%	4.36	3.28	5.95	0.18	2.72	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	330	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	110	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	440	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Northern 5	SW07	SW08	SW09	BORR MW22
Client sampling date / time				16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909465-006	EP1909465-007	EP1909465-008	EP1909465-009	EP1909465-010	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	400	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	400	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	3	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	3	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	<10	<10	<10	<10	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	----	
Carbofenthoion	786-19-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	----	
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----	
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	<0.20	<0.20	----	
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Northern 5	SW07	SW08	SW09	BORR MW22
Client sampling date / time					16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00
Compound	CAS Number	LOR	Unit		EP1909465-006	EP1909465-007	EP1909465-008	EP1909465-009	EP1909465-010
					Result	Result	Result	Result	Result
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	----
Ethoprophos	13194-48-4	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	----
Fenamiphos	22224-92-6	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	----
Fenchlorphos (Rannel)	299-84-3	10	µg/L		<10	<10	<10	<10	----
Fenitrothion	122-14-5	2	µg/L		<2	<2	<2	<2	----
Fensulfothion	115-90-2	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	----
Fenthion	55-38-9	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	----
Malathion	121-75-5	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Mevinphos	7786-34-7	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Monocrotophos	6923-22-4	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Omethoate	1113-02-6	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	----
Parathion	56-38-2	0.2	µg/L		<0.2	<0.2	<0.2	<0.2	----
Parathion-methyl	298-00-0	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Phorate	298-02-2	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	----
Profenofos	41198-08-7	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	----
Prothiofos	34643-46-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	----
Sulfotep	3689-24-5	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	----
Sulprofos	35400-43-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	----
Terbufos	13071-79-9	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	----
Temephos	3383-96-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L		<0.01	<0.01	<0.01	<0.01	----
Triazophos	24017-47-8	0.005	µg/L		<0.005	<0.005	<0.005	<0.005	----
Trichlorfon	52-68-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	----
Trichloronate	327-98-0	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%		121	120	122	122	118
Toluene-D8	2037-26-5	2	%		95.4	93.6	93.0	92.4	95.5
4-Bromofluorobenzene	460-00-4	2	%		114	110	113	112	112



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW22b	BORR MW20	FD01	FB01	RB01
Client sampling date / time				16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909465-011	EP1909465-012	EP1909465-013	EP1909465-014	EP1909465-015	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.07	5.98	4.82	----	----	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	12400	4140	213	----	----	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	8140	2650	150	----	----	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	63	41	<1	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	63	41	<1	----	----	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	66	24	13	----	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	400	70	13	----	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	4200	1300	30	----	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	120	36	10	----	----	
Magnesium	7439-95-4	1	mg/L	344	110	3	----	----	
Sodium	7440-23-5	1	mg/L	2160	680	17	----	----	
Potassium	7440-09-7	1	mg/L	5	5	8	----	----	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.04	0.01	0.44	----	----	
Arsenic	7440-38-2	0.001	mg/L	0.002	<0.001	<0.001	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0001	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----	
Cobalt	7440-48-4	0.001	mg/L	0.148	0.009	0.004	----	----	
Copper	7440-50-8	0.001	mg/L	0.010	0.011	0.018	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----	
Manganese	7439-96-5	0.001	mg/L	0.522	0.188	0.180	----	----	
Nickel	7440-02-0	0.001	mg/L	0.079	0.015	0.014	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----	
Zinc	7440-66-6	0.005	mg/L	0.073	0.056	0.060	----	----	
Iron	7439-89-6	0.05	mg/L	19.0	0.79	<0.05	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW22b	BORR MW20	FD01	FB01	RB01
Client sampling date / time				16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909465-011	EP1909465-012	EP1909465-013	EP1909465-014	EP1909465-015	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.62	1.85	1.25	----	----	
Arsenic	7440-38-2	0.001	mg/L	----	----	----	----	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	----	<0.0001	
Chromium	7440-47-3	0.001	mg/L	----	----	----	----	<0.001	
Copper	7440-50-8	0.001	mg/L	----	----	----	----	<0.001	
Nickel	7440-02-0	0.001	mg/L	----	----	----	----	<0.001	
Lead	7439-92-1	0.001	mg/L	----	----	----	----	<0.001	
Zinc	7440-66-6	0.005	mg/L	----	----	----	----	<0.005	
Iron	7439-89-6	0.05	mg/L	19.3	6.47	0.29	----	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.15	0.02	<0.01	----	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.15	0.02	<0.01	----	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.01	9.37	----	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.4	0.1	2.1	----	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.4	0.1	11.5	----	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.02	<0.01	<0.01	----	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	----	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	128	38.9	1.12	----	----	
∅ Total Cations	----	0.01	meq/L	128	40.6	1.69	----	----	
∅ Ionic Balance	----	0.01	%	0.12	2.02	----	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	----	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	----	----	
C15 - C28 Fraction	----	100	µg/L	220	<100	<100	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW22b	BORR MW20	FD01	FB01	RB01
Client sampling date / time				16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909465-011	EP1909465-012	EP1909465-013	EP1909465-014	EP1909465-015	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>									
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<b>220</b>	<50	<50	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	----	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	----	----	
>C16 - C34 Fraction	----	100	µg/L	<b>220</b>	<100	<100	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<b>220</b>	<100	<100	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	----	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	----	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	----	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	----	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	----	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	----	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	----	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	<b>121</b>	<b>120</b>	<b>117</b>	<b>115</b>	----	
Toluene-D8	2037-26-5	2	%	<b>94.8</b>	<b>96.4</b>	<b>92.7</b>	<b>96.7</b>	----	
4-Bromofluorobenzene	460-00-4	2	%	<b>110</b>	<b>106</b>	<b>110</b>	<b>109</b>	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW 833	TBW 827	TBW 825	BORR MW19	BORR MW19b
Client sampling date / time				16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909465-016	EP1909465-017	EP1909465-018	EP1909465-019	EP1909465-020	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	----	----	----	6.77	6.29	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	4580	2260	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	----	----	----	2730	1340	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	83	52	
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	83	52	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	----	----	----	12	28	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	143	38	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	----	----	----	1320	671	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	----	----	----	58	17	
Magnesium	7439-95-4	1	mg/L	----	----	----	134	53	
Sodium	7440-23-5	1	mg/L	----	----	----	791	353	
Potassium	7440-09-7	1	mg/L	----	----	----	6	4	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	----	0.01	0.01	
Arsenic	7440-38-2	0.001	mg/L	----	----	----	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	----	----	----	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	----	----	----	0.004	0.003	
Copper	7440-50-8	0.001	mg/L	----	----	----	0.010	0.007	
Lead	7439-92-1	0.001	mg/L	----	----	----	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	----	----	----	0.167	0.183	
Nickel	7440-02-0	0.001	mg/L	----	----	----	0.006	0.013	
Selenium	7782-49-2	0.01	mg/L	----	----	----	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	----	----	----	0.057	0.056	
Iron	7439-89-6	0.05	mg/L	----	----	----	0.60	7.24	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW 833	TBW 827	TBW 825	BORR MW19	BORR MW19b
Client sampling date / time				16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909465-016	EP1909465-017	EP1909465-018	EP1909465-019	EP1909465-020	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	----	1.07	0.81	
Iron	7439-89-6	0.05	mg/L	----	----	----	0.90	8.71	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	----	----	----	0.02	0.02	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	----	----	----	0.02	0.02	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	----	----	----	5.07	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	----	----	2.0	0.2	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	----	----	----	7.1	0.2	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	----	----	----	0.02	0.01	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	----	----	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	----	----	----	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	----	----	----	41.9	20.8	
∅ Total Cations	----	0.01	meq/L	----	----	----	48.5	20.7	
∅ Ionic Balance	----	0.01	%	----	----	----	7.32	0.22	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	----	----	----	<50	<50	
C15 - C28 Fraction	----	100	µg/L	----	----	----	<100	<100	
C29 - C36 Fraction	----	50	µg/L	----	----	----	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	----	----	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	----	----	----	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW 833	TBW 827	TBW 825	BORR MW19	BORR MW19b
Client sampling date / time				16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	16-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909465-016	EP1909465-017	EP1909465-018	EP1909465-019	EP1909465-020	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	----	----	----	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	----	----	----	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	----	----	----	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	----	----	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	115	115	118	115	121	
Toluene-D8	2037-26-5	2	%	94.1	95.5	95.5	96.0	93.3	
4-Bromofluorobenzene	460-00-4	2	%	108	110	110	108	111	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MT01	BORR MW32	FD02	RB02	FB02
Client sampling date / time				17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909465-021	EP1909465-022	EP1909465-023	EP1909465-024	EP1909465-025	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.56	5.97	5.95	----	----	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	278	296	294	----	----	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	306	218	216	----	----	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	37	32	31	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	37	32	31	----	----	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	13	20	18	----	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	<20	<10	----	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	59	72	70	----	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	10	3	3	----	----	
Magnesium	7439-95-4	1	mg/L	5	7	8	----	----	
Sodium	7440-23-5	1	mg/L	43	47	47	----	----	
Potassium	7440-09-7	1	mg/L	5	3	3	----	----	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.24	0.96	0.92	----	----	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----	
Chromium	7440-47-3	0.001	mg/L	0.001	0.001	0.001	----	----	
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----	
Copper	7440-50-8	0.001	mg/L	0.012	0.010	0.002	----	----	
Lead	7439-92-1	0.001	mg/L	0.001	0.001	<0.001	----	----	
Manganese	7439-96-5	0.001	mg/L	0.037	0.004	0.002	----	----	
Nickel	7440-02-0	0.001	mg/L	0.006	0.009	0.001	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----	
Zinc	7440-66-6	0.005	mg/L	0.053	0.045	<0.005	----	----	
Iron	7439-89-6	0.05	mg/L	1.43	0.66	0.69	----	----	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MT01	BORR MW32	FD02	RB02	FB02
Client sampling date / time				17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909465-021	EP1909465-022	EP1909465-023	EP1909465-024	EP1909465-025	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.26	10.3	10.3	----	----	
Arsenic	7440-38-2	0.001	mg/L	----	----	----	<0.001	----	
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	<0.0001	----	
Chromium	7440-47-3	0.001	mg/L	----	----	----	<0.001	----	
Copper	7440-50-8	0.001	mg/L	----	----	----	<0.001	----	
Nickel	7440-02-0	0.001	mg/L	----	----	----	<0.001	----	
Lead	7439-92-1	0.001	mg/L	----	----	----	<0.001	----	
Zinc	7440-66-6	0.005	mg/L	----	----	----	<0.005	----	
Iron	7439-89-6	0.05	mg/L	2.80	1.31	1.33	----	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.05	0.52	0.52	----	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.05	0.52	0.52	----	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	----	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	4.7	2.1	2.0	----	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	4.7	2.1	2.0	----	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.30	0.04	0.07	----	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.17	<0.01	<0.01	----	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	0.1	0.1	----	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	2.40	2.67	2.59	----	----	
∅ Total Cations	----	0.01	meq/L	2.91	2.85	2.93	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	----	----	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	----	----	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MT01	BORR MW32	FD02	RB02	FB02
Client sampling date / time				17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909465-021	EP1909465-022	EP1909465-023	EP1909465-024	EP1909465-025	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>									
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	----	----	
>C16 - C34 Fraction	----	100	µg/L	110	<100	<100	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	110	<100	<100	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	----	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	----	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	----	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	<10	----	----	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	----	----	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	----	----	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	----	----	----	----	
Carbofenthoion	786-19-6	0.02	µg/L	<0.02	----	----	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	----	----	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	----	----	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	----	----	----	----	
Coumaphos	56-72-4	0.01	µg/L	<0.01	----	----	----	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	----	----	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	----	----	----	----	
Demeton-O	298-03-3	0.02	µg/L	<0.02	----	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MT01	BORR MW32	FD02	RB02	FB02
Client sampling date / time					17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EP1909465-021	EP1909465-022	EP1909465-023	EP1909465-024	EP1909465-025	
				Result	Result	Result	Result	Result	
<b>EP234A: OP Pesticides - Continued</b>									
Demeton-S	126-75-0	0.02	µg/L	<0.02	----	----	----	----	----
Diazinon	333-41-5	0.01	µg/L	<0.01	----	----	----	----	----
Dichlorvos	62-73-7	0.20	µg/L	<0.20	----	----	----	----	----
Dimethoate	60-51-5	0.02	µg/L	<0.02	----	----	----	----	----
Disulfoton	298-04-4	0.05	µg/L	<0.05	----	----	----	----	----
Ethion	563-12-2	0.02	µg/L	<0.02	----	----	----	----	----
EPN	2104-64-5	0.05	µg/L	<0.05	----	----	----	----	----
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	----	----	----	----	----
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	----	----	----	----	----
Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	----	----	----	----	----
Fenitrothion	122-14-5	2	µg/L	<2	----	----	----	----	----
Fensulfothion	115-90-2	0.01	µg/L	<0.01	----	----	----	----	----
Fenthion	55-38-9	0.05	µg/L	<0.05	----	----	----	----	----
Malathion	121-75-5	0.02	µg/L	<0.02	----	----	----	----	----
Mevinphos	7786-34-7	0.02	µg/L	<0.02	----	----	----	----	----
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	----	----	----	----	----
Omethoate	1113-02-6	0.01	µg/L	<0.01	----	----	----	----	----
Parathion	56-38-2	0.2	µg/L	<0.2	----	----	----	----	----
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	----	----	----	----	----
Phorate	298-02-2	0.1	µg/L	<0.1	----	----	----	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	----	----	----	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	----	----	----	----	----
Profenofos	41198-08-7	0.01	µg/L	<0.01	----	----	----	----	----
Prothiofos	34643-46-4	0.1	µg/L	<0.1	----	----	----	----	----
Sulfotep	3689-24-5	0.005	µg/L	<0.005	----	----	----	----	----
Sulprofos	35400-43-2	0.05	µg/L	<0.05	----	----	----	----	----
Terbufos	13071-79-9	0.01	µg/L	<0.01	----	----	----	----	----
Temephos	3383-96-8	0.02	µg/L	<0.02	----	----	----	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	----	----	----	----	----
Triazophos	24017-47-8	0.005	µg/L	<0.005	----	----	----	----	----
Trichlorfon	52-68-6	0.02	µg/L	<0.02	----	----	----	----	----
Trichloronate	327-98-0	0.5	µg/L	<0.5	----	----	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	126	115	114	----	106	
Toluene-D8	2037-26-5	2	%	97.8	101	98.2	----	108	



### Analytical Results

Sub-Matrix: <b>WATER</b> (Matrix: <b>WATER</b> )				Client sample ID	MT01	BORR MW32	FD02	RB02	FB02
Client sampling date / time				17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909465-021	EP1909465-022	EP1909465-023	EP1909465-024	EP1909465-025	
				Result	Result	Result	Result	Result	
<b>EP080S: TPH(V)/BTEX Surrogates - Continued</b>									
4-Bromofluorobenzene	460-00-4	2	%	110	99.3	97.6	----	97.7	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BH11.1	BORR MW39	BORR MW24	JT01	Northern 3
Client sampling date / time				17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909465-026	EP1909465-027	EP1909465-028	EP1909465-029	EP1909465-030	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.92	5.62	4.58	7.06	5.00	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	1470	276	1710	2020	9030	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	880	452	1480	1350	5680	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	163	13	<1	42	<1	
Total Alkalinity as CaCO3	----	1	mg/L	163	13	<1	42	<1	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	14	20	29	4	6	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	100	51	43	47	384	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	366	42	566	648	2920	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	7	<1	<1	30	80	
Magnesium	7439-95-4	1	mg/L	22	<1	11	65	206	
Sodium	7440-23-5	1	mg/L	289	60	342	276	1540	
Potassium	7440-09-7	1	mg/L	16	<1	<1	4	42	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.02	0.61	0.18	0.02	0.24	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.008	<0.001	0.031	
Copper	7440-50-8	0.001	mg/L	0.010	0.010	0.023	0.020	0.013	
Lead	7439-92-1	0.001	mg/L	<0.001	0.002	0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.288	0.011	0.008	0.134	1.80	
Nickel	7440-02-0	0.001	mg/L	0.008	0.004	0.017	0.011	0.017	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.068	0.032	0.077	0.050	0.073	
Iron	7439-89-6	0.05	mg/L	7.81	0.30	0.06	0.12	0.27	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BH11.1	BORR MW39	BORR MW24	JT01	Northern 3
Client sampling date / time				17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909465-026	EP1909465-027	EP1909465-028	EP1909465-029	EP1909465-030	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.14	8.55	14.7	0.13	0.33	
Iron	7439-89-6	0.05	mg/L	17.4	8.36	11.8	1.12	0.68	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.20	0.01	0.02	<0.01	1.19	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.20	<0.01	0.02	<0.01	1.19	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.03	0.14	0.05	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.4	0.3	0.9	0.4	2.5	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.4	0.3	0.9	0.5	2.6	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.91	0.02	0.05	0.04	0.06	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.19	0.02	<0.01	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	15.7	2.51	16.9	20.1	90.4	
∅ Total Cations	----	0.01	meq/L	15.1	2.61	15.8	19.0	89.0	
∅ Ionic Balance	----	0.01	%	1.70	----	3.31	2.93	0.76	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	90	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	340	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	90	<50	340	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BH11.1	BORR MW39	BORR MW24	JT01	Northern 3
Client sampling date / time				17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909465-026	EP1909465-027	EP1909465-028	EP1909465-029	EP1909465-030	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<b>280</b>	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<b>280</b>	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	----	----	<10	<10	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	----	----	<0.02	<0.02	
Azinphos-methyl	86-50-0	0.02	µg/L	----	----	----	<0.02	<0.02	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	----	----	<0.10	<0.10	
Carbofenthiol	786-19-6	0.02	µg/L	----	----	----	<0.02	<0.02	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	----	----	<0.02	<0.02	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	----	----	<0.02	<0.02	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	----	----	<0.2	<0.2	
Coumaphos	56-72-4	0.01	µg/L	----	----	----	<0.01	<0.01	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	----	----	<0.02	<0.02	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	----	----	<0.02	<0.02	
Demeton-O	298-03-3	0.02	µg/L	----	----	----	<0.02	<0.02	
Demeton-S	126-75-0	0.02	µg/L	----	----	----	<0.02	<0.02	
Diazinon	333-41-5	0.01	µg/L	----	----	----	<0.01	<0.01	
Dichlorvos	62-73-7	0.20	µg/L	----	----	----	<0.20	<0.20	
Dimethoate	60-51-5	0.02	µg/L	----	----	----	<0.02	<0.02	
Disulfoton	298-04-4	0.05	µg/L	----	----	----	<0.05	<0.05	
Ethion	563-12-2	0.02	µg/L	----	----	----	<0.02	<0.02	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BH11.1	BORR MW39	BORR MW24	JT01	Northern 3
Client sampling date / time					17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00
Compound	CAS Number	LOR	Unit		EP1909465-026	EP1909465-027	EP1909465-028	EP1909465-029	EP1909465-030
					Result	Result	Result	Result	Result
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L		----	----	----	<0.05	<0.05
Ethoprophos	13194-48-4	0.01	µg/L		----	----	----	<0.01	<0.01
Fenamiphos	22224-92-6	0.01	µg/L		----	----	----	<0.01	<0.01
Fenchlorphos (Ronnell)	299-84-3	10	µg/L		----	----	----	<10	<10
Fenitrothion	122-14-5	2	µg/L		----	----	----	<2	<2
Fensulfothion	115-90-2	0.01	µg/L		----	----	----	<0.01	<0.01
Fenthion	55-38-9	0.05	µg/L		----	----	----	<0.05	<0.05
Malathion	121-75-5	0.02	µg/L		----	----	----	<0.02	<0.02
Mevinphos	7786-34-7	0.02	µg/L		----	----	----	<0.02	<0.02
Monocrotophos	6923-22-4	0.02	µg/L		----	----	----	<0.02	<0.02
Omethoate	1113-02-6	0.01	µg/L		----	----	----	<0.01	<0.01
Parathion	56-38-2	0.2	µg/L		----	----	----	<0.2	<0.2
Parathion-methyl	298-00-0	0.5	µg/L		----	----	----	<0.5	<0.5
Phorate	298-02-2	0.1	µg/L		----	----	----	<0.1	<0.1
Pirimiphos-ethyl	23505-41-1	0.01	µg/L		----	----	----	<0.01	<0.01
Pirimiphos-methyl	29232-93-7	0.01	µg/L		----	----	----	<0.01	<0.01
Profenofos	41198-08-7	0.01	µg/L		----	----	----	<0.01	<0.01
Prothiofos	34643-46-4	0.1	µg/L		----	----	----	<0.1	<0.1
Sulfotep	3689-24-5	0.005	µg/L		----	----	----	<0.005	<0.005
Sulprofos	35400-43-2	0.05	µg/L		----	----	----	<0.05	<0.05
Terbufos	13071-79-9	0.01	µg/L		----	----	----	<0.01	<0.01
Temephos	3383-96-8	0.02	µg/L		----	----	----	<0.02	<0.02
Tetrachlorvinphos	22248-79-9	0.01	µg/L		----	----	----	<0.01	<0.01
Triazophos	24017-47-8	0.005	µg/L		----	----	----	<0.005	<0.005
Trichlorfon	52-68-6	0.02	µg/L		----	----	----	<0.02	<0.02
Trichloronate	327-98-0	0.5	µg/L		----	----	----	<0.5	<0.5
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%		111	106	108	113	111
Toluene-D8	2037-26-5	2	%		99.2	102	103	102	101
4-Bromofluorobenzene	460-00-4	2	%		94.8	92.0	97.0	98.7	97.7





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FD03	WRM North Site 5	North Creek 4	BORR MW31	BORR MW29
Client sampling date / time				17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909465-031	EP1909465-032	EP1909465-033	EP1909465-034	EP1909465-035	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	7.12	7.17	7.55	5.60	5.48	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	2020	2520	1140	247	827	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	1280	1690	684	248	630	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	86	63	55	14	12	
Total Alkalinity as CaCO3	----	1	mg/L	86	63	55	14	12	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	4	7	2	21	20	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	47	122	30	<1	149	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	652	742	359	59	187	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	32	37	16	3	22	
Magnesium	7439-95-4	1	mg/L	68	64	28	4	29	
Sodium	7440-23-5	1	mg/L	286	397	185	40	103	
Potassium	7440-09-7	1	mg/L	4	22	5	3	8	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	<0.01	0.05	0.04	1.45	0.50	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	0.001	0.002	
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.001	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.003	0.014	0.015	0.011	0.010	
Lead	7439-92-1	0.001	mg/L	<0.001	0.001	<0.001	0.002	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.138	0.118	0.186	0.009	0.018	
Nickel	7440-02-0	0.001	mg/L	0.001	0.007	0.008	0.009	0.008	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	<0.005	0.060	0.048	0.078	0.108	
Iron	7439-89-6	0.05	mg/L	0.09	0.52	0.37	1.13	1.24	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FD03	WRM North Site 5	North Creek 4	BORR MW31	BORR MW29
Client sampling date / time				17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909465-031	EP1909465-032	EP1909465-033	EP1909465-034	EP1909465-035	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.17	2.58	0.84	2.77	2.37	
Iron	7439-89-6	0.05	mg/L	1.39	3.92	2.65	2.96	1.48	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.01	0.02	0.04	0.70	0.57	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	<0.01	0.02	0.04	0.70	0.57	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.15	<0.01	0.24	0.20	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.4	6.7	0.8	1.6	1.3	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.6	6.7	1.0	1.8	1.3	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.02	0.81	0.06	<0.01	0.02	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.23	0.03	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	0.2	0.9	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	21.1	24.7	11.8	1.94	8.62	
∅ Total Cations	----	0.01	meq/L	19.7	24.9	11.3	2.30	8.17	
∅ Ionic Balance	----	0.01	%	3.31	0.43	2.48	----	2.67	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	650	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	160	<100	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	60	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	870	<50	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	250	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FD03	WRM North Site 5	North Creek 4	BORR MW31	BORR MW29
Client sampling date / time				17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909465-031	EP1909465-032	EP1909465-033	EP1909465-034	EP1909465-035	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	120	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	370	<100	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	250	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	<10	<10	<10	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	<0.10	----	----	
Carbofenthion	786-19-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	<0.2	----	----	
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	<0.01	----	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	<0.01	----	----	
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	<0.20	----	----	
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FD03	WRM North Site 5	North Creek 4	BORR MW31	BORR MW29
Client sampling date / time					17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00
Compound	CAS Number	LOR	Unit		EP1909465-031	EP1909465-032	EP1909465-033	EP1909465-034	EP1909465-035
					Result	Result	Result	Result	Result
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L		<0.05	<0.05	<0.05	----	----
Ethoprophos	13194-48-4	0.01	µg/L		<0.01	<0.01	<0.01	----	----
Fenamiphos	22224-92-6	0.01	µg/L		<0.01	<0.01	<0.01	----	----
Fenchlorphos (Ronnell)	299-84-3	10	µg/L		<10	<10	<10	----	----
Fenitrothion	122-14-5	2	µg/L		<2	<2	<2	----	----
Fensulfothion	115-90-2	0.01	µg/L		<0.01	<0.01	<0.01	----	----
Fenthion	55-38-9	0.05	µg/L		<0.05	<0.05	<0.05	----	----
Malathion	121-75-5	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Mevinphos	7786-34-7	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Monocrotophos	6923-22-4	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Omethoate	1113-02-6	0.01	µg/L		<0.01	<0.01	<0.01	----	----
Parathion	56-38-2	0.2	µg/L		<0.2	<0.2	<0.2	----	----
Parathion-methyl	298-00-0	0.5	µg/L		<0.5	<0.5	<0.5	----	----
Phorate	298-02-2	0.1	µg/L		<0.1	<0.1	<0.1	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L		<0.01	<0.01	<0.01	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L		<0.01	<0.01	<0.01	----	----
Profenofos	41198-08-7	0.01	µg/L		<0.01	<0.01	<0.01	----	----
Prothiofos	34643-46-4	0.1	µg/L		<0.1	<0.1	<0.1	----	----
Sulfotep	3689-24-5	0.005	µg/L		<0.005	<0.005	<0.005	----	----
Sulprofos	35400-43-2	0.05	µg/L		<0.05	<0.05	<0.05	----	----
Terbufos	13071-79-9	0.01	µg/L		<0.01	<0.01	<0.01	----	----
Temephos	3383-96-8	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L		<0.01	<0.01	<0.01	----	----
Triazophos	24017-47-8	0.005	µg/L		<0.005	<0.005	<0.005	----	----
Trichlorfon	52-68-6	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Trichloronate	327-98-0	0.5	µg/L		<0.5	<0.5	<0.5	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%		115	117	113	110	116
Toluene-D8	2037-26-5	2	%		98.0	96.2	106	106	103
4-Bromofluorobenzene	460-00-4	2	%		96.8	98.2	95.4	88.7	93.3



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		SW06	BORR MW37	BH9.2	BORR MW25	TBW829
Client sampling date / time		17-Sep-2019 00:00		17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EP1909465-036	EP1909465-037	EP1909465-038	EP1909465-039	EP1909465-040
				Result	Result	Result	Result	Result
<b>EA005P: pH by PC Titrator</b>								
pH Value	----	0.01	pH Unit	7.52	5.91	6.26	6.02	----
<b>EA010P: Conductivity by PC Titrator</b>								
Electrical Conductivity @ 25°C	----	1	µS/cm	1980	3370	2060	3600	----
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
Total Dissolved Solids @180°C	----	10	mg/L	1310	2040	1450	2200	----
<b>ED037P: Alkalinity by PC Titrator</b>								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	73	53	50	61	----
Total Alkalinity as CaCO3	----	1	mg/L	73	53	50	61	----
<b>ED038A: Acidity</b>								
Acidity as CaCO3	----	1	mg/L	4	41	15	29	----
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	38	78	50	97	----
<b>ED045G: Chloride by Discrete Analyser</b>								
Chloride	16887-00-6	1	mg/L	596	1010	659	1060	----
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	35	15	51	28	----
Magnesium	7439-95-4	1	mg/L	62	71	86	62	----
Sodium	7440-23-5	1	mg/L	214	578	244	664	----
Potassium	7440-09-7	1	mg/L	12	2	1	4	----
<b>EG020F: Dissolved Metals by ICP-MS</b>								
Aluminium	7429-90-5	0.01	mg/L	0.03	0.03	0.03	0.03	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.002	<0.001	0.003	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.044	0.005	0.036	----
Copper	7440-50-8	0.001	mg/L	0.014	0.010	0.026	0.012	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	0.001	----
Manganese	7439-96-5	0.001	mg/L	0.088	0.465	0.009	0.477	----
Nickel	7440-02-0	0.001	mg/L	0.005	0.026	0.013	0.027	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Zinc	7440-66-6	0.005	mg/L	0.068	0.096	0.065	0.077	----
Iron	7439-89-6	0.05	mg/L	0.38	12.2	<0.05	6.86	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW06	BORR MW37	BH9.2	BORR MW25	TBW829
Client sampling date / time				17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909465-036	EP1909465-037	EP1909465-038	EP1909465-039	EP1909465-040	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	1.15	1.99	1.70	4.84	----	
Iron	7439-89-6	0.05	mg/L	3.02	12.9	4.30	12.8	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.04	0.02	0.02	0.01	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.04	0.02	0.02	<0.01	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.10	<0.01	0.25	<0.01	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.2	0.2	0.2	0.1	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	1.3	0.2	0.4	0.1	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.15	0.03	<0.01	0.05	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.05	<0.01	<0.01	<0.01	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	19.1	31.2	20.6	33.1	----	
∅ Total Cations	----	0.01	meq/L	16.5	31.8	20.3	35.5	----	
∅ Ionic Balance	----	0.01	%	7.31	0.97	0.90	3.42	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	----	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	----	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW06	BORR MW37	BH9.2	BORR MW25	TBW829
Client sampling date / time				17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909465-036	EP1909465-037	EP1909465-038	EP1909465-039	EP1909465-040	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	<10	----	----	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	----	----	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	----	----	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	----	----	----	----	
Carbofenthion	786-19-6	0.02	µg/L	<0.02	----	----	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	----	----	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	----	----	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	----	----	----	----	
Coumaphos	56-72-4	0.01	µg/L	<0.01	----	----	----	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	----	----	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	----	----	----	----	
Demeton-O	298-03-3	0.02	µg/L	<0.02	----	----	----	----	
Demeton-S	126-75-0	0.02	µg/L	<0.02	----	----	----	----	
Diazinon	333-41-5	0.01	µg/L	<0.01	----	----	----	----	
Dichlorvos	62-73-7	0.20	µg/L	<0.20	----	----	----	----	
Dimethoate	60-51-5	0.02	µg/L	<0.02	----	----	----	----	
Disulfoton	298-04-4	0.05	µg/L	<0.05	----	----	----	----	
Ethion	563-12-2	0.02	µg/L	<0.02	----	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW06	BORR MW37	BH9.2	BORR MW25	TBW829
Client sampling date / time					17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00	17-Sep-2019 00:00
Compound	CAS Number	LOR	Unit		EP1909465-036	EP1909465-037	EP1909465-038	EP1909465-039	EP1909465-040
					Result	Result	Result	Result	Result
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L		<0.05	----	----	----	----
Ethoprophos	13194-48-4	0.01	µg/L		<0.01	----	----	----	----
Fenamiphos	22224-92-6	0.01	µg/L		<0.01	----	----	----	----
Fenchlorphos (Rannel)	299-84-3	10	µg/L		<10	----	----	----	----
Fenitrothion	122-14-5	2	µg/L		<2	----	----	----	----
Fensulfothion	115-90-2	0.01	µg/L		<0.01	----	----	----	----
Fenthion	55-38-9	0.05	µg/L		<0.05	----	----	----	----
Malathion	121-75-5	0.02	µg/L		<0.02	----	----	----	----
Mevinphos	7786-34-7	0.02	µg/L		<0.02	----	----	----	----
Monocrotophos	6923-22-4	0.02	µg/L		<0.02	----	----	----	----
Omethoate	1113-02-6	0.01	µg/L		<0.01	----	----	----	----
Parathion	56-38-2	0.2	µg/L		<0.2	----	----	----	----
Parathion-methyl	298-00-0	0.5	µg/L		<0.5	----	----	----	----
Phorate	298-02-2	0.1	µg/L		<0.1	----	----	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L		<0.01	----	----	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L		<0.01	----	----	----	----
Profenofos	41198-08-7	0.01	µg/L		<0.01	----	----	----	----
Prothiofos	34643-46-4	0.1	µg/L		<0.1	----	----	----	----
Sulfotep	3689-24-5	0.005	µg/L		<0.005	----	----	----	----
Sulprofos	35400-43-2	0.05	µg/L		<0.05	----	----	----	----
Terbufos	13071-79-9	0.01	µg/L		<0.01	----	----	----	----
Temephos	3383-96-8	0.02	µg/L		<0.02	----	----	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L		<0.01	----	----	----	----
Triazophos	24017-47-8	0.005	µg/L		<0.005	----	----	----	----
Trichlorfon	52-68-6	0.02	µg/L		<0.02	----	----	----	----
Trichloronate	327-98-0	0.5	µg/L		<0.5	----	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%		117	103	111	106	105
Toluene-D8	2037-26-5	2	%		101	109	106	104	98.4
4-Bromofluorobenzene	460-00-4	2	%		96.0	97.4	94.1	95.8	96.1





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID			TBW831	----	----	----	----
Client sampling date / time		17-Sep-2019 00:00			----	----	----	----	----
Compound	CAS Number	LOR	Unit	EP1909465-041	-----	-----	-----	-----	-----
				Result	----	----	----	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	----	----	----	----
<sup>^</sup> C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----	----
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	----	----	----	----	----
Toluene	108-88-3	2	µg/L	<2	----	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	----	----	----	----	----
<sup>^</sup> Total Xylenes	----	2	µg/L	<2	----	----	----	----	----
<sup>^</sup> Sum of BTEX	----	1	µg/L	<1	----	----	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	105	----	----	----	----	----
Toluene-D8	2037-26-5	2	%	96.6	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	96.0	----	----	----	----	----



## Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	61	141
Toluene-D8	2037-26-5	73	126
4-Bromofluorobenzene	460-00-4	60	125

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1909465	Page	: 1 of 21
Client	: GHD PTY LTD	Laboratory	: Environmental Division Perth
Contact	: MS VICKI DAVIES	Telephone	: 08 9406 1311
Project	: 6137041	Date Samples Received	: 18-Sep-2019
Site	: ----	Issue Date	: 03-Oct-2019
Sampler	: DOMINIQUE SHUTTLEWORTH, Emily Evans	No. of samples received	: 41
Order number	: 6137041(08.0831)	No. of samples analysed	: 41

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



**Outliers : Quality Control Samples**

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
EP234A: OP Pesticides	EP1909465--002	North Creek 2	Bromophos-ethyl	4824-78-6	53.2 %	70.0-130%	Recovery less than lower data quality objective

**Outliers : Analysis Holding Time Compliance**

Matrix: **WATER**

Method	Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EA005P: pH by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural</b>							
BORR MW13, BH32.1, BORR MW18, SW07, SW09, BORR MW22b, FD01, BORR MW19b	North Creek 2, BORR MW15, Northern 5, SW08, BORR MW22, BORR MW20, BORR MW19,	----	----	----	19-Sep-2019	16-Sep-2019	3
<b>Clear Plastic Bottle - Natural</b>							
MT01, FD02, BORR MW39, JT01, FD03, North Creek 4, BORR MW29, BORR MW37, BORR MW25	BORR MW32, BH11.1, BORR MW24, Northern 3, WRM North Site 5, BORR MW31, SW06, BH9.2,	----	----	----	19-Sep-2019	17-Sep-2019	2

**Outliers : Frequency of Quality Control Samples**

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
TRH - Semivolatle Fraction	3	32	9.38	10.00	NEPM 2013 B3 & ALS QC Standard



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA005P: pH by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA005-P)</b> BORR MW13, BH32.1, BORR MW18, SW07, SW09, BORR MW22b, FD01, BORR MW19b	North Creek 2, BORR MW15, Northern 5, SW08, BORR MW22, BORR MW20, BORR MW19,	16-Sep-2019	----	----	----	19-Sep-2019	16-Sep-2019	*
<b>Clear Plastic Bottle - Natural (EA005-P)</b> MT01, FD02, BORR MW39, JT01, FD03, North Creek 4, BORR MW29, BORR MW37, BORR MW25	BORR MW32, BH11.1, BORR MW24, Northern 3, WRM North Site 5, BORR MW31, SW06, BH9.2,	17-Sep-2019	----	----	----	19-Sep-2019	17-Sep-2019	*



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EA010P: Conductivity by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural (EA010-P)</b> BORR MW13, BH32.1, BORR MW18, SW07, SW09, BORR MW22b, FD01, BORR MW19b North Creek 2, BORR MW15, Northern 5, SW08, BORR MW22, BORR MW20, BORR MW19,	16-Sep-2019	----	----	----	19-Sep-2019	14-Oct-2019	✓
<b>Clear Plastic Bottle - Natural (EA010-P)</b> MT01, FD02, BORR MW39, JT01, FD03, North Creek 4, BORR MW29, BORR MW37, BORR MW25 BORR MW32, BH11.1, BORR MW24, Northern 3, WRM North Site 5, BORR MW31, SW06, BH9.2,	17-Sep-2019	----	----	----	19-Sep-2019	15-Oct-2019	✓
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>							
<b>Clear Plastic Bottle - Natural (EA015H)</b> BORR MW13, BH32.1, BORR MW18, SW07, SW09, BORR MW22b, FD01, BORR MW19b North Creek 2, BORR MW15, Northern 5, SW08, BORR MW22, BORR MW20, BORR MW19,	16-Sep-2019	----	----	----	23-Sep-2019	23-Sep-2019	✓
<b>Clear Plastic Bottle - Natural (EA015H)</b> MT01, FD02, BORR MW39, JT01, FD03, North Creek 4, BORR MW29, BORR MW37, BORR MW25 BORR MW32, BH11.1, BORR MW24, Northern 3, WRM North Site 5, BORR MW31, SW06, BH9.2,	17-Sep-2019	----	----	----	24-Sep-2019	24-Sep-2019	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>ED037P: Alkalinity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (ED037-P)</b> BORR MW13, BH32.1, BORR MW18, SW07, SW09, BORR MW22b, FD01, BORR MW19b	North Creek 2, BORR MW15, Northern 5, SW08, BORR MW22, BORR MW20, BORR MW19,	16-Sep-2019	----	----	----	19-Sep-2019	30-Sep-2019	✓
<b>Clear Plastic Bottle - Natural (ED037-P)</b> MT01, FD02, BORR MW39, JT01, FD03, North Creek 4, BORR MW29, BORR MW37, BORR MW25	BORR MW32, BH11.1, BORR MW24, Northern 3, WRM North Site 5, BORR MW31, SW06, BH9.2,	17-Sep-2019	----	----	----	19-Sep-2019	01-Oct-2019	✓
<b>ED038A: Acidity</b>								
<b>Clear Plastic Bottle - Natural (ED038)</b> BORR MW13, BH32.1, BORR MW18, SW07, SW09, BORR MW22b, FD01, BORR MW19b	North Creek 2, BORR MW15, Northern 5, SW08, BORR MW22, BORR MW20, BORR MW19,	16-Sep-2019	----	----	----	26-Sep-2019	30-Sep-2019	✓
<b>Clear Plastic Bottle - Natural (ED038)</b> MT01, FD02, BORR MW39, JT01, FD03, North Creek 4, BORR MW29, BORR MW37, BORR MW25	BORR MW32, BH11.1, BORR MW24, Northern 3, WRM North Site 5, BORR MW31, SW06, BH9.2,	17-Sep-2019	----	----	----	26-Sep-2019	01-Oct-2019	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>							
<b>Clear Plastic Bottle - Natural (ED041G)</b> BORR MW13, North Creek 2, BH32.1, BORR MW15, BORR MW18, Northern 5, SW07, SW08, SW09, BORR MW22, BORR MW22b, BORR MW20, FD01, BORR MW19, BORR MW19b	16-Sep-2019	----	----	----	18-Sep-2019	14-Oct-2019	✓
<b>Clear Plastic Bottle - Natural (ED041G)</b> MT01, BORR MW32, FD02, BH11.1, BORR MW39, BORR MW24, JT01, Northern 3, FD03, WRM North Site 5, North Creek 4, BORR MW31, BORR MW29, SW06, BORR MW37, BH9.2, BORR MW25	17-Sep-2019	----	----	----	18-Sep-2019	15-Oct-2019	✓
<b>ED045G: Chloride by Discrete Analyser</b>							
<b>Clear Plastic Bottle - Natural (ED045G)</b> BORR MW13, North Creek 2, BH32.1, BORR MW15, BORR MW18, Northern 5, SW07, SW08, SW09, BORR MW22, BORR MW22b, BORR MW20, FD01, BORR MW19, BORR MW19b	16-Sep-2019	----	----	----	18-Sep-2019	14-Oct-2019	✓
<b>Clear Plastic Bottle - Natural (ED045G)</b> MT01, BORR MW32, FD02, BH11.1, BORR MW39, BORR MW24, JT01, Northern 3, FD03, WRM North Site 5, North Creek 4, BORR MW31, BORR MW29, SW06, BORR MW37, BH9.2, BORR MW25	17-Sep-2019	----	----	----	18-Sep-2019	15-Oct-2019	✓





Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>ED093F: Dissolved Major Cations</b>							
<b>Clear HDPE (U-T ORC) - Filtered; Lab-acidified (ED093F)</b> BORR MW13, North Creek 2, BH32.1, BORR MW15, BORR MW18, Northern 5, SW07, SW08, SW09, BORR MW22, BORR MW22b, BORR MW20, FD01, BORR MW19, BORR MW19b	16-Sep-2019	----	----	----	23-Sep-2019	14-Oct-2019	✓
<b>Clear HDPE (U-T ORC) - Filtered; Lab-acidified (ED093F)</b> MT01, BORR MW32, FD02, BH11.1, BORR MW39, BORR MW24, JT01, Northern 3, FD03, WRM North Site 5, North Creek 4, BORR MW31, BORR MW29, SW06, BORR MW37, BH9.2, BORR MW25	17-Sep-2019	----	----	----	23-Sep-2019	15-Oct-2019	✓
<b>EG020F: Dissolved Metals by ICP-MS</b>							
<b>Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG020A-F)</b> BORR MW13, North Creek 2, BH32.1, BORR MW15, BORR MW18, Northern 5, SW07, SW08, SW09, BORR MW22, BORR MW22b, BORR MW20, FD01, BORR MW19, BORR MW19b	16-Sep-2019	----	----	----	23-Sep-2019	14-Mar-2020	✓
<b>Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG020A-F)</b> MT01, BORR MW32, FD02, BH11.1, BORR MW39, BORR MW24, JT01, Northern 3, FD03, WRM North Site 5, North Creek 4, BORR MW31, BORR MW29, SW06, BORR MW37, BH9.2, BORR MW25	17-Sep-2019	----	----	----	23-Sep-2019	15-Mar-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EG020T: Total Metals by ICP-MS</b>							
<b>Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG020A-T)</b> BORR MW13, North Creek 2, BH32.1, BORR MW15, BORR MW18, Northern 5, SW07, SW08, SW09, BORR MW22, BORR MW22b, BORR MW20, FD01, RB01, BORR MW19, BORR MW19b	16-Sep-2019	25-Sep-2019	14-Mar-2020	✓	25-Sep-2019	14-Mar-2020	✓
<b>Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG020A-T)</b> MT01, BORR MW32, FD02, RB02, BH11.1, BORR MW39, BORR MW24, JT01, Northern 3, FD03, WRM North Site 5, North Creek 4, BORR MW31, BORR MW29, SW06, BORR MW37, BH9.2, BORR MW25	17-Sep-2019	25-Sep-2019	15-Mar-2020	✓	25-Sep-2019	15-Mar-2020	✓
<b>EK055G: Ammonia as N by Discrete Analyser</b>							
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> BORR MW13, North Creek 2, BH32.1, BORR MW15, BORR MW18, Northern 5, SW07, SW08, SW09, BORR MW22, BORR MW22b, BORR MW20, FD01, BORR MW19, BORR MW19b	16-Sep-2019	----	----	----	18-Sep-2019	14-Oct-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> MT01, BORR MW32, FD02, BH11.1, BORR MW39, BORR MW24, JT01, Northern 3, FD03, WRM North Site 5, North Creek 4, BORR MW31, BORR MW29, SW06, BORR MW37, BH9.2, BORR MW25	17-Sep-2019	----	----	----	18-Sep-2019	15-Oct-2019	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> BORR MW13, North Creek 2, BH32.1, BORR MW15, BORR MW18, Northern 5, SW07, SW08, SW09, BORR MW22, BORR MW22b, BORR MW20, FD01, BORR MW19, BORR MW19b	16-Sep-2019	----	----	----	18-Sep-2019	14-Oct-2019	✓	
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> MT01, BORR MW32, FD02, BH11.1, BORR MW39, BORR MW24, JT01, Northern 3, FD03, WRM North Site 5, North Creek 4, BORR MW31, BORR MW29, SW06, BORR MW37, BH9.2, BORR MW25	17-Sep-2019	----	----	----	18-Sep-2019	15-Oct-2019	✓	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> BORR MW13, North Creek 2, BH32.1, BORR MW15, BORR MW18, Northern 5, SW07, SW08, SW09, BORR MW22, BORR MW22b, BORR MW20, FD01, BORR MW19, BORR MW19b	16-Sep-2019	23-Sep-2019	14-Oct-2019	✓	24-Sep-2019	14-Oct-2019	✓	
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> MT01, BORR MW32, FD02, BH11.1, BORR MW39, BORR MW24, JT01, Northern 3, FD03, WRM North Site 5, North Creek 4, BORR MW31, BORR MW29, SW06, BORR MW37, BH9.2, BORR MW25	17-Sep-2019	23-Sep-2019	15-Oct-2019	✓	24-Sep-2019	15-Oct-2019	✓	



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> BORR MW13, BH32.1, BORR MW18, SW07, SW09, BORR MW22b, FD01, BORR MW19b North Creek 2, BORR MW15, Northern 5, SW08, BORR MW22, BORR MW20, BORR MW19,	16-Sep-2019	23-Sep-2019	14-Oct-2019	✓	24-Sep-2019	14-Oct-2019	✓	
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> MT01, FD02, BORR MW39, JT01, FD03, North Creek 4, BORR MW29, BORR MW37, BORR MW25 BORR MW32, BH11.1, BORR MW24, Northern 3, WRM North Site 5, BORR MW31, SW06, BH9.2,	17-Sep-2019	23-Sep-2019	15-Oct-2019	✓	24-Sep-2019	15-Oct-2019	✓	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>								
<b>Clear Plastic Bottle - Natural (EK071G)</b> BORR MW13, BH32.1, BORR MW18, SW07, SW09, BORR MW22b, FD01, BORR MW19b North Creek 2, BORR MW15, Northern 5, SW08, BORR MW22, BORR MW20, BORR MW19,	16-Sep-2019	----	----	----	18-Sep-2019	18-Sep-2019	✓	
<b>Clear Plastic Bottle - Natural (EK071G)</b> MT01, FD02, BORR MW39, JT01, FD03, North Creek 4, BORR MW29, BORR MW37, BORR MW25 BORR MW32, BH11.1, BORR MW24, Northern 3, WRM North Site 5, BORR MW31, SW06, BH9.2,	17-Sep-2019	----	----	----	18-Sep-2019	19-Sep-2019	✓	



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK085M: Sulfide as S2-</b>								
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> BORR MW13, BH32.1, BORR MW18, SW07, SW09, BORR MW22b, FD01, BORR MW19b	North Creek 2, BORR MW15, Northern 5, SW08, BORR MW22, BORR MW20, BORR MW19,	16-Sep-2019	----	----	----	23-Sep-2019	23-Sep-2019	✓
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> MT01, FD02, BORR MW39, JT01, FD03, North Creek 4, BORR MW29, BORR MW37, BORR MW25	BORR MW32, BH11.1, BORR MW24, Northern 3, WRM North Site 5, BORR MW31, SW06, BH9.2,	17-Sep-2019	----	----	----	23-Sep-2019	24-Sep-2019	✓



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 Work Order : EP1909465  
 Client : GHD PTY LTD  
 Project : 6137041



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>								
MT01, FD02, BH11.1, BORR MW24, Northern 3, WRM North Site 5, BORR MW31, SW06, BH9.2, TBW829,	BORR MW32, FB02, BORR MW39, JT01, FD03, North Creek 4, BORR MW29, BORR MW37, BORR MW25, TBW831	17-Sep-2019	24-Sep-2019	01-Oct-2019	✓	24-Sep-2019	01-Oct-2019	✓







Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>								
MT01, FD02, BH11.1, BORR MW24, Northern 3, WRM North Site 5, BORR MW31, SW06, BH9.2, TBW829,	BORR MW32, FB02, BORR MW39, JT01, FD03, North Creek 4, BORR MW29, BORR MW37, BORR MW25, TBW831	17-Sep-2019	24-Sep-2019	01-Oct-2019	✓	24-Sep-2019	01-Oct-2019	✓
<b>EP080: BTEXN</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
BORR MW13, BH32.1, BORR MW18, SW07, SW09, BORR MW22b, FD01, TBW 833, TBW 825, BORR MW19b	North Creek 2, BORR MW15, Northern 5, SW08, BORR MW22, BORR MW20, FB01, TBW 827, BORR MW19,	16-Sep-2019	24-Sep-2019	30-Sep-2019	✓	24-Sep-2019	30-Sep-2019	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
MT01, FD02, BH11.1, BORR MW24, Northern 3, WRM North Site 5, BORR MW31, SW06, BH9.2, TBW829,	BORR MW32, FB02, BORR MW39, JT01, FD03, North Creek 4, BORR MW29, BORR MW37, BORR MW25, TBW831	17-Sep-2019	24-Sep-2019	01-Oct-2019	✓	24-Sep-2019	01-Oct-2019	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP204: Glyphosate and AMPA</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b> North Creek 2, SW07, SW09	Northern 5, SW08,	16-Sep-2019	----	----	----	20-Sep-2019	30-Sep-2019	✓
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b> MT01, Northern 3, WRM North Site 5, SW06	JT01, FD03, North Creek 4,	17-Sep-2019	----	----	----	20-Sep-2019	01-Oct-2019	✓
<b>EP234A: OP Pesticides</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> North Creek 2, SW07, SW09	Northern 5, SW08,	16-Sep-2019	----	----	----	23-Sep-2019	23-Sep-2019	✓
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> MT01, Northern 3, WRM North Site 5, SW06	JT01, FD03, North Creek 4,	17-Sep-2019	----	----	----	23-Sep-2019	24-Sep-2019	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Laboratory Duplicates (DUP)</b>							
Acidity as Calcium Carbonate	ED038	4	32	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	6	60	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	4	34	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	6	60	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	4	32	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	3	22	13.64	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	4	32	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	2	13	15.38	10.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	6	60	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	4	34	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	34	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	4	33	12.12	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	37	10.81	10.53	✔	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	4	32	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	4	34	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	4	32	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	3	32	9.38	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	39	10.26	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Acidity as Calcium Carbonate	ED038	2	32	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	6	60	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	4	34	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	3	60	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	32	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	2	22	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	32	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	13	7.69	5.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	6	60	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	34	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	34	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	33	6.06	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	37	10.81	10.53	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Alkalinity by PC Titrator	ED037-P	3	60	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	3	60	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	37	5.41	5.26	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3)  Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3)  Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ammonium as N	EK055G-NH4	WATER	Ammonium in the sample is reported as the ionised / unionised fractions by the use of a nomograph and the initial pH and Temperature. Ammonia is determined by direct colorimetry by Discrete Analyser according to APHA 4500-NH3 G. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Sulfide as S2-	EK085	WATER	In house: Referenced to APHA 4500-S2- D. Sulfide species present in water samples are immediately precipitated when collected in pretreated caustic/zinc acetate preserved sample containers. The sulphides are coloured using methylene blue indicator. Non-detects may be screened by comparison against a standard at half-LOR, otherwise samples are measured using UV-VIS detection at 664nm. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatle Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Glyphosate and AMPA	EP204	WATER	In house: Pre-column derivatisation LCMS (ES in negative mode). Water samples are derivatised with 9-fluorenyl methoxycarbonyl chloroformate (FMOC) in alkaline condition. The derivatives of glyphosate and AMPA are separated by a C8 column and determined by MS.
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CHAIN OF CUSTODY RECORD  
AND ANALYSIS REQUEST



GHD  
Level 10, 999 Hay Street Perth WA 6000  
PO Box 3106 Perth WA 6832

Reception Ph: 08 6222 8222

Project ID (as per ESdat set up; no spaces) 6137041	PO Number (to be invoiced) 6137041 (08.0831)	Laboratory: ALS Laboratories
		Address: 26 Rigali Way, Wangara WA
		Laboratory Contact: Marnie Thompson

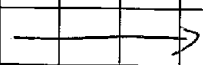
Laboratory Quote No. EP1489/19 v4	Turnaround Time Standard	<table border="1"> <thead> <tr> <th rowspan="2">Sample Matrix (S: Soil / SL: Sludge / W: Water / A: Air)</th> <th rowspan="2">Container</th> <th rowspan="2">No</th> <th rowspan="2">AS per GWS/RP</th> <th rowspan="2">AS per SWS/RP</th> <th rowspan="2">AS per EP1489/19 v4</th> <th rowspan="2">AS per EP1489/19 v4</th> <th rowspan="2">AS per EP1489/19 v4</th> <th colspan="4">Analyses</th> <th rowspan="2">HOLD</th> <th rowspan="2">Remarks</th> </tr> <tr> <th colspan="4"> </th> </tr> </thead> <tbody> <tr> <td>Sludge/Water/Air</td> <td>Type: Bottle / Jar / N / Via / Bag / C-Clas / P-Plastic</td> <td>Preservative: Unpreserved / HCl / H2SO4 / HNO3 / Other</td> <td colspan="10"></td> </tr> </tbody> </table>	Sample Matrix (S: Soil / SL: Sludge / W: Water / A: Air)	Container	No	AS per GWS/RP	AS per SWS/RP	AS per EP1489/19 v4	AS per EP1489/19 v4	AS per EP1489/19 v4	Analyses				HOLD	Remarks					Sludge/Water/Air	Type: Bottle / Jar / N / Via / Bag / C-Clas / P-Plastic	Preservative: Unpreserved / HCl / H2SO4 / HNO3 / Other										
Sample Matrix (S: Soil / SL: Sludge / W: Water / A: Air)	Container										No	AS per GWS/RP	AS per SWS/RP	AS per EP1489/19 v4			AS per EP1489/19 v4	AS per EP1489/19 v4	Analyses				HOLD	Remarks									
Sludge/Water/Air	Type: Bottle / Jar / N / Via / Bag / C-Clas / P-Plastic	Preservative: Unpreserved / HCl / H2SO4 / HNO3 / Other																															
Job Manager (Invoice) & GHD accounts Vicki Davies Julia Roberts	Email Address (Results) Emily.Evans@ghd.com Vicki.Davies@ghd.com																																

GHD Sample ID	Lab Sample ID	Date	Time	Sample Matrix (S: Soil / SL: Sludge / W: Water / A: Air)	Container	No	AS per GWS/RP	AS per SWS/RP	AS per EP1489/19 v4	AS per EP1489/19 v4	AS per EP1489/19 v4	Analyses				HOLD	Remarks		
<del>BORR MW15</del>	1	16/9/19		W	B	8	✓												*No underscore for BORR MW well names
North Creek 2	2	16/9/19		W	B	10		✓											
BH32.1	3	16/9/19		W	B	8	✓												
BORR MW15	4	16/9/19		W	B	8	✓												
BORR MW18	5	16/9/19		W	B	8	✓												
Northern 5	6	16/9/19		W	B	10		✓											
SW07	7	16/9/19		W	B	10		✓											
SW08	8	16/9/19		W	B	10		✓											
SW09	9	16/9/19		W	B	10		✓											
BORR MW22	10	16/9/19		W	B	8	✓												
BORR MW22b	11	16/9/19		W	B	8	✓												
BORR MW20	12	16/09/19		W	B	8	✓												
FS01	13	16/09/19		W	B	8	✓												
FS01	-	16/09/19		W	B	8	✓												
FB01	14	16/09/19		W	B	1				✓									
RB01	15	16/09/19		W	B	1				✓									
TBN 833	16	16/09/19		W	B	1				✓									

Environmental Division  
Perth  
Work Order Reference  
**EP1909465**



Telephone : 81-8-9408 1300



Please forwarded to Eurofins

Sampled by: Emily Evans + Don Sutherland	Date/Time: 16/09/19	Relinquished by: EE + DS	Date/Time: 16/09/19
Received by: ND	Date/Time: 18/9	Relinquished by:	Date/Time:

1130



**CHAIN OF CUSTODY RECORD  
AND ANALYSIS REQUEST**



GHD  
Level 10, 999 Hay Street  
Perth WA 6000

PO Box 3106  
Perth WA 6832

Reception Ph: 08 6222 8222

Project ID (as per ESDat set up; no spaces) **6137041** PO Number (to be invoiced) **6137041 (08.0831)**

Laboratory: **ALS Laboratories** Address: **26 Rigali Way, Wangara WA**

Laboratory Contact: **Marnie Thompson**

Laboratory Quote No. **EP/489/19/V4** Turnaround Time Standard

Job Manager (Invoice) & GHD accounts **Vicki Davies  
Julia Roberts** Email Address (Results) **Emily.Evans@ghd.com  
Vicki.Davies@ghd.com**

GHD Sample ID	Lab Sample ID	Date	Time	Sample Matrix (S-Soil / Sludge / W-Water / A-Air)	Container Type (Bottle / Jar / Vial / Bag / C-glass / Plastic)	Preservative (Unpreserved / HCl / H2SO4 / HNO3 / Other)	No	AS per GHD SQA 4 EP/489/19 V4	AS per SQA 4 EP/489/19 V4	AS per EP/489/19 V4	Analyses	HOLD	Remarks
---------------	---------------	------	------	---	--	---	----	-------------------------------	---------------------------	---------------------	----------	------	---------

TBW 827	17	16/09/19		W	B		1			✓			
TBW 825	18	16/09/19		W	B		1			✓			
BORR MW19	19	16/09/19		W	B		8	✓					
BORR MW19B	20	16/09/19		W	B		8	✓					
MT01	21	17/09/19		W	B		10		✓				labelled as SW01 on bottles - please use MT01
BORR MW32	23	17/09/19		W	B		8	✓					
FD02	23	17/09/19		W	B		8	✓					
RB02	24	17/09/19		W	B		1			✓			
FB02	25	17/09/19		W	B		1			✓			
BH 11.1	26	17/09/19		W	B		8	✓					
BORR-MW39	27	17/09/19		W	B		8	✓					
BORR MW24	28	17/09/19		W	B		8	✓					
JT01	29	17/09/19		W	B		10		✓				labelled as SW03 on bottles - please use JT01
Northern 3	30	17/09/19		W	B		10		✓				
FD03	31	17/09/19		W	B		10		✓				
WRM North Site 5	32	17/09/19		W	B		10		✓				
North Creek 4	33	17/09/19		W	B		10		✓				

Sampled by: **Emily Evans + Dom Shuttleworth** Date/Time: **17/09/19** Relinquished by: **EE + DS** Date/Time: **17/09/19**

Received by: **NV** Date/Time: **1130 18/9** Relinquished by: Date/Time:

CHAIN OF CUSTODY RECORD  
AND ANALYSIS REQUEST



GHD  
Level 10, 999 Hay Street  
Perth WA 6000  
PO Box 3106  
Perth WA 6832

Reception Ph: 08 6222 8222

Project ID (as per ESdat set up; no spaces) **6137041** PO Number (to be invoiced) **6137041 (08.083)**  
 Laboratory: **ALS Laboratories**  
 Address: **26 Rigall Way, Wangara WA**  
 Laboratory Contact: **Marnie Thompson**

Laboratory Quote No. <b>EP/489/19 V4</b>		Turnaround Time Standard		Container				Analyses										Remarks				
Job Manager (Invoice) & GHD accounts <b>Vicki Davies Julia Roberts</b>		Email Address (Results) <b>Emily.Evans@ghd.com Vicki.Davies@ghd.com</b>		Sample Matrix S-Soil/S L-Sludge/W-Water/A-Air	Type Bottle/Jar/Vial/Bag/G-Glass/P-Plastic	Preservative Unpreserved/HCl/H2SO4/HNO3/Other	No	AS per GWN Suite <b>EP/489/19 V4</b>	AS per SW Suite <b>EP/489/19 V4</b>	AS per V4 <b>EP/489/19 V4</b>											HOLD	
GHD Sample ID	Lab Sample ID	Date	Time																			
BORR MW31	34	17/09/19		W	B		8	✓														
BORR MW29	35	17/09/19		W	B		8	✓														
SN06	36	17/09/19		W	B		10			✓												
BORR_MW37	37	17/09/19		W	B		8	✓														
BH 9.2	38	17/09/19		W	B		8	✓														
BORR MW25	39	17/09/19		W	B		8	✓														
TBW829	40	17/09/19		W	B		1															
TBW831	41	17/09/19		W	B		1															

Sampled by: **Emily Evans + Don Shuttleworth** Date/Time: **17/09/19** Relinquished by: **EE + DS** Date/Time: **17/09/19.**  
 Received by: **AW** Date/Time: **18/9/19** Relinquished by: Date/Time:

## CERTIFICATE OF ANALYSIS

**Work Order** : **EP1909602**  
**Client** : **GHD PTY LTD**  
**Contact** : **MS VICKI DAVIES**  
**Address** : **999 HAY STREET**  
**PERTH WA, AUSTRALIA 6000**  
**Telephone** : **----**  
**Project** : **6137041**  
**Order number** : **6137041 (08.0831)**  
**C-O-C number** : **----**  
**Sampler** : **Emily Evans, Ian Oglesby**  
**Site** : **----**  
**Quote number** : **EP/489/19 V4**  
**No. of samples received** : **22**  
**No. of samples analysed** : **22**

**Page** : 1 of 18  
**Laboratory** : Environmental Division Perth  
**Contact** : Marnie Thomsett  
**Address** : 26 Rigali Way Wangara WA Australia 6065  
**Telephone** : 08 9406 1311  
**Date Samples Received** : 20-Sep-2019 12:30  
**Date Analysis Commenced** : 20-Sep-2019  
**Issue Date** : 04-Oct-2019 13:24



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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
Daniel Fisher	Inorganics Analyst	Perth Inorganics, Wangara, WA
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Vanessa Nguyen	Organic Chemist	Perth Organics, Wangara, WA



## General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- Glyphosate and OP pesticides analysis conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- EG020: Metals LOR for sample EP1909602-016 raised due to high TDS content.
- EG020T: Positive result for zinc for sample EP1909602-012 has been confirmed by re-digestion and re-analysis.
- ED041G (Sulfate Turbidimetric): LOR for sample EP1909602-006 raised due to possible sample matrix interference.
- TDS by method EA-015 may bias high for sample #8 due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- EA015H (Total Dissolved Solids): TDS for sample #6, #7 and #9 biasing high due to possible sample matrix interferences.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium, sodium and iron for #19.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Southern 4	Southern 3	BORR MW12	BORR MW09	BORR MW10
Client sampling date / time				18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909602-001	EP1909602-002	EP1909602-003	EP1909602-004	EP1909602-005	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	7.70	7.56	6.79	6.63	6.81	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	5680	2500	494	393	414	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	3560	1580	285	258	264	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	112	134	26	10	39	
Total Alkalinity as CaCO3	----	1	mg/L	112	134	26	10	39	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	10	12	13	7	10	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	108	140	36	34	45	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	1680	708	122	95	79	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	52	30	6	27	19	
Magnesium	7439-95-4	1	mg/L	125	50	11	5	10	
Sodium	7440-23-5	1	mg/L	920	407	73	33	43	
Potassium	7440-09-7	1	mg/L	23	15	6	9	4	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.08	0.07	0.03	0.02	0.08	
Arsenic	7440-38-2	0.001	mg/L	0.002	<0.001	0.001	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.023	0.013	0.006	0.014	0.011	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.079	0.046	0.006	0.003	0.013	
Nickel	7440-02-0	0.001	mg/L	0.015	0.009	0.005	0.008	0.009	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.126	0.080	0.032	0.120	0.053	
Iron	7439-89-6	0.05	mg/L	0.56	0.45	1.44	<0.05	2.66	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Southern 4	Southern 3	BORR MW12	BORR MW09	BORR MW10
Client sampling date / time				18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909602-001	EP1909602-002	EP1909602-003	EP1909602-004	EP1909602-005	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.24	0.07	0.88	1.51	0.76	
Iron	7439-89-6	0.05	mg/L	0.75	0.61	3.47	0.41	6.67	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.12	0.02	0.13	<0.01	0.18	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.12	0.02	0.13	<0.01	0.18	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.02	<0.01	0.90	0.91	0.18	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	3.0	3.8	0.6	0.3	0.7	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	3.0	3.8	1.5	1.2	0.9	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.10	0.13	0.03	<0.01	<0.01	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.07	0.04	<0.01	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	51.9	25.6	4.71	3.59	3.94	
∅ Total Cations	----	0.01	meq/L	53.5	23.7	4.53	3.42	3.74	
∅ Ionic Balance	----	0.01	%	1.53	3.78	1.91	2.33	2.61	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Southern 4	Southern 3	BORR MW12	BORR MW09	BORR MW10
Client sampling date / time				18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909602-001	EP1909602-002	EP1909602-003	EP1909602-004	EP1909602-005	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	130	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	130	<100	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	<10	<10	----	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	----	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	----	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	----	----	----	
Carbofenthion	786-19-6	0.02	µg/L	<0.02	<0.02	----	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	----	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	----	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	----	----	----	
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	----	----	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	----	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	----	----	----	
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	----	----	----	
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	----	----	----	
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	----	----	----	
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	----	----	----	
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	----	----	----	
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	----	----	----	
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Southern 4	Southern 3	BORR MW12	BORR MW09	BORR MW10
Client sampling date / time					18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00
Compound	CAS Number	LOR	Unit		EP1909602-001	EP1909602-002	EP1909602-003	EP1909602-004	EP1909602-005
					Result	Result	Result	Result	Result
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L		<0.05	<0.05	----	----	----
Ethoprophos	13194-48-4	0.01	µg/L		<0.01	<0.01	----	----	----
Fenamiphos	22224-92-6	0.01	µg/L		<0.01	<0.01	----	----	----
Fenchlorphos (Rannel)	299-84-3	10	µg/L		<10	<10	----	----	----
Fenitrothion	122-14-5	2	µg/L		<2	<2	----	----	----
Fensulfothion	115-90-2	0.01	µg/L		<0.01	<0.01	----	----	----
Fenthion	55-38-9	0.05	µg/L		<0.05	<0.05	----	----	----
Malathion	121-75-5	0.02	µg/L		<0.02	<0.02	----	----	----
Mevinphos	7786-34-7	0.02	µg/L		<0.02	<0.02	----	----	----
Monocrotophos	6923-22-4	0.02	µg/L		<0.02	<0.02	----	----	----
Omethoate	1113-02-6	0.01	µg/L		<0.01	<0.01	----	----	----
Parathion	56-38-2	0.2	µg/L		<0.2	<0.2	----	----	----
Parathion-methyl	298-00-0	0.5	µg/L		<0.5	<0.5	----	----	----
Phorate	298-02-2	0.1	µg/L		<0.1	<0.1	----	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L		<0.01	<0.01	----	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L		<0.01	<0.01	----	----	----
Profenofos	41198-08-7	0.01	µg/L		<0.01	<0.01	----	----	----
Prothiofos	34643-46-4	0.1	µg/L		<0.1	<0.1	----	----	----
Sulfotep	3689-24-5	0.005	µg/L		<0.005	<0.005	----	----	----
Sulprofos	35400-43-2	0.05	µg/L		<0.05	<0.05	----	----	----
Terbufos	13071-79-9	0.01	µg/L		<0.01	<0.01	----	----	----
Temephos	3383-96-8	0.02	µg/L		<0.02	<0.02	----	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L		<0.01	<0.01	----	----	----
Triazophos	24017-47-8	0.005	µg/L		<0.005	<0.005	----	----	----
Trichlorfon	52-68-6	0.02	µg/L		<0.02	<0.02	----	----	----
Trichloronate	327-98-0	0.5	µg/L		<0.5	<0.5	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%		78.6	79.2	64.3	79.3	76.7
Toluene-D8	2037-26-5	2	%		97.5	98.2	101	101	96.3
4-Bromofluorobenzene	460-00-4	2	%		78.2	78.2	74.2	75.6	76.2





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW08a	SW10	BORR MW07	SW11	BORR MW06
Client sampling date / time				18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909602-006	EP1909602-007	EP1909602-008	EP1909602-009	EP1909602-010	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.61	7.55	6.71	7.02	7.08	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	507	748	576	348	384	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	368	550	474	269	273	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	46	65	34	77	48	
Total Alkalinity as CaCO3	----	1	mg/L	46	65	34	77	48	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	20	9	22	27	11	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<20	14	89	10	44	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	143	206	115	54	66	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	15	30	15	9	26	
Magnesium	7439-95-4	1	mg/L	10	17	13	6	10	
Sodium	7440-23-5	1	mg/L	67	92	66	42	42	
Potassium	7440-09-7	1	mg/L	7	17	3	2	7	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.34	0.12	0.03	0.09	0.16	
Arsenic	7440-38-2	0.001	mg/L	0.002	<0.001	<0.001	0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.007	0.015	0.009	0.009	0.009	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.003	
Manganese	7439-96-5	0.001	mg/L	0.045	0.011	0.015	0.012	0.064	
Nickel	7440-02-0	0.001	mg/L	0.005	0.011	0.009	0.008	0.008	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.074	0.105	0.112	0.027	0.061	
Iron	7439-89-6	0.05	mg/L	1.80	1.07	0.06	0.51	3.73	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW08a	SW10	BORR MW07	SW11	BORR MW06
Client sampling date / time				18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909602-006	EP1909602-007	EP1909602-008	EP1909602-009	EP1909602-010	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	3.47	0.10	25.2	0.78	2.19	
Iron	7439-89-6	0.05	mg/L	2.56	1.05	19.9	1.58	6.47	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.20	<0.01	<0.01	0.10	0.14	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.20	<0.01	<0.01	0.09	0.14	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.07	<0.01	1.02	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.4	3.3	0.7	2.0	0.7	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	1.4	3.3	0.8	2.0	1.7	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.58	0.67	0.37	0.05	0.03	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.54	0.65	<0.01	0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	4.95	7.40	5.78	3.27	3.74	
∅ Total Cations	----	0.01	meq/L	4.66	7.33	4.77	2.82	4.13	
∅ Ionic Balance	----	0.01	%	2.99	0.46	9.58	7.37	4.95	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW08a	SW10	BORR MW07	SW11	BORR MW06
Client sampling date / time				18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909602-006	EP1909602-007	EP1909602-008	EP1909602-009	EP1909602-010	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	130	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	130	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	<10	----	<10	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	<0.02	----	<0.02	----	
Azinphos-methyl	86-50-0	0.02	µg/L	----	<0.02	----	<0.02	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	<0.10	----	<0.10	----	
Carbofenthion	786-19-6	0.02	µg/L	----	<0.02	----	<0.02	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	<0.02	----	<0.02	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	<0.02	----	<0.02	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	<0.2	----	<0.2	----	
Coumaphos	56-72-4	0.01	µg/L	----	<0.01	----	<0.01	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	<0.02	----	<0.02	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	<0.02	----	<0.02	----	
Demeton-O	298-03-3	0.02	µg/L	----	<0.02	----	<0.02	----	
Demeton-S	126-75-0	0.02	µg/L	----	<0.02	----	<0.02	----	
Diazinon	333-41-5	0.01	µg/L	----	<0.01	----	<0.01	----	
Dichlorvos	62-73-7	0.20	µg/L	----	<0.20	----	<0.20	----	
Dimethoate	60-51-5	0.02	µg/L	----	<0.02	----	<0.02	----	
Disulfoton	298-04-4	0.05	µg/L	----	<0.05	----	<0.05	----	
Ethion	563-12-2	0.02	µg/L	----	<0.02	----	<0.02	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW08a	SW10	BORR MW07	SW11	BORR MW06
Client sampling date / time					18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00
Compound	CAS Number	LOR	Unit		EP1909602-006	EP1909602-007	EP1909602-008	EP1909602-009	EP1909602-010
					Result	Result	Result	Result	Result
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L	----	<0.05	----	<0.05	----	
Ethoprophos	13194-48-4	0.01	µg/L	----	<0.01	----	<0.01	----	
Fenamiphos	22224-92-6	0.01	µg/L	----	<0.01	----	<0.01	----	
Fenchlorphos (Rannel)	299-84-3	10	µg/L	----	<10	----	<10	----	
Fenitrothion	122-14-5	2	µg/L	----	<2	----	<2	----	
Fensulfothion	115-90-2	0.01	µg/L	----	<0.01	----	<0.01	----	
Fenthion	55-38-9	0.05	µg/L	----	<0.05	----	<0.05	----	
Malathion	121-75-5	0.02	µg/L	----	<0.02	----	<0.02	----	
Mevinphos	7786-34-7	0.02	µg/L	----	<0.02	----	<0.02	----	
Monocrotophos	6923-22-4	0.02	µg/L	----	<0.02	----	<0.02	----	
Omethoate	1113-02-6	0.01	µg/L	----	<0.01	----	<0.01	----	
Parathion	56-38-2	0.2	µg/L	----	<0.2	----	<0.2	----	
Parathion-methyl	298-00-0	0.5	µg/L	----	<0.5	----	<0.5	----	
Phorate	298-02-2	0.1	µg/L	----	<0.1	----	<0.1	----	
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	----	<0.01	----	<0.01	----	
Pirimiphos-methyl	29232-93-7	0.01	µg/L	----	<0.01	----	<0.01	----	
Profenofos	41198-08-7	0.01	µg/L	----	<0.01	----	<0.01	----	
Prothiofos	34643-46-4	0.1	µg/L	----	<0.1	----	<0.1	----	
Sulfotep	3689-24-5	0.005	µg/L	----	<0.005	----	<0.005	----	
Sulprofos	35400-43-2	0.05	µg/L	----	<0.05	----	<0.05	----	
Terbufos	13071-79-9	0.01	µg/L	----	<0.01	----	<0.01	----	
Temephos	3383-96-8	0.02	µg/L	----	<0.02	----	<0.02	----	
Tetrachlorvinphos	22248-79-9	0.01	µg/L	----	<0.01	----	<0.01	----	
Triazophos	24017-47-8	0.005	µg/L	----	<0.005	----	<0.005	----	
Trichlorfon	52-68-6	0.02	µg/L	----	<0.02	----	<0.02	----	
Trichloronate	327-98-0	0.5	µg/L	----	<0.5	----	<0.5	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%		84.9	79.7	86.5	69.4	84.5
Toluene-D8	2037-26-5	2	%		97.6	99.0	95.2	95.6	99.4
4-Bromofluorobenzene	460-00-4	2	%		78.9	75.2	75.9	86.1	74.6



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		BORR MW04	RB03	FB03	TBW832	TBW830
Client sampling date / time		18-Sep-2019 00:00		18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	EP1909602-011	EP1909602-012	EP1909602-013	EP1909602-014	EP1909602-015
				Result	Result	Result	Result	Result
<b>EA005P: pH by PC Titrator</b>								
pH Value	----	0.01	pH Unit	7.61	----	----	----	----
<b>EA010P: Conductivity by PC Titrator</b>								
Electrical Conductivity @ 25°C	----	1	µS/cm	2890	----	----	----	----
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
Total Dissolved Solids @180°C	----	10	mg/L	1720	----	----	----	----
<b>ED037P: Alkalinity by PC Titrator</b>								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	246	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	246	----	----	----	----
<b>ED038A: Acidity</b>								
Acidity as CaCO3	----	1	mg/L	14	----	----	----	----
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	148	----	----	----	----
<b>ED045G: Chloride by Discrete Analyser</b>								
Chloride	16887-00-6	1	mg/L	800	----	----	----	----
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	126	----	----	----	----
Magnesium	7439-95-4	1	mg/L	45	----	----	----	----
Sodium	7440-23-5	1	mg/L	408	----	----	----	----
Potassium	7440-09-7	1	mg/L	5	----	----	----	----
<b>EG020F: Dissolved Metals by ICP-MS</b>								
Aluminium	7429-90-5	0.01	mg/L	0.01	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	0.003	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	0.008	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.130	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	0.010	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	0.047	----	----	----	----
Iron	7439-89-6	0.05	mg/L	4.39	----	----	----	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW04	RB03	FB03	TBW832	TBW830
Client sampling date / time				18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909602-011	EP1909602-012	EP1909602-013	EP1909602-014	EP1909602-015	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	4.63	----	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	----	<0.001	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	----	<0.0001	----	----	----	
Chromium	7440-47-3	0.001	mg/L	----	<0.001	----	----	----	
Copper	7440-50-8	0.001	mg/L	----	<0.001	----	----	----	
Nickel	7440-02-0	0.001	mg/L	----	<0.001	----	----	----	
Lead	7439-92-1	0.001	mg/L	----	<0.001	----	----	----	
Zinc	7440-66-6	0.005	mg/L	----	0.006	----	----	----	
Iron	7439-89-6	0.05	mg/L	16.5	----	----	----	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.18	----	----	----	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.18	----	----	----	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	----	----	----	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	4.5	----	----	----	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	4.5	----	----	----	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.52	----	----	----	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	----	----	----	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	----	----	----	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	30.6	----	----	----	----	
∅ Total Cations	----	0.01	meq/L	27.9	----	----	----	----	
∅ Ionic Balance	----	0.01	%	4.62	----	----	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	----	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	----	
C15 - C28 Fraction	----	100	µg/L	<100	----	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW04	RB03	FB03	TBW832	TBW830
Client sampling date / time				18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	18-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909602-011	EP1909602-012	EP1909602-013	EP1909602-014	EP1909602-015	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>									
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	----	----	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	----	----	----	----	
>C16 - C34 Fraction	----	100	µg/L	<100	----	----	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	----	----	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	----	----	----	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	----	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	----	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	----	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	----	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	----	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	----	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	----	<5	<5	<5	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	90.2	----	76.9	70.0	64.7	
Toluene-D8	2037-26-5	2	%	99.5	----	102	99.9	114	
4-Bromofluorobenzene	460-00-4	2	%	75.4	----	75.5	72.4	64.2	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MR MW05	BORR MW11	BORR MW05	BORR MW46	RB04
Client sampling date / time				19-Sep-2019 00:00	19-Sep-2019 00:00	19-Sep-2019 00:00	19-Sep-2019 00:00	19-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909602-016	EP1909602-017	EP1909602-018	EP1909602-019	EP1909602-020	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.47	7.23	7.12	5.77	----	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	22200	2300	1030	541	----	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	14300	1570	576	445	----	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	125	258	73	7	----	
Total Alkalinity as CaCO3	----	1	mg/L	125	258	73	7	----	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	39	24	11	12	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	1040	89	105	236	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	8600	639	273	18	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	173	21	22	34	----	
Magnesium	7439-95-4	1	mg/L	689	38	15	17	----	
Sodium	7440-23-5	1	mg/L	3870	419	160	16	----	
Potassium	7440-09-7	1	mg/L	43	7	6	4	----	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	<0.05	0.04	0.09	0.03	----	
Arsenic	7440-38-2	0.001	mg/L	0.010	0.004	<0.001	0.004	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0005	<0.0001	<0.0001	<0.0001	----	
Chromium	7440-47-3	0.001	mg/L	<0.005	0.002	<0.001	<0.001	----	
Cobalt	7440-48-4	0.001	mg/L	<0.005	<0.001	<0.001	0.005	----	
Copper	7440-50-8	0.001	mg/L	0.008	0.009	0.012	0.017	----	
Lead	7439-92-1	0.001	mg/L	<0.005	<0.001	<0.001	0.001	----	
Manganese	7439-96-5	0.001	mg/L	0.198	0.076	0.012	0.080	----	
Nickel	7440-02-0	0.001	mg/L	0.009	0.008	0.015	0.012	----	
Selenium	7782-49-2	0.01	mg/L	<0.05	<0.01	<0.01	<0.01	----	
Zinc	7440-66-6	0.005	mg/L	0.052	0.039	0.046	0.070	----	
Iron	7439-89-6	0.05	mg/L	19.4	1.03	0.90	43.4	----	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MR MW05	BORR MW11	BORR MW05	BORR MW46	RB04
Client sampling date / time				19-Sep-2019 00:00	19-Sep-2019 00:00	19-Sep-2019 00:00	19-Sep-2019 00:00	19-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909602-016	EP1909602-017	EP1909602-018	EP1909602-019	EP1909602-020	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	7.07	4.35	1.09	10.7	----	
Arsenic	7440-38-2	0.001	mg/L	----	----	----	----	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	----	<0.0001	
Chromium	7440-47-3	0.001	mg/L	----	----	----	----	<0.001	
Copper	7440-50-8	0.001	mg/L	----	----	----	----	<0.001	
Nickel	7440-02-0	0.001	mg/L	----	----	----	----	<0.001	
Lead	7439-92-1	0.001	mg/L	----	----	----	----	<0.001	
Zinc	7440-66-6	0.005	mg/L	----	----	----	----	<0.005	
Iron	7439-89-6	0.05	mg/L	29.4	11.6	1.28	58.7	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.23	<0.01	0.07	0.23	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.23	<0.01	0.07	0.23	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.3	1.5	1.1	0.6	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	1.3	1.5	1.1	0.6	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.09	0.28	0.03	0.01	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.01	<0.01	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	0.2	<0.1	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	267	25.0	11.3	5.56	----	
∅ Total Cations	----	0.01	meq/L	----	----	----	6.22	----	
∅ Total Cations	----	0.01	meq/L	235	22.6	9.44	----	----	
∅ Ionic Balance	----	0.01	%	----	----	----	5.63	----	
∅ Ionic Balance	----	0.01	%	6.37	5.15	9.14	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MR MW05	BORR MW11	BORR MW05	BORR MW46	RB04
Client sampling date / time				19-Sep-2019 00:00	19-Sep-2019 00:00	19-Sep-2019 00:00	19-Sep-2019 00:00	19-Sep-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1909602-016	EP1909602-017	EP1909602-018	EP1909602-019	EP1909602-020	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>									
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	----	
C15 - C28 Fraction	----	100	µg/L	190	<100	<100	<100	----	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	190	<50	<50	<50	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	----	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	----	
>C16 - C34 Fraction	----	100	µg/L	160	<100	<100	<100	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	160	<100	<100	<100	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	----	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	----	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	----	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	----	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	----	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	----	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	65.5	70.7	72.4	79.1	----	
Toluene-D8	2037-26-5	2	%	101	97.6	100	87.4	----	
4-Bromofluorobenzene	460-00-4	2	%	73.7	74.6	84.0	73.5	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB04	TBW828	----	----	----
Client sampling date / time				19-Sep-2019 00:00	19-Sep-2019 00:00	----	----	----	
Compound	CAS Number	LOR	Unit	EP1909602-021	EP1909602-022	-----	-----	-----	
				Result	Result	----	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	----	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	----	----	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	----	----	----	
Toluene	108-88-3	2	µg/L	<2	<2	----	----	----	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	----	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	----	----	----	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	----	----	----	
^ Total Xylenes	----	2	µg/L	<2	<2	----	----	----	
^ Sum of BTEX	----	1	µg/L	<1	<1	----	----	----	
Naphthalene	91-20-3	5	µg/L	<5	<5	----	----	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	73.4	72.4	----	----	----	
Toluene-D8	2037-26-5	2	%	104	114	----	----	----	
4-Bromofluorobenzene	460-00-4	2	%	68.2	61.1	----	----	----	



## Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	61	141
Toluene-D8	2037-26-5	73	126
4-Bromofluorobenzene	460-00-4	60	125

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1909602	Page	: 1 of 15
Client	: GHD PTY LTD	Laboratory	: Environmental Division Perth
Contact	: MS VICKI DAVIES	Telephone	: 08 9406 1311
Project	: 6137041	Date Samples Received	: 20-Sep-2019
Site	: ----	Issue Date	: 04-Oct-2019
Sampler	: Emily Evans, Ian Oglesby	No. of samples received	: 22
Order number	: 6137041 (08.0831)	No. of samples analysed	: 22

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

#### Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



### Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis			
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue	
<b>EA005P: pH by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural</b> Southern 4, BORR MW12, BORR MW10, SW10, SW11, BORR MW04	Southern 3, BORR MW09, BORR MW08a, BORR MW07, BORR MW06,	----	----	----	24-Sep-2019	18-Sep-2019	6
<b>Clear Plastic Bottle - Natural</b> MR MW05, BORR MW05,	BORR MW11, BORR MW46	----	----	----	24-Sep-2019	19-Sep-2019	5

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA005P: pH by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA005-P)</b> Southern 4, BORR MW12, BORR MW10, SW10, SW11, BORR MW04	Southern 3, BORR MW09, BORR MW08a, BORR MW07, BORR MW06,	18-Sep-2019	----	----	----	24-Sep-2019	18-Sep-2019	*
<b>Clear Plastic Bottle - Natural (EA005-P)</b> MR MW05, BORR MW05,	BORR MW11, BORR MW46	19-Sep-2019	----	----	----	24-Sep-2019	19-Sep-2019	*



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA010P: Conductivity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA010-P)</b> Southern 4, BORR MW12, BORR MW10, SW10, SW11, BORR MW04	Southern 3, BORR MW09, BORR MW08a, BORR MW07, BORR MW06,	18-Sep-2019	----	----	----	24-Sep-2019	16-Oct-2019	✓
<b>Clear Plastic Bottle - Natural (EA010-P)</b> MR MW05, BORR MW05,	BORR MW11, BORR MW46	19-Sep-2019	----	----	----	24-Sep-2019	17-Oct-2019	✓
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
<b>Clear Plastic Bottle - Natural (EA015H)</b> Southern 4, BORR MW12, BORR MW10, SW10, SW11, BORR MW04	Southern 3, BORR MW09, BORR MW08a, BORR MW07, BORR MW06,	18-Sep-2019	----	----	----	25-Sep-2019	25-Sep-2019	✓
<b>Clear Plastic Bottle - Natural (EA015H)</b> MR MW05, BORR MW05,	BORR MW11, BORR MW46	19-Sep-2019	----	----	----	26-Sep-2019	26-Sep-2019	✓
<b>ED037P: Alkalinity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (ED037-P)</b> Southern 4, BORR MW12, BORR MW10, SW10, SW11, BORR MW04	Southern 3, BORR MW09, BORR MW08a, BORR MW07, BORR MW06,	18-Sep-2019	----	----	----	24-Sep-2019	02-Oct-2019	✓
<b>Clear Plastic Bottle - Natural (ED037-P)</b> MR MW05, BORR MW05,	BORR MW11, BORR MW46	19-Sep-2019	----	----	----	24-Sep-2019	03-Oct-2019	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>ED038A: Acidity</b>								
<b>Clear Plastic Bottle - Natural (ED038)</b> Southern 4, BORR MW12, BORR MW10, SW10, SW11, BORR MW04	Southern 3, BORR MW09, BORR MW08a, BORR MW07, BORR MW06,	18-Sep-2019	----	----	----	01-Oct-2019	02-Oct-2019	✓
<b>Clear Plastic Bottle - Natural (ED038)</b> MR MW05, BORR MW05,	BORR MW11, BORR MW46	19-Sep-2019	----	----	----	01-Oct-2019	03-Oct-2019	✓
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
<b>Clear Plastic Bottle - Natural (ED041G)</b> Southern 4, BORR MW12, BORR MW10, SW10, SW11, BORR MW04	Southern 3, BORR MW09, BORR MW08a, BORR MW07, BORR MW06,	18-Sep-2019	----	----	----	20-Sep-2019	16-Oct-2019	✓
<b>Clear Plastic Bottle - Natural (ED041G)</b> MR MW05, BORR MW05,	BORR MW11, BORR MW46	19-Sep-2019	----	----	----	20-Sep-2019	17-Oct-2019	✓
<b>ED045G: Chloride by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Natural (ED045G)</b> Southern 4, BORR MW12, BORR MW10, SW10, SW11, BORR MW04	Southern 3, BORR MW09, BORR MW08a, BORR MW07, BORR MW06,	18-Sep-2019	----	----	----	20-Sep-2019	16-Oct-2019	✓
<b>Clear Plastic Bottle - Natural (ED045G)</b> MR MW05, BORR MW05,	BORR MW11, BORR MW46	19-Sep-2019	----	----	----	20-Sep-2019	17-Oct-2019	✓





Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>ED093F: Dissolved Major Cations</b>								
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> Southern 4, BORR MW12, BORR MW10, SW10, SW11, BORR MW04	Southern 3, BORR MW09, BORR MW08a, BORR MW07, BORR MW06,	18-Sep-2019	----	----	----	25-Sep-2019	16-Oct-2019	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> MR MW05, BORR MW05,	BORR MW11, BORR MW46	19-Sep-2019	----	----	----	25-Sep-2019	17-Oct-2019	✓
<b>EG020F: Dissolved Metals by ICP-MS</b>								
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> Southern 4, BORR MW12, BORR MW10, SW10, SW11, BORR MW04	Southern 3, BORR MW09, BORR MW08a, BORR MW07, BORR MW06,	18-Sep-2019	----	----	----	25-Sep-2019	16-Mar-2020	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> MR MW05, BORR MW05,	BORR MW11, BORR MW46	19-Sep-2019	----	----	----	25-Sep-2019	17-Mar-2020	✓
<b>EG020T: Total Metals by ICP-MS</b>								
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> Southern 4, BORR MW12, BORR MW10, SW10, SW11, BORR MW04,	Southern 3, BORR MW09, BORR MW08a, BORR MW07, BORR MW06, RB03	18-Sep-2019	25-Sep-2019	16-Mar-2020	✓	25-Sep-2019	16-Mar-2020	✓
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> MR MW05, BORR MW05, RB04	BORR MW11, BORR MW46,	19-Sep-2019	25-Sep-2019	17-Mar-2020	✓	25-Sep-2019	17-Mar-2020	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK055G: Ammonia as N by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> Southern 4, BORR MW12, BORR MW10, SW10, SW11, BORR MW04	Southern 3, BORR MW09, BORR MW08a, BORR MW07, BORR MW06,	18-Sep-2019	----	----	----	20-Sep-2019	16-Oct-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> MR MW05, BORR MW05,	BORR MW11, BORR MW46	19-Sep-2019	----	----	----	20-Sep-2019	17-Oct-2019	✓
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> Southern 4, BORR MW12, BORR MW10, SW10, SW11, BORR MW04	Southern 3, BORR MW09, BORR MW08a, BORR MW07, BORR MW06,	18-Sep-2019	----	----	----	20-Sep-2019	16-Oct-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> MR MW05, BORR MW05,	BORR MW11, BORR MW46	19-Sep-2019	----	----	----	20-Sep-2019	17-Oct-2019	✓
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
<b>Amber VOC Vial - Sulfuric Acid (EK061G)</b> BORR MW12		18-Sep-2019	27-Sep-2019	16-Oct-2019	✓	01-Oct-2019	16-Oct-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> Southern 4, BORR MW09, BORR MW08a, BORR MW07, BORR MW06,	Southern 3, BORR MW10, SW10, SW11, BORR MW04	18-Sep-2019	27-Sep-2019	16-Oct-2019	✓	01-Oct-2019	16-Oct-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> MR MW05, BORR MW05,	BORR MW11, BORR MW46	19-Sep-2019	27-Sep-2019	17-Oct-2019	✓	01-Oct-2019	17-Oct-2019	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>							
<b>Amber VOC Vial - Sulfuric Acid (EK067G)</b> BORR MW12	18-Sep-2019	27-Sep-2019	16-Oct-2019	✓	01-Oct-2019	16-Oct-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> Southern 4, BORR MW09, BORR MW08a, BORR MW07, BORR MW06, Southern 3, BORR MW10, SW10, SW11, BORR MW04	18-Sep-2019	27-Sep-2019	16-Oct-2019	✓	01-Oct-2019	16-Oct-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> MR MW05, BORR MW05, BORR MW11, BORR MW46	19-Sep-2019	27-Sep-2019	17-Oct-2019	✓	01-Oct-2019	17-Oct-2019	✓
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>							
<b>Clear Plastic Bottle - Natural (EK071G)</b> Southern 4, BORR MW12, BORR MW10, SW10, SW11, BORR MW04 Southern 3, BORR MW09, BORR MW08a, BORR MW07, BORR MW06	18-Sep-2019	----	----	----	20-Sep-2019	20-Sep-2019	✓
<b>Clear Plastic Bottle - Natural (EK071G)</b> MR MW05, BORR MW05, BORR MW11, BORR MW46	19-Sep-2019	----	----	----	20-Sep-2019	21-Sep-2019	✓
<b>EK085M: Sulfide as S2-</b>							
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> Southern 4, BORR MW12, BORR MW10, SW10, SW11, BORR MW04 Southern 3, BORR MW09, BORR MW08a, BORR MW07, BORR MW06	18-Sep-2019	----	----	----	25-Sep-2019	25-Sep-2019	✓
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> MR MW05, BORR MW05, BORR MW11, BORR MW46	19-Sep-2019	----	----	----	25-Sep-2019	26-Sep-2019	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
<b>Amber Glass Bottle - Unpreserved (EP071)</b> Southern 4, BORR MW12, BORR MW10, SW10, SW11, BORR MW04	Southern 3, BORR MW09, BORR MW08a, BORR MW07, BORR MW06,	18-Sep-2019	25-Sep-2019	25-Sep-2019	✓	27-Sep-2019	04-Nov-2019	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b> MR MW05, BORR MW05,	BORR MW11, BORR MW46	19-Sep-2019	26-Sep-2019	26-Sep-2019	✓	27-Sep-2019	05-Nov-2019	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> Southern 4, BORR MW12, BORR MW10, SW10, SW11, BORR MW04, TBW832,	Southern 3, BORR MW09, BORR MW08a, BORR MW07, BORR MW06, FB03, TBW830	18-Sep-2019	27-Sep-2019	02-Oct-2019	✓	27-Sep-2019	02-Oct-2019	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> MR MW05, BORR MW05, FB04,	BORR MW11, BORR MW46, TBW828	19-Sep-2019	27-Sep-2019	03-Oct-2019	✓	27-Sep-2019	03-Oct-2019	✓



Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>								
<b>Amber Glass Bottle - Unpreserved (EP071)</b>								
Southern 4, BORR MW12, BORR MW10, SW10, SW11, BORR MW04	Southern 3, BORR MW09, BORR MW08a, BORR MW07, BORR MW06,	18-Sep-2019	25-Sep-2019	25-Sep-2019	✓	27-Sep-2019	04-Nov-2019	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b>								
MR MW05, BORR MW05,	BORR MW11, BORR MW46	19-Sep-2019	26-Sep-2019	26-Sep-2019	✓	27-Sep-2019	05-Nov-2019	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
Southern 4, BORR MW12, BORR MW10, SW10, SW11, BORR MW04, TBW832,	Southern 3, BORR MW09, BORR MW08a, BORR MW07, BORR MW06, FB03, TBW830	18-Sep-2019	27-Sep-2019	02-Oct-2019	✓	27-Sep-2019	02-Oct-2019	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
MR MW05, BORR MW05, FB04,	BORR MW11, BORR MW46, TBW828	19-Sep-2019	27-Sep-2019	03-Oct-2019	✓	27-Sep-2019	03-Oct-2019	✓
<b>EP080: BTEXN</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
Southern 4, BORR MW12, BORR MW10, SW10, SW11, BORR MW04, TBW832,	Southern 3, BORR MW09, BORR MW08a, BORR MW07, BORR MW06, FB03, TBW830	18-Sep-2019	27-Sep-2019	02-Oct-2019	✓	27-Sep-2019	02-Oct-2019	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
MR MW05, BORR MW05, FB04,	BORR MW11, BORR MW46, TBW828	19-Sep-2019	27-Sep-2019	03-Oct-2019	✓	27-Sep-2019	03-Oct-2019	✓
<b>EP204: Glyphosate and AMPA</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b>								
Southern 4, SW10,	Southern 3, SW11	18-Sep-2019	----	----	----	25-Sep-2019	02-Oct-2019	✓

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 Work Order : EP1909602  
 Client : GHD PTY LTD  
 Project : 6137041



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP234A: OP Pesticides</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> Southern 4, SW10,	Southern 3, SW11	18-Sep-2019	----	----	----	25-Sep-2019	25-Sep-2019	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Laboratory Duplicates (DUP)</b>							
Acidity as Calcium Carbonate	ED038	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	3	21	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	3	29	10.34	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	3	24	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	2	4	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	3	30	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	3	29	10.34	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	3	29	10.34	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	4	36	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	32	12.50	10.53	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Acidity as Calcium Carbonate	ED038	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	4	21	19.05	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	16	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	4	29	13.79	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	17	11.76	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	30	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	29	13.79	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	32	12.50	10.53	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Alkalinity by PC Titrator	ED037-P	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	16	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	17	11.76	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	32	6.25	5.26	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Ammonia as N by Discrete analyser	EK055G	2	16	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	17	11.76	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard





## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3)  Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3)  Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ammonium as N	EK055G-NH4	WATER	Ammonium in the sample is reported as the ionised / unionised fractions by the use of a nomograph and the initial pH and Temperature. Ammonia is determined by direct colorimetry by Discrete Analyser according to APHA 4500-NH3 G. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Sulfide as S2-	EK085	WATER	In house: Referenced to APHA 4500-S2- D. Sulfide species present in water samples are immediately precipitated when collected in pretreated caustic/zinc acetate preserved sample containers. The sulphides are coloured using methylene blue indicator. Non-detects may be screened by comparison against a standard at half-LOR, otherwise samples are measured using UV-VIS detection at 664nm. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatle Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Glyphosate and AMPA	EP204	WATER	In house: Pre-column derivatisation LCMS (ES in negative mode). Water samples are derivatised with 9-fluorenyl methoxycarbonyl chloroformate (Fmoc) in alkaline condition. The derivatives of glyphosate and AMPA are separated by a C8 column and determined by MS.
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

**CHAIN OF CUSTODY RECORD  
AND ANALYSIS REQUEST**



GHD  
Level 10, 999 Hay Street  
Perth WA 6000

PO Box 3106  
Perth WA 6832

Reception Ph: 08 6222 8222

Project ID (as per ESdat set up; no spaces)  
**6137041**

PO Number (to be invoiced)  
**6137041 (08.0831)**

Laboratory: **ALS Laboratories**  
Address: **26 Rigali Way, Wangara WA**  
Laboratory Contact: **Juanita Thompson**

Laboratory Quote No.  
**EP/489/19 v4**

Turnaround Time  
Standard

Job Manager (Invoice) & GHD accounts  
**Nicki Davies  
Julia Roberts**

Email Address (Results)  
**Emily.evans@ghd.com  
Nicki.Davies@ghd.com**

**Analyses**

Environmental Division  
Perth  
Work Order Reference  
**EP1909602**



Telephone : 61-8-9406 1301

HOLD

LabQC x 3

LabQC x 3

GHD Sample ID	Lab Sample ID	Date	Time	Sample Matrix (Soil/Si/Sludge/W/Water/Air)	Container			AS per contract	EP/489/19 v4	AS per contract	EP/489/19 v4	AS per contract	EP/489/19 v4	Remarks
					Type (Bottle/Jar/Vial/Bag/Glass/Plastic)	Preservative (Ultraclean/HCl/H2SO4/HNO3/Other)	No							
1	Southern 4	18/09/19		W	B		10		✓					
2	Southern 3	18/09/19		W	B		10		✓					
3	BORR MW12	18/09/19		W	B		8	✓						
4	BORR MW09	18/09/19		W	B		8	✓						
5	BORR MW10	18/09/19		W	B		8	✓						
6	BORR MW08a	18/09/19		W	B		8	✓						LabQC x 3
7	SW10	18/09/19		W	B		10		✓					
8	BORR MW07	18/09/19		W	B		8	✓						
9	SW11	18/09/19		W	B		10		✓					
10	BORR MW06	18/09/19		W	B		8	✓						
11	BORR MW04	18/09/19		W	B		8	✓						
12	FB03	18/09/19		W	B		1					✓		
13	FB03	18/09/19		W	B		1					✓		
14	TBW832	18/09/19		W	B		1					✓		
15	TBW830	18/09/19		W	B		1					✓		
16	MR MW05	19/09/19		W	B		8	✓						
17	BORR MW11	19/09/19		W	B		8	✓						

Date/Time: **19/09/19** Relinquished by: **EE + 10**  
Date/Time: **20/09/19** Relinquished by:

Date/Time: **19/09/19.**  
Date/Time:

Sampled by: **Emily Evans + Ian Oglesby**  
Received by: **Phannon**

12:30pm



GHD Pty Ltd WA  
999 Hay Street Perth  
Perth  
WA 6004



NATA Accredited  
Accreditation Number 1261  
Site Number 23736

Accredited for compliance with ISO/IEC 17025 – Testing  
The results of the tests, calibrations and/or  
measurements included in this document are traceable  
to Australian/national standards.

Attention: **Emily Evans**

Report **678265-W**

Project name

Project ID **6137041**

Received Date **Sep 19, 2019**

Client Sample ID			<b>FS01</b>
Sample Matrix			<b>Water</b>
Eurofins Sample No.			<b>P19-Se32570</b>
Date Sampled			<b>Sep 16, 2019</b>
Test/Reference	LOR	Unit	
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>			
TRH C6-C9	0.02	mg/L	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1
TRH C10-C36 (Total)	0.1	mg/L	< 0.1
<b>BTEX</b>			
Benzene	0.001	mg/L	< 0.001
Toluene	0.001	mg/L	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002
o-Xylene	0.001	mg/L	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003
4-Bromofluorobenzene (surr.)	1	%	52
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>			
Naphthalene <sup>N02</sup>	0.01	mg/L	< 0.01
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	0.05	mg/L	< 0.05
TRH C6-C10	0.02	mg/L	< 0.02
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	0.02	mg/L	< 0.02
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>			
TRH >C10-C16	0.05	mg/L	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1
<b>Acidity (as CaCO3)</b>			
Acidity (as CaCO3)	10	mg/L	23
<b>Ammonia (as N)</b>			
Ammonia (as N)	0.01	mg/L	0.02
<b>Ammonium Ion (as N)</b>			
Ammonium Ion (as N)	0.01	mg/L	0.03
<b>Chloride</b>			
Chloride	1	mg/L	29
<b>Conductivity (at 25°C)</b>			
Conductivity (at 25°C)	1	uS/cm	220
<b>Nitrate &amp; Nitrite (as N)</b>			
Nitrate & Nitrite (as N)	0.05	mg/L	10
<b>pH (at 25°C)</b>			
pH (at 25°C)	0.1	pH Units	4.6
<b>Phosphate total (as P)</b>			
Phosphate total (as P)	0.01	mg/L	< 0.01
<b>Phosphorus filterable reactive (as P)</b>			
Phosphorus filterable reactive (as P)	0.01	mg/L	< 0.01
<b>Sulphate (as S)</b>			
Sulphate (as S)	5	mg/L	< 5
<b>Sulphide (as S)</b>			
Sulphide (as S)	0.05	mg/L	< 0.05

Client Sample ID			<b>FS01</b>
Sample Matrix			<b>Water</b>
Eurofins Sample No.			<b>P19-Se32570</b>
Date Sampled			<b>Sep 16, 2019</b>
Test/Reference	LOR	Unit	
Total Dissolved Solids Dried at 180°C ± 2°C	10	mg/L	150
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.0
Total Nitrogen (as N)	0.2	mg/L	11
<b>Alkalinity (speciated)</b>			
Total Alkalinity (as CaCO <sub>3</sub> )	20	mg/L	< 20
<b>Heavy Metals</b>			
Aluminium	0.05	mg/L	1.3
Aluminium (filtered)	0.05	mg/L	0.72
Arsenic (filtered)	0.001	mg/L	< 0.001
Cadmium (filtered)	0.0002	mg/L	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001
Iron	0.05	mg/L	0.36
Iron (filtered)	0.05	mg/L	< 0.05
Manganese (filtered)	0.005	mg/L	0.18
Nickel (filtered)	0.001	mg/L	0.005
Selenium (filtered)	0.001	mg/L	0.001
Zinc (filtered)	0.005	mg/L	< 0.005
<b>Alkali Metals</b>			
Sodium	0.5	mg/L	16
<b>Alkali Metals (filtered)</b>			
Calcium (filtered)	0.5	mg/L	8.8
Magnesium (filtered)	0.5	mg/L	3.5
Potassium (filtered)	0.5	mg/L	7.4
Sodium (filtered)	0.5	mg/L	15

**Sample History**

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
<b>Eurofins   mgt Suite B1</b>			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Perth	Sep 20, 2019	7 Days
BTEX - Method: LTM-ORG-2010 TRH C6-C40	Perth	Sep 20, 2019	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Perth	Sep 20, 2019	7 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Perth	Sep 20, 2019	
<b>ASS Groundwater Quality Suite - WA Department of Environment and Conservation</b>			
Acidity (as CaCO <sub>3</sub> ) - Method: LTM-INO-4210 Acidity	Melbourne	Sep 20, 2019	14 Days
Ammonia (as N) - Method: LTM-INO-4200 Ammonia by Discrete Analyser	Perth	Sep 20, 2019	28 Days
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Sep 23, 2019	28 Days
Conductivity (at 25°C) - Method: LTM-INO-4030 Conductivity	Melbourne	Sep 20, 2019	28 Days
pH (at 25°C) - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Sep 20, 2019	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorus	Melbourne	Sep 23, 2019	28 Days
Phosphorus filterable reactive (as P) - Method: APHA 4500-P Phosphate (filterable reactive)	Melbourne	Sep 23, 2019	2 Days
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Sep 23, 2019	28 Days
Total Dissolved Solids Dried at 180°C ± 2°C - Method: LTM-INO-4170 Total Dissolved Solids in Water	Melbourne	Sep 23, 2019	7 Days
Alkalinity (speciated) - Method: LTM-INO-4250 Alkalinity by Electrometric Titration	Melbourne	Sep 20, 2019	14 Days
Heavy Metals - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Perth	Sep 20, 2019	180 Days
Acid Sulphate Metals : Metals M9 filtered - Method:	Perth	Sep 20, 2019	180 Days
Alkali Metals - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Perth	Sep 20, 2019	180 Days
Ammonium Ion (as N) - Method: APHA 4500-NH <sub>3</sub> Ammonia Nitrogen by FIA	Perth	Sep 20, 2019	7 Days
Sulphide (as S) - Method: APHA 4500-S C & D - Sulphide	Melbourne	Sep 23, 2019	7 Days
Alkali Metals (filtered) - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Perth	Sep 20, 2019	180 Days
<b>Total Nitrogen Set (as N)</b>			
Nitrate & Nitrite (as N) - Method: LTM-INO-4120 Analysis of NO <sub>x</sub> NO <sub>2</sub> NH <sub>3</sub> by FIA	Melbourne	Sep 23, 2019	28 Days
Total Kjeldahl Nitrogen (as N) - Method: LTM-INO-4310 TKN in Waters & Soils by FIA	Melbourne	Sep 23, 2019	7 Days



<b>Company Name:</b> GHD Pty Ltd WA	<b>Order No.:</b>	<b>Received:</b> Sep 19, 2019 4:27 PM
<b>Address:</b> 999 Hay Street Perth Perth WA 6004	<b>Report #:</b> 678265	<b>Due:</b> Sep 26, 2019
<b>Project Name:</b>	<b>Phone:</b> 08 6222 8222	<b>Priority:</b> 5 Day
<b>Project ID:</b> 6137041	<b>Fax:</b> 08 9429 6555	<b>Contact Name:</b> Emily Evans

**Eurofins Analytical Services Manager : Robert Johnston**

Sample Detail						Ammonium Ion (as N)	Sulphide (as S)	Alkali Metals (filtered)	ASS Groundwater Quality Suite - WA Department of Environment and	Eurofins   mgt Suite B1
<b>Melbourne Laboratory - NATA Site # 1254 &amp; 14271</b>							X		X	
<b>Sydney Laboratory - NATA Site # 18217</b>										
<b>Brisbane Laboratory - NATA Site # 20794</b>										
<b>Perth Laboratory - NATA Site # 23736</b>						X		X	X	X
<b>External Laboratory</b>										
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID					
1	FS01	Sep 16, 2019		Water	P19-Se32570	X	X	X	X	X
<b>Test Counts</b>						1	1	1	1	1

## Internal Quality Control Review and Glossary

### General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

### Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

**\*\*NOTE:** pH duplicates are reported as a range NOT as RPD

### Units

**mg/kg:** milligrams per kilogram

**mg/L:** milligrams per litre

**ug/L:** micrograms per litre

**ppm:** Parts per million

**ppb:** Parts per billion

**%:** Percentage

**org/100mL:** Organisms per 100 millilitres

**NTU:** Nephelometric Turbidity Units

**MPN/100mL:** Most Probable Number of organisms per 100 millilitres

### Terms

<b>Dry</b>	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
<b>LOR</b>	Limit of Reporting.
<b>SPIKE</b>	Addition of the analyte to the sample and reported as percentage recovery.
<b>RPD</b>	Relative Percent Difference between two Duplicate pieces of analysis.
<b>LCS</b>	Laboratory Control Sample - reported as percent recovery.
<b>CRM</b>	Certified Reference Material - reported as percent recovery.
<b>Method Blank</b>	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
<b>Surr - Surrogate</b>	The addition of a like compound to the analyte target and reported as percentage recovery.
<b>Duplicate</b>	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
<b>USEPA</b>	United States Environmental Protection Agency
<b>APHA</b>	American Public Health Association
<b>TCLP</b>	Toxicity Characteristic Leaching Procedure
<b>COC</b>	Chain of Custody
<b>SRA</b>	Sample Receipt Advice
<b>QSM</b>	US Department of Defense Quality Systems Manual Version 5.3
<b>CP</b>	Client Parent - QC was performed on samples pertaining to this report
<b>NCP</b>	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
<b>TEQ</b>	Toxic Equivalency Quotient

### QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

### QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

**Quality Control Results**

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
<b>Method Blank</b>							
<b>BTEX</b>							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
<b>Method Blank</b>							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Ammonium Ion (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Phosphate total (as P)	mg/L	< 0.01			0.01	Pass	
Phosphorus filterable reactive (as P)	mg/L	< 0.01			0.01	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Sulphide (as S)	mg/L	< 0.05			0.05	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
<b>Method Blank</b>							
<b>Heavy Metals</b>							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
<b>Method Blank</b>							
<b>Alkali Metals</b>							
Sodium	mg/L	< 0.5			0.5	Pass	
<b>Method Blank</b>							
<b>Alkali Metals (filtered)</b>							

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Calcium (filtered)	mg/L	< 0.5		0.5	Pass	
Magnesium (filtered)	mg/L	< 0.5		0.5	Pass	
Potassium (filtered)	mg/L	< 0.5		0.5	Pass	
Sodium (filtered)	mg/L	< 0.5		0.5	Pass	
<b>LCS - % Recovery</b>						
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>						
TRH C6-C9	%	106		70-130	Pass	
TRH C10-C14	%	87		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>BTEX</b>						
Benzene	%	100		70-130	Pass	
Toluene	%	107		70-130	Pass	
Ethylbenzene	%	102		70-130	Pass	
m&p-Xylenes	%	101		70-130	Pass	
Xylenes - Total	%	99		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>						
Naphthalene	%	118		70-130	Pass	
TRH C6-C10	%	105		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>						
TRH >C10-C16	%	87		70-130	Pass	
<b>LCS - % Recovery</b>						
Chloride	%	70		70-130	Pass	
Nitrate & Nitrite (as N)	%	94		70-130	Pass	
Phosphate total (as P)	%	92		70-130	Pass	
Sulphate (as S)	%	103		70-130	Pass	
Sulphide (as S)	%	92		70-130	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	%	108		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	84		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Alkalinity (speciated)</b>						
Total Alkalinity (as CaCO3)	%	101		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Heavy Metals</b>						
Aluminium	%	99		80-120	Pass	
Aluminium (filtered)	%	107		80-120	Pass	
Arsenic (filtered)	%	111		80-120	Pass	
Cadmium (filtered)	%	107		80-120	Pass	
Chromium (filtered)	%	103		80-120	Pass	
Iron	%	97		80-120	Pass	
Iron (filtered)	%	109		80-120	Pass	
Manganese (filtered)	%	106		80-120	Pass	
Nickel (filtered)	%	106		80-120	Pass	
Selenium (filtered)	%	109		80-120	Pass	
Zinc (filtered)	%	105		80-120	Pass	
<b>LCS - % Recovery</b>						
<b>Alkali Metals</b>						
Sodium	%	95		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Alkali Metals (filtered)</b>						
Calcium (filtered)	%	94		70-130	Pass	
Magnesium (filtered)	%	100		70-130	Pass	
Potassium (filtered)	%	98		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
<b>Spike - % Recovery</b>								
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>				Result 1				
TRH C6-C9	P19-Se32570	CP	%	97		70-130	Pass	
TRH C10-C14	P19-Se30767	NCP	%	109		70-130	Pass	
<b>Spike - % Recovery</b>								
<b>BTEX</b>				Result 1				
Benzene	P19-Se32570	CP	%	100		70-130	Pass	
Toluene	P19-Se32570	CP	%	107		70-130	Pass	
Ethylbenzene	P19-Se32570	CP	%	104		70-130	Pass	
m&p-Xylenes	P19-Se32570	CP	%	103		70-130	Pass	
o-Xylene	P19-Se32570	CP	%	99		70-130	Pass	
Xylenes - Total	P19-Se32570	CP	%	101		70-130	Pass	
<b>Spike - % Recovery</b>								
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1				
Naphthalene	P19-Se32570	CP	%	114		70-130	Pass	
TRH C6-C10	P19-Se32570	CP	%	97		70-130	Pass	
<b>Spike - % Recovery</b>								
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1				
TRH >C10-C16	P19-Se30767	NCP	%	112		70-130	Pass	
<b>Spike - % Recovery</b>								
				Result 1				
Nitrate & Nitrite (as N)	M19-Se31174	NCP	%	94		70-130	Pass	
Phosphate total (as P)	N19-Se31168	NCP	%	103		70-130	Pass	
Sulphate (as S)	M19-Se31368	NCP	%	104		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M19-Se29131	NCP	%	77		70-130	Pass	
<b>Spike - % Recovery</b>								
<b>Alkalinity (speciated)</b>				Result 1				
Total Alkalinity (as CaCO3)	N19-Se31169	NCP	%	98		70-130	Pass	
<b>Spike - % Recovery</b>								
<b>Heavy Metals</b>				Result 1				
Aluminium	P19-Se32570	CP	%	93		75-125	Pass	
Aluminium (filtered)	P19-Se32570	CP	%	96		75-125	Pass	
Arsenic (filtered)	P19-Se32570	CP	%	105		70-130	Pass	
Cadmium (filtered)	P19-Se32570	CP	%	101		70-130	Pass	
Chromium (filtered)	P19-Se32570	CP	%	93		70-130	Pass	
Iron	P19-Se32570	CP	%	90		75-125	Pass	
Iron (filtered)	P19-Se32570	CP	%	100		70-130	Pass	
Nickel (filtered)	P19-Se32570	CP	%	93		70-130	Pass	
Selenium (filtered)	P19-Se32570	CP	%	106		70-130	Pass	
Zinc (filtered)	P19-Se32570	CP	%	101		70-130	Pass	
<b>Spike - % Recovery</b>								
<b>Alkali Metals</b>				Result 1				
Sodium	P19-Se32570	CP	%	85		70-130	Pass	
<b>Spike - % Recovery</b>								
<b>Alkali Metals (filtered)</b>				Result 1				
Calcium (filtered)	P19-Se32570	CP	%	97		70-130	Pass	
Magnesium (filtered)	P19-Se32570	CP	%	98		70-130	Pass	
Potassium (filtered)	P19-Se32570	CP	%	95		70-130	Pass	
Sodium (filtered)	P19-Se32570	CP	%	102		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
<b>Duplicate</b>									
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>				Result 1	Result 2	RPD			
TRH C6-C9	P19-Sc30770	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	P19-Sc30918	NCP	mg/L	0.85	0.80	7.0	30%	Pass	
TRH C15-C28	P19-Sc30918	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	P19-Sc30918	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
<b>Duplicate</b>									
<b>BTEX</b>				Result 1	Result 2	RPD			
Benzene	P19-Sc30770	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	P19-Sc30770	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	P19-Sc30770	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	P19-Sc30770	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	P19-Sc30770	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	P19-Sc30770	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
<b>Duplicate</b>									
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1	Result 2	RPD			
Naphthalene	P19-Sc30770	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	P19-Sc30770	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
<b>Duplicate</b>									
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1	Result 2	RPD			
TRH >C10-C16	P19-Sc30918	NCP	mg/L	0.82	0.73	11	30%	Pass	
TRH >C16-C34	P19-Sc30918	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	P19-Sc30918	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
<b>Duplicate</b>									
				Result 1	Result 2	RPD			
Acidity (as CaCO <sub>3</sub> )	M19-Sc11857	NCP	mg/L	130	150	13	30%	Pass	
Ammonia (as N)	P19-Sc32498	NCP	mg/L	0.25	0.25	1.0	30%	Pass	
Chloride	P19-Sc35144	NCP	mg/L	49	50	2.0	30%	Pass	
Conductivity (at 25°C)	N19-Sc31168	NCP	uS/cm	1300	1300	1.0	30%	Pass	
Nitrate & Nitrite (as N)	M19-Sc31174	NCP	mg/L	0.56	0.56	<1	30%	Pass	
pH (at 25°C)	N19-Sc31168	NCP	pH Units	7.1	7.2	pass	30%	Pass	
Phosphate total (as P)	M19-Sc31244	NCP	mg/L	0.02	0.02	8.0	30%	Pass	
Sulphate (as S)	P19-Sc35144	NCP	mg/L	6.3	8.3	28	30%	Pass	
Sulphide (as S)	M19-Sc32468	NCP	mg/L	0.20	0.20	<1	30%	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	M19-Sc30629	NCP	mg/L	2600	2600	1.0	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M19-Sc28539	NCP	mg/L	9.8	13	27	30%	Pass	
<b>Duplicate</b>									
<b>Alkalinity (speciated)</b>				Result 1	Result 2	RPD			
Total Alkalinity (as CaCO <sub>3</sub> )	N19-Sc31168	NCP	mg/L	400	380	4.0	30%	Pass	
<b>Duplicate</b>									
<b>Heavy Metals</b>				Result 1	Result 2	RPD			
Aluminium	P19-Sc32602	NCP	mg/L	5.2	5.2	<1	30%	Pass	
Aluminium (filtered)	P19-Sc32498	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Arsenic (filtered)	P19-Sc32498	NCP	mg/L	0.055	0.055	1.0	30%	Pass	
Cadmium (filtered)	P19-Sc32498	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	P19-Sc32498	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	P19-Sc32602	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Iron (filtered)	P19-Sc32498	NCP	mg/L	4.6	4.6	<1	30%	Pass	
Manganese (filtered)	P19-Sc32498	NCP	mg/L	0.018	0.018	1.0	30%	Pass	
Nickel (filtered)	P19-Sc32498	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	P19-Sc32498	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	P19-Sc32498	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
<b>Duplicate</b>									
<b>Alkali Metals</b>				Result 1	Result 2	RPD			
Sodium	P19-Sc32602	NCP	mg/L	130	130	1.0	30%	Pass	

Duplicate								
Alkali Metals (filtered)				Result 1	Result 2	RPD		
Calcium (filtered)	P19-Se32498	NCP	mg/L	100	99	1.0	30%	Pass
Magnesium (filtered)	P19-Se32498	NCP	mg/L	19	19	1.0	30%	Pass
Potassium (filtered)	P19-Se32498	NCP	mg/L	3.1	3.1	<1	30%	Pass
Sodium (filtered)	P19-Se32498	NCP	mg/L	27	27	1.0	30%	Pass

**Comments**
**Sample Integrity**

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

**Qualifier Codes/Comments**

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.

**Authorised By**

Robert Johnston	Analytical Services Manager
Elden Garrett	Senior Analyst-Metal (WA)
Elden Garrett	Senior Analyst-Organic (WA)
Elden Garrett	Senior Analyst-Volatile (WA)
Julie Kay	Senior Analyst-Inorganic (VIC)
Rhys Thomas	Senior Analyst-Inorganic (WA)


**Glenn Jackson  
General Manager**

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

\* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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## #AU06 EnviroSampleWA

---

**To:** Robert Johnston  
**Subject:** RE: Triplicate sample received without COC

----- Original message -----

**From:** [Emily.Evans@ghd.com](mailto:Emily.Evans@ghd.com)  
**Date:** 19/9/19 4:27 pm (GMT+08:00)  
**To:** Robert Johnston <[RobertJohnston@eurofins.com](mailto:RobertJohnston@eurofins.com)>  
**Cc:** Vicki Davies <[Vicki.Davies@ghd.com](mailto:Vicki.Davies@ghd.com)>  
**Subject:** RE: Triplicate sample received without COC

Hi Robert,

Could FS01 please be analysed as per the groundwater suite in the attached lab quote.

The project number is 6137041.

Let me know if you require any further information.

Many thanks,

**Emily Evans**  
**Graduate Environmental Scientist**

### GHD

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T: + 61 8 9721 0744 | E: [Emily.Evans@ghd.com](mailto:Emily.Evans@ghd.com)  
10 Victoria Street, Bunbury WA 6230 Australia | [www.ghd.com](http://www.ghd.com)

### Connect



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Please consider our environment before printing this email

**From:** Vicki Davies <[Vicki.Davies@ghd.com](mailto:Vicki.Davies@ghd.com)>  
**Sent:** Thursday, 19 September 2019 9:03 AM  
**To:** Robert Johnston <[RobertJohnston@eurofins.com](mailto:RobertJohnston@eurofins.com)>; Emily Evans <[Emily.Evans@ghd.com](mailto:Emily.Evans@ghd.com)>  
**Subject:** RE: Triplicate sample received without COC

Hi Robert

Emily is out in the field today but should be back this afternoon. She will then be able to follow up with your query below.

Kind regards

**Vicki Davies**  
**Environmental Scientist**

GHD

Rob Johnston Eurofins<sup>1</sup> 20/9/19 678265



**Tailored Analytical Services & Charges: Groundwater Suite**

Parameter	ALS Code	Technique/ Method Reference	Limit Of Reporting (LOR)	No.	Price per Sample (\$)	Total (\$)
TRH/BTEXN	W-04	USEPA 8015A, USEPA 8260B	1 - 100 µg/L	32	32.00	1,024.00
Acid Sulphate Soil GW Suite - Extended Cl, SO <sub>4</sub> , Alkalinity, Acidity, pH, E.C., TDS, Dissolved Ca, Mg, Na, K, Fe, Mn, Al by ICP-AES or MS. Total N, TKN, NO <sub>x</sub> , Ammonia, Total & Reactive P; Total Al & Fe; Sulfide; Dissolved As, Cd, Co, Cu, Pb, Fe, Mn, Al, Cr, Ni, Se, Zn by ICPMS	ASSGW-2	Various	0.0001 - 10 mg/L, 0.01 pH Unit, 1 µS/cm, 0.01 %, 0.01 meq/L	32	150.00	4,800.00
Ammonium as N	EK055G- NH4	Calculation	0.01 mg/L	32		
<b>Total cost per sample (Excluding GST)</b>					<b>182.00</b>	<b>-</b>
<b>Total cost for this table based on sample numbers provided (Excluding GST)</b>						<b>5,824.00</b>
<b>Total Annual Cost (12 Months) (Excluding GST)</b>						<b>69,888.00</b>

**Sample Containers for: Groundwater Excluding TOC**

No.	Label Colour	Container Type (Preservation noted if required)	Test Parameter(s)
	Green	1 x 250mL Clear Plastic Bottle - Natural	Cl, SO <sub>4</sub> , Alkalinity, Acidity, pH, EC, TDS, Ca, Mg, Na, K, Reactive Phosphorus
	Red/Green	1 x 60mL Clear Plastic Bottle - Filtered; Lab- acidified	Dissolved Metals
	Red/Green	1 x 60mL Clear Plastic Bottle - Unfiltered; Lab- acidified	Total Metals
	Purple	1 x 60mL Clear Plastic Bottle - Sulfuric Acid	Total N, Total P, Ammonia, Ammonium as N, TKN, NO <sub>x</sub>
	Fluorescent Yellow	1 x 125mL Clear Plastic Bottle - Zinc Acetate/NaOH	Sulfide
	Orange	1 x 100mL Amber Glass Bottle - Unpreserved	TRH
	Purple	2 x 40mL Amber VOC Vial - Sulfuric Acid	TRH/BTEXN

Additional bottles are required on water samples for semi-volatile organics analysis for laboratory QA/QC purposes.

*Rob Johnston Eurofins 20/9/19*

## CERTIFICATE OF ANALYSIS

**Work Order** : **EP1910866**  
**Client** : **GHD PTY LTD**  
**Contact** : **MS VICKI DAVIES**  
**Address** : **999 HAY STREET**  
**PERTH WA, AUSTRALIA 6000**  
**Telephone** : **----**  
**Project** : **6137041**  
**Order number** : **6137041 (08.0831)**  
**C-O-C number** : **----**  
**Sampler** : **Emily Evans**  
**Site** : **----**  
**Quote number** : **EP/489/19 V4**  
**No. of samples received** : **18**  
**No. of samples analysed** : **18**

**Page** : 1 of 19  
**Laboratory** : Environmental Division Perth  
**Contact** : Marnie Thomsett  
**Address** : 26 Rigali Way Wangara WA Australia 6065  
**Telephone** : 08 9406 1311  
**Date Samples Received** : 23-Oct-2019 12:30  
**Date Analysis Commenced** : 23-Oct-2019  
**Issue Date** : 31-Oct-2019 17:19



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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
David Viner	SENIOR LAB TECH	Perth Organics, Wangara, WA
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Gaston Allende	R&D Chemist	Sydney Organics, Smithfield, NSW



## General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP204 and EP234A conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- EP234: Poor matrix spike recovery for particular compounds due to matrix interferences.
- EK055G (Ammonia): LOR for sample EP1910866-018 raised due to possible sample matrix interference.
- EK061G/EK067G (TKN/TP): LOR for sample EP1910866-006 raised due to possible sample matrix interference.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- Ionic balances were calculated using: major anions - chloride, alkalinity, sulfate and NOx; and major cations - calcium, magnesium, potassium and sodium for #6.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium, sodium, iron and ammonia for #9.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW 965	FB01	RB01	BORR MW13	BORR MW15
Client sampling date / time				21-Oct-2019 00:00	21-Oct-2019 00:00	21-Oct-2019 00:00	21-Oct-2019 00:00	21-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1910866-001	EP1910866-002	EP1910866-003	EP1910866-004	EP1910866-005	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	----	----	----	7.14	6.41	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	668	161	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	----	----	----	408	84	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	215	15	
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	215	15	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	----	----	----	27	14	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	63	9	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	----	----	----	50	33	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	----	----	----	10	4	
Magnesium	7439-95-4	1	mg/L	----	----	----	16	4	
Sodium	7440-23-5	1	mg/L	----	----	----	127	17	
Potassium	7440-09-7	1	mg/L	----	----	----	2	4	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	----	0.03	0.12	
Arsenic	7440-38-2	0.001	mg/L	----	----	----	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	----	----	----	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	----	----	----	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	----	----	----	0.010	0.004	
Lead	7439-92-1	0.001	mg/L	----	----	----	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	----	----	----	0.011	0.004	
Nickel	7440-02-0	0.001	mg/L	----	----	----	0.009	0.008	
Selenium	7782-49-2	0.01	mg/L	----	----	----	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	----	----	----	0.096	0.086	
Iron	7439-89-6	0.05	mg/L	----	----	----	1.86	0.95	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW 965	FB01	RB01	BORR MW13	BORR MW15
Client sampling date / time					21-Oct-2019 00:00	21-Oct-2019 00:00	21-Oct-2019 00:00	21-Oct-2019 00:00	21-Oct-2019 00:00
Compound	CAS Number	LOR	Unit	EP1910866-001	EP1910866-002	EP1910866-003	EP1910866-004	EP1910866-005	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	----	0.13	0.61	
Arsenic	7440-38-2	0.001	mg/L	----	----	<0.001	----	----	
Cadmium	7440-43-9	0.0001	mg/L	----	----	<0.0001	----	----	
Chromium	7440-47-3	0.001	mg/L	----	----	<0.001	----	----	
Copper	7440-50-8	0.001	mg/L	----	----	<0.001	----	----	
Nickel	7440-02-0	0.001	mg/L	----	----	<0.001	----	----	
Lead	7439-92-1	0.001	mg/L	----	----	<0.001	----	----	
Zinc	7440-66-6	0.005	mg/L	----	----	<0.005	----	----	
Iron	7439-89-6	0.05	mg/L	----	----	----	2.84	5.64	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	----	----	----	0.03	0.69	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	----	----	----	0.03	0.69	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	----	----	----	2.22	0.38	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	----	----	1.3	1.3	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	----	----	----	3.5	1.7	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	----	----	----	<0.01	0.01	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	----	----	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	----	----	----	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	----	----	----	7.02	1.42	
∅ Total Cations	----	0.01	meq/L	----	----	----	7.39	1.37	
∅ Ionic Balance	----	0.01	%	----	----	----	2.59	1.70	
<b>EP071: Total Petroleum Hydrocarbons</b>									
C10 - C14 Fraction	----	50	µg/L	----	<50	----	----	----	
C15 - C28 Fraction	----	100	µg/L	----	<100	----	----	----	
C29 - C36 Fraction	----	50	µg/L	----	<50	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW 965	FB01	RB01	BORR MW13	BORR MW15
Client sampling date / time					21-Oct-2019 00:00	21-Oct-2019 00:00	21-Oct-2019 00:00	21-Oct-2019 00:00	21-Oct-2019 00:00
Compound	CAS Number	LOR	Unit	EP1910866-001	EP1910866-002	EP1910866-003	EP1910866-004	EP1910866-005	
				Result	Result	Result	Result	Result	
<b>EP071: Total Petroleum Hydrocarbons - Continued</b>									
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	<50	----	----	----	----
<b>EP071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
>C10 - C16 Fraction	----	100	µg/L	----	<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L	----	<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L	----	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	----	<100	----	----	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	----	----	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	----	----	----	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	----	----	----	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	----	----	----	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	----	----	<50	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	----	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	----	----	----	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	----	----	----	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	----	----	----	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	----	----	----	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	----	----	<100	<100	<100
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	----	----	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	----	----	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	----	----	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	----	----	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	----	----	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	----	----	<5	<5	<5
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	84.5	----	----	84.6	88.0	88.0
Toluene-D8	2037-26-5	2	%	98.5	----	----	98.9	96.8	96.8



### Analytical Results

Sub-Matrix: <b>WATER</b> (Matrix: <b>WATER</b> )				Client sample ID	TBW 965	FB01	RB01	BORR MW13	BORR MW15
Client sampling date / time					21-Oct-2019 00:00	21-Oct-2019 00:00	21-Oct-2019 00:00	21-Oct-2019 00:00	21-Oct-2019 00:00
Compound	CAS Number	LOR	Unit	EP1910866-001	EP1910866-002	EP1910866-003	EP1910866-004	EP1910866-005	EP1910866-005
				Result	Result	Result	Result	Result	Result
<b>EP080S: TPH(V)/BTEX Surrogates - Continued</b>									
4-Bromofluorobenzene	460-00-4	2	%	101	----	----	102	105	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW18	BORR MW19b	BORR MW20	BORR MW12	BORR MW24
Client sampling date / time				21-Oct-2019 00:00	21-Oct-2019 00:00	21-Oct-2019 00:00	22-Oct-2019 00:00	22-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1910866-006	EP1910866-007	EP1910866-008	EP1910866-009	EP1910866-010	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	4.81	6.35	6.28	6.79	4.95	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	235	2220	4110	511	1750	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	132	1220	2320	284	1180	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	45	45	28	<1	
Total Alkalinity as CaCO3	----	1	mg/L	<1	45	45	28	<1	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	21	33	25	14	35	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	14	38	67	35	40	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	30	656	1150	117	504	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	10	14	30	5	1	
Magnesium	7439-95-4	1	mg/L	3	50	99	10	10	
Sodium	7440-23-5	1	mg/L	19	341	608	65	321	
Potassium	7440-09-7	1	mg/L	8	4	4	5	<1	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.50	0.01	0.02	0.02	0.17	
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.001	<0.001	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.008	
Cobalt	7440-48-4	0.001	mg/L	0.004	0.002	0.008	<0.001	0.006	
Copper	7440-50-8	0.001	mg/L	0.008	0.008	0.011	0.007	0.009	
Lead	7439-92-1	0.001	mg/L	0.002	<0.001	<0.001	<0.001	0.001	
Manganese	7439-96-5	0.001	mg/L	0.279	0.136	0.170	0.005	0.006	
Nickel	7440-02-0	0.001	mg/L	0.012	0.011	0.012	0.007	0.025	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.088	0.100	0.055	0.074	0.076	
Iron	7439-89-6	0.05	mg/L	<0.05	6.46	3.00	2.31	0.15	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW18	BORR MW19b	BORR MW20	BORR MW12	BORR MW24
Client sampling date / time				21-Oct-2019 00:00	21-Oct-2019 00:00	21-Oct-2019 00:00	22-Oct-2019 00:00	22-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1910866-006	EP1910866-007	EP1910866-008	EP1910866-009	EP1910866-010	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	1.28	0.96	0.55	0.34	3.05	
Iron	7439-89-6	0.05	mg/L	0.16	7.29	4.48	3.49	2.92	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.02	0.03	0.18	0.02	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	<0.01	0.02	0.03	0.18	0.02	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	11.0	<0.01	<0.01	0.88	0.02	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.6	0.2	0.1	0.6	0.2	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	13.6	0.2	0.1	1.5	0.2	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	<0.05	<0.01	<0.01	0.01	<0.01	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	1.92	----	----	----	----	
∅ Total Anions	----	0.01	meq/L	----	20.2	34.7	4.59	15.0	
∅ Total Cations	----	0.01	meq/L	----	----	----	4.16	----	
∅ Total Cations	----	0.01	meq/L	1.78	19.7	36.2	----	14.8	
∅ Ionic Balance	----	0.01	%	3.95	----	----	4.85	----	
∅ Ionic Balance	----	0.01	%	----	1.12	2.06	----	0.72	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW18	BORR MW19b	BORR MW20	BORR MW12	BORR MW24
Client sampling date / time				21-Oct-2019 00:00	21-Oct-2019 00:00	21-Oct-2019 00:00	22-Oct-2019 00:00	22-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1910866-006	EP1910866-007	EP1910866-008	EP1910866-009	EP1910866-010	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	82.3	85.4	81.6	89.5	82.4	
Toluene-D8	2037-26-5	2	%	98.5	98.4	100	97.6	100	
4-Bromofluorobenzene	460-00-4	2	%	103	103	103	102	102	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW 958	RB02	FB01	JT01	Northern 3
Client sampling date / time				22-Oct-2019 00:00	22-Oct-2019 00:00	22-Oct-2019 00:00	22-Oct-2019 00:00	22-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1910866-011	EP1910866-012	EP1910866-013	EP1910866-014	EP1910866-015	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	----	----	----	7.15	4.83	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	3270	10500	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	----	----	----	1740	6110	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	46	<1	
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	46	<1	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	----	----	----	11	16	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	78	454	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	----	----	----	892	3160	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	----	----	----	38	79	
Magnesium	7439-95-4	1	mg/L	----	----	----	93	232	
Sodium	7440-23-5	1	mg/L	----	----	----	429	1750	
Potassium	7440-09-7	1	mg/L	----	----	----	7	47	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	----	0.02	0.63	
Arsenic	7440-38-2	0.001	mg/L	----	----	----	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	0.0002	0.0002	
Chromium	7440-47-3	0.001	mg/L	----	----	----	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	----	----	----	<0.001	0.043	
Copper	7440-50-8	0.001	mg/L	----	----	----	0.008	0.011	
Lead	7439-92-1	0.001	mg/L	----	----	----	0.001	0.001	
Manganese	7439-96-5	0.001	mg/L	----	----	----	0.226	2.49	
Nickel	7440-02-0	0.001	mg/L	----	----	----	0.009	0.026	
Selenium	7782-49-2	0.01	mg/L	----	----	----	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	----	----	----	0.091	0.150	
Iron	7439-89-6	0.05	mg/L	----	----	----	0.15	0.28	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW 958	RB02	FB01	JT01	Northern 3
Client sampling date / time					22-Oct-2019 00:00	22-Oct-2019 00:00	22-Oct-2019 00:00	22-Oct-2019 00:00	22-Oct-2019 00:00
Compound	CAS Number	LOR	Unit	EP1910866-011	EP1910866-012	EP1910866-013	EP1910866-014	EP1910866-015	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	----	0.06	0.72	
Arsenic	7440-38-2	0.001	mg/L	----	<0.001	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	----	<0.0001	----	----	----	
Chromium	7440-47-3	0.001	mg/L	----	<0.001	----	----	----	
Copper	7440-50-8	0.001	mg/L	----	<0.001	----	----	----	
Nickel	7440-02-0	0.001	mg/L	----	<0.001	----	----	----	
Lead	7439-92-1	0.001	mg/L	----	<0.001	----	----	----	
Zinc	7440-66-6	0.005	mg/L	----	<0.005	----	----	----	
Iron	7439-89-6	0.05	mg/L	----	----	----	1.59	0.41	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	----	----	----	0.02	0.33	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	----	----	----	0.02	0.33	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	----	----	----	0.04	0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	----	----	0.4	1.2	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	----	----	----	0.4	1.2	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	----	----	----	<0.01	0.02	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	----	----	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	----	----	----	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	----	----	----	27.7	98.6	
∅ Total Cations	----	0.01	meq/L	----	----	----	28.4	100	
∅ Ionic Balance	----	0.01	%	----	----	----	1.22	0.89	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	----	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	----	----	----	<50	<50	
C15 - C28 Fraction	----	100	µg/L	----	----	----	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW 958	RB02	FB01	JT01	Northern 3
Client sampling date / time				22-Oct-2019 00:00	22-Oct-2019 00:00	22-Oct-2019 00:00	22-Oct-2019 00:00	22-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1910866-011	EP1910866-012	EP1910866-013	EP1910866-014	EP1910866-015	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>									
C29 - C36 Fraction	----	50	µg/L	----	----	----	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	----	----	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	----	----	----	<100	<100	
>C16 - C34 Fraction	----	100	µg/L	----	----	----	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	----	----	----	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	----	----	----	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	----	----	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	----	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	----	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	----	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	----	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	----	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	----	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	----	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	----	----	<10	<10	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	----	----	<0.02	<0.02	
Azinphos-methyl	86-50-0	0.02	µg/L	----	----	----	<0.02	<0.02	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	----	----	<0.10	<0.10	
Carbofenthoion	786-19-6	0.02	µg/L	----	----	----	<0.02	<0.02	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	----	----	<0.02	<0.02	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	----	----	<0.02	<0.02	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	----	----	<0.2	<0.2	
Coumaphos	56-72-4	0.01	µg/L	----	----	----	<0.01	<0.01	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	----	----	<0.02	<0.02	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	----	----	<0.02	<0.02	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW 958	RB02	FB01	JT01	Northern 3
Client sampling date / time					22-Oct-2019 00:00	22-Oct-2019 00:00	22-Oct-2019 00:00	22-Oct-2019 00:00	22-Oct-2019 00:00
Compound	CAS Number	LOR	Unit		EP1910866-011	EP1910866-012	EP1910866-013	EP1910866-014	EP1910866-015
					Result	Result	Result	Result	Result
<b>EP234A: OP Pesticides - Continued</b>									
Demeton-O	298-03-3	0.02	µg/L		----	----	----	<0.02	<0.02
Demeton-S	126-75-0	0.02	µg/L		----	----	----	<0.02	<0.02
Diazinon	333-41-5	0.01	µg/L		----	----	----	<0.01	<0.01
Dichlorvos	62-73-7	0.20	µg/L		----	----	----	<0.20	<0.20
Dimethoate	60-51-5	0.02	µg/L		----	----	----	<0.02	<0.02
Disulfoton	298-04-4	0.05	µg/L		----	----	----	<0.05	<0.05
Ethion	563-12-2	0.02	µg/L		----	----	----	<0.02	<0.02
EPN	2104-64-5	0.05	µg/L		----	----	----	<0.05	<0.05
Ethoprophos	13194-48-4	0.01	µg/L		----	----	----	<0.01	<0.01
Fenamiphos	22224-92-6	0.01	µg/L		----	----	----	<0.01	<0.01
Fenclorophos (Ronnel)	299-84-3	10	µg/L		----	----	----	<10	<10
Fenitrothion	122-14-5	2	µg/L		----	----	----	<2	<2
Fensulfothion	115-90-2	0.01	µg/L		----	----	----	<0.01	<0.01
Fenthion	55-38-9	0.05	µg/L		----	----	----	<0.05	<0.05
Malathion	121-75-5	0.02	µg/L		----	----	----	<0.02	<0.02
Mevinphos	7786-34-7	0.02	µg/L		----	----	----	<0.02	<0.02
Monocrotophos	6923-22-4	0.02	µg/L		----	----	----	<0.02	<0.02
Omethoate	1113-02-6	0.01	µg/L		----	----	----	<0.01	<0.01
Parathion	56-38-2	0.2	µg/L		----	----	----	<0.2	<0.2
Parathion-methyl	298-00-0	0.5	µg/L		----	----	----	<0.5	<0.5
Phorate	298-02-2	0.1	µg/L		----	----	----	<0.1	<0.1
Pirimiphos-ethyl	23505-41-1	0.01	µg/L		----	----	----	<0.01	<0.01
Pirimiphos-methyl	29232-93-7	0.01	µg/L		----	----	----	<0.01	<0.01
Profenofos	41198-08-7	0.01	µg/L		----	----	----	<0.01	<0.01
Prothiofos	34643-46-4	0.1	µg/L		----	----	----	<0.1	<0.1
Sulfotep	3689-24-5	0.005	µg/L		----	----	----	<0.005	<0.005
Sulprofos	35400-43-2	0.05	µg/L		----	----	----	<0.05	<0.05
Terbufos	13071-79-9	0.01	µg/L		----	----	----	<0.01	<0.01
Temephos	3383-96-8	0.02	µg/L		----	----	----	<0.02	<0.02
Tetrachlorvinphos	22248-79-9	0.01	µg/L		----	----	----	<0.01	<0.01
Triazophos	24017-47-8	0.005	µg/L		----	----	----	<0.005	<0.005
Trichlorfon	52-68-6	0.02	µg/L		----	----	----	<0.02	<0.02
Trichloronate	327-98-0	0.5	µg/L		----	----	----	<0.5	<0.5
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%		89.9	----	89.7	94.1	88.0



**Analytical Results**

Sub-Matrix: <b>WATER</b> (Matrix: <b>WATER</b> )				Client sample ID	TBW 958	RB02	FB01	JT01	Northern 3
Client sampling date / time				22-Oct-2019 00:00	22-Oct-2019 00:00	22-Oct-2019 00:00	22-Oct-2019 00:00	22-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1910866-011	EP1910866-012	EP1910866-013	EP1910866-014	EP1910866-015	
				Result	Result	Result	Result	Result	
<b>EP080S: TPH(V)/BTEX Surrogates - Continued</b>									
Toluene-D8	2037-26-5	2	%	96.8	----	99.8	96.5	98.9	
4-Bromofluorobenzene	460-00-4	2	%	102	----	99.1	103	103	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Southern 3	Southern 4	WRM North Site 5	----	----
Client sampling date / time				22-Oct-2019 00:00	22-Oct-2019 00:00	22-Oct-2019 00:00	----	----	
Compound	CAS Number	LOR	Unit	EP1910866-016	EP1910866-017	EP1910866-018	-----	-----	
				Result	Result	Result	----	----	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	7.85	7.87	7.26	----	----	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	3660	6570	3400	----	----	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	2160	3890	2100	----	----	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	186	129	119	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	186	129	119	----	----	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	10	9	20	----	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	146	110	94	----	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	943	2030	910	----	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	32	51	40	----	----	
Magnesium	7439-95-4	1	mg/L	71	146	81	----	----	
Sodium	7440-23-5	1	mg/L	614	1070	529	----	----	
Potassium	7440-09-7	1	mg/L	23	26	28	----	----	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.06	0.06	0.06	----	----	
Arsenic	7440-38-2	0.001	mg/L	0.001	0.001	0.002	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----	
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.002	----	----	
Copper	7440-50-8	0.001	mg/L	0.017	0.015	0.010	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	0.001	<0.001	----	----	
Manganese	7439-96-5	0.001	mg/L	0.203	0.029	0.293	----	----	
Nickel	7440-02-0	0.001	mg/L	0.011	0.012	0.010	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----	
Zinc	7440-66-6	0.005	mg/L	0.099	0.122	0.085	----	----	
Iron	7439-89-6	0.05	mg/L	1.42	0.45	1.27	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Southern 3	Southern 4	WRM North Site 5	----	----
Client sampling date / time				22-Oct-2019 00:00	22-Oct-2019 00:00	22-Oct-2019 00:00	----	----	
Compound	CAS Number	LOR	Unit	EP1910866-016	EP1910866-017	EP1910866-018	-----	-----	
				Result	Result	Result	----	----	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.07	0.14	3.19	----	----	
Iron	7439-89-6	0.05	mg/L	2.10	0.67	6.42	----	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	<0.01	<0.02	----	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	<0.01	<0.01	<0.01	----	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.01	<0.01	<0.01	----	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	5.8	4.2	22.3	----	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	5.8	4.2	22.3	----	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.90	0.15	5.36	----	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.78	<0.01	2.02	----	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	----	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	33.4	62.1	30.0	----	----	
∅ Total Cations	----	0.01	meq/L	34.7	61.8	32.4	----	----	
∅ Ionic Balance	----	0.01	%	2.02	0.29	3.82	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----	
C10 - C14 Fraction	----	50	µg/L	<50	<50	170	----	----	
C15 - C28 Fraction	----	100	µg/L	110	180	790	----	----	
C29 - C36 Fraction	----	50	µg/L	50	60	440	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	160	240	1400	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	----	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	250	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Southern 3	Southern 4	WRM North Site 5	----	----
Client sampling date / time				22-Oct-2019 00:00	22-Oct-2019 00:00	22-Oct-2019 00:00	----	----	
Compound	CAS Number	LOR	Unit	EP1910866-016	EP1910866-017	EP1910866-018	-----	-----	
				Result	Result	Result	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	150	230	1010	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	180	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	150	230	1440	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	250	----	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----	
Toluene	108-88-3	2	µg/L	<2	<2	4	----	----	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	----	----	
^ Sum of BTEX	----	1	µg/L	<1	<1	4	----	----	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	<10	<10	<10	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	<0.10	----	----	
Carbofenthion	786-19-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	<0.2	----	----	
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	<0.01	----	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	<0.01	----	----	
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	<0.20	----	----	
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Southern 3	Southern 4	WRM North Site 5	----	----
Client sampling date / time					22-Oct-2019 00:00	22-Oct-2019 00:00	22-Oct-2019 00:00	----	----
Compound	CAS Number	LOR	Unit		EP1910866-016	EP1910866-017	EP1910866-018	-----	-----
					Result	Result	Result	----	----
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L		<0.05	<0.05	<0.05	----	----
Ethoprophos	13194-48-4	0.01	µg/L		<0.01	<0.01	<0.01	----	----
Fenamiphos	22224-92-6	0.01	µg/L		<0.01	<0.01	<0.01	----	----
Fenchlorphos (Ronnell)	299-84-3	10	µg/L		<10	<10	<10	----	----
Fenitrothion	122-14-5	2	µg/L		<2	<2	<2	----	----
Fensulfothion	115-90-2	0.01	µg/L		<0.01	<0.01	<0.01	----	----
Fenthion	55-38-9	0.05	µg/L		<0.05	<0.05	<0.05	----	----
Malathion	121-75-5	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Mevinphos	7786-34-7	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Monocrotophos	6923-22-4	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Omethoate	1113-02-6	0.01	µg/L		<0.01	<0.01	<0.01	----	----
Parathion	56-38-2	0.2	µg/L		<0.2	<0.2	<0.2	----	----
Parathion-methyl	298-00-0	0.5	µg/L		<0.5	<0.5	<0.5	----	----
Phorate	298-02-2	0.1	µg/L		<0.1	<0.1	<0.1	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L		<0.01	<0.01	<0.01	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L		<0.01	<0.01	<0.01	----	----
Profenofos	41198-08-7	0.01	µg/L		<0.01	<0.01	<0.01	----	----
Prothiofos	34643-46-4	0.1	µg/L		<0.1	<0.1	<0.1	----	----
Sulfotep	3689-24-5	0.005	µg/L		<0.005	<0.005	<0.005	----	----
Sulprofos	35400-43-2	0.05	µg/L		<0.05	<0.05	<0.05	----	----
Terbufos	13071-79-9	0.01	µg/L		<0.01	<0.01	<0.01	----	----
Temephos	3383-96-8	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L		<0.01	<0.01	<0.01	----	----
Triazophos	24017-47-8	0.005	µg/L		<0.005	<0.005	<0.005	----	----
Trichlorfon	52-68-6	0.02	µg/L		<0.02	<0.02	<0.02	----	----
Trichloronate	327-98-0	0.5	µg/L		<0.5	<0.5	<0.5	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%		90.9	90.1	101	----	----
Toluene-D8	2037-26-5	2	%		96.0	97.4	98.4	----	----
4-Bromofluorobenzene	460-00-4	2	%		102	102	103	----	----



## Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	61	141
Toluene-D8	2037-26-5	73	126
4-Bromofluorobenzene	460-00-4	60	125

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1910866	Page	: 1 of 14
Client	: GHD PTY LTD	Laboratory	: Environmental Division Perth
Contact	: MS VICKI DAVIES	Telephone	: 08 9406 1311
Project	: 6137041	Date Samples Received	: 23-Oct-2019
Site	: ----	Issue Date	: 31-Oct-2019
Sampler	: Emily Evans	No. of samples received	: 18
Order number	: 6137041 (08.0831)	No. of samples analysed	: 18

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



**Outliers : Quality Control Samples**

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	EP1910866--004	BORR MW13	Nitrite + Nitrate as N	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP234A: OP Pesticides	EP1910866--014	JT01	Azinphos-ethyl	2642-71-9	56.5 %	70.0-130%	Recovery less than lower data quality objective
EP234A: OP Pesticides	EP1910866--014	JT01	Tetrachlorvinphos	22248-79-9	49.0 %	77.0-125%	Recovery less than lower data quality objective

**Outliers : Analysis Holding Time Compliance**

Matrix: **WATER**

Method	Container / Client Sample ID(s)	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue	
<b>EA005P: pH by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural</b>	BORR MW13, BORR MW18, BORR MW20	BORR MW15, BORR MW19b,	----	----	----	29-Oct-2019	21-Oct-2019	8
<b>Clear Plastic Bottle - Natural</b>	BORR MW12, JT01, Southern 3, WRM North Site 5	BORR MW24, Northern 3, Southern 4,	----	----	----	29-Oct-2019	22-Oct-2019	7

**Outliers : Frequency of Quality Control Samples**

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
TRH - Semivolatile Fraction	1	20	5.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fractions Only	0	1	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>					
TRH - Semivolatile Fraction	0	20	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fractions Only	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA005P: pH by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA005-P)</b> BORR MW13, BORR MW18, BORR MW20	BORR MW15, BORR MW19b,	21-Oct-2019	----	----	----	29-Oct-2019	21-Oct-2019	*
<b>Clear Plastic Bottle - Natural (EA005-P)</b> BORR MW12, JT01, Southern 3, WRM North Site 5	BORR MW24, Northern 3, Southern 4,	22-Oct-2019	----	----	----	29-Oct-2019	22-Oct-2019	*
<b>EA010P: Conductivity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA010-P)</b> BORR MW13, BORR MW18, BORR MW20	BORR MW15, BORR MW19b,	21-Oct-2019	----	----	----	29-Oct-2019	18-Nov-2019	✓
<b>Clear Plastic Bottle - Natural (EA010-P)</b> BORR MW12, JT01, Southern 3, WRM North Site 5	BORR MW24, Northern 3, Southern 4,	22-Oct-2019	----	----	----	29-Oct-2019	19-Nov-2019	✓
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
<b>Clear Plastic Bottle - Natural (EA015H)</b> BORR MW13, BORR MW18, BORR MW20	BORR MW15, BORR MW19b,	21-Oct-2019	----	----	----	24-Oct-2019	28-Oct-2019	✓
<b>Clear Plastic Bottle - Natural (EA015H)</b> BORR MW12, JT01, Southern 3, WRM North Site 5	BORR MW24, Northern 3, Southern 4,	22-Oct-2019	----	----	----	24-Oct-2019	29-Oct-2019	✓





Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>ED037P: Alkalinity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (ED037-P)</b> BORR MW13, BORR MW18, BORR MW20	BORR MW15, BORR MW19b,	21-Oct-2019	----	----	----	29-Oct-2019	04-Nov-2019	✓
<b>Clear Plastic Bottle - Natural (ED037-P)</b> BORR MW12, JT01, Southern 3, WRM North Site 5	BORR MW24, Northern 3, Southern 4,	22-Oct-2019	----	----	----	29-Oct-2019	05-Nov-2019	✓
<b>ED038A: Acidity</b>								
<b>Clear Plastic Bottle - Natural (ED038)</b> BORR MW13, BORR MW18, BORR MW20	BORR MW15, BORR MW19b,	21-Oct-2019	----	----	----	24-Oct-2019	04-Nov-2019	✓
<b>Clear Plastic Bottle - Natural (ED038)</b> BORR MW12, JT01, Southern 3, WRM North Site 5	BORR MW24, Northern 3, Southern 4,	22-Oct-2019	----	----	----	24-Oct-2019	05-Nov-2019	✓
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
<b>Clear Plastic Bottle - Natural (ED041G)</b> BORR MW13, BORR MW18, BORR MW20	BORR MW15, BORR MW19b,	21-Oct-2019	----	----	----	23-Oct-2019	18-Nov-2019	✓
<b>Clear Plastic Bottle - Natural (ED041G)</b> BORR MW12, JT01, Southern 3, WRM North Site 5	BORR MW24, Northern 3, Southern 4,	22-Oct-2019	----	----	----	23-Oct-2019	19-Nov-2019	✓
<b>ED045G: Chloride by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Natural (ED045G)</b> BORR MW13, BORR MW18, BORR MW20	BORR MW15, BORR MW19b,	21-Oct-2019	----	----	----	23-Oct-2019	18-Nov-2019	✓
<b>Clear Plastic Bottle - Natural (ED045G)</b> BORR MW12, JT01, Southern 3, WRM North Site 5	BORR MW24, Northern 3, Southern 4,	22-Oct-2019	----	----	----	23-Oct-2019	19-Nov-2019	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>ED093F: Dissolved Major Cations</b>								
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> BORR MW13, BORR MW18, BORR MW20	BORR MW15, BORR MW19b,	21-Oct-2019	----	----	----	25-Oct-2019	18-Nov-2019	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> BORR MW12, JT01, Southern 3, WRM North Site 5	BORR MW24, Northern 3, Southern 4,	22-Oct-2019	----	----	----	25-Oct-2019	19-Nov-2019	✓
<b>EG020F: Dissolved Metals by ICP-MS</b>								
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> BORR MW13, BORR MW18, BORR MW20	BORR MW15, BORR MW19b,	21-Oct-2019	----	----	----	25-Oct-2019	18-Apr-2020	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> BORR MW12, JT01, Southern 3, WRM North Site 5	BORR MW24, Northern 3, Southern 4,	22-Oct-2019	----	----	----	25-Oct-2019	19-Apr-2020	✓
<b>EG020T: Total Metals by ICP-MS</b>								
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> RB01, BORR MW15, BORR MW19b,	BORR MW13, BORR MW18, BORR MW20	21-Oct-2019	24-Oct-2019	18-Apr-2020	✓	24-Oct-2019	18-Apr-2020	✓
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> BORR MW12, RB02, Northern 3, Southern 4,	BORR MW24, JT01, Southern 3, WRM North Site 5	22-Oct-2019	24-Oct-2019	19-Apr-2020	✓	24-Oct-2019	19-Apr-2020	✓
<b>EK055G: Ammonia as N by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> BORR MW13, BORR MW18, BORR MW20	BORR MW15, BORR MW19b,	21-Oct-2019	----	----	----	23-Oct-2019	18-Nov-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> BORR MW12, JT01, Southern 3, WRM North Site 5	BORR MW24, Northern 3, Southern 4,	22-Oct-2019	----	----	----	23-Oct-2019	19-Nov-2019	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> BORR MW13, BORR MW18, BORR MW20	BORR MW15, BORR MW19b,	21-Oct-2019	----	----	----	23-Oct-2019	18-Nov-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> BORR MW12, JT01, Southern 3, WRM North Site 5	BORR MW24, Northern 3, Southern 4,	22-Oct-2019	----	----	----	23-Oct-2019	19-Nov-2019	✓
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> BORR MW13, BORR MW18, BORR MW20	BORR MW15, BORR MW19b,	21-Oct-2019	29-Oct-2019	18-Nov-2019	✓	29-Oct-2019	18-Nov-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> BORR MW12, JT01, Southern 3, WRM North Site 5	BORR MW24, Northern 3, Southern 4,	22-Oct-2019	29-Oct-2019	19-Nov-2019	✓	29-Oct-2019	19-Nov-2019	✓
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> BORR MW13, BORR MW18, BORR MW20	BORR MW15, BORR MW19b,	21-Oct-2019	29-Oct-2019	18-Nov-2019	✓	29-Oct-2019	18-Nov-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> BORR MW12, JT01, Southern 3, WRM North Site 5	BORR MW24, Northern 3, Southern 4,	22-Oct-2019	29-Oct-2019	19-Nov-2019	✓	29-Oct-2019	19-Nov-2019	✓
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>								
<b>Clear Plastic Bottle - Natural (EK071G)</b> BORR MW13, BORR MW18, BORR MW20	BORR MW15, BORR MW19b,	21-Oct-2019	----	----	----	23-Oct-2019	23-Oct-2019	✓
<b>Clear Plastic Bottle - Natural (EK071G)</b> BORR MW12, JT01, Southern 3, WRM North Site 5	BORR MW24, Northern 3, Southern 4,	22-Oct-2019	----	----	----	23-Oct-2019	24-Oct-2019	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK085M: Sulfide as S2-</b>								
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> BORR MW13, BORR MW18, BORR MW20	BORR MW15, BORR MW19b,	21-Oct-2019	----	----	----	25-Oct-2019	28-Oct-2019	✓
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> BORR MW12, JT01, Southern 3, WRM North Site 5	BORR MW24, Northern 3, Southern 4,	22-Oct-2019	----	----	----	25-Oct-2019	29-Oct-2019	✓
<b>EP071: Total Petroleum Hydrocarbons</b>								
<b>Amber Glass Bottle - Unpreserved (EP071-SV)</b> FB01		21-Oct-2019	28-Oct-2019	28-Oct-2019	✓	29-Oct-2019	07-Dec-2019	✓
<b>EP071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>								
<b>Amber Glass Bottle - Unpreserved (EP071-SV)</b> FB01		21-Oct-2019	28-Oct-2019	28-Oct-2019	✓	29-Oct-2019	07-Dec-2019	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BORR MW13, BORR MW18, BORR MW20	BORR MW15, BORR MW19b,	21-Oct-2019	28-Oct-2019	28-Oct-2019	✓	29-Oct-2019	07-Dec-2019	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BORR MW12, JT01, Southern 3, WRM North Site 5	BORR MW24, Northern 3, Southern 4,	22-Oct-2019	28-Oct-2019	29-Oct-2019	✓	29-Oct-2019	07-Dec-2019	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> TBW 965, BORR MW15, BORR MW19b,	BORR MW13, BORR MW18, BORR MW20	21-Oct-2019	29-Oct-2019	04-Nov-2019	✓	29-Oct-2019	04-Nov-2019	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BORR MW12, TBW 958, JT01, Southern 3, WRM North Site 5	BORR MW24, FB01, Northern 3, Southern 4,	22-Oct-2019	29-Oct-2019	05-Nov-2019	✓	29-Oct-2019	05-Nov-2019	✓



Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>								
<b>Amber Glass Bottle - Unpreserved (EP071)</b>								
BORR MW13, BORR MW18, BORR MW20	BORR MW15, BORR MW19b,	21-Oct-2019	28-Oct-2019	28-Oct-2019	✓	29-Oct-2019	07-Dec-2019	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b>								
BORR MW12, JT01, Southern 3, WRM North Site 5	BORR MW24, Northern 3, Southern 4,	22-Oct-2019	28-Oct-2019	29-Oct-2019	✓	29-Oct-2019	07-Dec-2019	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
TBW 965, BORR MW15, BORR MW19b,	BORR MW13, BORR MW18, BORR MW20	21-Oct-2019	29-Oct-2019	04-Nov-2019	✓	29-Oct-2019	04-Nov-2019	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
BORR MW12, TBW 958, JT01, Southern 3, WRM North Site 5	BORR MW24, FB01, Northern 3, Southern 4,	22-Oct-2019	29-Oct-2019	05-Nov-2019	✓	29-Oct-2019	05-Nov-2019	✓
<b>EP080: BTEXN</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
TBW 965, BORR MW15, BORR MW19b,	BORR MW13, BORR MW18, BORR MW20	21-Oct-2019	29-Oct-2019	04-Nov-2019	✓	29-Oct-2019	04-Nov-2019	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
BORR MW12, TBW 958, JT01, Southern 3, WRM North Site 5	BORR MW24, FB01, Northern 3, Southern 4,	22-Oct-2019	29-Oct-2019	05-Nov-2019	✓	29-Oct-2019	05-Nov-2019	✓
<b>EP204: Glyphosate and AMPA</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b>								
JT01, Southern 3, WRM North Site 5	Northern 3, Southern 4,	22-Oct-2019	----	----	----	25-Oct-2019	05-Nov-2019	✓
<b>EP234A: OP Pesticides</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b>								
JT01, Southern 3, WRM North Site 5	Northern 3, Southern 4,	22-Oct-2019	----	----	----	28-Oct-2019	29-Oct-2019	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Laboratory Duplicates (DUP)</b>							
Acidity as Calcium Carbonate	ED038	4	39	10.26	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	16	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	3	28	10.71	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	6	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	3	28	10.71	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	2	16	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	15	13.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	19	10.53	10.53	✔	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	12	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	17	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	12	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fractions Only	EP071-SV	0	1	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Acidity as Calcium Carbonate	ED038	2	39	5.13	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	28	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	28	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	15	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Total Dissolved Solids (High Level)	EA015H	2	19	10.53	10.53	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fractions Only	EP071-SV	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	19	5.26	5.26	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fractions Only	EP071-SV	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Ammonia as N by Discrete analyser	EK055G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	20	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard

Page : 11 of 14  
 Work Order : EP1910866  
 Client : GHD PTY LTD  
 Project : 6137041



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Matrix Spikes (MS) - Continued</b>							
TRH - Semivolatile Fractions Only	EP071-SV	0	1	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard





## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3)  Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3)  Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ammonium as N	EK055G-NH4	WATER	Ammonium in the sample is reported as the ionised / unionised fractions by the use of a nomograph and the initial pH and Temperature. Ammonia is determined by direct colorimetry by Discrete Analyser according to APHA 4500-NH3 G. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Sulfide as S2-	EK085	WATER	In house: Referenced to APHA 4500-S2- D. Sulfide species present in water samples are immediately precipitated when collected in pretreated caustic/zinc acetate preserved sample containers. The sulphides are coloured using methylene blue indicator. Non-detects may be screened by comparison against a standard at half-LOR, otherwise samples are measured using UV-VIS detection at 664nm. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatle Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
TRH - Semivolatle Fractions Only	EP071-SV	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Glyphosate and AMPA	EP204	WATER	In house: Pre-column derivatisation LCMS (ES in negative mode). Water samples are derivatised with 9-fluorenyl methoxycarbonyl chloroformate (FMOC) in alkaline condition. The derivatives of glyphosate and AMPA are separated by a C8 column and determined by MS.
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CHAIN OF CUSTODY RECORD  
AND ANALYSIS REQUEST



GHD  
Level 10, 999 Hay Street  
Perth WA 6000  
PO Box 3106  
Perth WA 6832

Reception Ph: 08 6222 8222

Project ID (as per ESdat set up; no spaces)

6137041 (08.0831)

PO Number (to be invoiced)

6137041 (08.0831)

Laboratory:

ALS Laboratory

Address:

26 Rigali Way Wanganua WA

Laboratory Contact:

Marnie Thompson

Laboratory Quote No.

EP/489/19/V4

Turnaround Time

Standard

Job Manager (Invoice) & GHD accounts

Julia Roberts  
Vicki Davies

Email Address (Results)

Emily.Evans@ghd.com  
Vicki.Davies@ghd.com

GHD Sample ID		Lab Sample ID	Date	Time	Sample Matrix - Soil/S- Sludge/Water/Air	Container			No	Analyses		Remarks
						Type - Bottle/Jar/V- Via/Pap/G-Glass/P-plastic	Preservative Unpreserved/HCl/ H2SO4/NH3/Other			AS per consuit EP/489/19 V4	SAS per SMCUTE EP/489/19 V4	
	TBW665	1	21/10/19		W	B		1			✓	HOLD
	FB01	2	21/10/19		W	B		1			✓	Semi volatile TRH.
	RB01	3	21/10/19		W	B		1			✓	
	BORR MW13	4	21/10/19		W	B		8	✓			
	BORR MW15	5	21/10/19		W	B		8	✓			
	BORR MW18	6	21/10/19		W	B		8	✓			
	BORR MW19b	7	21/10/19		W	B		8	✓			
	BORR MW20	8	21/10/19		W	B		8	✓			
	BORR MW2	9	22/10/19		W	B		8	✓			
	BORR MW24	10	22/10/19		W	B		8	✓			
	TBW958	11	22/10/19		W	B		1			✓	
	RB02	12	22/10/19		W	B		1			✓	
	FB01	13	22/10/19		W	B		2			✓	
	JT01	14	22/10/19		W	B		10		✓		
	Northern 3	15	22/10/19		W	B		9		✓		* only 1 green amber sent
	Southern 3	16	22/10/19		W	B		9		✓		"
	Southern 4	17	22/10/19		W	B		9		✓		"

Environmental Division  
Perth  
Work Order Reference  
**EP1910866**



Telephone : 61-8-9496 1301

Sampled by: ~~EE~~ Emily Evans

Date/Time: 22/10/19

Relinquished by: EE

Date/Time: 22/10/19

Received by: LUPP7

Date/Time: 23/10 12:30

Relinquished by:

Date/Time:

**CHAIN OF CUSTODY RECORD  
AND ANALYSIS REQUEST**



GHD  
Level 10, 999 Hay Street  
Perth WA 6000

PO Box 3106  
Perth WA 6832

Reception Ph: 08 6222 8222

Page 2 of 2

Project ID (as per ESDat set up; no spaces) 6137041 (08.0831)  
 PO Number (to be invoiced) 6137041 (08.0831)

Laboratory: ALS Laboratory  
 Address: 26 Rigall Way Wangan, WA  
 Laboratory Contact: Marnie Thompson

Laboratory Quote No. EP/489/19/V4  
 Turnaround Time Standard  
 Job Manager (Invoice) & GHD accounts: Julia Roberts  
Vicki Davies  
 Email Address (Results): Emily.Evans@ghd.com  
Vicki.Davies@ghd.com

Sample Matrix: Soil/SL

GHD Sample ID	Lab Sample ID	Date	Time
---------------	---------------	------	------

Sample Matrix	Container	Analyses	Remarks
Sludge/W-Water/A-Air	Type B-Bottle/Jar/V-Vial/Bag/G-Glass/P-Plastic	Preservative Unpreserved/HCl/H2SO4/HNO3/Other	No

GHD Sample ID	Lab Sample ID	Date	Time	Sample Matrix	Container	Preservative	No	Analyses	Remarks	
WRM North Sites	18	22/10/19		W	B		10	✓		

Sampled by: Emily Evans Date/Time: 22/10/19 Relinquished by: EE Date/Time: 22/10/19  
 Received by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_

## CERTIFICATE OF ANALYSIS

**Work Order** : **EP1910998**  
**Client** : **GHD PTY LTD**  
**Contact** : **MS VICKI DAVIES**  
**Address** : **999 HAY STREET**  
                   **PERTH WA, AUSTRALIA 6000**  
**Telephone** : ----  
**Project** : **6137041**  
**Order number** : **61370410831**  
**C-O-C number** : ----  
**Sampler** : **Emily Evans**  
**Site** : ----  
**Quote number** : **EP/489/19 V4**  
**No. of samples received** : **32**  
**No. of samples analysed** : **32**

**Page** : 1 of 29  
**Laboratory** : Environmental Division Perth  
**Contact** : Marnie Thomsett  
**Address** : 26 Rigali Way Wangara WA Australia 6065  
**Telephone** : 08 9406 1311  
**Date Samples Received** : 25-Oct-2019 12:15  
**Date Analysis Commenced** : 25-Oct-2019  
**Issue Date** : 12-Nov-2019 06:39



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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
David Viner	SENIOR LAB TECH	Perth Organics, Wangara, WA
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP204 and EP234 conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- EK055G (Ammonia): LOR for samples EP1910998-007 and 011 raised due to possible sample matrix interference.
- ED041G (Turbidimetric Sulfate): LOR for samples EP1910998-011, 012 and 032 raised due to possible sample matrix interference.
- EK061G/EK067G (TKN/TP): LOR for sample EP1910998-028 raised due to possible sample matrix interference.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - iron, calcium, magnesium, potassium and sodium for sample #19.
- TDS by method EA-015 may bias high for sample #2, #11, #19 and #32 due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- EA015H (Total Dissolved Solids): TDS for various samples biasing high due to possible sample matrix interferences.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BH11.1	BORR_MW39	TBW 961	FB03	RB03
Client sampling date / time				23-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1910998-001	EP1910998-002	EP1910998-003	EP1910998-004	EP1910998-005	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	7.39	6.04	----	----	----	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	1440	262	----	----	----	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	836	364	----	----	----	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	----	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	171	12	----	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	171	12	----	----	----	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	19	23	----	----	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	93	45	----	----	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	336	40	----	----	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	6	<1	----	----	----	
Magnesium	7439-95-4	1	mg/L	16	<1	----	----	----	
Sodium	7440-23-5	1	mg/L	248	51	----	----	----	
Potassium	7440-09-7	1	mg/L	14	<1	----	----	----	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.04	0.20	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	0.0001	<0.0001	----	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----	
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	----	----	----	
Copper	7440-50-8	0.001	mg/L	0.007	0.005	----	----	----	
Lead	7439-92-1	0.001	mg/L	0.001	<0.001	----	----	----	
Manganese	7439-96-5	0.001	mg/L	0.241	0.013	----	----	----	
Nickel	7440-02-0	0.001	mg/L	0.012	0.004	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----	
Zinc	7440-66-6	0.005	mg/L	0.101	0.036	----	----	----	
Iron	7439-89-6	0.05	mg/L	8.28	0.12	----	----	----	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BH11.1	BORR_MW39	TBW 961	FB03	RB03
Client sampling date / time				23-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1910998-001	EP1910998-002	EP1910998-003	EP1910998-004	EP1910998-005	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.07	4.84	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	----	----	----	----	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	----	<0.0001	
Chromium	7440-47-3	0.001	mg/L	----	----	----	----	<0.001	
Copper	7440-50-8	0.001	mg/L	----	----	----	----	<0.001	
Nickel	7440-02-0	0.001	mg/L	----	----	----	----	<0.001	
Lead	7439-92-1	0.001	mg/L	----	----	----	----	<0.001	
Zinc	7440-66-6	0.005	mg/L	----	----	----	----	<0.005	
Iron	7439-89-6	0.05	mg/L	15.0	4.26	----	----	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.20	0.01	----	----	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.20	<0.01	----	----	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.03	<0.01	----	----	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.4	0.1	----	----	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.4	0.1	----	----	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.69	0.03	----	----	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.29	0.02	----	----	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	----	----	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	14.8	2.30	----	----	----	
∅ Total Cations	----	0.01	meq/L	12.8	2.22	----	----	----	
∅ Ionic Balance	----	0.01	%	7.50	----	----	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	----	
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----	
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BH11.1	BORR_MW39	TBW 961	FB03	RB03
Client sampling date / time				23-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1910998-001	EP1910998-002	EP1910998-003	EP1910998-004	EP1910998-005	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>									
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	----	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	----	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	----	----	----	
>C16 - C34 Fraction	----	100	µg/L	<100	<100	----	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	----	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	----	----	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	----	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	----	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	----	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	----	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	----	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	----	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	106	102	92.3	99.6	----	
Toluene-D8	2037-26-5	2	%	95.3	95.7	97.2	98.5	----	
4-Bromofluorobenzene	460-00-4	2	%	103	105	103	106	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW25	BH9.2	BORR_MW37	FD02	Northern 5
Client sampling date / time				23-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	24-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1910998-006	EP1910998-007	EP1910998-008	EP1910998-009	EP1910998-010	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.41	4.15	6.18	6.33	7.72	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	3640	7520	3480	3480	1010	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	2100	4250	1850	1730	558	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	78	<1	46	44	153	
Total Alkalinity as CaCO3	----	1	mg/L	78	<1	46	44	153	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	50	283	41	41	10	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	94	88	75	76	26	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	1040	2420	954	953	230	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	29	59	14	13	36	
Magnesium	7439-95-4	1	mg/L	54	249	64	62	19	
Sodium	7440-23-5	1	mg/L	575	868	519	503	140	
Potassium	7440-09-7	1	mg/L	4	<1	2	2	6	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.02	23.0	0.02	<0.01	0.03	
Arsenic	7440-38-2	0.001	mg/L	0.003	0.002	0.002	0.002	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	0.031	0.035	0.040	0.038	<0.001	
Copper	7440-50-8	0.001	mg/L	0.002	0.040	0.004	<0.001	0.013	
Lead	7439-92-1	0.001	mg/L	<0.001	0.014	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.438	0.020	0.359	0.357	0.150	
Nickel	7440-02-0	0.001	mg/L	0.022	0.020	0.016	0.015	0.010	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.076	0.074	0.017	0.010	0.109	
Iron	7439-89-6	0.05	mg/L	8.27	55.4	12.0	12.2	0.19	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW25	BH9.2	BORR_MW37	FD02	Northern 5
Client sampling date / time				23-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	24-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1910998-006	EP1910998-007	EP1910998-008	EP1910998-009	EP1910998-010	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	2.40	28.1	1.14	1.16	0.08	
Iron	7439-89-6	0.05	mg/L	11.9	67.9	14.0	14.4	1.47	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.11	<0.10	0.08	0.08	0.12	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.11	<0.01	0.08	0.08	0.12	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.05	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.3	0.2	0.3	0.3	0.9	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.3	0.2	0.3	0.3	1.0	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.04	0.02	0.02	0.02	0.48	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.47	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	32.8	70.1	29.4	29.3	10.1	
∅ Total Cations	----	0.01	meq/L	31.0	61.2	28.6	27.7	9.60	
∅ Ionic Balance	----	0.01	%	2.89	6.78	1.38	2.92	2.45	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	140	<100	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	140	<50	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW25	BH9.2	BORR_MW37	FD02	Northern 5
Client sampling date / time				23-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	24-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1910998-006	EP1910998-007	EP1910998-008	EP1910998-009	EP1910998-010	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	160	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	160	<100	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	----	----	----	<10	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	----	----	----	<0.02	
Azinphos-methyl	86-50-0	0.02	µg/L	----	----	----	----	<0.02	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	----	----	----	<0.10	
Carbofenthiion	786-19-6	0.02	µg/L	----	----	----	----	<0.02	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	----	----	----	<0.02	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	----	----	----	<0.02	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	----	----	----	<0.2	
Coumaphos	56-72-4	0.01	µg/L	----	----	----	----	<0.01	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	----	----	----	<0.02	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	----	----	----	<0.02	
Demeton-O	298-03-3	0.02	µg/L	----	----	----	----	<0.02	
Demeton-S	126-75-0	0.02	µg/L	----	----	----	----	<0.02	
Diazinon	333-41-5	0.01	µg/L	----	----	----	----	<0.01	
Dichlorvos	62-73-7	0.20	µg/L	----	----	----	----	<0.20	
Dimethoate	60-51-5	0.02	µg/L	----	----	----	----	<0.02	
Disulfoton	298-04-4	0.05	µg/L	----	----	----	----	<0.05	
Ethion	563-12-2	0.02	µg/L	----	----	----	----	<0.02	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW25	BH9.2	BORR_MW37	FD02	Northern 5
Client sampling date / time					23-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	24-Oct-2019 00:00
Compound	CAS Number	LOR	Unit	EP1910998-006	EP1910998-007	EP1910998-008	EP1910998-009	EP1910998-010	
				Result	Result	Result	Result	Result	
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L	----	----	----	----	----	<0.05
Ethoprophos	13194-48-4	0.01	µg/L	----	----	----	----	----	<0.01
Fenamiphos	22224-92-6	0.01	µg/L	----	----	----	----	----	<0.01
Fenchlorphos (Rannel)	299-84-3	10	µg/L	----	----	----	----	----	<10
Fenitrothion	122-14-5	2	µg/L	----	----	----	----	----	<2
Fensulfothion	115-90-2	0.01	µg/L	----	----	----	----	----	<0.01
Fenthion	55-38-9	0.05	µg/L	----	----	----	----	----	<0.05
Malathion	121-75-5	0.02	µg/L	----	----	----	----	----	<0.02
Mevinphos	7786-34-7	0.02	µg/L	----	----	----	----	----	<0.02
Monocrotophos	6923-22-4	0.02	µg/L	----	----	----	----	----	<0.02
Omethoate	1113-02-6	0.01	µg/L	----	----	----	----	----	<0.01
Parathion	56-38-2	0.2	µg/L	----	----	----	----	----	<0.2
Parathion-methyl	298-00-0	0.5	µg/L	----	----	----	----	----	<0.5
Phorate	298-02-2	0.1	µg/L	----	----	----	----	----	<0.1
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	----	----	----	----	----	<0.01
Pirimiphos-methyl	29232-93-7	0.01	µg/L	----	----	----	----	----	<0.01
Profenofos	41198-08-7	0.01	µg/L	----	----	----	----	----	<0.01
Prothiofos	34643-46-4	0.1	µg/L	----	----	----	----	----	<0.1
Sulfotep	3689-24-5	0.005	µg/L	----	----	----	----	----	<0.005
Sulprofos	35400-43-2	0.05	µg/L	----	----	----	----	----	<0.05
Terbufos	13071-79-9	0.01	µg/L	----	----	----	----	----	<0.01
Temephos	3383-96-8	0.02	µg/L	----	----	----	----	----	<0.02
Tetrachlorvinphos	22248-79-9	0.01	µg/L	----	----	----	----	----	<0.01
Triazophos	24017-47-8	0.005	µg/L	----	----	----	----	----	<0.005
Trichlorfon	52-68-6	0.02	µg/L	----	----	----	----	----	<0.02
Trichloronate	327-98-0	0.5	µg/L	----	----	----	----	----	<0.5
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	106	101	104	109	110	
Toluene-D8	2037-26-5	2	%	96.4	96.4	95.0	97.1	93.2	
4-Bromofluorobenzene	460-00-4	2	%	106	106	108	106	105	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MT01	BORR MW32	BORR MW22b	BH32.1	FD03
Client sampling date / time				24-Oct-2019 00:00	24-Oct-2019 00:00	24-Oct-2019 00:00	24-Oct-2019 00:00	24-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1910998-011	EP1910998-012	EP1910998-013	EP1910998-014	EP1910998-015	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.70	6.30	6.32	4.10	4.25	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	330	281	13400	5850	5720	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	334	210	7570	3220	3180	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	34	36	52	<1	<1	
Total Alkalinity as CaCO3	----	1	mg/L	34	36	52	<1	<1	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	16	22	78	50	50	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<10	<10	409	385	379	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	72	56	3800	1400	1390	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	9	3	114	8	8	
Magnesium	7439-95-4	1	mg/L	5	6	332	119	117	
Sodium	7440-23-5	1	mg/L	40	40	2010	935	910	
Potassium	7440-09-7	1	mg/L	5	3	4	3	3	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.36	0.93	0.03	2.06	1.87	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.002	0.006	0.006	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	0.0002	0.0002	
Chromium	7440-47-3	0.001	mg/L	0.001	0.001	<0.001	0.002	0.002	
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.154	0.821	0.775	
Copper	7440-50-8	0.001	mg/L	0.017	0.008	0.003	0.004	0.003	
Lead	7439-92-1	0.001	mg/L	0.001	0.001	<0.001	0.002	0.002	
Manganese	7439-96-5	0.001	mg/L	0.032	0.005	0.512	0.139	0.130	
Nickel	7440-02-0	0.001	mg/L	0.016	0.013	0.078	0.732	0.690	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.054	0.101	0.104	0.030	0.029	
Iron	7439-89-6	0.05	mg/L	1.90	0.86	23.7	8.65	8.11	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MT01	BORR MW32	BORR MW22b	BH32.1	FD03
Client sampling date / time				24-Oct-2019 00:00	24-Oct-2019 00:00	24-Oct-2019 00:00	24-Oct-2019 00:00	24-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1910998-011	EP1910998-012	EP1910998-013	EP1910998-014	EP1910998-015	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.42	2.44	0.49	3.76	4.03	
Iron	7439-89-6	0.05	mg/L	4.73	1.18	27.6	15.6	16.2	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	<0.05	0.54	0.17	0.03	0.02	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	<0.01	0.54	0.17	0.03	0.02	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.02	<0.01	<0.01	<0.01	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	4.6	1.3	0.4	0.3	0.3	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	4.6	1.3	0.4	0.3	0.3	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.29	0.01	0.04	0.04	0.05	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.03	<0.01	<0.01	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	0.2	0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	2.71	2.30	117	47.5	47.1	
∅ Total Cations	----	0.01	meq/L	2.73	2.46	120	50.9	49.7	
∅ Ionic Balance	----	0.01	%	----	----	1.60	3.49	2.67	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	180	<100	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	130	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	310	<50	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MT01	BORR MW32	BORR MW22b	BH32.1	FD03
Client sampling date / time					24-Oct-2019 00:00	24-Oct-2019 00:00	24-Oct-2019 00:00	24-Oct-2019 00:00	24-Oct-2019 00:00
Compound	CAS Number	LOR	Unit	EP1910998-011	EP1910998-012	EP1910998-013	EP1910998-014	EP1910998-015	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	280	<100	110	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	280	<100	110	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	112	113	99.1	93.9	106	
Toluene-D8	2037-26-5	2	%	94.0	92.8	98.4	101	96.9	
4-Bromofluorobenzene	460-00-4	2	%	105	104	103	103	106	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB04	FB04	SW09	BORR MW46	TBW 957
Client sampling date / time				24-Oct-2019 00:00	24-Oct-2019 00:00	24-Oct-2019 00:00	24-Oct-2019 00:00	24-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1910998-016	EP1910998-017	EP1910998-018	EP1910998-019	EP1910998-020	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	----	----	7.57	5.97	----	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	640	474	----	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	----	----	390	405	----	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	<1	<1	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	<1	<1	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	110	8	----	
Total Alkalinity as CaCO3	----	1	mg/L	----	----	110	8	----	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	----	----	8	73	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	4	189	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	----	----	140	18	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	----	----	13	30	----	
Magnesium	7439-95-4	1	mg/L	----	----	8	14	----	
Sodium	7440-23-5	1	mg/L	----	----	95	14	----	
Potassium	7440-09-7	1	mg/L	----	----	7	3	----	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	0.06	0.02	----	
Arsenic	7440-38-2	0.001	mg/L	----	----	<0.001	0.004	----	
Cadmium	7440-43-9	0.0001	mg/L	----	----	<0.0001	<0.0001	----	
Chromium	7440-47-3	0.001	mg/L	----	----	<0.001	<0.001	----	
Cobalt	7440-48-4	0.001	mg/L	----	----	<0.001	0.004	----	
Copper	7440-50-8	0.001	mg/L	----	----	0.008	0.012	----	
Lead	7439-92-1	0.001	mg/L	----	----	0.001	<0.001	----	
Manganese	7439-96-5	0.001	mg/L	----	----	0.014	0.164	----	
Nickel	7440-02-0	0.001	mg/L	----	----	0.014	0.012	----	
Selenium	7782-49-2	0.01	mg/L	----	----	<0.01	<0.01	----	
Zinc	7440-66-6	0.005	mg/L	----	----	0.120	0.115	----	
Iron	7439-89-6	0.05	mg/L	----	----	0.57	37.4	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB04	FB04	SW09	BORR MW46	TBW 957
Client sampling date / time				24-Oct-2019 00:00	24-Oct-2019 00:00	24-Oct-2019 00:00	24-Oct-2019 00:00	24-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1910998-016	EP1910998-017	EP1910998-018	EP1910998-019	EP1910998-020	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	0.21	1.80	----	
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----	
Iron	7439-89-6	0.05	mg/L	----	----	3.30	55.0	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	----	----	<0.01	0.22	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	----	----	<0.01	0.22	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	----	----	0.01	0.08	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	----	0.9	0.5	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	----	----	0.9	0.6	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	----	----	0.04	0.01	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	----	0.02	<0.01	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	----	----	<0.1	<0.1	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	----	----	6.23	4.60	----	
∅ Total Cations	----	0.01	meq/L	----	----	----	5.34	----	
∅ Total Cations	----	0.01	meq/L	----	----	5.62	----	----	
∅ Ionic Balance	----	0.01	%	----	----	----	7.45	----	
∅ Ionic Balance	----	0.01	%	----	----	5.16	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	----	<20	<20	<20	<20	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB04	FB04	SW09	BORR MW46	TBW 957
Client sampling date / time				24-Oct-2019 00:00	24-Oct-2019 00:00	24-Oct-2019 00:00	24-Oct-2019 00:00	24-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1910998-016	EP1910998-017	EP1910998-018	EP1910998-019	EP1910998-020	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>									
C10 - C14 Fraction	----	50	µg/L	----	----	<50	<50	----	
C15 - C28 Fraction	----	100	µg/L	----	----	<100	<100	----	
C29 - C36 Fraction	----	50	µg/L	----	----	<50	<50	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	----	<50	<50	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	----	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	----	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	----	----	<100	<100	----	
>C16 - C34 Fraction	----	100	µg/L	----	----	<100	<100	----	
>C34 - C40 Fraction	----	100	µg/L	----	----	<100	<100	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	----	----	<100	<100	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	----	<100	<100	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	----	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	----	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	----	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	----	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	----	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	----	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	----	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	----	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	----	<10	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	----	<0.02	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	----	----	<0.02	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	----	<0.10	----	----	
Carbofenthiion	786-19-6	0.02	µg/L	----	----	<0.02	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	----	<0.02	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	----	<0.02	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	----	<0.2	----	----	
Coumaphos	56-72-4	0.01	µg/L	----	----	<0.01	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB04	FB04	SW09	BORR MW46	TBW 957
Client sampling date / time					24-Oct-2019 00:00	24-Oct-2019 00:00	24-Oct-2019 00:00	24-Oct-2019 00:00	24-Oct-2019 00:00
Compound	CAS Number	LOR	Unit		EP1910998-016	EP1910998-017	EP1910998-018	EP1910998-019	EP1910998-020
					Result	Result	Result	Result	Result
<b>EP234A: OP Pesticides - Continued</b>									
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L		----	----	<0.02	----	----
Demeton-S-methyl	919-86-8	0.02	µg/L		----	----	<0.02	----	----
Demeton-O	298-03-3	0.02	µg/L		----	----	<0.02	----	----
Demeton-S	126-75-0	0.02	µg/L		----	----	<0.02	----	----
Diazinon	333-41-5	0.01	µg/L		----	----	<0.01	----	----
Dichlorvos	62-73-7	0.20	µg/L		----	----	<0.20	----	----
Dimethoate	60-51-5	0.02	µg/L		----	----	<0.02	----	----
Disulfoton	298-04-4	0.05	µg/L		----	----	<0.05	----	----
Ethion	563-12-2	0.02	µg/L		----	----	<0.02	----	----
EPN	2104-64-5	0.05	µg/L		----	----	<0.05	----	----
Ethoprophos	13194-48-4	0.01	µg/L		----	----	<0.01	----	----
Fenamiphos	22224-92-6	0.01	µg/L		----	----	<0.01	----	----
Fenchlorphos (Ronnel)	299-84-3	10	µg/L		----	----	<10	----	----
Fenitrothion	122-14-5	2	µg/L		----	----	<2	----	----
Fensulfothion	115-90-2	0.01	µg/L		----	----	<0.01	----	----
Fenthion	55-38-9	0.05	µg/L		----	----	<0.05	----	----
Malathion	121-75-5	0.02	µg/L		----	----	<0.02	----	----
Mevinphos	7786-34-7	0.02	µg/L		----	----	<0.02	----	----
Monocrotophos	6923-22-4	0.02	µg/L		----	----	<0.02	----	----
Omethoate	1113-02-6	0.01	µg/L		----	----	<0.01	----	----
Parathion	56-38-2	0.2	µg/L		----	----	<0.2	----	----
Parathion-methyl	298-00-0	0.5	µg/L		----	----	<0.5	----	----
Phorate	298-02-2	0.1	µg/L		----	----	<0.1	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L		----	----	<0.01	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L		----	----	<0.01	----	----
Profenofos	41198-08-7	0.01	µg/L		----	----	<0.01	----	----
Prothiofos	34643-46-4	0.1	µg/L		----	----	<0.1	----	----
Sulfotep	3689-24-5	0.005	µg/L		----	----	<0.005	----	----
Sulprofos	35400-43-2	0.05	µg/L		----	----	<0.05	----	----
Terbufos	13071-79-9	0.01	µg/L		----	----	<0.01	----	----
Temephos	3383-96-8	0.02	µg/L		----	----	<0.02	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L		----	----	<0.01	----	----
Triazophos	24017-47-8	0.005	µg/L		----	----	<0.005	----	----
Trichlorfon	52-68-6	0.02	µg/L		----	----	<0.02	----	----
Trichloronate	327-98-0	0.5	µg/L		----	----	<0.5	----	----



## Analytical Results

Sub-Matrix: <b>WATER</b> (Matrix: <b>WATER</b> )				Client sample ID	<b>RB04</b>	<b>FB04</b>	<b>SW09</b>	<b>BORR MW46</b>	<b>TBW 957</b>
Client sampling date / time				24-Oct-2019 00:00	24-Oct-2019 00:00	24-Oct-2019 00:00	24-Oct-2019 00:00	24-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	<b>EP1910998-016</b>	<b>EP1910998-017</b>	<b>EP1910998-018</b>	<b>EP1910998-019</b>	<b>EP1910998-020</b>	
				Result	Result	Result	Result	Result	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
<b>1,2-Dichloroethane-D4</b>	17060-07-0	2	%	----	<b>100</b>	<b>109</b>	<b>116</b>	<b>111</b>	
<b>Toluene-D8</b>	2037-26-5	2	%	----	<b>96.7</b>	<b>94.1</b>	<b>92.6</b>	<b>94.6</b>	
<b>4-Bromofluorobenzene</b>	460-00-4	2	%	----	<b>102</b>	<b>104</b>	<b>105</b>	<b>103</b>	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW 963	TBW 962	SW06	SW07	SW08
Client sampling date / time				24-Oct-2019 00:00	24-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1910998-021	EP1910998-022	EP1910998-023	EP1910998-024	EP1910998-025	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	----	----	7.67	7.41	7.41	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	3420	908	898	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	----	----	1940	502	484	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	82	39	37	
Total Alkalinity as CaCO3	----	1	mg/L	----	----	82	39	37	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	----	----	9	7	7	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	74	29	29	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	----	----	932	267	269	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	----	----	68	10	10	
Magnesium	7439-95-4	1	mg/L	----	----	104	19	22	
Sodium	7440-23-5	1	mg/L	----	----	390	125	139	
Potassium	7440-09-7	1	mg/L	----	----	7	5	5	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	0.03	0.03	0.02	
Arsenic	7440-38-2	0.001	mg/L	----	----	<0.001	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	----	----	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	----	----	<0.001	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	----	----	<0.001	<0.001	0.002	
Copper	7440-50-8	0.001	mg/L	----	----	0.009	0.008	0.009	
Lead	7439-92-1	0.001	mg/L	----	----	<0.001	0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	----	----	0.076	0.066	0.073	
Nickel	7440-02-0	0.001	mg/L	----	----	<0.001	0.016	0.020	
Selenium	7782-49-2	0.01	mg/L	----	----	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	----	----	0.006	0.112	0.124	
Iron	7439-89-6	0.05	mg/L	----	----	0.33	0.14	0.16	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW 963	TBW 962	SW06	SW07	SW08
Client sampling date / time					24-Oct-2019 00:00	24-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00
Compound	CAS Number	LOR	Unit	EP1910998-021	EP1910998-022	EP1910998-023	EP1910998-024	EP1910998-025	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	0.14	0.11	0.10	
Iron	7439-89-6	0.05	mg/L	----	----	0.77	1.64	1.56	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	----	----	0.03	0.02	0.04	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	----	----	0.03	0.02	0.04	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	----	----	0.01	0.09	0.12	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	----	1.1	0.2	0.2	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	----	----	1.1	0.3	0.3	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	----	----	0.08	0.03	0.03	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	----	0.03	0.01	0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	----	----	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	----	----	29.5	8.91	8.93	
∅ Total Cations	----	0.01	meq/L	----	----	29.1	7.63	8.48	
∅ Ionic Balance	----	0.01	%	----	----	0.64	7.78	2.57	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	----	----	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	----	----	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	----	----	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	----	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	----	----	<100	<100	<100	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW 963	TBW 962	SW06	SW07	SW08
Client sampling date / time				24-Oct-2019 00:00	24-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1910998-021	EP1910998-022	EP1910998-023	EP1910998-024	EP1910998-025	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	----	----	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	----	----	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	----	----	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	----	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	----	<10	<10	<10	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Azinphos-methyl	86-50-0	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	----	<0.10	<0.10	<0.10	
Carbofenthiion	786-19-6	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	----	<0.2	<0.2	<0.2	
Coumaphos	56-72-4	0.01	µg/L	----	----	<0.01	<0.01	<0.01	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Demeton-O	298-03-3	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Demeton-S	126-75-0	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Diazinon	333-41-5	0.01	µg/L	----	----	<0.01	<0.01	<0.01	
Dichlorvos	62-73-7	0.20	µg/L	----	----	<0.20	<0.20	<0.20	
Dimethoate	60-51-5	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Disulfoton	298-04-4	0.05	µg/L	----	----	<0.05	<0.05	<0.05	
Ethion	563-12-2	0.02	µg/L	----	----	<0.02	<0.02	<0.02	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW 963	TBW 962	SW06	SW07	SW08
Client sampling date / time					24-Oct-2019 00:00	24-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00
Compound	CAS Number	LOR	Unit	EP1910998-021	EP1910998-022	EP1910998-023	EP1910998-024	EP1910998-025	
				Result	Result	Result	Result	Result	
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L	----	----	<0.05	<0.05	<0.05	
Ethoprophos	13194-48-4	0.01	µg/L	----	----	<0.01	<0.01	<0.01	
Fenamiphos	22224-92-6	0.01	µg/L	----	----	<0.01	<0.01	<0.01	
Fenchlorphos (Ronnell)	299-84-3	10	µg/L	----	----	<10	<10	<10	
Fenitrothion	122-14-5	2	µg/L	----	----	<2	<2	<2	
Fensulfothion	115-90-2	0.01	µg/L	----	----	<0.01	<0.01	<0.01	
Fenthion	55-38-9	0.05	µg/L	----	----	<0.05	<0.05	<0.05	
Malathion	121-75-5	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Mevinphos	7786-34-7	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Monocrotophos	6923-22-4	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Omethoate	1113-02-6	0.01	µg/L	----	----	<0.01	<0.01	<0.01	
Parathion	56-38-2	0.2	µg/L	----	----	<0.2	<0.2	<0.2	
Parathion-methyl	298-00-0	0.5	µg/L	----	----	<0.5	<0.5	<0.5	
Phorate	298-02-2	0.1	µg/L	----	----	<0.1	<0.1	<0.1	
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	----	----	<0.01	<0.01	<0.01	
Pirimiphos-methyl	29232-93-7	0.01	µg/L	----	----	<0.01	<0.01	<0.01	
Profenofos	41198-08-7	0.01	µg/L	----	----	<0.01	<0.01	<0.01	
Prothiofos	34643-46-4	0.1	µg/L	----	----	<0.1	<0.1	<0.1	
Sulfotep	3689-24-5	0.005	µg/L	----	----	<0.005	<0.005	<0.005	
Sulprofos	35400-43-2	0.05	µg/L	----	----	<0.05	<0.05	<0.05	
Terbufos	13071-79-9	0.01	µg/L	----	----	<0.01	<0.01	<0.01	
Temephos	3383-96-8	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Tetrachlorvinphos	22248-79-9	0.01	µg/L	----	----	<0.01	<0.01	<0.01	
Triazophos	24017-47-8	0.005	µg/L	----	----	<0.005	<0.005	<0.005	
Trichlorfon	52-68-6	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Trichloronate	327-98-0	0.5	µg/L	----	----	<0.5	<0.5	<0.5	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	102	98.3	105	97.8	107	
Toluene-D8	2037-26-5	2	%	98.8	99.2	93.5	97.8	93.2	
4-Bromofluorobenzene	460-00-4	2	%	104	103	105	104	105	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FD01	North Creek 2	BORR MW09	BORR MW11	BORR MW10
Client sampling date / time					23-Oct-2019 00:00	24-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00
Compound	CAS Number	LOR	Unit		EP1910998-026	EP1910998-027	EP1910998-028	EP1910998-029	EP1910998-030
					Result	Result	Result	Result	Result
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit		7.70	7.42	6.80	7.76	6.49
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm		3400	815	271	12900	392
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L		1940	449	164	7430	262
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		82	40	11	1400	22
Total Alkalinity as CaCO3	----	1	mg/L		82	40	11	1400	22
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L		10	6	6	51	13
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		74	26	36	11	43
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L		974	236	44	3560	81
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L		64	7	17	90	13
Magnesium	7439-95-4	1	mg/L		103	16	3	245	8
Sodium	7440-23-5	1	mg/L		389	112	23	2100	38
Potassium	7440-09-7	1	mg/L		6	4	5	18	4
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L		0.02	0.02	0.04	0.04	0.07
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	<0.001	0.006	<0.001
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	0.004	<0.001
Cobalt	7440-48-4	0.001	mg/L		<0.001	0.001	<0.001	0.002	<0.001
Copper	7440-50-8	0.001	mg/L		0.002	0.009	0.011	0.010	0.008
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	0.001	<0.001
Manganese	7439-96-5	0.001	mg/L		0.076	0.061	0.002	0.590	0.010
Nickel	7440-02-0	0.001	mg/L		<0.001	0.011	0.009	0.017	0.007
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L		<0.005	0.082	0.055	0.090	0.074
Iron	7439-89-6	0.05	mg/L		0.31	0.21	<0.05	2.31	2.93



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FD01	North Creek 2	BORR MW09	BORR MW11	BORR MW10
Client sampling date / time				23-Oct-2019 00:00	24-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1910998-026	EP1910998-027	EP1910998-028	EP1910998-029	EP1910998-030	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.10	0.08	0.40	2.52	0.96	
Iron	7439-89-6	0.05	mg/L	0.70	1.49	0.10	13.2	5.54	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.01	<0.01	<0.01	<0.01	0.24	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.24	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.02	0.08	2.69	<0.01	0.17	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.2	0.2	0.5	4.2	0.6	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	1.2	0.3	3.2	4.2	0.8	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.08	0.02	<0.02	0.33	<0.01	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.03	<0.01	<0.01	0.05	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	30.6	8.00	2.21	129	3.62	
∅ Total Cations	----	0.01	meq/L	28.7	6.64	2.22	116	3.06	
∅ Ionic Balance	----	0.01	%	3.21	9.27	----	4.96	8.34	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FD01	North Creek 2	BORR MW09	BORR MW11	BORR MW10
Client sampling date / time				23-Oct-2019 00:00	24-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1910998-026	EP1910998-027	EP1910998-028	EP1910998-029	EP1910998-030	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	<10	<10	----	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	----	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	----	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	----	----	----	
Carbofenthion	786-19-6	0.02	µg/L	<0.02	<0.02	----	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	----	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	----	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	----	----	----	
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	----	----	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	----	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	----	----	----	
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	----	----	----	
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	----	----	----	
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	----	----	----	
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	----	----	----	
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	----	----	----	
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	----	----	----	
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FD01	North Creek 2	BORR MW09	BORR MW11	BORR MW10
Client sampling date / time					23-Oct-2019 00:00	24-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00	23-Oct-2019 00:00
Compound	CAS Number	LOR	Unit		EP1910998-026	EP1910998-027	EP1910998-028	EP1910998-029	EP1910998-030
					Result	Result	Result	Result	Result
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L		<0.05	<0.05	----	----	----
Ethoprophos	13194-48-4	0.01	µg/L		<0.01	<0.01	----	----	----
Fenamiphos	22224-92-6	0.01	µg/L		<0.01	<0.01	----	----	----
Fenchlorphos (Ronnell)	299-84-3	10	µg/L		<10	<10	----	----	----
Fenitrothion	122-14-5	2	µg/L		<2	<2	----	----	----
Fensulfothion	115-90-2	0.01	µg/L		<0.01	<0.01	----	----	----
Fenthion	55-38-9	0.05	µg/L		<0.05	<0.05	----	----	----
Malathion	121-75-5	0.02	µg/L		<0.02	<0.02	----	----	----
Mevinphos	7786-34-7	0.02	µg/L		<0.02	<0.02	----	----	----
Monocrotophos	6923-22-4	0.02	µg/L		<0.02	<0.02	----	----	----
Omethoate	1113-02-6	0.01	µg/L		<0.01	<0.01	----	----	----
Parathion	56-38-2	0.2	µg/L		<0.2	<0.2	----	----	----
Parathion-methyl	298-00-0	0.5	µg/L		<0.5	<0.5	----	----	----
Phorate	298-02-2	0.1	µg/L		<0.1	<0.1	----	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L		<0.01	<0.01	----	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L		<0.01	<0.01	----	----	----
Profenofos	41198-08-7	0.01	µg/L		<0.01	<0.01	----	----	----
Prothiofos	34643-46-4	0.1	µg/L		<0.1	<0.1	----	----	----
Sulfotep	3689-24-5	0.005	µg/L		<0.005	<0.005	----	----	----
Sulprofos	35400-43-2	0.05	µg/L		<0.05	<0.05	----	----	----
Terbufos	13071-79-9	0.01	µg/L		<0.01	<0.01	----	----	----
Temephos	3383-96-8	0.02	µg/L		<0.02	<0.02	----	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L		<0.01	<0.01	----	----	----
Triazophos	24017-47-8	0.005	µg/L		<0.005	<0.005	----	----	----
Trichlorfon	52-68-6	0.02	µg/L		<0.02	<0.02	----	----	----
Trichloronate	327-98-0	0.5	µg/L		<0.5	<0.5	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%		105	99.6	99.6	92.9	93.0
Toluene-D8	2037-26-5	2	%		95.1	97.1	95.7	97.8	96.2
4-Bromofluorobenzene	460-00-4	2	%		107	103	101	104	103



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW29	BORR MW31	----	----	----
Client sampling date / time				24-Oct-2019 00:00	24-Oct-2019 00:00	----	----	----	
Compound	CAS Number	LOR	Unit	EP1910998-031	EP1910998-032	-----	-----	-----	
				Result	Result	----	----	----	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	5.74	6.04	----	----	----	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	764	236	----	----	----	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	562	235	----	----	----	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	----	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	12	15	----	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	12	15	----	----	----	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	23	20	----	----	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	133	<10	----	----	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	165	54	----	----	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	17	3	----	----	----	
Magnesium	7439-95-4	1	mg/L	26	3	----	----	----	
Sodium	7440-23-5	1	mg/L	84	32	----	----	----	
Potassium	7440-09-7	1	mg/L	6	3	----	----	----	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.51	0.96	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----	
Chromium	7440-47-3	0.001	mg/L	0.002	<0.001	----	----	----	
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	----	----	----	
Copper	7440-50-8	0.001	mg/L	0.002	0.003	----	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	0.001	----	----	----	
Manganese	7439-96-5	0.001	mg/L	0.023	0.008	----	----	----	
Nickel	7440-02-0	0.001	mg/L	0.007	0.008	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----	
Zinc	7440-66-6	0.005	mg/L	0.422	0.086	----	----	----	
Iron	7439-89-6	0.05	mg/L	2.14	1.19	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW29	BORR MW31	----	----	----
Client sampling date / time				24-Oct-2019 00:00	24-Oct-2019 00:00	----	----	----	
Compound	CAS Number	LOR	Unit	EP1910998-031	EP1910998-032	-----	-----	-----	
				Result	Result	----	----	----	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	5.98	2.96	----	----	----	
Iron	7439-89-6	0.05	mg/L	4.62	2.17	----	----	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.48	0.84	----	----	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.48	0.84	----	----	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.01	0.05	----	----	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.4	1.6	----	----	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	1.4	1.6	----	----	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.03	0.01	----	----	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	----	----	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	0.8	0.5	----	----	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	7.66	1.82	----	----	----	
∅ Total Cations	----	0.01	meq/L	6.80	1.86	----	----	----	
∅ Ionic Balance	----	0.01	%	6.00	----	----	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	----	----	
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----	
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----	
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	----	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	----	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	----	----	----	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	----	----	----	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW29	BORR MW31	----	----	----
Client sampling date / time				24-Oct-2019 00:00	24-Oct-2019 00:00	----	----	----	
Compound	CAS Number	LOR	Unit	EP1910998-031	EP1910998-032	-----	-----	-----	
				Result	Result	----	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	----	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	----	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	----	----	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	----	----	----	
Toluene	108-88-3	2	µg/L	<2	<2	----	----	----	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	----	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	----	----	----	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	----	----	----	
^ Total Xylenes	----	2	µg/L	<2	<2	----	----	----	
^ Sum of BTEX	----	1	µg/L	<1	<1	----	----	----	
Naphthalene	91-20-3	5	µg/L	<5	<5	----	----	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	106	107	----	----	----	
Toluene-D8	2037-26-5	2	%	96.6	94.2	----	----	----	
4-Bromofluorobenzene	460-00-4	2	%	104	102	----	----	----	



## Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	61	141
Toluene-D8	2037-26-5	73	126
4-Bromofluorobenzene	460-00-4	60	125

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1910998	Page	: 1 of 18
Client	: GHD PTY LTD	Laboratory	: Environmental Division Perth
Contact	: MS VICKI DAVIES	Telephone	: 08 9406 1311
Project	: 6137041	Date Samples Received	: 25-Oct-2019
Site	: ----	Issue Date	: 11-Nov-2019
Sampler	: Emily Evans	No. of samples received	: 32
Order number	: 61370410831	No. of samples analysed	: 32

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



### Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EA005P: pH by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural</b>							
BH11.1, BORR MW25, BORR_MW37, SW06, SW08, BORR MW09, BORR MW10	BORR_MW39, BH9.2, FD02, SW07, FD01, BORR MW11,	----	----	----	01-Nov-2019	23-Oct-2019	9
<b>Clear Plastic Bottle - Natural</b>							
Northern 5, BORR MW32, BH32.1, SW09, North Creek 2, BORR MW31	MT01, BORR MW22b, FD03, BORR MW46, BORR MW29,	----	----	----	01-Nov-2019	24-Oct-2019	8
<b>EP234A: OP Pesticides</b>							
<b>Amber Bottle Unpreserved for Specialist Organics</b>							
SW06, SW08,	SW07, FD01	----	----	----	31-Oct-2019	30-Oct-2019	1

### Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
TRH - Semivolatile Fraction	1	40	2.50	10.00	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>					
TRH - Semivolatile Fraction	1	40	2.50	5.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.



Matrix: **WATER** Evaluation: ✘ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EA005P: pH by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural (EA005-P)</b> BH11.1, BORR MW25, BORR_MW37, SW06, SW08, BORR MW09, BORR MW10 BORR_MW39, BH9.2, FD02, SW07, FD01, BORR MW11,	23-Oct-2019	----	----	----	01-Nov-2019	23-Oct-2019	✘
<b>Clear Plastic Bottle - Natural (EA005-P)</b> Northern 5, BORR MW32, BH32.1, SW09, North Creek 2, BORR MW31 MT01, BORR MW22b, FD03, BORR MW46, BORR MW29,	24-Oct-2019	----	----	----	01-Nov-2019	24-Oct-2019	✘
<b>EA010P: Conductivity by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural (EA010-P)</b> BH11.1, BORR MW25, BORR_MW37, SW06, SW08, BORR MW09, BORR MW10 BORR_MW39, BH9.2, FD02, SW07, FD01, BORR MW11,	23-Oct-2019	----	----	----	01-Nov-2019	20-Nov-2019	✔
<b>Clear Plastic Bottle - Natural (EA010-P)</b> Northern 5, BORR MW32, BH32.1, SW09, North Creek 2, BORR MW31 MT01, BORR MW22b, FD03, BORR MW46, BORR MW29,	24-Oct-2019	----	----	----	01-Nov-2019	21-Nov-2019	✔



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
<b>Clear Plastic Bottle - Natural (EA015H)</b> BH11.1, BORR MW25, BORR_MW37, SW06, SW08, BORR MW09, BORR MW10	BORR_MW39, BH9.2, FD02, SW07, FD01, BORR MW11,	23-Oct-2019	----	----	----	29-Oct-2019	30-Oct-2019	✓
<b>Clear Plastic Bottle - Natural (EA015H)</b> Northern 5, BORR MW32, BH32.1, SW09, North Creek 2, BORR MW31	MT01, BORR MW22b, FD03, BORR MW46, BORR MW29,	24-Oct-2019	----	----	----	30-Oct-2019	31-Oct-2019	✓
<b>ED037P: Alkalinity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (ED037-P)</b> BH11.1, BORR MW25, BORR_MW37, SW06, SW08, BORR MW09, BORR MW10	BORR_MW39, BH9.2, FD02, SW07, FD01, BORR MW11,	23-Oct-2019	----	----	----	01-Nov-2019	06-Nov-2019	✓
<b>Clear Plastic Bottle - Natural (ED037-P)</b> Northern 5, BORR MW32, BH32.1, SW09, North Creek 2, BORR MW31	MT01, BORR MW22b, FD03, BORR MW46, BORR MW29,	24-Oct-2019	----	----	----	01-Nov-2019	07-Nov-2019	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>ED038A: Acidity</b>							
<b>Clear Plastic Bottle - Natural (ED038)</b> BH11.1, BORR MW25, BORR_MW37, SW06, SW08, BORR MW09, BORR MW10 BORR_MW39, BH9.2, FD02, SW07, FD01, BORR MW11,	23-Oct-2019	----	----	----	28-Oct-2019	06-Nov-2019	✓
<b>Clear Plastic Bottle - Natural (ED038)</b> Northern 5, BORR MW32, BH32.1, SW09, North Creek 2, BORR MW31 MT01, BORR MW22b, FD03, BORR MW46, BORR MW29,	24-Oct-2019	----	----	----	28-Oct-2019	07-Nov-2019	✓
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>							
<b>Clear Plastic Bottle - Natural (ED041G)</b> BH11.1, BORR MW25, BORR_MW37, SW06, SW08, BORR MW09, BORR MW10 BORR_MW39, BH9.2, FD02, SW07, FD01, BORR MW11,	23-Oct-2019	----	----	----	25-Oct-2019	20-Nov-2019	✓
<b>Clear Plastic Bottle - Natural (ED041G)</b> Northern 5, BORR MW32, BH32.1, SW09, North Creek 2, BORR MW31 MT01, BORR MW22b, FD03, BORR MW46, BORR MW29,	24-Oct-2019	----	----	----	25-Oct-2019	21-Nov-2019	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>ED045G: Chloride by Discrete Analyser</b>							
<b>Clear Plastic Bottle - Natural (ED045G)</b> BH11.1, BORR MW25, BORR_MW37, SW06, SW08, BORR MW09, BORR MW10 BORR_MW39, BH9.2, FD02, SW07, FD01, BORR MW11,	23-Oct-2019	----	----	----	25-Oct-2019	20-Nov-2019	✓
<b>Clear Plastic Bottle - Natural (ED045G)</b> Northern 5, BORR MW32, BH32.1, SW09, North Creek 2, BORR MW31 MT01, BORR MW22b, FD03, BORR MW46, BORR MW29,	24-Oct-2019	----	----	----	25-Oct-2019	21-Nov-2019	✓
<b>ED093F: Dissolved Major Cations</b>							
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> BH11.1, BORR MW25, BORR_MW37, SW06, SW08, BORR MW09, BORR MW10 BORR_MW39, BH9.2, FD02, SW07, FD01, BORR MW11,	23-Oct-2019	----	----	----	29-Oct-2019	20-Nov-2019	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> Northern 5, BORR MW32, BH32.1, SW09, North Creek 2, BORR MW31 MT01, BORR MW22b, FD03, BORR MW46, BORR MW29,	24-Oct-2019	----	----	----	29-Oct-2019	21-Nov-2019	✓





Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EG020F: Dissolved Metals by ICP-MS</b>							
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> BH11.1, BORR MW25, BORR_MW37, SW06, SW08, BORR MW09, BORR MW10 BORR_MW39, BH9.2, FD02, SW07, FD01, BORR MW11,	23-Oct-2019	----	----	----	29-Oct-2019	20-Apr-2020	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> Northern 5, BORR MW32, BH32.1, SW09, North Creek 2, BORR MW31 MT01, BORR MW22b, FD03, BORR MW46, BORR MW29,	24-Oct-2019	----	----	----	29-Oct-2019	21-Apr-2020	✓
<b>EG020T: Total Metals by ICP-MS</b>							
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> BH11.1, RB03, BH9.2, FD02, SW07, FD01, BORR MW11, BORR_MW39, BORR MW25, BORR_MW37, SW06, SW08, BORR MW09, BORR MW10,	23-Oct-2019	28-Oct-2019	20-Apr-2020	✓	28-Oct-2019	20-Apr-2020	✓
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> Northern 5, BORR MW32, BH32.1, RB04, BORR MW46, BORR MW29, MT01, BORR MW22b, FD03, SW09, North Creek 2, BORR MW31,	24-Oct-2019	28-Oct-2019	21-Apr-2020	✓	28-Oct-2019	21-Apr-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK055G: Ammonia as N by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> BH11.1, BORR MW25, BORR_MW37, SW06, SW08, BORR MW09, BORR MW10	BORR_MW39, BH9.2, FD02, SW07, FD01, BORR MW11,	23-Oct-2019	----	----	----	25-Oct-2019	20-Nov-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> Northern 5, BORR MW32, BH32.1, SW09, North Creek 2, BORR MW31	MT01, BORR MW22b, FD03, BORR MW46, BORR MW29,	24-Oct-2019	----	----	----	25-Oct-2019	21-Nov-2019	✓
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> BH11.1, BORR MW25, BORR_MW37, SW06, SW08, BORR MW09, BORR MW10	BORR_MW39, BH9.2, FD02, SW07, FD01, BORR MW11,	23-Oct-2019	----	----	----	25-Oct-2019	20-Nov-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> Northern 5, BORR MW32, BH32.1, SW09, North Creek 2, BORR MW31	MT01, BORR MW22b, FD03, BORR MW46, BORR MW29,	24-Oct-2019	----	----	----	25-Oct-2019	21-Nov-2019	✓



Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> BH11.1, BORR MW25, BORR_MW37, SW06, SW08, BORR MW09, BORR MW10	BORR_MW39, BH9.2, FD02, SW07, FD01, BORR MW11,	23-Oct-2019	29-Oct-2019	20-Nov-2019	✓	30-Oct-2019	20-Nov-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> Northern 5, BORR MW32, BH32.1, SW09, North Creek 2, BORR MW31	MT01, BORR MW22b, FD03, BORR MW46, BORR MW29,	24-Oct-2019	29-Oct-2019	21-Nov-2019	✓	30-Oct-2019	21-Nov-2019	✓
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> BH11.1, BORR MW25, BORR_MW37, SW06, SW08, BORR MW09, BORR MW10	BORR_MW39, BH9.2, FD02, SW07, FD01, BORR MW11,	23-Oct-2019	29-Oct-2019	20-Nov-2019	✓	30-Oct-2019	20-Nov-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> Northern 5, BORR MW32, BH32.1, SW09, North Creek 2, BORR MW31	MT01, BORR MW22b, FD03, BORR MW46, BORR MW29,	24-Oct-2019	29-Oct-2019	21-Nov-2019	✓	30-Oct-2019	21-Nov-2019	✓



Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>								
<b>Clear Plastic Bottle - Natural (EK071G)</b>								
BH11.1, BORR MW25, BORR_MW37, SW06, SW08, BORR MW09, BORR MW10	BORR_MW39, BH9.2, FD02, SW07, FD01, BORR MW11,	23-Oct-2019	----	----	----	25-Oct-2019	25-Oct-2019	✓
<b>Clear Plastic Bottle - Natural (EK071G)</b>								
Northern 5, BORR MW32, BH32.1, SW09, North Creek 2, BORR MW31	MT01, BORR MW22b, FD03, BORR MW46, BORR MW29,	24-Oct-2019	----	----	----	25-Oct-2019	26-Oct-2019	✓
<b>EK085M: Sulfide as S2-</b>								
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b>								
BH11.1, BORR MW25, BORR_MW37, SW06, SW08, BORR MW09, BORR MW10	BORR_MW39, BH9.2, FD02, SW07, FD01, BORR MW11,	23-Oct-2019	----	----	----	28-Oct-2019	30-Oct-2019	✓
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b>								
Northern 5, BORR MW32, BH32.1, SW09, North Creek 2, BORR MW31	MT01, BORR MW22b, FD03, BORR MW46, BORR MW29,	24-Oct-2019	----	----	----	28-Oct-2019	31-Oct-2019	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
<b>Amber Glass Bottle - Unpreserved (EP071)</b>									
BH11.1, BORR MW25, BORR_MW37, SW06, SW08, BORR MW09, BORR MW10	BORR_MW39, BH9.2, FD02, SW07, FD01, BORR MW11,	23-Oct-2019	30-Oct-2019	30-Oct-2019	✓	31-Oct-2019	09-Dec-2019	✓	
<b>Amber Glass Bottle - Unpreserved (EP071)</b>									
Northern 5, BORR MW32, BH32.1, SW09, North Creek 2, BORR MW31	MT01, BORR MW22b, FD03, BORR MW46, BORR MW29,	24-Oct-2019	30-Oct-2019	31-Oct-2019	✓	31-Oct-2019	09-Dec-2019	✓	
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>									
BH11.1, TBW 961, BORR MW25, BORR_MW37, SW06, SW08, BORR MW09, BORR MW10	BORR_MW39, FB03, BH9.2, FD02, SW07, FD01, BORR MW11,	23-Oct-2019	31-Oct-2019	06-Nov-2019	✓	31-Oct-2019	06-Nov-2019	✓	
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>									
Northern 5, BORR MW32, BH32.1, FB04, BORR MW46, TBW 963, North Creek 2, BORR MW31	MT01, BORR MW22b, FD03, SW09, TBW 957, TBW 962, BORR MW29,	24-Oct-2019	31-Oct-2019	07-Nov-2019	✓	31-Oct-2019	07-Nov-2019	✓	



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>								
<b>Amber Glass Bottle - Unpreserved (EP071)</b>								
BH11.1, BORR MW25, BORR_MW37, SW06, SW08, BORR MW09, BORR MW10	BORR_MW39, BH9.2, FD02, SW07, FD01, BORR MW11,	23-Oct-2019	30-Oct-2019	30-Oct-2019	✓	31-Oct-2019	09-Dec-2019	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b>								
Northern 5, BORR MW32, BH32.1, SW09, North Creek 2, BORR MW31	MT01, BORR MW22b, FD03, BORR MW46, BORR MW29,	24-Oct-2019	30-Oct-2019	31-Oct-2019	✓	31-Oct-2019	09-Dec-2019	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
BH11.1, TBW 961, BORR MW25, BORR_MW37, SW06, SW08, BORR MW09, BORR MW10	BORR_MW39, FB03, BH9.2, FD02, SW07, FD01, BORR MW11,	23-Oct-2019	31-Oct-2019	06-Nov-2019	✓	31-Oct-2019	06-Nov-2019	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
Northern 5, BORR MW32, BH32.1, FB04, BORR MW46, TBW 963, North Creek 2, BORR MW31	MT01, BORR MW22b, FD03, SW09, TBW 957, TBW 962, BORR MW29,	24-Oct-2019	31-Oct-2019	07-Nov-2019	✓	31-Oct-2019	07-Nov-2019	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080: BTEXN</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BH11.1, TBW 961, BORR MW25, BORR_MW37, SW06, SW08, BORR MW09, BORR MW10	BORR_MW39, FB03, BH9.2, FD02, SW07, FD01, BORR MW11,	23-Oct-2019	31-Oct-2019	06-Nov-2019	✓	31-Oct-2019	06-Nov-2019	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> Northern 5, BORR MW32, BH32.1, FB04, BORR MW46, TBW 963, North Creek 2, BORR MW31	MT01, BORR MW22b, FD03, SW09, TBW 957, TBW 962, BORR MW29,	24-Oct-2019	31-Oct-2019	07-Nov-2019	✓	31-Oct-2019	07-Nov-2019	✓
<b>EP204: Glyphosate and AMPA</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b> SW06, SW08,	SW07, FD01	23-Oct-2019	----	----	----	30-Oct-2019	06-Nov-2019	✓
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b> Northern 5, North Creek 2	SW09,	24-Oct-2019	----	----	----	30-Oct-2019	07-Nov-2019	✓
<b>EP234A: OP Pesticides</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> SW06, SW08,	SW07, FD01	23-Oct-2019	----	----	----	31-Oct-2019	30-Oct-2019	*
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> Northern 5, North Creek 2	SW09,	24-Oct-2019	----	----	----	31-Oct-2019	31-Oct-2019	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Laboratory Duplicates (DUP)</b>							
Acidity as Calcium Carbonate	ED038	4	38	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	3	24	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	4	31	12.90	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	4	39	10.26	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	9	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	3	24	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	2	14	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	34	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	3	29	10.34	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	3	29	10.34	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	35	11.43	10.53	✔	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	29	10.34	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	29	10.34	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	40	2.50	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	30	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Acidity as Calcium Carbonate	ED038	2	38	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	4	24	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	31	6.45	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	39	5.13	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	24	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	34	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	29	6.90	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	29	13.79	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	35	11.43	10.53	✔	NEPM 2013 B3 & ALS QC Standard





Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Alkalinity by PC Titrator	ED037-P	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	35	5.71	5.26	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	40	2.50	5.00	*	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3)  Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3)  Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ammonium as N	EK055G-NH4	WATER	Ammonium in the sample is reported as the ionised / unionised fractions by the use of a nomograph and the initial pH and Temperature. Ammonia is determined by direct colorimetry by Discrete Analyser according to APHA 4500-NH3 G. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Sulfide as S2-	EK085	WATER	In house: Referenced to APHA 4500-S2- D. Sulfide species present in water samples are immediately precipitated when collected in pretreated caustic/zinc acetate preserved sample containers. The sulphides are coloured using methylene blue indicator. Non-detects may be screened by comparison against a standard at half-LOR, otherwise samples are measured using UV-VIS detection at 664nm. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatle Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Glyphosate and AMPA	EP204	WATER	In house: Pre-column derivatisation LCMS (ES in negative mode). Water samples are derivatised with 9-fluorenyl methoxycarbonyl chloroformate (FMOC) in alkaline condition. The derivatives of glyphosate and AMPA are separated by a C8 column and determined by MS.
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CHAIN OF CUSTODY RECORD  
AND ANALYSIS REQUEST



GHD  
Level 10, 999 Hay Street  
Perth WA 6000

PO Box 3106  
Perth WA 6832

Reception Ph: 08 6222 8222

Page 1 of 2

Project ID (as per ESDat set up; no spaces) **6137041**  
PO Number (to be invoiced) **6137041 0831**

Laboratory: **ALS Laboratory**  
Address: **26 Rigali Way, Wangara, WA**  
Laboratory Contact: **Marnie Thompson**

Laboratory Quote No. **EP/489/19 v4**  
Turnaround Time Standard

Job Manager (Invoice) & GHD accounts  
**Julia Roberts**  
**Vicki Davies**  
Email Address (Results)  
**Emily.Evans@ghd.com**  
**Vicki.Davies@ghd.com**

GHD Sample ID	Lab Sample ID	Date	Time	Sample Matrix S-Soil/S Sludge/W-Water/A-Air	Container					As per GHD suite EP/489/19 v4	As per SW suite EP/489/19 v4	As per EP/489/19 v4	HOLD	Remarks
					Type B-Bottle/Jar/N- Vial/Bag/G-glass/P-Plastic	Preservative Unpreserved/HCl/ H2SO4/HNO3/Other	No	Analyses						
BH11.1	1	23/10/19		W	B		8	✓						
BORR_MW39	2	23/10/19		W	B		8	✓						
TBW 961	3	23/10/19		W	B		1			✓				
FB03	4	23/10/19		W	B		2			✓				
RB03	5	23/10/19		W	B		1			✓				
BORR MW25	6	23/10/19		W	B		8	✓						
<del>GS04</del>		<del>23/10/19</del>		<del>S</del>	<del>J</del>		<del>1</del>							
BH9.2	7	23/10/19		W	B		8	✓						
BORR_MW37	8	23/10/19		W	B		8	✓						
FD02	9	23/10/19		W	B		8	✓						
<del>AS01</del>		<del>23/10/19</del>		<del>S</del>	<del>J</del>		<del>1</del>							
<del>GS05</del>		<del>23/10/19</del>		<del>S</del>	<del>J</del>		<del>1</del>							
<del>GS06</del>		<del>23/10/19</del>		<del>S</del>	<del>J</del>		<del>1</del>							
Northern 5	10	24/10/19		W	B		9			✓				
MT01	11	24/10/19		W	B		8			✓				No green amber bottles
BORR MW32	12	24/10/19		W	B		8	✓						
BORR MW226	13	24/10/19		W	B		8	✓						

Environmental Division  
Perth  
Work Order Reference  
**EP1910998**



Telephone 61-8-9406 1301

Sampled by: **Emily Evans** Date/Time: **23/10/19** Relinquished by: **EE** Date/Time: **23/10/19**  
Received by: **NO** Date/Time: **25/10/19** Relinquished by: Date/Time:

12:15

CHAIN OF CUSTODY RECORD  
AND ANALYSIS REQUEST



GHD  
Level 10, 999 Hay Street  
Perth WA 6000  
PO Box 3106  
Perth WA 6832

Reception Ph: 08 6222 8222

Project ID (as per ESdat set up; no spaces)  
6137041

PO Number (to be invoiced)  
6137041 0831

Laboratory: ALS Laboratory  
Address: 26 Rigali Way, Wangara, WA  
Laboratory Contact: Marnie Thompson

Laboratory Quote No.  
EP/489/19 V4

Turnaround Time  
Standard

Job Manager (Invoice) & GHD accounts  
Julia Roblas  
Vicki Davies

Email Address (Results)  
emily.evans@ghd.com  
vicki.davies@ghd.com

GHD Sample ID	Lab Sample ID	Date	Time	Sample Matrix - Soil / Sl. / Sludge / W-Water / A-Air	Container			Analyses										HOLD	Remarks				
					Type - Bottle / Jar / Vial / Bag / G-Glass / P-Plastic	Preservative - Unpreserved / HCl / H2SO4 / HNO3 / Other	No	AS per GWS suite EP/489/19 V4	AS per SW suite EP/489/19 V4	AS per EP/489/19 V4													
BH32.1	14	24/10/19		W	B		8	✓															
FD03	15	24/10/19		W	B		8	✓															
FS01	16	24/10/19		W	B		8	✓	----->														
RB04	17	24/10/19		W	B		1			W	✓												
FB04	18	24/10/19		W	B		1			W	✓												
SW09	19	24/10/19		W	B		9			✓													
BORR MW46	20	24/10/19		W	B		8	✓															
TBW 957	21	24/10/19		W	B		1				✓												
TBW 963	22	24/10/19		W	B		1				✓												
TBW 962	23	24/10/19		W	B		1				✓												
SW06	24																						
SW07	25																						
SW08	26																						
FD01	27																						
North Creek 2	28																						
BORR MW09	29																						
BORR MW11	30																						

Sampled by: Emily Evans

Date/Time: 24/10/19

Relinquished by: EE

Date/Time: 24/10/19

Received by: NO

Date/Time: 25/10/19

Relinquished by:

Date/Time:

12:15

③① BORR MW10

③② BORR MW29

③③ BORR MW31

## CERTIFICATE OF ANALYSIS

**Work Order** : **EP1911129**  
**Client** : **GHD PTY LTD**  
**Contact** : **MS VICKI DAVIES**  
**Address** : **999 HAY STREET**  
**PERTH WA, AUSTRALIA 6000**  
**Telephone** : **----**  
**Project** : **6137041**  
**Order number** : **6137041 0831**  
**C-O-C number** : **----**  
**Sampler** : **DOMINIQUE SHUTTLEWORTH, Emily Evans**  
**Site** : **----**  
**Quote number** : **EP/489/19 V4**  
**No. of samples received** : **10**  
**No. of samples analysed** : **10**

**Page** : 1 of 10  
**Laboratory** : Environmental Division Perth  
**Contact** : Marnie Thomsett  
**Address** : 26 Rigali Way Wangara WA Australia 6065  
**Telephone** : 08 9406 1311  
**Date Samples Received** : 29-Oct-2019 12:30  
**Date Analysis Commenced** : 29-Oct-2019  
**Issue Date** : 12-Nov-2019 16:38



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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Vanessa Nguyen	Organic Chemist	Perth Organics, Wangara, WA





## General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP204 and EP234-1 conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- EG020: Metals LOR for sample EP1911129-002 raised due to high TDS content.
- ED041G (Turbidimetric Sulfate): LOR raised on sample #3 due to possible sample matrix interference.
- EG050G-T (Hexavalent Chromium): LOR for sample EP1911129-010 raised due to possible sample matrix interference.
- EG050G-T (Hexavalent Chromium): Poor Hexavalent Chromium spike recoveries due to sample matrix effects. Confirmed by re-analysis.
- TDS by method EA-015 may bias high for sample #3 and #8 due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	North Creek 4	MRMW05	BORR MW08a	FB05	TBW 964
Client sampling date / time				28-Oct-2019 00:00	28-Oct-2019 00:00	28-Oct-2019 00:00	28-Oct-2019 00:00	28-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1911129-001	EP1911129-002	EP1911129-003	EP1911129-004	EP1911129-005	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	7.57	6.29	6.19	----	----	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	3240	19900	534	----	----	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	2020	15300	584	----	----	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	44	129	48	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	44	129	48	----	----	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	6	51	23	----	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	63	960	<10	----	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	933	7590	135	----	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	48	170	15	----	----	
Magnesium	7439-95-4	1	mg/L	109	680	12	----	----	
Sodium	7440-23-5	1	mg/L	423	3770	68	----	----	
Potassium	7440-09-7	1	mg/L	4	38	7	----	----	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.02	<0.05	0.32	----	----	
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.009	0.002	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0005	<0.0001	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.005	0.001	----	----	
Cobalt	7440-48-4	0.001	mg/L	0.001	<0.005	<0.001	----	----	
Copper	7440-50-8	0.001	mg/L	0.012	<0.005	0.011	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.005	<0.001	----	----	
Manganese	7439-96-5	0.001	mg/L	0.439	0.189	0.050	----	----	
Nickel	7440-02-0	0.001	mg/L	0.011	0.007	0.012	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.05	<0.01	----	----	
Zinc	7440-66-6	0.005	mg/L	0.094	0.068	0.083	----	----	
Iron	7439-89-6	0.05	mg/L	<0.05	23.6	2.30	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	North Creek 4	MRMW05	BORR MW08a	FB05	TBW 964
Client sampling date / time				28-Oct-2019 00:00	28-Oct-2019 00:00	28-Oct-2019 00:00	28-Oct-2019 00:00	28-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1911129-001	EP1911129-002	EP1911129-003	EP1911129-004	EP1911129-005	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.16	0.96	12.3	----	----	
Iron	7439-89-6	0.05	mg/L	0.53	27.9	4.91	----	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.01	0.23	0.24	----	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	<0.01	0.23	0.24	----	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	----	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.5	1.1	2.9	----	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.5	1.1	2.9	----	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.03	0.12	1.01	----	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.01	0.46	----	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	----	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	28.5	237	4.77	----	----	
∅ Total Cations	----	0.01	meq/L	29.9	229	4.87	----	----	
∅ Ionic Balance	----	0.01	%	2.33	1.56	1.10	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	----	----	
C15 - C28 Fraction	----	100	µg/L	<100	140	<100	----	----	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	140	<50	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	North Creek 4	MRMW05	BORR MW08a	FB05	TBW 964
Client sampling date / time				28-Oct-2019 00:00	28-Oct-2019 00:00	28-Oct-2019 00:00	28-Oct-2019 00:00	28-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1911129-001	EP1911129-002	EP1911129-003	EP1911129-004	EP1911129-005	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	100	<100	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	100	<100	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	----	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	<10	----	----	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	----	----	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	----	----	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	----	----	----	----	
Carbofenthion	786-19-6	0.02	µg/L	<0.02	----	----	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	----	----	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	----	----	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	----	----	----	----	
Coumaphos	56-72-4	0.01	µg/L	<0.01	----	----	----	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	----	----	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	----	----	----	----	
Demeton-O	298-03-3	0.02	µg/L	<0.02	----	----	----	----	
Demeton-S	126-75-0	0.02	µg/L	<0.02	----	----	----	----	
Diazinon	333-41-5	0.01	µg/L	<0.01	----	----	----	----	
Dichlorvos	62-73-7	0.20	µg/L	<0.20	----	----	----	----	
Dimethoate	60-51-5	0.02	µg/L	<0.02	----	----	----	----	
Disulfoton	298-04-4	0.05	µg/L	<0.05	----	----	----	----	
Ethion	563-12-2	0.02	µg/L	<0.02	----	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	North Creek 4	MRMW05	BORR MW08a	FB05	TBW 964
Client sampling date / time					28-Oct-2019 00:00	28-Oct-2019 00:00	28-Oct-2019 00:00	28-Oct-2019 00:00	28-Oct-2019 00:00
Compound	CAS Number	LOR	Unit		EP1911129-001	EP1911129-002	EP1911129-003	EP1911129-004	EP1911129-005
					Result	Result	Result	Result	Result
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L		<0.05	----	----	----	----
Ethoprophos	13194-48-4	0.01	µg/L		<0.01	----	----	----	----
Fenamiphos	22224-92-6	0.01	µg/L		<0.01	----	----	----	----
Fenchlorphos (Rannel)	299-84-3	10	µg/L		<10	----	----	----	----
Fenitrothion	122-14-5	2	µg/L		<2	----	----	----	----
Fensulfothion	115-90-2	0.01	µg/L		<0.01	----	----	----	----
Fenthion	55-38-9	0.05	µg/L		<0.05	----	----	----	----
Malathion	121-75-5	0.02	µg/L		<0.02	----	----	----	----
Mevinphos	7786-34-7	0.02	µg/L		<0.02	----	----	----	----
Monocrotophos	6923-22-4	0.02	µg/L		<0.02	----	----	----	----
Omethoate	1113-02-6	0.01	µg/L		<0.01	----	----	----	----
Parathion	56-38-2	0.2	µg/L		<0.2	----	----	----	----
Parathion-methyl	298-00-0	0.5	µg/L		<0.5	----	----	----	----
Phorate	298-02-2	0.1	µg/L		<0.1	----	----	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L		<0.01	----	----	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L		<0.01	----	----	----	----
Profenofos	41198-08-7	0.01	µg/L		<0.01	----	----	----	----
Prothiofos	34643-46-4	0.1	µg/L		<0.1	----	----	----	----
Sulfotep	3689-24-5	0.005	µg/L		<0.005	----	----	----	----
Sulprofos	35400-43-2	0.05	µg/L		<0.05	----	----	----	----
Terbufos	13071-79-9	0.01	µg/L		<0.01	----	----	----	----
Temephos	3383-96-8	0.02	µg/L		<0.02	----	----	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L		<0.01	----	----	----	----
Triazophos	24017-47-8	0.005	µg/L		<0.005	----	----	----	----
Trichlorfon	52-68-6	0.02	µg/L		<0.02	----	----	----	----
Trichloronate	327-98-0	0.5	µg/L		<0.5	----	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%		102	106	105	96.7	98.1
Toluene-D8	2037-26-5	2	%		96.1	97.1	95.0	95.7	95.3
4-Bromofluorobenzene	460-00-4	2	%		97.3	99.9	97.8	96.4	96.4



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW04	BORR MW05	BORR MW06	RB05	BORR MW10
Client sampling date / time				28-Oct-2019 00:00	28-Oct-2019 00:00	28-Oct-2019 00:00	28-Oct-2019 00:00	28-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1911129-006	EP1911129-007	EP1911129-008	EP1911129-009	EP1911129-010	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	7.19	6.80	6.76	----	----	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	3940	1160	690	----	----	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	2410	683	492	----	----	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	301	79	71	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	301	79	71	----	----	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	26	14	16	----	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	233	108	31	----	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	942	262	158	----	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	170	27	32	----	----	
Magnesium	7439-95-4	1	mg/L	65	19	19	----	----	
Sodium	7440-23-5	1	mg/L	577	185	75	----	----	
Potassium	7440-09-7	1	mg/L	4	6	15	----	----	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.01	0.09	0.08	----	----	
Arsenic	7440-38-2	0.001	mg/L	0.002	0.001	<0.001	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.001	----	----	
Cobalt	7440-48-4	0.001	mg/L	0.002	<0.001	<0.001	----	----	
Copper	7440-50-8	0.001	mg/L	0.010	0.008	0.001	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	0.001	<0.001	----	----	
Manganese	7439-96-5	0.001	mg/L	0.166	0.015	0.326	----	----	
Nickel	7440-02-0	0.001	mg/L	0.009	0.013	0.001	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----	
Zinc	7440-66-6	0.005	mg/L	0.066	0.115	0.010	----	----	
Iron	7439-89-6	0.05	mg/L	4.72	1.22	19.3	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW04	BORR MW05	BORR MW06	RB05	BORR MW10
Client sampling date / time				28-Oct-2019 00:00	28-Oct-2019 00:00	28-Oct-2019 00:00	28-Oct-2019 00:00	28-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1911129-006	EP1911129-007	EP1911129-008	EP1911129-009	EP1911129-010	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	1.25	6.63	3.17	----	----	
Arsenic	7440-38-2	0.001	mg/L	----	----	----	<0.001	----	
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	<0.0001	----	
Chromium	7440-47-3	0.001	mg/L	----	----	----	<0.001	----	
Copper	7440-50-8	0.001	mg/L	----	----	----	<0.001	----	
Nickel	7440-02-0	0.001	mg/L	----	----	----	<0.001	----	
Lead	7439-92-1	0.001	mg/L	----	----	----	<0.001	----	
Zinc	7440-66-6	0.005	mg/L	----	----	----	<0.005	----	
Iron	7439-89-6	0.05	mg/L	7.94	3.63	32.3	----	----	
<b>EG050T: Total Hexavalent Chromium</b>									
Hexavalent Chromium	18540-29-9	0.01	mg/L	----	----	----	----	<0.02	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.27	0.10	0.42	----	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.27	0.10	0.42	----	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.01	0.20	----	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.4	1.6	2.1	----	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.4	1.6	2.3	----	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.08	0.09	0.12	----	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.01	<0.01	----	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	----	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	37.4	11.2	6.52	----	----	
∅ Total Cations	----	0.01	meq/L	39.0	11.1	6.81	----	----	
∅ Ionic Balance	----	0.01	%	2.09	0.48	2.14	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW04	BORR MW05	BORR MW06	RB05	BORR MW10
Client sampling date / time				28-Oct-2019 00:00	28-Oct-2019 00:00	28-Oct-2019 00:00	28-Oct-2019 00:00	28-Oct-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1911129-006	EP1911129-007	EP1911129-008	EP1911129-009	EP1911129-010	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>									
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	----	----	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	----	----	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	----	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	----	----	
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	----	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----	
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	----	----	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	----	----	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	93.7	99.5	99.4	----	----	
Toluene-D8	2037-26-5	2	%	96.8	95.2	97.2	----	----	
4-Bromofluorobenzene	460-00-4	2	%	97.1	98.7	100.0	----	----	





## Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	61	141
Toluene-D8	2037-26-5	73	126
4-Bromofluorobenzene	460-00-4	60	125

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1911129	Page	: 1 of 11
Client	: GHD PTY LTD	Laboratory	: Environmental Division Perth
Contact	: MS VICKI DAVIES	Telephone	: 08 9406 1311
Project	: 6137041	Date Samples Received	: 29-Oct-2019
Site	: ----	Issue Date	: 12-Nov-2019
Sampler	: DOMINIQUE SHUTTLEWORTH, Emily Evans	No. of samples received	: 10
Order number	: 6137041 0831	No. of samples analysed	: 10

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



### Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
EG050T: Total Hexavalent Chromium	EP1911129--010	BORR MW10	Hexavalent Chromium	18540-29-9	62.8 %	70.0-130%	Recovery less than lower data quality objective

### Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EA005P: pH by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural</b>							
North Creek 4, BORR MW08a, BORR MW05,	MRMW05, BORR MW04, BORR MW06	----	----	----	02-Nov-2019	28-Oct-2019	5

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EA005P: pH by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural (EA005-P)</b>							
North Creek 4, BORR MW08a, BORR MW05,	MRMW05, BORR MW04, BORR MW06	28-Oct-2019	----	----	02-Nov-2019	28-Oct-2019	*
<b>EA010P: Conductivity by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural (EA010-P)</b>							
North Creek 4, BORR MW08a, BORR MW05,	MRMW05, BORR MW04, BORR MW06	28-Oct-2019	----	----	02-Nov-2019	25-Nov-2019	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
<b>Clear Plastic Bottle - Natural (EA015H)</b> North Creek 4, BORR MW08a, BORR MW05,	MRMW05, BORR MW04, BORR MW06	28-Oct-2019	----	----	----	04-Nov-2019	04-Nov-2019	✓
<b>ED037P: Alkalinity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (ED037-P)</b> North Creek 4, BORR MW08a, BORR MW05,	MRMW05, BORR MW04, BORR MW06	28-Oct-2019	----	----	----	02-Nov-2019	11-Nov-2019	✓
<b>ED038A: Acidity</b>								
<b>Clear Plastic Bottle - Natural (ED038)</b> North Creek 4, BORR MW08a, BORR MW05,	MRMW05, BORR MW04, BORR MW06	28-Oct-2019	----	----	----	01-Nov-2019	11-Nov-2019	✓
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
<b>Clear Plastic Bottle - Natural (ED041G)</b> North Creek 4, BORR MW08a, BORR MW05,	MRMW05, BORR MW04, BORR MW06	28-Oct-2019	----	----	----	29-Oct-2019	25-Nov-2019	✓
<b>ED045G: Chloride by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Natural (ED045G)</b> North Creek 4, BORR MW08a, BORR MW05,	MRMW05, BORR MW04, BORR MW06	28-Oct-2019	----	----	----	29-Oct-2019	25-Nov-2019	✓
<b>ED093F: Dissolved Major Cations</b>								
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> North Creek 4, BORR MW08a, BORR MW05,	MRMW05, BORR MW04, BORR MW06	28-Oct-2019	----	----	----	30-Oct-2019	25-Nov-2019	✓
<b>EG020F: Dissolved Metals by ICP-MS</b>								
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> North Creek 4, BORR MW08a, BORR MW05,	MRMW05, BORR MW04, BORR MW06	28-Oct-2019	----	----	----	30-Oct-2019	25-Apr-2020	✓
<b>EG020T: Total Metals by ICP-MS</b>								
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> North Creek 4, BORR MW08a, BORR MW05, RB05	MRMW05, BORR MW04, BORR MW06	28-Oct-2019	31-Oct-2019	25-Apr-2020	✓	31-Oct-2019	25-Apr-2020	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EG050T: Total Hexavalent Chromium</b>							
Clear Plastic Bottle - NaOH (EG050G-T) BORR MW10	28-Oct-2019	----	----	----	05-Nov-2019	25-Nov-2019	✓
<b>EK055G: Ammonia as N by Discrete Analyser</b>							
Clear Plastic Bottle - Sulfuric Acid (EK055G) North Creek 4, MRMW05, BORR MW08a, BORR MW04, BORR MW05, BORR MW06	28-Oct-2019	----	----	----	29-Oct-2019	25-Nov-2019	✓
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>							
Clear Plastic Bottle - Sulfuric Acid (EK059G) North Creek 4, MRMW05, BORR MW08a, BORR MW04, BORR MW05, BORR MW06	28-Oct-2019	----	----	----	29-Oct-2019	25-Nov-2019	✓
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>							
Clear Plastic Bottle - Sulfuric Acid (EK061G) North Creek 4, MRMW05, BORR MW08a, BORR MW04, BORR MW05, BORR MW06	28-Oct-2019	05-Nov-2019	25-Nov-2019	✓	05-Nov-2019	25-Nov-2019	✓
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>							
Clear Plastic Bottle - Sulfuric Acid (EK067G) North Creek 4, MRMW05, BORR MW08a, BORR MW04, BORR MW05, BORR MW06	28-Oct-2019	05-Nov-2019	25-Nov-2019	✓	05-Nov-2019	25-Nov-2019	✓
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>							
Clear Plastic Bottle - Natural (EK071G) North Creek 4, MRMW05, BORR MW08a, BORR MW04, BORR MW05, BORR MW06	28-Oct-2019	----	----	----	29-Oct-2019	30-Oct-2019	✓
<b>EK085M: Sulfide as S2-</b>							
Clear Plastic Bottle - Zinc Acetate/NaOH (EK085) North Creek 4, MRMW05, BORR MW08a, BORR MW04, BORR MW05, BORR MW06	28-Oct-2019	----	----	----	31-Oct-2019	04-Nov-2019	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
<b>Amber Glass Bottle - Unpreserved (EP071)</b> North Creek 4, BORR MW08a, BORR MW05,	MRMW05, BORR MW04, BORR MW06	28-Oct-2019	02-Nov-2019	04-Nov-2019	✓	04-Nov-2019	12-Dec-2019	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> North Creek 4, BORR MW08a, TBW 964, BORR MW05,	MRMW05, FB05, BORR MW04, BORR MW06	28-Oct-2019	01-Nov-2019	11-Nov-2019	✓	01-Nov-2019	11-Nov-2019	✓
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>								
<b>Amber Glass Bottle - Unpreserved (EP071)</b> North Creek 4, BORR MW08a, BORR MW05,	MRMW05, BORR MW04, BORR MW06	28-Oct-2019	02-Nov-2019	04-Nov-2019	✓	04-Nov-2019	12-Dec-2019	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> North Creek 4, BORR MW08a, TBW 964, BORR MW05,	MRMW05, FB05, BORR MW04, BORR MW06	28-Oct-2019	01-Nov-2019	11-Nov-2019	✓	01-Nov-2019	11-Nov-2019	✓
<b>EP080: BTEXN</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> North Creek 4, BORR MW08a, TBW 964, BORR MW05,	MRMW05, FB05, BORR MW04, BORR MW06	28-Oct-2019	01-Nov-2019	11-Nov-2019	✓	01-Nov-2019	11-Nov-2019	✓
<b>EP204: Glyphosate and AMPA</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b> North Creek 4		28-Oct-2019	----	----	----	05-Nov-2019	11-Nov-2019	✓
<b>EP234A: OP Pesticides</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> North Creek 4		28-Oct-2019	----	----	----	31-Oct-2019	04-Nov-2019	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Laboratory Duplicates (DUP)</b>							
Acidity as Calcium Carbonate	ED038	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Total	EG050G-T	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	15	13.33	10.53	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Acidity as Calcium Carbonate	ED038	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Total	EG050G-T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Sulfide as S2-	EK085	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	15	13.33	10.53	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Total	EG050G-T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	15	6.67	5.26	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Ammonia as N by Discrete analyser	EK055G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Total	EG050G-T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard





Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3)  Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3)  Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Hexavalent Chromium by Discrete Analyser - Total	EG050G-T	WATER	In house: Referenced to APHA 3500 Cr-A & B. Hexavalent chromium is determined directly on water sample by Discrete Analyser as received by pH adjustment and colour development using dephenylcarbazine. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G. Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ammonium as N	EK055G-NH4	WATER	Ammonium in the sample is reported as the ionised / unionised fractions by the use of a nomograph and the initial pH and Temperature. Ammonia is determined by direct colorimetry by Discrete Analyser according to APHA 4500-NH3 G. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F. Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Sulfide as S2-	EK085	WATER	In house: Referenced to APHA 4500-S2- D. Sulfide species present in water samples are immediately precipitated when collected in pretreated caustic/zinc acetate preserved sample containers. The sulphides are coloured using methylene blue indicator. Non-detects may be screened by comparison against a standard at half-LOR, otherwise samples are measured using UV-VIS detection at 664nm. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatle Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A. The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B. Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Glyphosate and AMPA	EP204	WATER	In house: Pre-column derivatisation LCMS (ES in negative mode). Water samples are derivatised with 9-fluorenyl methoxycarbonyl chloroformate (FMOC) in alkaline condition. The derivatives of glyphosate and AMPA are separated by a C8 column and determined by MS.
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

**CHAIN OF CUSTODY RECORD  
AND ANALYSIS REQUEST**



GHD  
Level 10, 999 Hay Street  
Perth WA 6000

PO Box 3106  
Perth WA 6832

Reception Ph: 08 6222 8222

Project ID (as per ESDat set up; no spaces) **6137041** PO Number (to be invoiced) **6137041 0831**

Laboratory: **ALS Laboratory**  
Address: **26 Rigali Way, Wangara WA**  
Laboratory Contact: **Marnie Thompson**

Laboratory Quote No. **EP1489/19 V4** Turnaround Time Standard

Job Manager (Invoice) & GHD accounts **Julia Roberts  
Vicki Davies** Email Address (Results) **Emily.Evans@ghd.com  
Vicki.Davies@ghd.com**

GHD Sample ID	Lab Sample ID	Date	Time	Sample Matrix (Soil/Sludge/W-Water/A-Air)	Container Type (B-Bottle/I-Inj/V-Vial/Bag/G-Glass/P-Plastic)	Preservative (Unpreserved/HCl/H2SO4/HNO3/Other)	No	Aspercan suit	AS per SWS suit	AS per EP/489/19 V4	AS per EP/489/19 V4	AS per EP/489/19 V4	Cr6	Specification	HOLD	Remarks
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NOAH Creek 4	1	28/10/19		W	B		9		✓							
MRMN05	2	28/10/19		W	B		8	✓								
BORR MN08a	3	28/10/19		W	B		8	✓								
FB05	4	28/10/19		W	B		1			✓						
TBW 964	5	28/10/19		W	B		1			✓						
<del>SW10</del>		<del>28/10/19</del>		<del>W</del>	<del>B</del>		<del>10</del>	<del>✓</del>								
BORR MN04	6	28/10/19		W	B		8	✓								
BORR MN05	7	28/10/19		W	B		8	✓								
BORR MN06	8	28/10/19		W	B		8	✓								
RB05	9	28/10/19		W	B		1			✓						
BORR MW10	10	28/10/19		W	B		1				✓					

Perth  
Work Order Reference  
**EP1911129**

Telephone : + 61-8-9406 1301

Sampled by: **Emily Evans / Dom Shuttleworth** Date/Time: **28/10/19** Relinquished by: **EE / DS** Date/Time: **28/10/19**

Received by: **Louff** Date/Time: **29/10 1230** Relinquished by: Date/Time:

GHD Pty Ltd WA  
999 Hay Street Perth  
Perth  
WA 6004



NATA Accredited  
Accreditation Number 1261  
Site Number 23736

Accredited for compliance with ISO/IEC 17025 – Testing  
The results of the tests, calibrations and/or  
measurements included in this document are traceable  
to Australian/national standards.

Attention: **Emily Evans**

Report **685136-W**

Project name

Project ID **6137041**

Received Date **Oct 29, 2019**

Client Sample ID			<b>FS01</b>
Sample Matrix			<b>Water</b>
Eurofins Sample No.			<b>P19-Oc44630</b>
Date Sampled			<b>Oct 24, 2019</b>
Test/Reference	LOR	Unit	
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>			
TRH C6-C9	0.02	mg/L	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1
TRH C10-C36 (Total)	0.1	mg/L	< 0.1
<b>BTEX</b>			
Benzene	0.001	mg/L	< 0.001
Toluene	0.001	mg/L	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002
o-Xylene	0.001	mg/L	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003
4-Bromofluorobenzene (surr.)	1	%	115
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>			
Naphthalene <sup>N02</sup>	0.01	mg/L	< 0.01
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	0.05	mg/L	< 0.05
TRH C6-C10	0.02	mg/L	< 0.02
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	0.02	mg/L	< 0.02
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>			
TRH >C10-C16	0.05	mg/L	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1
<b>Acidity (as CaCO3)</b>			
Acidity (as CaCO3)	10	mg/L	91
<b>Ammonia (as N)</b>			
Ammonia (as N)	0.01	mg/L	0.05
<b>Ammonium Ion (as N)</b>			
Ammonium Ion (as N)	0.01	mg/L	0.05
<b>Chloride</b>			
Chloride	1	mg/L	1600
<b>Conductivity (at 25°C)</b>			
Conductivity (at 25°C)	10	uS/cm	5000
<b>Nitrate &amp; Nitrite (as N)</b>			
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05
<b>pH (at 25°C)</b>			
pH (at 25°C)	0.1	pH Units	4.3
<b>Phosphate total (as P)</b>			
Phosphate total (as P)	0.01	mg/L	0.05
<b>Phosphorus filterable reactive (as P)</b>			
Phosphorus filterable reactive (as P)	0.01	mg/L	< 0.01
<b>Sulphate (as S)</b>			
Sulphate (as S)	5	mg/L	120
<b>Total Dissolved Solids Dried at 180°C ± 2°C</b>			
Total Dissolved Solids Dried at 180°C ± 2°C	10	mg/L	3000

<b>Client Sample ID</b>			<b>FS01</b>
<b>Sample Matrix</b>			<b>Water</b>
<b>Eurofins Sample No.</b>			<b>P19-Oc44630</b>
<b>Date Sampled</b>			<b>Oct 24, 2019</b>
Test/Reference	LOR	Unit	
<b>Total Kjeldahl Nitrogen (as N)</b>			
	0.2	mg/L	< 0.2
<b>Total Nitrogen (as N)*</b>			
	0.2	mg/L	< 0.2
<b>Alkalinity (speciated)</b>			
<b>Total Alkalinity (as CaCO<sub>3</sub>)</b>			
	20	mg/L	< 20
<b>Heavy Metals</b>			
Aluminium	0.05	mg/L	2.7
Aluminium (filtered)	0.05	mg/L	1.8
Arsenic (filtered)	0.001	mg/L	0.005
Cadmium (filtered)	0.0002	mg/L	< 0.0002
Chromium (filtered)	0.001	mg/L	0.002
Iron	0.05	mg/L	9.3
Iron (filtered)	0.05	mg/L	7.8
Manganese (filtered)	0.005	mg/L	0.13
Nickel (filtered)	0.001	mg/L	0.62
Selenium (filtered)	0.001	mg/L	< 0.001
Zinc (filtered)	0.005	mg/L	0.026
<b>Alkali Metals</b>			
Sodium	0.5	mg/L	820

**Sample History**

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
<b>Eurofins   mgt Suite B1</b>			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Perth	Oct 29, 2019	7 Days
BTEX - Method: LTM-ORG-2010 TRH C6-C40	Perth	Oct 29, 2019	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Perth	Oct 29, 2019	7 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Perth	Oct 29, 2019	
<b>ASS Groundwater Quality Suite - WA Department of Environment and Conservation</b>			
Acidity (as CaCO <sub>3</sub> ) - Method: LTM-INO-4210 Acidity	Perth	Oct 29, 2019	14 Days
Ammonia (as N) - Method: LTM-INO-4200 Ammonia by Discrete Analyser	Perth	Oct 29, 2019	28 Days
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Oct 30, 2019	28 Days
Conductivity (at 25°C) - Method: LTM-INO-4030 Conductivity	Perth	Oct 29, 2019	28 Days
pH (at 25°C) - Method: LTM-GEN-7090 pH in water by ISE	Perth	Oct 29, 2019	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorus	Melbourne	Oct 30, 2019	28 Days
Phosphorus filterable reactive (as P) - Method: APHA 4500-P Phosphate (filterable reactive)	Melbourne	Oct 30, 2019	2 Days
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Oct 30, 2019	28 Days
Total Dissolved Solids Dried at 180°C ± 2°C - Method: LTM-INO-4170 Total Dissolved Solids in Water	Melbourne	Oct 30, 2019	7 Days
Alkalinity (speciated) - Method: LTM-INO-4250 Alkalinity by Electrometric Titration	Perth	Oct 29, 2019	14 Days
Heavy Metals - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Perth	Oct 30, 2019	180 Days
Acid Sulphate Metals : Metals M9 filtered - Method:	Perth	Oct 29, 2019	180 Days
Alkali Metals - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Perth	Oct 30, 2019	180 Days
Ammonium Ion (as N) - Method: APHA 4500-NH <sub>3</sub> Ammonia Nitrogen by FIA	Perth	Oct 29, 2019	7 Days
<b>Total Nitrogen Set (as N)</b>			
Nitrate & Nitrite (as N) - Method: LTM-INO-4120 Analysis of NO <sub>x</sub> NO <sub>2</sub> NH <sub>3</sub> by FIA	Melbourne	Oct 30, 2019	28 Days
Total Kjeldahl Nitrogen (as N) - Method: LTM-INO-4310 TKN in Waters & Soils by FIA	Melbourne	Oct 30, 2019	7 Days



<b>Company Name:</b> GHD Pty Ltd WA	<b>Order No.:</b>	<b>Received:</b> Oct 29, 2019 9:49 AM
<b>Address:</b> 999 Hay Street Perth Perth WA 6004	<b>Report #:</b> 685136	<b>Due:</b> Nov 5, 2019
<b>Project Name:</b>	<b>Phone:</b> 08 6222 8222	<b>Priority:</b> 5 Day
<b>Project ID:</b> 6137041	<b>Fax:</b> 08 9429 6555	<b>Contact Name:</b> Emily Evans

**Eurofins Analytical Services Manager : Robert Johnston**

Sample Detail						Ammonium Ion (as N)	ASS Groundwater Quality Suite - WA Department of Environment and	Eurofins   mgt Suite B1
Melbourne Laboratory - NATA Site # 1254 & 14271							X	
Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794								
Perth Laboratory - NATA Site # 23736						X	X	X
External Laboratory								
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID			
1	FS01	Oct 24, 2019		Water	P19-Oc44630	X	X	X
<b>Test Counts</b>						1	1	1

## Internal Quality Control Review and Glossary

### General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
- All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
- This report replaces any interim results previously issued.

### Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

**\*\*NOTE:** pH duplicates are reported as a range NOT as RPD

### Units

**mg/kg:** milligrams per kilogram

**mg/L:** milligrams per litre

**ug/L:** micrograms per litre

**ppm:** Parts per million

**ppb:** Parts per billion

**%:** Percentage

**org/100mL:** Organisms per 100 millilitres

**NTU:** Nephelometric Turbidity Units

**MPN/100mL:** Most Probable Number of organisms per 100 millilitres

### Terms

<b>Dry</b>	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
<b>LOR</b>	Limit of Reporting.
<b>SPIKE</b>	Addition of the analyte to the sample and reported as percentage recovery.
<b>RPD</b>	Relative Percent Difference between two Duplicate pieces of analysis.
<b>LCS</b>	Laboratory Control Sample - reported as percent recovery.
<b>CRM</b>	Certified Reference Material - reported as percent recovery.
<b>Method Blank</b>	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
<b>Surr - Surrogate</b>	The addition of a like compound to the analyte target and reported as percentage recovery.
<b>Duplicate</b>	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
<b>USEPA</b>	United States Environmental Protection Agency
<b>APHA</b>	American Public Health Association
<b>TCLP</b>	Toxicity Characteristic Leaching Procedure
<b>COC</b>	Chain of Custody
<b>SRA</b>	Sample Receipt Advice
<b>QSM</b>	US Department of Defense Quality Systems Manual Version 5.3
<b>CP</b>	Client Parent - QC was performed on samples pertaining to this report
<b>NCP</b>	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
<b>TEQ</b>	Toxic Equivalency Quotient

### QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

### QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

**Quality Control Results**

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
<b>Method Blank</b>							
<b>BTEX</b>							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
<b>Method Blank</b>							
Acidity (as CaCO <sub>3</sub> )	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Phosphate total (as P)	mg/L	< 0.01			0.01	Pass	
Phosphorus filterable reactive (as P)	mg/L	< 0.01			0.01	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
<b>Method Blank</b>							
<b>Heavy Metals</b>							
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
<b>LCS - % Recovery</b>							
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>							
TRH C6-C9	%	101			70-130	Pass	
TRH C10-C14	%	87			70-130	Pass	
<b>LCS - % Recovery</b>							
<b>BTEX</b>							
Benzene	%	75			70-130	Pass	
Toluene	%	109			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Ethylbenzene	%	108			70-130	Pass		
m&p-Xylenes	%	118			70-130	Pass		
Xylenes - Total	%	117			70-130	Pass		
<b>LCS - % Recovery</b>								
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>								
Naphthalene	%	93			70-130	Pass		
TRH C6-C10	%	106			70-130	Pass		
<b>LCS - % Recovery</b>								
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>								
TRH >C10-C16	%	102			70-130	Pass		
<b>LCS - % Recovery</b>								
Acidity (as CaCO <sub>3</sub> )	%	101			70-130	Pass		
Ammonia (as N)	%	104			70-130	Pass		
Chloride	%	104			70-130	Pass		
Nitrate & Nitrite (as N)	%	105			70-130	Pass		
Phosphate total (as P)	%	98			70-130	Pass		
Sulphate (as S)	%	109			70-130	Pass		
Total Dissolved Solids Dried at 180°C ± 2°C	%	98			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	83			70-130	Pass		
<b>LCS - % Recovery</b>								
<b>Heavy Metals</b>								
Aluminium (filtered)	%	112			80-120	Pass		
Arsenic (filtered)	%	108			80-120	Pass		
Cadmium (filtered)	%	102			80-120	Pass		
Chromium (filtered)	%	109			80-120	Pass		
Iron (filtered)	%	108			80-120	Pass		
Manganese (filtered)	%	106			80-120	Pass		
Nickel (filtered)	%	107			80-120	Pass		
Selenium (filtered)	%	107			80-120	Pass		
Zinc (filtered)	%	105			80-120	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
<b>Spike - % Recovery</b>								
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>				Result 1				
TRH C6-C9	P19-Oc42404	NCP	%	83		70-130	Pass	
TRH C10-C14	P19-Oc46345	NCP	%	103		70-130	Pass	
<b>Spike - % Recovery</b>								
<b>BTEX</b>				Result 1				
Benzene	P19-Oc42404	NCP	%	74		70-130	Pass	
Toluene	P19-Oc42404	NCP	%	95		70-130	Pass	
Ethylbenzene	P19-Oc42404	NCP	%	104		70-130	Pass	
m&p-Xylenes	P19-Oc42404	NCP	%	108		70-130	Pass	
o-Xylene	P19-Oc42404	NCP	%	110		70-130	Pass	
Xylenes - Total	P19-Oc42404	NCP	%	109		70-130	Pass	
<b>Spike - % Recovery</b>								
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1				
Naphthalene	P19-Oc46340	NCP	%	88		70-130	Pass	
TRH C6-C10	P19-Oc42404	NCP	%	85		70-130	Pass	
<b>Spike - % Recovery</b>								
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1				
TRH >C10-C16	P19-Oc46345	NCP	%	113		70-130	Pass	
<b>Spike - % Recovery</b>								
				Result 1				
Ammonia (as N)	P19-Oc41571	NCP	%	102		70-130	Pass	
Chloride	P19-Oc41571	NCP	%	84		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Phosphate total (as P)	P19-Oc41556	NCP	%	99			70-130	Pass	
Sulphate (as S)	W19-Oc40422	NCP	%	102			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	S19-Oc44341	NCP	%	85			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Heavy Metals</b>				Result 1					
Aluminium	P19-Oc49755	NCP	%	89			75-125	Pass	
Aluminium (filtered)	P19-Oc44596	NCP	%	103			75-125	Pass	
Cadmium (filtered)	P19-Oc44596	NCP	%	98			70-130	Pass	
Chromium (filtered)	P19-Oc44596	NCP	%	90			70-130	Pass	
Iron	P19-Oc49755	NCP	%	89			75-125	Pass	
Iron (filtered)	P19-Oc44596	NCP	%	89			70-130	Pass	
Manganese (filtered)	P19-Oc44596	NCP	%	91			70-130	Pass	
Selenium (filtered)	P19-Oc44596	NCP	%	87			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Alkali Metals</b>				Result 1					
Sodium	P19-Oc49755	NCP	%	84			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Duplicate</b>									
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>				Result 1	Result 2	RPD			
TRH C6-C9	P19-Oc44630	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	P19-Oc44630	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	P19-Oc44630	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	P19-Oc44630	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
<b>Duplicate</b>									
<b>BTEX</b>				Result 1	Result 2	RPD			
Benzene	P19-Oc44630	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	P19-Oc44630	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	P19-Oc44630	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	P19-Oc44630	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	P19-Oc44630	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	P19-Oc44630	CP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
<b>Duplicate</b>									
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1	Result 2	RPD			
Naphthalene	P19-Oc44630	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	P19-Oc44630	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
<b>Duplicate</b>									
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1	Result 2	RPD			
TRH >C10-C16	P19-Oc44630	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	P19-Oc44630	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	P19-Oc44630	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
<b>Duplicate</b>									
				Result 1	Result 2	RPD			
Ammonia (as N)	P19-Oc44796	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Chloride	W19-Oc40383	NCP	mg/L	190	160	16	30%	Pass	
Conductivity (at 25°C)	P19-Oc45054	NCP	uS/cm	1300	1300	<1	30%	Pass	
Nitrate & Nitrite (as N)	M19-Oc37369	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
pH (at 25°C)	P19-Oc45054	NCP	pH Units	6.4	6.4	1.0	30%	Pass	
Phosphate total (as P)	P19-Oc41566	NCP	mg/L	0.14	0.13	3.0	30%	Pass	
Sulphate (as S)	W19-Oc40383	NCP	mg/L	170	170	<1	30%	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	M19-Oc41668	NCP	mg/L	1000	1300	23	30%	Pass	
Total Kjeldahl Nitrogen (as N)	S19-Oc44312	NCP	mg/L	67	52	24	30%	Pass	
<b>Duplicate</b>									
<b>Alkalinity (speciated)</b>				Result 1	Result 2	RPD			
Total Alkalinity (as CaCO <sub>3</sub> )	P19-Oc45054	NCP	mg/L	120	120	<1	30%	Pass	

<b>Duplicate</b>								
<b>Heavy Metals</b>				Result 1	Result 2	RPD		
Aluminium	P19-Oc49753	NCP	mg/L	1.9	1.7	10	30%	Pass
Aluminium (filtered)	P19-Oc45202	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Arsenic (filtered)	P19-Oc45202	NCP	mg/L	0.003	0.002	5.0	30%	Pass
Cadmium (filtered)	P19-Oc45202	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium (filtered)	P19-Oc45202	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	P19-Oc49753	NCP	mg/L	5.0	4.7	6.0	30%	Pass
Iron (filtered)	P19-Oc45202	NCP	mg/L	0.38	0.38	1.0	30%	Pass
Manganese (filtered)	P19-Oc45202	NCP	mg/L	0.010	0.010	1.0	30%	Pass
Nickel (filtered)	P19-Oc45202	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium (filtered)	P19-Oc45202	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	P19-Oc45202	NCP	mg/L	0.017	0.017	2.0	30%	Pass
<b>Duplicate</b>								
<b>Alkali Metals</b>				Result 1	Result 2	RPD		
Sodium	P19-Oc49753	NCP	mg/L	49	47	4.0	30%	Pass

**Comments**
**Sample Integrity**

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

**Qualifier Codes/Comments**

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.

**Authorised By**

Robert Johnston	Analytical Services Manager
Elden Garrett	Senior Analyst-Metal (WA)
Elden Garrett	Senior Analyst-Organic (WA)
Elden Garrett	Senior Analyst-Volatile (WA)
Julie Kay	Senior Analyst-Inorganic (VIC)
Rhys Thomas	Senior Analyst-Inorganic (WA)


**Glenn Jackson  
General Manager**

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

\* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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## Robert Johnston

**To:** Emily.Evans@ghd.com  
**Subject:** RE: 6137041 - no COC provided

**From:** [Emily.Evans@ghd.com](mailto:Emily.Evans@ghd.com) [mailto:Emily.Evans@ghd.com]  
**Sent:** Tuesday, 29 October 2019 9:49 AM  
**To:** Robert Johnston  
**Cc:** Vicki Davies  
**Subject:** FW: 6137041 - no COC provided

Caitlyn Gibson Ch  
29/10/19 Eurobins  
# 685136

Hi Robert,

Could FS01 please be analysed as per the groundwater suite below.

Parameter	ALS Code	Technique/ Method Reference	Limit Of Reporting (LOR)
TRH/BTEXN	W-04	USEPA 8015A, USEPA 8260B	1 - 100 µg/L
Acid Sulphate Soil GW Suite - Extended Cl, SO <sub>4</sub> , Alkalinity, Acidity, pH, E.C., TDS, Dissolved Ca, Mg, Na, K, Fe, Mn, Al by ICP-AES or MS. Total N, TKN, NO <sub>x</sub> , Ammonia, Total & Reactive P; Total Al & Fe; Sulfide; Dissolved As, Cd, Co, Cu, Pb, Fe, Mn, Al, Cr, Ni, Se, Zn by ICPMS	ASSGW-2	Various	0.0001 - 10 mg/L, 0.01 pH Unit, 1 µS/cm, 0.01 %, 0.01 meq/L
Ammonium as N	EK055G- NH4	Calculation	0.01 mg/L

Kind regards,

**Emily Evans**  
**Graduate Environmental Scientist**

### GHD

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T: + 61 8 9721 0744 | E: [Emily.Evans@ghd.com](mailto:Emily.Evans@ghd.com)  
10 Victoria Street, Bunbury WA 6230 Australia | [www.ghd.com](http://www.ghd.com)

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**From:** Vicki Davies <[Vicki.Davies@ghd.com](mailto:Vicki.Davies@ghd.com)>  
**Sent:** Tuesday, 29 October 2019 9:43 AM  
**To:** Emily Evans <[Emily.Evans@ghd.com](mailto:Emily.Evans@ghd.com)>  
**Subject:** FW: 6137041 - no COC provided

Hi Emily

Could you please follow this up with Robert at Eurofins?

Cheers  
Vicki

**From:** Robert Johnston <[RobertJohnston@eurofins.com](mailto:RobertJohnston@eurofins.com)>  
**Sent:** Tuesday, 29 October 2019 8:18 AM  
**To:** Vicki Davies <[Vicki.Davies@ghd.com](mailto:Vicki.Davies@ghd.com)>; Julia Roberts <[Julia.Roberts@ghd.com](mailto:Julia.Roberts@ghd.com)>  
**Subject:** 6137041 - no COC provided

Hi Vicki and Julia,

We have received sample FS01 (sampled 24/10) without a COC. Can you please advise on the analysis required?

Kind Regards,

Robert Johnston  
Analytical Services Manager, WA

**Eurofins** | Environment Testing  
Unit 2, 91 Leach Highway  
KEWDALE WA 6105  
AUSTRALIA

Phone: +61 (0)8 9251 9605  
Mobile: +61 (0)4 2357 9286

Email: [RobertJohnston@Eurofins.com](mailto:RobertJohnston@Eurofins.com)  
Website: [environment.eurofins.com.au](http://environment.eurofins.com.au)



Date/Time: 29/10/19  
Chilled:  Yes /  No  
Temp: 16.3  
16.2  
16.4  
Correction: +0.7  
Final Temp: 16.5°C

**Eurofins Fast TAT Service Expansion**  
Eurofins has expanded the NATA accredited Fast TAT services on offer in Perth. Leveraging existing Fast TAT Asbestos & Water services, the available scope now includes a range of Waste Classification and Contaminated Sites determinations.

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## CERTIFICATE OF ANALYSIS

<b>Work Order</b>	: <b>EP1912183</b>	Page	: 1 of 27
<b>Client</b>	: <b>GHD PTY LTD</b>	Laboratory	: Environmental Division Perth
<b>Contact</b>	: <b>MS VICKI DAVIES</b>	<b>Contact</b>	: <b>Marnie Thomsett</b>
<b>Address</b>	: <b>999 HAY STREET</b> <b>PERTH WA, AUSTRALIA 6000</b>	<b>Address</b>	: <b>26 Rigali Way Wangara WA Australia 6065</b>
<b>Telephone</b>	: ----	<b>Telephone</b>	: <b>08 9406 1311</b>
<b>Project</b>	: <b>6137041</b>	<b>Date Samples Received</b>	: <b>20-Nov-2019 12:20</b>
<b>Order number</b>	: <b>6137041 (08.0831)</b>	<b>Date Analysis Commenced</b>	: <b>20-Nov-2019</b>
<b>C-O-C number</b>	: ----	<b>Issue Date</b>	: <b>02-Dec-2019 13:55</b>
<b>Sampler</b>	: <b>DOMINIQUE SHUTTLEWORTH, Emily Evans</b>		
<b>Site</b>	: ----		
<b>Quote number</b>	: <b>EP/489/19 V4</b>		
<b>No. of samples received</b>	: <b>33</b>		
<b>No. of samples analysed</b>	: <b>33</b>		



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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
Daniel Fisher	Inorganics Analyst	Perth Inorganics, Wangara, WA
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Gaston Allende	R&D Chemist	Sydney Organics, Smithfield, NSW



## General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP204, EP234-1, EP071 and EP080 conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- EP234: Poor matrix spike recovery for particular compounds due to matrix interferences.
- EG020: It is recognised that total aluminium, iron concentration is less than dissolved for sample EP1912183-006. However, the difference is within experimental variation of the methods.
- ED041G (Turbidimetric Sulfate): LOR raised on various samples due to possible sample matrix interferences (sample colour).
- EA015H (Total Dissolved Solids): TDS for various samples biasing high due to possible sample matrix interferences.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- Ionic balances were calculated using: major anions - chloride, alkalinity, sulfate and NOx; and major cations - calcium, magnesium, potassium and sodium for #7.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID				
				North Creek 2	BH32.1	SW09	SW08	SW07
Client sampling date / time				18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EP1912183-001	EP1912183-002	EP1912183-003	EP1912183-004	EP1912183-005
				Result	Result	Result	Result	Result
<b>EA005P: pH by PC Titrator</b>								
pH Value	----	0.01	pH Unit	7.20	3.79	7.50	7.31	7.32
<b>EA010P: Conductivity by PC Titrator</b>								
Electrical Conductivity @ 25°C	----	1	µS/cm	807	6060	732	1040	1030
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
Total Dissolved Solids @180°C	----	10	mg/L	460	3690	458	590	604
<b>ED037P: Alkalinity by PC Titrator</b>								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	32	<1	138	35	34
Total Alkalinity as CaCO3	----	1	mg/L	32	<1	138	35	34
<b>ED038A: Acidity</b>								
Acidity as CaCO3	----	1	mg/L	7	13	16	9	8
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	30	418	<30	34	32
<b>ED045G: Chloride by Discrete Analyser</b>								
Chloride	16887-00-6	1	mg/L	260	1930	187	346	324
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	8	7	16	13	11
Magnesium	7439-95-4	1	mg/L	19	122	10	27	27
Sodium	7440-23-5	1	mg/L	136	1090	132	163	143
Potassium	7440-09-7	1	mg/L	7	3	8	7	8
<b>EG020F: Dissolved Metals by ICP-MS</b>								
Aluminium	7429-90-5	0.01	mg/L	0.03	3.00	0.04	0.02	0.02
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.008	0.001	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0003	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	0.004	0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	0.001	0.996	<0.001	0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.021	0.027	0.022	0.018	0.002
Lead	7439-92-1	0.001	mg/L	0.001	0.004	0.001	0.001	<0.001
Manganese	7439-96-5	0.001	mg/L	0.094	0.174	0.045	0.107	0.091
Nickel	7440-02-0	0.001	mg/L	0.016	1.06	0.014	0.018	0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	0.090	0.102	0.054	0.093	0.023
Iron	7439-89-6	0.05	mg/L	0.26	10.0	0.84	0.18	0.19



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	North Creek 2	BH32.1	SW09	SW08	SW07
Client sampling date / time					18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1912183-001	EP1912183-002	EP1912183-003	EP1912183-004	EP1912183-005
					Result	Result	Result	Result	Result
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L		0.18	4.44	0.18	0.08	0.07
Iron	7439-89-6	0.05	mg/L		2.01	32.5	5.31	1.90	1.72
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L		0.02	0.02	<0.01	<0.01	0.01
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L		0.02	0.02	<0.01	<0.01	<0.01
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L		0.02	0.02	0.01	<0.01	<0.01
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.2	0.5	1.1	0.3	0.3
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L		0.2	0.5	1.1	0.3	0.3
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L		<0.01	0.10	0.07	<0.01	0.02
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	<0.01	0.01	<0.01	<0.01
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L		8.60	63.1	8.03	11.2	10.5
∅ Total Cations	----	0.01	meq/L		8.06	57.9	7.57	10.1	9.20
∅ Ionic Balance	----	0.01	%		3.24	4.35	2.98	4.82	6.55
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	<100



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	North Creek 2	BH32.1	SW09	SW08	SW07
Client sampling date / time				18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912183-001	EP1912183-002	EP1912183-003	EP1912183-004	EP1912183-005	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	<10	----	<10	<10	<10	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	----	<0.02	<0.02	<0.02	
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	----	<0.02	<0.02	<0.02	
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	----	<0.10	<0.10	<0.10	
Carbofenthiion	786-19-6	0.02	µg/L	<0.02	----	<0.02	<0.02	<0.02	
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	----	<0.02	<0.02	<0.02	
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	----	<0.02	<0.02	<0.02	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	----	<0.2	<0.2	<0.2	
Coumaphos	56-72-4	0.01	µg/L	<0.01	----	<0.01	<0.01	<0.01	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	----	<0.02	<0.02	<0.02	
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	----	<0.02	<0.02	<0.02	
Demeton-O	298-03-3	0.02	µg/L	<0.02	----	<0.02	<0.02	<0.02	
Demeton-S	126-75-0	0.02	µg/L	<0.02	----	<0.02	<0.02	<0.02	
Diazinon	333-41-5	0.01	µg/L	<0.01	----	<0.01	<0.01	<0.01	
Dichlorvos	62-73-7	0.20	µg/L	<0.20	----	<0.20	<0.20	<0.20	
Dimethoate	60-51-5	0.02	µg/L	<0.02	----	<0.02	<0.02	<0.02	
Disulfoton	298-04-4	0.05	µg/L	<0.05	----	<0.05	<0.05	<0.05	
Ethion	563-12-2	0.02	µg/L	<0.02	----	<0.02	<0.02	<0.02	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	North Creek 2	BH32.1	SW09	SW08	SW07
Client sampling date / time					18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1912183-001	EP1912183-002	EP1912183-003	EP1912183-004	EP1912183-005
					Result	Result	Result	Result	Result
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L		<0.05	----	<0.05	<0.05	<0.05
Ethoprophos	13194-48-4	0.01	µg/L		<0.01	----	<0.01	<0.01	<0.01
Fenamiphos	22224-92-6	0.01	µg/L		<0.01	----	<0.01	<0.01	<0.01
Fenchlorphos (Rannel)	299-84-3	10	µg/L		<10	----	<10	<10	<10
Fenitrothion	122-14-5	2	µg/L		<2	----	<2	<2	<2
Fensulfothion	115-90-2	0.01	µg/L		<0.01	----	<0.01	<0.01	<0.01
Fenthion	55-38-9	0.05	µg/L		<0.05	----	<0.05	<0.05	<0.05
Malathion	121-75-5	0.02	µg/L		<0.02	----	<0.02	<0.02	<0.02
Mevinphos	7786-34-7	0.02	µg/L		<0.02	----	<0.02	<0.02	<0.02
Monocrotophos	6923-22-4	0.02	µg/L		<0.02	----	<0.02	<0.02	<0.02
Omethoate	1113-02-6	0.01	µg/L		<0.01	----	<0.01	<0.01	<0.01
Parathion	56-38-2	0.2	µg/L		<0.2	----	<0.2	<0.2	<0.2
Parathion-methyl	298-00-0	0.5	µg/L		<0.5	----	<0.5	<0.5	<0.5
Phorate	298-02-2	0.1	µg/L		<0.1	----	<0.1	<0.1	<0.1
Pirimiphos-ethyl	23505-41-1	0.01	µg/L		<0.01	----	<0.01	<0.01	<0.01
Pirimiphos-methyl	29232-93-7	0.01	µg/L		<0.01	----	<0.01	<0.01	<0.01
Profenofos	41198-08-7	0.01	µg/L		<0.01	----	<0.01	<0.01	<0.01
Prothiofos	34643-46-4	0.1	µg/L		<0.1	----	<0.1	<0.1	<0.1
Sulfotep	3689-24-5	0.005	µg/L		<0.005	----	<0.005	<0.005	<0.005
Sulprofos	35400-43-2	0.05	µg/L		<0.05	----	<0.05	<0.05	<0.05
Terbufos	13071-79-9	0.01	µg/L		<0.01	----	<0.01	<0.01	<0.01
Temephos	3383-96-8	0.02	µg/L		<0.02	----	<0.02	<0.02	<0.02
Tetrachlorvinphos	22248-79-9	0.01	µg/L		<0.01	----	<0.01	<0.01	<0.01
Triazophos	24017-47-8	0.005	µg/L		<0.005	----	<0.005	<0.005	<0.005
Trichlorfon	52-68-6	0.02	µg/L		<0.02	----	<0.02	<0.02	<0.02
Trichloronate	327-98-0	0.5	µg/L		<0.5	----	<0.5	<0.5	<0.5
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%		112	116	121	110	114
Toluene-D8	2037-26-5	2	%		112	118	120	113	108
4-Bromofluorobenzene	460-00-4	2	%		96.8	104	105	103	104



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW13	BORR MW18	BORR MW19	BORR MW19b	North Creek 4
Client sampling date / time				18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912183-006	EP1912183-007	EP1912183-008	EP1912183-009	EP1912183-010	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.95	4.71	7.49	6.67	7.43	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	692	295	9640	2020	3120	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	467	184	5880	1200	2180	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	226	<1	182	54	44	
Total Alkalinity as CaCO3	----	1	mg/L	226	<1	182	54	44	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	61	29	37	45	8	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	75	13	216	35	62	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	58	38	3180	652	977	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	11	15	70	17	56	
Magnesium	7439-95-4	1	mg/L	14	5	230	49	104	
Sodium	7440-23-5	1	mg/L	145	24	1730	329	435	
Potassium	7440-09-7	1	mg/L	2	13	3	6	13	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.08	0.76	0.01	<0.01	0.02	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.006	0.034	0.002	0.002	
Copper	7440-50-8	0.001	mg/L	0.002	0.023	0.006	<0.001	0.019	
Lead	7439-92-1	0.001	mg/L	<0.001	0.002	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.011	0.314	1.36	0.129	0.952	
Nickel	7440-02-0	0.001	mg/L	0.002	0.022	0.009	0.004	0.018	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	<0.005	0.080	0.097	0.024	0.105	
Iron	7439-89-6	0.05	mg/L	3.01	0.05	4.10	5.14	0.44	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW13	BORR MW18	BORR MW19	BORR MW19b	North Creek 4
Client sampling date / time				18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912183-006	EP1912183-007	EP1912183-008	EP1912183-009	EP1912183-010	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.05	1.91	5.56	1.52	0.13	
Iron	7439-89-6	0.05	mg/L	2.88	0.67	5.60	6.82	1.35	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.05	<0.01	0.03	0.04	0.10	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.05	<0.01	0.03	0.04	0.10	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.03	16.8	0.57	0.02	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.0	5.1	1.0	<0.1	1.8	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	1.0	21.9	1.6	<0.1	1.8	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	<0.01	0.02	0.04	0.01	0.13	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.08	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	----	2.54	----	----	----	
∅ Total Anions	----	0.01	meq/L	7.71	----	97.8	20.2	29.7	
∅ Total Cations	----	0.01	meq/L	8.06	2.54	97.7	19.3	30.6	
∅ Ionic Balance	----	0.01	%	----	0.11	----	----	----	
∅ Ionic Balance	----	0.01	%	2.20	----	0.04	2.16	1.45	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW13	BORR MW18	BORR MW19	BORR MW19b	North Creek 4
Client sampling date / time				18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912183-006	EP1912183-007	EP1912183-008	EP1912183-009	EP1912183-010	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	----	----	----	<10	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	----	----	----	<0.02	
Azinphos-methyl	86-50-0	0.02	µg/L	----	----	----	----	<0.02	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	----	----	----	<0.10	
Carbofenthiion	786-19-6	0.02	µg/L	----	----	----	----	<0.02	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	----	----	----	<0.02	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	----	----	----	<0.02	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	----	----	----	<0.2	
Coumaphos	56-72-4	0.01	µg/L	----	----	----	----	<0.01	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	----	----	----	<0.02	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	----	----	----	<0.02	
Demeton-O	298-03-3	0.02	µg/L	----	----	----	----	<0.02	
Demeton-S	126-75-0	0.02	µg/L	----	----	----	----	<0.02	
Diazinon	333-41-5	0.01	µg/L	----	----	----	----	<0.01	
Dichlorvos	62-73-7	0.20	µg/L	----	----	----	----	<0.20	
Dimethoate	60-51-5	0.02	µg/L	----	----	----	----	<0.02	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW13	BORR MW18	BORR MW19	BORR MW19b	North Creek 4
Client sampling date / time					18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EP1912183-006	EP1912183-007	EP1912183-008	EP1912183-009	EP1912183-010	EP1912183-010
				Result	Result	Result	Result	Result	Result
<b>EP234A: OP Pesticides - Continued</b>									
Disulfoton	298-04-4	0.05	µg/L	----	----	----	----	----	<0.05
Ethion	563-12-2	0.02	µg/L	----	----	----	----	----	<0.02
EPN	2104-64-5	0.05	µg/L	----	----	----	----	----	<0.05
Ethoprophos	13194-48-4	0.01	µg/L	----	----	----	----	----	<0.01
Fenamiphos	22224-92-6	0.01	µg/L	----	----	----	----	----	<0.01
Fenchlorphos (Ronnell)	299-84-3	10	µg/L	----	----	----	----	----	<10
Fenitrothion	122-14-5	2	µg/L	----	----	----	----	----	<2
Fensulfothion	115-90-2	0.01	µg/L	----	----	----	----	----	<0.01
Fenthion	55-38-9	0.05	µg/L	----	----	----	----	----	<0.05
Malathion	121-75-5	0.02	µg/L	----	----	----	----	----	<0.02
Mevinphos	7786-34-7	0.02	µg/L	----	----	----	----	----	<0.02
Monocrotophos	6923-22-4	0.02	µg/L	----	----	----	----	----	<0.02
Omethoate	1113-02-6	0.01	µg/L	----	----	----	----	----	<0.01
Parathion	56-38-2	0.2	µg/L	----	----	----	----	----	<0.2
Parathion-methyl	298-00-0	0.5	µg/L	----	----	----	----	----	<0.5
Phorate	298-02-2	0.1	µg/L	----	----	----	----	----	<0.1
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	----	----	----	----	----	<0.01
Pirimiphos-methyl	29232-93-7	0.01	µg/L	----	----	----	----	----	<0.01
Profenofos	41198-08-7	0.01	µg/L	----	----	----	----	----	<0.01
Prothiofos	34643-46-4	0.1	µg/L	----	----	----	----	----	<0.1
Sulfotep	3689-24-5	0.005	µg/L	----	----	----	----	----	<0.005
Sulprofos	35400-43-2	0.05	µg/L	----	----	----	----	----	<0.05
Terbufos	13071-79-9	0.01	µg/L	----	----	----	----	----	<0.01
Temephos	3383-96-8	0.02	µg/L	----	----	----	----	----	<0.02
Tetrachlorvinphos	22248-79-9	0.01	µg/L	----	----	----	----	----	<0.01
Triazophos	24017-47-8	0.005	µg/L	----	----	----	----	----	<0.005
Trichlorfon	52-68-6	0.02	µg/L	----	----	----	----	----	<0.02
Trichloronate	327-98-0	0.5	µg/L	----	----	----	----	----	<0.5
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	116	111	111	109	119	119
Toluene-D8	2037-26-5	2	%	122	117	119	109	116	116
4-Bromofluorobenzene	460-00-4	2	%	113	106	108	99.4	111	111



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW22b	FD01	TBW 1140	FB01	RB01
Client sampling date / time				18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912183-011	EP1912183-012	EP1912183-014	EP1912183-015	EP1912183-016	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.29	6.72	----	----	----	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	13400	2010	----	----	----	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	8840	1280	----	----	----	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	----	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	36	55	----	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	36	55	----	----	----	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	122	45	----	----	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	407	36	----	----	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	4540	648	----	----	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	123	18	----	----	----	
Magnesium	7439-95-4	1	mg/L	366	50	----	----	----	
Sodium	7440-23-5	1	mg/L	2270	338	----	----	----	
Potassium	7440-09-7	1	mg/L	5	7	----	----	----	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.05	0.02	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	0.002	0.001	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----	
Cobalt	7440-48-4	0.001	mg/L	0.159	0.002	----	----	----	
Copper	7440-50-8	0.001	mg/L	0.010	0.010	----	----	----	
Lead	7439-92-1	0.001	mg/L	0.001	<0.001	----	----	----	
Manganese	7439-96-5	0.001	mg/L	0.524	0.133	----	----	----	
Nickel	7440-02-0	0.001	mg/L	0.092	0.019	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----	
Zinc	7440-66-6	0.005	mg/L	0.107	0.093	----	----	----	
Iron	7439-89-6	0.05	mg/L	23.7	4.98	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW22b	FD01	TBW 1140	FB01	RB01
Client sampling date / time				18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912183-011	EP1912183-012	EP1912183-014	EP1912183-015	EP1912183-016	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	2.17	1.44	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	----	----	----	----	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	----	<0.0001	
Chromium	7440-47-3	0.001	mg/L	----	----	----	----	<0.001	
Copper	7440-50-8	0.001	mg/L	----	----	----	----	<0.001	
Nickel	7440-02-0	0.001	mg/L	----	----	----	----	<0.001	
Lead	7439-92-1	0.001	mg/L	----	----	----	----	<0.001	
Zinc	7440-66-6	0.005	mg/L	----	----	----	----	<0.005	
Iron	7439-89-6	0.05	mg/L	26.3	6.68	----	----	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.15	0.03	----	----	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.15	0.03	----	----	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.03	----	----	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.4	0.1	----	----	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.4	0.1	----	----	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.05	<0.01	----	----	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	----	----	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	----	----	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	137	20.1	----	----	----	
∅ Total Cations	----	0.01	meq/L	135	19.9	----	----	----	
∅ Ionic Balance	----	0.01	%	0.78	0.58	----	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	----	
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----	
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW22b	FD01	TBW 1140	FB01	RB01
Client sampling date / time				18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	18-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912183-011	EP1912183-012	EP1912183-014	EP1912183-015	EP1912183-016	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>									
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	----	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	----	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	----	----	----	
>C16 - C34 Fraction	----	100	µg/L	<100	<100	----	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	----	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	----	----	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	----	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	----	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	----	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	----	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	----	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	----	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	123	113	108	116	----	
Toluene-D8	2037-26-5	2	%	119	109	113	112	----	
4-Bromofluorobenzene	460-00-4	2	%	107	104	103	111	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW 1133	RB02	FB02	BH9.2	BH11.1
Client sampling date / time				19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912183-017	EP1912183-018	EP1912183-019	EP1912183-020	EP1912183-021	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	----	----	----	4.30	7.21	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	8100	1470	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	----	----	----	5390	928	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	<1	164	
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	<1	164	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	----	----	----	297	39	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	56	106	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	----	----	----	2840	370	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	----	----	----	77	8	
Magnesium	7439-95-4	1	mg/L	----	----	----	316	22	
Sodium	7440-23-5	1	mg/L	----	----	----	1070	289	
Potassium	7440-09-7	1	mg/L	----	----	----	1	17	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	----	14.0	0.02	
Arsenic	7440-38-2	0.001	mg/L	----	----	----	0.002	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	----	----	----	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	----	----	----	0.047	<0.001	
Copper	7440-50-8	0.001	mg/L	----	----	----	0.040	0.008	
Lead	7439-92-1	0.001	mg/L	----	----	----	0.007	<0.001	
Manganese	7439-96-5	0.001	mg/L	----	----	----	0.034	0.328	
Nickel	7440-02-0	0.001	mg/L	----	----	----	0.038	0.014	
Selenium	7782-49-2	0.01	mg/L	----	----	----	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	----	----	----	0.130	0.069	
Iron	7439-89-6	0.05	mg/L	----	----	----	68.4	11.8	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW 1133	RB02	FB02	BH9.2	BH11.1
Client sampling date / time				19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912183-017	EP1912183-018	EP1912183-019	EP1912183-020	EP1912183-021	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	----	15.2	0.08	
Arsenic	7440-38-2	0.001	mg/L	----	<0.001	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	----	<0.0001	----	----	----	
Chromium	7440-47-3	0.001	mg/L	----	<0.001	----	----	----	
Copper	7440-50-8	0.001	mg/L	----	<0.001	----	----	----	
Nickel	7440-02-0	0.001	mg/L	----	<0.001	----	----	----	
Lead	7439-92-1	0.001	mg/L	----	<0.001	----	----	----	
Zinc	7440-66-6	0.005	mg/L	----	<0.005	----	----	----	
Iron	7439-89-6	0.05	mg/L	----	----	----	70.6	15.4	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	----	----	----	0.02	0.24	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	----	----	----	0.02	0.24	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	----	----	----	<0.01	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	----	----	0.3	0.4	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	----	----	----	0.3	0.4	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	----	----	----	<0.01	0.31	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	----	----	<0.01	0.09	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	----	----	----	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	----	----	----	81.3	15.9	
∅ Total Cations	----	0.01	meq/L	----	----	----	76.4	15.2	
∅ Ionic Balance	----	0.01	%	----	----	----	3.08	2.26	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	----	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	----	----	----	<50	<50	
C15 - C28 Fraction	----	100	µg/L	----	----	----	<100	<100	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW 1133	RB02	FB02	BH9.2	BH11.1
Client sampling date / time				19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912183-017	EP1912183-018	EP1912183-019	EP1912183-020	EP1912183-021	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>									
C29 - C36 Fraction	----	50	µg/L	----	----	----	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	----	----	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	----	----	----	<100	<100	
>C16 - C34 Fraction	----	100	µg/L	----	----	----	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	----	----	----	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	----	----	----	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	----	----	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	----	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	----	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	----	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	----	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	----	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	----	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	----	<5	<5	<5	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	104	----	110	109	117	
Toluene-D8	2037-26-5	2	%	99.6	----	110	110	113	
4-Bromofluorobenzene	460-00-4	2	%	95.1	----	105	98.3	106	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW39	BORR_MW37	BORR MW15	BORR MW25	BORR MW29
Client sampling date / time				19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912183-022	EP1912183-023	EP1912183-024	EP1912183-025	EP1912183-026	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	5.70	6.13	6.32	6.17	5.66	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	279	3270	183	3500	721	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	464	1960	126	2060	574	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	13	41	13	50	12	
Total Alkalinity as CaCO3	----	1	mg/L	13	41	13	50	12	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	58	123	28	106	69	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	47	74	7	93	131	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	41	1010	40	1080	165	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	<1	16	5	24	19	
Magnesium	7439-95-4	1	mg/L	<1	71	5	62	28	
Sodium	7440-23-5	1	mg/L	57	576	19	634	90	
Potassium	7440-09-7	1	mg/L	<1	3	6	4	7	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.05	0.02	0.11	0.04	0.52	
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.002	<0.001	0.002	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.002	
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.045	<0.001	0.037	<0.001	
Copper	7440-50-8	0.001	mg/L	0.010	<0.001	0.011	0.006	0.006	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	
Manganese	7439-96-5	0.001	mg/L	0.012	0.350	0.005	0.447	0.016	
Nickel	7440-02-0	0.001	mg/L	0.008	0.017	0.012	0.032	0.009	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.097	0.018	0.055	0.078	0.053	
Iron	7439-89-6	0.05	mg/L	0.07	8.97	2.13	6.62	1.26	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW39	BORR_MW37	BORR MW15	BORR MW25	BORR MW29
Client sampling date / time				19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912183-022	EP1912183-023	EP1912183-024	EP1912183-025	EP1912183-026	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	8.15	1.81	1.18	4.45	2.87	
Iron	7439-89-6	0.05	mg/L	9.46	9.56	9.93	11.6	1.46	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.01	0.19	1.00	0.08	0.46	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	<0.01	0.19	1.00	0.08	0.46	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.07	0.01	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.3	0.4	1.3	0.3	1.3	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.3	0.4	1.4	0.3	1.3	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.13	0.02	0.02	0.04	0.01	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	0.6	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	2.39	30.8	1.53	33.4	7.62	
∅ Total Cations	----	0.01	meq/L	2.48	31.8	1.64	34.0	7.35	
∅ Ionic Balance	----	0.01	%	1.73	1.47	3.37	0.86	1.84	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW39	BORR_MW37	BORR MW15	BORR MW25	BORR MW29
Client sampling date / time				19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912183-022	EP1912183-023	EP1912183-024	EP1912183-025	EP1912183-026	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	112	109	114	120	127	
Toluene-D8	2037-26-5	2	%	108	107	114	117	126	
4-Bromofluorobenzene	460-00-4	2	%	100	98.6	110	114	119	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW31	BORR MW32	MT01	SW06	FD02
Client sampling date / time				19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912183-027	EP1912183-028	EP1912183-029	EP1912183-030	EP1912183-031	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	5.79	6.25	6.72	7.61	6.70	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	250	289	334	3090	332	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	234	220	358	2030	374	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	14	31	32	53	33	
Total Alkalinity as CaCO3	----	1	mg/L	14	31	32	53	33	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	612	402	177	72	268	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<10	<10	<10	48	<10	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	61	70	75	968	81	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	4	4	10	55	9	
Magnesium	7439-95-4	1	mg/L	5	7	6	110	7	
Sodium	7440-23-5	1	mg/L	38	45	53	428	54	
Potassium	7440-09-7	1	mg/L	4	3	7	7	8	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.97	0.76	0.40	0.03	0.33	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.001	<0.001	0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.001	0.002	0.002	<0.001	0.001	
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.010	0.011	0.021	0.027	0.002	
Lead	7439-92-1	0.001	mg/L	0.002	0.001	0.003	0.002	0.002	
Manganese	7439-96-5	0.001	mg/L	0.009	0.006	0.029	0.118	0.027	
Nickel	7440-02-0	0.001	mg/L	0.016	0.023	0.018	0.012	0.002	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.094	0.067	0.068	0.087	0.007	
Iron	7439-89-6	0.05	mg/L	1.48	0.77	3.43	0.16	3.22	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW31	BORR MW32	MT01	SW06	FD02
Client sampling date / time				19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912183-027	EP1912183-028	EP1912183-029	EP1912183-030	EP1912183-031	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	3.30	5.73	1.34	0.65	3.57	
Iron	7439-89-6	0.05	mg/L	2.10	1.22	6.55	1.64	8.50	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.92	0.56	<0.01	0.01	0.01	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.92	0.56	<0.01	<0.01	<0.01	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.02	0.01	0.02	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.5	1.2	6.7	1.0	6.5	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	1.5	1.2	6.7	1.0	6.5	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	<0.01	0.02	0.51	0.10	0.62	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.10	0.02	0.09	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	0.5	0.2	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	----	----	2.94	----	3.13	
∅ Total Anions	----	0.01	meq/L	2.00	2.59	----	29.4	----	
∅ Total Cations	----	0.01	meq/L	2.37	2.81	3.48	30.6	3.58	
∅ Ionic Balance	----	0.01	%	----	----	8.32	----	6.65	
∅ Ionic Balance	----	0.01	%	----	----	----	2.05	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW31	BORR MW32	MT01	SW06	FD02
Client sampling date / time				19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912183-027	EP1912183-028	EP1912183-029	EP1912183-030	EP1912183-031	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	----	<10	<10	<10	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Azinphos-methyl	86-50-0	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	----	<0.10	<0.10	<0.10	
Carbofenothion	786-19-6	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	----	<0.2	<0.2	<0.2	
Coumaphos	56-72-4	0.01	µg/L	----	----	<0.01	<0.01	<0.01	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Demeton-O	298-03-3	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Demeton-S	126-75-0	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Diazinon	333-41-5	0.01	µg/L	----	----	<0.01	<0.01	<0.01	
Dichlorvos	62-73-7	0.20	µg/L	----	----	<0.20	<0.20	<0.20	
Dimethoate	60-51-5	0.02	µg/L	----	----	<0.02	<0.02	<0.02	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW31	BORR MW32	MT01	SW06	FD02
Client sampling date / time					19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EP1912183-027	EP1912183-028	EP1912183-029	EP1912183-030	EP1912183-031	
				Result	Result	Result	Result	Result	
<b>EP234A: OP Pesticides - Continued</b>									
Disulfoton	298-04-4	0.05	µg/L	----	----	<0.05	<0.05	<0.05	
Ethion	563-12-2	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
EPN	2104-64-5	0.05	µg/L	----	----	<0.05	<0.05	<0.05	
Ethoprophos	13194-48-4	0.01	µg/L	----	----	<0.01	<0.01	<0.01	
Fenamiphos	22224-92-6	0.01	µg/L	----	----	<0.01	<0.01	<0.01	
Fenchlorphos (Ronnell)	299-84-3	10	µg/L	----	----	<10	<10	<10	
Fenitrothion	122-14-5	2	µg/L	----	----	<2	<2	<2	
Fensulfothion	115-90-2	0.01	µg/L	----	----	<0.01	<0.01	<0.01	
Fenthion	55-38-9	0.05	µg/L	----	----	<0.05	<0.05	<0.05	
Malathion	121-75-5	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Mevinphos	7786-34-7	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Monocrotophos	6923-22-4	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Omethoate	1113-02-6	0.01	µg/L	----	----	<0.01	<0.01	<0.01	
Parathion	56-38-2	0.2	µg/L	----	----	<0.2	<0.2	<0.2	
Parathion-methyl	298-00-0	0.5	µg/L	----	----	<0.5	<0.5	<0.5	
Phorate	298-02-2	0.1	µg/L	----	----	<0.1	<0.1	<0.1	
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	----	----	<0.01	<0.01	<0.01	
Pirimiphos-methyl	29232-93-7	0.01	µg/L	----	----	<0.01	<0.01	<0.01	
Profenofos	41198-08-7	0.01	µg/L	----	----	<0.01	<0.01	<0.01	
Prothiofos	34643-46-4	0.1	µg/L	----	----	<0.1	<0.1	<0.1	
Sulfotep	3689-24-5	0.005	µg/L	----	----	<0.005	<0.005	<0.005	
Sulprofos	35400-43-2	0.05	µg/L	----	----	<0.05	<0.05	<0.05	
Terbufos	13071-79-9	0.01	µg/L	----	----	<0.01	<0.01	<0.01	
Temephos	3383-96-8	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Tetrachlorvinphos	22248-79-9	0.01	µg/L	----	----	<0.01	<0.01	<0.01	
Triazophos	24017-47-8	0.005	µg/L	----	----	<0.005	<0.005	<0.005	
Trichlorfon	52-68-6	0.02	µg/L	----	----	<0.02	<0.02	<0.02	
Trichloronate	327-98-0	0.5	µg/L	----	----	<0.5	<0.5	<0.5	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	130	127	130	118	129	
Toluene-D8	2037-26-5	2	%	130	126	131	115	125	
4-Bromofluorobenzene	460-00-4	2	%	122	121	122	111	119	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		FD03	TBW 1136	TBW 1134	----	----
Client sampling date / time		19-Nov-2019 00:00		19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	----	----
Compound	CAS Number	LOR	Unit	EP1912183-032	EP1912183-033	EP1912183-034	-----	-----
				Result	Result	Result	----	----
<b>EA005P: pH by PC Titrator</b>								
pH Value	----	0.01	pH Unit	6.06	----	----	----	----
<b>EA010P: Conductivity by PC Titrator</b>								
Electrical Conductivity @ 25°C	----	1	µS/cm	3240	----	----	----	----
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
Total Dissolved Solids @180°C	----	10	mg/L	1960	----	----	----	----
<b>ED037P: Alkalinity by PC Titrator</b>								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	41	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	41	----	----	----	----
<b>ED038A: Acidity</b>								
Acidity as CaCO3	----	1	mg/L	330	----	----	----	----
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	74	----	----	----	----
<b>ED045G: Chloride by Discrete Analyser</b>								
Chloride	16887-00-6	1	mg/L	1020	----	----	----	----
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	16	----	----	----	----
Magnesium	7439-95-4	1	mg/L	70	----	----	----	----
Sodium	7440-23-5	1	mg/L	576	----	----	----	----
Potassium	7440-09-7	1	mg/L	3	----	----	----	----
<b>EG020F: Dissolved Metals by ICP-MS</b>								
Aluminium	7429-90-5	0.01	mg/L	0.03	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	0.002	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	0.044	----	----	----	----
Copper	7440-50-8	0.001	mg/L	0.015	----	----	----	----
Lead	7439-92-1	0.001	mg/L	0.001	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.348	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	0.032	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	0.088	----	----	----	----
Iron	7439-89-6	0.05	mg/L	8.48	----	----	----	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FD03	TBW 1136	TBW 1134	----	----
Client sampling date / time				19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	----	----	
Compound	CAS Number	LOR	Unit	EP1912183-032	EP1912183-033	EP1912183-034	-----	-----	
				Result	Result	Result	----	----	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	1.43	----	----	----	----	
Iron	7439-89-6	0.05	mg/L	9.21	----	----	----	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.16	----	----	----	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.16	----	----	----	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	----	----	----	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.4	----	----	----	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.4	----	----	----	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.02	----	----	----	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	----	----	----	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	----	----	----	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	31.1	----	----	----	----	
∅ Total Cations	----	0.01	meq/L	31.7	----	----	----	----	
∅ Ionic Balance	----	0.01	%	0.89	----	----	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----	
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	----	
C15 - C28 Fraction	----	100	µg/L	<100	----	----	----	----	
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	----	----	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	----	
>C10 - C16 Fraction	----	100	µg/L	<100	----	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FD03	TBW 1136	TBW 1134	----	----
Client sampling date / time				19-Nov-2019 00:00	19-Nov-2019 00:00	19-Nov-2019 00:00	----	----	
Compound	CAS Number	LOR	Unit	EP1912183-032	EP1912183-033	EP1912183-034	-----	-----	
				Result	Result	Result	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	----	----	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	----	----	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	----	----	----	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----	
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	----	----	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	----	----	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	116	117	110	----	----	
Toluene-D8	2037-26-5	2	%	115	113	99.4	----	----	
4-Bromofluorobenzene	460-00-4	2	%	112	108	99.6	----	----	



## Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1912183	Page	: 1 of 19
Client	: GHD PTY LTD	Laboratory	: Environmental Division Perth
Contact	: MS VICKI DAVIES	Telephone	: 08 9406 1311
Project	: 6137041	Date Samples Received	: 20-Nov-2019
Site	: ----	Issue Date	: 02-Dec-2019
Sampler	: DOMINIQUE SHUTTLEWORTH, Emily Evans	No. of samples received	: 33
Order number	: 6137041 (08.0831)	No. of samples analysed	: 33

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



**Outliers : Quality Control Samples**

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
EP234A: OP Pesticides	ES1938404--004	Anonymous	Demeton-O	298-03-3	2.00 %	70.0-130%	Recovery less than lower data quality objective
EP234A: OP Pesticides	ES1938404--004	Anonymous	Demeton-O & Demeton-S	298-03-3/126-75-0	0.00 %	69.0-129%	Recovery less than lower data quality objective
EP234A: OP Pesticides	ES1938404--004	Anonymous	Demeton-S	126-75-0	2.00 %	70.0-130%	Recovery less than lower data quality objective
EP234A: OP Pesticides	ES1938404--004	Anonymous	Demeton-S-methyl	919-86-8	0.500 %	70.0-130%	Recovery less than lower data quality objective
EP234A: OP Pesticides	ES1938404--004	Anonymous	Disulfoton	298-04-4	2.40 %	70.0-130%	Recovery less than lower data quality objective
EP234A: OP Pesticides	ES1938404--004	Anonymous	Fenamiphos	22224-92-6	8.00 %	70.0-130%	Recovery less than lower data quality objective
EP234A: OP Pesticides	ES1938404--004	Anonymous	Fenthion	55-38-9	10.4 %	70.0-130%	Recovery less than lower data quality objective
EP234A: OP Pesticides	ES1938404--004	Anonymous	Phorate	298-02-2	4.30 %	70.0-130%	Recovery less than lower data quality objective
EP234A: OP Pesticides	ES1938404--004	Anonymous	Sulprofos	35400-43-2	11.2 %	70.0-130%	Recovery less than lower data quality objective
EP234A: OP Pesticides	ES1938404--004	Anonymous	Temephos	3383-96-8	45.0 %	70.0-130%	Recovery less than lower data quality objective
EP234A: OP Pesticides	ES1938404--004	Anonymous	Terbufos	13071-79-9	7.00 %	70.0-130%	Recovery less than lower data quality objective

**Outliers : Analysis Holding Time Compliance**

Matrix: **WATER**

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EA005P: pH by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural</b>							
North Creek 2, SW09, SW07, BORR MW18, BORR MW19b, BORR MW22b,	BH32.1, SW08, BORR MW13, BORR MW19, North Creek 4, FD01	----	----	----	25-Nov-2019	18-Nov-2019	7



Matrix: **WATER**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EA005P: pH by PC Titrator - Analysis Holding Time Compliance</b>						
<b>Clear Plastic Bottle - Natural</b> BH9.2, BH11.1, BORR_MW39, BORR_MW37, BORR MW15, BORR MW25, BORR MW29, BORR MW31, BORR MW32, MT01, SW06, FD02, FD03	----	----	----	25-Nov-2019	19-Nov-2019	6

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EA005P: pH by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural (EA005-P)</b> North Creek 2, BH32.1, SW09, SW08, SW07, BORR MW13, BORR MW18, BORR MW19, BORR MW19b, North Creek 4, BORR MW22b, FD01	18-Nov-2019	----	----	----	25-Nov-2019	18-Nov-2019	*
<b>Clear Plastic Bottle - Natural (EA005-P)</b> BH9.2, BH11.1, BORR_MW39, BORR_MW37, BORR MW15, BORR MW25, BORR MW29, BORR MW31, BORR MW32, MT01, SW06, FD02, FD03	19-Nov-2019	----	----	----	25-Nov-2019	19-Nov-2019	*



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA010P: Conductivity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA010-P)</b> North Creek 2, SW09, SW07, BORR MW18, BORR MW19b, BORR MW22b,	BH32.1, SW08, BORR MW13, BORR MW19, North Creek 4, FD01	18-Nov-2019	----	----	----	25-Nov-2019	16-Dec-2019	✓
<b>Clear Plastic Bottle - Natural (EA010-P)</b> BH9.2, BORR_MW39, BORR MW15, BORR MW29, BORR MW32, SW06, FD03	BH11.1, BORR_MW37, BORR MW25, BORR MW31, MT01, FD02,	19-Nov-2019	----	----	----	25-Nov-2019	17-Dec-2019	✓
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
<b>Clear Plastic Bottle - Natural (EA015H)</b> North Creek 2, SW09, SW07, BORR MW18, BORR MW19b, BORR MW22b,	BH32.1, SW08, BORR MW13, BORR MW19, North Creek 4, FD01	18-Nov-2019	----	----	----	25-Nov-2019	25-Nov-2019	✓
<b>Clear Plastic Bottle - Natural (EA015H)</b> BH9.2, BORR_MW39, BORR MW15, BORR MW29, BORR MW32, SW06,	BH11.1, BORR_MW37, BORR MW25, BORR MW31, MT01, FD02	19-Nov-2019	----	----	----	25-Nov-2019	26-Nov-2019	✓
<b>Clear Plastic Bottle - Natural (EA015H)</b> FD03		19-Nov-2019	----	----	----	26-Nov-2019	26-Nov-2019	✓





Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>ED037P: Alkalinity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (ED037-P)</b> North Creek 2, SW09, SW07, BORR MW18, BORR MW19b, BORR MW22b,	BH32.1, SW08, BORR MW13, BORR MW19, North Creek 4, FD01	18-Nov-2019	----	----	----	25-Nov-2019	02-Dec-2019	✓
<b>Clear Plastic Bottle - Natural (ED037-P)</b> BH9.2, BORR_MW39, BORR MW15, BORR MW29, BORR MW32, SW06, FD03	BH11.1, BORR_MW37, BORR MW25, BORR MW31, MT01, FD02,	19-Nov-2019	----	----	----	25-Nov-2019	03-Dec-2019	✓
<b>ED038A: Acidity</b>								
<b>Clear Plastic Bottle - Natural (ED038)</b> North Creek 2, SW09, SW07, BORR MW18, BORR MW19b, BORR MW22b,	BH32.1, SW08, BORR MW13, BORR MW19, North Creek 4, FD01	18-Nov-2019	----	----	----	25-Nov-2019	02-Dec-2019	✓
<b>Clear Plastic Bottle - Natural (ED038)</b> BH9.2, BORR_MW39, BORR MW15, BORR MW29, BORR MW32, SW06, FD03	BH11.1, BORR_MW37, BORR MW25, BORR MW31, MT01, FD02,	19-Nov-2019	----	----	----	25-Nov-2019	03-Dec-2019	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>							
<b>Clear Plastic Bottle - Natural (ED041G)</b> North Creek 2, SW09, SW07, BORR MW18, BORR MW19b, BORR MW22b, BH32.1, SW08, BORR MW13, BORR MW19, North Creek 4, FD01	18-Nov-2019	----	----	----	20-Nov-2019	16-Dec-2019	✓
<b>Clear Plastic Bottle - Natural (ED041G)</b> BH9.2, BORR_MW39, BORR MW15, BORR MW29, BORR MW32, SW06, FD03 BH11.1, BORR_MW37, BORR MW25, BORR MW31, MT01, FD02	19-Nov-2019	----	----	----	20-Nov-2019	17-Dec-2019	✓
<b>ED045G: Chloride by Discrete Analyser</b>							
<b>Clear Plastic Bottle - Natural (ED045G)</b> North Creek 2, SW09, SW07, BORR MW18, BORR MW19b, BORR MW22b, BH32.1, SW08, BORR MW13, BORR MW19, North Creek 4, FD01	18-Nov-2019	----	----	----	20-Nov-2019	16-Dec-2019	✓
<b>Clear Plastic Bottle - Natural (ED045G)</b> BH9.2, BORR_MW39, BORR MW15, BORR MW29, BORR MW32, SW06, FD03 BH11.1, BORR_MW37, BORR MW25, BORR MW31, MT01, FD02	19-Nov-2019	----	----	----	20-Nov-2019	17-Dec-2019	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>ED093F: Dissolved Major Cations</b>								
<b>Clear HDPE (U-T ORC) - Filtered; Lab-acidified (ED093F)</b> North Creek 2, SW09, SW07, BORR MW18, BORR MW19b, BORR MW22b,	BH32.1, SW08, BORR MW13, BORR MW19, North Creek 4, FD01	18-Nov-2019	----	----	----	26-Nov-2019	16-Dec-2019	✓
<b>Clear HDPE (U-T ORC) - Filtered; Lab-acidified (ED093F)</b> BH9.2, BORR_MW39, BORR MW15, BORR MW29, BORR MW32, SW06, FD03	BH11.1, BORR_MW37, BORR MW25, BORR MW31, MT01, FD02,	19-Nov-2019	----	----	----	26-Nov-2019	17-Dec-2019	✓
<b>EG020F: Dissolved Metals by ICP-MS</b>								
<b>Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG020A-F)</b> North Creek 2, SW09, SW07, BORR MW18, BORR MW19b, BORR MW22b,	BH32.1, SW08, BORR MW13, BORR MW19, North Creek 4, FD01	18-Nov-2019	----	----	----	26-Nov-2019	16-May-2020	✓
<b>Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG020A-F)</b> BH9.2, BORR_MW39, BORR MW15, BORR MW29, BORR MW32, SW06, FD03	BH11.1, BORR_MW37, BORR MW25, BORR MW31, MT01, FD02,	19-Nov-2019	----	----	----	26-Nov-2019	17-May-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EG020T: Total Metals by ICP-MS</b>							
<b>Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG020A-T)</b> North Creek 2, SW09, SW07, BORR MW18, BORR MW19b, BORR MW22b, RB01 BH32.1, SW08, BORR MW13, BORR MW19, North Creek 4, FD01	18-Nov-2019	26-Nov-2019	16-May-2020	✓	26-Nov-2019	16-May-2020	✓
<b>Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG020A-T)</b> RB02, BH11.1, BORR_MW37, BORR MW25, BORR MW31, MT01, FD02 BH9.2, BORR_MW39, BORR MW15, BORR MW29, BORR MW32, SW06, FD03	19-Nov-2019	26-Nov-2019	17-May-2020	✓	26-Nov-2019	17-May-2020	✓
<b>EK055G: Ammonia as N by Discrete Analyser</b>							
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> North Creek 2, SW09, SW07, BORR MW18, BORR MW19b, BORR MW22b BH32.1, SW08, BORR MW13, BORR MW19, North Creek 4, FD01	18-Nov-2019	----	----	----	20-Nov-2019	16-Dec-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> BH9.2, BORR_MW39, BORR MW15, BORR MW29, BORR MW32, SW06, FD03 BH11.1, BORR_MW37, BORR MW25, BORR MW31, MT01, FD02	19-Nov-2019	----	----	----	20-Nov-2019	17-Dec-2019	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>							
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> North Creek 2, SW09, SW07, BORR MW18, BORR MW19b, BORR MW22b, BH32.1, SW08, BORR MW13, BORR MW19, North Creek 4, FD01	18-Nov-2019	----	----	----	20-Nov-2019	16-Dec-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> BH9.2, BORR_MW39, BORR MW15, BORR MW29, BORR MW32, SW06, FD03 BH11.1, BORR_MW37, BORR MW25, BORR MW31, MT01, FD02	19-Nov-2019	----	----	----	20-Nov-2019	17-Dec-2019	✓
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>							
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> North Creek 2, SW09, SW07, BORR MW18, BORR MW19b, BORR MW22b, BH32.1, SW08, BORR MW13, BORR MW19, North Creek 4, FD01	18-Nov-2019	27-Nov-2019	16-Dec-2019	✓	27-Nov-2019	16-Dec-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> BH9.2, BORR_MW39, BORR MW15, BORR MW29, BORR MW32, SW06, FD03 BH11.1, BORR_MW37, BORR MW25, BORR MW31, MT01, FD02	19-Nov-2019	27-Nov-2019	17-Dec-2019	✓	27-Nov-2019	17-Dec-2019	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b>								
North Creek 2, SW09, SW07, BORR MW18, BORR MW19b, BORR MW22b,	BH32.1, SW08, BORR MW13, BORR MW19, North Creek 4, FD01	18-Nov-2019	27-Nov-2019	16-Dec-2019	✓	27-Nov-2019	16-Dec-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b>								
BH9.2, BORR_MW39, BORR MW15, BORR MW29, BORR MW32, SW06, FD03	BH11.1, BORR_MW37, BORR MW25, BORR MW31, MT01, FD02,	19-Nov-2019	27-Nov-2019	17-Dec-2019	✓	27-Nov-2019	17-Dec-2019	✓
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>								
<b>Clear Plastic Bottle - Natural (EK071G)</b>								
North Creek 2, SW09, SW07, BORR MW18, BORR MW19b, BORR MW22b,	BH32.1, SW08, BORR MW13, BORR MW19, North Creek 4, FD01	18-Nov-2019	----	----	----	20-Nov-2019	20-Nov-2019	✓
<b>Clear Plastic Bottle - Natural (EK071G)</b>								
BH9.2, BORR_MW39, BORR MW15, BORR MW29, BORR MW32, SW06, FD03	BH11.1, BORR_MW37, BORR MW25, BORR MW31, MT01, FD02,	19-Nov-2019	----	----	----	20-Nov-2019	21-Nov-2019	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK085M: Sulfide as S2-</b>								
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> North Creek 2, SW09, SW07, BORR MW18, BORR MW19b, BORR MW22b,	BH32.1, SW08, BORR MW13, BORR MW19, North Creek 4, FD01	18-Nov-2019	----	----	----	25-Nov-2019	25-Nov-2019	✓
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> BH9.2, BORR_MW39, BORR MW15, BORR MW29, BORR MW32, SW06, FD03	BH11.1, BORR_MW37, BORR MW25, BORR MW31, MT01, FD02,	19-Nov-2019	----	----	----	25-Nov-2019	26-Nov-2019	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
<b>Amber Glass Bottle - Unpreserved (EP071)</b>									
North Creek 2, SW09, SW07, BORR MW18, BORR MW19b, BORR MW22b,	BH32.1, SW08, BORR MW13, BORR MW19, North Creek 4, FD01	18-Nov-2019	23-Nov-2019	25-Nov-2019	✓	26-Nov-2019	02-Jan-2020	✓	
<b>Amber Glass Bottle - Unpreserved (EP071)</b>									
BH9.2, BORR_MW39, BORR MW15, BORR MW29, BORR MW32, SW06, FD03	BH11.1, BORR_MW37, BORR MW25, BORR MW31, MT01, FD02,	19-Nov-2019	23-Nov-2019	26-Nov-2019	✓	26-Nov-2019	02-Jan-2020	✓	
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>									
North Creek 2, SW09, SW07, BORR MW18, BORR MW19b, BORR MW22b, TBW 1140,	BH32.1, SW08, BORR MW13, BORR MW19, North Creek 4, FD01, FB01	18-Nov-2019	29-Nov-2019	02-Dec-2019	✓	29-Nov-2019	02-Dec-2019	✓	
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>									
TBW 1133, BH9.2, BORR_MW39, BORR MW15, BORR MW29, BORR MW32, SW06, FD03, TBW 1134	FB02, BH11.1, BORR_MW37, BORR MW25, BORR MW31, MT01, FD02, TBW 1136,	19-Nov-2019	29-Nov-2019	03-Dec-2019	✓	29-Nov-2019	03-Dec-2019	✓	





Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>								
<b>Amber Glass Bottle - Unpreserved (EP071)</b>								
North Creek 2, SW09, SW07, BORR MW18, BORR MW19b, BORR MW22b,	BH32.1, SW08, BORR MW13, BORR MW19, North Creek 4, FD01	18-Nov-2019	23-Nov-2019	25-Nov-2019	✓	26-Nov-2019	02-Jan-2020	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b>								
BH9.2, BORR_MW39, BORR MW15, BORR MW29, BORR MW32, SW06, FD03	BH11.1, BORR_MW37, BORR MW25, BORR MW31, MT01, FD02,	19-Nov-2019	23-Nov-2019	26-Nov-2019	✓	26-Nov-2019	02-Jan-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
North Creek 2, SW09, SW07, BORR MW18, BORR MW19b, BORR MW22b, TBW 1140,	BH32.1, SW08, BORR MW13, BORR MW19, North Creek 4, FD01, FB01	18-Nov-2019	29-Nov-2019	02-Dec-2019	✓	29-Nov-2019	02-Dec-2019	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
TBW 1133, BH9.2, BORR_MW39, BORR MW15, BORR MW29, BORR MW32, SW06, FD03, TBW 1134	FB02, BH11.1, BORR_MW37, BORR MW25, BORR MW31, MT01, FD02, TBW 1136,	19-Nov-2019	29-Nov-2019	03-Dec-2019	✓	29-Nov-2019	03-Dec-2019	✓



Matrix: WATER

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080: BTEXN</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> North Creek 2, SW09, SW07, BORR MW18, BORR MW19b, BORR MW22b, TBW 1140, BH32.1, SW08, BORR MW13, BORR MW19, North Creek 4, FD01, FB01	18-Nov-2019	29-Nov-2019	02-Dec-2019	✔	29-Nov-2019	02-Dec-2019	✔	
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> TBW 1133, BH9.2, BORR_MW39, BORR MW15, BORR MW29, BORR MW32, SW06, FD03, TBW 1134, FB02, BH11.1, BORR_MW37, BORR MW25, BORR MW31, MT01, FD02, TBW 1136,	19-Nov-2019	29-Nov-2019	03-Dec-2019	✔	29-Nov-2019	03-Dec-2019	✔	
<b>EP204: Glyphosate and AMPA</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b> North Creek 2, SW08, North Creek 4, SW09, SW07,	18-Nov-2019	----	----	----	22-Nov-2019	02-Dec-2019	✔	
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b> MT01, FD02, SW06,	19-Nov-2019	----	----	----	22-Nov-2019	03-Dec-2019	✔	
<b>EP234A: OP Pesticides</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> North Creek 2, SW08, North Creek 4, SW09, SW07,	18-Nov-2019	----	----	----	25-Nov-2019	25-Nov-2019	✔	
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> MT01, FD02, SW06,	19-Nov-2019	----	----	----	25-Nov-2019	26-Nov-2019	✔	



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaural	Actual	Expected	Evaluation	
<b>Laboratory Duplicates (DUP)</b>							
Acidity as Calcium Carbonate	ED038	3	25	12.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	4	33	12.12	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	4	38	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	6	54	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	4	38	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	4	36	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	4	38	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	38	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	4	32	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	8	74	10.81	10.53	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	4	32	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	4	32	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	3	30	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Acidity as Calcium Carbonate	ED038	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	4	38	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	3	54	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	38	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	8	74	10.81	10.53	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Alkalinity by PC Titrator	ED037-P	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	3	54	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	74	5.41	5.26	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Ammonia as N by Discrete analyser	EK055G	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3)  Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3)  Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ammonium as N	EK055G-NH4	WATER	Ammonium in the sample is reported as the ionised / unionised fractions by the use of a nomograph and the initial pH and Temperature. Ammonia is determined by direct colorimetry by Discrete Analyser according to APHA 4500-NH3 G. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Sulfide as S2-	EK085	WATER	In house: Referenced to APHA 4500-S2- D. Sulfide species present in water samples are immediately precipitated when collected in pretreated caustic/zinc acetate preserved sample containers. The sulphides are coloured using methylene blue indicator. Non-detects may be screened by comparison against a standard at half-LOR, otherwise samples are measured using UV-VIS detection at 664nm. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatle Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Glyphosate and AMPA	EP204	WATER	In house: Pre-column derivatisation LCMS (ES in negative mode). Water samples are derivatised with 9-fluorenyl methoxycarbonyl chloroformate (FMOCl) in alkaline condition. The derivatives of glyphosate and AMPA are separated by a C8 column and determined by MS.
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.





CHAIN OF CUSTODY RECORD  
AND ANALYSIS REQUEST



GHD  
Level 10, 999 Hay Street  
Perth WA 6000

PO Box 3106  
Perth WA 6832

Reception Ph: 08 6222 8222

Project ID (as per ESDat set up; no spaces)  
6137041

PO Number (to be invoiced)  
6137041 (08.0831)

Laboratory: ALS Laboratory  
Address: 26 Rigali Way Wanaara  
Laboratory Contact: J Marnie Thompson

Laboratory Quote No.  
EP/489/19 v4

Turnaround Time  
Standard

Job Manager (Invoice) & GHD accounts  
Julia Roberts  
Vicki Davies

Email Address (Results)  
Emily.Evans@ghd.com  
vicki.davies@ghd.com

GHD Sample ID	Lab Sample ID	Date	Time	Sample Matrix S-Sol/Sl. Sludge/Water/Air	Container Type Bottle/Vial/Vial/Rasp/Glass/Plastic	Preservative Unpreserved/HCl/H2SO4/HNO3/Other	No	AS per GWSuite EP/489/19 v4	AS per GWSuite EP/489/19 v4	AS per GWSuite EP/489/19 v4	Analyses	Remarks
2B02	18	19/11/19		W	B		1					
FBO2	19	"		W	B		1					
BH9.2	20	"		W	B		8	✓				
BH11.1	21	"		W	B		8	✓				
BORR-MW59	22	"		W	B		8	✓				
BORR-MW37	23	"		W	B		8	✓				
BORR MW15	24	"		W	B		8	✓				
BORR MW25	25	"		W	B		8	✓				
BORR MW29	26	"		W	B		8	✓				
BORR MW51	27	"		W	B		8	✓				
BORR MW32	28	"		W	B		8	✓				
MT01	29	"		W	B		10		✓			
SN06	30	"		W	B		10		✓			
FD02	31	"		W	B		10		✓			
FD03	32	"		W	B		8	✓				
TBN 1136	33	"		W	B		1			✓		
TBN 1134	34	"		W	B		1			✓		

Sampled by: Emily Evans + Dom Shuttleworth

Received by: MD

Date/Time: 19/11/19

Date/Time: 12:20

29/11/19

Relinquished by: EE + DS

Relinquished by:

Date/Time: 19/11/19

Date/Time:

HOLD

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>EP1912321</b> <b>Client</b> : <b>GHD PTY LTD</b> <b>Contact</b> : <b>MS VICKI DAVIES</b> <b>Address</b> : <b>999 HAY STREET</b> <b>PERTH WA, AUSTRALIA 6000</b>  <b>Telephone</b> : ---- <b>Project</b> : <b>6137041</b> <b>Order number</b> : <b>6137041 08.0831</b> <b>C-O-C number</b> : ---- <b>Sampler</b> : <b>DOMINIQUE SHUTTLEWORTH, Emily Evans, Ian Oglesby</b> <b>Site</b> : ---- <b>Quote number</b> : <b>EP/489/19 V4</b> <b>No. of samples received</b> : <b>25</b> <b>No. of samples analysed</b> : <b>25</b>	<b>Page</b> : 1 of 22 <b>Laboratory</b> : Environmental Division Perth <b>Contact</b> : Marnie Thomsett <b>Address</b> : 26 Rigali Way Wangara WA Australia 6065  <b>Telephone</b> : 08 9406 1311 <b>Date Samples Received</b> : 22-Nov-2019 12:15 <b>Date Analysis Commenced</b> : 22-Nov-2019 <b>Issue Date</b> : 06-Dec-2019 14:22
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
Daniel Fisher	Inorganics Analyst	Perth Inorganics, Wangara, WA
David Viner	SENIOR LAB TECH	Perth Organics, Wangara, WA
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP204 and EP234-1 conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- ED041G (Turbidimetric Sulfate): LOR raised on sample #9 and #17 due to possible sample matrix interference.
- TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- Ionic balances were calculated using: major anions - chloride, alkalinity, sulfate and NOx; and major cations - calcium, magnesium, potassium and sodium for #18.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB03	TBW 1132	TBW 1137	RB03	BORR MW12
Client sampling date / time				20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912321-001	EP1912321-002	EP1912321-003	EP1912321-004	EP1912321-005	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	----	----	1.05	
Arsenic	7440-38-2	0.001	mg/L	----	----	----	<0.001	----	
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	<0.0001	----	
Chromium	7440-47-3	0.001	mg/L	----	----	----	<0.001	----	
Copper	7440-50-8	0.001	mg/L	----	----	----	<0.001	----	
Nickel	7440-02-0	0.001	mg/L	----	----	----	<0.001	----	
Lead	7439-92-1	0.001	mg/L	----	----	----	<0.001	----	
Zinc	7440-66-6	0.005	mg/L	----	----	----	<0.005	----	
Iron	7439-89-6	0.05	mg/L	----	----	----	----	5.19	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	----	----	----	----	0.20	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	----	----	----	----	0.20	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	----	----	----	----	0.26	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	----	----	----	0.4	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	----	----	----	----	0.7	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	----	----	----	----	0.02	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	----	----	----	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	----	----	----	----	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	----	----	----	----	5.05	
∅ Total Cations	----	0.01	meq/L	----	----	----	----	4.95	
∅ Ionic Balance	----	0.01	%	----	----	----	----	1.00	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	<20	
C10 - C14 Fraction	----	50	µg/L	----	----	----	----	<50	
C15 - C28 Fraction	----	100	µg/L	----	----	----	----	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB03	TBW 1132	TBW 1137	RB03	BORR MW12
Client sampling date / time				20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912321-001	EP1912321-002	EP1912321-003	EP1912321-004	EP1912321-005	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>									
C29 - C36 Fraction	----	50	µg/L	----	----	----	----	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	----	----	----	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	<20	
>C10 - C16 Fraction	----	100	µg/L	----	----	----	----	<100	
>C16 - C34 Fraction	----	100	µg/L	----	----	----	----	<100	
>C34 - C40 Fraction	----	100	µg/L	----	----	----	----	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	----	----	----	----	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	----	----	----	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	----	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	----	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	<5	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	80.6	82.7	82.9	----	84.8	
Toluene-D8	2037-26-5	2	%	100	98.6	99.0	----	99.6	
4-Bromofluorobenzene	460-00-4	2	%	104	105	106	----	105	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Southern 3	Southern 4	BORR MW11	WRM North Site 5	BORR MW04
Client sampling date / time				20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912321-006	EP1912321-007	EP1912321-008	EP1912321-009	EP1912321-010	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	8.14	7.73	7.67	7.50	7.26	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	6390	7490	19600	7960	4080	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	4040	5020	12700	5780	2430	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	314	164	1860	370	310	
Total Alkalinity as CaCO3	----	1	mg/L	314	164	1860	370	310	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	5	11	36	29	18	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	173	103	20	<10	262	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	1900	2130	6430	2570	1040	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	59	67	127	100	180	
Magnesium	7439-95-4	1	mg/L	131	182	428	217	68	
Sodium	7440-23-5	1	mg/L	1210	1340	4230	1270	618	
Potassium	7440-09-7	1	mg/L	43	31	28	66	5	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.06	0.05	0.07	0.03	<0.01	
Arsenic	7440-38-2	0.001	mg/L	0.002	0.002	0.007	0.010	0.002	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.007	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	0.001	<0.001	0.002	0.005	0.002	
Copper	7440-50-8	0.001	mg/L	0.023	0.018	0.024	0.019	0.012	
Lead	7439-92-1	0.001	mg/L	0.002	0.001	0.002	0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.479	0.070	0.092	3.72	0.166	
Nickel	7440-02-0	0.001	mg/L	0.014	0.012	0.041	0.032	0.014	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.066	0.048	0.077	0.067	0.095	
Iron	7439-89-6	0.05	mg/L	0.62	0.40	1.40	1.56	4.80	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Southern 3	Southern 4	BORR MW11	WRM North Site 5	BORR MW04
Client sampling date / time				20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912321-006	EP1912321-007	EP1912321-008	EP1912321-009	EP1912321-010	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.58	0.19	1.54	37.2	4.48	
Iron	7439-89-6	0.05	mg/L	1.52	0.66	4.02	93.4	20.5	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.18	<0.01	<0.01	0.14	0.23	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.16	<0.01	<0.01	0.14	0.23	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.01	<0.01	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	8.0	3.9	6.3	50.9	0.4	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	8.0	3.9	6.3	50.9	0.4	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	1.66	0.25	0.15	15.5	0.12	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	1.28	0.05	0.05	2.23	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	63.5	65.5	219	79.9	41.0	
∅ Total Cations	----	0.01	meq/L	67.4	77.4	226	79.8	41.6	
∅ Ionic Balance	----	0.01	%	3.04	8.32	1.64	0.07	0.73	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	120	<50	
C15 - C28 Fraction	----	100	µg/L	240	120	210	1090	<100	
C29 - C36 Fraction	----	50	µg/L	250	<50	120	800	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	490	120	330	2010	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	220	<100	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Southern 3	Southern 4	BORR MW11	WRM North Site 5	BORR MW04
Client sampling date / time				20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912321-006	EP1912321-007	EP1912321-008	EP1912321-009	EP1912321-010	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	430	140	290	1640	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	350	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	430	140	290	2210	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	220	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	<10	<10	----	<10	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	----	<0.02	----	
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	----	<0.02	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	----	<0.10	----	
Carbofenthoion	786-19-6	0.02	µg/L	<0.02	<0.02	----	<0.02	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	----	<0.02	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	----	<0.02	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	----	<0.2	----	
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	----	<0.01	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	----	<0.02	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	----	<0.02	----	
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	----	<0.02	----	
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	----	<0.02	----	
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	----	<0.01	----	
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	----	<0.20	----	
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	----	<0.02	----	
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	----	<0.05	----	
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	----	<0.02	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Southern 3	Southern 4	BORR MW11	WRM North Site 5	BORR MW04
Client sampling date / time					20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00
Compound	CAS Number	LOR	Unit		EP1912321-006	EP1912321-007	EP1912321-008	EP1912321-009	EP1912321-010
					Result	Result	Result	Result	Result
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L		<0.05	<0.05	----	<0.05	----
Ethoprophos	13194-48-4	0.01	µg/L		<0.01	<0.01	----	<0.01	----
Fenamiphos	22224-92-6	0.01	µg/L		<0.01	<0.01	----	<0.01	----
Fenchlorphos (Rannel)	299-84-3	10	µg/L		<10	<10	----	<10	----
Fenitrothion	122-14-5	2	µg/L		<2	<2	----	<2	----
Fensulfothion	115-90-2	0.01	µg/L		<0.01	<0.01	----	<0.01	----
Fenthion	55-38-9	0.05	µg/L		<0.05	<0.05	----	<0.05	----
Malathion	121-75-5	0.02	µg/L		<0.02	<0.02	----	<0.02	----
Mevinphos	7786-34-7	0.02	µg/L		<0.02	<0.02	----	<0.02	----
Monocrotophos	6923-22-4	0.02	µg/L		<0.02	<0.02	----	<0.02	----
Omethoate	1113-02-6	0.01	µg/L		<0.01	<0.01	----	<0.01	----
Parathion	56-38-2	0.2	µg/L		<0.2	<0.2	----	<0.2	----
Parathion-methyl	298-00-0	0.5	µg/L		<0.5	<0.5	----	<0.5	----
Phorate	298-02-2	0.1	µg/L		<0.1	<0.1	----	<0.1	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L		<0.01	<0.01	----	<0.01	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L		<0.01	<0.01	----	<0.01	----
Profenofos	41198-08-7	0.01	µg/L		<0.01	<0.01	----	<0.01	----
Prothiofos	34643-46-4	0.1	µg/L		<0.1	<0.1	----	<0.1	----
Sulfotep	3689-24-5	0.005	µg/L		<0.005	<0.005	----	<0.005	----
Sulprofos	35400-43-2	0.05	µg/L		<0.05	<0.05	----	<0.05	----
Terbufos	13071-79-9	0.01	µg/L		<0.01	<0.01	----	<0.01	----
Temephos	3383-96-8	0.02	µg/L		<0.02	<0.02	----	<0.02	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L		<0.01	<0.01	----	<0.01	----
Triazophos	24017-47-8	0.005	µg/L		<0.005	<0.005	----	<0.005	----
Trichlorfon	52-68-6	0.02	µg/L		<0.02	<0.02	----	<0.02	----
Trichloronate	327-98-0	0.5	µg/L		<0.5	<0.5	----	<0.5	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%		84.0	85.0	84.9	84.3	82.2
Toluene-D8	2037-26-5	2	%		97.4	97.7	97.3	100	98.8
4-Bromofluorobenzene	460-00-4	2	%		104	104	108	104	104



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW05	Northern 3	JT01	BORR MW24	BORR MW06
Client sampling date / time				20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912321-011	EP1912321-012	EP1912321-013	EP1912321-014	EP1912321-015	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	7.08	4.68	7.26	4.91	6.74	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	1140	13300	2820	1650	605	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	722	8670	1850	1320	466	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	86	<1	50	<1	56	
Total Alkalinity as CaCO3	----	1	mg/L	86	<1	50	<1	56	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	12	16	8	32	16	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	117	550	59	39	40	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	287	4630	872	558	149	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	27	116	41	1	41	
Magnesium	7439-95-4	1	mg/L	19	320	95	11	14	
Sodium	7440-23-5	1	mg/L	196	2360	406	343	52	
Potassium	7440-09-7	1	mg/L	7	62	6	<1	10	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.10	0.68	0.03	0.18	0.15	
Arsenic	7440-38-2	0.001	mg/L	0.001	<0.001	<0.001	<0.001	0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0003	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.001	<0.001	<0.001	0.001	0.001	
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.056	<0.001	0.007	<0.001	
Copper	7440-50-8	0.001	mg/L	0.011	0.022	0.019	0.017	0.011	
Lead	7439-92-1	0.001	mg/L	0.001	0.002	0.001	0.001	0.002	
Manganese	7439-96-5	0.001	mg/L	0.014	2.97	0.141	0.004	0.080	
Nickel	7440-02-0	0.001	mg/L	0.014	0.034	0.013	0.014	0.018	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.072	0.138	0.073	0.055	0.073	
Iron	7439-89-6	0.05	mg/L	1.36	0.48	0.18	0.10	5.02	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW05	Northern 3	JT01	BORR MW24	BORR MW06
Client sampling date / time				20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912321-011	EP1912321-012	EP1912321-013	EP1912321-014	EP1912321-015	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	1.06	0.82	0.11	13.8	3.86	
Iron	7439-89-6	0.05	mg/L	2.03	0.54	1.89	13.6	12.5	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.12	0.63	0.01	0.03	0.29	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.12	0.63	<0.01	0.03	0.29	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.02	<0.01	0.02	0.14	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.1	1.5	0.4	0.5	1.6	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	1.1	1.5	0.4	0.5	1.7	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.02	0.04	0.01	0.09	0.06	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.02	<0.01	<0.01	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	12.2	142	26.8	16.6	6.15	
∅ Total Cations	----	0.01	meq/L	11.6	136	27.7	15.9	5.72	
∅ Ionic Balance	----	0.01	%	2.66	2.04	1.56	2.09	3.70	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	70	<50	
C15 - C28 Fraction	----	100	µg/L	<100	1290	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	1400	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	2690	<50	70	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW05	Northern 3	JT01	BORR MW24	BORR MW06
Client sampling date / time				20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912321-011	EP1912321-012	EP1912321-013	EP1912321-014	EP1912321-015	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	2520	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	280	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	2800	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	<10	<10	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	<0.02	<0.02	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	----	<0.02	<0.02	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	<0.10	<0.10	----	----	
Carbofenthion	786-19-6	0.02	µg/L	----	<0.02	<0.02	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	<0.02	<0.02	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	<0.02	<0.02	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	<0.2	<0.2	----	----	
Coumaphos	56-72-4	0.01	µg/L	----	<0.01	<0.01	----	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	<0.02	<0.02	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	<0.02	<0.02	----	----	
Demeton-O	298-03-3	0.02	µg/L	----	<0.02	<0.02	----	----	
Demeton-S	126-75-0	0.02	µg/L	----	<0.02	<0.02	----	----	
Diazinon	333-41-5	0.01	µg/L	----	<0.01	<0.01	----	----	
Dichlorvos	62-73-7	0.20	µg/L	----	<0.20	<0.20	----	----	
Dimethoate	60-51-5	0.02	µg/L	----	<0.02	<0.02	----	----	
Disulfoton	298-04-4	0.05	µg/L	----	<0.05	<0.05	----	----	
Ethion	563-12-2	0.02	µg/L	----	<0.02	<0.02	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW05	Northern 3	JT01	BORR MW24	BORR MW06
Client sampling date / time					20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00	20-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EP1912321-011	EP1912321-012	EP1912321-013	EP1912321-014	EP1912321-015	
				Result	Result	Result	Result	Result	
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L	----	<0.05	<0.05	----	----	
Ethoprophos	13194-48-4	0.01	µg/L	----	<0.01	<0.01	----	----	
Fenamiphos	22224-92-6	0.01	µg/L	----	<0.01	<0.01	----	----	
Fenchlorphos (Rannel)	299-84-3	10	µg/L	----	<10	<10	----	----	
Fenitrothion	122-14-5	2	µg/L	----	<2	<2	----	----	
Fensulfothion	115-90-2	0.01	µg/L	----	<0.01	<0.01	----	----	
Fenthion	55-38-9	0.05	µg/L	----	<0.05	<0.05	----	----	
Malathion	121-75-5	0.02	µg/L	----	<0.02	<0.02	----	----	
Mevinphos	7786-34-7	0.02	µg/L	----	<0.02	<0.02	----	----	
Monocrotophos	6923-22-4	0.02	µg/L	----	<0.02	<0.02	----	----	
Omethoate	1113-02-6	0.01	µg/L	----	<0.01	<0.01	----	----	
Parathion	56-38-2	0.2	µg/L	----	<0.2	<0.2	----	----	
Parathion-methyl	298-00-0	0.5	µg/L	----	<0.5	<0.5	----	----	
Phorate	298-02-2	0.1	µg/L	----	<0.1	<0.1	----	----	
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	----	<0.01	<0.01	----	----	
Pirimiphos-methyl	29232-93-7	0.01	µg/L	----	<0.01	<0.01	----	----	
Profenofos	41198-08-7	0.01	µg/L	----	<0.01	<0.01	----	----	
Prothiofos	34643-46-4	0.1	µg/L	----	<0.1	<0.1	----	----	
Sulfotep	3689-24-5	0.005	µg/L	----	<0.005	<0.005	----	----	
Sulprofos	35400-43-2	0.05	µg/L	----	<0.05	<0.05	----	----	
Terbufos	13071-79-9	0.01	µg/L	----	<0.01	<0.01	----	----	
Temephos	3383-96-8	0.02	µg/L	----	<0.02	<0.02	----	----	
Tetrachlorvinphos	22248-79-9	0.01	µg/L	----	<0.01	<0.01	----	----	
Triazophos	24017-47-8	0.005	µg/L	----	<0.005	<0.005	----	----	
Trichlorfon	52-68-6	0.02	µg/L	----	<0.02	<0.02	----	----	
Trichloronate	327-98-0	0.5	µg/L	----	<0.5	<0.5	----	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	<b>85.4</b>	<b>86.5</b>	<b>83.0</b>	<b>82.5</b>	<b>85.3</b>	
Toluene-D8	2037-26-5	2	%	<b>97.0</b>	<b>96.5</b>	<b>98.7</b>	<b>98.3</b>	<b>97.8</b>	
4-Bromofluorobenzene	460-00-4	2	%	<b>105</b>	<b>107</b>	<b>106</b>	<b>105</b>	<b>105</b>	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW46	BORR MW08a	BORR MW09	BORR MW10	MR MW05
Client sampling date / time				20-Nov-2019 00:00	21-Nov-2019 00:00	21-Nov-2019 00:00	21-Nov-2019 00:00	21-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912321-016	EP1912321-017	EP1912321-018	EP1912321-019	EP1912321-020	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.07	6.36	6.62	6.38	6.25	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	377	550	192	411	21400	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	312	411	116	266	14800	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	17	48	11	21	125	
Total Alkalinity as CaCO3	----	1	mg/L	17	48	11	21	125	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	40	18	7	15	46	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	144	<10	26	41	934	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	16	167	26	86	7470	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	37	18	12	13	168	
Magnesium	7439-95-4	1	mg/L	12	14	3	12	666	
Sodium	7440-23-5	1	mg/L	15	73	17	47	3770	
Potassium	7440-09-7	1	mg/L	3	8	5	4	41	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.02	0.24	0.02	0.08	0.03	
Arsenic	7440-38-2	0.001	mg/L	0.002	0.002	<0.001	0.001	0.013	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	0.001	<0.001	0.001	0.003	
Cobalt	7440-48-4	0.001	mg/L	0.004	<0.001	<0.001	<0.001	0.005	
Copper	7440-50-8	0.001	mg/L	0.016	0.009	0.020	0.013	0.004	
Lead	7439-92-1	0.001	mg/L	0.001	0.001	0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.075	0.054	0.002	0.012	0.189	
Nickel	7440-02-0	0.001	mg/L	0.015	0.018	0.017	0.012	0.006	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.070	0.085	0.042	0.055	0.031	
Iron	7439-89-6	0.05	mg/L	27.1	2.10	<0.05	3.50	18.9	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW46	BORR MW08a	BORR MW09	BORR MW10	MR MW05
Client sampling date / time				20-Nov-2019 00:00	21-Nov-2019 00:00	21-Nov-2019 00:00	21-Nov-2019 00:00	21-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912321-016	EP1912321-017	EP1912321-018	EP1912321-019	EP1912321-020	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	5.22	5.16	0.18	0.92	3.39	
Iron	7439-89-6	0.05	mg/L	40.3	2.71	<0.05	4.93	26.6	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.20	0.29	<0.01	0.20	0.27	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.20	0.29	<0.01	0.20	0.27	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.26	<0.01	2.32	0.02	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.5	1.6	0.6	0.8	0.9	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.8	1.6	2.9	0.8	0.9	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.02	0.67	<0.01	<0.01	0.08	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.67	<0.01	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	----	----	1.66	----	----	
∅ Total Anions	----	0.01	meq/L	3.79	5.67	----	3.70	233	
∅ Total Cations	----	0.01	meq/L	3.56	5.43	1.71	3.78	228	
∅ Ionic Balance	----	0.01	%	----	----	1.56	----	----	
∅ Ionic Balance	----	0.01	%	3.07	2.16	----	1.12	0.96	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	170	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	170	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW46	BORR MW08a	BORR MW09	BORR MW10	MR MW05
Client sampling date / time				20-Nov-2019 00:00	21-Nov-2019 00:00	21-Nov-2019 00:00	21-Nov-2019 00:00	21-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912321-016	EP1912321-017	EP1912321-018	EP1912321-019	EP1912321-020	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	140	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	140	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	82.8	84.2	79.1	79.9	85.1	
Toluene-D8	2037-26-5	2	%	96.6	97.0	98.2	97.6	97.6	
4-Bromofluorobenzene	460-00-4	2	%	104	106	105	104	104	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Northern 5	BORR MW20	RB04	FB04	TBW 1139
Client sampling date / time				21-Nov-2019 00:00	21-Nov-2019 00:00	21-Nov-2019 00:00	21-Nov-2019 00:00	21-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912321-021	EP1912321-022	EP1912321-023	EP1912321-024	EP1912321-025	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	7.76	6.41	----	----	----	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	986	4060	----	----	----	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	554	2600	----	----	----	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	----	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	155	45	----	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	155	45	----	----	----	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	7	16	----	----	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	22	64	----	----	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	260	1240	----	----	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	33	34	----	----	----	
Magnesium	7439-95-4	1	mg/L	21	108	----	----	----	
Sodium	7440-23-5	1	mg/L	156	649	----	----	----	
Potassium	7440-09-7	1	mg/L	6	5	----	----	----	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.02	0.02	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	0.001	<0.001	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----	
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.008	----	----	----	
Copper	7440-50-8	0.001	mg/L	0.017	0.017	----	----	----	
Lead	7439-92-1	0.001	mg/L	0.001	0.001	----	----	----	
Manganese	7439-96-5	0.001	mg/L	0.152	0.176	----	----	----	
Nickel	7440-02-0	0.001	mg/L	0.009	0.019	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----	
Zinc	7440-66-6	0.005	mg/L	0.048	0.064	----	----	----	
Iron	7439-89-6	0.05	mg/L	0.16	0.34	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Northern 5	BORR MW20	RB04	FB04	TBW 1139
Client sampling date / time				21-Nov-2019 00:00	21-Nov-2019 00:00	21-Nov-2019 00:00	21-Nov-2019 00:00	21-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912321-021	EP1912321-022	EP1912321-023	EP1912321-024	EP1912321-025	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.12	1.28	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	----	----	<0.001	----	----	
Cadmium	7440-43-9	0.0001	mg/L	----	----	<0.0001	----	----	
Chromium	7440-47-3	0.001	mg/L	----	----	<0.001	----	----	
Copper	7440-50-8	0.001	mg/L	----	----	<0.001	----	----	
Nickel	7440-02-0	0.001	mg/L	----	----	<0.001	----	----	
Lead	7439-92-1	0.001	mg/L	----	----	<0.001	----	----	
Zinc	7440-66-6	0.005	mg/L	----	----	<0.005	----	----	
Iron	7439-89-6	0.05	mg/L	0.87	3.63	----	----	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.03	----	----	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	<0.01	0.03	----	----	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.02	----	----	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.8	0.1	----	----	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.8	0.1	----	----	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.50	<0.01	----	----	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.43	<0.01	----	----	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	----	----	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	10.9	37.2	----	----	----	
∅ Total Cations	----	0.01	meq/L	10.3	38.9	----	----	----	
∅ Ionic Balance	----	0.01	%	2.71	2.28	----	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----	
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Northern 5	BORR MW20	RB04	FB04	TBW 1139
Client sampling date / time				21-Nov-2019 00:00	21-Nov-2019 00:00	21-Nov-2019 00:00	21-Nov-2019 00:00	21-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912321-021	EP1912321-022	EP1912321-023	EP1912321-024	EP1912321-025	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>									
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	----	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	----	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	----	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	----	----	----	
>C16 - C34 Fraction	----	100	µg/L	<100	<100	----	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	----	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	----	----	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	----	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	----	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	----	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	----	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	----	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	----	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	----	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	----	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	<10	----	----	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	----	----	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	----	----	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	----	----	----	----	
Carbofenthoion	786-19-6	0.02	µg/L	<0.02	----	----	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	----	----	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	----	----	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	----	----	----	----	
Coumaphos	56-72-4	0.01	µg/L	<0.01	----	----	----	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	----	----	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	----	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Northern 5	BORR MW20	RB04	FB04	TBW 1139
Client sampling date / time					21-Nov-2019 00:00	21-Nov-2019 00:00	21-Nov-2019 00:00	21-Nov-2019 00:00	21-Nov-2019 00:00
Compound	CAS Number	LOR	Unit	EP1912321-021	EP1912321-022	EP1912321-023	EP1912321-024	EP1912321-025	
				Result	Result	Result	Result	Result	
<b>EP234A: OP Pesticides - Continued</b>									
Demeton-O	298-03-3	0.02	µg/L	<0.02	----	----	----	----	----
Demeton-S	126-75-0	0.02	µg/L	<0.02	----	----	----	----	----
Diazinon	333-41-5	0.01	µg/L	<0.01	----	----	----	----	----
Dichlorvos	62-73-7	0.20	µg/L	<0.20	----	----	----	----	----
Dimethoate	60-51-5	0.02	µg/L	<0.02	----	----	----	----	----
Disulfoton	298-04-4	0.05	µg/L	<0.05	----	----	----	----	----
Ethion	563-12-2	0.02	µg/L	<0.02	----	----	----	----	----
EPN	2104-64-5	0.05	µg/L	<0.05	----	----	----	----	----
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	----	----	----	----	----
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	----	----	----	----	----
Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	----	----	----	----	----
Fenitrothion	122-14-5	2	µg/L	<2	----	----	----	----	----
Fensulfothion	115-90-2	0.01	µg/L	<0.01	----	----	----	----	----
Fenthion	55-38-9	0.05	µg/L	<0.05	----	----	----	----	----
Malathion	121-75-5	0.02	µg/L	<0.02	----	----	----	----	----
Mevinphos	7786-34-7	0.02	µg/L	<0.02	----	----	----	----	----
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	----	----	----	----	----
Omethoate	1113-02-6	0.01	µg/L	<0.01	----	----	----	----	----
Parathion	56-38-2	0.2	µg/L	<0.2	----	----	----	----	----
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	----	----	----	----	----
Phorate	298-02-2	0.1	µg/L	<0.1	----	----	----	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	----	----	----	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	----	----	----	----	----
Profenofos	41198-08-7	0.01	µg/L	<0.01	----	----	----	----	----
Prothiofos	34643-46-4	0.1	µg/L	<0.1	----	----	----	----	----
Sulfotep	3689-24-5	0.005	µg/L	<0.005	----	----	----	----	----
Sulprofos	35400-43-2	0.05	µg/L	<0.05	----	----	----	----	----
Terbufos	13071-79-9	0.01	µg/L	<0.01	----	----	----	----	----
Temephos	3383-96-8	0.02	µg/L	<0.02	----	----	----	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	----	----	----	----	----
Triazophos	24017-47-8	0.005	µg/L	<0.005	----	----	----	----	----
Trichlorfon	52-68-6	0.02	µg/L	<0.02	----	----	----	----	----
Trichloronate	327-98-0	0.5	µg/L	<0.5	----	----	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	84.2	95.0	----	96.2	94.1	

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 Work Order : EP1912321  
 Client : GHD PTY LTD  
 Project : 6137041



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Northern 5	BORR MW20	RB04	FB04	TBW 1139
Client sampling date / time				21-Nov-2019 00:00	21-Nov-2019 00:00	21-Nov-2019 00:00	21-Nov-2019 00:00	21-Nov-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1912321-021	EP1912321-022	EP1912321-023	EP1912321-024	EP1912321-025	
				Result	Result	Result	Result	Result	
<b>EP080S: TPH(V)/BTEX Surrogates - Continued</b>									
Toluene-D8	2037-26-5	2	%	97.0	99.6	----	98.8	101	
4-Bromofluorobenzene	460-00-4	2	%	104	91.2	----	89.8	90.3	



## Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	61	141
Toluene-D8	2037-26-5	73	126
4-Bromofluorobenzene	460-00-4	60	125

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1912321	Page	: 1 of 15
Client	: GHD PTY LTD	Laboratory	: Environmental Division Perth
Contact	: MS VICKI DAVIES	Telephone	: 08 9406 1311
Project	: 6137041	Date Samples Received	: 22-Nov-2019
Site	: ----	Issue Date	: 06-Dec-2019
Sampler	: DOMINIQUE SHUTTLEWORTH, Emily Evans, Ian Oglesby	No. of samples received	: 25
Order number	: 6137041 08.0831	No. of samples analysed	: 25

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

#### Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**





### Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EA005P: pH by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural</b>							
BORR MW12, Southern 3, Southern 4, BORR MW11, WRM North Site 5, BORR MW04, BORR MW05, Northern 3, JT01, BORR MW24, BORR MW06, BORR MW46		----	----	----	02-Dec-2019	20-Nov-2019	12
<b>Clear Plastic Bottle - Natural</b>							
BORR MW08a, BORR MW10, Northern 5, BORR MW20		----	----	----	02-Dec-2019	21-Nov-2019	11
<b>EP234A: OP Pesticides</b>							
<b>Amber Bottle Unpreserved for Specialist Organics</b>							
Southern 3, Southern 4, WRM North Site 5, Northern 3, JT01		----	----	----	28-Nov-2019	27-Nov-2019	1

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
		Container / Client Sample ID(s)	Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA005P: pH by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA005-P)</b> BORR MW12, Southern 4, WRM North Site 5, BORR MW05, JT01, BORR MW06, Southern 3, BORR MW11, BORR MW04, Northern 3, BORR MW24, BORR MW46	20-Nov-2019	----	----	----	02-Dec-2019	20-Nov-2019	✘	
<b>Clear Plastic Bottle - Natural (EA005-P)</b> BORR MW08a, BORR MW10, Northern 5, BORR MW09, MR MW05, BORR MW20	21-Nov-2019	----	----	----	02-Dec-2019	21-Nov-2019	✘	
<b>EA010P: Conductivity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA010-P)</b> BORR MW12, Southern 4, WRM North Site 5, BORR MW05, JT01, BORR MW06, Southern 3, BORR MW11, BORR MW04, Northern 3, BORR MW24, BORR MW46	20-Nov-2019	----	----	----	02-Dec-2019	18-Dec-2019	✓	
<b>Clear Plastic Bottle - Natural (EA010-P)</b> BORR MW08a, BORR MW10, Northern 5, BORR MW09, MR MW05, BORR MW20	21-Nov-2019	----	----	----	02-Dec-2019	19-Dec-2019	✓	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
<b>Clear Plastic Bottle - Natural (EA015H)</b> BORR MW12, Southern 4, WRM North Site 5, BORR MW05, JT01, BORR MW06, Southern 3, BORR MW11, BORR MW04, Northern 3, BORR MW24, BORR MW46	20-Nov-2019	----	----	----	27-Nov-2019	27-Nov-2019	✓	
<b>Clear Plastic Bottle - Natural (EA015H)</b> BORR MW08a, BORR MW10, Northern 5, BORR MW09, MR MW05, BORR MW20	21-Nov-2019	----	----	----	28-Nov-2019	28-Nov-2019	✓	



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>ED037P: Alkalinity by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural (ED037-P)</b> BORR MW12, Southern 4, WRM North Site 5, BORR MW05, JT01, BORR MW06, Southern 3, BORR MW11, BORR MW04, Northern 3, BORR MW24, BORR MW46	20-Nov-2019	----	----	----	02-Dec-2019	04-Dec-2019	✓
<b>Clear Plastic Bottle - Natural (ED037-P)</b> BORR MW08a, BORR MW10, Northern 5, BORR MW09, MR MW05, BORR MW20	21-Nov-2019	----	----	----	02-Dec-2019	05-Dec-2019	✓
<b>ED038A: Acidity</b>							
<b>Clear Plastic Bottle - Natural (ED038)</b> BORR MW12, Southern 4, WRM North Site 5, BORR MW05, JT01, BORR MW06, Southern 3, BORR MW11, BORR MW04, Northern 3, BORR MW24, BORR MW46	20-Nov-2019	----	----	----	02-Dec-2019	04-Dec-2019	✓
<b>Clear Plastic Bottle - Natural (ED038)</b> BORR MW08a, BORR MW10, Northern 5, BORR MW09, MR MW05, BORR MW20	21-Nov-2019	----	----	----	02-Dec-2019	05-Dec-2019	✓
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>							
<b>Clear Plastic Bottle - Natural (ED041G)</b> BORR MW12, Southern 4, WRM North Site 5, BORR MW05, JT01, BORR MW06, Southern 3, BORR MW11, BORR MW04, Northern 3, BORR MW24, BORR MW46	20-Nov-2019	----	----	----	22-Nov-2019	18-Dec-2019	✓
<b>Clear Plastic Bottle - Natural (ED041G)</b> BORR MW08a, BORR MW10, Northern 5, BORR MW09, MR MW05, BORR MW20	21-Nov-2019	----	----	----	22-Nov-2019	19-Dec-2019	✓



Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>ED045G: Chloride by Discrete Analyser</b>							
<b>Clear Plastic Bottle - Natural (ED045G)</b> BORR MW12, Southern 4, WRM North Site 5, BORR MW05, JT01, BORR MW06, Southern 3, BORR MW11, BORR MW04, Northern 3, BORR MW24, BORR MW46	20-Nov-2019	----	----	----	22-Nov-2019	18-Dec-2019	✓
<b>Clear Plastic Bottle - Natural (ED045G)</b> BORR MW08a, BORR MW10, Northern 5, BORR MW09, MR MW05, BORR MW20	21-Nov-2019	----	----	----	22-Nov-2019	19-Dec-2019	✓
<b>ED093F: Dissolved Major Cations</b>							
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> BORR MW12, Southern 4, WRM North Site 5, BORR MW05, JT01, BORR MW06, Southern 3, BORR MW11, BORR MW04, Northern 3, BORR MW24, BORR MW46	20-Nov-2019	----	----	----	29-Nov-2019	18-Dec-2019	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> BORR MW08a, BORR MW10, Northern 5, BORR MW09, MR MW05, BORR MW20	21-Nov-2019	----	----	----	29-Nov-2019	19-Dec-2019	✓
<b>EG020F: Dissolved Metals by ICP-MS</b>							
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> BORR MW12, Southern 4, WRM North Site 5, BORR MW05, JT01, BORR MW06, Southern 3, BORR MW11, BORR MW04, Northern 3, BORR MW24, BORR MW46	20-Nov-2019	----	----	----	29-Nov-2019	18-May-2020	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> BORR MW08a, BORR MW10, Northern 5, BORR MW09, MR MW05, BORR MW20	21-Nov-2019	----	----	----	29-Nov-2019	19-May-2020	✓



Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EG020T: Total Metals by ICP-MS</b>							
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> RB03, Southern 3, BORR MW11, BORR MW04, Northern 3, BORR MW24, BORR MW46 BORR MW12, Southern 4, WRM North Site 5, BORR MW05, JT01, BORR MW06,	20-Nov-2019	28-Nov-2019	18-May-2020	✓	28-Nov-2019	18-May-2020	✓
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> BORR MW08a, BORR MW10, Northern 5, RB04 BORR MW09, MR MW05, BORR MW20,	21-Nov-2019	28-Nov-2019	19-May-2020	✓	28-Nov-2019	19-May-2020	✓
<b>EK055G: Ammonia as N by Discrete Analyser</b>							
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> BORR MW12, Southern 4, WRM North Site 5, BORR MW05, JT01, BORR MW06, Southern 3, BORR MW11, BORR MW04, Northern 3, BORR MW24, BORR MW46	20-Nov-2019	----	----	----	22-Nov-2019	18-Dec-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> BORR MW08a, BORR MW10, Northern 5, BORR MW09, MR MW05, BORR MW20	21-Nov-2019	----	----	----	22-Nov-2019	19-Dec-2019	✓
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>							
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> BORR MW12, Southern 4, WRM North Site 5, BORR MW05, JT01, BORR MW06, Southern 3, BORR MW11, BORR MW04, Northern 3, BORR MW24, BORR MW46	20-Nov-2019	----	----	----	22-Nov-2019	18-Dec-2019	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> BORR MW08a, BORR MW10, Northern 5, BORR MW09, MR MW05, BORR MW20	21-Nov-2019	----	----	----	22-Nov-2019	19-Dec-2019	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> BORR MW12, Southern 4, WRM North Site 5, BORR MW05, JT01, BORR MW06, Southern 3, BORR MW11, BORR MW04, Northern 3, BORR MW24, BORR MW46	20-Nov-2019	03-Dec-2019	18-Dec-2019	✓	03-Dec-2019	18-Dec-2019	✓	
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> BORR MW08a, BORR MW10, Northern 5, BORR MW09, MR MW05, BORR MW20	21-Nov-2019	03-Dec-2019	19-Dec-2019	✓	03-Dec-2019	19-Dec-2019	✓	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> BORR MW12, Southern 4, WRM North Site 5, BORR MW05, JT01, BORR MW06, Southern 3, BORR MW11, BORR MW04, Northern 3, BORR MW24, BORR MW46	20-Nov-2019	03-Dec-2019	18-Dec-2019	✓	03-Dec-2019	18-Dec-2019	✓	
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> BORR MW08a, BORR MW10, Northern 5, BORR MW09, MR MW05, BORR MW20	21-Nov-2019	03-Dec-2019	19-Dec-2019	✓	03-Dec-2019	19-Dec-2019	✓	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>								
<b>Clear Plastic Bottle - Natural (EK071G)</b> BORR MW12, Southern 4, WRM North Site 5, BORR MW05, JT01, BORR MW06, Southern 3, BORR MW11, BORR MW04, Northern 3, BORR MW24, BORR MW46	20-Nov-2019	----	----	----	22-Nov-2019	22-Nov-2019	✓	
<b>Clear Plastic Bottle - Natural (EK071G)</b> BORR MW08a, BORR MW10, Northern 5, BORR MW09, MR MW05, BORR MW20	21-Nov-2019	----	----	----	22-Nov-2019	23-Nov-2019	✓	



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK085M: Sulfide as S2-</b>								
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> BORR MW12, Southern 4, WRM North Site 5, BORR MW05, JT01, BORR MW06, Southern 3, BORR MW11, BORR MW04, Northern 3, BORR MW24, BORR MW46	20-Nov-2019	----	----	----	27-Nov-2019	27-Nov-2019	✓	
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> BORR MW08a, BORR MW10, Northern 5, BORR MW09, MR MW05, BORR MW20	21-Nov-2019	----	----	----	27-Nov-2019	28-Nov-2019	✓	
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BORR MW12, Southern 4, WRM North Site 5, BORR MW05, JT01, BORR MW06, Southern 3, BORR MW11, BORR MW04, Northern 3, BORR MW24, BORR MW46	20-Nov-2019	27-Nov-2019	27-Nov-2019	✓	03-Dec-2019	06-Jan-2020	✓	
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BORR MW08a, BORR MW10, Northern 5, BORR MW09, MR MW05, BORR MW20	21-Nov-2019	27-Nov-2019	28-Nov-2019	✓	03-Dec-2019	06-Jan-2020	✓	
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> FB03, TBW 1137, Southern 3, BORR MW11, BORR MW04, Northern 3, BORR MW24, BORR MW46 TBW 1132, BORR MW12, Southern 4, WRM North Site 5, BORR MW05, JT01, BORR MW06,	20-Nov-2019	02-Dec-2019	04-Dec-2019	✓	02-Dec-2019	04-Dec-2019	✓	
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BORR MW08a, BORR MW10, Northern 5, FB04, BORR MW09, MR MW05, BORR MW20, TBW 1139	21-Nov-2019	02-Dec-2019	05-Dec-2019	✓	02-Dec-2019	05-Dec-2019	✓	



Matrix: WATER

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>								
<b>Amber Glass Bottle - Unpreserved (EP071)</b>								
BORR MW12, Southern 4, WRM North Site 5, BORR MW05, JT01, BORR MW06,	Southern 3, BORR MW11, BORR MW04, Northern 3, BORR MW24, BORR MW46	20-Nov-2019	27-Nov-2019	27-Nov-2019	✔	03-Dec-2019	06-Jan-2020	✔
<b>Amber Glass Bottle - Unpreserved (EP071)</b>								
BORR MW08a, BORR MW10, Northern 5,	BORR MW09, MR MW05, BORR MW20	21-Nov-2019	27-Nov-2019	28-Nov-2019	✔	03-Dec-2019	06-Jan-2020	✔
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
FB03, TBW 1137, Southern 3, BORR MW11, BORR MW04, Northern 3, BORR MW24, BORR MW46	TBW 1132, BORR MW12, Southern 4, WRM North Site 5, BORR MW05, JT01, BORR MW06,	20-Nov-2019	02-Dec-2019	04-Dec-2019	✔	02-Dec-2019	04-Dec-2019	✔
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
BORR MW08a, BORR MW10, Northern 5, FB04,	BORR MW09, MR MW05, BORR MW20, TBW 1139	21-Nov-2019	02-Dec-2019	05-Dec-2019	✔	02-Dec-2019	05-Dec-2019	✔
<b>EP080: BTEXN</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
FB03, TBW 1137, Southern 3, BORR MW11, BORR MW04, Northern 3, BORR MW24, BORR MW46	TBW 1132, BORR MW12, Southern 4, WRM North Site 5, BORR MW05, JT01, BORR MW06,	20-Nov-2019	02-Dec-2019	04-Dec-2019	✔	02-Dec-2019	04-Dec-2019	✔
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
BORR MW08a, BORR MW10, Northern 5, FB04,	BORR MW09, MR MW05, BORR MW20, TBW 1139	21-Nov-2019	02-Dec-2019	05-Dec-2019	✔	02-Dec-2019	05-Dec-2019	✔





Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP204: Glyphosate and AMPA</b>							
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b> Southern 3, Southern 4, WRM North Site 5, Northern 3, JT01	20-Nov-2019	----	----	----	02-Dec-2019	04-Dec-2019	✓
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b> Northern 5	21-Nov-2019	----	----	----	02-Dec-2019	05-Dec-2019	✓
<b>EP234A: OP Pesticides</b>							
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> Southern 3, Southern 4, WRM North Site 5, Northern 3, JT01	20-Nov-2019	----	----	----	28-Nov-2019	27-Nov-2019	*
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> Northern 5	21-Nov-2019	----	----	----	28-Nov-2019	28-Nov-2019	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Laboratory Duplicates (DUP)</b>							
Acidity as Calcium Carbonate	ED038	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	32	12.50	10.53	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Acidity as Calcium Carbonate	ED038	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	32	12.50	10.53	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	32	6.25	5.26	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3)  Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3)  Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ammonium as N	EK055G-NH4	WATER	Ammonium in the sample is reported as the ionised / unionised fractions by the use of a nomograph and the initial pH and Temperature. Ammonia is determined by direct colorimetry by Discrete Analyser according to APHA 4500-NH3 G. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Sulfide as S2-	EK085	WATER	In house: Referenced to APHA 4500-S2- D. Sulfide species present in water samples are immediately precipitated when collected in pretreated caustic/zinc acetate preserved sample containers. The sulphides are coloured using methylene blue indicator. Non-detects may be screened by comparison against a standard at half-LOR, otherwise samples are measured using UV-VIS detection at 664nm. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatle Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Glyphosate and AMPA	EP204	WATER	In house: Pre-column derivatisation LCMS (ES in negative mode). Water samples are derivatised with 9-fluorenyl methoxycarbonyl chloroformate (FMOC) in alkaline condition. The derivatives of glyphosate and AMPA are separated by a C8 column and determined by MS.
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.



CHAIN OF CUSTODY RECORD  
AND ANALYSIS REQUEST



GHD  
Level 10, 999 Hay Street  
Perth WA 6000  
PO Box 3106  
Perth WA 6832

Reception Ph: 08 6222 8222

Project ID (as per ESdat set up; no spaces)  
**6137041**  
PO Number (to be invoiced)  
**6137041 08.0831**

Laboratory: **ALS Laboratory**  
Address: **26 Rigali Way Wangara**  
Laboratory Contact: **Marnie Thomsett**

Laboratory Quote No.  
**EP489/19 V4**  
Turnaround Time  
Standard

Job Manager (Invoice) & GHD accounts  
**Julia Roberts**  
**Vicki Davies**  
Email Address (Results)  
**Emily.Evans@ghd.com**  
**Vicki.Davies@ghd.com**

GHD Sample ID	Lab Sample ID	Date	Time	Sample Matrix S-Soil/Sr Sludge/W-Water/A-Air	Container				AS per am suit EP 489/19 V4	AS per SVS suit EP 489/19 V4	AS per EP 489/19 V4	Analyses											HOLD	Remarks			
					Type B-Bottle/J-1a/N- Via/Bag/G-Glass/P-Plastic	Preservative Unpreserved/AC/ H2SO4/HNO3/Other	No																				
BORR MW09	18	21/11/19		W	B		8	✓																			
BORR MW10	19	21/11/19		W	B		8	✓																			
MR MW05	20	21/11/19		W	B		8	✓																			
NORthern 5	21	21/11/19		W	B		10		✓																		
BORR MW20	22	21/11/19		W	B		8	✓																			
RB04	23	21/11/19		W	B		1			✓																	
FB04	24	21/11/19		W	B		1				✓																
TBW1139	25	21/11/19		W	B		1					✓															

Sampled by: **Emily Evans + Ian Ogleby**  
Received by: **AD**

Date/Time: **21/11/19**  
Relinquished by: **EE / 10**  
Date/Time: **21/11/19**  
Relinquished by:  
Date/Time:

12:15



GHD Pty Ltd WA  
999 Hay Street Perth  
Perth  
WA 6004



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Accreditation Number 1261  
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The results of the tests, calibrations and/or  
measurements included in this document are traceable  
to Australian/national standards.

Attention: **Vicki Davies**

Report **689319-W**

Project name

Project ID **6137041**

Received Date **Nov 21, 2019**

Client Sample ID			<b>FS01</b>
Sample Matrix			<b>Water</b>
Eurofins Sample No.			<b>P19-No29824</b>
Date Sampled			<b>Nov 18, 2019</b>
Test/Reference	LOR	Unit	
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>			
TRH C6-C9	0.02	mg/L	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1
TRH C10-C36 (Total)	0.1	mg/L	< 0.1
<b>BTEX</b>			
Benzene	0.001	mg/L	< 0.001
Toluene	0.001	mg/L	< 0.001
Ethylbenzene	0.001	mg/L	0.001
m&p-Xylenes	0.002	mg/L	< 0.002
o-Xylene	0.001	mg/L	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003
4-Bromofluorobenzene (surr.)	1	%	88
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>			
Naphthalene <sup>N02</sup>	0.01	mg/L	< 0.01
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	0.05	mg/L	< 0.05
TRH C6-C10	0.02	mg/L	0.02
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	0.02	mg/L	< 0.02
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>			
TRH >C10-C16	0.05	mg/L	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1
<b>Acidity (as CaCO3)</b>			
Acidity (as CaCO3)	10	mg/L	80
<b>Ammonia (as N)</b>			
Ammonia (as N)	0.01	mg/L	0.02
<b>Ammonium Ion (as N)</b>			
Ammonium Ion (as N)	0.01	mg/L	0.02
<b>Chloride</b>			
Chloride	1	mg/L	600
<b>Conductivity (at 25°C)</b>			
Conductivity (at 25°C)	10	uS/cm	2200
<b>Nitrate &amp; Nitrite (as N)</b>			
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05
<b>Nitrate (as N)</b>			
Nitrate (as N)	0.02	mg/L	0.04
<b>Nitrite (as N)</b>			
Nitrite (as N)	0.02	mg/L	< 0.02
<b>pH (at 25°C)</b>			
pH (at 25°C)	0.1	pH Units	6.2
<b>Phosphate total (as P)</b>			
Phosphate total (as P)	0.01	mg/L	0.02
<b>Phosphorus reactive (as P)</b>			
Phosphorus reactive (as P)	0.01	mg/L	< 0.01

<b>Client Sample ID</b>			<b>FS01</b>
<b>Sample Matrix</b>			<b>Water</b>
<b>Eurofins Sample No.</b>			<b>P19-No29824</b>
<b>Date Sampled</b>			<b>Nov 18, 2019</b>
Test/Reference	LOR	Unit	
<b>Sulphate (as SO4)</b>			
	5	mg/L	38
<b>Sulphide (as S)</b>			
	0.05	mg/L	< 0.05
<b>Total Dissolved Solids Dried at 180°C ± 2°C</b>			
	10	mg/L	1100
<b>Total Kjeldahl Nitrogen (as N)</b>			
	0.2	mg/L	< 0.2
<b>Total Nitrogen (as N)*</b>			
	0.2	mg/L	< 0.2
<b>Alkalinity (speciated)</b>			
<b>Total Alkalinity (as CaCO3)</b>			
	20	mg/L	64
<b>Heavy Metals</b>			
<b>Aluminium</b>			
	0.05	mg/L	0.51
<b>Aluminium (filtered)</b>			
	0.05	mg/L	< 0.05
<b>Arsenic (filtered)</b>			
	0.001	mg/L	0.001
<b>Cadmium (filtered)</b>			
	0.0002	mg/L	< 0.0002
<b>Chromium (filtered)</b>			
	0.001	mg/L	< 0.001
<b>Cobalt (filtered)</b>			
	0.001	mg/L	0.001
<b>Copper (filtered)</b>			
	0.001	mg/L	< 0.001
<b>Iron</b>			
	0.05	mg/L	5.9
<b>Iron (filtered)</b>			
	0.05	mg/L	5.4
<b>Lead (filtered)</b>			
	0.001	mg/L	< 0.001
<b>Manganese (filtered)</b>			
	0.005	mg/L	0.12
<b>Nickel (filtered)</b>			
	0.001	mg/L	0.003
<b>Selenium (filtered)</b>			
	0.001	mg/L	< 0.001
<b>Zinc (filtered)</b>			
	0.005	mg/L	0.009
<b>Alkali Metals (filtered)</b>			
<b>Calcium (filtered)</b>			
	0.5	mg/L	14
<b>Magnesium (filtered)</b>			
	0.5	mg/L	46
<b>Potassium (filtered)</b>			
	0.5	mg/L	5.3
<b>Sodium (filtered)</b>			
	0.5	mg/L	310

**Sample History**

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
<b>Eurofins   mgt Suite B1</b>			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Perth	Nov 21, 2019	7 Days
BTEX - Method: LTM-ORG-2010 TRH C6-C40	Perth	Nov 21, 2019	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Perth	Nov 21, 2019	7 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Perth	Nov 21, 2019	7 Days
Acidity (as CaCO <sub>3</sub> ) - Method: LTM-INO-4210 Acidity	Perth	Nov 21, 2019	14 Days
Ammonium Ion (as N) - Method: APHA 4500-NH <sub>3</sub> Ammonia Nitrogen by FIA	Melbourne	Nov 22, 2019	28 Days
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Nov 22, 2019	28 Days
Conductivity (at 25°C) - Method: LTM-INO-4030 Conductivity	Perth	Nov 21, 2019	28 Days
pH (at 25°C) - Method: LTM-GEN-7090 pH in water by ISE	Perth	Nov 21, 2019	0 Hours
Sulphate (as SO <sub>4</sub> ) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Nov 22, 2019	28 Days
Sulphide (as S) - Method: APHA 4500-S C & D - Sulphide	Melbourne	Nov 22, 2019	7 Days
Total Dissolved Solids Dried at 180°C ± 2°C - Method: LTM-INO-4170 Total Dissolved Solids in Water	Melbourne	Nov 22, 2019	7 Days
Alkalinity (speciated) - Method: LTM-INO-4250 Alkalinity by Electrometric Titration	Perth	Nov 21, 2019	14 Days
Heavy Metals - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Perth	Nov 21, 2019	180 Days
Heavy Metals (filtered) - Method: HEAVY METALS	Perth	Nov 21, 2019	180 Days
Alkali Metals (filtered) - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Perth	Nov 21, 2019	180 Days
<b>Eurofins   mgt Suite B19E: Total N, TKN, NO<sub>x</sub>, NO<sub>2</sub>, NO<sub>3</sub>, NH<sub>3</sub>, Total P, Reactive P</b>			
Ammonia (as N) - Method: LTM-INO-4200 Ammonia by Discrete Analyser	Melbourne	Nov 22, 2019	28 Days
Nitrate & Nitrite (as N) - Method: LTM-INO-4120 Analysis of NO <sub>x</sub> NO <sub>2</sub> NH <sub>3</sub> by FIA	Melbourne	Nov 22, 2019	28 Days
Nitrate (as N) - Method: LTM-INO-4120 Analysis of NO <sub>x</sub> NO <sub>2</sub> NH <sub>3</sub> by FIA	Melbourne	Nov 22, 2019	28 Days
Nitrite (as N) - Method: LTM-INO-4120 Analysis of NO <sub>x</sub> NO <sub>2</sub> NH <sub>3</sub> by FIA	Melbourne	Nov 22, 2019	2 Days
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorus	Melbourne	Nov 22, 2019	28 Days
Phosphorus reactive (as P) - Method: APHA 4500-P	Melbourne	Nov 22, 2019	2 Days
Total Kjeldahl Nitrogen (as N) - Method: LTM-INO-4310 TKN in Waters & Soils by FIA	Melbourne	Nov 22, 2019	7 Days

<b>Company Name:</b> GHD Pty Ltd WA	<b>Order No.:</b>	<b>Received:</b> Nov 21, 2019 9:13 AM
<b>Address:</b> 999 Hay Street Perth Perth WA 6004	<b>Report #:</b> 689319	<b>Due:</b> Nov 28, 2019
	<b>Phone:</b> 08 6222 8222	<b>Priority:</b> 5 Day
	<b>Fax:</b> 08 9429 6555	<b>Contact Name:</b> Vicki Davies
<b>Project Name:</b>	<b>Eurofins Analytical Services Manager : Robert Johnston</b>	
<b>Project ID:</b> 6137041		

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Ammonium Ion (as N)	Arsenic (filtered)	Cadmium (filtered)	Calcium (filtered)	Chloride	Chromium (filtered)	Cobalt (filtered)	Conductivity (at 25°C)	Copper (filtered)	Iron	Iron (filtered)	Lead (filtered)	Magnesium (filtered)	Manganese (filtered)	Nickel (filtered)	pH (at 25°C)	Potassium (filtered)	Selenium (filtered)	Sodium (filtered)	Sulphate (as SO4)	Sulphide (as S)	Total Alkalinity (as CaCO3)	Total Dissolved Solids Dried at 180°C ± 2°C	Zinc (filtered)	Eurofins   mg/L Suite B1	Eurofins   mg/L Suite B19E: Total N, TKN, NOx, NO2, NO3, NH3, Total P, Reactive P	
<b>Melbourne Laboratory - NATA Site # 1254 &amp; 14271</b>									X				X																					X	
<b>Sydney Laboratory - NATA Site # 18217</b>																																			
<b>Brisbane Laboratory - NATA Site # 20794</b>																																			
<b>Perth Laboratory - NATA Site # 23736</b>						X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X		X	X	
<b>External Laboratory</b>																																			
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																														
1	FS01	Nov 18, 2019		Water	P19-No29824	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
<b>Test Counts</b>						1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

## Internal Quality Control Review and Glossary

### General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
- All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
- This report replaces any interim results previously issued.

### Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

**\*\*NOTE:** pH duplicates are reported as a range NOT as RPD

### Units

**mg/kg:** milligrams per kilogram

**mg/L:** milligrams per litre

**ug/L:** micrograms per litre

**ppm:** Parts per million

**ppb:** Parts per billion

**%:** Percentage

**org/100mL:** Organisms per 100 millilitres

**NTU:** Nephelometric Turbidity Units

**MPN/100mL:** Most Probable Number of organisms per 100 millilitres

### Terms

<b>Dry</b>	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
<b>LOR</b>	Limit of Reporting.
<b>SPIKE</b>	Addition of the analyte to the sample and reported as percentage recovery.
<b>RPD</b>	Relative Percent Difference between two Duplicate pieces of analysis.
<b>LCS</b>	Laboratory Control Sample - reported as percent recovery.
<b>CRM</b>	Certified Reference Material - reported as percent recovery.
<b>Method Blank</b>	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
<b>Surr - Surrogate</b>	The addition of a like compound to the analyte target and reported as percentage recovery.
<b>Duplicate</b>	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
<b>USEPA</b>	United States Environmental Protection Agency
<b>APHA</b>	American Public Health Association
<b>TCLP</b>	Toxicity Characteristic Leaching Procedure
<b>COC</b>	Chain of Custody
<b>SRA</b>	Sample Receipt Advice
<b>QSM</b>	US Department of Defense Quality Systems Manual Version 5.3
<b>CP</b>	Client Parent - QC was performed on samples pertaining to this report
<b>NCP</b>	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
<b>TEQ</b>	Toxic Equivalency Quotient

### QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

### QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

**Quality Control Results**

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
<b>Method Blank</b>							
<b>BTEX</b>							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
<b>Method Blank</b>							
Acidity (as CaCO <sub>3</sub> )	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Ammonium Ion (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Conductivity (at 25°C)	uS/cm	< 10			10	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.01			0.01	Pass	
Phosphorus reactive (as P)	mg/L	< 0.01			0.01	Pass	
Sulphate (as SO <sub>4</sub> )	mg/L	< 5			5	Pass	
Sulphide (as S)	mg/L	< 0.05			0.05	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
<b>Method Blank</b>							
<b>Alkalinity (speciated)</b>							
Total Alkalinity (as CaCO <sub>3</sub> )	mg/L	< 20			20	Pass	
<b>Method Blank</b>							
<b>Heavy Metals</b>							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Cobalt (filtered)	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Lead (filtered)	mg/L	< 0.001		0.001	Pass	
Manganese (filtered)	mg/L	< 0.005		0.005	Pass	
Nickel (filtered)	mg/L	< 0.001		0.001	Pass	
Selenium (filtered)	mg/L	< 0.001		0.001	Pass	
Zinc (filtered)	mg/L	< 0.005		0.005	Pass	
<b>Method Blank</b>						
<b>Alkali Metals (filtered)</b>						
Calcium (filtered)	mg/L	< 0.5		0.5	Pass	
Magnesium (filtered)	mg/L	< 0.5		0.5	Pass	
Potassium (filtered)	mg/L	< 0.5		0.5	Pass	
Sodium (filtered)	mg/L	< 0.5		0.5	Pass	
<b>LCS - % Recovery</b>						
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>						
TRH C6-C9	%	115		70-130	Pass	
TRH C10-C14	%	88		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>BTEX</b>						
Benzene	%	108		70-130	Pass	
Toluene	%	110		70-130	Pass	
Ethylbenzene	%	108		70-130	Pass	
m&p-Xylenes	%	108		70-130	Pass	
Xylenes - Total	%	109		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>						
Naphthalene	%	103		70-130	Pass	
TRH C6-C10	%	99		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>						
TRH >C10-C16	%	116		70-130	Pass	
<b>LCS - % Recovery</b>						
Acidity (as CaCO <sub>3</sub> )	%	107		70-130	Pass	
Ammonia (as N)	%	104		70-130	Pass	
Chloride	%	105		70-130	Pass	
Conductivity (at 25°C)	%	96		70-130	Pass	
Nitrate & Nitrite (as N)	%	110		70-130	Pass	
Nitrate (as N)	%	110		70-130	Pass	
Nitrite (as N)	%	108		70-130	Pass	
Phosphate total (as P)	%	93		70-130	Pass	
Phosphorus reactive (as P)	%	109		70-130	Pass	
Sulphate (as SO <sub>4</sub> )	%	106		70-130	Pass	
Sulphide (as S)	%	100		70-130	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	%	99		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	84		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Alkalinity (speciated)</b>						
Total Alkalinity (as CaCO <sub>3</sub> )	%	107		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Heavy Metals</b>						
Aluminium	%	95		80-120	Pass	
Aluminium (filtered)	%	95		80-120	Pass	
Arsenic (filtered)	%	99		80-120	Pass	
Cadmium (filtered)	%	98		80-120	Pass	
Chromium (filtered)	%	96		80-120	Pass	
Cobalt (filtered)	%	96		80-120	Pass	

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code		
Copper (filtered)	%	93	80-120	Pass			
Iron	%	96	80-120	Pass			
Iron (filtered)	%	95	80-120	Pass			
Lead (filtered)	%	96	80-120	Pass			
Manganese (filtered)	%	93	80-120	Pass			
Nickel (filtered)	%	93	80-120	Pass			
Selenium (filtered)	%	97	80-120	Pass			
Zinc (filtered)	%	99	80-120	Pass			
<b>LCS - % Recovery</b>							
<b>Alkali Metals (filtered)</b>							
Calcium (filtered)	%	91	70-130	Pass			
Magnesium (filtered)	%	93	70-130	Pass			
Potassium (filtered)	%	95	70-130	Pass			
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
<b>Spike - % Recovery</b>							
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>				Result 1			
TRH C6-C9	P19-No37264	NCP	%	94	70-130	Pass	
TRH C10-C14	P19-No30126	NCP	%	112	70-130	Pass	
<b>Spike - % Recovery</b>							
<b>BTEX</b>				Result 1			
Benzene	P19-No37264	NCP	%	90	70-130	Pass	
Toluene	P19-No37264	NCP	%	86	70-130	Pass	
Ethylbenzene	P19-No37264	NCP	%	79	70-130	Pass	
m&p-Xylenes	P19-No37264	NCP	%	73	70-130	Pass	
o-Xylene	P19-No37264	NCP	%	76	70-130	Pass	
Xylenes - Total	P19-No37264	NCP	%	74	70-130	Pass	
<b>Spike - % Recovery</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1			
Naphthalene	P19-No37264	NCP	%	76	70-130	Pass	
TRH C6-C10	P19-No37264	NCP	%	91	70-130	Pass	
<b>Spike - % Recovery</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1			
TRH >C10-C16	P19-No30126	NCP	%	112	70-130	Pass	
<b>Spike - % Recovery</b>							
				Result 1			
Chloride	S19-No27164	NCP	%	109	70-130	Pass	
Sulphate (as SO4)	M19-No29602	NCP	%	86	70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M19-No32907	NCP	%	80	70-130	Pass	
<b>Spike - % Recovery</b>							
<b>Alkalinity (speciated)</b>				Result 1			
Total Alkalinity (as CaCO3)	P19-No30126	NCP	%	84	70-130	Pass	
<b>Spike - % Recovery</b>							
<b>Heavy Metals</b>				Result 1			
Aluminium	P19-No26315	NCP	%	116	75-125	Pass	
Aluminium (filtered)	P19-No29906	NCP	%	100	75-125	Pass	
Arsenic (filtered)	P19-No29906	NCP	%	110	70-130	Pass	
Cadmium (filtered)	P19-No29906	NCP	%	104	70-130	Pass	
Chromium (filtered)	P19-No29906	NCP	%	99	70-130	Pass	
Cobalt (filtered)	P19-No29906	NCP	%	98	75-125	Pass	
Copper (filtered)	P19-No29906	NCP	%	94	70-130	Pass	
Iron	P19-No26315	NCP	%	106	75-125	Pass	
Iron (filtered)	P19-No30768	NCP	%	100	70-130	Pass	
Lead (filtered)	P19-No29906	NCP	%	98	70-130	Pass	
Manganese (filtered)	P19-No29906	NCP	%	97	70-130	Pass	



Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Nickel (filtered)	P19-No29906	NCP	%	94			70-130	Pass	
Selenium (filtered)	P19-No29906	NCP	%	111			70-130	Pass	
Zinc (filtered)	P19-No29906	NCP	%	105			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Alkali Metals (filtered)</b>				Result 1					
Calcium (filtered)	P19-No29906	NCP	%	90			70-130	Pass	
Potassium (filtered)	P19-No29906	NCP	%	89			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Duplicate</b>									
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>				Result 1	Result 2	RPD			
TRH C6-C9	P19-No30135	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	P19-No29824	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	P19-No29824	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	P19-No29824	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
<b>Duplicate</b>									
<b>BTEX</b>				Result 1	Result 2	RPD			
Benzene	P19-No30135	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	P19-No30135	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	P19-No30135	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	P19-No30135	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	P19-No30135	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	P19-No30135	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
<b>Duplicate</b>									
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1	Result 2	RPD			
Naphthalene	P19-No30135	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	P19-No30135	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
<b>Duplicate</b>									
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1	Result 2	RPD			
TRH >C10-C16	P19-No29824	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	P19-No29824	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	P19-No29824	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
<b>Duplicate</b>									
				Result 1	Result 2	RPD			
Acidity (as CaCO <sub>3</sub> )	P19-No30767	NCP	mg/L	33	31	6.0	30%	Pass	
Ammonia (as N)	B19-No38620	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Ammonium Ion (as N)	B19-No38620	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Chloride	P19-No30767	NCP	mg/L	130	130	<1	30%	Pass	
Conductivity (at 25°C)	P19-No29824	CP	uS/cm	2200	2000	10	30%	Pass	
Nitrate & Nitrite (as N)	B19-No38620	NCP	mg/L	0.07	0.08	5.0	30%	Pass	
Nitrate (as N)	B19-No38620	NCP	mg/L	0.07	0.08	5.0	30%	Pass	
Nitrite (as N)	B19-No38620	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
pH (at 25°C)	P19-No29824	CP	pH Units	6.2	6.2	1.0	30%	Pass	
Phosphate total (as P)	M19-No29591	NCP	mg/L	3.0	3.1	3.0	30%	Pass	
Sulphate (as SO <sub>4</sub> )	P19-No30767	NCP	mg/L	58	59	1.0	30%	Pass	
Sulphide (as S)	M19-No29633	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	M19-No31420	NCP	mg/L	190	210	10	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M19-No36860	NCP	mg/L	470	490	3.8	30%	Pass	
<b>Duplicate</b>									
<b>Alkalinity (speciated)</b>				Result 1	Result 2	RPD			
Total Alkalinity (as CaCO <sub>3</sub> )	P19-No29824	CP	mg/L	64	63	1.0	30%	Pass	

<b>Duplicate</b>								
<b>Heavy Metals</b>				Result 1	Result 2	RPD		
Aluminium	P19-No28347	NCP	mg/L	0.18	0.22	20	30%	Pass
Aluminium (filtered)	P19-No29824	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Arsenic (filtered)	P19-No29824	CP	mg/L	0.001	0.001	<1	30%	Pass
Cadmium (filtered)	P19-No29824	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium (filtered)	P19-No29824	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cobalt (filtered)	P19-No29824	CP	mg/L	0.001	0.001	2.0	30%	Pass
Copper (filtered)	P19-No29824	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	P19-No28347	NCP	mg/L	22	26	20	30%	Pass
Iron (filtered)	P19-No29824	CP	mg/L	5.4	5.4	1.0	30%	Pass
Lead (filtered)	P19-No29824	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	P19-No29824	CP	mg/L	0.12	0.12	<1	30%	Pass
Nickel (filtered)	P19-No29824	CP	mg/L	0.003	0.003	1.0	30%	Pass
Selenium (filtered)	P19-No29824	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	P19-No29824	CP	mg/L	0.009	0.009	4.0	30%	Pass
<b>Duplicate</b>								
<b>Alkali Metals (filtered)</b>				Result 1	Result 2	RPD		
Calcium (filtered)	P19-No29824	CP	mg/L	14	14	2.0	30%	Pass
Magnesium (filtered)	P19-No29824	CP	mg/L	46	46	1.0	30%	Pass
Potassium (filtered)	P19-No29824	CP	mg/L	5.3	5.3	1.0	30%	Pass
Sodium (filtered)	P19-No29824	CP	mg/L	310	310	1.0	30%	Pass

**Comments**
**Sample Integrity**

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	No
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

**Qualifier Codes/Comments**

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.

**Authorised By**

Robert Johnston	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (WA)
Andrew Sullivan	Senior Analyst-Volatile (WA)
Elden Garrett	Senior Analyst-Metal (WA)
Julie Kay	Senior Analyst-Inorganic (VIC)
Rhys Thomas	Senior Analyst-Inorganic (WA)


**Glenn Jackson  
General Manager**

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

\* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

## Robert Johnston

**To:** Vicki Davies; Julia Roberts; Emily.Evans@ghd.com  
**Subject:** RE: 6137041: FS01 received without a COC

**From:** Vicki Davies [<mailto:Vicki.Davies@ghd.com>]  
**Sent:** Thursday, 21 November 2019 9:13 AM  
**To:** Robert Johnston; Julia Roberts; [Emily.Evans@ghd.com](mailto:Emily.Evans@ghd.com)  
**Subject:** RE: 6137041: FS01 received without a COC

Caitlyn Gibson  
Eurefins 21/11/19  
#689319

Hi Robert

Could FS01 please be analysed as per the groundwater suite below.

Parameter	ALS Code	Technique/ Method Reference	Limit Of Reporting (LOR)
TRH/BTEXN	W-04	USEPA 8015A, USEPA 8260B	1 - 100 µg/L
Acid Sulphate Soil GW Suite - Extended Cl, SO <sub>4</sub> , Alkalinity, Acidity, pH, E.C., TDS, Dissolved Ca, Mg, Na, K, Fe, Mn, Al by ICP-AES or MS. Total N, TKN, NO <sub>x</sub> , Ammonia, Total & Reactive P; Total Al & Fe; Sulfide; Dissolved As, Cd, Co, Cu, Pb, Fe, Mn, Al, Cr, Ni, Se, Zn by ICPMS	ASSGW-2	Various	0.0001 - 10 mg/L, 0.01 pH Unit, 1 µS/cm, 0.01 %, 0.01 meq/L
Ammonium as N	EK055G- NH <sub>4</sub>	Calculation	0.01 mg/L

If you need any further information please let me know.

Kind regards



**Vicki Davies**  
Environmental Scientist

PO Box 2776  
Cloisters Square 6850  
T: 08 98405104

Carlynn Gibson CF  
Eurofins 21/11/19  
#689319

**From:** Robert Johnston <[RobertJohnston@eurofins.com](mailto:RobertJohnston@eurofins.com)>  
**Sent:** Wednesday, 20 November 2019 4:21 PM  
**To:** Vicki Davies <[Vicki.Davies@ghd.com](mailto:Vicki.Davies@ghd.com)>; Julia Roberts <[Julia.Roberts@ghd.com](mailto:Julia.Roberts@ghd.com)>  
**Subject:** 6137041: FS01 received without a COC

Hi Vicki and Julia,

We have received sample FS01 (sampled 18/11) without a COC from ALS. Can you please provide us a COC for this?

Kind Regards,

Robert Johnston  
**Analytical Services Manager, WA**

**Eurofins | Environment Testing**  
Unit 2, 91 Leach Highway  
KEWDALE WA 6105  
AUSTRALIA

Phone: +61 (0)8 9251 9605  
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Email: [RobertJohnston@Eurofins.com](mailto:RobertJohnston@Eurofins.com)  
Website: [environment.eurofins.com.au](http://environment.eurofins.com.au)



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## CERTIFICATE OF ANALYSIS

**Work Order** : **EP1913499**  
**Client** : **GHD PTY LTD**  
**Contact** : Julia Roberts  
**Address** : 999 HAY STREET  
 PERTH WA, AUSTRALIA 6000  
**Telephone** : ----  
**Project** : 6137041  
**Order number** : 6137041 08.0831  
**C-O-C number** : ----  
**Sampler** : Emily Evans, Pascale Ketelaar  
**Site** : ----  
**Quote number** : EP/489/19 V4  
**No. of samples received** : 26  
**No. of samples analysed** : 26

**Page** : 1 of 26  
**Laboratory** : Environmental Division Perth  
**Contact** : Marnie Thomsett  
**Address** : 26 Rigali Way Wangara WA Australia 6065  
**Telephone** : 08 9406 1311  
**Date Samples Received** : 18-Dec-2019 12:55  
**Date Analysis Commenced** : 18-Dec-2019  
**Issue Date** : 02-Jan-2020 15:36



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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Daniel Fisher	Inorganics Analyst	Perth Inorganics, Wangara, WA
David Viner	SENIOR LAB TECH	Perth Organics, Wangara, WA
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- Glyphosate and OP pesticides analysis conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- EP234: Poor matrix spike recovery for particular compounds due to matrix interferences.
- EK055G (Ammonia): LOR for sample EP1913499-024 raised due to possible sample matrix interference.
- EG020F: Results for nickel, zinc for samples EP1913499-017, 021 have been confirmed by re-analysis.
- EG020T: Results for aluminium, iron for samples EP1913499-017, 021 have been confirmed by re-digestion and re-analysis.
- It is recognised that Total Kjeldahl Nitrogen (EK061G) is less than Ammonia (EK055G) for sample EP1913499-003. However, the difference is within experimental variation of the methods.
- Ionic balances were calculated using: major anions - NO<sub>x</sub>, chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium for sample #16.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW13	NOAH CREEK 2	BH32.1	SW09	SW08
Client sampling date / time				16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1913499-001	EP1913499-002	EP1913499-003	EP1913499-004	EP1913499-005	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	7.17	7.18	6.35	7.32	7.56	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	748	755	1120	972	991	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	475	432	616	606	558	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	218	23	24	154	31	
Total Alkalinity as CaCO3	----	1	mg/L	218	23	24	154	31	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	23	9	28	19	7	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	96	26	29	17	31	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	68	244	378	241	313	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	9	6	5	17	9	
Magnesium	7439-95-4	1	mg/L	11	16	23	12	23	
Sodium	7440-23-5	1	mg/L	157	124	185	168	149	
Potassium	7440-09-7	1	mg/L	2	8	7	18	8	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.04	0.02	0.04	0.06	0.03	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	0.002	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.001	0.002	0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.018	0.016	0.012	0.009	0.016	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.012	0.092	0.059	0.185	0.083	
Nickel	7440-02-0	0.001	mg/L	0.016	0.012	0.013	0.008	0.014	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.074	0.058	0.050	0.139	0.069	
Iron	7439-89-6	0.05	mg/L	3.11	0.11	5.07	5.68	0.13	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW13	NOAH CREEK 2	BH32.1	SW09	SW08
Client sampling date / time				16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1913499-001	EP1913499-002	EP1913499-003	EP1913499-004	EP1913499-005	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.13	0.06	0.27	1.11	0.03	
Iron	7439-89-6	0.05	mg/L	4.23	2.12	8.30	17.8	1.83	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.09	<0.01	0.12	0.04	<0.01	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.09	<0.01	0.12	0.04	<0.01	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.04	<0.01	<0.01	<0.01	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.8	0.2	0.1	1.1	0.2	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.8	0.2	0.1	1.1	0.2	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	0.04	0.41	<0.01	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	0.03	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	8.27	7.88	11.7	10.2	10.1	
∅ Total Cations	----	0.01	meq/L	8.23	7.21	10.4	9.60	9.03	
∅ Ionic Balance	----	0.01	%	0.23	4.43	6.23	3.15	5.58	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	160	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	90	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	250	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW13	NOAH CREEK 2	BH32.1	SW09	SW08
Client sampling date / time				16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1913499-001	EP1913499-002	EP1913499-003	EP1913499-004	EP1913499-005	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	230	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	230	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	6	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	6	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	<10	----	<10	<10	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	<0.02	----	<0.02	<0.02	
Azinphos-methyl	86-50-0	0.02	µg/L	----	<0.02	----	<0.02	<0.02	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	<0.10	----	<0.10	<0.10	
Carbofenthiion	786-19-6	0.02	µg/L	----	<0.02	----	<0.02	<0.02	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	<0.02	----	<0.02	<0.02	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	<0.02	----	<0.02	<0.02	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	<0.2	----	<0.2	<0.2	
Coumaphos	56-72-4	0.01	µg/L	----	<0.01	----	<0.01	<0.01	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	<0.02	----	<0.02	<0.02	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	<0.02	----	<0.02	<0.02	
Demeton-O	298-03-3	0.02	µg/L	----	<0.02	----	<0.02	<0.02	
Demeton-S	126-75-0	0.02	µg/L	----	<0.02	----	<0.02	<0.02	
Diazinon	333-41-5	0.01	µg/L	----	<0.01	----	<0.01	<0.01	
Dichlorvos	62-73-7	0.20	µg/L	----	<0.20	----	<0.20	<0.20	
Dimethoate	60-51-5	0.02	µg/L	----	<0.02	----	<0.02	<0.02	
Disulfoton	298-04-4	0.05	µg/L	----	<0.05	----	<0.05	<0.05	
Ethion	563-12-2	0.02	µg/L	----	<0.02	----	<0.02	<0.02	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW13	NOAH CREEK 2	BH32.1	SW09	SW08
Client sampling date / time					16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00
Compound	CAS Number	LOR	Unit		EP1913499-001	EP1913499-002	EP1913499-003	EP1913499-004	EP1913499-005
					Result	Result	Result	Result	Result
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L	----	<0.05	----	<0.05	<0.05	<0.05
Ethoprophos	13194-48-4	0.01	µg/L	----	<0.01	----	<0.01	<0.01	<0.01
Fenamiphos	22224-92-6	0.01	µg/L	----	<0.01	----	<0.01	<0.01	<0.01
Fenchlorphos (Rannel)	299-84-3	10	µg/L	----	<10	----	<10	<10	<10
Fenitrothion	122-14-5	2	µg/L	----	<2	----	<2	<2	<2
Fensulfothion	115-90-2	0.01	µg/L	----	<0.01	----	<0.01	<0.01	<0.01
Fenthion	55-38-9	0.05	µg/L	----	<0.05	----	<0.05	<0.05	<0.05
Malathion	121-75-5	0.02	µg/L	----	<0.02	----	<0.02	<0.02	<0.02
Mevinphos	7786-34-7	0.02	µg/L	----	<0.02	----	<0.02	<0.02	<0.02
Monocrotophos	6923-22-4	0.02	µg/L	----	<0.02	----	<0.02	<0.02	<0.02
Omethoate	1113-02-6	0.01	µg/L	----	<0.01	----	<0.01	<0.01	<0.01
Parathion	56-38-2	0.2	µg/L	----	<0.2	----	<0.2	<0.2	<0.2
Parathion-methyl	298-00-0	0.5	µg/L	----	<0.5	----	<0.5	<0.5	<0.5
Phorate	298-02-2	0.1	µg/L	----	<0.1	----	<0.1	<0.1	<0.1
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	----	<0.01	----	<0.01	<0.01	<0.01
Pirimiphos-methyl	29232-93-7	0.01	µg/L	----	<0.01	----	<0.01	<0.01	<0.01
Profenofos	41198-08-7	0.01	µg/L	----	<0.01	----	<0.01	<0.01	<0.01
Prothiofos	34643-46-4	0.1	µg/L	----	<0.1	----	<0.1	<0.1	<0.1
Sulfotep	3689-24-5	0.005	µg/L	----	<0.005	----	<0.005	<0.005	<0.005
Sulprofos	35400-43-2	0.05	µg/L	----	<0.05	----	<0.05	<0.05	<0.05
Terbufos	13071-79-9	0.01	µg/L	----	<0.01	----	<0.01	<0.01	<0.01
Temephos	3383-96-8	0.02	µg/L	----	<0.02	----	<0.02	<0.02	<0.02
Tetrachlorvinphos	22248-79-9	0.01	µg/L	----	<0.01	----	<0.01	<0.01	<0.01
Triazophos	24017-47-8	0.005	µg/L	----	<0.005	----	<0.005	<0.005	<0.005
Trichlorfon	52-68-6	0.02	µg/L	----	<0.02	----	<0.02	<0.02	<0.02
Trichloronate	327-98-0	0.5	µg/L	----	<0.5	----	<0.5	<0.5	<0.5
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%		105	102	103	105	106
Toluene-D8	2037-26-5	2	%		101	100	100	100	101
4-Bromofluorobenzene	460-00-4	2	%		107	104	102	104	107



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW07	BORR MW15	BORR MW04	BORR MW05	BORR MW06
Client sampling date / time				16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1913499-006	EP1913499-007	EP1913499-008	EP1913499-009	EP1913499-010	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	7.23	6.60	7.45	7.26	6.95	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	962	168	3760	1060	514	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	564	106	2330	653	398	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	24	12	264	77	44	
Total Alkalinity as CaCO3	----	1	mg/L	24	12	264	77	44	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	8	15	18	13	14	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	31	10	242	111	55	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	310	40	931	261	121	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	8	5	162	24	35	
Magnesium	7439-95-4	1	mg/L	22	4	57	16	10	
Sodium	7440-23-5	1	mg/L	147	19	542	175	58	
Potassium	7440-09-7	1	mg/L	7	5	5	7	10	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.03	0.10	<0.01	0.08	0.16	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.002	0.001	0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.001	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.014	0.006	0.007	0.006	0.002	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.084	0.004	0.140	0.011	0.040	
Nickel	7440-02-0	0.001	mg/L	0.010	0.010	0.008	0.010	0.006	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.047	0.047	0.040	0.064	0.022	
Iron	7439-89-6	0.05	mg/L	0.10	1.32	4.57	1.00	2.74	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW07	BORR MW15	BORR MW04	BORR MW05	BORR MW06
Client sampling date / time				16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1913499-006	EP1913499-007	EP1913499-008	EP1913499-009	EP1913499-010	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.03	0.54	0.80	1.46	2.48	
Iron	7439-89-6	0.05	mg/L	1.83	4.38	9.91	1.51	6.18	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.77	0.22	0.09	0.20	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	<0.01	0.77	0.22	0.09	0.20	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.48	<0.01	<0.01	0.04	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	1.0	0.3	0.9	1.0	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.2	1.5	0.3	0.9	1.0	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	<0.01	0.02	0.04	0.01	0.02	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	9.87	1.58	36.6	11.2	5.44	
∅ Total Cations	----	0.01	meq/L	8.78	1.53	36.5	10.3	5.35	
∅ Ionic Balance	----	0.01	%	5.82	----	0.13	4.21	0.83	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW07	BORR MW15	BORR MW04	BORR MW05	BORR MW06
Client sampling date / time				16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1913499-006	EP1913499-007	EP1913499-008	EP1913499-009	EP1913499-010	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	<10	----	----	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	----	----	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	----	----	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	----	----	----	----	
Carbofenthion	786-19-6	0.02	µg/L	<0.02	----	----	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	----	----	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	----	----	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	----	----	----	----	
Coumaphos	56-72-4	0.01	µg/L	<0.01	----	----	----	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	----	----	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	----	----	----	----	
Demeton-O	298-03-3	0.02	µg/L	<0.02	----	----	----	----	
Demeton-S	126-75-0	0.02	µg/L	<0.02	----	----	----	----	
Diazinon	333-41-5	0.01	µg/L	<0.01	----	----	----	----	
Dichlorvos	62-73-7	0.20	µg/L	<0.20	----	----	----	----	
Dimethoate	60-51-5	0.02	µg/L	<0.02	----	----	----	----	
Disulfoton	298-04-4	0.05	µg/L	<0.05	----	----	----	----	
Ethion	563-12-2	0.02	µg/L	<0.02	----	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW07	BORR MW15	BORR MW04	BORR MW05	BORR MW06
Client sampling date / time				16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1913499-006	EP1913499-007	EP1913499-008	EP1913499-009	EP1913499-010	
				Result	Result	Result	Result	Result	
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L	<0.05	----	----	----	----	
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	----	----	----	----	
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	----	----	----	----	
Fenchlorphos (Rannel)	299-84-3	10	µg/L	<10	----	----	----	----	
Fenitrothion	122-14-5	2	µg/L	<2	----	----	----	----	
Fensulfothion	115-90-2	0.01	µg/L	<0.01	----	----	----	----	
Fenthion	55-38-9	0.05	µg/L	<0.05	----	----	----	----	
Malathion	121-75-5	0.02	µg/L	<0.02	----	----	----	----	
Mevinphos	7786-34-7	0.02	µg/L	<0.02	----	----	----	----	
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	----	----	----	----	
Omethoate	1113-02-6	0.01	µg/L	<0.01	----	----	----	----	
Parathion	56-38-2	0.2	µg/L	<0.2	----	----	----	----	
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	----	----	----	----	
Phorate	298-02-2	0.1	µg/L	<0.1	----	----	----	----	
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	----	----	----	----	
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	----	----	----	----	
Profenofos	41198-08-7	0.01	µg/L	<0.01	----	----	----	----	
Prothiofos	34643-46-4	0.1	µg/L	<0.1	----	----	----	----	
Sulfotep	3689-24-5	0.005	µg/L	<0.005	----	----	----	----	
Sulprofos	35400-43-2	0.05	µg/L	<0.05	----	----	----	----	
Terbufos	13071-79-9	0.01	µg/L	<0.01	----	----	----	----	
Temephos	3383-96-8	0.02	µg/L	<0.02	----	----	----	----	
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	----	----	----	----	
Triazophos	24017-47-8	0.005	µg/L	<0.005	----	----	----	----	
Trichlorfon	52-68-6	0.02	µg/L	<0.02	----	----	----	----	
Trichloronate	327-98-0	0.5	µg/L	<0.5	----	----	----	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	108	103	104	108	107	
Toluene-D8	2037-26-5	2	%	101	100	101	101	102	
4-Bromofluorobenzene	460-00-4	2	%	107	106	104	107	106	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB01	FB01	TBW1234	TBW1243	NORTHERN 5
Client sampling date / time				16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	17-Dec-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1913499-011	EP1913499-012	EP1913499-013	EP1913499-014	EP1913499-015	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	----	----	----	----	7.90	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	----	1280	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	----	----	----	----	734	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	----	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	----	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	----	174	
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	----	174	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	----	----	----	----	7	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	----	22	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	----	----	----	----	339	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	----	----	----	----	42	
Magnesium	7439-95-4	1	mg/L	----	----	----	----	24	
Sodium	7440-23-5	1	mg/L	----	----	----	----	191	
Potassium	7440-09-7	1	mg/L	----	----	----	----	8	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	----	----	0.02	
Arsenic	7440-38-2	0.001	mg/L	----	----	----	----	0.001	
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	----	<0.0001	
Chromium	7440-47-3	0.001	mg/L	----	----	----	----	<0.001	
Cobalt	7440-48-4	0.001	mg/L	----	----	----	----	<0.001	
Copper	7440-50-8	0.001	mg/L	----	----	----	----	0.016	
Lead	7439-92-1	0.001	mg/L	----	----	----	----	<0.001	
Manganese	7439-96-5	0.001	mg/L	----	----	----	----	0.092	
Nickel	7440-02-0	0.001	mg/L	----	----	----	----	0.022	
Selenium	7782-49-2	0.01	mg/L	----	----	----	----	<0.01	
Zinc	7440-66-6	0.005	mg/L	----	----	----	----	0.062	
Iron	7439-89-6	0.05	mg/L	----	----	----	----	0.10	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB01	FB01	TBW1234	TBW1243	NORTHERN 5
Client sampling date / time				16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	17-Dec-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1913499-011	EP1913499-012	EP1913499-013	EP1913499-014	EP1913499-015	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	----	----	0.03	
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----	
Iron	7439-89-6	0.05	mg/L	----	----	----	----	0.62	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	----	----	----	----	<0.01	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	----	----	----	----	<0.01	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	----	----	----	----	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	----	----	----	0.8	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	----	----	----	----	0.8	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	----	----	----	----	0.53	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	----	----	----	0.52	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	----	----	----	----	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	----	----	----	----	13.5	
∅ Total Cations	----	0.01	meq/L	----	----	----	----	12.6	
∅ Ionic Balance	----	0.01	%	----	----	----	----	3.50	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	----	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	----	----	----	----	<50	
C15 - C28 Fraction	----	100	µg/L	----	----	----	----	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB01	FB01	TBW1234	TBW1243	NORTHERN 5
Client sampling date / time				16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	17-Dec-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1913499-011	EP1913499-012	EP1913499-013	EP1913499-014	EP1913499-015	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>									
C29 - C36 Fraction	----	50	µg/L	----	----	----	----	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	----	----	----	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	----	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	----	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	----	----	----	----	<100	
>C16 - C34 Fraction	----	100	µg/L	----	----	----	----	<100	
>C34 - C40 Fraction	----	100	µg/L	----	----	----	----	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	----	----	----	----	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	----	----	----	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	----	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	----	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	----	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	----	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	----	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	----	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	----	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	----	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	----	----	----	<10	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	----	----	----	<0.02	
Azinphos-methyl	86-50-0	0.02	µg/L	----	----	----	----	<0.02	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	----	----	----	<0.10	
Carbofenthoion	786-19-6	0.02	µg/L	----	----	----	----	<0.02	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	----	----	----	<0.02	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	----	----	----	<0.02	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	----	----	----	<0.2	
Coumaphos	56-72-4	0.01	µg/L	----	----	----	----	<0.01	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	----	----	----	<0.02	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	----	----	----	<0.02	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB01	FB01	TBW1234	TBW1243	NORTHERN 5
Client sampling date / time					16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	17-Dec-2019 00:00
Compound	CAS Number	LOR	Unit	EP1913499-011	EP1913499-012	EP1913499-013	EP1913499-014	EP1913499-015	
				Result	Result	Result	Result	Result	
<b>EP234A: OP Pesticides - Continued</b>									
Demeton-O	298-03-3	0.02	µg/L	----	----	----	----	<0.02	
Demeton-S	126-75-0	0.02	µg/L	----	----	----	----	<0.02	
Diazinon	333-41-5	0.01	µg/L	----	----	----	----	<0.01	
Dichlorvos	62-73-7	0.20	µg/L	----	----	----	----	<0.20	
Dimethoate	60-51-5	0.02	µg/L	----	----	----	----	<0.02	
Disulfoton	298-04-4	0.05	µg/L	----	----	----	----	<0.05	
Ethion	563-12-2	0.02	µg/L	----	----	----	----	<0.02	
EPN	2104-64-5	0.05	µg/L	----	----	----	----	<0.05	
Ethoprophos	13194-48-4	0.01	µg/L	----	----	----	----	<0.01	
Fenamiphos	22224-92-6	0.01	µg/L	----	----	----	----	<0.01	
Fenchlorphos (Ronnell)	299-84-3	10	µg/L	----	----	----	----	<10	
Fenitrothion	122-14-5	2	µg/L	----	----	----	----	<2	
Fensulfothion	115-90-2	0.01	µg/L	----	----	----	----	<0.01	
Fenthion	55-38-9	0.05	µg/L	----	----	----	----	<0.05	
Malathion	121-75-5	0.02	µg/L	----	----	----	----	<0.02	
Mevinphos	7786-34-7	0.02	µg/L	----	----	----	----	<0.02	
Monocrotophos	6923-22-4	0.02	µg/L	----	----	----	----	<0.02	
Omethoate	1113-02-6	0.01	µg/L	----	----	----	----	<0.01	
Parathion	56-38-2	0.2	µg/L	----	----	----	----	<0.2	
Parathion-methyl	298-00-0	0.5	µg/L	----	----	----	----	<0.5	
Phorate	298-02-2	0.1	µg/L	----	----	----	----	<0.1	
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	----	----	----	----	<0.01	
Pirimiphos-methyl	29232-93-7	0.01	µg/L	----	----	----	----	<0.01	
Profenofos	41198-08-7	0.01	µg/L	----	----	----	----	<0.01	
Prothiofos	34643-46-4	0.1	µg/L	----	----	----	----	<0.1	
Sulfotep	3689-24-5	0.005	µg/L	----	----	----	----	<0.005	
Sulprofos	35400-43-2	0.05	µg/L	----	----	----	----	<0.05	
Terbufos	13071-79-9	0.01	µg/L	----	----	----	----	<0.01	
Temephos	3383-96-8	0.02	µg/L	----	----	----	----	<0.02	
Tetrachlorvinphos	22248-79-9	0.01	µg/L	----	----	----	----	<0.01	
Triazophos	24017-47-8	0.005	µg/L	----	----	----	----	<0.005	
Trichlorfon	52-68-6	0.02	µg/L	----	----	----	----	<0.02	
Trichloronate	327-98-0	0.5	µg/L	----	----	----	----	<0.5	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	----	98.0	101	100	105	



### Analytical Results

Sub-Matrix: <b>WATER</b> (Matrix: <b>WATER</b> )				Client sample ID	RB01	FB01	TBW1234	TBW1243	NORTHERN 5
Client sampling date / time				16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	16-Dec-2019 00:00	17-Dec-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1913499-011	EP1913499-012	EP1913499-013	EP1913499-014	EP1913499-015	
				Result	Result	Result	Result	Result	
<b>EP080S: TPH(V)/BTEX Surrogates - Continued</b>									
<b>Toluene-D8</b>	2037-26-5	2	%	----	<b>101</b>	<b>103</b>	<b>98.7</b>	<b>98.7</b>	
<b>4-Bromofluorobenzene</b>	460-00-4	2	%	----	<b>103</b>	<b>104</b>	<b>111</b>	<b>114</b>	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW18	BORR MW19b	RB02	FB02	TBW1239
Client sampling date / time				17-Dec-2019 00:00	17-Dec-2019 00:00	17-Dec-2019 00:00	17-Dec-2019 00:00	17-Dec-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1913499-016	EP1913499-017	EP1913499-018	EP1913499-019	EP1913499-020	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	4.94	6.57	----	----	----	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	311	2000	----	----	----	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	234	1170	----	----	----	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	----	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	52	----	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	<1	52	----	----	----	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	17	26	----	----	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	16	36	----	----	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	43	637	----	----	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	14	16	----	----	----	
Magnesium	7439-95-4	1	mg/L	5	43	----	----	----	
Sodium	7440-23-5	1	mg/L	28	308	----	----	----	
Potassium	7440-09-7	1	mg/L	15	6	----	----	----	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.46	0.01	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.001	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	0.0002	<0.0001	----	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----	
Cobalt	7440-48-4	0.001	mg/L	0.006	0.002	----	----	----	
Copper	7440-50-8	0.001	mg/L	0.012	0.007	----	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----	
Manganese	7439-96-5	0.001	mg/L	0.261	0.110	----	----	----	
Nickel	7440-02-0	0.001	mg/L	0.023	0.004	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----	
Zinc	7440-66-6	0.005	mg/L	0.058	0.022	----	----	----	
Iron	7439-89-6	0.05	mg/L	<0.05	4.07	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW18	BORR MW19b	RB02	FB02	TBW1239
Client sampling date / time				17-Dec-2019 00:00	17-Dec-2019 00:00	17-Dec-2019 00:00	17-Dec-2019 00:00	17-Dec-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1913499-016	EP1913499-017	EP1913499-018	EP1913499-019	EP1913499-020	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	1.00	1.89	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	----	----	<0.001	----	----	
Cadmium	7440-43-9	0.0001	mg/L	----	----	<0.0001	----	----	
Chromium	7440-47-3	0.001	mg/L	----	----	<0.001	----	----	
Copper	7440-50-8	0.001	mg/L	----	----	<0.001	----	----	
Nickel	7440-02-0	0.001	mg/L	----	----	<0.001	----	----	
Lead	7439-92-1	0.001	mg/L	----	----	<0.001	----	----	
Zinc	7440-66-6	0.005	mg/L	----	----	<0.005	----	----	
Iron	7439-89-6	0.05	mg/L	0.12	6.37	----	----	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.03	0.02	----	----	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.03	0.02	----	----	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	15.9	<0.01	----	----	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.3	0.1	----	----	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	17.2	0.1	----	----	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	----	----	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	----	----	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	----	----	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	2.68	19.8	----	----	----	
∅ Total Cations	----	0.01	meq/L	2.71	17.9	----	----	----	
∅ Ionic Balance	----	0.01	%	0.55	4.96	----	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----	
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW18	BORR MW19b	RB02	FB02	TBW1239
Client sampling date / time				17-Dec-2019 00:00	17-Dec-2019 00:00	17-Dec-2019 00:00	17-Dec-2019 00:00	17-Dec-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1913499-016	EP1913499-017	EP1913499-018	EP1913499-019	EP1913499-020	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>									
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	----	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	----	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	----	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	----	----	----	
>C16 - C34 Fraction	----	100	µg/L	<100	<100	----	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	----	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	----	----	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	----	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	----	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	----	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	----	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	----	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	----	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	----	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	----	<5	<5	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	102	97.9	----	100	99.3	
Toluene-D8	2037-26-5	2	%	97.5	99.0	----	99.7	98.1	
4-Bromofluorobenzene	460-00-4	2	%	111	113	----	109	112	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FD01	BORR MW20	BORR MW22b	BH9.2	BORR MW25
Client sampling date / time				17-Dec-2019 00:00	17-Dec-2019 00:00	17-Dec-2019 00:00	17-Dec-2019 00:00	17-Dec-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1913499-021	EP1913499-022	EP1913499-023	EP1913499-024	EP1913499-025	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.70	6.44	6.33	3.89	6.51	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	2000	4160	12900	7580	3720	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	1140	2360	7530	4610	2030	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	54	41	40	<1	69	
Total Alkalinity as CaCO3	----	1	mg/L	54	41	40	<1	69	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	25	25	69	394	35	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	36	70	411	93	84	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	631	1230	4190	2380	1020	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	15	34	111	57	28	
Magnesium	7439-95-4	1	mg/L	44	99	329	270	55	
Sodium	7440-23-5	1	mg/L	310	619	2080	1010	604	
Potassium	7440-09-7	1	mg/L	6	5	5	<1	4	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	<0.01	0.02	0.03	27.7	0.03	
Arsenic	7440-38-2	0.001	mg/L	0.001	<0.001	0.002	0.002	0.003	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	0.002	0.008	0.146	0.038	0.032	
Copper	7440-50-8	0.001	mg/L	<0.001	0.013	0.006	0.018	0.004	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	0.017	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.114	0.166	0.466	0.021	0.411	
Nickel	7440-02-0	0.001	mg/L	0.002	0.017	0.081	0.025	0.028	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.022	0.074	0.103	0.068	0.080	
Iron	7439-89-6	0.05	mg/L	4.43	3.94	23.0	72.0	8.13	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FD01	BORR MW20	BORR MW22b	BH9.2	BORR MW25
Client sampling date / time					17-Dec-2019 00:00	17-Dec-2019 00:00	17-Dec-2019 00:00	17-Dec-2019 00:00	17-Dec-2019 00:00
Compound	CAS Number	LOR	Unit	EP1913499-021	EP1913499-022	EP1913499-023	EP1913499-024	EP1913499-025	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	2.17	1.38	0.37	29.3	2.64	
Iron	7439-89-6	0.05	mg/L	7.47	6.79	23.5	73.8	10.9	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.04	0.16	<0.05	0.21	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.02	0.04	0.16	<0.01	0.21	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.1	<0.1	0.2	0.2	0.4	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.1	<0.1	0.2	0.2	0.4	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.04	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	19.6	37.0	128	69.1	31.9	
∅ Total Cations	----	0.01	meq/L	18.0	36.9	123	69.0	32.3	
∅ Ionic Balance	----	0.01	%	4.31	0.10	1.73	0.05	0.62	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	120	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	120	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FD01	BORR MW20	BORR MW22b	BH9.2	BORR MW25
Client sampling date / time					17-Dec-2019 00:00	17-Dec-2019 00:00	17-Dec-2019 00:00	17-Dec-2019 00:00	17-Dec-2019 00:00
Compound	CAS Number	LOR	Unit	EP1913499-021	EP1913499-022	EP1913499-023	EP1913499-024	EP1913499-025	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<b>130</b>	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<b>130</b>	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	<b>100</b>	<b>99.8</b>	<b>101</b>	<b>98.7</b>	<b>109</b>	
Toluene-D8	2037-26-5	2	%	<b>98.3</b>	<b>98.5</b>	<b>100</b>	<b>99.8</b>	<b>97.5</b>	
4-Bromofluorobenzene	460-00-4	2	%	<b>110</b>	<b>108</b>	<b>100</b>	<b>98.5</b>	<b>98.9</b>	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		NORTH CREEK 4	----	----	----	----
Client sampling date / time		17-Dec-2019 00:00		----	----	----	----	----
Compound	CAS Number	LOR	Unit	EP1913499-026	-----	-----	-----	-----
				Result	----	----	----	----
<b>EA005P: pH by PC Titrator</b>								
pH Value	----	0.01	pH Unit	7.40	----	----	----	----
<b>EA010P: Conductivity by PC Titrator</b>								
Electrical Conductivity @ 25°C	----	1	µS/cm	2720	----	----	----	----
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
Total Dissolved Solids @180°C	----	10	mg/L	1700	----	----	----	----
<b>ED037P: Alkalinity by PC Titrator</b>								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	48	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	48	----	----	----	----
<b>ED038A: Acidity</b>								
Acidity as CaCO3	----	1	mg/L	8	----	----	----	----
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	55	----	----	----	----
<b>ED045G: Chloride by Discrete Analyser</b>								
Chloride	16887-00-6	1	mg/L	874	----	----	----	----
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	45	----	----	----	----
Magnesium	7439-95-4	1	mg/L	89	----	----	----	----
Sodium	7440-23-5	1	mg/L	385	----	----	----	----
Potassium	7440-09-7	1	mg/L	11	----	----	----	----
<b>EG020F: Dissolved Metals by ICP-MS</b>								
Aluminium	7429-90-5	0.01	mg/L	0.02	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	0.009	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.335	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	0.007	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	0.030	----	----	----	----
Iron	7439-89-6	0.05	mg/L	0.28	----	----	----	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID			NORTH CREEK 4				
Client sampling date / time		17-Dec-2019 00:00			----	----	----	----	----
Compound	CAS Number	LOR	Unit	EP1913499-026	-----	-----	-----	-----	-----
				Result	----	----	----	----	----
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.06	----	----	----	----	----
Iron	7439-89-6	0.05	mg/L	0.95	----	----	----	----	----
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.03	----	----	----	----	----
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.03	----	----	----	----	----
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	----	----	----	----	----
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.2	----	----	----	----	----
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	1.2	----	----	----	----	----
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.09	----	----	----	----	----
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.05	----	----	----	----	----
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	----	----	----	----	----
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	26.8	----	----	----	----	----
∅ Total Cations	----	0.01	meq/L	26.6	----	----	----	----	----
∅ Ionic Balance	----	0.01	%	0.30	----	----	----	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----	----
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	----	----	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	----	----	----	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----	----
>C10 - C16 Fraction	----	100	µg/L	<100	----	----	----	----	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	NORTH CREEK 4	----	----	----	----
Client sampling date / time				17-Dec-2019 00:00	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1913499-026	-----	-----	-----	-----	
				Result	----	----	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	----	----	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	----	----	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	----	----	----	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	----	----	----	----	
Toluene	108-88-3	2	µg/L	<2	----	----	----	----	
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	----	----	
ortho-Xylene	95-47-6	2	µg/L	<2	----	----	----	----	
^ Total Xylenes	----	2	µg/L	<2	----	----	----	----	
^ Sum of BTEX	----	1	µg/L	<1	----	----	----	----	
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	<10	----	----	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	----	----	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	----	----	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	----	----	----	----	
Carbofenthion	786-19-6	0.02	µg/L	<0.02	----	----	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	----	----	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	----	----	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	----	----	----	----	
Coumaphos	56-72-4	0.01	µg/L	<0.01	----	----	----	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	----	----	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	----	----	----	----	
Demeton-O	298-03-3	0.02	µg/L	<0.02	----	----	----	----	
Demeton-S	126-75-0	0.02	µg/L	<0.02	----	----	----	----	
Diazinon	333-41-5	0.01	µg/L	<0.01	----	----	----	----	
Dichlorvos	62-73-7	0.20	µg/L	<0.20	----	----	----	----	
Dimethoate	60-51-5	0.02	µg/L	<0.02	----	----	----	----	
Disulfoton	298-04-4	0.05	µg/L	<0.05	----	----	----	----	
Ethion	563-12-2	0.02	µg/L	<0.02	----	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	NORTH CREEK 4	----	----	----	----
Client sampling date / time				17-Dec-2019 00:00	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1913499-026	-----	-----	-----	-----	
				Result	----	----	----	----	
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L	<0.05	----	----	----	----	
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	----	----	----	----	
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	----	----	----	----	
Fenchlorphos (Ronnell)	299-84-3	10	µg/L	<10	----	----	----	----	
Fenitrothion	122-14-5	2	µg/L	<2	----	----	----	----	
Fensulfothion	115-90-2	0.01	µg/L	<0.01	----	----	----	----	
Fenthion	55-38-9	0.05	µg/L	<0.05	----	----	----	----	
Malathion	121-75-5	0.02	µg/L	<0.02	----	----	----	----	
Mevinphos	7786-34-7	0.02	µg/L	<0.02	----	----	----	----	
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	----	----	----	----	
Omethoate	1113-02-6	0.01	µg/L	<0.01	----	----	----	----	
Parathion	56-38-2	0.2	µg/L	<0.2	----	----	----	----	
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	----	----	----	----	
Phorate	298-02-2	0.1	µg/L	<0.1	----	----	----	----	
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	----	----	----	----	
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	----	----	----	----	
Profenofos	41198-08-7	0.01	µg/L	<0.01	----	----	----	----	
Prothiofos	34643-46-4	0.1	µg/L	<0.1	----	----	----	----	
Sulfotep	3689-24-5	0.005	µg/L	<0.005	----	----	----	----	
Sulprofos	35400-43-2	0.05	µg/L	<0.05	----	----	----	----	
Terbufos	13071-79-9	0.01	µg/L	<0.01	----	----	----	----	
Temephos	3383-96-8	0.02	µg/L	<0.02	----	----	----	----	
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	----	----	----	----	
Triazophos	24017-47-8	0.005	µg/L	<0.005	----	----	----	----	
Trichlorfon	52-68-6	0.02	µg/L	<0.02	----	----	----	----	
Trichloronate	327-98-0	0.5	µg/L	<0.5	----	----	----	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	102	----	----	----	----	
Toluene-D8	2037-26-5	2	%	98.0	----	----	----	----	
4-Bromofluorobenzene	460-00-4	2	%	101	----	----	----	----	



## Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	61	141
Toluene-D8	2037-26-5	73	126
4-Bromofluorobenzene	460-00-4	60	125

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1913499	Page	: 1 of 15
Client	: GHD PTY LTD	Laboratory	: Environmental Division Perth
Contact	: Julia Roberts	Telephone	: 08 9406 1311
Project	: 6137041	Date Samples Received	: 18-Dec-2019
Site	: ----	Issue Date	: 02-Jan-2020
Sampler	: Emily Evans, Pascale Ketelaar	No. of samples received	: 26
Order number	: 6137041 08.0831	No. of samples analysed	: 26

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.





### Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
EP234A: OP Pesticides	EB1933084--001	Anonymous	Phorate	298-02-2	45.0 %	70.0-130%	Recovery less than lower data quality objective

### Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EA005P: pH by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural</b>							
BORR MW13, BH32.1, SW08, BORR MW15, BORR MW05,	NOAH CREEK 2, SW09, SW07, BORR MW04, BORR MW06	----	----	----	28-Dec-2019	16-Dec-2019	12
<b>Clear Plastic Bottle - Natural</b>							
NORTHERN 5, BORR MW19b, BORR MW20, BH9.2, NORTH CREEK 4	BORR MW18, FD01, BORR MW22b, BORR MW25,	----	----	----	28-Dec-2019	17-Dec-2019	11

### Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
TRH - Semivolatle Fraction	0	20	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>					
TRH - Semivolatle Fraction	0	20	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA005P: pH by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA005-P)</b> BORR MW13, BH32.1, SW08, BORR MW15, BORR MW05, NOAH CREEK 2, SW09, SW07, BORR MW04, BORR MW06	16-Dec-2019	----	----	----	28-Dec-2019	16-Dec-2019	✘	
<b>Clear Plastic Bottle - Natural (EA005-P)</b> NORTHERN 5, BORR MW19b, BORR MW20, BH9.2, NORTH CREEK 4 BORR MW18, FD01, BORR MW22b, BORR MW25,	17-Dec-2019	----	----	----	28-Dec-2019	17-Dec-2019	✘	
<b>EA010P: Conductivity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA010-P)</b> BORR MW13, BH32.1, SW08, BORR MW15, BORR MW05, NOAH CREEK 2, SW09, SW07, BORR MW04, BORR MW06	16-Dec-2019	----	----	----	28-Dec-2019	13-Jan-2020	✓	
<b>Clear Plastic Bottle - Natural (EA010-P)</b> NORTHERN 5, BORR MW19b, BORR MW20, BH9.2, NORTH CREEK 4 BORR MW18, FD01, BORR MW22b, BORR MW25,	17-Dec-2019	----	----	----	28-Dec-2019	14-Jan-2020	✓	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
<b>Clear Plastic Bottle - Natural (EA015H)</b> BORR MW13, BH32.1, SW08, BORR MW15, BORR MW05, NOAH CREEK 2, SW09, SW07, BORR MW04, BORR MW06	16-Dec-2019	----	----	----	21-Dec-2019	23-Dec-2019	✓	
<b>Clear Plastic Bottle - Natural (EA015H)</b> NORTHERN 5, BORR MW19b, BORR MW20, BH9.2, NORTH CREEK 4 BORR MW18, FD01, BORR MW22b, BORR MW25,	17-Dec-2019	----	----	----	23-Dec-2019	24-Dec-2019	✓	



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>ED037P: Alkalinity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (ED037-P)</b> BORR MW13, BH32.1, SW08, BORR MW15, BORR MW05,	NOAH CREEK 2, SW09, SW07, BORR MW04, BORR MW06	16-Dec-2019	----	----	----	28-Dec-2019	30-Dec-2019	✓
<b>Clear Plastic Bottle - Natural (ED037-P)</b> NORTHERN 5, BORR MW19b, BORR MW20, BH9.2, NORTH CREEK 4	BORR MW18, FD01, BORR MW22b, BORR MW25,	17-Dec-2019	----	----	----	28-Dec-2019	31-Dec-2019	✓
<b>ED038A: Acidity</b>								
<b>Clear Plastic Bottle - Natural (ED038)</b> BORR MW13, BH32.1, SW08, BORR MW15, BORR MW05,	NOAH CREEK 2, SW09, SW07, BORR MW04, BORR MW06	16-Dec-2019	----	----	----	19-Dec-2019	30-Dec-2019	✓
<b>Clear Plastic Bottle - Natural (ED038)</b> NORTHERN 5, BORR MW19b, BORR MW20, BH9.2, NORTH CREEK 4	BORR MW18, FD01, BORR MW22b, BORR MW25,	17-Dec-2019	----	----	----	19-Dec-2019	31-Dec-2019	✓
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
<b>Clear Plastic Bottle - Natural (ED041G)</b> BORR MW13, BH32.1, SW08, BORR MW15, BORR MW05,	NOAH CREEK 2, SW09, SW07, BORR MW04, BORR MW06	16-Dec-2019	----	----	----	18-Dec-2019	13-Jan-2020	✓
<b>Clear Plastic Bottle - Natural (ED041G)</b> NORTHERN 5, BORR MW19b, BORR MW20, BH9.2, NORTH CREEK 4	BORR MW18, FD01, BORR MW22b, BORR MW25,	17-Dec-2019	----	----	----	18-Dec-2019	14-Jan-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>ED045G: Chloride by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Natural (ED045G)</b> BORR MW13, BH32.1, SW08, BORR MW15, BORR MW05,	NOAH CREEK 2, SW09, SW07, BORR MW04, BORR MW06	16-Dec-2019	----	----	----	18-Dec-2019	13-Jan-2020	✓
<b>Clear Plastic Bottle - Natural (ED045G)</b> NORTHERN 5, BORR MW19b, BORR MW20, BH9.2, NORTH CREEK 4	BORR MW18, FD01, BORR MW22b, BORR MW25,	17-Dec-2019	----	----	----	18-Dec-2019	14-Jan-2020	✓
<b>ED093F: Dissolved Major Cations</b>								
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> BORR MW13, BH32.1, SW08, BORR MW15, BORR MW05,	NOAH CREEK 2, SW09, SW07, BORR MW04, BORR MW06	16-Dec-2019	----	----	----	27-Dec-2019	13-Jan-2020	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> NORTHERN 5, BORR MW19b, BORR MW20, BH9.2, NORTH CREEK 4	BORR MW18, FD01, BORR MW22b, BORR MW25,	17-Dec-2019	----	----	----	27-Dec-2019	14-Jan-2020	✓
<b>EG020F: Dissolved Metals by ICP-MS</b>								
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> BORR MW13, BH32.1, SW08, BORR MW15, BORR MW05,	NOAH CREEK 2, SW09, SW07, BORR MW04, BORR MW06	16-Dec-2019	----	----	----	27-Dec-2019	13-Jun-2020	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> NORTHERN 5, BORR MW19b, BORR MW20, BH9.2, NORTH CREEK 4	BORR MW18, FD01, BORR MW22b, BORR MW25,	17-Dec-2019	----	----	----	27-Dec-2019	14-Jun-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EG020T: Total Metals by ICP-MS</b>							
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> BORR MW13, BH32.1, SW08, BORR MW15, BORR MW05, RB01 NOAH CREEK 2, SW09, SW07, BORR MW04, BORR MW06,	16-Dec-2019	27-Dec-2019	13-Jun-2020	✓	27-Dec-2019	13-Jun-2020	✓
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> NORTHERN 5, BORR MW19b, FD01, BORR MW22b, BORR MW25, BORR MW18, RB02, BORR MW20, BH9.2, NORTH CREEK 4	17-Dec-2019	27-Dec-2019	14-Jun-2020	✓	27-Dec-2019	14-Jun-2020	✓
<b>EK055G: Ammonia as N by Discrete Analyser</b>							
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> BORR MW13, BH32.1, SW08, BORR MW15, BORR MW05, NOAH CREEK 2, SW09, SW07, BORR MW04, BORR MW06	16-Dec-2019	----	----	----	18-Dec-2019	13-Jan-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> NORTHERN 5, BORR MW19b, BORR MW20, BH9.2, NORTH CREEK 4 BORR MW18, FD01, BORR MW22b, BORR MW25,	17-Dec-2019	----	----	----	18-Dec-2019	14-Jan-2020	✓
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>							
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> BORR MW13, BH32.1, SW08, BORR MW15, BORR MW05, NOAH CREEK 2, SW09, SW07, BORR MW04, BORR MW06	16-Dec-2019	----	----	----	18-Dec-2019	13-Jan-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> NORTHERN 5, BORR MW19b, BORR MW20, BH9.2, NORTH CREEK 4 BORR MW18, FD01, BORR MW22b, BORR MW25,	17-Dec-2019	----	----	----	18-Dec-2019	14-Jan-2020	✓



Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> BORR MW13, BH32.1, SW08, BORR MW15, BORR MW05, NOAH CREEK 2, SW09, SW07, BORR MW04, BORR MW06	16-Dec-2019	31-Dec-2019	13-Jan-2020	✓	31-Dec-2019	13-Jan-2020	✓	
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> NORTHERN 5, BORR MW19b, BORR MW20, BH9.2, NORTH CREEK 4 BORR MW18, FD01, BORR MW22b, BORR MW25,	17-Dec-2019	31-Dec-2019	14-Jan-2020	✓	31-Dec-2019	14-Jan-2020	✓	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> BORR MW13, BH32.1, SW08, BORR MW15, BORR MW05, NOAH CREEK 2, SW09, SW07, BORR MW04, BORR MW06	16-Dec-2019	31-Dec-2019	13-Jan-2020	✓	31-Dec-2019	13-Jan-2020	✓	
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> NORTHERN 5, BORR MW19b, BORR MW20, BH9.2, NORTH CREEK 4 BORR MW18, FD01, BORR MW22b, BORR MW25,	17-Dec-2019	31-Dec-2019	14-Jan-2020	✓	31-Dec-2019	14-Jan-2020	✓	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>								
<b>Clear Plastic Bottle - Natural (EK071G)</b> BORR MW13, BH32.1, SW08, BORR MW15, BORR MW05, NOAH CREEK 2, SW09, SW07, BORR MW04, BORR MW06	16-Dec-2019	----	----	----	18-Dec-2019	18-Dec-2019	✓	
<b>Clear Plastic Bottle - Natural (EK071G)</b> NORTHERN 5, BORR MW19b, BORR MW20, BH9.2, NORTH CREEK 4 BORR MW18, FD01, BORR MW22b, BORR MW25,	17-Dec-2019	----	----	----	18-Dec-2019	19-Dec-2019	✓	



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
<b>EK085M: Sulfide as S2-</b>									
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> BORR MW13, BH32.1, SW08, BORR MW15, BORR MW05,	NOAH CREEK 2, SW09, SW07, BORR MW04, BORR MW06	16-Dec-2019	----	----	----	20-Dec-2019	23-Dec-2019	✓	
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> NORTHERN 5, BORR MW19b, BORR MW20, BH9.2, NORTH CREEK 4	BORR MW18, FD01, BORR MW22b, BORR MW25,	17-Dec-2019	----	----	----	20-Dec-2019	24-Dec-2019	✓	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BORR MW13, BH32.1, SW08, BORR MW15, BORR MW05,	NOAH CREEK 2, SW09, SW07, BORR MW04, BORR MW06	16-Dec-2019	23-Dec-2019	23-Dec-2019	✓	24-Dec-2019	01-Feb-2020	✓	
<b>Amber Glass Bottle - Unpreserved (EP071)</b> NORTHERN 5, BORR MW19b, BORR MW20, BH9.2, NORTH CREEK 4	BORR MW18, FD01, BORR MW22b, BORR MW25,	17-Dec-2019	23-Dec-2019	24-Dec-2019	✓	24-Dec-2019	01-Feb-2020	✓	
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BORR MW13, BH32.1, SW08, BORR MW15, BORR MW05, FB01, TBW1243	NOAH CREEK 2, SW09, SW07, BORR MW04, BORR MW06, TBW1234,	16-Dec-2019	21-Dec-2019	30-Dec-2019	✓	21-Dec-2019	30-Dec-2019	✓	
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> NORTHERN 5, BORR MW19b, TBW1239, BORR MW20, BH9.2, NORTH CREEK 4	BORR MW18, FB02, FD01, BORR MW22b, BORR MW25,	17-Dec-2019	21-Dec-2019	31-Dec-2019	✓	21-Dec-2019	31-Dec-2019	✓	



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>								
<b>Amber Glass Bottle - Unpreserved (EP071)</b>								
BORR MW13, BH32.1, SW08, BORR MW15, BORR MW05,	NOAH CREEK 2, SW09, SW07, BORR MW04, BORR MW06	16-Dec-2019	23-Dec-2019	23-Dec-2019	✓	24-Dec-2019	01-Feb-2020	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b>								
NORTHERN 5, BORR MW19b, BORR MW20, BH9.2, NORTH CREEK 4	BORR MW18, FD01, BORR MW22b, BORR MW25,	17-Dec-2019	23-Dec-2019	24-Dec-2019	✓	24-Dec-2019	01-Feb-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
BORR MW13, BH32.1, SW08, BORR MW15, BORR MW05, FB01, TBW1243	NOAH CREEK 2, SW09, SW07, BORR MW04, BORR MW06, TBW1234,	16-Dec-2019	21-Dec-2019	30-Dec-2019	✓	21-Dec-2019	30-Dec-2019	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
NORTHERN 5, BORR MW19b, TBW1239, BORR MW20, BH9.2, NORTH CREEK 4	BORR MW18, FB02, FD01, BORR MW22b, BORR MW25,	17-Dec-2019	21-Dec-2019	31-Dec-2019	✓	21-Dec-2019	31-Dec-2019	✓





Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080: BTEXN</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BORR MW13, BH32.1, SW08, BORR MW15, BORR MW05, FB01, TBW1243	NOAH CREEK 2, SW09, SW07, BORR MW04, BORR MW06, TBW1234,	16-Dec-2019	21-Dec-2019	30-Dec-2019	✓	21-Dec-2019	30-Dec-2019	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> NORTHERN 5, BORR MW19b, TBW1239, BORR MW20, BH9.2, NORTH CREEK 4	BORR MW18, FB02, FD01, BORR MW22b, BORR MW25,	17-Dec-2019	21-Dec-2019	31-Dec-2019	✓	21-Dec-2019	31-Dec-2019	✓
<b>EP204: Glyphosate and AMPA</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b> NOAH CREEK 2, SW08,	SW09, SW07	16-Dec-2019	----	----	----	23-Dec-2019	30-Dec-2019	✓
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b> NORTHERN 5,	NORTH CREEK 4	17-Dec-2019	----	----	----	23-Dec-2019	31-Dec-2019	✓
<b>EP234A: OP Pesticides</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> NOAH CREEK 2, SW08,	SW09, SW07	16-Dec-2019	----	----	----	23-Dec-2019	23-Dec-2019	✓
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> NORTHERN 5,	NORTH CREEK 4	17-Dec-2019	----	----	----	23-Dec-2019	24-Dec-2019	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity as Calcium Carbonate	ED038	4	30	13.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	3	25	12.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	8	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	3	22	13.64	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	2	12	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	36	11.11	10.53	✔	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	30	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	4	35	11.43	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	30	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	20	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Acidity as Calcium Carbonate	ED038	2	30	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	25	8.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	8	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	22	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	12	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	36	11.11	10.53	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Alkalinity by PC Titrator	ED037-P	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	36	5.56	5.26	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	20	0.00	5.00	*	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3)  Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3)  Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ammonium as N	EK055G-NH4	WATER	Ammonium in the sample is reported as the ionised / unionised fractions by the use of a nomograph and the initial pH and Temperature. Ammonia is determined by direct colorimetry by Discrete Analyser according to APHA 4500-NH3 G. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Sulfide as S2-	EK085	WATER	In house: Referenced to APHA 4500-S2- D. Sulfide species present in water samples are immediately precipitated when collected in pretreated caustic/zinc acetate preserved sample containers. The sulphides are coloured using methylene blue indicator. Non-detects may be screened by comparison against a standard at half-LOR, otherwise samples are measured using UV-VIS detection at 664nm. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatle Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Glyphosate and AMPA	EP204	WATER	In house: Pre-column derivatisation LCMS (ES in negative mode). Water samples are derivatised with 9-fluorenyl methoxycarbonyl chloroformate (Fmoc) in alkaline condition. The derivatives of glyphosate and AMPA are separated by a C8 column and determined by MS.
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.



CHAIN OF CUSTODY RECORD  
AND ANALYSIS REQUEST



GHD  
Level 10, 999 Hay Street  
Perth WA 6000

PO Box 3106  
Perth WA 6832

Reception Ph: 08 5222 8222

Project ID (as per ESdat set up; no spaces): 6137041

PO Number (to be invoiced): 6137041 08.0831

Laboratory Quote No.: EP/489/19 V4

Turnaround Time Standard:

Laboratory: ALS LABORATORY

Address: 26 Rigati Way Wangara WA

Laboratory Contact: Marnie Gnomsett

Job Manager (Invoice) & GHD accounts:  
Julia Roberts  
Vicki Davies

Email Address (Results):  
Vicki.Davies@ghd.com  
Ann.Emily.Evans@ghd.com

GHD Sample ID	Lab Sample ID	Date	Time	Sample Matrix Soil / SL Sludge / W-Water / A-Air	Container				Analyses													HOLD	Remarks										
					Type B-Bottle / Jar / V- Vial / Bag / G-Glass / P-Plastic	Preservative Unpreserved / HCl / H2SO4 / HNO3 / Other	No.																										
R602	18	17/12/19		W	B		1																										
F602	19	"		W	B		2																										
TBW 1239	20	"		W	B		1																										
FDO1	21	"		W	B		8		✓																								
BORR MW20	22	"		W	B		8		✓																								
BORR MW226	23	"		W	B		8		✓																								
B49.2	24	"		W	B		8		✓																								
BORR MW25	25	"		W	B		8		✓																								
NORTH CREEK 4	26	"		W	B		9		✓																								

Sampled by: Emily Evans + Pascale Kotelaar

Received by: MR

Date/Time: 17/12/19

Date/Time: 18/12/19

Relinquished by: EE + PR

Relinquished by:

Date/Time: 17/12/19

Date/Time:



## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>EP1913643</b> <b>Client</b> : <b>GHD PTY LTD</b> <b>Contact</b> : <b>Julia Roberts</b> <b>Address</b> : <b>999 HAY STREET</b> <b>PERTH WA, AUSTRALIA 6000</b>  <b>Telephone</b> : <b>----</b> <b>Project</b> : <b>6137041 BORR Groundwater and Surface Water Monitoring</b> <b>Order number</b> : <b>6137041080831</b> <b>C-O-C number</b> : <b>----</b> <b>Sampler</b> : <b>Emily Evans, Pascale Ketelaar</b> <b>Site</b> : <b>----</b> <b>Quote number</b> : <b>EP/489/19 V4</b> <b>No. of samples received</b> : <b>28</b> <b>No. of samples analysed</b> : <b>28</b>	<b>Page</b> : 1 of 25 <b>Laboratory</b> : Environmental Division Perth <b>Contact</b> : Marnie Thomsett <b>Address</b> : 26 Rigali Way Wangara WA Australia 6065  <b>Telephone</b> : 08 9406 1311 <b>Date Samples Received</b> : 20-Dec-2019 13:15 <b>Date Analysis Commenced</b> : 20-Dec-2019 <b>Issue Date</b> : 09-Jan-2020 15:42
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
Daniel Fisher	Inorganics Analyst	Perth Inorganics, Wangara, WA
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
ShukHui Li	Client Services - Technical Manager	Perth Organics, Wangara, WA



## General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EG020: Metals LOR for samples EP1913643-006, 016, 025 raised due to high TDS content.
- EK055G (Ammonia): LOR for sample EP1913643-028 raised due to possible sample matrix interference.
- ED041G (Sulfate Turbidimetric): LOR for samples EP1913643-009, -010, & -019 raised due to possible sample matrix interference.
- EK059G (NOx): LOR for sample EP1913643-001 raised due to possible sample matrix interference.
- TDS by method EA-015 may bias high for sample #1, #5, #8, #10, #11, #17, #18 and #19 due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		MT01	BH11.1	JT01	BORR_MW39	BORR MW24
Client sampling date / time		18-Dec-2019 00:00		18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00
Compound	CAS Number	LOR	Unit	EP1913643-001	EP1913643-002	EP1913643-003	EP1913643-004	EP1913643-005
				Result	Result	Result	Result	Result
<b>EA005P: pH by PC Titrator</b>								
pH Value	----	0.01	pH Unit	6.62	7.45	7.23	6.40	4.89
<b>EA010P: Conductivity by PC Titrator</b>								
Electrical Conductivity @ 25°C	----	1	µS/cm	653	1490	3590	300	1790
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
Total Dissolved Solids @180°C	----	10	mg/L	582	820	1880	384	1170
<b>ED037P: Alkalinity by PC Titrator</b>								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	38	151	44	12	<1
Total Alkalinity as CaCO3	----	1	mg/L	38	151	44	12	<1
<b>ED038A: Acidity</b>								
Acidity as CaCO3	----	1	mg/L	18	16	10	21	30
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	1	88	80	45	38
<b>ED045G: Chloride by Discrete Analyser</b>								
Chloride	16887-00-6	1	mg/L	179	344	1060	42	553
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	12	6	43	<1	<1
Magnesium	7439-95-4	1	mg/L	9	18	99	<1	10
Sodium	7440-23-5	1	mg/L	98	261	516	60	337
Potassium	7440-09-7	1	mg/L	14	14	11	<1	<1
<b>EG020F: Dissolved Metals by ICP-MS</b>								
Aluminium	7429-90-5	0.01	mg/L	0.43	0.02	0.02	0.07	0.17
Arsenic	7440-38-2	0.001	mg/L	0.002	<0.001	<0.001	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	0.002	<0.001	<0.001	0.003	<0.001
Cobalt	7440-48-4	0.001	mg/L	0.001	<0.001	<0.001	<0.001	0.007
Copper	7440-50-8	0.001	mg/L	0.002	0.007	0.016	0.010	0.018
Lead	7439-92-1	0.001	mg/L	0.006	<0.001	<0.001	<0.001	0.001
Manganese	7439-96-5	0.001	mg/L	0.042	0.241	0.239	0.015	0.006
Nickel	7440-02-0	0.001	mg/L	0.002	0.012	0.014	0.008	0.014
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	<0.005	0.074	0.104	0.043	0.094
Iron	7439-89-6	0.05	mg/L	3.47	8.05	0.16	0.22	0.09



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MT01	BH11.1	JT01	BORR_MW39	BORR MW24
Client sampling date / time				18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1913643-001	EP1913643-002	EP1913643-003	EP1913643-004	EP1913643-005	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.68	0.13	0.03	4.90	12.3	
Iron	7439-89-6	0.05	mg/L	7.51	11.2	2.01	4.69	11.6	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.05	0.21	0.14	0.02	0.04	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.05	0.21	0.14	0.02	0.04	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.05	<0.01	<0.01	<0.01	0.02	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	5.8	0.4	0.6	<0.1	0.3	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	5.8	0.4	0.6	<0.1	0.3	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.50	0.44	0.03	0.04	0.05	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.06	0.25	<0.01	0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	5.83	14.6	32.4	2.36	16.4	
∅ Total Cations	----	0.01	meq/L	5.96	13.5	33.0	2.61	15.5	
∅ Ionic Balance	----	0.01	%	1.11	3.78	0.88	5.00	2.85	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	150	<100	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	130	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	280	<50	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MT01	BH11.1	JT01	BORR_MW39	BORR MW24
Client sampling date / time				18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1913643-001	EP1913643-002	EP1913643-003	EP1913643-004	EP1913643-005	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	260	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	260	<100	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	<10	----	<10	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	----	<0.02	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	----	<0.02	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	----	<0.10	----	----	
Carbofenthion	786-19-6	0.02	µg/L	<0.02	----	<0.02	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	----	<0.02	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	----	<0.02	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	----	<0.2	----	----	
Coumaphos	56-72-4	0.01	µg/L	<0.01	----	<0.01	----	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	----	<0.02	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	----	<0.02	----	----	
Demeton-O	298-03-3	0.02	µg/L	<0.02	----	<0.02	----	----	
Demeton-S	126-75-0	0.02	µg/L	<0.02	----	<0.02	----	----	
Diazinon	333-41-5	0.01	µg/L	<0.01	----	<0.01	----	----	
Dichlorvos	62-73-7	0.20	µg/L	<0.20	----	<0.20	----	----	
Dimethoate	60-51-5	0.02	µg/L	<0.02	----	<0.02	----	----	
Disulfoton	298-04-4	0.05	µg/L	<0.05	----	<0.05	----	----	
Ethion	563-12-2	0.02	µg/L	<0.02	----	<0.02	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MT01	BH11.1	JT01	BORR_MW39	BORR MW24
Client sampling date / time					18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00
Compound	CAS Number	LOR	Unit		EP1913643-001	EP1913643-002	EP1913643-003	EP1913643-004	EP1913643-005
					Result	Result	Result	Result	Result
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L		<0.05	----	<0.05	----	----
Ethoprophos	13194-48-4	0.01	µg/L		<0.01	----	<0.01	----	----
Fenamiphos	22224-92-6	0.01	µg/L		<0.01	----	<0.01	----	----
Fenchlorphos (Ronnell)	299-84-3	10	µg/L		<10	----	<10	----	----
Fenitrothion	122-14-5	2	µg/L		<2	----	<2	----	----
Fensulfothion	115-90-2	0.01	µg/L		<0.01	----	<0.01	----	----
Fenthion	55-38-9	0.05	µg/L		<0.05	----	<0.05	----	----
Malathion	121-75-5	0.02	µg/L		<0.02	----	<0.02	----	----
Mevinphos	7786-34-7	0.02	µg/L		<0.02	----	<0.02	----	----
Monocrotophos	6923-22-4	0.02	µg/L		<0.02	----	<0.02	----	----
Omethoate	1113-02-6	0.01	µg/L		<0.01	----	<0.01	----	----
Parathion	56-38-2	0.2	µg/L		<0.2	----	<0.2	----	----
Parathion-methyl	298-00-0	0.5	µg/L		<0.5	----	<0.5	----	----
Phorate	298-02-2	0.1	µg/L		<0.1	----	<0.1	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L		<0.01	----	<0.01	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L		<0.01	----	<0.01	----	----
Profenofos	41198-08-7	0.01	µg/L		<0.01	----	<0.01	----	----
Prothiofos	34643-46-4	0.1	µg/L		<0.1	----	<0.1	----	----
Sulfotep	3689-24-5	0.005	µg/L		<0.005	----	<0.005	----	----
Sulprofos	35400-43-2	0.05	µg/L		<0.05	----	<0.05	----	----
Terbufos	13071-79-9	0.01	µg/L		<0.01	----	<0.01	----	----
Temephos	3383-96-8	0.02	µg/L		<0.02	----	<0.02	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L		<0.01	----	<0.01	----	----
Triazophos	24017-47-8	0.005	µg/L		<0.005	----	<0.005	----	----
Trichlorfon	52-68-6	0.02	µg/L		<0.02	----	<0.02	----	----
Trichloronate	327-98-0	0.5	µg/L		<0.5	----	<0.5	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%		100	100	99.1	95.3	101
Toluene-D8	2037-26-5	2	%		93.1	95.2	95.0	96.0	95.2
4-Bromofluorobenzene	460-00-4	2	%		98.3	106	104	97.1	103



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Northern 3	SW06	BORR_MW37	BORR MW32	BORR MW31
Client sampling date / time				18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1913643-006	EP1913643-007	EP1913643-008	EP1913643-009	EP1913643-010	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	4.09	7.43	6.09	6.40	5.99	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	30600	3260	3370	287	260	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	19400	1770	1810	194	200	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	48	35	30	12	
Total Alkalinity as CaCO3	----	1	mg/L	<1	48	35	30	12	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	36	8	29	21	23	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	1300	63	82	<10	<10	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	12000	995	1010	64	61	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	268	49	13	3	3	
Magnesium	7439-95-4	1	mg/L	712	99	62	6	5	
Sodium	7440-23-5	1	mg/L	5540	431	558	43	37	
Potassium	7440-09-7	1	mg/L	137	6	3	3	4	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	2.57	0.03	0.02	0.86	0.98	
Arsenic	7440-38-2	0.001	mg/L	<0.005	<0.001	0.002	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	0.0006	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.005	<0.001	<0.001	0.001	0.001	
Cobalt	7440-48-4	0.001	mg/L	0.140	0.001	0.040	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.031	0.018	0.005	0.004	0.009	
Lead	7439-92-1	0.001	mg/L	<0.005	0.001	<0.001	0.001	0.002	
Manganese	7439-96-5	0.001	mg/L	8.16	0.107	0.306	0.006	0.009	
Nickel	7440-02-0	0.001	mg/L	0.062	0.013	0.020	0.013	0.013	
Selenium	7782-49-2	0.01	mg/L	<0.05	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.247	0.073	0.070	0.124	0.075	
Iron	7439-89-6	0.05	mg/L	2.71	0.38	10.1	0.62	1.51	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Northern 3	SW06	BORR_MW37	BORR MW32	BORR MW31
Client sampling date / time					18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00
Compound	CAS Number	LOR	Unit		EP1913643-006	EP1913643-007	EP1913643-008	EP1913643-009	EP1913643-010
					Result	Result	Result	Result	Result
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L		2.66	0.21	1.54	2.21	2.39
Iron	7439-89-6	0.05	mg/L		3.64	1.48	11.2	0.84	2.29
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L		3.08	0.46	0.04	0.58	0.96
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L		3.08	0.45	0.04	0.58	0.96
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	0.18	0.04	<0.01	<0.01
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		3.4	1.6	0.2	1.1	1.2
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L		3.4	1.8	0.2	1.1	1.2
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L		<0.01	0.16	<0.01	<0.01	0.02
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	0.14	<0.01	<0.01	<0.01
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L		366	30.3	30.9	2.40	1.96
∅ Total Cations	----	0.01	meq/L		316	29.5	30.1	2.59	2.27
∅ Ionic Balance	----	0.01	%		7.20	1.41	1.31	3.72	7.38
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	<100





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Northern 3	SW06	BORR_MW37	BORR MW32	BORR MW31
Client sampling date / time					18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00
Compound	CAS Number	LOR	Unit		EP1913643-006	EP1913643-007	EP1913643-008	EP1913643-009	EP1913643-010
					Result	Result	Result	Result	Result
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	<100
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L		<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L		<10	<10	----	----	----
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L		<0.02	<0.02	----	----	----
Azinphos-methyl	86-50-0	0.02	µg/L		<0.02	<0.02	----	----	----
Bromophos-ethyl	4824-78-6	0.10	µg/L		<0.10	<0.10	----	----	----
Carbofenthion	786-19-6	0.02	µg/L		<0.02	<0.02	----	----	----
Chlorfenvinphos	470-90-6	0.02	µg/L		<0.02	<0.02	----	----	----
Chlorpyrifos	2921-88-2	0.02	µg/L		<0.02	<0.02	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L		<0.2	<0.2	----	----	----
Coumaphos	56-72-4	0.01	µg/L		<0.01	<0.01	----	----	----
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L		<0.02	<0.02	----	----	----
Demeton-S-methyl	919-86-8	0.02	µg/L		<0.02	<0.02	----	----	----
Demeton-O	298-03-3	0.02	µg/L		<0.02	<0.02	----	----	----
Demeton-S	126-75-0	0.02	µg/L		<0.02	<0.02	----	----	----
Diazinon	333-41-5	0.01	µg/L		<0.01	<0.01	----	----	----
Dichlorvos	62-73-7	0.20	µg/L		<0.20	<0.20	----	----	----
Dimethoate	60-51-5	0.02	µg/L		<0.02	<0.02	----	----	----
Disulfoton	298-04-4	0.05	µg/L		<0.05	<0.05	----	----	----
Ethion	563-12-2	0.02	µg/L		<0.02	<0.02	----	----	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Northern 3	SW06	BORR_MW37	BORR MW32	BORR MW31
Client sampling date / time					18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00
Compound	CAS Number	LOR	Unit		EP1913643-006	EP1913643-007	EP1913643-008	EP1913643-009	EP1913643-010
					Result	Result	Result	Result	Result
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L		<0.05	<0.05	----	----	----
Ethoprophos	13194-48-4	0.01	µg/L		<0.01	<0.01	----	----	----
Fenamiphos	22224-92-6	0.01	µg/L		<0.01	<0.01	----	----	----
Fenchlorphos (Ronnell)	299-84-3	10	µg/L		<10	<10	----	----	----
Fenitrothion	122-14-5	2	µg/L		<2	<2	----	----	----
Fensulfothion	115-90-2	0.01	µg/L		<0.01	<0.01	----	----	----
Fenthion	55-38-9	0.05	µg/L		<0.05	<0.05	----	----	----
Malathion	121-75-5	0.02	µg/L		<0.02	<0.02	----	----	----
Mevinphos	7786-34-7	0.02	µg/L		<0.02	<0.02	----	----	----
Monocrotophos	6923-22-4	0.02	µg/L		<0.02	<0.02	----	----	----
Omethoate	1113-02-6	0.01	µg/L		<0.01	<0.01	----	----	----
Parathion	56-38-2	0.2	µg/L		<0.2	<0.2	----	----	----
Parathion-methyl	298-00-0	0.5	µg/L		<0.5	<0.5	----	----	----
Phorate	298-02-2	0.1	µg/L		<0.1	<0.1	----	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L		<0.01	<0.01	----	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L		<0.01	<0.01	----	----	----
Profenofos	41198-08-7	0.01	µg/L		<0.01	<0.01	----	----	----
Prothiofos	34643-46-4	0.1	µg/L		<0.1	<0.1	----	----	----
Sulfotep	3689-24-5	0.005	µg/L		<0.005	<0.005	----	----	----
Sulprofos	35400-43-2	0.05	µg/L		<0.05	<0.05	----	----	----
Terbufos	13071-79-9	0.01	µg/L		<0.01	<0.01	----	----	----
Temephos	3383-96-8	0.02	µg/L		<0.02	<0.02	----	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L		<0.01	<0.01	----	----	----
Triazophos	24017-47-8	0.005	µg/L		<0.005	<0.005	----	----	----
Trichlorfon	52-68-6	0.02	µg/L		<0.02	<0.02	----	----	----
Trichloronate	327-98-0	0.5	µg/L		<0.5	<0.5	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%		102	101	98.6	98.7	103
Toluene-D8	2037-26-5	2	%		96.2	94.4	97.5	95.5	92.6
4-Bromofluorobenzene	460-00-4	2	%		102	99.9	102	99.9	98.6



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW29	RB03	FB03	TBW 1235	TBW 1236
Client sampling date / time				18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1913643-011	EP1913643-012	EP1913643-013	EP1913643-014	EP1913643-015	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	5.92	----	----	----	----	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	721	----	----	----	----	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	469	----	----	----	----	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	11	----	----	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	11	----	----	----	----	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	210	----	----	----	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	121	----	----	----	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	144	----	----	----	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	16	----	----	----	----	
Magnesium	7439-95-4	1	mg/L	23	----	----	----	----	
Sodium	7440-23-5	1	mg/L	84	----	----	----	----	
Potassium	7440-09-7	1	mg/L	6	----	----	----	----	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.50	----	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	0.002	----	----	----	----	
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	0.004	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	
Manganese	7439-96-5	0.001	mg/L	0.016	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	0.015	----	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	0.103	----	----	----	----	
Iron	7439-89-6	0.05	mg/L	1.03	----	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW29	RB03	FB03	TBW 1235	TBW 1236
Client sampling date / time				18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1913643-011	EP1913643-012	EP1913643-013	EP1913643-014	EP1913643-015	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	1.74	----	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	----	<0.001	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	----	<0.0001	----	----	----	
Chromium	7440-47-3	0.001	mg/L	----	<0.001	----	----	----	
Copper	7440-50-8	0.001	mg/L	----	<0.001	----	----	----	
Nickel	7440-02-0	0.001	mg/L	----	<0.001	----	----	----	
Lead	7439-92-1	0.001	mg/L	----	<0.001	----	----	----	
Zinc	7440-66-6	0.005	mg/L	----	<0.005	----	----	----	
Iron	7439-89-6	0.05	mg/L	1.41	----	----	----	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.44	----	----	----	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.44	----	----	----	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	----	----	----	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.1	----	----	----	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	1.1	----	----	----	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	<0.01	----	----	----	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	----	----	----	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	----	----	----	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	6.80	----	----	----	----	
∅ Total Cations	----	0.01	meq/L	6.50	----	----	----	----	
∅ Ionic Balance	----	0.01	%	2.27	----	----	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	----	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	----	
C15 - C28 Fraction	----	100	µg/L	<100	----	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW29	RB03	FB03	TBW 1235	TBW 1236
Client sampling date / time					18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00	18-Dec-2019 00:00
Compound	CAS Number	LOR	Unit		EP1913643-011	EP1913643-012	EP1913643-013	EP1913643-014	EP1913643-015
					Result	Result	Result	Result	Result
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>									
C29 - C36 Fraction	----	50	µg/L		<50	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	----	----	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	----	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L		<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	----	----	----	----
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L		<1	----	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	----	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	----	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	----	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	----	<2	<2	<2
^ Total Xylenes	----	2	µg/L		<2	----	<2	<2	<2
^ Sum of BTEX	----	1	µg/L		<1	----	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	----	<5	<5	<5
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%		99.3	----	101	98.8	99.0
Toluene-D8	2037-26-5	2	%		94.7	----	95.7	96.3	96.0
4-Bromofluorobenzene	460-00-4	2	%		104	----	103	101	101



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MR MW05	Southern 4	BORR MW46	BORR MW08a	BORR MW09
Client sampling date / time				19-Dec-2019 00:00	19-Dec-2019 00:00	19-Dec-2019 00:00	19-Dec-2019 00:00	19-Dec-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1913643-016	EP1913643-017	EP1913643-018	EP1913643-019	EP1913643-020	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.39	8.56	6.28	6.80	6.82	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	22200	9630	408	607	215	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	13600	5650	316	418	138	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	18	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	125	172	14	58	10	
Total Alkalinity as CaCO3	----	1	mg/L	125	190	14	58	10	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	47	<1	46	18	7	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	884	84	137	<20	36	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	7360	3080	17	161	28	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	162	80	31	20	12	
Magnesium	7439-95-4	1	mg/L	603	202	11	12	3	
Sodium	7440-23-5	1	mg/L	3740	1600	14	73	18	
Potassium	7440-09-7	1	mg/L	41	37	3	9	5	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	<0.05	0.06	0.02	0.33	0.02	
Arsenic	7440-38-2	0.001	mg/L	0.009	0.002	0.002	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.005	<0.001	<0.001	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	<0.005	<0.001	0.004	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	<0.005	0.013	0.016	0.010	0.014	
Lead	7439-92-1	0.001	mg/L	<0.005	0.001	<0.001	0.002	0.001	
Manganese	7439-96-5	0.001	mg/L	0.180	0.036	0.085	0.067	0.004	
Nickel	7440-02-0	0.001	mg/L	0.014	0.013	0.012	0.016	0.014	
Selenium	7782-49-2	0.01	mg/L	<0.05	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.069	0.139	0.062	0.097	0.060	
Iron	7439-89-6	0.05	mg/L	19.5	0.14	26.8	0.98	<0.05	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MR MW05	Southern 4	BORR MW46	BORR MW08a	BORR MW09
Client sampling date / time					19-Dec-2019 00:00	19-Dec-2019 00:00	19-Dec-2019 00:00	19-Dec-2019 00:00	19-Dec-2019 00:00
Compound	CAS Number	LOR	Unit		EP1913643-016	EP1913643-017	EP1913643-018	EP1913643-019	EP1913643-020
					Result	Result	Result	Result	Result
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L		3.00	0.24	3.20	1.44	0.05
Iron	7439-89-6	0.05	mg/L		24.5	0.41	32.9	1.21	<0.05
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L		0.24	0.03	0.19	0.45	0.01
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L		0.24	0.02	0.19	0.45	<0.01
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	<0.01	0.19	<0.01	1.07
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		2.0	7.1	1.2	1.9	0.2
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L		2.0	7.1	1.4	1.9	1.3
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L		0.08	0.23	<0.01	1.06	<0.01
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		0.01	<0.01	<0.01	1.03	<0.01
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L		228	92.4	3.61	5.70	1.74
∅ Total Cations	----	0.01	meq/L		221	91.2	3.14	5.39	1.76
∅ Ionic Balance	----	0.01	%		1.57	0.69	7.02	2.79	0.50
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		270	130	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		270	130	<50	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	<100



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MR MW05	Southern 4	BORR MW46	BORR MW08a	BORR MW09
Client sampling date / time					19-Dec-2019 00:00	19-Dec-2019 00:00	19-Dec-2019 00:00	19-Dec-2019 00:00	19-Dec-2019 00:00
Compound	CAS Number	LOR	Unit	EP1913643-016	EP1913643-017	EP1913643-018	EP1913643-019	EP1913643-020	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	240	160	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	240	160	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	<10	----	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	<0.02	----	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	----	<0.02	----	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	<0.10	----	----	----	
Carbofenthion	786-19-6	0.02	µg/L	----	<0.02	----	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	<0.02	----	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	<0.02	----	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	<0.2	----	----	----	
Coumaphos	56-72-4	0.01	µg/L	----	<0.01	----	----	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	<0.02	----	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	<0.02	----	----	----	
Demeton-O	298-03-3	0.02	µg/L	----	<0.02	----	----	----	
Demeton-S	126-75-0	0.02	µg/L	----	<0.02	----	----	----	
Diazinon	333-41-5	0.01	µg/L	----	<0.01	----	----	----	
Dichlorvos	62-73-7	0.20	µg/L	----	<0.20	----	----	----	
Dimethoate	60-51-5	0.02	µg/L	----	<0.02	----	----	----	
Disulfoton	298-04-4	0.05	µg/L	----	<0.05	----	----	----	
Ethion	563-12-2	0.02	µg/L	----	<0.02	----	----	----	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MR MW05	Southern 4	BORR MW46	BORR MW08a	BORR MW09
Client sampling date / time					19-Dec-2019 00:00	19-Dec-2019 00:00	19-Dec-2019 00:00	19-Dec-2019 00:00	19-Dec-2019 00:00
Compound	CAS Number	LOR	Unit		EP1913643-016	EP1913643-017	EP1913643-018	EP1913643-019	EP1913643-020
					Result	Result	Result	Result	Result
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L	----	<0.05	----	----	----	----
Ethoprophos	13194-48-4	0.01	µg/L	----	<0.01	----	----	----	----
Fenamiphos	22224-92-6	0.01	µg/L	----	<0.01	----	----	----	----
Fenchlorphos (Rannel)	299-84-3	10	µg/L	----	<10	----	----	----	----
Fenitrothion	122-14-5	2	µg/L	----	<2	----	----	----	----
Fensulfothion	115-90-2	0.01	µg/L	----	<0.01	----	----	----	----
Fenthion	55-38-9	0.05	µg/L	----	<0.05	----	----	----	----
Malathion	121-75-5	0.02	µg/L	----	<0.02	----	----	----	----
Mevinphos	7786-34-7	0.02	µg/L	----	<0.02	----	----	----	----
Monocrotophos	6923-22-4	0.02	µg/L	----	<0.02	----	----	----	----
Omethoate	1113-02-6	0.01	µg/L	----	<0.01	----	----	----	----
Parathion	56-38-2	0.2	µg/L	----	<0.2	----	----	----	----
Parathion-methyl	298-00-0	0.5	µg/L	----	<0.5	----	----	----	----
Phorate	298-02-2	0.1	µg/L	----	<0.1	----	----	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	----	<0.01	----	----	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L	----	<0.01	----	----	----	----
Profenofos	41198-08-7	0.01	µg/L	----	<0.01	----	----	----	----
Prothiofos	34643-46-4	0.1	µg/L	----	<0.1	----	----	----	----
Sulfotep	3689-24-5	0.005	µg/L	----	<0.005	----	----	----	----
Sulprofos	35400-43-2	0.05	µg/L	----	<0.05	----	----	----	----
Terbufos	13071-79-9	0.01	µg/L	----	<0.01	----	----	----	----
Temephos	3383-96-8	0.02	µg/L	----	<0.02	----	----	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L	----	<0.01	----	----	----	----
Triazophos	24017-47-8	0.005	µg/L	----	<0.005	----	----	----	----
Trichlorfon	52-68-6	0.02	µg/L	----	<0.02	----	----	----	----
Trichloronate	327-98-0	0.5	µg/L	----	<0.5	----	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	100	102	75.9	75.8	72.8	
Toluene-D8	2037-26-5	2	%	94.6	96.2	102	100	101	
4-Bromofluorobenzene	460-00-4	2	%	100	104	109	109	108	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		RB04	FB04	TBW1249	BORRMW10	BORRMW11
Client sampling date / time		19-Dec-2019 00:00		19-Dec-2019 00:00	19-Dec-2019 00:00	19-Dec-2019 00:00	19-Dec-2019 00:00	19-Dec-2019 00:00
Compound	CAS Number	LOR	Unit	EP1913643-021	EP1913643-022	EP1913643-023	EP1913643-024	EP1913643-025
				Result	Result	Result	Result	Result
<b>EA005P: pH by PC Titrator</b>								
pH Value	----	0.01	pH Unit	----	----	----	6.54	7.93
<b>EA010P: Conductivity by PC Titrator</b>								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	465	24600
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
Total Dissolved Solids @180°C	----	10	mg/L	----	----	----	288	15000
<b>ED037P: Alkalinity by PC Titrator</b>								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	21	1840
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	21	1840
<b>ED038A: Acidity</b>								
Acidity as CaCO3	----	1	mg/L	----	----	----	16	16
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	54	2
<b>ED045G: Chloride by Discrete Analyser</b>								
Chloride	16887-00-6	1	mg/L	----	----	----	92	7660
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	----	----	----	13	136
Magnesium	7439-95-4	1	mg/L	----	----	----	11	461
Sodium	7440-23-5	1	mg/L	----	----	----	51	4830
Potassium	7440-09-7	1	mg/L	----	----	----	5	30
<b>EG020F: Dissolved Metals by ICP-MS</b>								
Aluminium	7429-90-5	0.01	mg/L	----	----	----	0.09	0.05
Arsenic	7440-38-2	0.001	mg/L	----	----	----	0.001	0.009
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	<0.0001	<0.0005
Chromium	7440-47-3	0.001	mg/L	----	----	----	0.001	0.006
Cobalt	7440-48-4	0.001	mg/L	----	----	----	<0.001	<0.005
Copper	7440-50-8	0.001	mg/L	----	----	----	0.009	0.010
Lead	7439-92-1	0.001	mg/L	----	----	----	<0.001	<0.005
Manganese	7439-96-5	0.001	mg/L	----	----	----	0.013	0.246
Nickel	7440-02-0	0.001	mg/L	----	----	----	0.010	0.018
Selenium	7782-49-2	0.01	mg/L	----	----	----	<0.01	<0.05
Zinc	7440-66-6	0.005	mg/L	----	----	----	0.055	0.404
Iron	7439-89-6	0.05	mg/L	----	----	----	3.81	0.74



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB04	FB04	TBW1249	BORRMW10	BORRMW11
Client sampling date / time				19-Dec-2019 00:00	19-Dec-2019 00:00	19-Dec-2019 00:00	19-Dec-2019 00:00	19-Dec-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1913643-021	EP1913643-022	EP1913643-023	EP1913643-024	EP1913643-025	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	----	0.42	2.23	
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----	
Iron	7439-89-6	0.05	mg/L	----	----	----	4.12	4.78	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	----	----	----	0.26	0.11	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	----	----	----	0.26	0.10	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	----	----	----	<0.01	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	----	----	0.6	6.2	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	----	----	----	0.6	6.2	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	----	----	----	<0.01	0.17	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	----	----	<0.01	0.07	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	----	----	----	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	----	----	----	4.14	253	
∅ Total Cations	----	0.01	meq/L	----	----	----	3.90	256	
∅ Ionic Balance	----	0.01	%	----	----	----	2.97	0.53	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	----	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	----	----	----	<50	<50	
C15 - C28 Fraction	----	100	µg/L	----	----	----	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB04	FB04	TBW1249	BORRMW10	BORRMW11
Client sampling date / time				19-Dec-2019 00:00	19-Dec-2019 00:00	19-Dec-2019 00:00	19-Dec-2019 00:00	19-Dec-2019 00:00	
Compound	CAS Number	LOR	Unit	EP1913643-021	EP1913643-022	EP1913643-023	EP1913643-024	EP1913643-025	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>									
C29 - C36 Fraction	----	50	µg/L	----	----	----	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	----	----	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	----	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	----	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	----	----	----	<100	<100	
>C16 - C34 Fraction	----	100	µg/L	----	----	----	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	----	----	----	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	----	----	----	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	----	----	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	----	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	----	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	----	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	----	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	----	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	----	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	----	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	----	<5	<5	<5	<5	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	----	75.8	75.7	75.2	77.8	
Toluene-D8	2037-26-5	2	%	----	102	104	103	103	
4-Bromofluorobenzene	460-00-4	2	%	----	109	109	110	109	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		BORRMW12	FD03	FD02	----	----
Client sampling date / time		19-Dec-2019 00:00		19-Dec-2019 00:00	19-Dec-2019 00:00	19-Dec-2019 00:00	----	----
Compound	CAS Number	LOR	Unit	EP1913643-026	EP1913643-027	EP1913643-028	-----	-----
				Result	Result	Result	----	----
<b>EA005P: pH by PC Titrator</b>								
pH Value	----	0.01	pH Unit	<b>6.96</b>	<b>7.07</b>	<b>6.64</b>	----	----
<b>EA010P: Conductivity by PC Titrator</b>								
Electrical Conductivity @ 25°C	----	1	µS/cm	<b>523</b>	<b>518</b>	<b>651</b>	----	----
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
Total Dissolved Solids @180°C	----	10	mg/L	<b>314</b>	<b>318</b>	<b>624</b>	----	----
<b>ED037P: Alkalinity by PC Titrator</b>								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<b>26</b>	<b>26</b>	<b>35</b>	----	----
Total Alkalinity as CaCO3	----	1	mg/L	<b>26</b>	<b>26</b>	<b>35</b>	----	----
<b>ED038A: Acidity</b>								
Acidity as CaCO3	----	1	mg/L	<b>13</b>	<b>12</b>	<b>15</b>	----	----
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<b>35</b>	<b>34</b>	<1	----	----
<b>ED045G: Chloride by Discrete Analyser</b>								
Chloride	16887-00-6	1	mg/L	<b>119</b>	<b>119</b>	<b>200</b>	----	----
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	<b>6</b>	<b>6</b>	<b>13</b>	----	----
Magnesium	7439-95-4	1	mg/L	<b>11</b>	<b>11</b>	<b>10</b>	----	----
Sodium	7440-23-5	1	mg/L	<b>73</b>	<b>73</b>	<b>102</b>	----	----
Potassium	7440-09-7	1	mg/L	<b>6</b>	<b>6</b>	<b>14</b>	----	----
<b>EG020F: Dissolved Metals by ICP-MS</b>								
Aluminium	7429-90-5	0.01	mg/L	<b>0.02</b>	<b>0.02</b>	<b>0.41</b>	----	----
Arsenic	7440-38-2	0.001	mg/L	<b>0.002</b>	<b>0.002</b>	<b>0.002</b>	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<b>0.002</b>	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<b>0.001</b>	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<b>0.002</b>	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<b>0.004</b>	----	----
Manganese	7439-96-5	0.001	mg/L	<b>0.001</b>	<b>0.002</b>	<b>0.040</b>	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<b>0.002</b>	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	----	----
Iron	7439-89-6	0.05	mg/L	<b>2.08</b>	<b>2.37</b>	<b>3.32</b>	----	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORRMW12	FD03	FD02	----	----
Client sampling date / time				19-Dec-2019 00:00	19-Dec-2019 00:00	19-Dec-2019 00:00	----	----	
Compound	CAS Number	LOR	Unit	EP1913643-026	EP1913643-027	EP1913643-028	-----	-----	
				Result	Result	Result	----	----	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.21	0.23	0.81	----	----	
Iron	7439-89-6	0.05	mg/L	2.90	2.97	7.21	----	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.19	0.21	<0.02	----	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.19	0.21	<0.01	----	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	1.06	1.09	0.05	----	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.3	0.4	5.4	----	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	1.4	1.5	5.4	----	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	0.48	----	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.06	----	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	----	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	4.60	4.58	6.34	----	----	
∅ Total Cations	----	0.01	meq/L	4.53	4.53	6.27	----	----	
∅ Ionic Balance	----	0.01	%	0.78	0.56	0.59	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	----	----	
C15 - C28 Fraction	----	100	µg/L	<100	<100	120	----	----	
C29 - C36 Fraction	----	50	µg/L	<50	<50	70	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	190	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	----	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORRMW12	FD03	FD02	----	----
Client sampling date / time				19-Dec-2019 00:00	19-Dec-2019 00:00	19-Dec-2019 00:00	----	----	
Compound	CAS Number	LOR	Unit	EP1913643-026	EP1913643-027	EP1913643-028	-----	-----	
				Result	Result	Result	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	180	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	180	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	----	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----	
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	----	----	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	----	----	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	----	<10	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	----	<0.02	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	----	----	<0.02	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	----	<0.10	----	----	
Carbofenthion	786-19-6	0.02	µg/L	----	----	<0.02	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	----	<0.02	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	----	<0.02	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	----	<0.2	----	----	
Coumaphos	56-72-4	0.01	µg/L	----	----	<0.01	----	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	----	<0.02	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	----	<0.02	----	----	
Demeton-O	298-03-3	0.02	µg/L	----	----	<0.02	----	----	
Demeton-S	126-75-0	0.02	µg/L	----	----	<0.02	----	----	
Diazinon	333-41-5	0.01	µg/L	----	----	<0.01	----	----	
Dichlorvos	62-73-7	0.20	µg/L	----	----	<0.20	----	----	
Dimethoate	60-51-5	0.02	µg/L	----	----	<0.02	----	----	
Disulfoton	298-04-4	0.05	µg/L	----	----	<0.05	----	----	
Ethion	563-12-2	0.02	µg/L	----	----	<0.02	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORRMW12	FD03	FD02	----	----
Client sampling date / time				19-Dec-2019 00:00	19-Dec-2019 00:00	19-Dec-2019 00:00	----	----	
Compound	CAS Number	LOR	Unit	EP1913643-026	EP1913643-027	EP1913643-028	-----	-----	
				Result	Result	Result	----	----	
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L	----	----	<0.05	----	----	
Ethoprophos	13194-48-4	0.01	µg/L	----	----	<0.01	----	----	
Fenamiphos	22224-92-6	0.01	µg/L	----	----	<0.01	----	----	
Fenchlorphos (Ronnell)	299-84-3	10	µg/L	----	----	<10	----	----	
Fenitrothion	122-14-5	2	µg/L	----	----	<2	----	----	
Fensulfothion	115-90-2	0.01	µg/L	----	----	<0.01	----	----	
Fenthion	55-38-9	0.05	µg/L	----	----	<0.05	----	----	
Malathion	121-75-5	0.02	µg/L	----	----	<0.02	----	----	
Mevinphos	7786-34-7	0.02	µg/L	----	----	<0.02	----	----	
Monocrotophos	6923-22-4	0.02	µg/L	----	----	<0.02	----	----	
Omethoate	1113-02-6	0.01	µg/L	----	----	<0.01	----	----	
Parathion	56-38-2	0.2	µg/L	----	----	<0.2	----	----	
Parathion-methyl	298-00-0	0.5	µg/L	----	----	<0.5	----	----	
Phorate	298-02-2	0.1	µg/L	----	----	<0.1	----	----	
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	----	----	<0.01	----	----	
Pirimiphos-methyl	29232-93-7	0.01	µg/L	----	----	<0.01	----	----	
Profenofos	41198-08-7	0.01	µg/L	----	----	<0.01	----	----	
Prothiofos	34643-46-4	0.1	µg/L	----	----	<0.1	----	----	
Sulfotep	3689-24-5	0.005	µg/L	----	----	<0.005	----	----	
Sulprofos	35400-43-2	0.05	µg/L	----	----	<0.05	----	----	
Terbufos	13071-79-9	0.01	µg/L	----	----	<0.01	----	----	
Temephos	3383-96-8	0.02	µg/L	----	----	<0.02	----	----	
Tetrachlorvinphos	22248-79-9	0.01	µg/L	----	----	<0.01	----	----	
Triazophos	24017-47-8	0.005	µg/L	----	----	<0.005	----	----	
Trichlorfon	52-68-6	0.02	µg/L	----	----	<0.02	----	----	
Trichloronate	327-98-0	0.5	µg/L	----	----	<0.5	----	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	<b>75.9</b>	<b>73.0</b>	<b>71.7</b>	----	----	
Toluene-D8	2037-26-5	2	%	<b>103</b>	<b>102</b>	<b>101</b>	----	----	
4-Bromofluorobenzene	460-00-4	2	%	<b>108</b>	<b>110</b>	<b>108</b>	----	----	





## Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	61	141
Toluene-D8	2037-26-5	73	126
4-Bromofluorobenzene	460-00-4	60	125

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1913643	Page	: 1 of 16
Client	: GHD PTY LTD	Laboratory	: Environmental Division Perth
Contact	: Julia Roberts	Telephone	: 08 9406 1311
Project	: 6137041 BORR Groundwater and Surface Water Monitoring	Date Samples Received	: 20-Dec-2019
Site	: ----	Issue Date	: 09-Jan-2020
Sampler	: Emily Evans, Pascale Ketelaar	No. of samples received	: 28
Order number	: 6137041080831	No. of samples analysed	: 28

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



**Outliers : Analysis Holding Time Compliance**

Matrix: **WATER**

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EA005P: pH by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural</b>							
MT01, JT01, BORR MW24, SW06, BORR MW32, BORR MW29	BH11.1, BORR_MW39, Northern 3, BORR_MW37, BORR MW31,	----	----	----	03-Jan-2020	18-Dec-2019	16
<b>Clear Plastic Bottle - Natural</b>							
MR MW05, BORR MW46, BORR MW09, BORRMW11, FD03,	Southern 4, BORR MW08a, BORRMW10, BORRMW12, FD02	----	----	----	03-Jan-2020	19-Dec-2019	15
<b>ED037P: Alkalinity by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural</b>							
MT01, JT01, BORR MW24, SW06, BORR MW32, BORR MW29	BH11.1, BORR_MW39, Northern 3, BORR_MW37, BORR MW31,	----	----	----	03-Jan-2020	01-Jan-2020	2
<b>Clear Plastic Bottle - Natural</b>							
MR MW05, BORR MW46, BORR MW09, BORRMW11, FD03,	Southern 4, BORR MW08a, BORRMW10, BORRMW12, FD02	----	----	----	03-Jan-2020	02-Jan-2020	1
<b>EP234A: OP Pesticides</b>							
<b>Amber Bottle Unpreserved for Specialist Organics</b>							
MT01, Northern 3,	JT01, SW06	----	----	----	31-Dec-2019	25-Dec-2019	6
<b>Amber Bottle Unpreserved for Specialist Organics</b>							
Southern 4,	FD02	----	----	----	31-Dec-2019	26-Dec-2019	5

**Outliers : Frequency of Quality Control Samples**

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Method					
<b>Laboratory Duplicates (DUP)</b>					



Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP) - Continued					
TRH - Semivolatile Fraction	2	25	8.00	10.00	NEPM 2013 B3 & ALS QC Standard

## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA005P: pH by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA005-P)</b>								
MT01, JT01, BORR MW24, SW06, BORR MW32, BORR MW29	BH11.1, BORR_MW39, Northern 3, BORR_MW37, BORR MW31,	18-Dec-2019	---	---	---	03-Jan-2020	18-Dec-2019	*
<b>Clear Plastic Bottle - Natural (EA005-P)</b>								
MR MW05, BORR MW46, BORR MW09, BORRMW11, FD03,	Southern 4, BORR MW08a, BORRMW10, BORRMW12, FD02	19-Dec-2019	---	---	---	03-Jan-2020	19-Dec-2019	*
<b>EA010P: Conductivity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA010-P)</b>								
MT01, JT01, BORR MW24, SW06, BORR MW32, BORR MW29	BH11.1, BORR_MW39, Northern 3, BORR_MW37, BORR MW31,	18-Dec-2019	---	---	---	03-Jan-2020	15-Jan-2020	✓
<b>Clear Plastic Bottle - Natural (EA010-P)</b>								
MR MW05, BORR MW46, BORR MW09, BORRMW11, FD03,	Southern 4, BORR MW08a, BORRMW10, BORRMW12, FD02	19-Dec-2019	---	---	---	03-Jan-2020	16-Jan-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
<b>Clear Plastic Bottle - Natural (EA015H)</b>								
MT01, JT01, BORR MW24, SW06, BORR MW32, BORR MW29	BH11.1, BORR_MW39, Northern 3, BORR_MW37, BORR MW31,	18-Dec-2019	----	----	----	23-Dec-2019	25-Dec-2019	✓
<b>Clear Plastic Bottle - Natural (EA015H)</b>								
MR MW05,	Southern 4	19-Dec-2019	----	----	----	23-Dec-2019	26-Dec-2019	✓
<b>Clear Plastic Bottle - Natural (EA015H)</b>								
BORR MW46, BORR MW09, BORRMW11, FD03,	BORR MW08a, BORRMW10, BORRMW12, FD02	19-Dec-2019	----	----	----	24-Dec-2019	26-Dec-2019	✓
<b>ED037P: Alkalinity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (ED037-P)</b>								
MT01, JT01, BORR MW24, SW06, BORR MW32, BORR MW29	BH11.1, BORR_MW39, Northern 3, BORR_MW37, BORR MW31,	18-Dec-2019	----	----	----	03-Jan-2020	01-Jan-2020	*
<b>Clear Plastic Bottle - Natural (ED037-P)</b>								
MR MW05, BORR MW46, BORR MW09, BORRMW11, FD03,	Southern 4, BORR MW08a, BORRMW10, BORRMW12, FD02	19-Dec-2019	----	----	----	03-Jan-2020	02-Jan-2020	*
<b>ED038A: Acidity</b>								
<b>Clear Plastic Bottle - Natural (ED038)</b>								
MT01, JT01, BORR MW24, SW06, BORR MW32, BORR MW29	BH11.1, BORR_MW39, Northern 3, BORR_MW37, BORR MW31,	18-Dec-2019	----	----	----	30-Dec-2019	01-Jan-2020	✓
<b>Clear Plastic Bottle - Natural (ED038)</b>								
MR MW05, BORR MW46, BORR MW09, BORRMW11, FD03,	Southern 4, BORR MW08a, BORRMW10, BORRMW12, FD02	19-Dec-2019	----	----	----	30-Dec-2019	02-Jan-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
<b>Clear Plastic Bottle - Natural (ED041G)</b> MT01, JT01, BORR MW24, SW06, BORR MW32, BORR MW29	BH11.1, BORR_MW39, Northern 3, BORR_MW37, BORR MW31,	18-Dec-2019	----	----	----	20-Dec-2019	15-Jan-2020	✓
<b>Clear Plastic Bottle - Natural (ED041G)</b> MR MW05, BORR MW46, BORR MW09, BORRMW11, FD03,	Southern 4, BORR MW08a, BORRMW10, BORRMW12, FD02	19-Dec-2019	----	----	----	20-Dec-2019	16-Jan-2020	✓
<b>ED045G: Chloride by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Natural (ED045G)</b> MT01, JT01, BORR MW24, SW06, BORR MW32, BORR MW29	BH11.1, BORR_MW39, Northern 3, BORR_MW37, BORR MW31,	18-Dec-2019	----	----	----	20-Dec-2019	15-Jan-2020	✓
<b>Clear Plastic Bottle - Natural (ED045G)</b> MR MW05, BORR MW46, BORR MW09, BORRMW11, FD03,	Southern 4, BORR MW08a, BORRMW10, BORRMW12, FD02	19-Dec-2019	----	----	----	20-Dec-2019	16-Jan-2020	✓
<b>ED093F: Dissolved Major Cations</b>								
<b>Clear HDPE (U-T ORC) - Filtered; Lab-acidified (ED093F)</b> MT01, JT01, BORR MW24, SW06, BORR MW32, BORR MW29	BH11.1, BORR_MW39, Northern 3, BORR_MW37, BORR MW31,	18-Dec-2019	----	----	----	02-Jan-2020	15-Jan-2020	✓
<b>Clear HDPE (U-T ORC) - Filtered; Lab-acidified (ED093F)</b> MR MW05, BORR MW46, BORR MW09, BORRMW11, FD03,	Southern 4, BORR MW08a, BORRMW10, BORRMW12, FD02	19-Dec-2019	----	----	----	02-Jan-2020	16-Jan-2020	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EG020F: Dissolved Metals by ICP-MS</b>							
<b>Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG020A-F)</b> MT01, BH11.1, JT01, BORR_MW39, BORR MW24, Northern 3, SW06, BORR_MW37, BORR MW32, BORR MW31, BORR MW29	18-Dec-2019	----	----	----	02-Jan-2020	15-Jun-2020	✓
<b>Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG020A-F)</b> MR MW05, Southern 4, BORR MW46, BORR MW08a, BORR MW09, BORRMW10, BORRMW11, BORRMW12, FD03, FD02	19-Dec-2019	----	----	----	02-Jan-2020	16-Jun-2020	✓
<b>EG020T: Total Metals by ICP-MS</b>							
<b>Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG020A-T)</b> MT01, BH11.1, JT01, BORR_MW39, BORR MW24, Northern 3, SW06, BORR_MW37, BORR MW32, BORR MW31, BORR MW29, RB03	18-Dec-2019	02-Jan-2020	15-Jun-2020	✓	02-Jan-2020	15-Jun-2020	✓
<b>Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG020A-T)</b> MR MW05, Southern 4, BORR MW46, BORR MW08a, BORR MW09, RB04, BORRMW10, BORRMW11, BORRMW12, FD03, FD02	19-Dec-2019	02-Jan-2020	16-Jun-2020	✓	02-Jan-2020	16-Jun-2020	✓
<b>EK055G: Ammonia as N by Discrete Analyser</b>							
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> MT01, BH11.1, JT01, BORR_MW39, BORR MW24, Northern 3, SW06, BORR_MW37, BORR MW32, BORR MW31, BORR MW29	18-Dec-2019	----	----	----	20-Dec-2019	15-Jan-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> MR MW05, Southern 4, BORR MW46, BORR MW08a, BORR MW09, BORRMW10, BORRMW11, BORRMW12, FD03, FD02	19-Dec-2019	----	----	----	20-Dec-2019	16-Jan-2020	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> MT01, JT01, BORR MW24, SW06, BORR MW32, BORR MW29	BH11.1, BORR_MW39, Northern 3, BORR_MW37, BORR MW31,	18-Dec-2019	----	----	----	20-Dec-2019	15-Jan-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> MR MW05, BORR MW46, BORR MW09, BORRMW11, FD03,	Southern 4, BORR MW08a, BORRMW10, BORRMW12, FD02	19-Dec-2019	----	----	----	20-Dec-2019	16-Jan-2020	✓
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> MT01, JT01, BORR MW24, SW06, BORR MW32, BORR MW29	BH11.1, BORR_MW39, Northern 3, BORR_MW37, BORR MW31,	18-Dec-2019	08-Jan-2020	15-Jan-2020	✓	08-Jan-2020	15-Jan-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> MR MW05, BORR MW46, BORR MW09, BORRMW11, FD03,	Southern 4, BORR MW08a, BORRMW10, BORRMW12, FD02	19-Dec-2019	08-Jan-2020	16-Jan-2020	✓	08-Jan-2020	16-Jan-2020	✓
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> MT01, JT01, BORR MW24, SW06, BORR MW32, BORR MW29	BH11.1, BORR_MW39, Northern 3, BORR_MW37, BORR MW31,	18-Dec-2019	08-Jan-2020	15-Jan-2020	✓	08-Jan-2020	15-Jan-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> MR MW05, BORR MW46, BORR MW09, BORRMW11, FD03,	Southern 4, BORR MW08a, BORRMW10, BORRMW12, FD02	19-Dec-2019	08-Jan-2020	16-Jan-2020	✓	08-Jan-2020	16-Jan-2020	✓





Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>								
<b>Clear Plastic Bottle - Natural (EK071G)</b> MT01, JT01, BORR MW24, SW06, BORR MW32, BORR MW29	BH11.1, BORR_MW39, Northern 3, BORR_MW37, BORR MW31,	18-Dec-2019	----	----	----	20-Dec-2019	20-Dec-2019	✓
<b>Clear Plastic Bottle - Natural (EK071G)</b> MR MW05, BORR MW46, BORR MW09, BORRMW11, FD03,	Southern 4, BORR MW08a, BORRMW10, BORRMW12, FD02	19-Dec-2019	----	----	----	20-Dec-2019	21-Dec-2019	✓
<b>EK085M: Sulfide as S2-</b>								
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> MT01, JT01, BORR MW24, SW06, BORR MW32, BORR MW29	BH11.1, BORR_MW39, Northern 3, BORR_MW37, BORR MW31,	18-Dec-2019	----	----	----	23-Dec-2019	25-Dec-2019	✓
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> MR MW05, BORR MW46, BORR MW09, BORRMW11, FD03,	Southern 4, BORR MW08a, BORRMW10, BORRMW12, FD02	19-Dec-2019	----	----	----	23-Dec-2019	26-Dec-2019	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
<b>Amber Glass Bottle - Unpreserved (EP071)</b>									
MT01, JT01, BORR MW24, SW06, BORR MW32, BORR MW29	BH11.1, BORR_MW39, Northern 3, BORR_MW37, BORR MW31,	18-Dec-2019	24-Dec-2019	25-Dec-2019	✓	31-Dec-2019	02-Feb-2020	✓	
<b>Amber Glass Bottle - Unpreserved (EP071)</b>									
BORR MW09, BORRMW11, FD03,	BORRMW10, BORRMW12, FD02	19-Dec-2019	24-Dec-2019	26-Dec-2019	✓	30-Dec-2019	02-Feb-2020	✓	
<b>Amber Glass Bottle - Unpreserved (EP071)</b>									
MR MW05, BORR MW46,	Southern 4, BORR MW08a	19-Dec-2019	24-Dec-2019	26-Dec-2019	✓	31-Dec-2019	02-Feb-2020	✓	
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>									
MT01, JT01, BORR MW24, SW06, BORR MW32, BORR MW29, TBW 1235,	BH11.1, BORR_MW39, Northern 3, BORR_MW37, BORR MW31, FB03, TBW 1235	18-Dec-2019	31-Dec-2019	01-Jan-2020	✓	31-Dec-2019	01-Jan-2020	✓	
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>									
BORR MW46, BORR MW09, TBW1249, BORRMW11, FD03,	BORR MW08a, FB04, BORRMW10, BORRMW12, FD02	19-Dec-2019	02-Jan-2020	02-Jan-2020	✓	02-Jan-2020	02-Jan-2020	✓	
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>									
MR MW05,	Southern 4	19-Dec-2019	31-Dec-2019	02-Jan-2020	✓	31-Dec-2019	02-Jan-2020	✓	



Matrix: WATER

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>								
<b>Amber Glass Bottle - Unpreserved (EP071)</b>								
MT01, JT01, BORR MW24, SW06, BORR MW32, BORR MW29	BH11.1, BORR_MW39, Northern 3, BORR_MW37, BORR MW31,	18-Dec-2019	24-Dec-2019	25-Dec-2019	✔	31-Dec-2019	02-Feb-2020	✔
<b>Amber Glass Bottle - Unpreserved (EP071)</b>								
BORR MW09, BORRMW11, FD03,	BORRMW10, BORRMW12, FD02	19-Dec-2019	24-Dec-2019	26-Dec-2019	✔	30-Dec-2019	02-Feb-2020	✔
<b>Amber Glass Bottle - Unpreserved (EP071)</b>								
MR MW05, BORR MW46,	Southern 4, BORR MW08a	19-Dec-2019	24-Dec-2019	26-Dec-2019	✔	31-Dec-2019	02-Feb-2020	✔
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
MT01, JT01, BORR MW24, SW06, BORR MW32, BORR MW29, TBW 1235,	BH11.1, BORR_MW39, Northern 3, BORR_MW37, BORR MW31, FB03, TBW 1235	18-Dec-2019	31-Dec-2019	01-Jan-2020	✔	31-Dec-2019	01-Jan-2020	✔
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
BORR MW46, BORR MW09, TBW1249, BORRMW11, FD03,	BORR MW08a, FB04, BORRMW10, BORRMW12, FD02	19-Dec-2019	02-Jan-2020	02-Jan-2020	✔	02-Jan-2020	02-Jan-2020	✔
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
MR MW05,	Southern 4	19-Dec-2019	31-Dec-2019	02-Jan-2020	✔	31-Dec-2019	02-Jan-2020	✔



Matrix: **WATER** Evaluation: ✘ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP080: BTEXN</b>							
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> MT01, JT01, BORR MW24, SW06, BORR MW32, BORR MW29, TBW 1235, BH11.1, BORR_MW39, Northern 3, BORR_MW37, BORR MW31, FB03, TBW 1235	18-Dec-2019	31-Dec-2019	01-Jan-2020	✔	31-Dec-2019	01-Jan-2020	✔
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BORR MW46, BORR MW09, TBW1249, BORRMW11, FD03, BORR MW08a, FB04, BORRMW10, BORRMW12, FD02	19-Dec-2019	02-Jan-2020	02-Jan-2020	✔	02-Jan-2020	02-Jan-2020	✔
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> MR MW05, Southern 4	19-Dec-2019	31-Dec-2019	02-Jan-2020	✔	31-Dec-2019	02-Jan-2020	✔
<b>EP204: Glyphosate and AMPA</b>							
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b> MT01, Northern 3, JT01, SW06	18-Dec-2019	----	----	----	27-Dec-2019	01-Jan-2020	✔
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b> Southern 4, FD02	19-Dec-2019	----	----	----	27-Dec-2019	02-Jan-2020	✔
<b>EP234A: OP Pesticides</b>							
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> MT01, Northern 3, JT01, SW06	18-Dec-2019	----	----	----	31-Dec-2019	25-Dec-2019	✘
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> Southern 4, FD02	19-Dec-2019	----	----	----	31-Dec-2019	26-Dec-2019	✘



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Laboratory Duplicates (DUP)</b>							
Acidity as Calcium Carbonate	ED038	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	4	31	12.90	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	4	36	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	3	27	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	3	22	13.64	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	3	21	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	4	38	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	6	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	4	35	11.43	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	3	27	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	3	21	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	38	10.53	10.53	✔	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	27	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	4	39	10.26	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	27	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	25	8.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	34	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Acidity as Calcium Carbonate	ED038	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	4	31	12.90	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	36	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	4	27	14.81	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	22	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	21	9.52	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	38	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	35	5.71	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	27	14.81	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	21	9.52	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	38	10.53	10.53	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Alkalinity by PC Titrator	ED037-P	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	38	5.26	5.26	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Ammonia as N by Discrete analyser	EK055G	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3)  Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3)  Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ammonium as N	EK055G-NH4	WATER	Ammonium in the sample is reported as the ionised / unionised fractions by the use of a nomograph and the initial pH and Temperature. Ammonia is determined by direct colorimetry by Discrete Analyser according to APHA 4500-NH3 G. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Sulfide as S2-	EK085	WATER	In house: Referenced to APHA 4500-S2- D. Sulfide species present in water samples are immediately precipitated when collected in pretreated caustic/zinc acetate preserved sample containers. The sulphides are coloured using methylene blue indicator. Non-detects may be screened by comparison against a standard at half-LOR, otherwise samples are measured using UV-VIS detection at 664nm. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatle Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Glyphosate and AMPA	EP204	WATER	In house: Pre-column derivatisation LCMS (ES in negative mode). Water samples are derivatised with 9-fluorenyl methoxycarbonyl chloroformate (FMOC) in alkaline condition. The derivatives of glyphosate and AMPA are separated by a C8 column and determined by MS.
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.





<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.





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Accreditation Number 1261  
Site Number 23736

Accredited for compliance with ISO/IEC 17025 – Testing  
The results of the tests, calibrations and/or  
measurements included in this document are traceable  
to Australian/national standards.

Attention: **Vicki Davies**

Report **695412-W**

Project name

Project ID **6137041**

Received Date **Jan 06, 2020**

Client Sample ID			<b>FS01</b>
Sample Matrix			<b>Water</b>
Eurofins Sample No.			<b>P20-Ja00520</b>
Date Sampled			<b>Dec 19, 2019</b>
Test/Reference	LOR	Unit	
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>			
TRH C6-C9	0.02	mg/L	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1
TRH C10-C36 (Total)	0.1	mg/L	< 0.1
<b>BTEX</b>			
Benzene	0.001	mg/L	< 0.001
Toluene	0.001	mg/L	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002
o-Xylene	0.001	mg/L	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003
4-Bromofluorobenzene (surr.)	1	%	122
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>			
Naphthalene <sup>N02</sup>	0.01	mg/L	< 0.01
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	0.05	mg/L	< 0.05
TRH C6-C10	0.02	mg/L	< 0.02
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	0.02	mg/L	< 0.02
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>			
TRH >C10-C16	0.05	mg/L	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1
<b>Acidity (as CaCO3)</b>			
Acidity (as CaCO3)	10	mg/L	< 10
<b>Ammonia (as N)</b>			
Ammonia (as N)	0.01	mg/L	0.22
<b>Chloride</b>			
Chloride	1	mg/L	150
<b>Conductivity (at 25°C)</b>			
Conductivity (at 25°C)	10	uS/cm	520
<b>Nitrate &amp; Nitrite (as N)</b>			
Nitrate & Nitrite (as N)	0.05	mg/L	1.2
<b>pH (at 25°C)</b>			
pH (at 25°C)	0.1	pH Units	6.6
<b>Phosphate total (as P)</b>			
Phosphate total (as P)	0.01	mg/L	0.02
<b>Phosphorus filterable reactive (as P)</b>			
Phosphorus filterable reactive (as P)	0.01	mg/L	0.01
<b>Sulphate (as S)</b>			
Sulphate (as S)	5	mg/L	12
<b>Total Dissolved Solids Dried at 180°C ± 2°C</b>			
Total Dissolved Solids Dried at 180°C ± 2°C	10	mg/L	400
<b>Total Kjeldahl Nitrogen (as N)</b>			
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2
<b>Total Nitrogen (as N)*</b>			
Total Nitrogen (as N)*	0.2	mg/L	1.2

<b>Client Sample ID</b>			<b>FS01</b>
<b>Sample Matrix</b>			<b>Water</b>
<b>Eurofins Sample No.</b>			<b>P20-Ja00520</b>
<b>Date Sampled</b>			<b>Dec 19, 2019</b>
Test/Reference	LOR	Unit	
<b>Alkalinity (speciated)</b>			
Total Alkalinity (as CaCO <sub>3</sub> )	20	mg/L	30
<b>Heavy Metals</b>			
Aluminium	0.05	mg/L	0.15
Aluminium (filtered)	0.05	mg/L	< 0.05
Arsenic (filtered)	0.001	mg/L	0.002
Cadmium (filtered)	0.0002	mg/L	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001
Iron	0.05	mg/L	2.6
Iron (filtered)	0.05	mg/L	2.6
Manganese (filtered)	0.005	mg/L	< 0.005
Nickel (filtered)	0.001	mg/L	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001
Zinc (filtered)	0.005	mg/L	< 0.005
<b>Eurofins   mgt Suite B11C: Na/K/Ca/Mg</b>			
Calcium	0.5	mg/L	5.8
Magnesium	0.5	mg/L	12
Potassium	0.5	mg/L	6.4
Sodium	0.5	mg/L	71

**Sample History**

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
<b>Eurofins   mgt Suite B1</b>			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Perth	Jan 06, 2020	7 Days
BTEX - Method: LTM-ORG-2010 TRH C6-C40	Perth	Jan 06, 2020	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Perth	Jan 06, 2020	7 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Perth	Jan 06, 2020	7 Days
<b>ASS Groundwater Quality Suite - WA Department of Environment and Conservation</b>			
Acidity (as CaCO <sub>3</sub> ) - Method: LTM-INO-4210 Acidity	Melbourne	Jan 07, 2020	14 Days
Ammonia (as N) - Method: LTM-INO-4200 Ammonia by Discrete Analyser	Melbourne	Jan 07, 2020	28 Days
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Jan 07, 2020	28 Days
Conductivity (at 25°C) - Method: LTM-INO-4030 Conductivity	Melbourne	Jan 07, 2020	28 Days
pH (at 25°C) - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Jan 07, 2020	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorus	Melbourne	Jan 07, 2020	28 Days
Phosphorus filterable reactive (as P) - Method: APHA 4500-P Phosphate (filterable reactive)	Melbourne	Jan 07, 2020	2 Days
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Jan 07, 2020	28 Days
Total Dissolved Solids Dried at 180°C ± 2°C - Method: LTM-INO-4170 Total Dissolved Solids in Water	Melbourne	Jan 07, 2020	7 Days
Alkalinity (speciated) - Method: LTM-INO-4250 Alkalinity by Electrometric Titration	Melbourne	Jan 07, 2020	14 Days
Heavy Metals - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Perth	Jan 06, 2020	180 Days
Acid Sulphate Metals : Metals M9 filtered - Method:	Perth	Jan 06, 2020	180 Days
Eurofins   mgt Suite B11C: Na/K/Ca/Mg - Method: LTM-MET-3010 Alkali Metals, S, Si and P by ICP-AES	Perth	Jan 06, 2020	180 Days
<b>Total Nitrogen Set (as N)</b>			
Nitrate & Nitrite (as N) - Method: LTM-INO-4120 Analysis of NO <sub>x</sub> NO <sub>2</sub> NH <sub>3</sub> by FIA	Melbourne	Jan 07, 2020	28 Days
Total Kjeldahl Nitrogen (as N) - Method: LTM-INO-4310 TKN in Waters & Soils by FIA	Melbourne	Jan 07, 2020	7 Days

**Australia**

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Site # 1254 & 14271

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Rolleston, Christchurch 7675  
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**Company Name:** GHD Pty Ltd WA  
**Address:** 999 Hay Street Perth  
Perth  
WA 6004

**Project Name:**  
**Project ID:** 6137041

**Order No.:**  
**Report #:** 695412  
**Phone:** 08 6222 8222  
**Fax:** 08 9429 6555

**Received:** Jan 6, 2020 9:43 AM  
**Due:** Jan 13, 2020  
**Priority:** 5 Day  
**Contact Name:** Vicki Davies

**Eurofins Analytical Services Manager : Robert Johnston**

Sample Detail						ASS Groundwater Quality Suite - WA Department of Environment and	Eurofins   mgt Suite B1	Eurofins   mgt Suite B1 1C: Na/K/Ca/Mg
Melbourne Laboratory - NATA Site # 1254 & 14271						X		
Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794								
Perth Laboratory - NATA Site # 23736						X	X	X
External Laboratory								
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID			
1	FS01	Dec 19, 2019		Water	P20-Ja00520	X	X	X
<b>Test Counts</b>						1	1	1

**Internal Quality Control Review and Glossary**
**General**

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
- All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
- This report replaces any interim results previously issued.

**Holding Times**

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

**\*\*NOTE:** pH duplicates are reported as a range NOT as RPD

**Units**

**mg/kg:** milligrams per kilogram

**mg/L:** milligrams per litre

**ug/L:** micrograms per litre

**ppm:** Parts per million

**ppb:** Parts per billion

**%:** Percentage

**org/100mL:** Organisms per 100 millilitres

**NTU:** Nephelometric Turbidity Units

**MPN/100mL:** Most Probable Number of organisms per 100 millilitres

**Terms**

<b>Dry</b>	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
<b>LOR</b>	Limit of Reporting.
<b>SPIKE</b>	Addition of the analyte to the sample and reported as percentage recovery.
<b>RPD</b>	Relative Percent Difference between two Duplicate pieces of analysis.
<b>LCS</b>	Laboratory Control Sample - reported as percent recovery.
<b>CRM</b>	Certified Reference Material - reported as percent recovery.
<b>Method Blank</b>	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
<b>Surr - Surrogate</b>	The addition of a like compound to the analyte target and reported as percentage recovery.
<b>Duplicate</b>	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
<b>USEPA</b>	United States Environmental Protection Agency
<b>APHA</b>	American Public Health Association
<b>TCLP</b>	Toxicity Characteristic Leaching Procedure
<b>COC</b>	Chain of Custody
<b>SRA</b>	Sample Receipt Advice
<b>QSM</b>	US Department of Defense Quality Systems Manual Version 5.3
<b>CP</b>	Client Parent - QC was performed on samples pertaining to this report
<b>NCP</b>	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
<b>TEQ</b>	Toxic Equivalency Quotient

**QC - Acceptance Criteria**

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

**QC Data General Comments**

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.



**Quality Control Results**

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
<b>Method Blank</b>							
<b>BTEX</b>							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
<b>Method Blank</b>							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Conductivity (at 25°C)	uS/cm	< 10			10	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Phosphate total (as P)	mg/L	< 0.01			0.01	Pass	
Phosphorus filterable reactive (as P)	mg/L	< 0.01			0.01	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
<b>Method Blank</b>							
<b>Alkalinity (speciated)</b>							
Total Alkalinity (as CaCO3)	mg/L	< 20			20	Pass	
<b>Method Blank</b>							
<b>Heavy Metals</b>							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
<b>Method Blank</b>							
<b>Eurofins   mgt Suite B11C: Na/K/Ca/Mg</b>							
Calcium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Magnesium	mg/L	< 0.5		0.5	Pass	
Potassium	mg/L	< 0.5		0.5	Pass	
Sodium	mg/L	< 0.5		0.5	Pass	
<b>LCS - % Recovery</b>						
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>						
TRH C6-C9	%	100		70-130	Pass	
TRH C10-C14	%	87		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>BTEX</b>						
Benzene	%	101		70-130	Pass	
Toluene	%	102		70-130	Pass	
Ethylbenzene	%	101		70-130	Pass	
m&p-Xylenes	%	100		70-130	Pass	
Xylenes - Total	%	101		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>						
Naphthalene	%	104		70-130	Pass	
TRH C6-C10	%	101		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>						
TRH >C10-C16	%	91		70-130	Pass	
<b>LCS - % Recovery</b>						
Ammonia (as N)	%	96		70-130	Pass	
Chloride	%	107		70-130	Pass	
Conductivity (at 25°C)	%	97		70-130	Pass	
Nitrate & Nitrite (as N)	%	98		70-130	Pass	
Phosphate total (as P)	%	100		70-130	Pass	
Sulphate (as S)	%	105		70-130	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	%	98		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	91		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Alkalinity (speciated)</b>						
Total Alkalinity (as CaCO3)	%	98		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Heavy Metals</b>						
Aluminium	%	92		80-120	Pass	
Aluminium (filtered)	%	108		80-120	Pass	
Arsenic (filtered)	%	109		80-120	Pass	
Cadmium (filtered)	%	101		80-120	Pass	
Chromium (filtered)	%	101		80-120	Pass	
Iron	%	87		80-120	Pass	
Iron (filtered)	%	101		80-120	Pass	
Manganese (filtered)	%	102		80-120	Pass	
Nickel (filtered)	%	95		80-120	Pass	
Selenium (filtered)	%	97		80-120	Pass	
Zinc (filtered)	%	97		80-120	Pass	
<b>LCS - % Recovery</b>						
<b>Eurofins   mgt Suite B11C: Na/K/Ca/Mg</b>						
Calcium	%	88		70-130	Pass	
Magnesium	%	91		70-130	Pass	
Potassium	%	92		70-130	Pass	
Sodium	%	92		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Spike - % Recovery</b>									
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>				Result 1					
TRH C6-C9	P20-Ja00078	NCP	%	96			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>BTEX</b>				Result 1					
Benzene	P20-Ja00078	NCP	%	118			70-130	Pass	
Toluene	P20-Ja00078	NCP	%	103			70-130	Pass	
Ethylbenzene	P20-Ja00078	NCP	%	101			70-130	Pass	
m&p-Xylenes	P20-Ja00078	NCP	%	98			70-130	Pass	
o-Xylene	P20-Ja00078	NCP	%	98			70-130	Pass	
Xylenes - Total	P20-Ja00078	NCP	%	98			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1					
Naphthalene	P20-Ja00078	NCP	%	100			70-130	Pass	
TRH C6-C10	P20-Ja00078	NCP	%	97			70-130	Pass	
<b>Spike - % Recovery</b>									
				Result 1					
Ammonia (as N)	M20-Ja01187	NCP	%	95			70-130	Pass	
Nitrate & Nitrite (as N)	M20-Ja01187	NCP	%	96			70-130	Pass	
Phosphate total (as P)	M20-Ja01083	NCP	%	86			70-130	Pass	
Sulphate (as S)	M20-Ja01188	NCP	%	88			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M19-De29032	NCP	%	92			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Alkalinity (speciated)</b>				Result 1					
Total Alkalinity (as CaCO3)	S20-Ja01517	NCP	%	71			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Heavy Metals</b>				Result 1					
Aluminium	P20-Ja00520	CP	%	93			75-125	Pass	
Aluminium (filtered)	P20-Ja00520	CP	%	117			75-125	Pass	
Arsenic (filtered)	P20-Ja00520	CP	%	116			70-130	Pass	
Cadmium (filtered)	P20-Ja00520	CP	%	106			70-130	Pass	
Chromium (filtered)	P20-Ja00520	CP	%	108			70-130	Pass	
Manganese (filtered)	P20-Ja00520	CP	%	109			70-130	Pass	
Nickel (filtered)	P20-Ja00520	CP	%	100			70-130	Pass	
Selenium (filtered)	P20-Ja00520	CP	%	107			70-130	Pass	
Zinc (filtered)	P20-Ja00520	CP	%	108			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Duplicate</b>									
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>				Result 1	Result 2	RPD			
TRH C6-C9	P20-Ja03536	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	P20-Ja00520	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	P20-Ja00520	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	P20-Ja00520	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
<b>Duplicate</b>									
<b>BTEX</b>				Result 1	Result 2	RPD			
Benzene	P20-Ja03536	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	P20-Ja03536	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	P20-Ja03536	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	P20-Ja03536	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	P20-Ja03536	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	P20-Ja03536	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
<b>Duplicate</b>									
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1	Result 2	RPD			
Naphthalene	P20-Ja03536	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	P20-Ja03536	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	P20-Ja00520	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	P20-Ja00520	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	P20-Ja00520	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO3)	B20-Ja03891	NCP	mg/L	280	320	12	30%	Pass	
Ammonia (as N)	M20-Ja01187	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Chloride	M20-Ja01187	NCP	mg/L	3000	3300	10	30%	Pass	
Conductivity (at 25°C)	N20-Ja00627	NCP	uS/cm	520	510	2.0	30%	Pass	
Nitrate & Nitrite (as N)	M20-Ja01187	NCP	mg/L	0.60	0.61	1.0	30%	Pass	
pH (at 25°C)	N20-Ja00627	NCP	pH Units	8.0	8.1	pass	30%	Pass	
Phosphate total (as P)	M20-Ja01115	NCP	mg/L	0.02	0.02	5.0	30%	Pass	
Sulphate (as S)	M20-Ja01187	NCP	mg/L	35	39	10	30%	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	M20-Ja01196	NCP	mg/L	3300	2800	17	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M20-Ja02463	NCP	mg/L	240	250	2.1	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Total Alkalinity (as CaCO3)	M20-Ja01190	NCP	mg/L	140	150	1.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	P20-Ja00520	CP	mg/L	0.15	0.07	73	30%	Fail	Q15
Aluminium (filtered)	P20-Ja00520	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Arsenic (filtered)	P20-Ja00520	CP	mg/L	0.002	0.002	3.0	30%	Pass	
Cadmium (filtered)	P20-Ja00520	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	P20-Ja00520	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	P20-Ja00520	CP	mg/L	2.6	2.5	3.0	30%	Pass	
Iron (filtered)	P20-Ja00520	CP	mg/L	2.6	2.7	1.0	30%	Pass	
Manganese (filtered)	P20-Ja00520	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Nickel (filtered)	P20-Ja00520	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	P20-Ja00520	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	P20-Ja00520	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
Eurofins   mgt Suite B11C: Na/K/Ca/Mg				Result 1	Result 2	RPD			
Calcium	P20-Ja00520	CP	mg/L	5.8	5.6	3.0	30%	Pass	
Magnesium	P20-Ja00520	CP	mg/L	12	12	2.0	30%	Pass	
Potassium	P20-Ja00520	CP	mg/L	6.4	6.2	4.0	30%	Pass	
Sodium	P20-Ja00520	CP	mg/L	71	69	3.0	30%	Pass	

**Comments**
**Sample Integrity**

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	No
Some samples have been subcontracted	No

**Qualifier Codes/Comments**

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

**Authorised By**

Robert Johnston	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (WA)
Andrew Sullivan	Senior Analyst-Volatile (WA)
Elden Garrett	Senior Analyst-Metal (WA)
Julie Kay	Senior Analyst-Inorganic (VIC)
Scott Beddoes	Senior Analyst-Inorganic (VIC)


**Glenn Jackson  
General Manager**

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

\* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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#AU06\_EnviroSampleWA

To: Vicki Davies  
 Subject: RE: 6137041 - FS01 received without a COC

From: Vicki Davies [mailto:Vicki.Davies@ghd.com]  
 Sent: Monday, 6 January 2020 9:43 AM  
 To: #AU06\_EnviroSampleWA  
 Subject: RE: 6137041 - FS01 received without a COC

Hi Rob

Sorry for the delayed reply, could FS01 please be analysed as per the groundwater suite below.

Parameter	ALS Code	Technique/ Method Reference	Limit Of Reporting (LOR)
TRH/BTEXN	W-04	USEPA 801 5A, USEPA 8260B	1 - 100 µg/L
Acid Sulphate Soil GW Suite - Extended Cl, SO <sub>4</sub> , Alkalinity, Acidity, pH, E.C., TDS, Dissolved Ca, Mg, Na, K, Fe, Mn, Al by ICP-AES or MS. Total N, TKN, NO <sub>x</sub> , Ammonia, Total & Reactive P; Total Al & Fe; Sulfide; Dissolved As, Cd, Co, Cu, Pb, Fe, Mn, Al, Cr, Ni, Se, Zn by ICPMS	ASSGW-2	Various	0.0001 - 10 mg/L, 0.01 pH Unit, 1 µS/cm, 0.01 %, 0.01 meq/L
Ammonium as N	EK055G- NH <sub>4</sub>	Calculation	0.01 mg/L

Kind regards



Vicki Davies  
 Environmental Scientist

PO Box 2776  
 Cloisters Square 6850  
 T: 08 98405104



Date/Time: 6/1/20 9:43  
 Chilled:  Yes / No  
 Temp: 14.1  
 13.3  
 13.4  
 Correction: +3.5  
 Final Temp: 18.4°C

Rob Johnston  
 Eurofins

695412



**From:** [EnviroSampleWA@eurofins.com](mailto:EnviroSampleWA@eurofins.com) <[EnviroSampleWA@eurofins.com](mailto:EnviroSampleWA@eurofins.com)>  
**Sent:** Friday, 20 December 2019 4:04 PM  
**To:** Vicki Davies <[Vicki.Davies@ghd.com](mailto:Vicki.Davies@ghd.com)>  
**Subject:** 6137041 - FS01 received without a COC

Hi Vicki,

ALS have sent us FS01 (sampled 19/12) without a COC. Can you please advise on the analysis required?

Kind Regards,  
Rob

**Eurofins | Environment Testing**  
Unit 2, 91 Leach Highway  
KEWDALE WA 6105  
Australia

Phone : +61 8 9251 9692  
Email : [EnviroSampleWA@eurofins.com](mailto:EnviroSampleWA@eurofins.com)

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Rob Johnston 6/1/20 Eurofins

695412

## CERTIFICATE OF ANALYSIS

<b>Work Order</b>	<b>: EP2000762</b>	<b>Page</b>	<b>: 1 of 25</b>
<b>Client</b>	<b>: GHD PTY LTD</b>	<b>Laboratory</b>	<b>: Environmental Division Perth</b>
<b>Contact</b>	<b>: Julia Roberts</b>	<b>Contact</b>	<b>: Marnie Thomsett</b>
<b>Address</b>	<b>: 999 HAY STREET PERTH WA, AUSTRALIA 6000</b>	<b>Address</b>	<b>: 26 Rigali Way Wangara WA Australia 6065</b>
<b>Telephone</b>	<b>: ----</b>	<b>Telephone</b>	<b>: 08 9406 1311</b>
<b>Project</b>	<b>: 6137041</b>	<b>Date Samples Received</b>	<b>: 23-Jan-2020 12:00</b>
<b>Order number</b>	<b>: 613704108.0831</b>	<b>Date Analysis Commenced</b>	<b>: 23-Jan-2020</b>
<b>C-O-C number</b>	<b>: ----</b>	<b>Issue Date</b>	<b>: 05-Feb-2020 11:34</b>
<b>Sampler</b>	<b>: Ian Oglesby</b>		
<b>Site</b>	<b>: ----</b>		
<b>Quote number</b>	<b>: EP/489/19 V4</b>		
<b>No. of samples received</b>	<b>: 28</b>		
<b>No. of samples analysed</b>	<b>: 28</b>		



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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
David Viner	SENIOR LAB TECH	Perth Organics, Wangara, WA
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Vanessa Nguyen	Organic Chemist	Perth Organics, Wangara, WA





## General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP204, EP234 conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- EK055G (Ammonia): LOR for sample EP2000762-024 raised due to possible sample matrix interference.
- ED041G (Turbidimetric Sulfate): LOR raised on sample # 4, #15, #19 and #20 due to possible sample matrix interference.
- EG020F: Results for zinc for samples EP2000762-009, 014, 022, 025, as well as copper and nickel for samples 022, 025, have been confirmed by re-analysis.
- EG020T: Result for aluminium for samples EP2000762-009, 014 have been confirmed by re-digestion and re-analysis.
- EP234: Poor matrix spike recovery for particular compounds due to matrix interferences.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW13	BH32_1	NORTH CREEK 2	SW09	BORR_MW15
Client sampling date / time				20-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2000762-001	EP2000762-002	EP2000762-003	EP2000762-004	EP2000762-005	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.69	5.77	6.93	7.46	6.61	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	912	1190	826	1100	201	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	552	626	424	580	100	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	243	18	22	187	27	
Total Alkalinity as CaCO3	----	1	mg/L	243	18	22	187	27	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	22	18	10	18	14	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	106	28	26	<10	7	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	74	399	268	295	38	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	10	4	5	15	3	
Magnesium	7439-95-4	1	mg/L	11	24	17	13	4	
Sodium	7440-23-5	1	mg/L	182	183	124	198	23	
Potassium	7440-09-7	1	mg/L	2	7	8	10	6	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.03	0.03	0.02	0.04	0.17	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.001	<0.001	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.007	0.006	0.019	0.016	0.005	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.013	0.068	0.105	0.045	0.004	
Nickel	7440-02-0	0.001	mg/L	0.009	0.009	0.013	0.009	0.006	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.035	0.054	0.066	0.057	0.042	
Iron	7439-89-6	0.05	mg/L	2.90	5.67	0.12	0.78	2.62	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW13	BH32_1	NORTH CREEK 2	SW09	BORR_MW15
Client sampling date / time				20-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2000762-001	EP2000762-002	EP2000762-003	EP2000762-004	EP2000762-005	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.14	2.60	0.04	0.11	0.58	
Iron	7439-89-6	0.05	mg/L	5.20	13.5	1.87	3.10	5.71	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.12	0.09	0.01	<0.01	0.88	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.12	0.09	<0.01	<0.01	0.88	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.04	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.0	0.3	<0.1	0.8	0.9	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	1.0	0.3	<0.1	0.8	0.9	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	<0.01	0.12	<0.01	0.05	<0.01	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	9.15	12.2	8.54	12.0	1.76	
∅ Total Cations	----	0.01	meq/L	9.37	10.3	7.25	10.7	1.63	
∅ Ionic Balance	----	0.01	%	1.20	8.37	8.20	6.03	3.67	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	110	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	110	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW13	BH32_1	NORTH CREEK 2	SW09	BORR_MW15
Client sampling date / time				20-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2000762-001	EP2000762-002	EP2000762-003	EP2000762-004	EP2000762-005	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	140	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	140	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	----	<10	<10	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	----	<0.02	<0.02	----	
Azinphos-methyl	86-50-0	0.02	µg/L	----	----	<0.02	<0.02	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	----	<0.10	<0.10	----	
Carbofenthiion	786-19-6	0.02	µg/L	----	----	<0.02	<0.02	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	----	<0.02	<0.02	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	----	<0.02	<0.02	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	----	<0.2	<0.2	----	
Coumaphos	56-72-4	0.01	µg/L	----	----	<0.01	<0.01	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	----	<0.02	<0.02	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	----	<0.02	<0.02	----	
Demeton-O	298-03-3	0.02	µg/L	----	----	<0.02	<0.02	----	
Demeton-S	126-75-0	0.02	µg/L	----	----	<0.02	<0.02	----	
Diazinon	333-41-5	0.01	µg/L	----	----	<0.01	<0.01	----	
Dichlorvos	62-73-7	0.20	µg/L	----	----	<0.20	<0.20	----	
Dimethoate	60-51-5	0.02	µg/L	----	----	<0.02	<0.02	----	
Disulfoton	298-04-4	0.05	µg/L	----	----	<0.05	<0.05	----	
Ethion	563-12-2	0.02	µg/L	----	----	<0.02	<0.02	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW13	BH32_1	NORTH CREEK 2	SW09	BORR_MW15
Client sampling date / time					20-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00
Compound	CAS Number	LOR	Unit	EP2000762-001	EP2000762-002	EP2000762-003	EP2000762-004	EP2000762-005	
				Result	Result	Result	Result	Result	
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L	----	----	<0.05	<0.05	----	
Ethoprophos	13194-48-4	0.01	µg/L	----	----	<0.01	<0.01	----	
Fenamiphos	22224-92-6	0.01	µg/L	----	----	<0.01	<0.01	----	
Fenchlorphos (Ronnell)	299-84-3	10	µg/L	----	----	<10	<10	----	
Fenitrothion	122-14-5	2	µg/L	----	----	<2	<2	----	
Fensulfothion	115-90-2	0.01	µg/L	----	----	<0.01	<0.01	----	
Fenthion	55-38-9	0.05	µg/L	----	----	<0.05	<0.05	----	
Malathion	121-75-5	0.02	µg/L	----	----	<0.02	<0.02	----	
Mevinphos	7786-34-7	0.02	µg/L	----	----	<0.02	<0.02	----	
Monocrotophos	6923-22-4	0.02	µg/L	----	----	<0.02	<0.02	----	
Omethoate	1113-02-6	0.01	µg/L	----	----	<0.01	<0.01	----	
Parathion	56-38-2	0.2	µg/L	----	----	<0.2	<0.2	----	
Parathion-methyl	298-00-0	0.5	µg/L	----	----	<0.5	<0.5	----	
Phorate	298-02-2	0.1	µg/L	----	----	<0.1	<0.1	----	
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	----	----	<0.01	<0.01	----	
Pirimiphos-methyl	29232-93-7	0.01	µg/L	----	----	<0.01	<0.01	----	
Profenofos	41198-08-7	0.01	µg/L	----	----	<0.01	<0.01	----	
Prothiofos	34643-46-4	0.1	µg/L	----	----	<0.1	<0.1	----	
Sulfotep	3689-24-5	0.005	µg/L	----	----	<0.005	<0.005	----	
Sulprofos	35400-43-2	0.05	µg/L	----	----	<0.05	<0.05	----	
Terbufos	13071-79-9	0.01	µg/L	----	----	<0.01	<0.01	----	
Temephos	3383-96-8	0.02	µg/L	----	----	<0.02	<0.02	----	
Tetrachlorvinphos	22248-79-9	0.01	µg/L	----	----	<0.01	<0.01	----	
Triazophos	24017-47-8	0.005	µg/L	----	----	<0.005	<0.005	----	
Trichlorfon	52-68-6	0.02	µg/L	----	----	<0.02	<0.02	----	
Trichloronate	327-98-0	0.5	µg/L	----	----	<0.5	<0.5	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	106	110	111	110	114	
Toluene-D8	2037-26-5	2	%	99.1	101	98.9	100	97.8	
4-Bromofluorobenzene	460-00-4	2	%	103	103	103	104	103	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW07	SW08	BORR_MW04	BORR_MW05	BORR_MW06
Client sampling date / time				20-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2000762-006	EP2000762-007	EP2000762-008	EP2000762-009	EP2000762-010	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.99	7.02	7.04	6.97	6.88	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	1090	1080	4080	1140	370	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	573	572	2450	654	260	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	24	24	281	80	47	
Total Alkalinity as CaCO3	----	1	mg/L	24	24	281	80	47	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	8	8	20	28	13	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	30	28	246	116	40	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	377	363	1140	299	55	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	10	8	181	24	19	
Magnesium	7439-95-4	1	mg/L	26	26	65	17	5	
Sodium	7440-23-5	1	mg/L	161	156	585	178	46	
Potassium	7440-09-7	1	mg/L	8	8	5	7	7	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.02	0.01	0.01	0.10	0.69	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.002	0.001	0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.002	
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.001	0.001	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.022	0.008	0.010	0.010	0.006	
Lead	7439-92-1	0.001	mg/L	0.001	<0.001	<0.001	0.001	0.001	
Manganese	7439-96-5	0.001	mg/L	0.107	0.106	0.167	0.014	0.027	
Nickel	7440-02-0	0.001	mg/L	0.011	0.008	0.011	0.013	0.003	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.068	0.036	0.078	0.010	0.040	
Iron	7439-89-6	0.05	mg/L	0.15	0.09	5.73	1.22	1.51	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW07	SW08	BORR_MW04	BORR_MW05	BORR_MW06
Client sampling date / time				20-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2000762-006	EP2000762-007	EP2000762-008	EP2000762-009	EP2000762-010	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.02	0.04	3.36	2.25	2.90	
Iron	7439-89-6	0.05	mg/L	1.83	1.92	22.0	1.87	2.63	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.01	<0.01	0.21	0.11	0.10	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	<0.01	<0.01	0.21	0.11	0.10	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	0.02	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.1	0.2	0.4	1.1	1.1	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.1	0.2	0.4	1.1	1.1	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	0.11	0.04	0.04	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	11.7	11.3	42.9	12.4	3.32	
∅ Total Cations	----	0.01	meq/L	9.85	9.53	40.0	10.5	3.54	
∅ Ionic Balance	----	0.01	%	8.77	8.51	3.55	8.40	3.15	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW07	SW08	BORR_MW04	BORR_MW05	BORR_MW06
Client sampling date / time				20-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2000762-006	EP2000762-007	EP2000762-008	EP2000762-009	EP2000762-010	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	<10	<10	----	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	----	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	----	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	----	----	----	
Carbofenthion	786-19-6	0.02	µg/L	<0.02	<0.02	----	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	----	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	----	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	----	----	----	
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	----	----	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	----	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	----	----	----	
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	----	----	----	
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	----	----	----	
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	----	----	----	
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	----	----	----	
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	----	----	----	
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	----	----	----	
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	----	----	----	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW07	SW08	BORR_MW04	BORR_MW05	BORR_MW06
Client sampling date / time					20-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00
Compound	CAS Number	LOR	Unit		EP2000762-006	EP2000762-007	EP2000762-008	EP2000762-009	EP2000762-010
					Result	Result	Result	Result	Result
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L		<0.05	<0.05	----	----	----
Ethoprophos	13194-48-4	0.01	µg/L		<0.01	<0.01	----	----	----
Fenamiphos	22224-92-6	0.01	µg/L		<0.01	<0.01	----	----	----
Fenchlorphos (Rannel)	299-84-3	10	µg/L		<10	<10	----	----	----
Fenitrothion	122-14-5	2	µg/L		<2	<2	----	----	----
Fensulfothion	115-90-2	0.01	µg/L		<0.01	<0.01	----	----	----
Fenthion	55-38-9	0.05	µg/L		<0.05	<0.05	----	----	----
Malathion	121-75-5	0.02	µg/L		<0.02	<0.02	----	----	----
Mevinphos	7786-34-7	0.02	µg/L		<0.02	<0.02	----	----	----
Monocrotophos	6923-22-4	0.02	µg/L		<0.02	<0.02	----	----	----
Omethoate	1113-02-6	0.01	µg/L		<0.01	<0.01	----	----	----
Parathion	56-38-2	0.2	µg/L		<0.2	<0.2	----	----	----
Parathion-methyl	298-00-0	0.5	µg/L		<0.5	<0.5	----	----	----
Phorate	298-02-2	0.1	µg/L		<0.1	<0.1	----	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L		<0.01	<0.01	----	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L		<0.01	<0.01	----	----	----
Profenofos	41198-08-7	0.01	µg/L		<0.01	<0.01	----	----	----
Prothiofos	34643-46-4	0.1	µg/L		<0.1	<0.1	----	----	----
Sulfotep	3689-24-5	0.005	µg/L		<0.005	<0.005	----	----	----
Sulprofos	35400-43-2	0.05	µg/L		<0.05	<0.05	----	----	----
Terbufos	13071-79-9	0.01	µg/L		<0.01	<0.01	----	----	----
Temephos	3383-96-8	0.02	µg/L		<0.02	<0.02	----	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L		<0.01	<0.01	----	----	----
Triazophos	24017-47-8	0.005	µg/L		<0.005	<0.005	----	----	----
Trichlorfon	52-68-6	0.02	µg/L		<0.02	<0.02	----	----	----
Trichloronate	327-98-0	0.5	µg/L		<0.5	<0.5	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%		113	113	112	116	110
Toluene-D8	2037-26-5	2	%		97.7	97.3	97.0	98.1	98.6
4-Bromofluorobenzene	460-00-4	2	%		104	104	102	104	103



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB01 TBW005	FB02	RB01	FD01	BORR_MW08a
Client sampling date / time				20-Jan-2020 00:00	21-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2000762-011	EP2000762-012	EP2000762-013	EP2000762-014	EP2000762-015	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	----	----	----	6.96	6.31	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	1150	575	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	----	----	----	653	366	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	79	44	
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	79	44	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	----	----	----	13	19	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	115	<20	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	----	----	----	298	164	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	----	----	----	26	17	
Magnesium	7439-95-4	1	mg/L	----	----	----	17	12	
Sodium	7440-23-5	1	mg/L	----	----	----	177	72	
Potassium	7440-09-7	1	mg/L	----	----	----	7	8	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	----	0.09	0.29	
Arsenic	7440-38-2	0.001	mg/L	----	----	----	0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	----	----	----	<0.001	0.001	
Cobalt	7440-48-4	0.001	mg/L	----	----	----	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	----	----	----	0.013	0.007	
Lead	7439-92-1	0.001	mg/L	----	----	----	0.002	<0.001	
Manganese	7439-96-5	0.001	mg/L	----	----	----	0.014	0.061	
Nickel	7440-02-0	0.001	mg/L	----	----	----	0.012	0.004	
Selenium	7782-49-2	0.01	mg/L	----	----	----	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	----	----	----	0.009	0.042	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB01 TBW005	FB02	RB01	FD01	BORR_MW08a
Client sampling date / time				20-Jan-2020 00:00	21-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2000762-011	EP2000762-012	EP2000762-013	EP2000762-014	EP2000762-015	
				Result	Result	Result	Result	Result	
<b>EG020F: Dissolved Metals by ICP-MS - Continued</b>									
Iron	7439-89-6	0.05	mg/L	----	----	----	1.18	1.39	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	----	2.31	1.33	
Arsenic	7440-38-2	0.001	mg/L	----	----	<0.001	----	----	
Cadmium	7440-43-9	0.0001	mg/L	----	----	<0.0001	----	----	
Chromium	7440-47-3	0.001	mg/L	----	----	<0.001	----	----	
Copper	7440-50-8	0.001	mg/L	----	----	<0.001	----	----	
Nickel	7440-02-0	0.001	mg/L	----	----	<0.001	----	----	
Lead	7439-92-1	0.001	mg/L	----	----	<0.001	----	----	
Zinc	7440-66-6	0.005	mg/L	----	----	<0.005	----	----	
Iron	7439-89-6	0.05	mg/L	----	----	----	1.90	2.09	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	----	----	----	0.10	0.11	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	----	----	----	0.10	0.11	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	----	----	----	<0.01	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	----	----	1.1	1.3	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	----	----	----	1.1	1.3	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	----	----	----	0.05	0.59	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	----	----	<0.01	0.59	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	----	----	----	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	----	----	----	12.4	5.50	
∅ Total Cations	----	0.01	meq/L	----	----	----	10.6	5.17	
∅ Ionic Balance	----	0.01	%	----	----	----	7.86	3.12	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	<20	<20	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB01 TBW005	FB02	RB01	FD01	BORR_MW08a
Client sampling date / time					20-Jan-2020 00:00	21-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00	20-Jan-2020 00:00
Compound	CAS Number	LOR	Unit	EP2000762-011	EP2000762-012	EP2000762-013	EP2000762-014	EP2000762-015	EP2000762-015
				Result	Result	Result	Result	Result	Result
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>									
C10 - C14 Fraction	----	50	µg/L	----	----	----	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	----	----	----	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	----	----	----	<50	<50	<50
<sup>^</sup> C10 - C36 Fraction (sum)	----	50	µg/L	----	----	----	<50	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	----	<20	<20	<20
<sup>^</sup> C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	----	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	----	----	----	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	----	----	----	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	----	----	----	<100	<100	<100
<sup>^</sup> >C10 - C40 Fraction (sum)	----	100	µg/L	----	----	----	<100	<100	<100
<sup>^</sup> >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	----	----	<100	<100	<100
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	----	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	----	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	----	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	----	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	----	<2	<2	<2
<sup>^</sup> Total Xylenes	----	2	µg/L	<2	<2	----	<2	<2	<2
<sup>^</sup> Sum of BTEX	----	1	µg/L	<1	<1	----	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	----	<5	<5	<5
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	111	112	----	113	111	111
Toluene-D8	2037-26-5	2	%	99.3	98.1	----	97.5	97.2	97.2
4-Bromofluorobenzene	460-00-4	2	%	103	102	----	102	102	102



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW09	MR_MW05	BORR_MW10	BORR_MW31	BORR_MW32
Client sampling date / time				21-Jan-2020 00:00	21-Jan-2020 00:00	21-Jan-2020 00:00	21-Jan-2020 00:00	21-Jan-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2000762-016	EP2000762-017	EP2000762-018	EP2000762-019	EP2000762-020	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.68	6.16	6.19	5.90	6.16	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	210	23100	457	264	273	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	93	14900	273	240	186	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	12	102	16	16	32	
Total Alkalinity as CaCO3	----	1	mg/L	12	102	16	16	32	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	8	35	17	23	21	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	38	1010	54	<10	<20	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	26	7270	108	65	62	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	11	178	14	4	3	
Magnesium	7439-95-4	1	mg/L	2	730	12	5	6	
Sodium	7440-23-5	1	mg/L	21	3940	52	37	42	
Potassium	7440-09-7	1	mg/L	5	84	5	4	3	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.04	0.02	0.10	0.95	0.98	
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.010	0.002	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	0.002	0.002	0.001	0.002	
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.006	<0.001	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.014	0.006	0.012	0.010	0.007	
Lead	7439-92-1	0.001	mg/L	0.001	<0.001	<0.001	0.001	0.001	
Manganese	7439-96-5	0.001	mg/L	0.004	0.225	0.015	0.010	0.006	
Nickel	7440-02-0	0.001	mg/L	0.006	0.016	0.013	0.018	0.004	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.047	0.057	0.073	0.105	0.138	
Iron	7439-89-6	0.05	mg/L	<0.05	17.3	3.27	1.47	0.71	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW09	MR_MW05	BORR_MW10	BORR_MW31	BORR_MW32
Client sampling date / time				21-Jan-2020 00:00	21-Jan-2020 00:00	21-Jan-2020 00:00	21-Jan-2020 00:00	21-Jan-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2000762-016	EP2000762-017	EP2000762-018	EP2000762-019	EP2000762-020	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.28	4.97	0.70	4.01	2.58	
Iron	7439-89-6	0.05	mg/L	0.12	24.0	4.04	2.31	0.85	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.37	0.27	0.96	0.55	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	<0.01	0.37	0.27	0.96	0.55	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.60	<0.01	<0.01	<0.01	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	0.8	0.6	1.5	1.0	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.8	0.8	0.6	1.5	1.0	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	<0.01	0.07	<0.01	<0.01	<0.01	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	0.5	0.2	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	1.76	228	4.49	2.15	2.39	
∅ Total Cations	----	0.01	meq/L	1.75	242	4.08	2.32	2.55	
∅ Ionic Balance	----	0.01	%	0.27	3.05	4.84	3.79	3.22	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW09	MR_MW05	BORR_MW10	BORR_MW31	BORR_MW32
Client sampling date / time				21-Jan-2020 00:00	21-Jan-2020 00:00	21-Jan-2020 00:00	21-Jan-2020 00:00	21-Jan-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2000762-016	EP2000762-017	EP2000762-018	EP2000762-019	EP2000762-020	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	110	112	115	120	119	
Toluene-D8	2037-26-5	2	%	97.7	98.2	97.0	98.5	98.0	
4-Bromofluorobenzene	460-00-4	2	%	100	99.9	101	99.9	101	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB01	SW06	BORR_MW37	BH_09.2	FD02
Client sampling date / time				20-Jan-2020 00:00	21-Jan-2020 00:00	21-Jan-2020 00:00	21-Jan-2020 00:00	21-Jan-2020 00:00	21-Jan-2020 00:00
Compound	CAS Number	LOR	Unit	EP2000762-021	EP2000762-022	EP2000762-023	EP2000762-024	EP2000762-025	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	----	7.30	5.92	3.84	7.36	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	----	2820	3360	8050	2830	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	----	1680	1890	4600	1640	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	55	35	<1	56	
Total Alkalinity as CaCO3	----	1	mg/L	----	55	35	<1	56	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	----	11	36	362	16	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	63	74	87	63	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	----	886	1130	2550	881	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	----	47	15	51	46	
Magnesium	7439-95-4	1	mg/L	----	95	68	285	96	
Sodium	7440-23-5	1	mg/L	----	370	547	950	381	
Potassium	7440-09-7	1	mg/L	----	9	2	<1	9	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	0.03	0.03	31.8	0.01	
Arsenic	7440-38-2	0.001	mg/L	----	<0.001	0.001	0.003	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	----	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	----	<0.001	<0.001	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	----	0.001	0.044	0.039	<0.001	
Copper	7440-50-8	0.001	mg/L	----	0.003	0.031	0.040	0.003	
Lead	7439-92-1	0.001	mg/L	----	<0.001	0.002	0.024	<0.001	
Manganese	7439-96-5	0.001	mg/L	----	0.111	0.296	0.022	0.110	
Nickel	7440-02-0	0.001	mg/L	----	<0.001	0.027	0.024	<0.001	
Selenium	7782-49-2	0.01	mg/L	----	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	----	0.008	0.111	0.079	0.008	
Iron	7439-89-6	0.05	mg/L	----	0.39	8.97	66.4	0.38	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB01	SW06	BORR_MW37	BH_09.2	FD02
Client sampling date / time				20-Jan-2020 00:00	21-Jan-2020 00:00	21-Jan-2020 00:00	21-Jan-2020 00:00	21-Jan-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2000762-021	EP2000762-022	EP2000762-023	EP2000762-024	EP2000762-025	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	0.06	1.32	33.5	0.08	
Iron	7439-89-6	0.05	mg/L	----	0.65	10.5	66.2	0.70	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	----	0.09	0.05	<0.10	0.15	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	----	0.09	0.05	<0.01	0.15	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	----	0.08	0.02	<0.01	0.09	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	1.3	0.2	0.3	1.4	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	----	1.4	0.2	0.3	1.5	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	----	0.24	<0.01	0.01	0.24	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	0.22	<0.01	<0.01	0.22	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	----	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	----	27.4	34.1	73.7	27.3	
∅ Total Cations	----	0.01	meq/L	----	26.5	30.2	67.3	27.0	
∅ Ionic Balance	----	0.01	%	----	1.70	6.11	4.55	0.52	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	----	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	----	<100	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	----	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	<50	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	----	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB01	SW06	BORR_MW37	BH_09.2	FD02
Client sampling date / time				20-Jan-2020 00:00	21-Jan-2020 00:00	21-Jan-2020 00:00	21-Jan-2020 00:00	21-Jan-2020 00:00	21-Jan-2020 00:00
Compound	CAS Number	LOR	Unit	EP2000762-021	EP2000762-022	EP2000762-023	EP2000762-024	EP2000762-025	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	----	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	----	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	----	<100	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	<100	<100	<100	<100	<100
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	<5
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	<10	----	----	----	<10
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	<0.02	----	----	----	<0.02
Azinphos-methyl	86-50-0	0.02	µg/L	----	<0.02	----	----	----	<0.02
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	<0.10	----	----	----	<0.10
Carbofenthion	786-19-6	0.02	µg/L	----	<0.02	----	----	----	<0.02
Chlorfenvinphos	470-90-6	0.02	µg/L	----	<0.02	----	----	----	<0.02
Chlorpyrifos	2921-88-2	0.02	µg/L	----	<0.02	----	----	----	<0.02
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	<0.2	----	----	----	<0.2
Coumaphos	56-72-4	0.01	µg/L	----	<0.01	----	----	----	<0.01
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	<0.02	----	----	----	<0.02
Demeton-S-methyl	919-86-8	0.02	µg/L	----	<0.02	----	----	----	<0.02
Demeton-O	298-03-3	0.02	µg/L	----	<0.02	----	----	----	<0.02
Demeton-S	126-75-0	0.02	µg/L	----	<0.02	----	----	----	<0.02
Diazinon	333-41-5	0.01	µg/L	----	<0.01	----	----	----	<0.01
Dichlorvos	62-73-7	0.20	µg/L	----	<0.20	----	----	----	<0.20
Dimethoate	60-51-5	0.02	µg/L	----	<0.02	----	----	----	<0.02
Disulfoton	298-04-4	0.05	µg/L	----	<0.05	----	----	----	<0.05
Ethion	563-12-2	0.02	µg/L	----	<0.02	----	----	----	<0.02



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB01	SW06	BORR_MW37	BH_09.2	FD02
Client sampling date / time					20-Jan-2020 00:00	21-Jan-2020 00:00	21-Jan-2020 00:00	21-Jan-2020 00:00	21-Jan-2020 00:00
Compound	CAS Number	LOR	Unit		EP2000762-021	EP2000762-022	EP2000762-023	EP2000762-024	EP2000762-025
					Result	Result	Result	Result	Result
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L		----	<0.05	----	----	<0.05
Ethoprophos	13194-48-4	0.01	µg/L		----	<0.01	----	----	<0.01
Fenamiphos	22224-92-6	0.01	µg/L		----	<0.01	----	----	<0.01
Fenchlorphos (Rannel)	299-84-3	10	µg/L		----	<10	----	----	<10
Fenitrothion	122-14-5	2	µg/L		----	<2	----	----	<2
Fensulfothion	115-90-2	0.01	µg/L		----	<0.01	----	----	<0.01
Fenthion	55-38-9	0.05	µg/L		----	<0.05	----	----	<0.05
Malathion	121-75-5	0.02	µg/L		----	<0.02	----	----	<0.02
Mevinphos	7786-34-7	0.02	µg/L		----	<0.02	----	----	<0.02
Monocrotophos	6923-22-4	0.02	µg/L		----	<0.02	----	----	<0.02
Omethoate	1113-02-6	0.01	µg/L		----	<0.01	----	----	<0.01
Parathion	56-38-2	0.2	µg/L		----	<0.2	----	----	<0.2
Parathion-methyl	298-00-0	0.5	µg/L		----	<0.5	----	----	<0.5
Phorate	298-02-2	0.1	µg/L		----	<0.1	----	----	<0.1
Pirimiphos-ethyl	23505-41-1	0.01	µg/L		----	<0.01	----	----	<0.01
Pirimiphos-methyl	29232-93-7	0.01	µg/L		----	<0.01	----	----	<0.01
Profenofos	41198-08-7	0.01	µg/L		----	<0.01	----	----	<0.01
Prothiofos	34643-46-4	0.1	µg/L		----	<0.1	----	----	<0.1
Sulfotep	3689-24-5	0.005	µg/L		----	<0.005	----	----	<0.005
Sulprofos	35400-43-2	0.05	µg/L		----	<0.05	----	----	<0.05
Terbufos	13071-79-9	0.01	µg/L		----	<0.01	----	----	<0.01
Temephos	3383-96-8	0.02	µg/L		----	<0.02	----	----	<0.02
Tetrachlorvinphos	22248-79-9	0.01	µg/L		----	<0.01	----	----	<0.01
Triazophos	24017-47-8	0.005	µg/L		----	<0.005	----	----	<0.005
Trichlorfon	52-68-6	0.02	µg/L		----	<0.02	----	----	<0.02
Trichloronate	327-98-0	0.5	µg/L		----	<0.5	----	----	<0.5
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%		114	102	98.9	68.9	68.5
Toluene-D8	2037-26-5	2	%		98.5	99.5	99.3	114	117
4-Bromofluorobenzene	460-00-4	2	%		102	102	99.4	90.4	90.5



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	NORTHERN_5	BORR_MW29	BORR_MW46	----	----
Client sampling date / time				21-Jan-2020 00:00	21-Jan-2020 00:00	21-Jan-2020 00:00	----	----	
Compound	CAS Number	LOR	Unit	EP2000762-026	EP2000762-027	EP2000762-028	-----	-----	
				Result	Result	Result	----	----	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	7.99	5.84	5.78	----	----	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	1740	765	397	----	----	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	904	494	284	----	----	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	216	13	7	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	216	13	7	----	----	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	15	18	49	----	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	18	116	136	----	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	470	166	18	----	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	48	18	30	----	----	
Magnesium	7439-95-4	1	mg/L	33	24	13	----	----	
Sodium	7440-23-5	1	mg/L	259	90	15	----	----	
Potassium	7440-09-7	1	mg/L	10	7	4	----	----	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.02	0.50	0.02	----	----	
Arsenic	7440-38-2	0.001	mg/L	0.001	<0.001	0.004	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	0.002	<0.001	----	----	
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.004	----	----	
Copper	7440-50-8	0.001	mg/L	0.015	0.004	0.012	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----	
Manganese	7439-96-5	0.001	mg/L	0.105	0.016	0.070	----	----	
Nickel	7440-02-0	0.001	mg/L	0.011	0.007	0.012	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----	
Zinc	7440-66-6	0.005	mg/L	0.059	0.092	0.033	----	----	
Iron	7439-89-6	0.05	mg/L	0.16	1.17	31.4	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	NORTHERN_5	BORR_MW29	BORR_MW46	----	----
Client sampling date / time				21-Jan-2020 00:00	21-Jan-2020 00:00	21-Jan-2020 00:00	----	----	
Compound	CAS Number	LOR	Unit	EP2000762-026	EP2000762-027	EP2000762-028	-----	-----	
				Result	Result	Result	----	----	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.03	1.50	2.48	----	----	
Iron	7439-89-6	0.05	mg/L	0.92	1.25	33.5	----	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.01	0.52	0.19	----	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	<0.01	0.52	0.19	----	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.04	----	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.9	1.0	0.3	----	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.9	1.0	0.3	----	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.43	<0.01	<0.01	----	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.42	<0.01	<0.01	----	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	0.7	<0.1	----	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	17.9	7.36	3.48	----	----	
∅ Total Cations	----	0.01	meq/L	16.6	6.97	3.32	----	----	
∅ Ionic Balance	----	0.01	%	3.80	2.72	2.32	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	----	----	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	----	----	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	----	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	NORTHERN_5	BORR_MW29	BORR_MW46	----	----
Client sampling date / time				21-Jan-2020 00:00	21-Jan-2020 00:00	21-Jan-2020 00:00	----	----	
Compound	CAS Number	LOR	Unit	EP2000762-026	EP2000762-027	EP2000762-028	-----	-----	
				Result	Result	Result	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	----	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----	
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	----	----	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	----	----	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	<10	----	----	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	----	----	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	----	----	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	----	----	----	----	
Carbofention	786-19-6	0.02	µg/L	<0.02	----	----	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	----	----	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	----	----	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	----	----	----	----	
Coumaphos	56-72-4	0.01	µg/L	<0.01	----	----	----	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	----	----	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	----	----	----	----	
Demeton-O	298-03-3	0.02	µg/L	<0.02	----	----	----	----	
Demeton-S	126-75-0	0.02	µg/L	<0.02	----	----	----	----	
Diazinon	333-41-5	0.01	µg/L	<0.01	----	----	----	----	
Dichlorvos	62-73-7	0.20	µg/L	<0.20	----	----	----	----	
Dimethoate	60-51-5	0.02	µg/L	<0.02	----	----	----	----	
Disulfoton	298-04-4	0.05	µg/L	<0.05	----	----	----	----	
Ethion	563-12-2	0.02	µg/L	<0.02	----	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	NORTHERN_5	BORR_MW29	BORR_MW46	----	----
Client sampling date / time					21-Jan-2020 00:00	21-Jan-2020 00:00	21-Jan-2020 00:00	----	----
Compound	CAS Number	LOR	Unit		EP2000762-026	EP2000762-027	EP2000762-028	-----	-----
					Result	Result	Result	----	----
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L		<0.05	----	----	----	----
Ethoprophos	13194-48-4	0.01	µg/L		<0.01	----	----	----	----
Fenamiphos	22224-92-6	0.01	µg/L		<0.01	----	----	----	----
Fenchlorphos (Ronnell)	299-84-3	10	µg/L		<10	----	----	----	----
Fenitrothion	122-14-5	2	µg/L		<2	----	----	----	----
Fensulfothion	115-90-2	0.01	µg/L		<0.01	----	----	----	----
Fenthion	55-38-9	0.05	µg/L		<0.05	----	----	----	----
Malathion	121-75-5	0.02	µg/L		<0.02	----	----	----	----
Mevinphos	7786-34-7	0.02	µg/L		<0.02	----	----	----	----
Monocrotophos	6923-22-4	0.02	µg/L		<0.02	----	----	----	----
Omethoate	1113-02-6	0.01	µg/L		<0.01	----	----	----	----
Parathion	56-38-2	0.2	µg/L		<0.2	----	----	----	----
Parathion-methyl	298-00-0	0.5	µg/L		<0.5	----	----	----	----
Phorate	298-02-2	0.1	µg/L		<0.1	----	----	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L		<0.01	----	----	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L		<0.01	----	----	----	----
Profenofos	41198-08-7	0.01	µg/L		<0.01	----	----	----	----
Prothiofos	34643-46-4	0.1	µg/L		<0.1	----	----	----	----
Sulfotep	3689-24-5	0.005	µg/L		<0.005	----	----	----	----
Sulprofos	35400-43-2	0.05	µg/L		<0.05	----	----	----	----
Terbufos	13071-79-9	0.01	µg/L		<0.01	----	----	----	----
Temephos	3383-96-8	0.02	µg/L		<0.02	----	----	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L		<0.01	----	----	----	----
Triazophos	24017-47-8	0.005	µg/L		<0.005	----	----	----	----
Trichlorfon	52-68-6	0.02	µg/L		<0.02	----	----	----	----
Trichloronate	327-98-0	0.5	µg/L		<0.5	----	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%		75.5	86.7	118	----	----
Toluene-D8	2037-26-5	2	%		113	97.2	100	----	----
4-Bromofluorobenzene	460-00-4	2	%		90.4	106	112	----	----



## Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	61	141
Toluene-D8	2037-26-5	73	126
4-Bromofluorobenzene	460-00-4	60	125



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP2000762	Page	: 1 of 18
Client	: GHD PTY LTD	Laboratory	: Environmental Division Perth
Contact	: Julia Roberts	Telephone	: 08 9406 1311
Project	: 6137041	Date Samples Received	: 23-Jan-2020
Site	: ----	Issue Date	: 05-Feb-2020
Sampler	: Ian Oglesby	No. of samples received	: 28
Order number	: 613704108.0831	No. of samples analysed	: 28

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



**Outliers : Quality Control Samples**

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
EP234A: OP Pesticides	EP2000762--003	NORTH CREEK 2	Azinphos-ethyl	2642-71-9	56.0 %	70.0-130%	Recovery less than lower data quality objective

**Outliers : Analysis Holding Time Compliance**

Matrix: **WATER**

Method	Container / Client Sample ID(s)	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue	
<b>EA005P: pH by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural</b>								
	BORR_MW13, NORTH CREEK 2, BORR_MW15, SW08, BORR_MW05, FD01,	BH32_1, SW09, SW07, BORR_MW04, BORR_MW06, BORR_MW08a	----	----	----	24-Jan-2020	20-Jan-2020	4
<b>Clear Plastic Bottle - Natural</b>								
	BORR_MW09, BORR_MW10, BORR_MW32, BORR_MW37, FD02, BORR_MW29,	MR_MW05, BORR_MW31, SW06, BH_09.2, NORTHERN_5, BORR_MW46	----	----	----	24-Jan-2020	21-Jan-2020	3
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>								
<b>Clear Plastic Bottle - Natural</b>								
	BORR_MW13, NORTH CREEK 2, BORR_MW15, SW08, BORR_MW05, FD01,	BH32_1, SW09, SW07, BORR_MW04, BORR_MW06, BORR_MW08a	----	----	----	23-Jan-2020	22-Jan-2020	1
<b>EP234A: OP Pesticides</b>								
<b>Amber Bottle Unpreserved for Specialist Organics</b>								
	NORTH CREEK 2, SW07,	SW09, SW08	----	----	----	28-Jan-2020	27-Jan-2020	1



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EA005P: pH by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural (EA005-P)</b> BORR_MW13, NORTH CREEK 2, BORR_MW15, SW08, BORR_MW05, FD01, BH32_1, SW09, SW07, BORR_MW04, BORR_MW06, BORR_MW08a	20-Jan-2020	----	----	----	24-Jan-2020	20-Jan-2020	*
<b>Clear Plastic Bottle - Natural (EA005-P)</b> BORR_MW09, BORR_MW10, BORR_MW32, BORR_MW37, FD02, BORR_MW29, MR_MW05, BORR_MW31, SW06, BH_09.2, NORTHERN_5, BORR_MW46	21-Jan-2020	----	----	----	24-Jan-2020	21-Jan-2020	*
<b>EA010P: Conductivity by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural (EA010-P)</b> BORR_MW13, NORTH CREEK 2, BORR_MW15, SW08, BORR_MW05, FD01, BH32_1, SW09, SW07, BORR_MW04, BORR_MW06, BORR_MW08a	20-Jan-2020	----	----	----	24-Jan-2020	17-Feb-2020	✓
<b>Clear Plastic Bottle - Natural (EA010-P)</b> BORR_MW09, BORR_MW10, BORR_MW32, BORR_MW37, FD02, BORR_MW29, MR_MW05, BORR_MW31, SW06, BH_09.2, NORTHERN_5, BORR_MW46	21-Jan-2020	----	----	----	24-Jan-2020	18-Feb-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>							
<b>Clear Plastic Bottle - Natural (EA015H)</b>							
BORR_MW13, NORTH CREEK 2, BORR_MW15, SW08, BORR_MW05, FD01, BH32_1, SW09, SW07, BORR_MW04, BORR_MW06, BORR_MW08a	20-Jan-2020	----	----	----	24-Jan-2020	27-Jan-2020	✓
<b>Clear Plastic Bottle - Natural (EA015H)</b>							
BORR_MW09, BORR_MW10, BORR_MW32, BORR_MW37, FD02, BORR_MW29, MR_MW05, BORR_MW31, SW06, BH_09.2, NORTHERN_5, BORR_MW46	21-Jan-2020	----	----	----	24-Jan-2020	28-Jan-2020	✓
<b>ED037P: Alkalinity by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural (ED037-P)</b>							
BORR_MW13, NORTH CREEK 2, BORR_MW15, SW08, BORR_MW05, FD01, BH32_1, SW09, SW07, BORR_MW04, BORR_MW06, BORR_MW08a	20-Jan-2020	----	----	----	24-Jan-2020	03-Feb-2020	✓
<b>Clear Plastic Bottle - Natural (ED037-P)</b>							
BORR_MW09, BORR_MW10, BORR_MW32, BORR_MW37, FD02, BORR_MW29, MR_MW05, BORR_MW31, SW06, BH_09.2, NORTHERN_5, BORR_MW46	21-Jan-2020	----	----	----	24-Jan-2020	04-Feb-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>ED038A: Acidity</b>							
<b>Clear Plastic Bottle - Natural (ED038)</b> BORR_MW13, NORTH CREEK 2, BORR_MW15, SW08, BORR_MW05, FD01, BH32_1, SW09, SW07, BORR_MW04, BORR_MW06, BORR_MW08a	20-Jan-2020	----	----	----	29-Jan-2020	03-Feb-2020	✓
<b>Clear Plastic Bottle - Natural (ED038)</b> BORR_MW09, BORR_MW10, BORR_MW32, BORR_MW37, FD02, BORR_MW29, MR_MW05, BORR_MW31, SW06, BH_09.2, NORTHERN_5, BORR_MW46	21-Jan-2020	----	----	----	29-Jan-2020	04-Feb-2020	✓
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>							
<b>Clear Plastic Bottle - Natural (ED041G)</b> BORR_MW13, NORTH CREEK 2, BORR_MW15, SW08, BORR_MW05, FD01, BH32_1, SW09, SW07, BORR_MW04, BORR_MW06, BORR_MW08a	20-Jan-2020	----	----	----	23-Jan-2020	17-Feb-2020	✓
<b>Clear Plastic Bottle - Natural (ED041G)</b> BORR_MW09, BORR_MW10, BORR_MW32, BORR_MW37, FD02, BORR_MW29, MR_MW05, BORR_MW31, SW06, BH_09.2, NORTHERN_5, BORR_MW46	21-Jan-2020	----	----	----	23-Jan-2020	18-Feb-2020	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>ED045G: Chloride by Discrete Analyser</b>							
<b>Clear Plastic Bottle - Natural (ED045G)</b> BORR_MW13, NORTH CREEK 2, BORR_MW15, SW08, BORR_MW05, FD01, BH32_1, SW09, SW07, BORR_MW04, BORR_MW06, BORR_MW08a	20-Jan-2020	----	----	----	23-Jan-2020	17-Feb-2020	✓
<b>Clear Plastic Bottle - Natural (ED045G)</b> BORR_MW09, BORR_MW10, BORR_MW32, BORR_MW37, FD02, BORR_MW29, MR_MW05, BORR_MW31, SW06, BH_09.2, NORTHERN_5, BORR_MW46	21-Jan-2020	----	----	----	23-Jan-2020	18-Feb-2020	✓
<b>ED093F: Dissolved Major Cations</b>							
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> BORR_MW13, NORTH CREEK 2, BORR_MW15, SW08, BORR_MW05, FD01, BH32_1, SW09, SW07, BORR_MW04, BORR_MW06, BORR_MW08a	20-Jan-2020	----	----	----	28-Jan-2020	17-Feb-2020	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> BORR_MW09, BORR_MW10, BORR_MW32, BORR_MW37, FD02, BORR_MW29, MR_MW05, BORR_MW31, SW06, BH_09.2, NORTHERN_5, BORR_MW46	21-Jan-2020	----	----	----	28-Jan-2020	18-Feb-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EG020F: Dissolved Metals by ICP-MS</b>							
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> BORR_MW13, NORTH CREEK 2, BORR_MW15, SW08, BORR_MW05, FD01, BH32_1, SW09, SW07, BORR_MW04, BORR_MW06, BORR_MW08a	20-Jan-2020	----	----	----	28-Jan-2020	18-Jul-2020	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> BORR_MW09, BORR_MW10, BORR_MW32, BORR_MW37, FD02, BORR_MW29, MR_MW05, BORR_MW31, SW06, BH_09.2, NORTHERN_5, BORR_MW46	21-Jan-2020	----	----	----	28-Jan-2020	19-Jul-2020	✓
<b>EG020T: Total Metals by ICP-MS</b>							
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> BORR_MW13, NORTH CREEK 2, BORR_MW15, SW08, BORR_MW05, RB01, BORR_MW08a, BH32_1, SW09, SW07, BORR_MW04, BORR_MW06, FD01,	20-Jan-2020	28-Jan-2020	18-Jul-2020	✓	28-Jan-2020	18-Jul-2020	✓
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> BORR_MW09, BORR_MW10, BORR_MW32, BORR_MW37, FD02, BORR_MW29, MR_MW05, BORR_MW31, SW06, BH_09.2, NORTHERN_5, BORR_MW46	21-Jan-2020	28-Jan-2020	19-Jul-2020	✓	28-Jan-2020	19-Jul-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EK055G: Ammonia as N by Discrete Analyser</b>							
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> BORR_MW13, NORTH CREEK 2, BORR_MW15, SW08, BORR_MW05, FD01, BH32_1, SW09, SW07, BORR_MW04, BORR_MW06, BORR_MW08a	20-Jan-2020	----	----	----	23-Jan-2020	17-Feb-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> BORR_MW09, BORR_MW10, BORR_MW32, BORR_MW37, FD02, BORR_MW29, MR_MW05, BORR_MW31, SW06, BH_09.2, NORTHERN_5, BORR_MW46	21-Jan-2020	----	----	----	23-Jan-2020	18-Feb-2020	✓
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>							
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> BORR_MW13, NORTH CREEK 2, BORR_MW15, SW08, BORR_MW05, FD01, BH32_1, SW09, SW07, BORR_MW04, BORR_MW06, BORR_MW08a	20-Jan-2020	----	----	----	23-Jan-2020	17-Feb-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> BORR_MW09, BORR_MW10, BORR_MW32, BORR_MW37, FD02, BORR_MW29, MR_MW05, BORR_MW31, SW06, BH_09.2, NORTHERN_5, BORR_MW46	21-Jan-2020	----	----	----	23-Jan-2020	18-Feb-2020	✓





Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> BORR_MW13, NORTH CREEK 2, BORR_MW15, SW08, BORR_MW05, FD01, BH32_1, SW09, SW07, BORR_MW04, BORR_MW06, BORR_MW08a	20-Jan-2020	30-Jan-2020	17-Feb-2020	✓	31-Jan-2020	17-Feb-2020	✓	
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> BORR_MW09, BORR_MW10, BORR_MW32, BORR_MW37, FD02, BORR_MW29, MR_MW05, BORR_MW31, SW06, BH_09.2, NORTHERN_5, BORR_MW46	21-Jan-2020	30-Jan-2020	18-Feb-2020	✓	31-Jan-2020	18-Feb-2020	✓	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> BORR_MW13, NORTH CREEK 2, BORR_MW15, SW08, BORR_MW05, FD01, BH32_1, SW09, SW07, BORR_MW04, BORR_MW06, BORR_MW08a	20-Jan-2020	30-Jan-2020	17-Feb-2020	✓	31-Jan-2020	17-Feb-2020	✓	
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> BORR_MW09, BORR_MW10, BORR_MW32, BORR_MW37, FD02, BORR_MW29, MR_MW05, BORR_MW31, SW06, BH_09.2, NORTHERN_5, BORR_MW46	21-Jan-2020	30-Jan-2020	18-Feb-2020	✓	31-Jan-2020	18-Feb-2020	✓	



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>								
<b>Clear Plastic Bottle - Natural (EK071G)</b>								
BORR_MW13, NORTH CREEK 2, BORR_MW15, SW08, BORR_MW05, FD01,	BH32_1, SW09, SW07, BORR_MW04, BORR_MW06, BORR_MW08a	20-Jan-2020	----	----	----	23-Jan-2020	22-Jan-2020	*
<b>Clear Plastic Bottle - Natural (EK071G)</b>								
BORR_MW09, BORR_MW10, BORR_MW32, BORR_MW37, FD02, BORR_MW29,	MR_MW05, BORR_MW31, SW06, BH_09.2, NORTHERN_5, BORR_MW46	21-Jan-2020	----	----	----	23-Jan-2020	23-Jan-2020	✓
<b>EK085M: Sulfide as S2-</b>								
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b>								
BORR_MW13, NORTH CREEK 2, BORR_MW15, SW08, BORR_MW05, FD01,	BH32_1, SW09, SW07, BORR_MW04, BORR_MW06, BORR_MW08a	20-Jan-2020	----	----	----	23-Jan-2020	27-Jan-2020	✓
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b>								
BORR_MW09, BORR_MW10, BORR_MW32, BORR_MW37, FD02,	MR_MW05, BORR_MW31, SW06, BH_09.2, NORTHERN_5	21-Jan-2020	----	----	----	23-Jan-2020	28-Jan-2020	✓
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b>								
BORR_MW29,	BORR_MW46	21-Jan-2020	----	----	----	28-Jan-2020	28-Jan-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BORR_MW13, NORTH CREEK 2, BORR_MW15, SW08, BORR_MW05, FD01, BH32_1, SW09, SW07, BORR_MW04, BORR_MW06, BORR_MW08a	20-Jan-2020	24-Jan-2020	27-Jan-2020	✓	03-Feb-2020	04-Mar-2020	✓		
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BORR_MW09, BORR_MW10, BORR_MW32 MR_MW05, BORR_MW31,	21-Jan-2020	24-Jan-2020	28-Jan-2020	✓	03-Feb-2020	04-Mar-2020	✓		
<b>Amber Glass Bottle - Unpreserved (EP071)</b> SW06, BH_09.2, BORR_MW37, FD02	21-Jan-2020	24-Jan-2020	28-Jan-2020	✓	31-Jan-2020	04-Mar-2020	✓		
<b>Amber Glass Bottle - Unpreserved (EP071)</b> NORTHERN_5, BORR_MW46 BORR_MW29,	21-Jan-2020	28-Jan-2020	28-Jan-2020	✓	31-Jan-2020	08-Mar-2020	✓		
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BORR_MW13, NORTH CREEK 2, BORR_MW15, SW08, BORR_MW05, TB01 - TBW005, BORR_MW08a, BH32_1, SW09, SW07, BORR_MW04, BORR_MW06, FD01, FB01	20-Jan-2020	24-Jan-2020	03-Feb-2020	✓	24-Jan-2020	03-Feb-2020	✓		
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> FB02, MR_MW05, BORR_MW31, SW06, BH_09.2, NORTHERN_5, BORR_MW46 BORR_MW09, BORR_MW10, BORR_MW32, BORR_MW37, FD02, BORR_MW29,	21-Jan-2020	24-Jan-2020	04-Feb-2020	✓	24-Jan-2020	04-Feb-2020	✓		



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>							
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BORR_MW13, NORTH CREEK 2, BORR_MW15, SW08, BORR_MW05, FD01, BH32_1, SW09, SW07, BORR_MW04, BORR_MW06, BORR_MW08a	20-Jan-2020	24-Jan-2020	27-Jan-2020	✓	03-Feb-2020	04-Mar-2020	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BORR_MW09, BORR_MW10, BORR_MW32 MR_MW05, BORR_MW31,	21-Jan-2020	24-Jan-2020	28-Jan-2020	✓	03-Feb-2020	04-Mar-2020	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b> SW06, BH_09.2, BORR_MW37, FD02	21-Jan-2020	24-Jan-2020	28-Jan-2020	✓	31-Jan-2020	04-Mar-2020	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b> NORTHERN_5, BORR_MW46 BORR_MW29,	21-Jan-2020	28-Jan-2020	28-Jan-2020	✓	31-Jan-2020	08-Mar-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BORR_MW13, NORTH CREEK 2, BORR_MW15, SW08, BORR_MW05, TB01 - TBW005, BORR_MW08a, BH32_1, SW09, SW07, BORR_MW04, BORR_MW06, FD01, FB01	20-Jan-2020	24-Jan-2020	03-Feb-2020	✓	24-Jan-2020	03-Feb-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> FB02, MR_MW05, BORR_MW31, SW06, BH_09.2, NORTHERN_5, BORR_MW46 BORR_MW09, BORR_MW10, BORR_MW32, BORR_MW37, FD02, BORR_MW29,	21-Jan-2020	24-Jan-2020	04-Feb-2020	✓	24-Jan-2020	04-Feb-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080: BTEXN</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BORR_MW13, NORTH CREEK 2, BORR_MW15, SW08, BORR_MW05, TB01 - TBW005, BORR_MW08a,	BH32_1, SW09, SW07, BORR_MW04, BORR_MW06, FD01, FB01	20-Jan-2020	24-Jan-2020	03-Feb-2020	✓	24-Jan-2020	03-Feb-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> FB02, MR_MW05, BORR_MW31, SW06, BH_09.2, NORTHERN_5, BORR_MW46	BORR_MW09, BORR_MW10, BORR_MW32, BORR_MW37, FD02, BORR_MW29,	21-Jan-2020	24-Jan-2020	04-Feb-2020	✓	24-Jan-2020	04-Feb-2020	✓
<b>EP204: Glyphosate and AMPA</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b> NORTH CREEK 2, SW07,	SW09, SW08	20-Jan-2020	----	----	----	29-Jan-2020	03-Feb-2020	✓
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b> SW06, NORTHERN_5	FD02,	21-Jan-2020	----	----	----	29-Jan-2020	04-Feb-2020	✓
<b>EP234A: OP Pesticides</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> NORTH CREEK 2, SW07,	SW09, SW08	20-Jan-2020	----	----	----	28-Jan-2020	27-Jan-2020	*
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> SW06, NORTHERN_5	FD02,	21-Jan-2020	----	----	----	28-Jan-2020	28-Jan-2020	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Laboratory Duplicates (DUP)</b>							
Acidity as Calcium Carbonate	ED038	3	24	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	4	35	11.43	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	5	31	16.13	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	3	30	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	4	34	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	35	11.43	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	6	54	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	38	10.53	10.53	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	24	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	4	37	10.81	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	24	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	3	27	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Acidity as Calcium Carbonate	ED038	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	4	35	11.43	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	35	11.43	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	3	54	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	38	10.53	10.53	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	40	7.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Alkalinity by PC Titrator	ED037-P	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	3	54	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	38	5.26	5.26	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	40	7.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
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Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	40	7.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3)  Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3)  Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.





Analytical Methods	Method	Matrix	Method Descriptions
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ammonium as N	EK055G-NH4	WATER	Ammonium in the sample is reported as the ionised / unionised fractions by the use of a nomograph and the initial pH and Temperature. Ammonia is determined by direct colorimetry by Discrete Analyser according to APHA 4500-NH3 G. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Sulfide as S2-	EK085	WATER	In house: Referenced to APHA 4500-S2- D. Sulfide species present in water samples are immediately precipitated when collected in pretreated caustic/zinc acetate preserved sample containers. The sulphides are coloured using methylene blue indicator. Non-detects may be screened by comparison against a standard at half-LOR, otherwise samples are measured using UV-VIS detection at 664nm. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatle Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Glyphosate and AMPA	EP204	WATER	In house: Pre-column derivatisation LCMS (ES in negative mode). Water samples are derivatised with 9-fluorenyl methoxycarbonyl chloroformate (FMOC) in alkaline condition. The derivatives of glyphosate and AMPA are separated by a C8 column and determined by MS.
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CHAIN OF CUSTODY RECORD  
AND ANALYSIS REQUEST



GHD  
Level 10, 999 Hay Street  
Perth WA 6000

PO Box 3106  
Perth WA 6832

Reception Ph: 08 6222 8222

Project ID (as per ESDat set up; no spaces)  
6137041

PO Number (to be invoiced)  
613704108.0831

Laboratory: ALS Environmental  
Address: 26 Rigali Way, Wangara WA 6065  
Laboratory Contact: Marnie Thomsett (08 9406 1301)

Laboratory Quote No.  
EP/489/19 V4

Turnaround Time  
Standard

Job Manager (Invoice) & GHD accounts  
Julia Roberts  
Vicki Davies

Email Address (Results)  
vicki.davies@ghd.com  
pascale.ketelaar@ghd.com

GHD Sample ID	Lab Sample ID	Date	Time	Sample Matrix (Soil/Sediment/Water/Air)	Container				Analyses					Remarks	
					Type (Bottle/Can/Vial/Bag/G-Clas/P-React)	Preservative (Unpreserved/HCl/12504/HNO3/Other)	No.	GW site	Env site	Fin site	field blank	trip blank	HOLD		
BORR_MW13	1	20.1.20					8	X							
BH122.1	2	"					8	X							
NORTH CREEK 2	3	"					10			X					
SW09	4	"					10			X					
BORR_MW15	5	"					8	X							
SW07	6	"					10			X					
SW08	7	"					10			X					
BORR_MW04	8	"					8	X							
BORR_MW05	9	"					8	X							
BORR_MW06	10	"					8	X							
TB01	11	"					1						X		
FB02	12	"					1				X				
RB01	13	"					1			X					
FD01	14	"					8	X							
BORR_MW08a	15	"					8	X							

Environmental Division  
Perth  
Work Order Reference  
EP2000762



Telephone : + 61-8-9406 1301

Sampled by: Ian Ogusby

Date/Time: 20.1.20

Relinquished by: Ian Ogusby

Date/Time: 21.1.20

Received by: M Wank

Date/Time: 22.1.200

Relinquished by:

Date/Time:

**CHAIN OF CUSTODY RECORD  
AND ANALYSIS REQUEST**



GHD  
Level 10, 999 Hay Street  
Perth WA 6000

PO Box 3106  
Perth WA 6832

Reception Ph: 08 6222 8222

Project ID (as per ESdat set up; no spaces)  
6137041

PO Number (to be invoiced)  
613704108.0831

Laboratory: ALS Environmental  
Address: 26 Rigali Way, Wangara WA 6065  
Laboratory Contact: Marnie Thomsett (08 9406 1301)

Laboratory Quote No.  
EP/489/19 V4

Turnaround Time  
Standard

Job Manager (Invoice) & GHD accounts  
Julia Roberts  
Vicki Davies

Email Address (Results)  
vicki.davies@ghd.com  
pascal.ketelaar@ghd.com

GHD Sample ID	Lab Sample ID	Date	Time	Sample Matrix Soil/S Sludge/Water/Air	Container			Analyses							Remarks				
					Type Bottle/Clear/Vin/Bag/Glass/Plastic	Preservative Unpreserved/HC/PZSO/HNO3/Other	No	GW site	SW site	in site	field blk	trip blk						HOLD	
BORR_MW09	16	21.1.20		W			11	X											
MR_MW05	17	"		W			11	X											
BORR_MW10	18	"		W			11	X											
BORR_MW31	17	"		W			11	X											
BORR_MW32	20	"		W			8	X											
FBO1	21	"		W			1						X						
SW06	22	"		W			13			X									
BORR_MW37	23	"		W			8	X											
BH_09.2	24	"		W			8	X											
FDO2	25	"		W			13			X									
NORTHERN_S	26	"		W			13			X									
BORR_MW29	27	"		W			8												
BORR_MW46	28	"		W			8												

Sampled by: Ian Oglesby

Date/Time: 21.1.20

Relinquished by: Ian Oglesby

Date/Time: 21.1.20

Received by: MW

Date/Time:

Relinquished by:

Date/Time:

## CERTIFICATE OF ANALYSIS

**Work Order** : **EP2000814**  
**Client** : **GHD PTY LTD**  
**Contact** : **MS VICKI DAVIES**  
**Address** : **999 HAY STREET**  
**PERTH WA, AUSTRALIA 6000**  
**Telephone** : **----**  
**Project** : **6137041**  
**Order number** : **613704108.0831**  
**C-O-C number** : **----**  
**Sampler** : **Ian Oglesby**  
**Site** : **----**  
**Quote number** : **EP/489/19 V4**  
**No. of samples received** : **18**  
**No. of samples analysed** : **18**

**Page** : 1 of 20  
**Laboratory** : Environmental Division Perth  
**Contact** : Marnie Thomsett  
**Address** : 26 Rigali Way Wangara WA Australia 6065  
**Telephone** : 08 9406 1311  
**Date Samples Received** : 24-Jan-2020 11:50  
**Date Analysis Commenced** : 24-Jan-2020  
**Issue Date** : 04-Feb-2020 09:20



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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
David Viner	SENIOR LAB TECH	Perth Organics, Wangara, WA
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Stephanie Tilson	Instrument Chemist	Perth Inorganics, Wangara, WA



## General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP204, EP234 conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- EK061G/EK067G (TKN/TP): LOR for sample EP2000814-001 raised due to possible sample matrix interference.
- EG020F: Results for copper, nickel, zinc for samples EP2000814-002, 004 have been confirmed by re-analysis.
- TDS by method EA-015 may be bias high for sample #10, 14 and 18 due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- EP234: Poor matrix spike recovery for particular compounds due to matrix interferences.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- Ionic balances were calculated using: major anions - chloride, alkalinity, sulfate and NOx; and major cations - calcium, magnesium, potassium and sodium for #1.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW18	BORR_MW12	Southern 4	FD03	FB03
Client sampling date / time				22-Jan-2020 00:00	22-Jan-2020 00:00	22-Jan-2020 00:00	22-Jan-2020 00:00	22-Jan-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2000814-001	EP2000814-002	EP2000814-003	EP2000814-004	EP2000814-005	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	4.77	6.78	8.67	6.77	----	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	362	534	11400	533	----	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	264	314	7750	318	----	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	34	<1	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	30	203	30	----	
Total Alkalinity as CaCO3	----	1	mg/L	<1	30	237	30	----	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	17	9	<1	9	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	18	38	151	38	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	55	129	4270	127	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	14	5	104	6	----	
Magnesium	7439-95-4	1	mg/L	6	12	267	11	----	
Sodium	7440-23-5	1	mg/L	33	78	1960	80	----	
Potassium	7440-09-7	1	mg/L	20	6	46	6	----	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.62	<0.01	0.05	0.02	----	
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.002	0.003	0.002	----	
Cadmium	7440-43-9	0.0001	mg/L	0.0004	<0.0001	<0.0001	<0.0001	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----	
Cobalt	7440-48-4	0.001	mg/L	0.009	<0.001	<0.001	<0.001	----	
Copper	7440-50-8	0.001	mg/L	0.032	<0.001	0.014	<0.001	----	
Lead	7439-92-1	0.001	mg/L	0.002	<0.001	0.001	<0.001	----	
Manganese	7439-96-5	0.001	mg/L	0.294	0.002	0.027	0.004	----	
Nickel	7440-02-0	0.001	mg/L	0.018	<0.001	0.016	<0.001	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----	
Zinc	7440-66-6	0.005	mg/L	0.107	<0.005	0.142	<0.005	----	
Iron	7439-89-6	0.05	mg/L	<0.05	2.33	0.07	2.16	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW18	BORR_MW12	Southern 4	FD03	FB03
Client sampling date / time				22-Jan-2020 00:00	22-Jan-2020 00:00	22-Jan-2020 00:00	22-Jan-2020 00:00	22-Jan-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2000814-001	EP2000814-002	EP2000814-003	EP2000814-004	EP2000814-005	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	1.16	0.33	0.21	0.28	----	
Iron	7439-89-6	0.05	mg/L	0.10	3.12	0.15	2.96	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.20	0.07	0.18	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	<0.01	0.20	0.06	0.18	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	13.7	0.47	<0.01	0.58	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.3	0.3	7.2	0.4	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	16.0	0.8	7.2	1.0	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	<0.05	<0.01	0.26	<0.01	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	2.90	----	----	----	----	
∅ Total Anions	----	0.01	meq/L	----	5.03	128	4.97	----	
∅ Total Cations	----	0.01	meq/L	3.14	4.78	114	4.84	----	
∅ Ionic Balance	----	0.01	%	3.89	----	----	----	----	
∅ Ionic Balance	----	0.01	%	----	2.51	6.09	1.38	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	----	
C15 - C28 Fraction	----	100	µg/L	<100	<100	100	<100	----	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	100	<50	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW18	BORR_MW12	Southern 4	FD03	FB03
Client sampling date / time				22-Jan-2020 00:00	22-Jan-2020 00:00	22-Jan-2020 00:00	22-Jan-2020 00:00	22-Jan-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2000814-001	EP2000814-002	EP2000814-003	EP2000814-004	EP2000814-005	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	----	
>C16 - C34 Fraction	----	100	µg/L	<100	<100	120	<100	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	120	<100	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	----	<10	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	----	<0.02	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	----	----	<0.02	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	----	<0.10	----	----	
Carbofenthoion	786-19-6	0.02	µg/L	----	----	<0.02	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	----	<0.02	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	----	<0.02	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	----	<0.2	----	----	
Coumaphos	56-72-4	0.01	µg/L	----	----	<0.01	----	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	----	<0.02	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	----	<0.02	----	----	
Demeton-O	298-03-3	0.02	µg/L	----	----	<0.02	----	----	
Demeton-S	126-75-0	0.02	µg/L	----	----	<0.02	----	----	
Diazinon	333-41-5	0.01	µg/L	----	----	<0.01	----	----	
Dichlorvos	62-73-7	0.20	µg/L	----	----	<0.20	----	----	
Dimethoate	60-51-5	0.02	µg/L	----	----	<0.02	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW18	BORR_MW12	Southern 4	FD03	FB03
Client sampling date / time					22-Jan-2020 00:00	22-Jan-2020 00:00	22-Jan-2020 00:00	22-Jan-2020 00:00	22-Jan-2020 00:00
Compound	CAS Number	LOR	Unit	EP2000814-001	EP2000814-002	EP2000814-003	EP2000814-004	EP2000814-005	
				Result	Result	Result	Result	Result	
<b>EP234A: OP Pesticides - Continued</b>									
Disulfoton	298-04-4	0.05	µg/L	----	----	<0.05	----	----	
Ethion	563-12-2	0.02	µg/L	----	----	<0.02	----	----	
EPN	2104-64-5	0.05	µg/L	----	----	<0.05	----	----	
Ethoprophos	13194-48-4	0.01	µg/L	----	----	<0.01	----	----	
Fenamiphos	22224-92-6	0.01	µg/L	----	----	<0.01	----	----	
Fenchlorphos (Ronnell)	299-84-3	10	µg/L	----	----	<10	----	----	
Fenitrothion	122-14-5	2	µg/L	----	----	<2	----	----	
Fensulfothion	115-90-2	0.01	µg/L	----	----	<0.01	----	----	
Fenthion	55-38-9	0.05	µg/L	----	----	<0.05	----	----	
Malathion	121-75-5	0.02	µg/L	----	----	<0.02	----	----	
Mevinphos	7786-34-7	0.02	µg/L	----	----	<0.02	----	----	
Monocrotophos	6923-22-4	0.02	µg/L	----	----	<0.02	----	----	
Omethoate	1113-02-6	0.01	µg/L	----	----	<0.01	----	----	
Parathion	56-38-2	0.2	µg/L	----	----	<0.2	----	----	
Parathion-methyl	298-00-0	0.5	µg/L	----	----	<0.5	----	----	
Phorate	298-02-2	0.1	µg/L	----	----	<0.1	----	----	
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	----	----	<0.01	----	----	
Pirimiphos-methyl	29232-93-7	0.01	µg/L	----	----	<0.01	----	----	
Profenofos	41198-08-7	0.01	µg/L	----	----	<0.01	----	----	
Prothiofos	34643-46-4	0.1	µg/L	----	----	<0.1	----	----	
Sulfotep	3689-24-5	0.005	µg/L	----	----	<0.005	----	----	
Sulprofos	35400-43-2	0.05	µg/L	----	----	<0.05	----	----	
Terbufos	13071-79-9	0.01	µg/L	----	----	<0.01	----	----	
Temephos	3383-96-8	0.02	µg/L	----	----	<0.02	----	----	
Tetrachlorvinphos	22248-79-9	0.01	µg/L	----	----	<0.01	----	----	
Triazophos	24017-47-8	0.005	µg/L	----	----	<0.005	----	----	
Trichlorfon	52-68-6	0.02	µg/L	----	----	<0.02	----	----	
Trichloronate	327-98-0	0.5	µg/L	----	----	<0.5	----	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	92.2	97.4	95.4	91.4	90.9	
Toluene-D8	2037-26-5	2	%	99.3	100	98.4	99.6	101	
4-Bromofluorobenzene	460-00-4	2	%	106	110	104	104	108	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW19B	BORR_MW20	North Creek 4	BORR_MW22B	BORR_MW39
Client sampling date / time				22-Jan-2020 00:00	22-Jan-2020 00:00	22-Jan-2020 00:00	22-Jan-2020 00:00	22-Jan-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2000814-006	EP2000814-007	EP2000814-008	EP2000814-009	EP2000814-010	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.44	6.30	7.50	6.21	5.80	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	2230	4170	2790	12500	269	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	1440	2750	1880	8930	440	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	46	42	50	47	11	
Total Alkalinity as CaCO3	----	1	mg/L	46	42	50	47	11	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	19	16	7	51	24	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	36	62	46	336	42	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	680	1230	855	4160	42	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	17	35	43	112	<1	
Magnesium	7439-95-4	1	mg/L	53	109	91	344	<1	
Sodium	7440-23-5	1	mg/L	358	658	376	2110	54	
Potassium	7440-09-7	1	mg/L	5	5	6	5	<1	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.02	0.01	0.02	0.03	0.19	
Arsenic	7440-38-2	0.001	mg/L	0.001	<0.001	<0.001	0.002	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	0.002	0.009	<0.001	0.152	<0.001	
Copper	7440-50-8	0.001	mg/L	0.013	0.013	0.019	0.005	0.011	
Lead	7439-92-1	0.001	mg/L	0.001	<0.001	0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.137	0.186	0.243	0.519	0.010	
Nickel	7440-02-0	0.001	mg/L	0.018	0.015	0.012	0.079	0.008	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.100	0.073	0.058	0.125	0.054	
Iron	7439-89-6	0.05	mg/L	5.36	3.96	0.08	21.6	0.09	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW19B	BORR_MW20	North Creek 4	BORR_MW22B	BORR_MW39
Client sampling date / time				22-Jan-2020 00:00	22-Jan-2020 00:00	22-Jan-2020 00:00	22-Jan-2020 00:00	22-Jan-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2000814-006	EP2000814-007	EP2000814-008	EP2000814-009	EP2000814-010	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	3.63	3.40	1.98	0.49	5.86	
Iron	7439-89-6	0.05	mg/L	9.38	8.92	4.35	22.6	6.45	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.03	0.02	<0.01	0.22	<0.01	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.03	0.02	<0.01	0.22	<0.01	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	<0.1	0.6	0.3	0.1	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	<0.1	<0.1	0.6	0.3	0.1	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	0.06	0.02	0.08	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	20.8	36.8	26.1	125	2.28	
∅ Total Cations	----	0.01	meq/L	20.9	39.5	26.1	126	2.35	
∅ Ionic Balance	----	0.01	%	0.14	3.46	0.13	0.21	1.51	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW19B	BORR_MW20	North Creek 4	BORR_MW22B	BORR_MW39
Client sampling date / time				22-Jan-2020 00:00	22-Jan-2020 00:00	22-Jan-2020 00:00	22-Jan-2020 00:00	22-Jan-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2000814-006	EP2000814-007	EP2000814-008	EP2000814-009	EP2000814-010	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	----	<10	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	----	<0.02	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	----	----	<0.02	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	----	<0.10	----	----	
Carbofenthion	786-19-6	0.02	µg/L	----	----	<0.02	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	----	<0.02	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	----	<0.02	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	----	<0.2	----	----	
Coumaphos	56-72-4	0.01	µg/L	----	----	<0.01	----	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	----	<0.02	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	----	<0.02	----	----	
Demeton-O	298-03-3	0.02	µg/L	----	----	<0.02	----	----	
Demeton-S	126-75-0	0.02	µg/L	----	----	<0.02	----	----	
Diazinon	333-41-5	0.01	µg/L	----	----	<0.01	----	----	
Dichlorvos	62-73-7	0.20	µg/L	----	----	<0.20	----	----	
Dimethoate	60-51-5	0.02	µg/L	----	----	<0.02	----	----	
Disulfoton	298-04-4	0.05	µg/L	----	----	<0.05	----	----	
Ethion	563-12-2	0.02	µg/L	----	----	<0.02	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW19B	BORR_MW20	North Creek 4	BORR_MW22B	BORR_MW39
Client sampling date / time					22-Jan-2020 00:00	22-Jan-2020 00:00	22-Jan-2020 00:00	22-Jan-2020 00:00	22-Jan-2020 00:00
Compound	CAS Number	LOR	Unit	EP2000814-006	EP2000814-007	EP2000814-008	EP2000814-009	EP2000814-010	
				Result	Result	Result	Result	Result	
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L	----	----	<0.05	----	----	
Ethoprophos	13194-48-4	0.01	µg/L	----	----	<0.01	----	----	
Fenamiphos	22224-92-6	0.01	µg/L	----	----	<0.01	----	----	
Fenchlorphos (Ronnell)	299-84-3	10	µg/L	----	----	<10	----	----	
Fenitrothion	122-14-5	2	µg/L	----	----	<2	----	----	
Fensulfothion	115-90-2	0.01	µg/L	----	----	<0.01	----	----	
Fenthion	55-38-9	0.05	µg/L	----	----	<0.05	----	----	
Malathion	121-75-5	0.02	µg/L	----	----	<0.02	----	----	
Mevinphos	7786-34-7	0.02	µg/L	----	----	<0.02	----	----	
Monocrotophos	6923-22-4	0.02	µg/L	----	----	<0.02	----	----	
Omethoate	1113-02-6	0.01	µg/L	----	----	<0.01	----	----	
Parathion	56-38-2	0.2	µg/L	----	----	<0.2	----	----	
Parathion-methyl	298-00-0	0.5	µg/L	----	----	<0.5	----	----	
Phorate	298-02-2	0.1	µg/L	----	----	<0.1	----	----	
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	----	----	<0.01	----	----	
Pirimiphos-methyl	29232-93-7	0.01	µg/L	----	----	<0.01	----	----	
Profenofos	41198-08-7	0.01	µg/L	----	----	<0.01	----	----	
Prothiofos	34643-46-4	0.1	µg/L	----	----	<0.1	----	----	
Sulfotep	3689-24-5	0.005	µg/L	----	----	<0.005	----	----	
Sulprofos	35400-43-2	0.05	µg/L	----	----	<0.05	----	----	
Terbufos	13071-79-9	0.01	µg/L	----	----	<0.01	----	----	
Temephos	3383-96-8	0.02	µg/L	----	----	<0.02	----	----	
Tetrachlorvinphos	22248-79-9	0.01	µg/L	----	----	<0.01	----	----	
Triazophos	24017-47-8	0.005	µg/L	----	----	<0.005	----	----	
Trichlorfon	52-68-6	0.02	µg/L	----	----	<0.02	----	----	
Trichloronate	327-98-0	0.5	µg/L	----	----	<0.5	----	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	91.3	96.0	98.9	101	98.1	
Toluene-D8	2037-26-5	2	%	100	102	96.3	96.6	98.4	
4-Bromofluorobenzene	460-00-4	2	%	105	89.2	91.4	88.6	91.0	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BH11.1	UT01	BORR_MW25	BORR_MW24	FB04
Client sampling date / time				22-Jan-2020 00:00	22-Jan-2020 00:00	23-Jan-2020 00:00	23-Jan-2020 00:00	23-Jan-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2000814-011	EP2000814-012	EP2000814-013	EP2000814-014	EP2000814-015	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	7.28	7.19	6.35	5.24	----	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	1480	3770	3680	1740	----	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	876	2450	2330	1600	----	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	152	46	59	3	----	
Total Alkalinity as CaCO3	----	1	mg/L	152	46	59	3	----	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	11	8	26	24	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	93	97	83	41	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	394	1230	1190	607	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	7	46	30	1	----	
Magnesium	7439-95-4	1	mg/L	20	108	61	9	----	
Sodium	7440-23-5	1	mg/L	261	564	637	332	----	
Potassium	7440-09-7	1	mg/L	15	13	4	<1	----	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.02	0.02	0.04	0.16	----	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.004	<0.001	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----	
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.036	0.008	----	
Copper	7440-50-8	0.001	mg/L	0.010	0.011	0.018	0.028	----	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.002	<0.001	----	
Manganese	7439-96-5	0.001	mg/L	0.258	0.208	0.478	0.013	----	
Nickel	7440-02-0	0.001	mg/L	0.012	0.010	0.025	0.027	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----	
Zinc	7440-66-6	0.005	mg/L	0.078	0.126	0.106	0.194	----	
Iron	7439-89-6	0.05	mg/L	7.63	0.06	8.23	0.21	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BH11.1	UT01	BORR_MW25	BORR_MW24	FB04
Client sampling date / time					22-Jan-2020 00:00	22-Jan-2020 00:00	23-Jan-2020 00:00	23-Jan-2020 00:00	23-Jan-2020 00:00
Compound	CAS Number	LOR	Unit		EP2000814-011	EP2000814-012	EP2000814-013	EP2000814-014	EP2000814-015
					Result	Result	Result	Result	Result
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L		0.16	0.12	3.00	38.8	----
Iron	7439-89-6	0.05	mg/L		10.7	2.02	12.3	30.4	----
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L		0.19	0.04	0.09	0.02	----
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L		0.19	0.04	0.09	0.02	----
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	<0.01	0.03	0.01	----
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.4	0.6	0.2	0.4	----
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L		0.4	0.6	0.2	0.4	----
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L		0.37	0.04	0.06	0.08	----
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		0.16	<0.01	<0.01	<0.01	----
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	----
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L		16.1	37.6	36.5	18.0	----
∅ Total Cations	----	0.01	meq/L		13.7	36.0	34.3	15.2	----
∅ Ionic Balance	----	0.01	%		7.90	2.15	3.03	8.43	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	70	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	70	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	----





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BH11.1	UT01	BORR_MW25	BORR_MW24	FB04
Client sampling date / time				22-Jan-2020 00:00	22-Jan-2020 00:00	23-Jan-2020 00:00	23-Jan-2020 00:00	23-Jan-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2000814-011	EP2000814-012	EP2000814-013	EP2000814-014	EP2000814-015	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	<10	----	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	<0.02	----	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	----	<0.02	----	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	<0.10	----	----	----	
Carbofenthion	786-19-6	0.02	µg/L	----	<0.02	----	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	<0.02	----	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	<0.02	----	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	<0.2	----	----	----	
Coumaphos	56-72-4	0.01	µg/L	----	<0.01	----	----	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	<0.02	----	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	<0.02	----	----	----	
Demeton-O	298-03-3	0.02	µg/L	----	<0.02	----	----	----	
Demeton-S	126-75-0	0.02	µg/L	----	<0.02	----	----	----	
Diazinon	333-41-5	0.01	µg/L	----	<0.01	----	----	----	
Dichlorvos	62-73-7	0.20	µg/L	----	<0.20	----	----	----	
Dimethoate	60-51-5	0.02	µg/L	----	<0.02	----	----	----	
Disulfoton	298-04-4	0.05	µg/L	----	<0.05	----	----	----	
Ethion	563-12-2	0.02	µg/L	----	<0.02	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BH11.1	UT01	BORR_MW25	BORR_MW24	FB04
Client sampling date / time					22-Jan-2020 00:00	22-Jan-2020 00:00	23-Jan-2020 00:00	23-Jan-2020 00:00	23-Jan-2020 00:00
Compound	CAS Number	LOR	Unit	EP2000814-011	EP2000814-012	EP2000814-013	EP2000814-014	EP2000814-015	
				Result	Result	Result	Result	Result	
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L	----	<0.05	----	----	----	----
Ethoprophos	13194-48-4	0.01	µg/L	----	<0.01	----	----	----	----
Fenamiphos	22224-92-6	0.01	µg/L	----	<0.01	----	----	----	----
Fenchlorphos (Rannel)	299-84-3	10	µg/L	----	<10	----	----	----	----
Fenitrothion	122-14-5	2	µg/L	----	<2	----	----	----	----
Fensulfothion	115-90-2	0.01	µg/L	----	<0.01	----	----	----	----
Fenthion	55-38-9	0.05	µg/L	----	<0.05	----	----	----	----
Malathion	121-75-5	0.02	µg/L	----	<0.02	----	----	----	----
Mevinphos	7786-34-7	0.02	µg/L	----	<0.02	----	----	----	----
Monocrotophos	6923-22-4	0.02	µg/L	----	<0.02	----	----	----	----
Omethoate	1113-02-6	0.01	µg/L	----	<0.01	----	----	----	----
Parathion	56-38-2	0.2	µg/L	----	<0.2	----	----	----	----
Parathion-methyl	298-00-0	0.5	µg/L	----	<0.5	----	----	----	----
Phorate	298-02-2	0.1	µg/L	----	<0.1	----	----	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	----	<0.01	----	----	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L	----	<0.01	----	----	----	----
Profenofos	41198-08-7	0.01	µg/L	----	<0.01	----	----	----	----
Prothiofos	34643-46-4	0.1	µg/L	----	<0.1	----	----	----	----
Sulfotep	3689-24-5	0.005	µg/L	----	<0.005	----	----	----	----
Sulprofos	35400-43-2	0.05	µg/L	----	<0.05	----	----	----	----
Terbufos	13071-79-9	0.01	µg/L	----	<0.01	----	----	----	----
Temephos	3383-96-8	0.02	µg/L	----	<0.02	----	----	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L	----	<0.01	----	----	----	----
Triazophos	24017-47-8	0.005	µg/L	----	<0.005	----	----	----	----
Trichlorfon	52-68-6	0.02	µg/L	----	<0.02	----	----	----	----
Trichloronate	327-98-0	0.5	µg/L	----	<0.5	----	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	104	106	99.2	100	93.9	
Toluene-D8	2037-26-5	2	%	96.3	96.9	112	97.8	100.0	
4-Bromofluorobenzene	460-00-4	2	%	89.2	90.2	104	89.9	106	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB02	TB02 TBW004	MT01	----	----
Client sampling date / time				23-Jan-2020 00:00	23-Jan-2020 00:00	23-Jan-2020 00:00	----	----	
Compound	CAS Number	LOR	Unit	EP2000814-016	EP2000814-017	EP2000814-018	-----	-----	
				Result	Result	Result	----	----	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	----	----	6.51	----	----	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	1660	----	----	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	----	----	1710	----	----	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	<1	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	<1	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	58	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	----	----	58	----	----	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	----	----	27	----	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	2	----	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	----	----	544	----	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	----	----	30	----	----	
Magnesium	7439-95-4	1	mg/L	----	----	26	----	----	
Sodium	7440-23-5	1	mg/L	----	----	267	----	----	
Potassium	7440-09-7	1	mg/L	----	----	28	----	----	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	0.30	----	----	
Arsenic	7440-38-2	0.001	mg/L	----	----	0.005	----	----	
Cadmium	7440-43-9	0.0001	mg/L	----	----	<0.0001	----	----	
Chromium	7440-47-3	0.001	mg/L	----	----	0.003	----	----	
Cobalt	7440-48-4	0.001	mg/L	----	----	0.002	----	----	
Copper	7440-50-8	0.001	mg/L	----	----	0.019	----	----	
Lead	7439-92-1	0.001	mg/L	----	----	0.021	----	----	
Manganese	7439-96-5	0.001	mg/L	----	----	0.079	----	----	
Nickel	7440-02-0	0.001	mg/L	----	----	0.016	----	----	
Selenium	7782-49-2	0.01	mg/L	----	----	<0.01	----	----	
Zinc	7440-66-6	0.005	mg/L	----	----	0.070	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB02	TB02 TBW004	MT01	----	----
Client sampling date / time				23-Jan-2020 00:00	23-Jan-2020 00:00	23-Jan-2020 00:00	----	----	
Compound	CAS Number	LOR	Unit	EP2000814-016	EP2000814-017	EP2000814-018	-----	-----	
				Result	Result	Result	----	----	
<b>EG020F: Dissolved Metals by ICP-MS - Continued</b>									
Iron	7439-89-6	0.05	mg/L	----	----	9.02	----	----	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	10.9	----	----	
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----	
Iron	7439-89-6	0.05	mg/L	----	----	39.2	----	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	----	----	3.78	----	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	----	----	3.77	----	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	----	----	0.03	----	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	----	21.0	----	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	----	----	21.0	----	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	----	----	1.78	----	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	----	0.34	----	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	----	----	<0.1	----	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	----	----	16.5	----	----	
∅ Total Cations	----	0.01	meq/L	----	----	16.0	----	----	
∅ Ionic Balance	----	0.01	%	----	----	1.78	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	----	<20	<20	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB02	TB02 TBW004	MT01	----	----
Client sampling date / time				23-Jan-2020 00:00	23-Jan-2020 00:00	23-Jan-2020 00:00	----	----	
Compound	CAS Number	LOR	Unit	EP2000814-016	EP2000814-017	EP2000814-018	-----	-----	
				Result	Result	Result	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>									
C10 - C14 Fraction	----	50	µg/L	----	----	60	----	----	
C15 - C28 Fraction	----	100	µg/L	----	----	330	----	----	
C29 - C36 Fraction	----	50	µg/L	----	----	120	----	----	
<sup>^</sup> C10 - C36 Fraction (sum)	----	50	µg/L	----	----	510	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	----	<20	<20	----	----	
<sup>^</sup> C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	----	<20	<20	----	----	
>C10 - C16 Fraction	----	100	µg/L	----	----	<100	----	----	
>C16 - C34 Fraction	----	100	µg/L	----	----	390	----	----	
>C34 - C40 Fraction	----	100	µg/L	----	----	<100	----	----	
<sup>^</sup> >C10 - C40 Fraction (sum)	----	100	µg/L	----	----	390	----	----	
<sup>^</sup> >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	----	<100	----	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	----	<1	<1	----	----	
Toluene	108-88-3	2	µg/L	----	<2	<2	----	----	
Ethylbenzene	100-41-4	2	µg/L	----	<2	<2	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	----	<2	<2	----	----	
ortho-Xylene	95-47-6	2	µg/L	----	<2	<2	----	----	
<sup>^</sup> Total Xylenes	----	2	µg/L	----	<2	<2	----	----	
<sup>^</sup> Sum of BTEX	----	1	µg/L	----	<1	<1	----	----	
Naphthalene	91-20-3	5	µg/L	----	<5	<5	----	----	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	----	<10	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	----	<0.02	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	----	----	<0.02	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	----	<0.10	----	----	
Carbofenthion	786-19-6	0.02	µg/L	----	----	<0.02	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	----	<0.02	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	----	<0.02	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	----	<0.2	----	----	
Coumaphos	56-72-4	0.01	µg/L	----	----	<0.01	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB02	TB02 TBW004	MT01	----	----
Client sampling date / time					23-Jan-2020 00:00	23-Jan-2020 00:00	23-Jan-2020 00:00	----	----
Compound	CAS Number	LOR	Unit	EP2000814-016	EP2000814-017	EP2000814-018	-----	-----	
				Result	Result	Result	----	----	
<b>EP234A: OP Pesticides - Continued</b>									
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	----	<0.02	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	----	<0.02	----	----	
Demeton-O	298-03-3	0.02	µg/L	----	----	<0.02	----	----	
Demeton-S	126-75-0	0.02	µg/L	----	----	<0.02	----	----	
Diazinon	333-41-5	0.01	µg/L	----	----	<0.01	----	----	
Dichlorvos	62-73-7	0.20	µg/L	----	----	<0.20	----	----	
Dimethoate	60-51-5	0.02	µg/L	----	----	<0.02	----	----	
Disulfoton	298-04-4	0.05	µg/L	----	----	<0.05	----	----	
Ethion	563-12-2	0.02	µg/L	----	----	<0.02	----	----	
EPN	2104-64-5	0.05	µg/L	----	----	<0.05	----	----	
Ethoprophos	13194-48-4	0.01	µg/L	----	----	<0.01	----	----	
Fenamiphos	22224-92-6	0.01	µg/L	----	----	<0.01	----	----	
Fenchlorphos (Ronnell)	299-84-3	10	µg/L	----	----	<10	----	----	
Fenitrothion	122-14-5	2	µg/L	----	----	<2	----	----	
Fensulfothion	115-90-2	0.01	µg/L	----	----	<0.01	----	----	
Fenthion	55-38-9	0.05	µg/L	----	----	<0.05	----	----	
Malathion	121-75-5	0.02	µg/L	----	----	<0.02	----	----	
Mevinphos	7786-34-7	0.02	µg/L	----	----	<0.02	----	----	
Monocrotophos	6923-22-4	0.02	µg/L	----	----	<0.02	----	----	
Omethoate	1113-02-6	0.01	µg/L	----	----	<0.01	----	----	
Parathion	56-38-2	0.2	µg/L	----	----	<0.2	----	----	
Parathion-methyl	298-00-0	0.5	µg/L	----	----	<0.5	----	----	
Phorate	298-02-2	0.1	µg/L	----	----	<0.1	----	----	
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	----	----	<0.01	----	----	
Pirimiphos-methyl	29232-93-7	0.01	µg/L	----	----	<0.01	----	----	
Profenofos	41198-08-7	0.01	µg/L	----	----	<0.01	----	----	
Prothiofos	34643-46-4	0.1	µg/L	----	----	<0.1	----	----	
Sulfotep	3689-24-5	0.005	µg/L	----	----	<0.005	----	----	
Sulprofos	35400-43-2	0.05	µg/L	----	----	<0.05	----	----	
Terbufos	13071-79-9	0.01	µg/L	----	----	<0.01	----	----	
Temephos	3383-96-8	0.02	µg/L	----	----	<0.02	----	----	
Tetrachlorvinphos	22248-79-9	0.01	µg/L	----	----	<0.01	----	----	
Triazophos	24017-47-8	0.005	µg/L	----	----	<0.005	----	----	
Trichlorfon	52-68-6	0.02	µg/L	----	----	<0.02	----	----	



### Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB02	TB02 TBW004	MT01	----	----
Client sampling date / time					23-Jan-2020 00:00	23-Jan-2020 00:00	23-Jan-2020 00:00	----	----
Compound	CAS Number	LOR	Unit	EP2000814-016	EP2000814-017	EP2000814-018	-----	-----	
				Result	Result	Result	----	----	
<b>EP234A: OP Pesticides - Continued</b>									
Trichloronate	327-98-0	0.5	µg/L	----	----	<0.5	----	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	----	91.9	93.5	----	----	
Toluene-D8	2037-26-5	2	%	----	102	100	----	----	
4-Bromofluorobenzene	460-00-4	2	%	----	110	105	----	----	



## Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	61	141
Toluene-D8	2037-26-5	73	126
4-Bromofluorobenzene	460-00-4	60	125



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP2000814	Page	: 1 of 15
Client	: GHD PTY LTD	Laboratory	: Environmental Division Perth
Contact	: MS VICKI DAVIES	Telephone	: 08 9406 1311
Project	: 6137041	Date Samples Received	: 24-Jan-2020
Site	: ----	Issue Date	: 04-Feb-2020
Sampler	: Ian Oglesby	No. of samples received	: 18
Order number	: 613704108.0831	No. of samples analysed	: 18

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



### Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
EK055G: Ammonia as N by Discrete Analyser	EP2000806--001	Anonymous	Ammonia as N	7664-41-7	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	EP2000806--001	Anonymous	Nitrite + Nitrate as N	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP234A: OP Pesticides	EP2000814--003	Southern 4	Fenchlorphos (Ronnel)	299-84-3	51.3 %	71.0-133%	Recovery less than lower data quality objective

### Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EA005P: pH by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural</b>							
BORR_MW18, Southern 4, BORR_MW19B, North Creek 4, BORR_MW39, UT01	BORR_MW12, FD03, BORR_MW20, BORR_MW22B, BH11.1,	----	----	----	28-Jan-2020	22-Jan-2020	6
<b>Clear Plastic Bottle - Natural</b>							
BORR_MW25, MT01	BORR_MW24,	----	----	----	28-Jan-2020	23-Jan-2020	5
<b>EP234A: OP Pesticides</b>							
<b>Amber Bottle Unpreserved for Specialist Organics</b>							
Southern 4, UT01	North Creek 4,	----	----	----	31-Jan-2020	29-Jan-2020	2
<b>Amber Bottle Unpreserved for Specialist Organics</b>							
MT01		----	----	----	31-Jan-2020	30-Jan-2020	1

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.



Matrix: **WATER** Evaluation: ✘ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA005P: pH by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA005-P)</b> BORR_MW18, Southern 4, BORR_MW19B, North Creek 4, BORR_MW39, UT01	BORR_MW12, FD03, BORR_MW20, BORR_MW22B, BH11.1,	22-Jan-2020	----	----	----	28-Jan-2020	22-Jan-2020	✘
<b>Clear Plastic Bottle - Natural (EA005-P)</b> BORR_MW25, MT01	BORR_MW24,	23-Jan-2020	----	----	----	28-Jan-2020	23-Jan-2020	✘
<b>EA010P: Conductivity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA010-P)</b> BORR_MW18, Southern 4, BORR_MW19B, North Creek 4, BORR_MW39, UT01	BORR_MW12, FD03, BORR_MW20, BORR_MW22B, BH11.1,	22-Jan-2020	----	----	----	28-Jan-2020	19-Feb-2020	✔
<b>Clear Plastic Bottle - Natural (EA010-P)</b> BORR_MW25, MT01	BORR_MW24,	23-Jan-2020	----	----	----	28-Jan-2020	20-Feb-2020	✔
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
<b>Clear Plastic Bottle - Natural (EA015H)</b> BORR_MW18, Southern 4, BORR_MW19B, North Creek 4, BORR_MW39, UT01	BORR_MW12, FD03, BORR_MW20, BORR_MW22B, BH11.1,	22-Jan-2020	----	----	----	28-Jan-2020	29-Jan-2020	✔
<b>Clear Plastic Bottle - Natural (EA015H)</b> BORR_MW25, MT01	BORR_MW24,	23-Jan-2020	----	----	----	28-Jan-2020	30-Jan-2020	✔



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>ED037P: Alkalinity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (ED037-P)</b> BORR_MW18, Southern 4, BORR_MW19B, North Creek 4, BORR_MW39, UT01	BORR_MW12, FD03, BORR_MW20, BORR_MW22B, BH11.1,	22-Jan-2020	----	----	----	28-Jan-2020	05-Feb-2020	✓
<b>Clear Plastic Bottle - Natural (ED037-P)</b> BORR_MW25, MT01	BORR_MW24,	23-Jan-2020	----	----	----	28-Jan-2020	06-Feb-2020	✓
<b>ED038A: Acidity</b>								
<b>Clear Plastic Bottle - Natural (ED038)</b> BORR_MW18, Southern 4, BORR_MW19B, North Creek 4, BORR_MW39, UT01	BORR_MW12, FD03, BORR_MW20, BORR_MW22B, BH11.1,	22-Jan-2020	----	----	----	29-Jan-2020	05-Feb-2020	✓
<b>Clear Plastic Bottle - Natural (ED038)</b> BORR_MW25, MT01	BORR_MW24,	23-Jan-2020	----	----	----	29-Jan-2020	06-Feb-2020	✓
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
<b>Clear Plastic Bottle - Natural (ED041G)</b> BORR_MW18, Southern 4, BORR_MW19B, North Creek 4, BORR_MW39, UT01	BORR_MW12, FD03, BORR_MW20, BORR_MW22B, BH11.1,	22-Jan-2020	----	----	----	24-Jan-2020	19-Feb-2020	✓
<b>Clear Plastic Bottle - Natural (ED041G)</b> BORR_MW25, MT01	BORR_MW24,	23-Jan-2020	----	----	----	24-Jan-2020	20-Feb-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>ED045G: Chloride by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Natural (ED045G)</b> BORR_MW18, Southern 4, BORR_MW19B, North Creek 4, BORR_MW39, UT01	BORR_MW12, FD03, BORR_MW20, BORR_MW22B, BH11.1,	22-Jan-2020	----	----	----	24-Jan-2020	19-Feb-2020	✓
<b>Clear Plastic Bottle - Natural (ED045G)</b> BORR_MW25, MT01	BORR_MW24,	23-Jan-2020	----	----	----	24-Jan-2020	20-Feb-2020	✓
<b>ED093F: Dissolved Major Cations</b>								
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> BORR_MW18, Southern 4, BORR_MW19B, North Creek 4, BORR_MW39, UT01	BORR_MW12, FD03, BORR_MW20, BORR_MW22B, BH11.1,	22-Jan-2020	----	----	----	28-Jan-2020	19-Feb-2020	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> BORR_MW25, MT01	BORR_MW24,	23-Jan-2020	----	----	----	28-Jan-2020	20-Feb-2020	✓
<b>EG020F: Dissolved Metals by ICP-MS</b>								
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> BORR_MW18, Southern 4, BORR_MW19B, North Creek 4, BORR_MW39, UT01	BORR_MW12, FD03, BORR_MW20, BORR_MW22B, BH11.1,	22-Jan-2020	----	----	----	28-Jan-2020	20-Jul-2020	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> BORR_MW25, MT01	BORR_MW24,	23-Jan-2020	----	----	----	28-Jan-2020	21-Jul-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EG020T: Total Metals by ICP-MS</b>								
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> BORR_MW18, Southern 4, BORR_MW19B, North Creek 4, BORR_MW39, UT01	BORR_MW12, FD03, BORR_MW20, BORR_MW22B, BH11.1,	22-Jan-2020	28-Jan-2020	20-Jul-2020	✓	28-Jan-2020	20-Jul-2020	✓
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> BORR_MW25, RB02,	BORR_MW24, MT01	23-Jan-2020	28-Jan-2020	21-Jul-2020	✓	28-Jan-2020	21-Jul-2020	✓
<b>EK055G: Ammonia as N by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> BORR_MW18, Southern 4, BORR_MW19B, North Creek 4, BORR_MW39, UT01	BORR_MW12, FD03, BORR_MW20, BORR_MW22B, BH11.1,	22-Jan-2020	----	----	----	24-Jan-2020	19-Feb-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> BORR_MW25, MT01	BORR_MW24,	23-Jan-2020	----	----	----	24-Jan-2020	20-Feb-2020	✓
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> BORR_MW18, Southern 4, BORR_MW19B, North Creek 4, BORR_MW39, UT01	BORR_MW12, FD03, BORR_MW20, BORR_MW22B, BH11.1,	22-Jan-2020	----	----	----	24-Jan-2020	19-Feb-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> BORR_MW25, MT01	BORR_MW24,	23-Jan-2020	----	----	----	24-Jan-2020	20-Feb-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> BORR_MW18, Southern 4, BORR_MW19B, North Creek 4, BORR_MW39, UT01	BORR_MW12, FD03, BORR_MW20, BORR_MW22B, BH11.1,	22-Jan-2020	29-Jan-2020	19-Feb-2020	✓	29-Jan-2020	19-Feb-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> BORR_MW25, MT01	BORR_MW24,	23-Jan-2020	29-Jan-2020	20-Feb-2020	✓	29-Jan-2020	20-Feb-2020	✓
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> BORR_MW18, Southern 4, BORR_MW19B, North Creek 4, BORR_MW39, UT01	BORR_MW12, FD03, BORR_MW20, BORR_MW22B, BH11.1,	22-Jan-2020	29-Jan-2020	19-Feb-2020	✓	29-Jan-2020	19-Feb-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> BORR_MW25, MT01	BORR_MW24,	23-Jan-2020	29-Jan-2020	20-Feb-2020	✓	29-Jan-2020	20-Feb-2020	✓
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>								
<b>Clear Plastic Bottle - Natural (EK071G)</b> BORR_MW18, Southern 4, BORR_MW19B, North Creek 4, BORR_MW39, UT01	BORR_MW12, FD03, BORR_MW20, BORR_MW22B, BH11.1,	22-Jan-2020	----	----	----	24-Jan-2020	24-Jan-2020	✓
<b>Clear Plastic Bottle - Natural (EK071G)</b> BORR_MW25, MT01	BORR_MW24,	23-Jan-2020	----	----	----	24-Jan-2020	25-Jan-2020	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK085M: Sulfide as S2-</b>								
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> BORR_MW18, Southern 4, BORR_MW19B, North Creek 4, BORR_MW39, UT01	BORR_MW12, FD03, BORR_MW20, BORR_MW22B, BH11.1,	22-Jan-2020	----	----	----	28-Jan-2020	29-Jan-2020	✓
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> BORR_MW25, MT01	BORR_MW24,	23-Jan-2020	----	----	----	28-Jan-2020	30-Jan-2020	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BORR_MW18, Southern 4, BORR_MW19B, North Creek 4, BORR_MW39, UT01	BORR_MW12, FD03, BORR_MW20, BORR_MW22B, BH11.1,	22-Jan-2020	29-Jan-2020	29-Jan-2020	✓	31-Jan-2020	09-Mar-2020	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BORR_MW25, MT01	BORR_MW24,	23-Jan-2020	29-Jan-2020	30-Jan-2020	✓	31-Jan-2020	09-Mar-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BORR_MW18, Southern 4, FB03, BORR_MW20, BORR_MW22B, BH11.1,	BORR_MW12, FD03, BORR_MW19B, North Creek 4, BORR_MW39, UT01	22-Jan-2020	28-Jan-2020	05-Feb-2020	✓	28-Jan-2020	05-Feb-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BORR_MW25, FB04, MT01	BORR_MW24, TB02 - TBW004,	23-Jan-2020	28-Jan-2020	06-Feb-2020	✓	28-Jan-2020	06-Feb-2020	✓





Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>								
<b>Amber Glass Bottle - Unpreserved (EP071)</b>								
BORR_MW18, Southern 4, BORR_MW19B, North Creek 4, BORR_MW39, UT01	BORR_MW12, FD03, BORR_MW20, BORR_MW22B, BH11.1,	22-Jan-2020	29-Jan-2020	29-Jan-2020	✓	31-Jan-2020	09-Mar-2020	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b>								
BORR_MW25, MT01	BORR_MW24,	23-Jan-2020	29-Jan-2020	30-Jan-2020	✓	31-Jan-2020	09-Mar-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
BORR_MW18, Southern 4, FB03, BORR_MW20, BORR_MW22B, BH11.1,	BORR_MW12, FD03, BORR_MW19B, North Creek 4, BORR_MW39, UT01	22-Jan-2020	28-Jan-2020	05-Feb-2020	✓	28-Jan-2020	05-Feb-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
BORR_MW25, FB04, MT01	BORR_MW24, TB02 - TBW004,	23-Jan-2020	28-Jan-2020	06-Feb-2020	✓	28-Jan-2020	06-Feb-2020	✓
<b>EP080: BTEXN</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
BORR_MW18, Southern 4, FB03, BORR_MW20, BORR_MW22B, BH11.1,	BORR_MW12, FD03, BORR_MW19B, North Creek 4, BORR_MW39, UT01	22-Jan-2020	28-Jan-2020	05-Feb-2020	✓	28-Jan-2020	05-Feb-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
BORR_MW25, FB04, MT01	BORR_MW24, TB02 - TBW004,	23-Jan-2020	28-Jan-2020	06-Feb-2020	✓	28-Jan-2020	06-Feb-2020	✓
<b>EP204: Glyphosate and AMPA</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b>								
Southern 4, UT01	North Creek 4,	22-Jan-2020	----	----	----	30-Jan-2020	05-Feb-2020	✓
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b>								
MT01		23-Jan-2020	----	----	----	30-Jan-2020	06-Feb-2020	✓

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 Work Order : EP2000814  
 Client : GHD PTY LTD  
 Project : 6137041



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP234A: OP Pesticides</b>							
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> Southern 4, North Creek 4, UT01	22-Jan-2020	----	----	----	31-Jan-2020	29-Jan-2020	✖
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> MT01	23-Jan-2020	----	----	----	31-Jan-2020	30-Jan-2020	✖



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaural	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity as Calcium Carbonate	ED038	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	4	27	14.81	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	4	33	12.12	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	19	10.53	10.53	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	28	10.71	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	4	33	12.12	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	28	10.71	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Acidity as Calcium Carbonate	ED038	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	19	10.53	10.53	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	19	5.26	5.26	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3)  Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3)  Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ammonium as N	EK055G-NH4	WATER	Ammonium in the sample is reported as the ionised / unionised fractions by the use of a nomograph and the initial pH and Temperature. Ammonia is determined by direct colorimetry by Discrete Analyser according to APHA 4500-NH3 G. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Sulfide as S2-	EK085	WATER	In house: Referenced to APHA 4500-S2- D. Sulfide species present in water samples are immediately precipitated when collected in pretreated caustic/zinc acetate preserved sample containers. The sulphides are coloured using methylene blue indicator. Non-detects may be screened by comparison against a standard at half-LOR, otherwise samples are measured using UV-VIS detection at 664nm. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatle Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Glyphosate and AMPA	EP204	WATER	In house: Pre-column derivatisation LCMS (ES in negative mode). Water samples are derivatised with 9-fluorenyl methoxycarbonyl chloroformate (FMOc) in alkaline condition. The derivatives of glyphosate and AMPA are separated by a C8 column and determined by MS.
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CHAIN OF CUSTODY RECORD  
AND ANALYSIS REQUEST



GHD  
Level 10, 999 Hay Street  
Perth WA 6000

PO Box 3106  
Perth WA 6832

Reception Ph: 08 6222 8222

Project ID (as per ESdat set up; no spaces)  
6137041

PO Number (to be invoiced)  
613704108.0831

Laboratory: ~~Perth WA 6000~~  
Address: ~~Perth WA 6000~~  
Laboratory Contact: ~~Perth WA 6000~~

Laboratory Quote No.  
ALS EP/489/19 V4

Turnaround Time  
Standard

Job Manager (Invoice) & GHD accounts  
Julia Roberts  
Vicki Davies

Email Address (Results)  
vicki.davies@ghd.com  
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GHD Sample ID	Lab Sample ID	Date	Time	Sample Matrix (Soil/Sediment/Water/Air)	Container				Analyses					Remarks		
					Type (Bottle/Can/Plastic/Other)	Preservative (None/HC/PC/Other)	No.	GW suite	EW suite	insuite	field blank	trip blank	HOLD			
BORR-MW18	1	22.1.20					8	X								
BORR-MW12	2	↑					8	X								
Southern 4	3	↓					12			X						
<del>W18</del> F003	4	↓					8	X								
<del>W18</del> F003	5	22.1.20					1				X					
BORR-MW19B	6	↑					8	X								
BORR-MW20	7	↓					8	X								
North Creek 4	8	↓					10			X						
BORR-MW22B	9	↓					8	X								
BORR-MW39	10	↓					8	X								
BH11.1	11	↓					8	X								
UTO1	12	22.1.20					10			X						
BORR-MW25	13	23.1.20					10	X								
BORR-MW24	14	↓					8	X								
F004	15	↓					1				X					
R002	16	↓					1			X						
T002	17	↓					1					X				

Environmental Division  
Perth  
Work Order Reference  
EP2000814



Telephone: +61-8-9406 1301

Sampled by: Ian Ogilby  
Received by: MD

Date/Time: 23.1.20  
Date/Time: 24/1/20

Relinquished by: Ian Ogilby  
Relinquished by:

Date/Time: 23.1.20  
Date/Time:





GHD Pty Ltd WA  
999 Hay Street Perth  
Perth  
WA 6004



NATA Accredited  
Accreditation Number 1261  
Site Number 23736

Accredited for compliance with ISO/IEC 17025 – Testing  
The results of the tests, calibrations and/or  
measurements included in this document are traceable  
to Australian/national standards.

Attention: **Julia Roberts**

Report **698442-W**

Project name

Project ID **6137041**

Received Date **Jan 24, 2020**

Client Sample ID			<b>FS01</b>
Sample Matrix			<b>Water</b>
Eurofins Sample No.			<b>P20-Ja23488</b>
Date Sampled			<b>Jan 22, 2020</b>
Test/Reference	LOR	Unit	
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>			
TRH C6-C9	0.02	mg/L	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1
TRH C10-C36 (Total)	0.1	mg/L	< 0.1
<b>BTEX</b>			
Benzene	0.001	mg/L	< 0.001
Toluene	0.001	mg/L	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002
o-Xylene	0.001	mg/L	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003
4-Bromofluorobenzene (surr.)	1	%	61
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>			
Naphthalene <sup>N02</sup>	0.01	mg/L	< 0.01
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	0.05	mg/L	< 0.05
TRH C6-C10	0.02	mg/L	< 0.02
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	0.02	mg/L	< 0.02
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>			
TRH >C10-C16	0.05	mg/L	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1
<b>Acidity (as CaCO3)</b>			
Acidity (as CaCO3)	10	mg/L	11
<b>Ammonia (as N)</b>			
Ammonia (as N)	0.01	mg/L	0.27
<b>Ammonium Ion (as N)</b>			
Ammonium Ion (as N)	0.01	mg/L	0.29
<b>Chloride</b>			
Chloride	1	mg/L	120
<b>Conductivity (at 25°C)</b>			
Conductivity (at 25°C)	10	uS/cm	530
<b>Nitrate &amp; Nitrite (as N)</b>			
Nitrate & Nitrite (as N)	0.05	mg/L	0.69
<b>pH (at 25°C)</b>			
pH (at 25°C)	0.1	pH Units	6.0
<b>Phosphate total (as P)</b>			
Phosphate total (as P)	0.01	mg/L	0.04
<b>Phosphorus filterable reactive (as P)</b>			
Phosphorus filterable reactive (as P)	0.01	mg/L	< 0.01
<b>Sulphate (as S)</b>			
Sulphate (as S)	5	mg/L	13
<b>Total Dissolved Solids Dried at 180°C ± 2°C</b>			
Total Dissolved Solids Dried at 180°C ± 2°C	10	mg/L	310

Client Sample ID			<b>FS01</b>
Sample Matrix			<b>Water</b>
Eurofins Sample No.			<b>P20-Ja23488</b>
Date Sampled			<b>Jan 22, 2020</b>
Test/Reference	LOR	Unit	
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4
Total Nitrogen (as N)*	0.2	mg/L	1.09
<b>Alkalinity (speciated)</b>			
Total Alkalinity (as CaCO <sub>3</sub> )	20	mg/L	41
<b>Heavy Metals</b>			
Aluminium	0.05	mg/L	0.18
Aluminium (filtered)	0.05	mg/L	< 0.05
Arsenic (filtered)	0.001	mg/L	0.002
Cadmium (filtered)	0.0002	mg/L	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001
Cobalt	0.001	mg/L	< 0.001
Copper	0.001	mg/L	< 0.001
Iron	0.05	mg/L	3.3
Iron (filtered)	0.05	mg/L	2.5
Lead	0.001	mg/L	< 0.001
Manganese	0.005	mg/L	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005
Nickel (filtered)	0.001	mg/L	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001
Zinc (filtered)	0.005	mg/L	< 0.005
<b>Alkali Metals</b>			
Potassium	0.5	mg/L	6.8
Sodium	0.5	mg/L	76

**Sample History**

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

<b>Description</b>	<b>Testing Site</b>	<b>Extracted</b>	<b>Holding Time</b>
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Perth	Jan 24, 2020	7 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Perth	Jan 24, 2020	7 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Perth	Jan 24, 2020	
<b>BTEX and Naphthalene</b>			
BTEX - Method: LTM-ORG-2010 TRH C6-C40	Perth	Jan 24, 2020	14 Days
<b>ASS Groundwater Quality Suite - WA Department of Environment and Conservation</b>			
Acidity (as CaCO <sub>3</sub> ) - Method: LTM-INO-4210 Acidity	Melbourne	Jan 28, 2020	14 Days
Ammonia (as N) - Method: LTM-INO-4200 Ammonia by Discrete Analyser	Perth	Jan 24, 2020	28 Days
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Jan 28, 2020	28 Days
Conductivity (at 25°C) - Method: LTM-INO-4030 Conductivity	Melbourne	Jan 28, 2020	28 Days
pH (at 25°C) - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Jan 28, 2020	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorus	Melbourne	Jan 28, 2020	28 Days
Phosphorus filterable reactive (as P) - Method: APHA 4500-P Phosphate (filterable reactive)	Melbourne	Jan 28, 2020	2 Days
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Jan 28, 2020	28 Days
Total Dissolved Solids Dried at 180°C ± 2°C - Method: LTM-INO-4170 Total Dissolved Solids in Water	Melbourne	Jan 28, 2020	7 Days
Alkalinity (speciated) - Method: LTM-INO-4250 Alkalinity by Electrometric Titration	Melbourne	Jan 28, 2020	14 Days
Heavy Metals - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Melbourne	Jan 28, 2020	180 Days
Acid Sulphate Metals : Metals M9 filtered - Method:	Perth	Jan 24, 2020	180 Days
Alkali Metals - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS - Method: LTM-MET-3010 Alkali Metals Sulfur Silicon Phosphorus by ICP-AES	Melbourne	Jan 28, 2020	180 Days
Ammonium Ion (as N) - Method: APHA 4500-NH <sub>3</sub> Ammonia Nitrogen by FIA	Perth	Jan 24, 2020	7 Days
<b>Total Nitrogen Set (as N)</b>			
Nitrate & Nitrite (as N) - Method: LTM-INO-4120 Analysis of NO <sub>x</sub> NO <sub>2</sub> NH <sub>3</sub> by FIA	Melbourne	Jan 28, 2020	28 Days
Total Kjeldahl Nitrogen (as N) - Method: LTM-INO-4310 TKN in Waters & Soils by FIA	Melbourne	Jan 28, 2020	7 Days

**Australia**

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Site # 1254 & 14271

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Rolleston, Christchurch 7675  
Phone : 0800 856 450  
IANZ # 1290

**Company Name:** GHD Pty Ltd WA  
**Address:** 999 Hay Street Perth  
Perth  
WA 6004

**Order No.:** 613704108.0831  
**Report #:** 698442  
**Phone:** 08 6222 8222  
**Fax:** 08 9429 6555

**Received:** Jan 24, 2020 8:50 AM  
**Due:** Jan 30, 2020  
**Priority:** 3 Day  
**Contact Name:** Julia Roberts

**Project Name:**  
**Project ID:** 6137041

**Eurofins Analytical Services Manager : Robert Johnston**

Sample Detail						Ammonium Ion (as N)	Cobalt	Copper	Lead	Manganese	Potassium	ASS Groundwater Quality Suite - WA Department of Environment and	BTEX and Naphthalene	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271												X		
Sydney Laboratory - NATA Site # 18217														
Brisbane Laboratory - NATA Site # 20794														
Perth Laboratory - NATA Site # 23736						X	X	X	X	X	X	X	X	X
External Laboratory														
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID									
1	FS01	Jan 22, 2020		Water	P20-Ja23488	X	X	X	X	X	X	X	X	X
<b>Test Counts</b>						1	1	1	1	1	1	1	1	1

## Internal Quality Control Review and Glossary

### General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

### Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

**\*\*NOTE:** pH duplicates are reported as a range NOT as RPD

### Units

**mg/kg:** milligrams per kilogram

**mg/L:** milligrams per litre

**ug/L:** micrograms per litre

**ppm:** Parts per million

**ppb:** Parts per billion

**%:** Percentage

**org/100mL:** Organisms per 100 millilitres

**NTU:** Nephelometric Turbidity Units

**MPN/100mL:** Most Probable Number of organisms per 100 millilitres

### Terms

<b>Dry</b>	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
<b>LOR</b>	Limit of Reporting.
<b>SPIKE</b>	Addition of the analyte to the sample and reported as percentage recovery.
<b>RPD</b>	Relative Percent Difference between two Duplicate pieces of analysis.
<b>LCS</b>	Laboratory Control Sample - reported as percent recovery.
<b>CRM</b>	Certified Reference Material - reported as percent recovery.
<b>Method Blank</b>	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
<b>Surr - Surrogate</b>	The addition of a like compound to the analyte target and reported as percentage recovery.
<b>Duplicate</b>	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
<b>USEPA</b>	United States Environmental Protection Agency
<b>APHA</b>	American Public Health Association
<b>TCLP</b>	Toxicity Characteristic Leaching Procedure
<b>COC</b>	Chain of Custody
<b>SRA</b>	Sample Receipt Advice
<b>QSM</b>	US Department of Defense Quality Systems Manual Version 5.3
<b>CP</b>	Client Parent - QC was performed on samples pertaining to this report
<b>NCP</b>	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
<b>TEQ</b>	Toxic Equivalency Quotient

### QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

### QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

**Quality Control Results**

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
<b>Method Blank</b>							
<b>BTEX</b>							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
<b>Method Blank</b>							
Acidity (as CaCO <sub>3</sub> )	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Conductivity (at 25°C)	uS/cm	< 10			10	Pass	
Phosphate total (as P)	mg/L	< 0.01			0.01	Pass	
Phosphorus filterable reactive (as P)	mg/L	< 0.01			0.01	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
<b>Method Blank</b>							
<b>Alkalinity (speciated)</b>							
Total Alkalinity (as CaCO <sub>3</sub> )	mg/L	< 20			20	Pass	
<b>Method Blank</b>							
<b>Heavy Metals</b>							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
<b>Method Blank</b>							
<b>Alkali Metals</b>							
Sodium	mg/L	< 0.5			0.5	Pass	
<b>LCS - % Recovery</b>							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>								
TRH C6-C9	%	86			70-130	Pass		
TRH C10-C14	%	82			70-130	Pass		
<b>LCS - % Recovery</b>								
<b>BTEX</b>								
Benzene	%	75			70-130	Pass		
Toluene	%	79			70-130	Pass		
Ethylbenzene	%	87			70-130	Pass		
m&p-Xylenes	%	88			70-130	Pass		
Xylenes - Total	%	88			70-130	Pass		
<b>LCS - % Recovery</b>								
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>								
Naphthalene	%	92			70-130	Pass		
TRH C6-C10	%	86			70-130	Pass		
<b>LCS - % Recovery</b>								
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>								
TRH >C10-C16	%	79			70-130	Pass		
<b>LCS - % Recovery</b>								
Chloride	%	104			70-130	Pass		
Conductivity (at 25°C)	%	91			70-130	Pass		
Nitrate & Nitrite (as N)	%	115			70-130	Pass		
Phosphate total (as P)	%	98			70-130	Pass		
Sulphate (as S)	%	118			70-130	Pass		
Total Dissolved Solids Dried at 180°C ± 2°C	%	101			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	91			70-130	Pass		
<b>LCS - % Recovery</b>								
<b>Alkalinity (speciated)</b>								
Total Alkalinity (as CaCO <sub>3</sub> )	%	106			70-130	Pass		
<b>LCS - % Recovery</b>								
<b>Heavy Metals</b>								
Aluminium	%	109			80-120	Pass		
Aluminium (filtered)	%	108			80-120	Pass		
Arsenic (filtered)	%	106			80-120	Pass		
Cadmium (filtered)	%	106			80-120	Pass		
Chromium (filtered)	%	108			80-120	Pass		
Iron	%	101			80-120	Pass		
Iron (filtered)	%	106			80-120	Pass		
Manganese (filtered)	%	105			80-120	Pass		
Nickel (filtered)	%	104			80-120	Pass		
Selenium (filtered)	%	103			80-120	Pass		
Zinc (filtered)	%	103			80-120	Pass		
<b>LCS - % Recovery</b>								
<b>Alkali Metals</b>								
Sodium	%	97			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
<b>Spike - % Recovery</b>								
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>				Result 1				
TRH C6-C9	P20-Ja24343	NCP	%	79		70-130	Pass	
TRH C10-C14	P20-Ja22884	NCP	%	87		70-130	Pass	
<b>Spike - % Recovery</b>								
<b>BTEX</b>				Result 1				
Benzene	P20-Ja24343	NCP	%	76		70-130	Pass	
Toluene	P20-Ja24343	NCP	%	71		70-130	Pass	
Ethylbenzene	P20-Ja24343	NCP	%	78		70-130	Pass	



Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
m&p-Xylenes	P20-Ja24343	NCP	%	77			70-130	Pass	
o-Xylene	P20-Ja24343	NCP	%	77			70-130	Pass	
Xylenes - Total	P20-Ja24343	NCP	%	77			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1					
Naphthalene	P20-Ja24343	NCP	%	86			70-130	Pass	
TRH C6-C10	P20-Ja24343	NCP	%	79			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1					
TRH >C10-C16	P20-Ja22884	NCP	%	104			70-130	Pass	
<b>Spike - % Recovery</b>									
				Result 1					
Chloride	M20-Ja21764	NCP	%	77			70-130	Pass	
Sulphate (as S)	M20-Ja21764	NCP	%	90			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Alkalinity (speciated)</b>				Result 1					
Total Alkalinity (as CaCO3)	M20-Ja25420	NCP	%	130			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Heavy Metals</b>				Result 1					
Aluminium	M20-Ja20451	NCP	%	65			75-125	Fail	Q08
Aluminium (filtered)	P20-Ja24343	NCP	%	98			75-125	Pass	
Arsenic (filtered)	P20-Ja24343	NCP	%	106			70-130	Pass	
Cadmium (filtered)	P20-Ja24343	NCP	%	100			70-130	Pass	
Chromium (filtered)	P20-Ja24343	NCP	%	98			70-130	Pass	
Cobalt	P20-Ja24343	NCP	%	100			75-125	Pass	
Copper	P20-Ja24343	NCP	%	95			75-125	Pass	
Iron	M20-Ja20451	NCP	%	50			75-125	Fail	Q08
Iron (filtered)	P20-Ja24343	NCP	%	92			70-130	Pass	
Lead	P20-Ja24343	NCP	%	102			75-125	Pass	
Manganese	P20-Ja24343	NCP	%	108			75-125	Pass	
Manganese (filtered)	P20-Ja24343	NCP	%	83			70-130	Pass	
Nickel (filtered)	P20-Ja24343	NCP	%	91			70-130	Pass	
Selenium (filtered)	P20-Ja24343	NCP	%	108			70-130	Pass	
Zinc (filtered)	P20-Ja24343	NCP	%	96			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Alkali Metals</b>				Result 1					
Potassium	P20-Ja24343	NCP	%	110			70-130	Pass	
Sodium	S20-Ja19724	NCP	%	92			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Duplicate</b>									
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>				Result 1	Result 2	RPD			
TRH C6-C9	P20-Ja23488	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	P20-Ja23488	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	P20-Ja23488	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	P20-Ja23488	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
<b>Duplicate</b>									
<b>BTEX</b>				Result 1	Result 2	RPD			
Benzene	P20-Ja23488	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	P20-Ja23488	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	P20-Ja23488	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	P20-Ja23488	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	P20-Ja23488	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	P20-Ja23488	CP	mg/L	< 0.003	< 0.003	<1	30%	Pass	

Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	P20-Ja23488	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass
TRH C6-C10	P20-Ja23488	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
TRH >C10-C16	P20-Ja23488	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH >C16-C34	P20-Ja23488	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH >C34-C40	P20-Ja23488	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO <sub>3</sub> )	M20-Ja24691	NCP	mg/L	63	75	17	30%	Pass
Chloride	P20-Ja27204	NCP	mg/L	88	88	<1	30%	Pass
Conductivity (at 25°C)	M20-Ja21889	NCP	uS/cm	230	230	2.0	30%	Pass
Nitrate & Nitrite (as N)	M20-Ja26435	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
pH (at 25°C)	M20-Ja21889	NCP	pH Units	4.0	4.0	pass	30%	Pass
Phosphate total (as P)	P20-Ja22311	NCP	mg/L	0.04	0.03	21	30%	Pass
Sulphate (as S)	P20-Ja27204	NCP	mg/L	200	200	<1	30%	Pass
Total Dissolved Solids Dried at 180°C ± 2°C	M20-Ja24700	NCP	mg/L	1800	2000	10	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Total Alkalinity (as CaCO <sub>3</sub> )	M20-Ja21889	NCP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M20-Ja20451	NCP	mg/L	3.7	3.6	2.0	30%	Pass
Aluminium (filtered)	P20-Ja24228	NCP	mg/L	< 0.05	0.05	83	30%	Fail Q15
Arsenic (filtered)	P20-Ja24228	NCP	mg/L	0.001	0.002	9.0	30%	Pass
Cadmium (filtered)	P20-Ja24228	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium (filtered)	P20-Ja24228	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M20-Ja20451	NCP	mg/L	5.2	5.1	2.0	30%	Pass
Iron (filtered)	P20-Ja24228	NCP	mg/L	0.19	0.22	15	30%	Pass
Manganese (filtered)	P20-Ja24228	NCP	mg/L	0.005	0.006	17	30%	Pass
Nickel (filtered)	P20-Ja24228	NCP	mg/L	0.002	0.002	6.0	30%	Pass
Selenium (filtered)	P20-Ja24228	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	P20-Ja24228	NCP	mg/L	0.009	0.014	41	30%	Fail Q15
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Sodium	S20-Ja19724	NCP	mg/L	76	78	2.0	30%	Pass

**Comments**
**Sample Integrity**

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	N/A
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	N/A
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

**Qualifier Codes/Comments**

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

**Authorised By**

Robert Johnston	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (WA)
Andrew Sullivan	Senior Analyst-Volatile (WA)
Elden Garrett	Senior Analyst-Metal (WA)
Emily Rosenberg	Senior Analyst-Metal (VIC)
Julie Kay	Senior Analyst-Inorganic (VIC)
Rhys Thomas	Senior Analyst-Inorganic (WA)
Scott Beddoes	Senior Analyst-Inorganic (VIC)


**Glenn Jackson  
General Manager**

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

\* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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## CERTIFICATE OF ANALYSIS

**Work Order** : **EP2001737**  
**Client** : **GHD PTY LTD**  
**Contact** : **MS VICKI DAVIES**  
**Address** : **999 HAY STREET**  
**PERTH WA, AUSTRALIA 6000**  
**Telephone** : **----**  
**Project** : **6137041**  
**Order number** : **6137041 08.0831**  
**C-O-C number** : **----**  
**Sampler** : **Pascale Ketelaar**  
**Site** : **----**  
**Quote number** : **EP/489/19 V4**  
**No. of samples received** : **26**  
**No. of samples analysed** : **26**

**Page** : 1 of 22  
**Laboratory** : Environmental Division Perth  
**Contact** : Marnie Thomsett  
**Address** : 26 Rigali Way Wangara WA Australia 6065  
**Telephone** : 08 9406 1311  
**Date Samples Received** : 19-Feb-2020 12:30  
**Date Analysis Commenced** : 19-Feb-2020  
**Issue Date** : 27-Feb-2020 22:10



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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
David Viner	SENIOR LAB TECH	Perth Organics, Wangara, WA
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EG020: Metals LOR for sample EP2001737-022 raised due to high TDS content.
- EP204 and EP234-1 conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- ED041G (Turbidimetric Sulfate): LOR raised on sample #2 due to possible sample matrix interference.
- EK055G (Ammonia): LOR raised on sample #2 due to possible sample matrix interference.
- ED041G (Sulfate Turbidimetric): LOR for sample EP2001737-024 raised due to possible sample matrix interference.
- EG020F: Results for aluminium, copper, iron, nickel, zinc for samples EP2001737-004, 006, 013, 014, 020, 023 have been confirmed by re-analysis.
- TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		BH32.1	SW09	SW08	North Creek 2	SW07
Client sampling date / time				17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00
Compound	CAS Number	LOR	Unit	EP2001737-001	EP2001737-002	EP2001737-003	EP2001737-004	EP2001737-005
				Result	Result	Result	Result	Result
<b>EA005P: pH by PC Titrator</b>								
pH Value	----	0.01	pH Unit	5.97	7.48	7.13	6.95	7.17
<b>EA010P: Conductivity by PC Titrator</b>								
Electrical Conductivity @ 25°C	----	1	µS/cm	1140	1170	1360	795	1360
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
Total Dissolved Solids @180°C	----	10	mg/L	671	698	857	472	816
<b>ED037P: Alkalinity by PC Titrator</b>								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	23	246	30	21	31
Total Alkalinity as CaCO3	----	1	mg/L	23	246	30	21	31
<b>ED038A: Acidity</b>								
Acidity as CaCO3	----	1	mg/L	18	13	7	7	6
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	27	<10	33	24	33
<b>ED045G: Chloride by Discrete Analyser</b>								
Chloride	16887-00-6	1	mg/L	380	320	464	258	448
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	5	15	15	5	15
Magnesium	7439-95-4	1	mg/L	24	13	38	17	38
Sodium	7440-23-5	1	mg/L	188	224	194	126	198
Potassium	7440-09-7	1	mg/L	7	10	9	8	9
<b>EG020F: Dissolved Metals by ICP-MS</b>								
Aluminium	7429-90-5	0.01	mg/L	0.04	0.05	<0.01	<0.01	0.03
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.001	<0.001	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	0.001	<0.001	<0.001	0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.016	0.013	<0.001	<0.001	0.016
Lead	7439-92-1	0.001	mg/L	0.001	<0.001	<0.001	<0.001	0.002
Manganese	7439-96-5	0.001	mg/L	0.069	0.118	0.119	0.114	0.121
Nickel	7440-02-0	0.001	mg/L	0.012	0.011	<0.001	0.001	0.010
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	0.065	0.044	0.005	0.011	0.075
Iron	7439-89-6	0.05	mg/L	6.30	1.13	0.13	0.12	0.14



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BH32.1	SW09	SW08	North Creek 2	SW07
Client sampling date / time				17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2001737-001	EP2001737-002	EP2001737-003	EP2001737-004	EP2001737-005	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	2.60	0.87	0.06	0.03	0.04	
Iron	7439-89-6	0.05	mg/L	16.8	10.2	1.94	1.98	1.89	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.12	<0.02	0.01	<0.01	<0.01	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.12	<0.01	<0.01	<0.01	<0.01	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.02	<0.01	0.02	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	1.6	0.3	<0.1	0.3	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.2	1.6	0.3	<0.1	0.3	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.16	0.20	0.07	0.01	0.04	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.02	0.02	<0.01	0.02	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	11.7	13.9	14.4	8.20	13.9	
∅ Total Cations	----	0.01	meq/L	10.6	11.8	12.5	7.33	12.7	
∅ Ionic Balance	----	0.01	%	5.20	8.25	6.80	5.56	4.60	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	140	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	70	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	210	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BH32.1	SW09	SW08	North Creek 2	SW07
Client sampling date / time					17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00
Compound	CAS Number	LOR	Unit	EP2001737-001	EP2001737-002	EP2001737-003	EP2001737-004	EP2001737-005	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	190	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	190	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	<10	<10	<10	<10	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02	
Azinphos-methyl	86-50-0	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	<0.10	<0.10	<0.10	<0.10	
Carbofenthiol	786-19-6	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	<0.2	<0.2	<0.2	<0.2	
Coumaphos	56-72-4	0.01	µg/L	----	<0.01	<0.01	<0.01	<0.01	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02	
Demeton-O	298-03-3	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02	
Demeton-S	126-75-0	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02	
Diazinon	333-41-5	0.01	µg/L	----	<0.01	<0.01	<0.01	<0.01	
Dichlorvos	62-73-7	0.20	µg/L	----	<0.20	<0.20	<0.20	<0.20	
Dimethoate	60-51-5	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02	
Disulfoton	298-04-4	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05	
Ethion	563-12-2	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BH32.1	SW09	SW08	North Creek 2	SW07
Client sampling date / time					17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00
Compound	CAS Number	LOR	Unit	EP2001737-001	EP2001737-002	EP2001737-003	EP2001737-004	EP2001737-005	
				Result	Result	Result	Result	Result	
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05	
Ethoprophos	13194-48-4	0.01	µg/L	----	<0.01	<0.01	<0.01	<0.01	
Fenamiphos	22224-92-6	0.01	µg/L	----	<0.01	<0.01	<0.01	<0.01	
Fenchlorphos (Ronnell)	299-84-3	10	µg/L	----	<10	<10	<10	<10	
Fenitrothion	122-14-5	2	µg/L	----	<2	<2	<2	<2	
Fensulfothion	115-90-2	0.01	µg/L	----	<0.01	<0.01	<0.01	<0.01	
Fenthion	55-38-9	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05	
Malathion	121-75-5	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02	
Mevinphos	7786-34-7	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02	
Monocrotophos	6923-22-4	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02	
Omethoate	1113-02-6	0.01	µg/L	----	<0.01	<0.01	<0.01	<0.01	
Parathion	56-38-2	0.2	µg/L	----	<0.2	<0.2	<0.2	<0.2	
Parathion-methyl	298-00-0	0.5	µg/L	----	<0.5	<0.5	<0.5	<0.5	
Phorate	298-02-2	0.1	µg/L	----	<0.1	<0.1	<0.1	<0.1	
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	----	<0.01	<0.01	<0.01	<0.01	
Pirimiphos-methyl	29232-93-7	0.01	µg/L	----	<0.01	<0.01	<0.01	<0.01	
Profenofos	41198-08-7	0.01	µg/L	----	<0.01	<0.01	<0.01	<0.01	
Prothiofos	34643-46-4	0.1	µg/L	----	<0.1	<0.1	<0.1	<0.1	
Sulfotep	3689-24-5	0.005	µg/L	----	<0.005	<0.005	<0.005	<0.005	
Sulprofos	35400-43-2	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05	
Terbufos	13071-79-9	0.01	µg/L	----	<0.01	<0.01	<0.01	<0.01	
Temephos	3383-96-8	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02	
Tetrachlorvinphos	22248-79-9	0.01	µg/L	----	<0.01	<0.01	<0.01	<0.01	
Triazophos	24017-47-8	0.005	µg/L	----	<0.005	<0.005	<0.005	<0.005	
Trichlorfon	52-68-6	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02	
Trichloronate	327-98-0	0.5	µg/L	----	<0.5	<0.5	<0.5	<0.5	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	93.8	98.2	96.6	98.0	89.1	
Toluene-D8	2037-26-5	2	%	98.1	98.4	98.0	99.1	98.2	
4-Bromofluorobenzene	460-00-4	2	%	91.6	92.1	92.0	96.2	95.8	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FD01	TBW083	FB01	BORR_MW15	BORR_MW19b
Client sampling date / time				17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2001737-006	EP2001737-007	EP2001737-008	EP2001737-009	EP2001737-010	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	7.05	----	----	6.39	6.70	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	807	----	----	156	2050	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	465	----	----	117	1220	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	20	----	----	14	52	
Total Alkalinity as CaCO3	----	1	mg/L	20	----	----	14	52	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	8	----	----	14	19	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	24	----	----	5	32	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	260	----	----	32	635	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	5	----	----	3	17	
Magnesium	7439-95-4	1	mg/L	18	----	----	3	48	
Sodium	7440-23-5	1	mg/L	125	----	----	18	317	
Potassium	7440-09-7	1	mg/L	8	----	----	5	6	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	<0.01	----	----	0.22	0.04	
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	<0.001	0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	0.001	----	----	<0.001	0.002	
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	0.009	0.009	
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	0.001	0.001	
Manganese	7439-96-5	0.001	mg/L	0.117	----	----	0.007	0.130	
Nickel	7440-02-0	0.001	mg/L	0.002	----	----	0.014	0.008	
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.008	----	----	0.090	0.076	
Iron	7439-89-6	0.05	mg/L	0.09	----	----	2.68	4.98	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FD01	TBW083	FB01	BORR_MW15	BORR_MW19b
Client sampling date / time					17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00
Compound	CAS Number	LOR	Unit		EP2001737-006	EP2001737-007	EP2001737-008	EP2001737-009	EP2001737-010
					Result	Result	Result	Result	Result
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L		0.03	----	----	3.49	1.35
Iron	7439-89-6	0.05	mg/L		1.95	----	----	9.16	6.20
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L		0.01	----	----	0.93	0.04
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L		<0.01	----	----	0.93	0.04
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L		0.01	----	----	<0.01	<0.01
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		<0.1	----	----	1.0	<0.1
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L		<0.1	----	----	1.0	<0.1
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L		0.02	----	----	0.08	0.02
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	----	----	<0.01	<0.01
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L		<0.1	----	----	0.1	<0.1
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L		8.23	----	----	1.29	19.6
∅ Total Cations	----	0.01	meq/L		7.37	----	----	1.31	18.7
∅ Ionic Balance	----	0.01	%		5.52	----	----	0.81	2.28
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	----	----	<50	<50
C15 - C28 Fraction	----	100	µg/L		<100	----	----	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	----	----	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	----	----	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L		<100	----	----	<100	<100



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FD01	TBW083	FB01	BORR_MW15	BORR_MW19b
Client sampling date / time					17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00
Compound	CAS Number	LOR	Unit	EP2001737-006	EP2001737-007	EP2001737-008	EP2001737-009	EP2001737-010	EP2001737-010
				Result	Result	Result	Result	Result	Result
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	----	----	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	----	----	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	----	----	<100	<100	<100
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	<5
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	<10	----	----	----	----	----
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	----	----	----	----	----
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	----	----	----	----	----
Carbofenthion	786-19-6	0.02	µg/L	<0.02	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	----	----	----	----	----
Coumaphos	56-72-4	0.01	µg/L	<0.01	----	----	----	----	----
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	----	----	----	----	----
Demeton-O	298-03-3	0.02	µg/L	<0.02	----	----	----	----	----
Demeton-S	126-75-0	0.02	µg/L	<0.02	----	----	----	----	----
Diazinon	333-41-5	0.01	µg/L	<0.01	----	----	----	----	----
Dichlorvos	62-73-7	0.20	µg/L	<0.20	----	----	----	----	----
Dimethoate	60-51-5	0.02	µg/L	<0.02	----	----	----	----	----
Disulfoton	298-04-4	0.05	µg/L	<0.05	----	----	----	----	----
Ethion	563-12-2	0.02	µg/L	<0.02	----	----	----	----	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FD01	TBW083	FB01	BORR_MW15	BORR_MW19b
Client sampling date / time					17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00
Compound	CAS Number	LOR	Unit	EP2001737-006	EP2001737-007	EP2001737-008	EP2001737-009	EP2001737-010	
				Result	Result	Result	Result	Result	
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L	<0.05	----	----	----	----	----
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	----	----	----	----	----
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	----	----	----	----	----
Fenclorphos (Rannel)	299-84-3	10	µg/L	<10	----	----	----	----	----
Fenitrothion	122-14-5	2	µg/L	<2	----	----	----	----	----
Fensulfothion	115-90-2	0.01	µg/L	<0.01	----	----	----	----	----
Fenthion	55-38-9	0.05	µg/L	<0.05	----	----	----	----	----
Malathion	121-75-5	0.02	µg/L	<0.02	----	----	----	----	----
Mevinphos	7786-34-7	0.02	µg/L	<0.02	----	----	----	----	----
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	----	----	----	----	----
Omethoate	1113-02-6	0.01	µg/L	<0.01	----	----	----	----	----
Parathion	56-38-2	0.2	µg/L	<0.2	----	----	----	----	----
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	----	----	----	----	----
Phorate	298-02-2	0.1	µg/L	<0.1	----	----	----	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	----	----	----	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	----	----	----	----	----
Profenofos	41198-08-7	0.01	µg/L	<0.01	----	----	----	----	----
Prothiofos	34643-46-4	0.1	µg/L	<0.1	----	----	----	----	----
Sulfotep	3689-24-5	0.005	µg/L	<0.005	----	----	----	----	----
Sulprofos	35400-43-2	0.05	µg/L	<0.05	----	----	----	----	----
Terbufos	13071-79-9	0.01	µg/L	<0.01	----	----	----	----	----
Temephos	3383-96-8	0.02	µg/L	<0.02	----	----	----	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	----	----	----	----	----
Triazophos	24017-47-8	0.005	µg/L	<0.005	----	----	----	----	----
Trichlorfon	52-68-6	0.02	µg/L	<0.02	----	----	----	----	----
Trichloronate	327-98-0	0.5	µg/L	<0.5	----	----	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	86.6	95.9	95.6	103	107	
Toluene-D8	2037-26-5	2	%	97.0	102	105	102	102	
4-Bromofluorobenzene	460-00-4	2	%	89.4	101	99.3	106	100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Northern 5	BORR_MW18	FD02	BORR_MW13	TBW079
Client sampling date / time				17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2001737-011	EP2001737-012	EP2001737-013	EP2001737-014	EP2001737-015	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	7.98	4.97	6.91	6.89	----	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	1980	404	853	849	----	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	1100	282	597	599	----	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	250	<1	277	276	----	
Total Alkalinity as CaCO3	----	1	mg/L	250	<1	277	276	----	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	13	15	21	20	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	13	22	92	92	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	532	61	57	58	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	55	13	8	8	----	
Magnesium	7439-95-4	1	mg/L	38	6	10	11	----	
Sodium	7440-23-5	1	mg/L	300	38	185	183	----	
Potassium	7440-09-7	1	mg/L	10	22	2	2	----	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.03	0.52	0.04	0.04	----	
Arsenic	7440-38-2	0.001	mg/L	0.001	<0.001	<0.001	<0.001	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0002	<0.0001	<0.0001	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----	
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.007	0.001	<0.001	----	
Copper	7440-50-8	0.001	mg/L	0.014	0.013	<0.001	<0.001	----	
Lead	7439-92-1	0.001	mg/L	<0.001	0.001	<0.001	<0.001	----	
Manganese	7439-96-5	0.001	mg/L	0.157	0.298	0.012	0.010	----	
Nickel	7440-02-0	0.001	mg/L	0.014	0.010	0.004	0.004	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----	
Zinc	7440-66-6	0.005	mg/L	0.054	0.044	0.020	0.005	----	
Iron	7439-89-6	0.05	mg/L	0.14	<0.05	4.02	4.20	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Northern 5	BORR_MW18	FD02	BORR_MW13	TBW079
Client sampling date / time				17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2001737-011	EP2001737-012	EP2001737-013	EP2001737-014	EP2001737-015	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.05	0.93	0.18	0.16	----	
Iron	7439-89-6	0.05	mg/L	0.94	<0.05	5.53	5.34	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.05	0.14	0.14	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	<0.01	0.05	0.14	0.14	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	15.5	0.02	0.03	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.0	1.3	1.0	1.1	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	1.0	16.8	1.0	1.1	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.80	0.02	0.02	0.04	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.59	<0.01	<0.01	<0.01	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	----	3.28	----	----	----	
∅ Total Anions	----	0.01	meq/L	20.3	----	9.06	9.07	----	
∅ Total Cations	----	0.01	meq/L	19.2	3.36	9.32	9.32	----	
∅ Ionic Balance	----	0.01	%	----	1.09	----	----	----	
∅ Ionic Balance	----	0.01	%	2.78	----	1.43	1.36	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	----	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	----	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Northern 5	BORR_MW18	FD02	BORR_MW13	TBW079
Client sampling date / time				17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2001737-011	EP2001737-012	EP2001737-013	EP2001737-014	EP2001737-015	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	----	
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	<10	----	----	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	----	----	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	----	----	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	----	----	----	----	
Carbofenthion	786-19-6	0.02	µg/L	<0.02	----	----	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	----	----	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	----	----	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	----	----	----	----	
Coumaphos	56-72-4	0.01	µg/L	<0.01	----	----	----	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	----	----	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	----	----	----	----	
Demeton-O	298-03-3	0.02	µg/L	<0.02	----	----	----	----	
Demeton-S	126-75-0	0.02	µg/L	<0.02	----	----	----	----	
Diazinon	333-41-5	0.01	µg/L	<0.01	----	----	----	----	
Dichlorvos	62-73-7	0.20	µg/L	<0.20	----	----	----	----	
Dimethoate	60-51-5	0.02	µg/L	<0.02	----	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Northern 5	BORR_MW18	FD02	BORR_MW13	TBW079
Client sampling date / time					17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00	17-Feb-2020 00:00
Compound	CAS Number	LOR	Unit	EP2001737-011	EP2001737-012	EP2001737-013	EP2001737-014	EP2001737-015	
				Result	Result	Result	Result	Result	
<b>EP234A: OP Pesticides - Continued</b>									
Disulfoton	298-04-4	0.05	µg/L	<0.05	----	----	----	----	----
Ethion	563-12-2	0.02	µg/L	<0.02	----	----	----	----	----
EPN	2104-64-5	0.05	µg/L	<0.05	----	----	----	----	----
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	----	----	----	----	----
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	----	----	----	----	----
Fenchlorphos (Ronnell)	299-84-3	10	µg/L	<10	----	----	----	----	----
Fenitrothion	122-14-5	2	µg/L	<2	----	----	----	----	----
Fensulfothion	115-90-2	0.01	µg/L	<0.01	----	----	----	----	----
Fenthion	55-38-9	0.05	µg/L	<0.05	----	----	----	----	----
Malathion	121-75-5	0.02	µg/L	<0.02	----	----	----	----	----
Mevinphos	7786-34-7	0.02	µg/L	<0.02	----	----	----	----	----
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	----	----	----	----	----
Omethoate	1113-02-6	0.01	µg/L	<0.01	----	----	----	----	----
Parathion	56-38-2	0.2	µg/L	<0.2	----	----	----	----	----
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	----	----	----	----	----
Phorate	298-02-2	0.1	µg/L	<0.1	----	----	----	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	----	----	----	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	----	----	----	----	----
Profenofos	41198-08-7	0.01	µg/L	<0.01	----	----	----	----	----
Prothiofos	34643-46-4	0.1	µg/L	<0.1	----	----	----	----	----
Sulfotep	3689-24-5	0.005	µg/L	<0.005	----	----	----	----	----
Sulprofos	35400-43-2	0.05	µg/L	<0.05	----	----	----	----	----
Terbufos	13071-79-9	0.01	µg/L	<0.01	----	----	----	----	----
Temephos	3383-96-8	0.02	µg/L	<0.02	----	----	----	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	----	----	----	----	----
Triazophos	24017-47-8	0.005	µg/L	<0.005	----	----	----	----	----
Trichlorfon	52-68-6	0.02	µg/L	<0.02	----	----	----	----	----
Trichloronate	327-98-0	0.5	µg/L	<0.5	----	----	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	135	88.0	108	103	98.4	
Toluene-D8	2037-26-5	2	%	91.6	104	101	101	100	
4-Bromofluorobenzene	460-00-4	2	%	113	98.6	95.6	99.1	97.8	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW46	BORR_MW04	BORR_MW05	BORR_MW06	FD03
Client sampling date / time				18-Feb-2020 00:00	18-Feb-2020 00:00	18-Feb-2020 00:00	18-Feb-2020 00:00	18-Feb-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2001737-016	EP2001737-017	EP2001737-018	EP2001737-019	EP2001737-020	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	5.30	7.20	6.97	7.03	6.54	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	376	4280	1200	546	461	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	298	2850	742	440	296	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	3	282	76	68	22	
Total Alkalinity as CaCO3	----	1	mg/L	3	282	76	68	22	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	51	18	19	10	16	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	142	272	129	28	50	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	15	1080	304	122	103	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	26	200	29	18	14	
Magnesium	7439-95-4	1	mg/L	12	74	22	8	12	
Sodium	7440-23-5	1	mg/L	14	638	183	78	49	
Potassium	7440-09-7	1	mg/L	4	5	7	12	5	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.04	0.02	0.08	0.23	0.08	
Arsenic	7440-38-2	0.001	mg/L	0.003	0.002	<0.001	<0.001	0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	
Cobalt	7440-48-4	0.001	mg/L	0.003	0.002	<0.001	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.014	0.012	0.010	0.007	<0.001	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	
Manganese	7439-96-5	0.001	mg/L	0.063	0.173	0.015	0.061	0.014	
Nickel	7440-02-0	0.001	mg/L	0.012	0.014	0.009	0.013	<0.001	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.047	0.053	0.033	0.120	<0.005	
Iron	7439-89-6	0.05	mg/L	30.2	7.83	1.44	2.45	3.39	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW46	BORR_MW04	BORR_MW05	BORR_MW06	FD03
Client sampling date / time				18-Feb-2020 00:00	18-Feb-2020 00:00	18-Feb-2020 00:00	18-Feb-2020 00:00	18-Feb-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2001737-016	EP2001737-017	EP2001737-018	EP2001737-019	EP2001737-020	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	3.58	1.19	2.75	4.93	0.78	
Iron	7439-89-6	0.05	mg/L	46.2	15.1	3.34	6.94	4.31	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.22	0.21	0.07	0.15	0.27	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.22	0.21	0.07	0.15	0.27	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.3	0.3	1.1	0.8	0.8	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.3	0.3	1.1	0.8	0.8	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.03	0.06	0.05	0.07	<0.01	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	3.44	41.8	12.8	5.38	4.39	
∅ Total Cations	----	0.01	meq/L	3.00	43.9	11.4	5.26	3.94	
∅ Ionic Balance	----	0.01	%	6.89	2.55	5.72	1.19	5.29	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW46	BORR_MW04	BORR_MW05	BORR_MW06	FD03
Client sampling date / time				18-Feb-2020 00:00	18-Feb-2020 00:00	18-Feb-2020 00:00	18-Feb-2020 00:00	18-Feb-2020 00:00	18-Feb-2020 00:00
Compound	CAS Number	LOR	Unit	EP2001737-016	EP2001737-017	EP2001737-018	EP2001737-019	EP2001737-020	EP2001737-020
				Result	Result	Result	Result	Result	Result
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	<100
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	<5
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	99.9	84.3	98.6	75.9	102	102
Toluene-D8	2037-26-5	2	%	104	106	108	108	106	106
4-Bromofluorobenzene	460-00-4	2	%	97.1	93.2	94.8	92.3	94.2	94.2



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW20	MR_MW05	BORR_MW10	BORR_MW08a	BORR_MW09
Client sampling date / time				18-Feb-2020 00:00	18-Feb-2020 00:00	18-Feb-2020 00:00	18-Feb-2020 00:00	18-Feb-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2001737-021	EP2001737-022	EP2001737-023	EP2001737-024	EP2001737-025	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.47	6.34	6.40	6.52	6.71	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	4150	23600	466	510	168	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	2750	17400	334	416	94	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	45	122	21	53	10	
Total Alkalinity as CaCO3	----	1	mg/L	45	122	21	53	10	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	23	41	14	17	15	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	67	1100	44	<20	24	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	1190	8630	103	142	24	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	34	206	15	16	10	
Magnesium	7439-95-4	1	mg/L	108	803	13	10	2	
Sodium	7440-23-5	1	mg/L	633	4270	50	70	16	
Potassium	7440-09-7	1	mg/L	5	49	5	8	5	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.01	<0.05	0.07	0.38	0.06	
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.018	0.001	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0005	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.005	0.002	0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	0.008	<0.005	<0.001	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.008	<0.005	<0.001	0.005	0.012	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.005	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.185	0.230	0.012	0.055	0.002	
Nickel	7440-02-0	0.001	mg/L	0.014	0.008	<0.001	0.005	0.010	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.05	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.053	0.053	<0.005	0.033	0.045	
Iron	7439-89-6	0.05	mg/L	4.43	18.5	3.63	1.04	<0.05	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW20	MR_MW05	BORR_MW10	BORR_MW08a	BORR_MW09
Client sampling date / time				18-Feb-2020 00:00	18-Feb-2020 00:00	18-Feb-2020 00:00	18-Feb-2020 00:00	18-Feb-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2001737-021	EP2001737-022	EP2001737-023	EP2001737-024	EP2001737-025	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	3.34	11.6	0.79	2.65	0.33	
Iron	7439-89-6	0.05	mg/L	8.17	36.7	4.33	1.48	0.06	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.43	0.27	0.22	<0.01	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.02	0.43	0.27	0.22	<0.01	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.50	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	1.5	0.8	1.8	0.1	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	<0.1	1.5	0.8	1.8	0.6	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.02	0.15	0.02	0.86	0.01	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	0.86	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	35.9	269	4.24	5.06	1.38	
∅ Total Cations	----	0.01	meq/L	38.2	263	4.12	4.87	1.49	
∅ Ionic Balance	----	0.01	%	3.22	1.02	1.43	1.95	3.87	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	120	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	120	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW20	MR_MW05	BORR_MW10	BORR_MW08a	BORR_MW09
Client sampling date / time				18-Feb-2020 00:00	18-Feb-2020 00:00	18-Feb-2020 00:00	18-Feb-2020 00:00	18-Feb-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2001737-021	EP2001737-022	EP2001737-023	EP2001737-024	EP2001737-025	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	110	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	110	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	98.8	91.8	118	98.9	111	
Toluene-D8	2037-26-5	2	%	107	105	101	104	102	
4-Bromofluorobenzene	460-00-4	2	%	95.5	91.5	97.6	94.4	93.4	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID			FB02	----	----	----	----
Client sampling date / time		18-Feb-2020 00:00			----	----	----	----	----
Compound	CAS Number	LOR	Unit	EP2001737-026	-----	-----	-----	-----	-----
				Result	----	----	----	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----	----
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	----	----	----	----	----
Toluene	108-88-3	2	µg/L	<2	----	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	----	----	----	----	----
^ Total Xylenes	----	2	µg/L	<2	----	----	----	----	----
^ Sum of BTEX	----	1	µg/L	<1	----	----	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	108	----	----	----	----	----
Toluene-D8	2037-26-5	2	%	103	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	94.8	----	----	----	----	----



## Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	61	141
Toluene-D8	2037-26-5	73	126
4-Bromofluorobenzene	460-00-4	60	125

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP2001737	Page	: 1 of 16
Client	: GHD PTY LTD	Laboratory	: Environmental Division Perth
Contact	: MS VICKI DAVIES	Telephone	: 08 9406 1311
Project	: 6137041	Date Samples Received	: 19-Feb-2020
Site	: ----	Issue Date	: 27-Feb-2020
Sampler	: Pascale Ketelaar	No. of samples received	: 26
Order number	: 6137041 08.0831	No. of samples analysed	: 26

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



### Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
EP234A: OP Pesticides	ES2005947--001	Anonymous	Diazinon	333-41-5	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

### Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EA005P: pH by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural</b>							
BH32.1, SW08, SW07, BORR_MW15, Northern 5, FD02,	SW09, North Creek 2, FD01, BORR_MW19b, BORR_MW18, BORR_MW13	----	----	----	21-Feb-2020	17-Feb-2020	4
<b>Clear Plastic Bottle - Natural</b>							
BORR_MW46, BORR_MW05, FD03, MR_MW05, BORR_MW08a,	BORR_MW04, BORR_MW06, BORR_MW20, BORR_MW10, BORR_MW09	----	----	----	21-Feb-2020	18-Feb-2020	3

### Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
TRH - Semivolatile Fraction	2	22	9.09	10.00	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>					
Total Metals by ICP-MS - Suite A	0	28	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.



Matrix: WATER Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EA005P: pH by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural (EA005-P)</b> BH32.1, SW08, SW07, BORR_MW15, Northern 5, FD02, SW09, North Creek 2, FD01, BORR_MW19b, BORR_MW18, BORR_MW13	17-Feb-2020	----	----	----	21-Feb-2020	17-Feb-2020	✖
<b>Clear Plastic Bottle - Natural (EA005-P)</b> BORR_MW46, BORR_MW05, FD03, MR_MW05, BORR_MW08a, BORR_MW04, BORR_MW06, BORR_MW20, BORR_MW10, BORR_MW09	18-Feb-2020	----	----	----	21-Feb-2020	18-Feb-2020	✖
<b>EA010P: Conductivity by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural (EA010-P)</b> BH32.1, SW08, SW07, BORR_MW15, Northern 5, FD02, SW09, North Creek 2, FD01, BORR_MW19b, BORR_MW18, BORR_MW13	17-Feb-2020	----	----	----	21-Feb-2020	16-Mar-2020	✔
<b>Clear Plastic Bottle - Natural (EA010-P)</b> BORR_MW46, BORR_MW05, FD03, MR_MW05, BORR_MW08a, BORR_MW04, BORR_MW06, BORR_MW20, BORR_MW10, BORR_MW09	18-Feb-2020	----	----	----	21-Feb-2020	17-Mar-2020	✔
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>							
<b>Clear Plastic Bottle - Natural (EA015H)</b> BH32.1, SW08, SW07, BORR_MW15, Northern 5, FD02, SW09, North Creek 2, FD01, BORR_MW19b, BORR_MW18, BORR_MW13	17-Feb-2020	----	----	----	24-Feb-2020	24-Feb-2020	✔
<b>Clear Plastic Bottle - Natural (EA015H)</b> BORR_MW46, BORR_MW05, FD03, MR_MW05, BORR_MW08a, BORR_MW04, BORR_MW06, BORR_MW20, BORR_MW10, BORR_MW09	18-Feb-2020	----	----	----	25-Feb-2020	25-Feb-2020	✔



Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>ED037P: Alkalinity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (ED037-P)</b> BH32.1, SW08, SW07, BORR_MW15, Northern 5, FD02, SW09, North Creek 2, FD01, BORR_MW19b, BORR_MW18, BORR_MW13	17-Feb-2020	----	----	----	21-Feb-2020	02-Mar-2020	✓	
<b>Clear Plastic Bottle - Natural (ED037-P)</b> BORR_MW46, BORR_MW05, FD03, MR_MW05, BORR_MW08a, BORR_MW04, BORR_MW06, BORR_MW20, BORR_MW10, BORR_MW09	18-Feb-2020	----	----	----	21-Feb-2020	03-Mar-2020	✓	
<b>ED038A: Acidity</b>								
<b>Clear Plastic Bottle - Natural (ED038)</b> BH32.1, SW08, SW07, BORR_MW15, Northern 5, FD02, SW09, North Creek 2, FD01, BORR_MW19b, BORR_MW18, BORR_MW13	17-Feb-2020	----	----	----	20-Feb-2020	02-Mar-2020	✓	
<b>Clear Plastic Bottle - Natural (ED038)</b> BORR_MW46, BORR_MW05, FD03, MR_MW05, BORR_MW08a, BORR_MW04, BORR_MW06, BORR_MW20, BORR_MW10, BORR_MW09	18-Feb-2020	----	----	----	20-Feb-2020	03-Mar-2020	✓	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
<b>Clear Plastic Bottle - Natural (ED041G)</b> BH32.1, SW08, SW07, BORR_MW15, Northern 5, FD02, SW09, North Creek 2, FD01, BORR_MW19b, BORR_MW18, BORR_MW13	17-Feb-2020	----	----	----	19-Feb-2020	16-Mar-2020	✓	
<b>Clear Plastic Bottle - Natural (ED041G)</b> BORR_MW46, BORR_MW05, FD03, MR_MW05, BORR_MW08a, BORR_MW04, BORR_MW06, BORR_MW20, BORR_MW10, BORR_MW09	18-Feb-2020	----	----	----	19-Feb-2020	17-Mar-2020	✓	



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>ED045G: Chloride by Discrete Analyser</b>							
<b>Clear Plastic Bottle - Natural (ED045G)</b> BH32.1, SW08, SW07, BORR_MW15, Northern 5, FD02, SW09, North Creek 2, FD01, BORR_MW19b, BORR_MW18, BORR_MW13	17-Feb-2020	----	----	----	19-Feb-2020	16-Mar-2020	✓
<b>Clear Plastic Bottle - Natural (ED045G)</b> BORR_MW46, BORR_MW05, FD03, MR_MW05, BORR_MW08a, BORR_MW04, BORR_MW06, BORR_MW20, BORR_MW10, BORR_MW09	18-Feb-2020	----	----	----	19-Feb-2020	17-Mar-2020	✓
<b>ED093F: Dissolved Major Cations</b>							
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> BH32.1, SW08, SW07, BORR_MW15, Northern 5, FD02, SW09, North Creek 2, FD01, BORR_MW19b, BORR_MW18, BORR_MW13	17-Feb-2020	----	----	----	20-Feb-2020	16-Mar-2020	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> BORR_MW46, BORR_MW05, FD03, MR_MW05, BORR_MW08a, BORR_MW04, BORR_MW06, BORR_MW20, BORR_MW10, BORR_MW09	18-Feb-2020	----	----	----	20-Feb-2020	17-Mar-2020	✓
<b>EG020F: Dissolved Metals by ICP-MS</b>							
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> BH32.1, SW08, SW07, BORR_MW15, Northern 5, FD02, SW09, North Creek 2, FD01, BORR_MW19b, BORR_MW18, BORR_MW13	17-Feb-2020	----	----	----	20-Feb-2020	15-Aug-2020	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> BORR_MW46, BORR_MW05, FD03, MR_MW05, BORR_MW08a, BORR_MW04, BORR_MW06, BORR_MW20, BORR_MW10, BORR_MW09	18-Feb-2020	----	----	----	20-Feb-2020	16-Aug-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EG020T: Total Metals by ICP-MS</b>							
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> BH32.1, SW08, SW07, BORR_MW15, Northern 5, FD02, SW09, North Creek 2, FD01, BORR_MW19b, BORR_MW18, BORR_MW13	17-Feb-2020	20-Feb-2020	15-Aug-2020	✓	20-Feb-2020	15-Aug-2020	✓
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> BORR_MW46, BORR_MW05, FD03, MR_MW05, BORR_MW08a, BORR_MW04, BORR_MW06, BORR_MW20, BORR_MW10, BORR_MW09	18-Feb-2020	20-Feb-2020	16-Aug-2020	✓	20-Feb-2020	16-Aug-2020	✓
<b>EK055G: Ammonia as N by Discrete Analyser</b>							
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> BH32.1, SW08, SW07, BORR_MW15, Northern 5, FD02, SW09, North Creek 2, FD01, BORR_MW19b, BORR_MW18, BORR_MW13	17-Feb-2020	----	----	----	19-Feb-2020	16-Mar-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> BORR_MW46, BORR_MW05, FD03, MR_MW05, BORR_MW08a, BORR_MW04, BORR_MW06, BORR_MW20, BORR_MW10, BORR_MW09	18-Feb-2020	----	----	----	19-Feb-2020	17-Mar-2020	✓
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>							
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> BH32.1, SW08, SW07, BORR_MW15, Northern 5, FD02, SW09, North Creek 2, FD01, BORR_MW19b, BORR_MW18, BORR_MW13	17-Feb-2020	----	----	----	19-Feb-2020	16-Mar-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> BORR_MW46, BORR_MW05, FD03, MR_MW05, BORR_MW08a, BORR_MW04, BORR_MW06, BORR_MW20, BORR_MW10, BORR_MW09	18-Feb-2020	----	----	----	19-Feb-2020	17-Mar-2020	✓





Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> BH32.1, SW08, SW07, BORR_MW15, Northern 5, FD02, SW09, North Creek 2, FD01, BORR_MW19b, BORR_MW18, BORR_MW13	17-Feb-2020	21-Feb-2020	16-Mar-2020	✓	21-Feb-2020	16-Mar-2020	✓	
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> BORR_MW46, BORR_MW05, FD03, MR_MW05, BORR_MW08a, BORR_MW04, BORR_MW06, BORR_MW20, BORR_MW10, BORR_MW09	18-Feb-2020	21-Feb-2020	17-Mar-2020	✓	21-Feb-2020	17-Mar-2020	✓	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> BH32.1, SW08, SW07, BORR_MW15, Northern 5, FD02, SW09, North Creek 2, FD01, BORR_MW19b, BORR_MW18, BORR_MW13	17-Feb-2020	21-Feb-2020	16-Mar-2020	✓	21-Feb-2020	16-Mar-2020	✓	
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> BORR_MW46, BORR_MW05, FD03, MR_MW05, BORR_MW08a, BORR_MW04, BORR_MW06, BORR_MW20, BORR_MW10, BORR_MW09	18-Feb-2020	21-Feb-2020	17-Mar-2020	✓	21-Feb-2020	17-Mar-2020	✓	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>								
<b>Clear Plastic Bottle - Natural (EK071G)</b> BH32.1, SW08, SW07, BORR_MW15, Northern 5, FD02, SW09, North Creek 2, FD01, BORR_MW19b, BORR_MW18, BORR_MW13	17-Feb-2020	----	----	----	19-Feb-2020	19-Feb-2020	✓	
<b>Clear Plastic Bottle - Natural (EK071G)</b> BORR_MW46, BORR_MW05, FD03, MR_MW05, BORR_MW08a, BORR_MW04, BORR_MW06, BORR_MW20, BORR_MW10, BORR_MW09	18-Feb-2020	----	----	----	19-Feb-2020	20-Feb-2020	✓	

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 Work Order : EP2001737  
 Client : GHD PTY LTD  
 Project : 6137041



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK085M: Sulfide as S2-</b>								
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> BH32.1, SW08, SW07, BORR_MW15, Northern 5, FD02,	SW09, North Creek 2, FD01, BORR_MW19b, BORR_MW18, BORR_MW13	17-Feb-2020	----	----	----	24-Feb-2020	24-Feb-2020	✓
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> BORR_MW46, BORR_MW05, FD03, MR_MW05, BORR_MW08a,	BORR_MW04, BORR_MW06, BORR_MW20, BORR_MW10, BORR_MW09	18-Feb-2020	----	----	----	24-Feb-2020	25-Feb-2020	✓



Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BH32.1, SW08, SW07	SW09, North Creek 2,	17-Feb-2020	21-Feb-2020	24-Feb-2020	✓	24-Feb-2020	01-Apr-2020	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b> FD01, BORR_MW19b, BORR_MW18, BORR_MW13	BORR_MW15, Northern 5, FD02,	17-Feb-2020	24-Feb-2020	24-Feb-2020	✓	24-Feb-2020	04-Apr-2020	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BORR_MW46, BORR_MW05, FD03, MR_MW05, BORR_MW08a,	BORR_MW04, BORR_MW06, BORR_MW20, BORR_MW10, BORR_MW09	18-Feb-2020	24-Feb-2020	25-Feb-2020	✓	24-Feb-2020	04-Apr-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BH32.1, SW08, SW07,	SW09, North Creek 2, FD01	17-Feb-2020	20-Feb-2020	02-Mar-2020	✓	20-Feb-2020	02-Mar-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> TBW083, BORR_MW15, Northern 5, FD02, TBW079	FB01, BORR_MW19b, BORR_MW18, BORR_MW13,	17-Feb-2020	21-Feb-2020	02-Mar-2020	✓	21-Feb-2020	02-Mar-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BORR_MW46, BORR_MW05, FD03, MR_MW05, BORR_MW08a, FB02	BORR_MW04, BORR_MW06, BORR_MW20, BORR_MW10, BORR_MW09,	18-Feb-2020	21-Feb-2020	03-Mar-2020	✓	21-Feb-2020	03-Mar-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>								
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BH32.1, SW08, SW07	SW09, North Creek 2,	17-Feb-2020	21-Feb-2020	24-Feb-2020	✓	24-Feb-2020	01-Apr-2020	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b> FD01, BORR_MW19b, BORR_MW18, BORR_MW13	BORR_MW15, Northern 5, FD02,	17-Feb-2020	24-Feb-2020	24-Feb-2020	✓	24-Feb-2020	04-Apr-2020	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BORR_MW46, BORR_MW05, FD03, MR_MW05, BORR_MW08a,	BORR_MW04, BORR_MW06, BORR_MW20, BORR_MW10, BORR_MW09	18-Feb-2020	24-Feb-2020	25-Feb-2020	✓	24-Feb-2020	04-Apr-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BH32.1, SW08, SW07,	SW09, North Creek 2, FD01	17-Feb-2020	20-Feb-2020	02-Mar-2020	✓	20-Feb-2020	02-Mar-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> TBW083, BORR_MW15, Northern 5, FD02, TBW079	FB01, BORR_MW19b, BORR_MW18, BORR_MW13,	17-Feb-2020	21-Feb-2020	02-Mar-2020	✓	21-Feb-2020	02-Mar-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BORR_MW46, BORR_MW05, FD03, MR_MW05, BORR_MW08a, FB02	BORR_MW04, BORR_MW06, BORR_MW20, BORR_MW10, BORR_MW09,	18-Feb-2020	21-Feb-2020	03-Mar-2020	✓	21-Feb-2020	03-Mar-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080: BTEXN</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BH32.1, SW08, SW07,	SW09, North Creek 2, FD01	17-Feb-2020	20-Feb-2020	02-Mar-2020	✓	20-Feb-2020	02-Mar-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> TBW083, BORR_MW15, Northern 5, FD02, TBW079	FB01, BORR_MW19b, BORR_MW18, BORR_MW13,	17-Feb-2020	21-Feb-2020	02-Mar-2020	✓	21-Feb-2020	02-Mar-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BORR_MW46, BORR_MW05, FD03, MR_MW05, BORR_MW08a, FB02	BORR_MW04, BORR_MW06, BORR_MW20, BORR_MW10, BORR_MW09,	18-Feb-2020	21-Feb-2020	03-Mar-2020	✓	21-Feb-2020	03-Mar-2020	✓
<b>EP204: Glyphosate and AMPA</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b> SW09, North Creek 2, FD01,	SW08, SW07, Northern 5	17-Feb-2020	---	---	---	24-Feb-2020	02-Mar-2020	✓
<b>EP234A: OP Pesticides</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> SW09, North Creek 2, FD01,	SW08, SW07, Northern 5	17-Feb-2020	---	---	---	24-Feb-2020	24-Feb-2020	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Laboratory Duplicates (DUP)</b>							
Acidity as Calcium Carbonate	ED038	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	4	32	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	3	25	12.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	2	12	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	3	25	12.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	2	14	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	4	34	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	32	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	33	12.12	10.53	✔	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	22	13.64	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	4	28	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	22	13.64	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	22	9.09	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	39	10.26	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Acidity as Calcium Carbonate	ED038	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	4	32	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	25	8.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	12	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	25	8.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	34	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	32	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	33	12.12	10.53	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Alkalinity by PC Titrator	ED037-P	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	33	6.06	5.26	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	0	28	0.00	5.00	*	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3)  Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3)  Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.





Analytical Methods	Method	Matrix	Method Descriptions
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ammonium as N	EK055G-NH4	WATER	Ammonium in the sample is reported as the ionised / unionised fractions by the use of a nomograph and the initial pH and Temperature. Ammonia is determined by direct colorimetry by Discrete Analyser according to APHA 4500-NH3 G. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Sulfide as S2-	EK085	WATER	In house: Referenced to APHA 4500-S2- D. Sulfide species present in water samples are immediately precipitated when collected in pretreated caustic/zinc acetate preserved sample containers. The sulphides are coloured using methylene blue indicator. Non-detects may be screened by comparison against a standard at half-LOR, otherwise samples are measured using UV-VIS detection at 664nm. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatle Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Glyphosate and AMPA	EP204	WATER	In house: Pre-column derivatisation LCMS (ES in negative mode). Water samples are derivatised with 9-fluorenyl methoxycarbonyl chloroformate (FMOC) in alkaline condition. The derivatives of glyphosate and AMPA are separated by a C8 column and determined by MS.
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

**CHAIN OF CUSTODY RECORD  
AND ANALYSIS REQUEST**



GHD  
Level 10, 999 Hay Street  
Perth WA 6000

PO Box 3106  
Perth WA 6832

Reception Ph: 08 6222 8222

**Project ID** (as per ESdat set up; no spaces)  
6137041

**PO Number** (to be invoiced)  
6137041 08.0831

**Laboratory:** ALS Environmental  
**Address:** 26 Rigali Way, Wangara WA 6065  
**Laboratory Contact:** Marnie Thomsett (08 9406 1301)

**Laboratory Quote No.**  
EP/489/19 V4

**Turnaround Time**  
Standard

**Job Manager (Invoice) & GHD accounts**  
Vicki Davies  
Julia Roberts

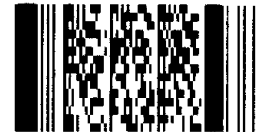
**Email Address (Results)**  
vicki.davies@ghd.com  
amy.hestehauge@ghd.com

GHD Sample ID	Lab Sample ID	Date	Time
---------------	---------------	------	------

BH32-1	1	17.2.20	
SW09	2		
SW08	3		
North Creek 2	4		
SW07	5		
FDO1	6		
TBW083	7		
FBO1	8		
BORR-mw15	9		
BORR-mw19b	10		
Northern 5	11		
BORR-mw18	12		
FDO2	13		
BORR-mw13	14		
TBW079	15	17.2.20	
BORR-mw46	16	18.2.20	
BORR-mw04	17	18.2.20	

Sample Matrix (S=Soil/SL Sludge/W/Water/A-Air)	Container				Analyses							Remarks			
	Type (B-Bottle/J-Jar/V-Vial/Pag/G-Glass/P-Plastic)	Preservative (Unpreserved/HCl/H2SO4/HNO3/Other)	No		GW suite	SW suite	rinsate	field blanks	trip blank						HOLD
			8	X											
			10			X									
			10			X									
			10			X									
			10			X									
			10			X									
			1										X		
			1						X						
			8	X											
			8	X											
			10												
			8	X											
			8	X											
			8	X											
			1											X	
			8	X											
			8	X											

Environmental Division  
Perth  
Work Order Reference  
**EP2001737**



Telephone : +61-8-9406 1301

Sampled by: Pascal Kelelea  
Received by: Rhannon

Date/Time: 18.2.20  
Date/Time: 19/02/2020

Relinquished by: Pascal Kelelea  
Relinquished by:

Date/Time: 18.2.20  
Date/Time:

12:30

96 CA



**CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST**

GHD  
Level 10, 999 Hay Street  
Perth WA 6000

PO Box 3106  
Perth WA 6832

Reception Ph: 08 6222 8222

Project ID (as per ESdat set up; no spaces)  
6137041

PO Number (to be invoiced)  
6137041 08.0831

Laboratory: ALS Environmental

Address: 26 Rigali Way, Wangara WA 6065

Laboratory Contact: Marnie Thomsett (08 9406 1301)

Laboratory Quote No.  
EP/489/19 V4

Turnaround Time  
Standard

Job Manager (Invoice) & GHD accounts  
Vicki Davies  
Julia Roberts

Email Address (Results)  
vicki.davies@ghd.com  
amy.hestehauge@ghd.com

GHD Sample ID	Lab Sample ID	Date	Time	Sample Matrix <small>S-Soil / SL Sludge / W-Water / A-Air</small>	Container				Analyses						Remarks			
					Type <small>B-Bottle/Jar/V- Vial/Bag/G-Glass/P-Plastic</small>	Preservative <small>Unpreserved / HCl / H2SO4 / HNO3 / Other</small>	No		gw suite	sw suite	rin suite	fieldbats	trip blank	fieldbats		HOLD		
BORR-MW05	18	18.2.20					10	X										
BORR-MW06	19						8	X										
FDO3	20						8	X										
BORR-MW20	21						8	X										
MR-MW05	22						8	X										
BORR-MW10	23						8	X										
BORR-MW08a	24						8	X										
BORR-MW09	25						10	X										
FBO2	26						1					X						

Sampled by: Pascale Ketelaar

Date/Time: 18.2.20

Relinquished by: Pascale Ketelaar

Date/Time: 18.2.20

Received by: phannon

Date/Time: 17/02/2020

Relinquished by:

Date/Time:

12:30.

## CERTIFICATE OF ANALYSIS

**Work Order** : **EP2001851**  
**Client** : **GHD PTY LTD**  
**Contact** : **MS VICKI DAVIES**  
**Address** : **999 HAY STREET**  
**PERTH WA, AUSTRALIA 6000**  
**Telephone** : **----**  
**Project** : **6137041**  
**Order number** : **6137041 08.0831**  
**C-O-C number** : **----**  
**Sampler** : **Pascale Ketelaar**  
**Site** : **----**  
**Quote number** : **EP/489/19 V4**  
**No. of samples received** : **21**  
**No. of samples analysed** : **21**

**Page** : 1 of 21  
**Laboratory** : Environmental Division Perth  
**Contact** : Marnie Thomsett  
**Address** : 26 Rigali Way Wangara WA Australia 6065  
**Telephone** : 08 9406 1311  
**Date Samples Received** : 21-Feb-2020 12:15  
**Date Analysis Commenced** : 21-Feb-2020  
**Issue Date** : 09-Mar-2020 13:48



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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
David Viner	SENIOR LAB TECH	Perth Organics, Wangara, WA
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP204 and EP234-1 conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- ED041G (Turbidimetric Sulfate): LOR raised on sample #2 due to possible sample matrix interference.
- EK055G (Ammonia): LOR raised on sample #12 due to possible sample matrix interference.
- EG020T: Positive result for nickel for sample EP2001851-019 has been confirmed by re-digestion and re-analysis.
- TDS by method EA-015 may bias high for sample #2 and #5 due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- EP234: Poor matrix spike recovery for particular compounds due to matrix interferences.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- EA015H (Total Dissolved Solids): TDS for sample EP2001851 #5 biasing high due to possible sample matrix interferences.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW12	BORR_MW31	NORTH CREEK 4	BORR_MW24	BORR_MW39
Client sampling date / time				19-Feb-2020 00:00	19-Feb-2020 00:00	20-Feb-2020 00:00	20-Feb-2020 00:00	20-Feb-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2001851-001	EP2001851-002	EP2001851-003	EP2001851-004	EP2001851-005	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.74	5.97	7.36	5.08	5.76	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	553	242	3230	1700	276	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	332	227	2180	1270	413	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	32	15	58	2	11	
Total Alkalinity as CaCO3	----	1	mg/L	32	15	58	2	11	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	14	25	8	30	27	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	40	<20	69	39	45	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	139	60	969	557	41	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	5	3	50	<1	<1	
Magnesium	7439-95-4	1	mg/L	11	4	105	10	<1	
Sodium	7440-23-5	1	mg/L	85	37	449	344	58	
Potassium	7440-09-7	1	mg/L	6	4	13	<1	<1	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.03	1.46	0.02	0.16	0.75	
Arsenic	7440-38-2	0.001	mg/L	0.003	<0.001	<0.001	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	0.001	<0.001	0.002	<0.001	
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.001	0.006	<0.001	
Copper	7440-50-8	0.001	mg/L	0.018	0.009	0.014	0.018	0.009	
Lead	7439-92-1	0.001	mg/L	0.001	0.001	<0.001	0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.008	0.009	0.546	0.005	0.021	
Nickel	7440-02-0	0.001	mg/L	0.014	0.006	0.004	0.011	0.004	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.068	0.045	0.043	0.060	0.039	
Iron	7439-89-6	0.05	mg/L	2.67	1.59	0.21	0.33	0.34	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW12	BORR_MW31	NORTH CREEK 4	BORR_MW24	BORR_MW39
Client sampling date / time				19-Feb-2020 00:00	19-Feb-2020 00:00	20-Feb-2020 00:00	20-Feb-2020 00:00	20-Feb-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2001851-001	EP2001851-002	EP2001851-003	EP2001851-004	EP2001851-005	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.62	4.14	0.15	22.0	10.8	
Iron	7439-89-6	0.05	mg/L	4.98	2.40	1.04	20.2	11.3	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.24	0.93	0.04	0.03	<0.01	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.24	0.93	0.04	0.03	<0.01	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.14	<0.01	<0.01	0.02	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.4	2.0	1.1	0.2	0.2	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.5	2.0	1.1	0.2	0.2	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.03	0.02	0.03	0.04	0.14	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	0.7	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	5.39	1.99	29.9	16.6	2.31	
∅ Total Cations	----	0.01	meq/L	5.00	2.19	31.0	15.8	2.52	
∅ Ionic Balance	----	0.01	%	3.73	4.74	1.76	2.40	4.33	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW12	BORR_MW31	NORTH CREEK 4	BORR_MW24	BORR_MW39
Client sampling date / time				19-Feb-2020 00:00	19-Feb-2020 00:00	20-Feb-2020 00:00	20-Feb-2020 00:00	20-Feb-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2001851-001	EP2001851-002	EP2001851-003	EP2001851-004	EP2001851-005	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	----	<10	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	----	<0.02	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	----	----	<0.02	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	----	<0.10	----	----	
Carbofenthiion	786-19-6	0.02	µg/L	----	----	<0.02	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	----	<0.02	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	----	<0.02	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	----	<0.2	----	----	
Coumaphos	56-72-4	0.01	µg/L	----	----	<0.01	----	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	----	<0.02	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	----	<0.02	----	----	
Demeton-O	298-03-3	0.02	µg/L	----	----	<0.02	----	----	
Demeton-S	126-75-0	0.02	µg/L	----	----	<0.02	----	----	
Diazinon	333-41-5	0.01	µg/L	----	----	<0.01	----	----	
Dichlorvos	62-73-7	0.20	µg/L	----	----	<0.20	----	----	
Dimethoate	60-51-5	0.02	µg/L	----	----	<0.02	----	----	
Disulfoton	298-04-4	0.05	µg/L	----	----	<0.05	----	----	
Ethion	563-12-2	0.02	µg/L	----	----	<0.02	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW12	BORR_MW31	NORTH CREEK 4	BORR_MW24	BORR_MW39
Client sampling date / time					19-Feb-2020 00:00	19-Feb-2020 00:00	20-Feb-2020 00:00	20-Feb-2020 00:00	20-Feb-2020 00:00
Compound	CAS Number	LOR	Unit	EP2001851-001	EP2001851-002	EP2001851-003	EP2001851-004	EP2001851-005	
				Result	Result	Result	Result	Result	
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L	----	----	<0.05	----	----	
Ethoprophos	13194-48-4	0.01	µg/L	----	----	<0.01	----	----	
Fenamiphos	22224-92-6	0.01	µg/L	----	----	<0.01	----	----	
Fenchlorphos (Rannel)	299-84-3	10	µg/L	----	----	<10	----	----	
Fenitrothion	122-14-5	2	µg/L	----	----	<2	----	----	
Fensulfothion	115-90-2	0.01	µg/L	----	----	<0.01	----	----	
Fenthion	55-38-9	0.05	µg/L	----	----	<0.05	----	----	
Malathion	121-75-5	0.02	µg/L	----	----	<0.02	----	----	
Mevinphos	7786-34-7	0.02	µg/L	----	----	<0.02	----	----	
Monocrotophos	6923-22-4	0.02	µg/L	----	----	<0.02	----	----	
Omethoate	1113-02-6	0.01	µg/L	----	----	<0.01	----	----	
Parathion	56-38-2	0.2	µg/L	----	----	<0.2	----	----	
Parathion-methyl	298-00-0	0.5	µg/L	----	----	<0.5	----	----	
Phorate	298-02-2	0.1	µg/L	----	----	<0.1	----	----	
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	----	----	<0.01	----	----	
Pirimiphos-methyl	29232-93-7	0.01	µg/L	----	----	<0.01	----	----	
Profenofos	41198-08-7	0.01	µg/L	----	----	<0.01	----	----	
Prothiofos	34643-46-4	0.1	µg/L	----	----	<0.1	----	----	
Sulfotep	3689-24-5	0.005	µg/L	----	----	<0.005	----	----	
Sulprofos	35400-43-2	0.05	µg/L	----	----	<0.05	----	----	
Terbufos	13071-79-9	0.01	µg/L	----	----	<0.01	----	----	
Temephos	3383-96-8	0.02	µg/L	----	----	<0.02	----	----	
Tetrachlorvinphos	22248-79-9	0.01	µg/L	----	----	<0.01	----	----	
Triazophos	24017-47-8	0.005	µg/L	----	----	<0.005	----	----	
Trichlorfon	52-68-6	0.02	µg/L	----	----	<0.02	----	----	
Trichloronate	327-98-0	0.5	µg/L	----	----	<0.5	----	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	94.8	94.5	96.4	99.2	99.2	
Toluene-D8	2037-26-5	2	%	100	102	101	99.7	98.8	
4-Bromofluorobenzene	460-00-4	2	%	105	104	103	102	101	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BH11.1	BORR_MW22b	SOUTHERN 4	SW06	BORR_MW29
Client sampling date / time				20-Feb-2020 00:00	20-Feb-2020 00:00	19-Feb-2020 00:00	19-Feb-2020 00:00	19-Feb-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2001851-006	EP2001851-007	EP2001851-008	EP2001851-009	EP2001851-010	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	7.17	6.34	8.07	7.47	5.75	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	1470	12100	12800	3120	908	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	878	8370	9210	2090	675	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	160	56	288	87	12	
Total Alkalinity as CaCO3	----	1	mg/L	160	56	288	87	12	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	16	64	<1	10	28	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	100	350	182	72	149	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	371	4220	4540	1030	212	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	7	112	125	59	23	
Magnesium	7439-95-4	1	mg/L	20	336	329	108	33	
Sodium	7440-23-5	1	mg/L	286	2110	2440	424	109	
Potassium	7440-09-7	1	mg/L	16	4	56	9	8	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.02	0.04	0.04	0.04	0.62	
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.002	0.004	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.002	
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.144	<0.001	0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.002	0.002	0.015	0.012	0.004	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.001	<0.001	0.001	
Manganese	7439-96-5	0.001	mg/L	0.303	0.519	0.057	0.153	0.019	
Nickel	7440-02-0	0.001	mg/L	0.005	0.069	0.006	0.006	0.006	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.051	0.074	0.082	0.039	0.046	
Iron	7439-89-6	0.05	mg/L	10.2	25.9	0.12	0.63	1.40	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BH11.1	BORR_MW22b	SOUTHERN 4	SW06	BORR_MW29
Client sampling date / time				20-Feb-2020 00:00	20-Feb-2020 00:00	19-Feb-2020 00:00	19-Feb-2020 00:00	19-Feb-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2001851-006	EP2001851-007	EP2001851-008	EP2001851-009	EP2001851-010	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.11	0.61	0.12	0.14	3.29	
Iron	7439-89-6	0.05	mg/L	13.3	27.7	0.17	1.21	1.75	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.33	0.08	0.01	0.07	0.49	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.33	0.08	<0.01	0.07	0.49	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	0.02	0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.6	0.4	7.0	2.0	1.7	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.6	0.4	7.0	2.0	1.7	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.27	0.03	0.17	0.36	0.03	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.10	<0.01	<0.01	0.16	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	0.2	0.9	<0.1	<0.1	0.4	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	15.7	127	138	32.3	9.32	
∅ Total Cations	----	0.01	meq/L	14.8	125	141	30.5	8.81	
∅ Ionic Balance	----	0.01	%	2.94	0.92	1.17	2.84	2.83	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	220	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	80	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	300	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BH11.1	BORR_MW22b	SOUTHERN 4	SW06	BORR_MW29
Client sampling date / time				20-Feb-2020 00:00	20-Feb-2020 00:00	19-Feb-2020 00:00	19-Feb-2020 00:00	19-Feb-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2001851-006	EP2001851-007	EP2001851-008	EP2001851-009	EP2001851-010	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	270	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	270	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	----	<10	<10	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	----	<0.02	<0.02	----	
Azinphos-methyl	86-50-0	0.02	µg/L	----	----	<0.02	<0.02	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	----	<0.10	<0.10	----	
Carbofenthiion	786-19-6	0.02	µg/L	----	----	<0.02	<0.02	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	----	<0.02	<0.02	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	----	<0.02	<0.02	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	----	<0.2	<0.2	----	
Coumaphos	56-72-4	0.01	µg/L	----	----	<0.01	<0.01	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	----	<0.02	<0.02	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	----	<0.02	<0.02	----	
Demeton-O	298-03-3	0.02	µg/L	----	----	<0.02	<0.02	----	
Demeton-S	126-75-0	0.02	µg/L	----	----	<0.02	<0.02	----	
Diazinon	333-41-5	0.01	µg/L	----	----	<0.01	<0.01	----	
Dichlorvos	62-73-7	0.20	µg/L	----	----	<0.20	<0.20	----	
Dimethoate	60-51-5	0.02	µg/L	----	----	<0.02	<0.02	----	
Disulfoton	298-04-4	0.05	µg/L	----	----	<0.05	<0.05	----	
Ethion	563-12-2	0.02	µg/L	----	----	<0.02	<0.02	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BH11.1	BORR_MW22b	SOUTHERN 4	SW06	BORR_MW29
Client sampling date / time					20-Feb-2020 00:00	20-Feb-2020 00:00	19-Feb-2020 00:00	19-Feb-2020 00:00	19-Feb-2020 00:00
Compound	CAS Number	LOR	Unit	EP2001851-006	EP2001851-007	EP2001851-008	EP2001851-009	EP2001851-010	
				Result	Result	Result	Result	Result	
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L	----	----	<0.05	<0.05	----	
Ethoprophos	13194-48-4	0.01	µg/L	----	----	<0.01	<0.01	----	
Fenamiphos	22224-92-6	0.01	µg/L	----	----	<0.01	<0.01	----	
Fenchlorphos (Ronnell)	299-84-3	10	µg/L	----	----	<10	<10	----	
Fenitrothion	122-14-5	2	µg/L	----	----	<2	<2	----	
Fensulfothion	115-90-2	0.01	µg/L	----	----	<0.01	<0.01	----	
Fenthion	55-38-9	0.05	µg/L	----	----	<0.05	<0.05	----	
Malathion	121-75-5	0.02	µg/L	----	----	<0.02	<0.02	----	
Mevinphos	7786-34-7	0.02	µg/L	----	----	<0.02	<0.02	----	
Monocrotophos	6923-22-4	0.02	µg/L	----	----	<0.02	<0.02	----	
Omethoate	1113-02-6	0.01	µg/L	----	----	<0.01	<0.01	----	
Parathion	56-38-2	0.2	µg/L	----	----	<0.2	<0.2	----	
Parathion-methyl	298-00-0	0.5	µg/L	----	----	<0.5	<0.5	----	
Phorate	298-02-2	0.1	µg/L	----	----	<0.1	<0.1	----	
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	----	----	<0.01	<0.01	----	
Pirimiphos-methyl	29232-93-7	0.01	µg/L	----	----	<0.01	<0.01	----	
Profenofos	41198-08-7	0.01	µg/L	----	----	<0.01	<0.01	----	
Prothiofos	34643-46-4	0.1	µg/L	----	----	<0.1	<0.1	----	
Sulfotep	3689-24-5	0.005	µg/L	----	----	<0.005	<0.005	----	
Sulprofos	35400-43-2	0.05	µg/L	----	----	<0.05	<0.05	----	
Terbufos	13071-79-9	0.01	µg/L	----	----	<0.01	<0.01	----	
Temephos	3383-96-8	0.02	µg/L	----	----	<0.02	<0.02	----	
Tetrachlorvinphos	22248-79-9	0.01	µg/L	----	----	<0.01	<0.01	----	
Triazophos	24017-47-8	0.005	µg/L	----	----	<0.005	<0.005	----	
Trichlorfon	52-68-6	0.02	µg/L	----	----	<0.02	<0.02	----	
Trichloronate	327-98-0	0.5	µg/L	----	----	<0.5	<0.5	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	100	97.7	98.1	103	106	
Toluene-D8	2037-26-5	2	%	100	101	102	96.9	98.1	
4-Bromofluorobenzene	460-00-4	2	%	101	98.7	99.9	100	100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW25	BH9.2	BORR_MW37	FB03	FB04
Client sampling date / time				19-Feb-2020 00:00	19-Feb-2020 00:00	19-Feb-2020 00:00	19-Feb-2020 00:00	20-Feb-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2001851-011	EP2001851-012	EP2001851-013	EP2001851-014	EP2001851-015	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.21	3.56	5.84	----	----	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	3560	7670	3300	----	----	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	2200	5060	2020	----	----	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	49	<1	28	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	49	<1	28	----	----	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	37	480	34	----	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	93	88	71	----	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	1090	2700	981	----	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	26	58	14	----	----	
Magnesium	7439-95-4	1	mg/L	63	274	68	----	----	
Sodium	7440-23-5	1	mg/L	575	959	531	----	----	
Potassium	7440-09-7	1	mg/L	6	<1	2	----	----	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.02	34.2	0.02	----	----	
Arsenic	7440-38-2	0.001	mg/L	0.003	0.002	0.001	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----	
Cobalt	7440-48-4	0.001	mg/L	0.034	0.036	0.043	----	----	
Copper	7440-50-8	0.001	mg/L	0.004	0.006	0.011	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	0.025	<0.001	----	----	
Manganese	7439-96-5	0.001	mg/L	0.489	0.018	0.266	----	----	
Nickel	7440-02-0	0.001	mg/L	0.020	0.018	0.022	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----	
Zinc	7440-66-6	0.005	mg/L	0.062	0.074	0.065	----	----	
Iron	7439-89-6	0.05	mg/L	9.13	74.2	8.29	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW25	BH9.2	BORR_MW37	FB03	FB04
Client sampling date / time				19-Feb-2020 00:00	19-Feb-2020 00:00	19-Feb-2020 00:00	19-Feb-2020 00:00	20-Feb-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2001851-011	EP2001851-012	EP2001851-013	EP2001851-014	EP2001851-015	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	3.17	35.1	4.68	----	----	
Iron	7439-89-6	0.05	mg/L	12.0	75.7	9.18	----	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.05	<0.10	0.04	----	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.05	<0.01	0.04	----	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.02	----	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	0.3	0.2	----	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.2	0.3	0.2	----	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.04	<0.01	0.03	----	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	----	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	33.7	78.0	29.7	----	----	
∅ Total Cations	----	0.01	meq/L	31.6	67.2	29.4	----	----	
∅ Ionic Balance	----	0.01	%	3.09	7.46	0.45	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	----	----	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	----	----	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	----	----	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW25	BH9.2	BORR_MW37	FB03	FB04
Client sampling date / time				19-Feb-2020 00:00	19-Feb-2020 00:00	19-Feb-2020 00:00	19-Feb-2020 00:00	20-Feb-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2001851-011	EP2001851-012	EP2001851-013	EP2001851-014	EP2001851-015	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	----	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	102	108	105	104	104	
Toluene-D8	2037-26-5	2	%	97.5	95.2	97.7	97.1	96.1	
4-Bromofluorobenzene	460-00-4	2	%	100	98.9	100	99.9	99.5	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW081	TBW082	RB01	RB02	BORR_MW32
Client sampling date / time				20-Feb-2020 00:00	20-Feb-2020 00:00	20-Feb-2020 00:00	20-Feb-2020 00:00	19-Feb-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2001851-016	EP2001851-017	EP2001851-018	EP2001851-019	EP2001851-020	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	----	----	----	----	6.27	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	----	266	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	----	----	----	----	194	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	----	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	----	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	----	31	
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	----	31	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	----	----	----	----	21	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	----	<1	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	----	----	----	----	62	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	----	----	----	----	3	
Magnesium	7439-95-4	1	mg/L	----	----	----	----	6	
Sodium	7440-23-5	1	mg/L	----	----	----	----	39	
Potassium	7440-09-7	1	mg/L	----	----	----	----	3	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	----	----	0.96	
Arsenic	7440-38-2	0.001	mg/L	----	----	----	----	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	----	<0.0001	
Chromium	7440-47-3	0.001	mg/L	----	----	----	----	0.002	
Cobalt	7440-48-4	0.001	mg/L	----	----	----	----	<0.001	
Copper	7440-50-8	0.001	mg/L	----	----	----	----	0.005	
Lead	7439-92-1	0.001	mg/L	----	----	----	----	<0.001	
Manganese	7439-96-5	0.001	mg/L	----	----	----	----	0.004	
Nickel	7440-02-0	0.001	mg/L	----	----	----	----	0.005	
Selenium	7782-49-2	0.01	mg/L	----	----	----	----	<0.01	
Zinc	7440-66-6	0.005	mg/L	----	----	----	----	0.034	
Iron	7439-89-6	0.05	mg/L	----	----	----	----	0.60	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW081	TBW082	RB01	RB02	BORR_MW32
Client sampling date / time				20-Feb-2020 00:00	20-Feb-2020 00:00	20-Feb-2020 00:00	20-Feb-2020 00:00	19-Feb-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2001851-016	EP2001851-017	EP2001851-018	EP2001851-019	EP2001851-020	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	----	----	1.91	
Arsenic	7440-38-2	0.001	mg/L	----	----	<0.001	<0.001	----	
Cadmium	7440-43-9	0.0001	mg/L	----	----	<0.0001	<0.0001	----	
Chromium	7440-47-3	0.001	mg/L	----	----	<0.001	<0.001	----	
Copper	7440-50-8	0.001	mg/L	----	----	<0.001	<0.001	----	
Nickel	7440-02-0	0.001	mg/L	----	----	<0.001	0.003	----	
Lead	7439-92-1	0.001	mg/L	----	----	<0.001	<0.001	----	
Zinc	7440-66-6	0.005	mg/L	----	----	<0.005	<0.005	----	
Iron	7439-89-6	0.05	mg/L	----	----	----	----	0.73	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	----	----	----	----	0.50	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	----	----	----	----	0.50	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	----	----	----	----	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	----	----	----	1.2	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	----	----	----	----	1.2	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	----	----	----	----	<0.01	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	----	----	----	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	----	----	----	----	0.2	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	----	----	----	----	2.37	
∅ Total Cations	----	0.01	meq/L	----	----	----	----	2.42	
∅ Ionic Balance	----	0.01	%	----	----	----	----	1.01	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	----	<20	
C10 - C14 Fraction	----	50	µg/L	----	----	----	----	<50	
C15 - C28 Fraction	----	100	µg/L	----	----	----	----	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW081	TBW082	RB01	RB02	BORR_MW32
Client sampling date / time					20-Feb-2020 00:00	20-Feb-2020 00:00	20-Feb-2020 00:00	20-Feb-2020 00:00	19-Feb-2020 00:00
Compound	CAS Number	LOR	Unit	EP2001851-016	EP2001851-017	EP2001851-018	EP2001851-019	EP2001851-020	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>									
C29 - C36 Fraction	----	50	µg/L	----	----	----	----	----	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	----	----	----	----	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	----	----	----	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	----	----	----	<20
>C10 - C16 Fraction	----	100	µg/L	----	----	----	----	----	<100
>C16 - C34 Fraction	----	100	µg/L	----	----	----	----	----	<100
>C34 - C40 Fraction	----	100	µg/L	----	----	----	----	----	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	----	----	----	----	----	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	----	----	----	----	<100
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	----	----	----	<1
Toluene	108-88-3	2	µg/L	<2	<2	----	----	----	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	----	----	----	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	----	----	----	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	----	----	----	<2
^ Total Xylenes	----	2	µg/L	<2	<2	----	----	----	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	----	----	----	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	----	----	----	<5
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	103	104	----	----	----	106
Toluene-D8	2037-26-5	2	%	97.8	97.4	----	----	----	95.9
4-Bromofluorobenzene	460-00-4	2	%	98.9	94.5	----	----	----	98.5



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID			JT01	----	----	----	----
Client sampling date / time		20-Feb-2020 00:00			----	----	----	----	----
Compound	CAS Number	LOR	Unit	EP2001851-021	-----	-----	-----	-----	-----
				Result	----	----	----	----	----
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	7.16	----	----	----	----	----
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	5010	----	----	----	----	----
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	3200	----	----	----	----	----
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	48	----	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	48	----	----	----	----	----
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	10	----	----	----	----	----
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	141	----	----	----	----	----
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	1380	----	----	----	----	----
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	57	----	----	----	----	----
Magnesium	7439-95-4	1	mg/L	134	----	----	----	----	----
Sodium	7440-23-5	1	mg/L	759	----	----	----	----	----
Potassium	7440-09-7	1	mg/L	21	----	----	----	----	----
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.01	----	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----	----
Copper	7440-50-8	0.001	mg/L	0.010	----	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.237	----	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	0.008	----	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	0.032	----	----	----	----	----
Iron	7439-89-6	0.05	mg/L	0.17	----	----	----	----	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	JT01	----	----	----	----
Client sampling date / time				20-Feb-2020 00:00	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP2001851-021	-----	-----	-----	-----	
				Result	----	----	----	----	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.02	----	----	----	----	
Iron	7439-89-6	0.05	mg/L	1.89	----	----	----	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.02	----	----	----	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.02	----	----	----	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.01	----	----	----	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.4	----	----	----	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.4	----	----	----	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.02	----	----	----	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	----	----	----	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	----	----	----	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	42.8	----	----	----	----	
∅ Total Cations	----	0.01	meq/L	47.4	----	----	----	----	
∅ Ionic Balance	----	0.01	%	5.10	----	----	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----	
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	----	
C15 - C28 Fraction	----	100	µg/L	<100	----	----	----	----	
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	----	----	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	----	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----	
>C10 - C16 Fraction	----	100	µg/L	<100	----	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	JT01	----	----	----	----
Client sampling date / time				20-Feb-2020 00:00	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP2001851-021	-----	-----	-----	-----	
				Result	----	----	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	----	----	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	----	----	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	----	----	----	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	----	----	----	----	
Toluene	108-88-3	2	µg/L	<2	----	----	----	----	
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	----	----	
ortho-Xylene	95-47-6	2	µg/L	<2	----	----	----	----	
^ Total Xylenes	----	2	µg/L	<2	----	----	----	----	
^ Sum of BTEX	----	1	µg/L	<1	----	----	----	----	
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	<10	----	----	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	----	----	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	----	----	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	----	----	----	----	
Carbofenthion	786-19-6	0.02	µg/L	<0.02	----	----	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	----	----	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	----	----	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	----	----	----	----	
Coumaphos	56-72-4	0.01	µg/L	<0.01	----	----	----	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	----	----	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	----	----	----	----	
Demeton-O	298-03-3	0.02	µg/L	<0.02	----	----	----	----	
Demeton-S	126-75-0	0.02	µg/L	<0.02	----	----	----	----	
Diazinon	333-41-5	0.01	µg/L	<0.01	----	----	----	----	
Dichlorvos	62-73-7	0.20	µg/L	<0.20	----	----	----	----	
Dimethoate	60-51-5	0.02	µg/L	<0.02	----	----	----	----	
Disulfoton	298-04-4	0.05	µg/L	<0.05	----	----	----	----	
Ethion	563-12-2	0.02	µg/L	<0.02	----	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	JT01	----	----	----	----
Client sampling date / time				20-Feb-2020 00:00	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP2001851-021	-----	-----	-----	-----	
				Result	----	----	----	----	
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L	<0.05	----	----	----	----	
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	----	----	----	----	
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	----	----	----	----	
Fenchlorphos (Ronnell)	299-84-3	10	µg/L	<10	----	----	----	----	
Fenitrothion	122-14-5	2	µg/L	<2	----	----	----	----	
Fensulfothion	115-90-2	0.01	µg/L	<0.01	----	----	----	----	
Fenthion	55-38-9	0.05	µg/L	<0.05	----	----	----	----	
Malathion	121-75-5	0.02	µg/L	<0.02	----	----	----	----	
Mevinphos	7786-34-7	0.02	µg/L	<0.02	----	----	----	----	
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	----	----	----	----	
Omethoate	1113-02-6	0.01	µg/L	<0.01	----	----	----	----	
Parathion	56-38-2	0.2	µg/L	<0.2	----	----	----	----	
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	----	----	----	----	
Phorate	298-02-2	0.1	µg/L	<0.1	----	----	----	----	
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	----	----	----	----	
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	----	----	----	----	
Profenofos	41198-08-7	0.01	µg/L	<0.01	----	----	----	----	
Prothiofos	34643-46-4	0.1	µg/L	<0.1	----	----	----	----	
Sulfotep	3689-24-5	0.005	µg/L	<0.005	----	----	----	----	
Sulprofos	35400-43-2	0.05	µg/L	<0.05	----	----	----	----	
Terbufos	13071-79-9	0.01	µg/L	<0.01	----	----	----	----	
Temephos	3383-96-8	0.02	µg/L	<0.02	----	----	----	----	
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	----	----	----	----	
Triazophos	24017-47-8	0.005	µg/L	<0.005	----	----	----	----	
Trichlorfon	52-68-6	0.02	µg/L	<0.02	----	----	----	----	
Trichloronate	327-98-0	0.5	µg/L	<0.5	----	----	----	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	<b>106</b>	----	----	----	----	
Toluene-D8	2037-26-5	2	%	<b>97.6</b>	----	----	----	----	
4-Bromofluorobenzene	460-00-4	2	%	<b>98.7</b>	----	----	----	----	





## Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	61	141
Toluene-D8	2037-26-5	73	126
4-Bromofluorobenzene	460-00-4	60	125

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP2001851	Page	: 1 of 16
Client	: GHD PTY LTD	Laboratory	: Environmental Division Perth
Contact	: MS VICKI DAVIES	Telephone	: 08 9406 1311
Project	: 6137041	Date Samples Received	: 21-Feb-2020
Site	: ----	Issue Date	: 09-Mar-2020
Sampler	: Pascale Ketelaar	No. of samples received	: 21
Order number	: 6137041 08.0831	No. of samples analysed	: 21

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



**Outliers : Quality Control Samples**

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
EP234A: OP Pesticides	EB2004785--001	Anonymous	Disulfoton	298-04-4	49.0 %	70.0-130%	Recovery less than lower data quality objective

**Outliers : Analysis Holding Time Compliance**

Matrix: **WATER**

Method	Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EA005P: pH by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural</b>							
BORR_MW12, SOUTHERN 4	BORR_MW31,	----	----	----	26-Feb-2020	19-Feb-2020	7
<b>Clear Plastic Bottle - Natural</b>							
SW06, BORR_MW25, BORR_MW37,	BORR_MW29, BH9.2, BORR_MW32	----	----	----	28-Feb-2020	19-Feb-2020	9
<b>Clear Plastic Bottle - Natural</b>							
NORTH CREEK 4, BORR_MW39, BORR_MW22b	BORR_MW24, BH11.1,	----	----	----	26-Feb-2020	20-Feb-2020	6
<b>Clear Plastic Bottle - Natural</b>							
JT01		----	----	----	28-Feb-2020	20-Feb-2020	8
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>							
<b>Clear Plastic Bottle - Natural</b>							
SW06, BORR_MW25, BORR_MW37,	BORR_MW29, BH9.2, BORR_MW32	----	----	----	26-Feb-2020	21-Feb-2020	5
<b>Clear Plastic Bottle - Natural</b>							
JT01		----	----	----	26-Feb-2020	22-Feb-2020	4
<b>EK085M: Sulfide as S2-</b>							
<b>Clear Plastic Bottle - Zinc Acetate/NaOH</b>							
SW06, BORR_MW25, BORR_MW37,	BORR_MW29, BH9.2, BORR_MW32	----	----	----	27-Feb-2020	26-Feb-2020	1
<b>EP234A: OP Pesticides</b>							
<b>Amber Bottle Unpreserved for Specialist Organics</b>							
SW06		----	----	----	05-Mar-2020	26-Feb-2020	8
<b>Amber Bottle Unpreserved for Specialist Organics</b>							
JT01		----	----	----	05-Mar-2020	27-Feb-2020	7



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA005P: pH by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA005-P)</b> BORR_MW12, SOUTHERN 4	BORR_MW31,	19-Feb-2020	----	----	----	26-Feb-2020	19-Feb-2020	*
<b>Clear Plastic Bottle - Natural (EA005-P)</b> SW06, BORR_MW25, BORR_MW37,	BORR_MW29, BH9.2, BORR_MW32	19-Feb-2020	----	----	----	28-Feb-2020	19-Feb-2020	*
<b>Clear Plastic Bottle - Natural (EA005-P)</b> NORTH CREEK 4, BORR_MW39, BORR_MW22b	BORR_MW24, BH11.1,	20-Feb-2020	----	----	----	26-Feb-2020	20-Feb-2020	*
<b>Clear Plastic Bottle - Natural (EA005-P)</b> JT01		20-Feb-2020	----	----	----	28-Feb-2020	20-Feb-2020	*
<b>EA010P: Conductivity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA010-P)</b> BORR_MW12, SOUTHERN 4	BORR_MW31,	19-Feb-2020	----	----	----	26-Feb-2020	18-Mar-2020	✓
<b>Clear Plastic Bottle - Natural (EA010-P)</b> SW06, BORR_MW25, BORR_MW37,	BORR_MW29, BH9.2, BORR_MW32	19-Feb-2020	----	----	----	28-Feb-2020	18-Mar-2020	✓
<b>Clear Plastic Bottle - Natural (EA010-P)</b> NORTH CREEK 4, BORR_MW39, BORR_MW22b	BORR_MW24, BH11.1,	20-Feb-2020	----	----	----	26-Feb-2020	19-Mar-2020	✓
<b>Clear Plastic Bottle - Natural (EA010-P)</b> JT01		20-Feb-2020	----	----	----	28-Feb-2020	19-Mar-2020	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
<b>Clear Plastic Bottle - Natural (EA015H)</b> BORR_MW12, SOUTHERN 4	BORR_MW31,	19-Feb-2020	----	----	----	25-Feb-2020	26-Feb-2020	✓
<b>Clear Plastic Bottle - Natural (EA015H)</b> SW06, BORR_MW25, BORR_MW37,	BORR_MW29, BH9.2, BORR_MW32	19-Feb-2020	----	----	----	26-Feb-2020	26-Feb-2020	✓
<b>Clear Plastic Bottle - Natural (EA015H)</b> NORTH CREEK 4, BORR_MW39, BORR_MW22b,	BORR_MW24, BH11.1, JT01	20-Feb-2020	----	----	----	26-Feb-2020	27-Feb-2020	✓
<b>ED037P: Alkalinity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (ED037-P)</b> BORR_MW12, SOUTHERN 4	BORR_MW31,	19-Feb-2020	----	----	----	26-Feb-2020	04-Mar-2020	✓
<b>Clear Plastic Bottle - Natural (ED037-P)</b> SW06, BORR_MW25, BORR_MW37,	BORR_MW29, BH9.2, BORR_MW32	19-Feb-2020	----	----	----	28-Feb-2020	04-Mar-2020	✓
<b>Clear Plastic Bottle - Natural (ED037-P)</b> NORTH CREEK 4, BORR_MW39, BORR_MW22b	BORR_MW24, BH11.1,	20-Feb-2020	----	----	----	26-Feb-2020	05-Mar-2020	✓
<b>Clear Plastic Bottle - Natural (ED037-P)</b> JT01		20-Feb-2020	----	----	----	28-Feb-2020	05-Mar-2020	✓
<b>ED038A: Acidity</b>								
<b>Clear Plastic Bottle - Natural (ED038)</b> BORR_MW12, SOUTHERN 4	BORR_MW31,	19-Feb-2020	----	----	----	24-Feb-2020	04-Mar-2020	✓
<b>Clear Plastic Bottle - Natural (ED038)</b> SW06, BORR_MW25, BORR_MW37,	BORR_MW29, BH9.2, BORR_MW32	19-Feb-2020	----	----	----	28-Feb-2020	04-Mar-2020	✓
<b>Clear Plastic Bottle - Natural (ED038)</b> NORTH CREEK 4, BORR_MW39, BORR_MW22b	BORR_MW24, BH11.1,	20-Feb-2020	----	----	----	24-Feb-2020	05-Mar-2020	✓
<b>Clear Plastic Bottle - Natural (ED038)</b> JT01		20-Feb-2020	----	----	----	28-Feb-2020	05-Mar-2020	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Clear Plastic Bottle - Natural (ED041G) BORR_MW12, SOUTHERN 4	BORR_MW31,	19-Feb-2020	----	----	----	21-Feb-2020	18-Mar-2020	✓
Clear Plastic Bottle - Natural (ED041G) SW06, BORR_MW25, BORR_MW37,	BORR_MW29, BH9.2, BORR_MW32	19-Feb-2020	----	----	----	26-Feb-2020	18-Mar-2020	✓
Clear Plastic Bottle - Natural (ED041G) NORTH CREEK 4, BORR_MW39, BORR_MW22b	BORR_MW24, BH11.1,	20-Feb-2020	----	----	----	21-Feb-2020	19-Mar-2020	✓
Clear Plastic Bottle - Natural (ED041G) JT01		20-Feb-2020	----	----	----	26-Feb-2020	19-Mar-2020	✓
<b>ED045G: Chloride by Discrete Analyser</b>								
Clear Plastic Bottle - Natural (ED045G) BORR_MW12, SOUTHERN 4	BORR_MW31,	19-Feb-2020	----	----	----	21-Feb-2020	18-Mar-2020	✓
Clear Plastic Bottle - Natural (ED045G) SW06, BORR_MW25, BORR_MW37,	BORR_MW29, BH9.2, BORR_MW32	19-Feb-2020	----	----	----	26-Feb-2020	18-Mar-2020	✓
Clear Plastic Bottle - Natural (ED045G) NORTH CREEK 4, BORR_MW39, BORR_MW22b	BORR_MW24, BH11.1,	20-Feb-2020	----	----	----	21-Feb-2020	19-Mar-2020	✓
Clear Plastic Bottle - Natural (ED045G) JT01		20-Feb-2020	----	----	----	26-Feb-2020	19-Mar-2020	✓
<b>ED093F: Dissolved Major Cations</b>								
Clear Plastic Bottle - Filtered; Lab-acidified (ED093F) BORR_MW12, SOUTHERN 4	BORR_MW31,	19-Feb-2020	----	----	----	24-Feb-2020	18-Mar-2020	✓
Clear Plastic Bottle - Filtered; Lab-acidified (ED093F) SW06, BORR_MW25, BORR_MW37,	BORR_MW29, BH9.2, BORR_MW32	19-Feb-2020	----	----	----	27-Feb-2020	18-Mar-2020	✓
Clear Plastic Bottle - Filtered; Lab-acidified (ED093F) NORTH CREEK 4, BORR_MW39, BORR_MW22b	BORR_MW24, BH11.1,	20-Feb-2020	----	----	----	24-Feb-2020	19-Mar-2020	✓
Clear Plastic Bottle - Filtered; Lab-acidified (ED093F) JT01		20-Feb-2020	----	----	----	27-Feb-2020	19-Mar-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EG020F: Dissolved Metals by ICP-MS</b>								
Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F) BORR_MW12, SOUTHERN 4	BORR_MW31,	19-Feb-2020	----	----	----	24-Feb-2020	17-Aug-2020	✓
Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F) SW06, BORR_MW25, BORR_MW37,	BORR_MW29, BH9.2, BORR_MW32	19-Feb-2020	----	----	----	27-Feb-2020	17-Aug-2020	✓
Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F) NORTH CREEK 4, BORR_MW39, BORR_MW22b	BORR_MW24, BH11.1,	20-Feb-2020	----	----	----	24-Feb-2020	18-Aug-2020	✓
Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F) JT01		20-Feb-2020	----	----	----	27-Feb-2020	18-Aug-2020	✓
<b>EG020T: Total Metals by ICP-MS</b>								
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T) BORR_MW12, SOUTHERN 4	BORR_MW31,	19-Feb-2020	24-Feb-2020	17-Aug-2020	✓	24-Feb-2020	17-Aug-2020	✓
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T) SW06, BORR_MW25, BORR_MW37,	BORR_MW29, BH9.2, BORR_MW32	19-Feb-2020	27-Feb-2020	17-Aug-2020	✓	27-Feb-2020	17-Aug-2020	✓
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T) NORTH CREEK 4, BORR_MW39, BORR_MW22b	BORR_MW24, BH11.1,	20-Feb-2020	24-Feb-2020	18-Aug-2020	✓	24-Feb-2020	18-Aug-2020	✓
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T) RB01, JT01	RB02,	20-Feb-2020	27-Feb-2020	18-Aug-2020	✓	27-Feb-2020	18-Aug-2020	✓
<b>EK055G: Ammonia as N by Discrete Analyser</b>								
Clear Plastic Bottle - Sulfuric Acid (EK055G) BORR_MW12, SOUTHERN 4	BORR_MW31,	19-Feb-2020	----	----	----	21-Feb-2020	18-Mar-2020	✓
Clear Plastic Bottle - Sulfuric Acid (EK055G) SW06, BORR_MW25, BORR_MW37,	BORR_MW29, BH9.2, BORR_MW32	19-Feb-2020	----	----	----	26-Feb-2020	18-Mar-2020	✓
Clear Plastic Bottle - Sulfuric Acid (EK055G) NORTH CREEK 4, BORR_MW39, BORR_MW22b	BORR_MW24, BH11.1,	20-Feb-2020	----	----	----	21-Feb-2020	19-Mar-2020	✓
Clear Plastic Bottle - Sulfuric Acid (EK055G) JT01		20-Feb-2020	----	----	----	26-Feb-2020	19-Mar-2020	✓



Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> BORR_MW12, SOUTHERN 4	BORR_MW31,	19-Feb-2020	----	----	----	21-Feb-2020	18-Mar-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> SW06, BORR_MW25, BORR_MW37,	BORR_MW29, BH9.2, BORR_MW32	19-Feb-2020	----	----	----	26-Feb-2020	18-Mar-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> NORTH CREEK 4, BORR_MW39, BORR_MW22b	BORR_MW24, BH11.1,	20-Feb-2020	----	----	----	21-Feb-2020	19-Mar-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> JT01		20-Feb-2020	----	----	----	26-Feb-2020	19-Mar-2020	✓
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> BORR_MW12, SOUTHERN 4	BORR_MW31,	19-Feb-2020	25-Feb-2020	18-Mar-2020	✓	26-Feb-2020	18-Mar-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> SW06, BORR_MW25, BORR_MW37,	BORR_MW29, BH9.2, BORR_MW32	19-Feb-2020	28-Feb-2020	18-Mar-2020	✓	28-Feb-2020	18-Mar-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> NORTH CREEK 4, BORR_MW39, BORR_MW22b	BORR_MW24, BH11.1,	20-Feb-2020	25-Feb-2020	19-Mar-2020	✓	26-Feb-2020	19-Mar-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> JT01		20-Feb-2020	28-Feb-2020	19-Mar-2020	✓	28-Feb-2020	19-Mar-2020	✓
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> BORR_MW12, SOUTHERN 4	BORR_MW31,	19-Feb-2020	25-Feb-2020	18-Mar-2020	✓	26-Feb-2020	18-Mar-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> SW06, BORR_MW25, BORR_MW37,	BORR_MW29, BH9.2, BORR_MW32	19-Feb-2020	28-Feb-2020	18-Mar-2020	✓	28-Feb-2020	18-Mar-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> NORTH CREEK 4, BORR_MW39, BORR_MW22b	BORR_MW24, BH11.1,	20-Feb-2020	25-Feb-2020	19-Mar-2020	✓	26-Feb-2020	19-Mar-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> JT01		20-Feb-2020	28-Feb-2020	19-Mar-2020	✓	28-Feb-2020	19-Mar-2020	✓





Matrix: **WATER** Evaluation: ✘ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>								
<b>Clear Plastic Bottle - Natural (EK071G)</b> BORR_MW12, SOUTHERN 4	BORR_MW31,	19-Feb-2020	----	----	----	21-Feb-2020	21-Feb-2020	✔
<b>Clear Plastic Bottle - Natural (EK071G)</b> SW06, BORR_MW25, BORR_MW37,	BORR_MW29, BH9.2, BORR_MW32	19-Feb-2020	----	----	----	26-Feb-2020	21-Feb-2020	✘
<b>Clear Plastic Bottle - Natural (EK071G)</b> NORTH CREEK 4, BORR_MW39, BORR_MW22b	BORR_MW24, BH11.1,	20-Feb-2020	----	----	----	21-Feb-2020	22-Feb-2020	✔
<b>Clear Plastic Bottle - Natural (EK071G)</b> JT01		20-Feb-2020	----	----	----	26-Feb-2020	22-Feb-2020	✘
<b>EK085M: Sulfide as S2-</b>								
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> BORR_MW12, SOUTHERN 4	BORR_MW31,	19-Feb-2020	----	----	----	24-Feb-2020	26-Feb-2020	✔
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> SW06, BORR_MW25, BORR_MW37,	BORR_MW29, BH9.2, BORR_MW32	19-Feb-2020	----	----	----	27-Feb-2020	26-Feb-2020	✘
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> NORTH CREEK 4, BORR_MW39, BORR_MW22b	BORR_MW24, BH11.1,	20-Feb-2020	----	----	----	24-Feb-2020	27-Feb-2020	✔
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> JT01		20-Feb-2020	----	----	----	27-Feb-2020	27-Feb-2020	✔



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BORR_MW12, SOUTHERN 4	BORR_MW31	19-Feb-2020	24-Feb-2020	26-Feb-2020	✓	25-Feb-2020	04-Apr-2020	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b> SOUTHERN 4		19-Feb-2020	25-Feb-2020	26-Feb-2020	✓	25-Feb-2020	05-Apr-2020	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b> SW06, BORR_MW25, BORR_MW37,	BORR_MW29, BH9.2, BORR_MW32	19-Feb-2020	26-Feb-2020	26-Feb-2020	✓	28-Feb-2020	06-Apr-2020	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b> NORTH CREEK 4		20-Feb-2020	24-Feb-2020	27-Feb-2020	✓	25-Feb-2020	04-Apr-2020	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BORR_MW24, BH11.1,	BORR_MW39, BORR_MW22b	20-Feb-2020	25-Feb-2020	27-Feb-2020	✓	25-Feb-2020	05-Apr-2020	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b> JT01		20-Feb-2020	26-Feb-2020	27-Feb-2020	✓	28-Feb-2020	06-Apr-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BORR_MW12, SOUTHERN 4	BORR_MW31,	19-Feb-2020	25-Feb-2020	04-Mar-2020	✓	25-Feb-2020	04-Mar-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> SW06, BORR_MW25, BORR_MW37, BORR_MW32	BORR_MW29, BH9.2, FB03,	19-Feb-2020	28-Feb-2020	04-Mar-2020	✓	28-Feb-2020	04-Mar-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> NORTH CREEK 4, BORR_MW39, BORR_MW22b	BORR_MW24, BH11.1,	20-Feb-2020	25-Feb-2020	05-Mar-2020	✓	25-Feb-2020	05-Mar-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> FB04, TBW082,	TBW081, JT01	20-Feb-2020	28-Feb-2020	05-Mar-2020	✓	28-Feb-2020	05-Mar-2020	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>								
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BORR_MW12, SOUTHERN 4	BORR_MW31	19-Feb-2020	24-Feb-2020	26-Feb-2020	✓	25-Feb-2020	04-Apr-2020	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b> SOUTHERN 4		19-Feb-2020	25-Feb-2020	26-Feb-2020	✓	25-Feb-2020	05-Apr-2020	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b> SW06, BORR_MW25, BORR_MW37,	BORR_MW29, BH9.2, BORR_MW32	19-Feb-2020	26-Feb-2020	26-Feb-2020	✓	28-Feb-2020	06-Apr-2020	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b> NORTH CREEK 4		20-Feb-2020	24-Feb-2020	27-Feb-2020	✓	25-Feb-2020	04-Apr-2020	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BORR_MW24, BH11.1,	BORR_MW39, BORR_MW22b	20-Feb-2020	25-Feb-2020	27-Feb-2020	✓	25-Feb-2020	05-Apr-2020	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b> JT01		20-Feb-2020	26-Feb-2020	27-Feb-2020	✓	28-Feb-2020	06-Apr-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BORR_MW12, SOUTHERN 4	BORR_MW31,	19-Feb-2020	25-Feb-2020	04-Mar-2020	✓	25-Feb-2020	04-Mar-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> SW06, BORR_MW25, BORR_MW37, BORR_MW32	BORR_MW29, BH9.2, FB03,	19-Feb-2020	28-Feb-2020	04-Mar-2020	✓	28-Feb-2020	04-Mar-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> NORTH CREEK 4, BORR_MW39, BORR_MW22b	BORR_MW24, BH11.1,	20-Feb-2020	25-Feb-2020	05-Mar-2020	✓	25-Feb-2020	05-Mar-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> FB04, TBW082,	TBW081, JT01	20-Feb-2020	28-Feb-2020	05-Mar-2020	✓	28-Feb-2020	05-Mar-2020	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080: BTEXN</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BORR_MW12, SOUTHERN 4	BORR_MW31,	19-Feb-2020	25-Feb-2020	04-Mar-2020	✓	25-Feb-2020	04-Mar-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> SW06, BORR_MW25, BORR_MW37, BORR_MW32	BORR_MW29, BH9.2, FB03,	19-Feb-2020	28-Feb-2020	04-Mar-2020	✓	28-Feb-2020	04-Mar-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> NORTH CREEK 4, BORR_MW39, BORR_MW22b	BORR_MW24, BH11.1,	20-Feb-2020	25-Feb-2020	05-Mar-2020	✓	25-Feb-2020	05-Mar-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> FB04, TBW082,	TBW081, JT01	20-Feb-2020	28-Feb-2020	05-Mar-2020	✓	28-Feb-2020	05-Mar-2020	✓
<b>EP204: Glyphosate and AMPA</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b> SOUTHERN 4,	SW06	19-Feb-2020	----	----	----	02-Mar-2020	04-Mar-2020	✓
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b> NORTH CREEK 4,	JT01	20-Feb-2020	----	----	----	02-Mar-2020	05-Mar-2020	✓
<b>EP234A: OP Pesticides</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> SOUTHERN 4		19-Feb-2020	----	----	----	26-Feb-2020	26-Feb-2020	✓
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> SW06		19-Feb-2020	----	----	----	05-Mar-2020	26-Feb-2020	*
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> NORTH CREEK 4		20-Feb-2020	----	----	----	26-Feb-2020	27-Feb-2020	✓
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> JT01		20-Feb-2020	----	----	----	05-Mar-2020	27-Feb-2020	*



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Laboratory Duplicates (DUP)</b>							
Acidity as Calcium Carbonate	ED038	6	48	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	6	60	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	4	35	11.43	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	4	26	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	6	60	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	6	47	12.77	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	4	37	10.81	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	3	17	17.65	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	6	60	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	3	28	10.71	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	29	13.79	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	4	29	13.79	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	22	18.18	10.53	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	4	29	13.79	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	4	38	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	29	10.34	10.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Acidity as Calcium Carbonate	ED038	4	48	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	6	60	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	4	26	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	3	60	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	3	47	6.38	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	2	17	11.76	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	6	60	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	29	13.79	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	22	18.18	10.53	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	15	13.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Alkalinity by PC Titrator	ED037-P	3	60	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	3	60	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	3	47	6.38	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	2	17	11.76	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	22	9.09	5.26	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	3	29	10.34	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	15	13.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Ammonia as N by Discrete analyser	EK055G	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	3	47	6.38	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	2	17	11.76	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	15	13.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3)  Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3)  Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ammonium as N	EK055G-NH4	WATER	Ammonium in the sample is reported as the ionised / unionised fractions by the use of a nomograph and the initial pH and Temperature. Ammonia is determined by direct colorimetry by Discrete Analyser according to APHA 4500-NH3 G. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Sulfide as S2-	EK085	WATER	In house: Referenced to APHA 4500-S2- D. Sulfide species present in water samples are immediately precipitated when collected in pretreated caustic/zinc acetate preserved sample containers. The sulphides are coloured using methylene blue indicator. Non-detects may be screened by comparison against a standard at half-LOR, otherwise samples are measured using UV-VIS detection at 664nm. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatle Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Glyphosate and AMPA	EP204	WATER	In house: Pre-column derivatisation LCMS (ES in negative mode). Water samples are derivatised with 9-fluorenyl methoxycarbonyl chloroformate (FMOC) in alkaline condition. The derivatives of glyphosate and AMPA are separated by a C8 column and determined by MS.
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.





<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

**CHAIN OF CUSTODY RECORD  
AND ANALYSIS REQUEST**



GHD  
Level 10, 999 Hay Street  
Perth WA 6000

PO Box 3106  
Perth WA 6832

Reception Ph: 08 6222 8222

Project ID (as per ESdat set up; no spaces)  
**6137041**

PO Number (to be invoiced)  
**6137041.08.0831**

Laboratory: **ALS Environmental**  
Address: **26 Rigali Way, Wangara WA 6065**  
Laboratory Contact: **Marnie Thomsett (08 9406 1301)**

Laboratory Quote No.  
EP/489/19 V4

Turnaround Time  
Standard

Job Manager (Invoice) & GHD accounts  
Vicki Davies  
Julia Roberts

Email Address (Results)  
vicki.davies@ghd.com  
amy.hestehauge@ghd.com

GHD Sample ID	Lab Sample ID	Date	Time	Sample Matrix - Soil / Sludge / W-Water / A-Air	Container				Analyses							Remarks	
					Type - B-Bottle / Jar / Vial / Bag / G-Glass / P-Plastic	Preservative - U-mpreserved / HCl / H2SO4 / HNO3 / Other	No	AW suite	SW suite	Field blank	trip blank	risate					
SW06	9	19.2.20				10		X									
BORR_MW29	10					8	X										
BORR_MW25	11					8	X										
BHA.2	12					10	X										
BORR_MW37	13					10	X										
FB03	14					1				X							
FB04	15	20.2.20				1				X							
TBN081	16					1					X						
TBW082	17					1					X						
RBO1	18					1						X					
RBO2	19					1						X					
BORR_MW32	20	19.2.20				8	X										
BORR_MW12	1					8	X										
BORR_MW31	2					8	X										
NORTH CREEK 4	3	20.2.20				10			X								
BORR_MW24	4					8	X										
BORR_MW39	5					8	X										

Environmental Division  
Perth  
Work Order Reference  
**EP2001851**



Telephone : - 61-8-9406 1301

Sampled by: **Pascale Ketelaar**

Received by: **NO**

Date/Time: **20.2.20**

Date/Time: **26.02.2020**

Relinquished by: **Pascale Ketelaar**

Relinquished by:

Date/Time: **20.2.20**

Date/Time:

12:15pm.



GHD Pty Ltd WA  
999 Hay Street Perth  
Perth  
WA 6004



NATA Accredited  
Accreditation Number 1261  
Site Number 23736

Accredited for compliance with ISO/IEC 17025 – Testing  
The results of the tests, calibrations and/or  
measurements included in this document are traceable  
to Australian/national standards.

Attention: **Vicki Davies**

Report **702937-W**

Project name

Project ID **6137041**

Received Date **Feb 19, 2020**

Client Sample ID			<b>FS01</b>
Sample Matrix			<b>Water</b>
Eurofins Sample No.			<b>P20-Fe25017</b>
Date Sampled			<b>Feb 18, 2020</b>
Test/Reference	LOR	Unit	
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>			
TRH C6-C9	0.02	mg/L	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1
TRH C10-C36 (Total)	0.1	mg/L	< 0.1
<b>BTEX</b>			
Benzene	0.001	mg/L	< 0.001
Toluene	0.001	mg/L	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002
o-Xylene	0.001	mg/L	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003
4-Bromofluorobenzene (surr.)	1	%	73
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>			
Naphthalene <sup>N02</sup>	0.01	mg/L	< 0.01
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	0.05	mg/L	< 0.05
TRH C6-C10	0.02	mg/L	0.02
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	0.02	mg/L	0.02
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>			
TRH >C10-C16	0.05	mg/L	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1
<b>Acidity (as CaCO3)</b>			
Acidity (as CaCO3)	10	mg/L	<sup>G03</sup> I/S
Ammonia (as N)	0.01	mg/L	0.38
Chloride	1	mg/L	160
Conductivity (at 25°C)	10	uS/cm	470
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02
pH (at 25°C)	0.1	pH Units	6.2
Phosphate total (as P)	0.01	mg/L	0.01
Phosphorus reactive (as P)	0.01	mg/L	< 0.01
Sulphate (as SO4)	5	mg/L	50

<b>Client Sample ID</b>			<b>FS01</b>
<b>Sample Matrix</b>			<b>Water</b>
<b>Eurofins Sample No.</b>			<b>P20-Fe25017</b>
<b>Date Sampled</b>			<b>Feb 18, 2020</b>
Test/Reference	LOR	Unit	
<b>Sulphide (as S)</b>			
	0.05	mg/L	0.10
<b>Total Dissolved Solids Dried at 180°C ± 2°C</b>			
	10	mg/L	510
<b>Total Kjeldahl Nitrogen (as N)</b>			
	0.2	mg/L	0.7
<b>Total Nitrogen (as N)*</b>			
	0.2	mg/L	0.7
<b>Alkalinity (speciated)</b>			
<b>Bicarbonate Alkalinity (as CaCO<sub>3</sub>)</b>			
	20	mg/L	34
<b>Carbonate Alkalinity (as CaCO<sub>3</sub>)</b>			
	10	mg/L	< 10
<b>Hydroxide Alkalinity (as CaCO<sub>3</sub>)</b>			
	20	mg/L	< 20
<b>Total Alkalinity (as CaCO<sub>3</sub>)</b>			
	20	mg/L	34
<b>Heavy Metals</b>			
<b>Aluminium</b>			
	0.05	mg/L	0.17
<b>Aluminium (filtered)</b>			
	0.05	mg/L	< 0.05
<b>Arsenic (filtered)</b>			
	0.001	mg/L	0.001
<b>Cadmium (filtered)</b>			
	0.0002	mg/L	< 0.0002
<b>Chromium (filtered)</b>			
	0.001	mg/L	0.001
<b>Cobalt (filtered)</b>			
	0.001	mg/L	< 0.001
<b>Copper (filtered)</b>			
	0.001	mg/L	< 0.001
<b>Iron</b>			
	0.05	mg/L	4.3
<b>Iron (filtered)</b>			
	0.05	mg/L	3.3
<b>Lead (filtered)</b>			
	0.001	mg/L	< 0.001
<b>Manganese (filtered)</b>			
	0.005	mg/L	0.011
<b>Nickel (filtered)</b>			
	0.001	mg/L	< 0.001
<b>Selenium (filtered)</b>			
	0.001	mg/L	< 0.001
<b>Zinc (filtered)</b>			
	0.005	mg/L	< 0.005
<b>Alkali Metals (filtered)</b>			
<b>Magnesium (filtered)</b>			
	0.5	mg/L	12
<b>Potassium (filtered)</b>			
	0.5	mg/L	4.9
<b>Sodium (filtered)</b>			
	0.5	mg/L	48
<b>Eurofins   mgt Suite B11C: Na/K/Ca/Mg</b>			
<b>Calcium</b>			
	0.5	mg/L	15
<b>Magnesium</b>			
	0.5	mg/L	14
<b>Potassium</b>			
	0.5	mg/L	5.2
<b>Sodium</b>			
	0.5	mg/L	53

**Sample History**

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
<b>Eurofins   mgt Suite B1</b>			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Perth	Feb 19, 2020	7 Days
BTEX - Method: LTM-ORG-2010 TRH C6-C40	Perth	Feb 19, 2020	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Perth	Feb 19, 2020	7 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Perth	Feb 19, 2020	7 Days
Acidity (as CaCO <sub>3</sub> ) - Method: LTM-INO-4210 Acidity	Melbourne	Feb 20, 2020	14 Days
Conductivity (at 25°C) - Method: LTM-INO-4030 Conductivity	Melbourne	Feb 20, 2020	28 Days
pH (at 25°C) - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Feb 20, 2020	0 Hours
Sulphide (as S) - Method: APHA 4500-S C & D - Sulphide	Melbourne	Feb 20, 2020	7 Days
Total Dissolved Solids Dried at 180°C ± 2°C - Method: LTM-INO-4170 Total Dissolved Solids in Water	Melbourne	Feb 20, 2020	7 Days
Heavy Metals - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Perth	Feb 19, 2020	180 Days
Heavy Metals (filtered) - Method: HEAVY METALS	Perth	Feb 19, 2020	180 Days
Alkali Metals (filtered) - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Perth	Feb 19, 2020	180 Days
<b>Eurofins   mgt Suite B11C: Na/K/Ca/Mg</b> - Method: LTM-MET-3010 Alkali Metals, S, Si and P by ICP-AES	Perth	Feb 19, 2020	180 Days
<b>Eurofins   mgt Suite B19E: Total N, TKN, NO<sub>x</sub>, NO<sub>2</sub>, NO<sub>3</sub>, NH<sub>3</sub>, Total P, Reactive P</b>			
Ammonia (as N) - Method: LTM-INO-4200 Ammonia by Discrete Analyser	Perth	Feb 19, 2020	28 Days
Nitrate & Nitrite (as N) - Method: LTM-INO-4350 Aqueous Inorganic Analytes by Discrete Analyser	Perth	Feb 19, 2020	28 Days
Nitrate (as N) - Method: LTM-INO-4350 Aqueous Inorganic Analytes by Discrete Analyser	Perth	Feb 19, 2020	2 Days
Nitrite (as N) - Method: LTM-INO-4350 Aqueous Inorganic Analytes by Discrete Analyser	Perth	Feb 19, 2020	2 Days
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorus	Melbourne	Feb 20, 2020	28 Days
Phosphorus reactive (as P) - Method: APHA 4500-P	Melbourne	Feb 20, 2020	2 Days
Total Kjeldahl Nitrogen (as N) - Method: LTM-INO-4310 TKN in Waters & Soils by FIA	Melbourne	Feb 20, 2020	7 Days
<b>Eurofins   mgt Suite B11E: Cl/SO<sub>4</sub>/Alkalinity</b>			
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Feb 20, 2020	28 Days
Sulphate (as SO <sub>4</sub> ) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Feb 20, 2020	28 Days
Alkalinity (speciated) - Method: LTM-INO-4250 Alkalinity by Electrometric Titration	Melbourne	Feb 20, 2020	14 Days

**Australia**

**Melbourne**  
6 Monterey Road  
Dandenong South VIC 3175  
Phone : +61 3 8564 5000  
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Site # 1254 & 14271

**Sydney**  
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Phone : +61 7 3902 4600  
NATA # 1261 Site # 20794

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Penrose, Auckland 1061  
Phone : +64 9 526 45 51  
IANZ # 1327

**Christchurch**  
43 Detroit Drive  
Rolleston, Christchurch 7675  
Phone : 0800 856 450  
IANZ # 1290

**Company Name:** GHD Pty Ltd WA  
**Address:** 999 Hay Street Perth  
Perth  
WA 6004

**Order No.:** 6137041 08.0831  
**Report #:** 702937  
**Phone:** 08 6222 8222  
**Fax:** 08 9429 6555

**Received:** Feb 19, 2020 9:00 AM  
**Due:** Feb 26, 2020  
**Priority:** 5 Day  
**Contact Name:** Vicki Davies

**Project Name:**  
**Project ID:** 6137041

**Eurofins Analytical Services Manager : Robert Johnston**

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic (filtered)	Cadmium (filtered)	Chromium (filtered)	Cobalt (filtered)	Conductivity (at 25°C)	Copper (filtered)	Iron	Iron (filtered)	Lead (filtered)	Magnesium (filtered)	Manganese (filtered)	Nickel (filtered)	pH (at 25°C)	Potassium (filtered)	Selenium (filtered)	Sodium (filtered)	Sulphide (as S)	Total Dissolved Solids Dried at 180°C ± 2°C	Zinc (filtered)	Eurofins   mgt Suite B1	Eurofins   mgt Suite B11E: Total N, TKN, NOx, NO2, NO3, NH3, Total P, Reactive P	Eurofins   mgt Suite B11E: Cl/SO4/Alkalinity	Eurofins   mgt Suite B11C: Na/K/Ca/Mg	
<b>Melbourne Laboratory - NATA Site # 1254 &amp; 14271</b>						X							X								X				X	X			X	X		
<b>Sydney Laboratory - NATA Site # 18217</b>																																
<b>Brisbane Laboratory - NATA Site # 20794</b>																																
<b>Perth Laboratory - NATA Site # 23736</b>							X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	
<b>External Laboratory</b>																																
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																											
1	FS01	Feb 18, 2020		Water	P20-Fe25017	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
<b>Test Counts</b>						1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

**Internal Quality Control Review and Glossary**
**General**

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
- All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
- This report replaces any interim results previously issued.

**Holding Times**

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

**\*\*NOTE:** pH duplicates are reported as a range NOT as RPD

**Units**

**mg/kg:** milligrams per kilogram

**mg/L:** milligrams per litre

**ug/L:** micrograms per litre

**ppm:** Parts per million

**ppb:** Parts per billion

**%:** Percentage

**org/100mL:** Organisms per 100 millilitres

**NTU:** Nephelometric Turbidity Units

**MPN/100mL:** Most Probable Number of organisms per 100 millilitres

**Terms**

<b>Dry</b>	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
<b>LOR</b>	Limit of Reporting.
<b>SPIKE</b>	Addition of the analyte to the sample and reported as percentage recovery.
<b>RPD</b>	Relative Percent Difference between two Duplicate pieces of analysis.
<b>LCS</b>	Laboratory Control Sample - reported as percent recovery.
<b>CRM</b>	Certified Reference Material - reported as percent recovery.
<b>Method Blank</b>	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
<b>Surr - Surrogate</b>	The addition of a like compound to the analyte target and reported as percentage recovery.
<b>Duplicate</b>	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
<b>USEPA</b>	United States Environmental Protection Agency
<b>APHA</b>	American Public Health Association
<b>TCLP</b>	Toxicity Characteristic Leaching Procedure
<b>COC</b>	Chain of Custody
<b>SRA</b>	Sample Receipt Advice
<b>QSM</b>	US Department of Defense Quality Systems Manual Version 5.3
<b>CP</b>	Client Parent - QC was performed on samples pertaining to this report
<b>NCP</b>	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
<b>TEQ</b>	Toxic Equivalency Quotient

**QC - Acceptance Criteria**

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

**QC Data General Comments**

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.



**Quality Control Results**

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
<b>Method Blank</b>							
<b>BTEX</b>							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	0.02			0.02	Pass	
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
<b>Method Blank</b>							
Acidity (as CaCO <sub>3</sub> )	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Conductivity (at 25°C)	uS/cm	< 10			10	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphorus reactive (as P)	mg/L	< 0.01			0.01	Pass	
Sulphate (as SO <sub>4</sub> )	mg/L	< 5			5	Pass	
Sulphide (as S)	mg/L	< 0.05			0.05	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
<b>Method Blank</b>							
<b>Alkalinity (speciated)</b>							
Bicarbonate Alkalinity (as CaCO <sub>3</sub> )	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO <sub>3</sub> )	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO <sub>3</sub> )	mg/L	< 20			20	Pass	
Total Alkalinity (as CaCO <sub>3</sub> )	mg/L	< 20			20	Pass	
<b>Method Blank</b>							
<b>Heavy Metals</b>							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Cobalt (filtered)	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
<b>Method Blank</b>							
<b>Alkali Metals (filtered)</b>							
Magnesium (filtered)	mg/L	< 0.5			0.5	Pass	
Potassium (filtered)	mg/L	< 0.5			0.5	Pass	
Sodium (filtered)	mg/L	< 0.5			0.5	Pass	
<b>Method Blank</b>							
<b>Eurofins   mgt Suite B11C: Na/K/Ca/Mg</b>							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
<b>LCS - % Recovery</b>							
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>							
TRH C6-C9	%	103			70-130	Pass	
TRH C10-C14	%	96			70-130	Pass	
<b>LCS - % Recovery</b>							
<b>BTEX</b>							
Benzene	%	93			70-130	Pass	
Toluene	%	103			70-130	Pass	
Ethylbenzene	%	98			70-130	Pass	
m&p-Xylenes	%	97			70-130	Pass	
Xylenes - Total	%	97			70-130	Pass	
<b>LCS - % Recovery</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>							
Naphthalene	%	104			70-130	Pass	
TRH C6-C10	%	93			70-130	Pass	
<b>LCS - % Recovery</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>							
TRH >C10-C16	%	97			70-130	Pass	
<b>LCS - % Recovery</b>							
Acidity (as CaCO <sub>3</sub> )	%	103			70-130	Pass	
Ammonia (as N)	%	106			70-130	Pass	
Chloride	%	123			70-130	Pass	
Conductivity (at 25°C)	%	89			70-130	Pass	
Nitrate & Nitrite (as N)	%	109			70-130	Pass	
Nitrate (as N)	%	109			70-130	Pass	
Nitrite (as N)	%	105			70-130	Pass	
Phosphate total (as P)	%	106			70-130	Pass	
Phosphorus reactive (as P)	%	107			70-130	Pass	
Sulphate (as SO <sub>4</sub> )	%	125			70-130	Pass	
Sulphide (as S)	%	90			70-130	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	%	106			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	84			70-130	Pass	
<b>LCS - % Recovery</b>							
<b>Alkalinity (speciated)</b>							
Carbonate Alkalinity (as CaCO <sub>3</sub> )	%	107			70-130	Pass	
Total Alkalinity (as CaCO <sub>3</sub> )	%	113			70-130	Pass	
<b>LCS - % Recovery</b>							
<b>Heavy Metals</b>							
Aluminium	%	90			80-120	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Aluminium (filtered)	%	90			80-120	Pass		
Arsenic (filtered)	%	93			80-120	Pass		
Cadmium (filtered)	%	97			80-120	Pass		
Chromium (filtered)	%	96			80-120	Pass		
Cobalt (filtered)	%	98			80-120	Pass		
Copper (filtered)	%	96			80-120	Pass		
Iron	%	89			80-120	Pass		
Iron (filtered)	%	95			80-120	Pass		
Lead (filtered)	%	102			80-120	Pass		
Manganese (filtered)	%	94			80-120	Pass		
Nickel (filtered)	%	93			80-120	Pass		
Selenium (filtered)	%	92			80-120	Pass		
Zinc (filtered)	%	95			80-120	Pass		
<b>LCS - % Recovery</b>								
<b>Alkali Metals (filtered)</b>								
Magnesium (filtered)	%	96			70-130	Pass		
Potassium (filtered)	%	94			70-130	Pass		
<b>LCS - % Recovery</b>								
<b>Eurofins   mgt Suite B11C: Na/K/Ca/Mg</b>								
Calcium	%	90			70-130	Pass		
Magnesium	%	95			70-130	Pass		
Potassium	%	93			70-130	Pass		
Sodium	%	95			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
<b>Spike - % Recovery</b>								
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>				Result 1				
TRH C6-C9	P20-Fe30519	NCP	%	87		70-130	Pass	
TRH C10-C14	P20-Fe22547	NCP	%	108		70-130	Pass	
<b>Spike - % Recovery</b>								
<b>BTEX</b>				Result 1				
Benzene	P20-Fe30519	NCP	%	98		70-130	Pass	
Toluene	P20-Fe30519	NCP	%	100		70-130	Pass	
Ethylbenzene	P20-Fe30519	NCP	%	105		70-130	Pass	
m&p-Xylenes	P20-Fe30519	NCP	%	106		70-130	Pass	
o-Xylene	P20-Fe30519	NCP	%	106		70-130	Pass	
Xylenes - Total	P20-Fe30519	NCP	%	106		70-130	Pass	
<b>Spike - % Recovery</b>								
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1				
Naphthalene	P20-Fe30519	NCP	%	103		70-130	Pass	
TRH C6-C10	P20-Fe30519	NCP	%	78		70-130	Pass	
<b>Spike - % Recovery</b>								
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1				
TRH >C10-C16	P20-Fe22547	NCP	%	84		70-130	Pass	
<b>Spike - % Recovery</b>								
				Result 1				
Ammonia (as N)	P20-Fe25017	CP	%	112		70-130	Pass	
Chloride	M20-Fe26422	NCP	%	80		70-130	Pass	
Nitrate & Nitrite (as N)	P20-Fe24772	NCP	%	96		70-130	Pass	
Nitrate (as N)	P20-Fe24772	NCP	%	96		70-130	Pass	
Nitrite (as N)	P20-Fe24772	NCP	%	99		70-130	Pass	
Sulphate (as SO4)	M20-Fe27213	NCP	%	108		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	P20-Fe26095	NCP	%	78		70-130	Pass	
<b>Spike - % Recovery</b>								
<b>Heavy Metals</b>				Result 1				

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Aluminium	P20-Fe23635	NCP	%	88			75-125	Pass	
Aluminium (filtered)	P20-Fe25974	NCP	%	94			75-125	Pass	
Arsenic (filtered)	P20-Fe25974	NCP	%	100			70-130	Pass	
Cadmium (filtered)	P20-Fe25974	NCP	%	101			70-130	Pass	
Chromium (filtered)	P20-Fe25974	NCP	%	96			70-130	Pass	
Cobalt (filtered)	P20-Fe25974	NCP	%	95			75-125	Pass	
Copper (filtered)	P20-Fe25974	NCP	%	90			70-130	Pass	
Iron	P20-Fe23635	NCP	%	85			75-125	Pass	
Iron (filtered)	P20-Fe25974	NCP	%	89			70-130	Pass	
Lead (filtered)	P20-Fe25974	NCP	%	98			70-130	Pass	
Manganese (filtered)	P20-Fe25974	NCP	%	82			70-130	Pass	
Nickel (filtered)	P20-Fe25974	NCP	%	88			70-130	Pass	
Zinc (filtered)	P20-Fe25974	NCP	%	96			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Alkali Metals (filtered)</b>				Result 1					
Magnesium (filtered)	P20-Fe25017	CP	%	94			70-130	Pass	
Potassium (filtered)	P20-Fe25017	CP	%	95			70-130	Pass	
Sodium (filtered)	P20-Fe25017	CP	%	83			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Eurofins   mgt Suite B11C: Na/K/Ca/Mg</b>				Result 1					
Calcium	P20-Fe23635	NCP	%	90			70-130	Pass	
Magnesium	P20-Fe23635	NCP	%	92			70-130	Pass	
Potassium	P20-Fe23635	NCP	%	89			70-130	Pass	
Sodium	P20-Fe22551	NCP	%	92			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Duplicate</b>									
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>				Result 1	Result 2	RPD			
TRH C6-C9	P20-Fe25017	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	P20-Fe25017	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	P20-Fe25017	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	P20-Fe25017	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
<b>Duplicate</b>									
<b>BTEX</b>				Result 1	Result 2	RPD			
Benzene	P20-Fe25017	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	P20-Fe25017	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	P20-Fe25017	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	P20-Fe25017	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	P20-Fe25017	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	P20-Fe25017	CP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
<b>Duplicate</b>									
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1	Result 2	RPD			
Naphthalene	P20-Fe25017	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	P20-Fe25017	CP	mg/L	0.02	0.02	2.0	30%	Pass	
<b>Duplicate</b>									
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1	Result 2	RPD			
TRH >C10-C16	P20-Fe25017	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	P20-Fe25017	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	P20-Fe25017	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
<b>Duplicate</b>									
				Result 1	Result 2	RPD			
Ammonia (as N)	P20-Fe28135	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Chloride	P20-Fe26147	NCP	mg/L	210	210	1.0	30%	Pass	
Conductivity (at 25°C)	M20-Fe24901	NCP	uS/cm	240	240	<1	30%	Pass	
Nitrate & Nitrite (as N)	P20-Fe28135	NCP	mg/L	0.26	0.26	2.0	30%	Pass	

<b>Duplicate</b>								
				Result 1	Result 2	RPD		
Nitrate (as N)	P20-Fe28135	NCP	mg/L	0.26	0.26	2.0	30%	Pass
Nitrite (as N)	P20-Fe28135	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
pH (at 25°C)	M20-Fe24901	NCP	pH Units	7.4	7.5	pass	30%	Pass
Sulphate (as SO4)	P20-Fe26147	NCP	mg/L	26	27	4.0	30%	Pass
Total Dissolved Solids Dried at 180°C ± 2°C	S20-Fe24871	NCP	mg/L	370	310	16	30%	Pass
Total Kjeldahl Nitrogen (as N)	M20-Fe25514	NCP	mg/L	84	81	4.6	30%	Pass
<b>Duplicate</b>								
<b>Alkalinity (speciated)</b>				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO3)	M20-Fe24901	NCP	mg/L	160	150	4.0	30%	Pass
Carbonate Alkalinity (as CaCO3)	M20-Fe24901	NCP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO3)	M20-Fe24901	NCP	mg/L	< 20	< 20	<1	30%	Pass
Total Alkalinity (as CaCO3)	M20-Fe24901	NCP	mg/L	160	150	4.0	30%	Pass
<b>Duplicate</b>								
<b>Heavy Metals</b>				Result 1	Result 2	RPD		
Aluminium	P20-Fe23634	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Aluminium (filtered)	P20-Fe25017	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Arsenic (filtered)	P20-Fe25017	CP	mg/L	0.001	0.001	4.0	30%	Pass
Cadmium (filtered)	P20-Fe25017	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium (filtered)	P20-Fe25017	CP	mg/L	0.001	0.001	4.0	30%	Pass
Cobalt (filtered)	P20-Fe25017	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	P20-Fe25017	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	P20-Fe23634	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Iron (filtered)	P20-Fe25017	CP	mg/L	3.3	3.4	3.0	30%	Pass
Lead (filtered)	P20-Fe25017	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	P20-Fe25017	CP	mg/L	0.011	0.011	1.0	30%	Pass
Nickel (filtered)	P20-Fe25017	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium (filtered)	P20-Fe25017	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	P20-Fe25017	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
<b>Duplicate</b>								
<b>Alkali Metals (filtered)</b>				Result 1	Result 2	RPD		
Magnesium (filtered)	P20-Fe27218	NCP	mg/L	17	18	7.0	30%	Pass
Potassium (filtered)	P20-Fe27218	NCP	mg/L	6.4	6.8	6.0	30%	Pass
Sodium (filtered)	P20-Fe27218	NCP	mg/L	75	79	6.0	30%	Pass
<b>Duplicate</b>								
<b>Eurofins   mgt Suite B11C: Na/K/Ca/Mg</b>				Result 1	Result 2	RPD		
Calcium	P20-Fe23634	NCP	mg/L	1.4	1.4	4.0	30%	Pass
Magnesium	P20-Fe23634	NCP	mg/L	2.0	2.1	2.0	30%	Pass
Potassium	P20-Fe23634	NCP	mg/L	3.2	3.3	1.0	30%	Pass
Sodium	P20-Fe23634	NCP	mg/L	84	85	1.0	30%	Pass

**Comments**
**Sample Integrity**

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

**Qualifier Codes/Comments**

Code	Description
G03	Insufficient sample was supplied to conduct this analysis
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.

**Authorised By**

Robert Johnston	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (WA)
Andrew Sullivan	Senior Analyst-Volatile (WA)
Elden Garrett	Senior Analyst-Metal (WA)
Rhys Thomas	Senior Analyst-Inorganic (WA)
Scott Beddoes	Senior Analyst-Inorganic (VIC)


**Glenn Jackson**  
**General Manager**

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

\* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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## #AU06\_EnviroSampleWA

**From:** Vicki Davies <Vicki.Davies@ghd.com>  
**Sent:** Wednesday, 19 February 2020 11:18 AM  
**To:** #AU06\_EnviroSampleWA; Amy Hestehauge  
**Subject:** RE: #6137041

*Caitlyn Gibse*  
*Envirofines #702937*

Hi Caitlyn

Sorry the GW suite was supposed to be ticked. Could FS01 please be analysed as per the groundwater suite below.

Parameter	ALS Code	Technique/ Method Reference	Limit Of Reporting (LOR)
TRH/BTEXN	W-04	USEPA 8015A, USEPA 8260B	1 - 100 µg/L
Acid Sulphate Soil GW Suite - Extended Cl, SO <sub>4</sub> , Alkalinity, Acidity, pH, E.C., TDS, Dissolved Ca, Mg, Na, K, Fe, Mn, Al by ICP-AES or MS. Total N, TKN, NO <sub>x</sub> , Ammonia, Total & Reactive P; Total Al & Fe; Sulfide; Dissolved As, Cd, Co, Cu, Pb, Fe, Mn, Al, Cr, Ni, Se, Zn by ICPMS	ASSGW-2	Various	0.0001 - 10 mg/L, 0.01 pH Unit, 1 µS/cm, 0.01 %, 0.01 meq/L
Ammonium as N	EK055G- NH4	Calculation	0.01 mg/L

If you need any further information please let me know.

Kind regards



**Vicki Davies**  
Environmental Scientist

PO Box 2776  
Cloisters Square 6850  
T: 08 98405104



Caitlyn Gibson  
Eurofins #702937

**From:** EnviroSampleWA@eurofins.com <EnviroSampleWA@eurofins.com>  
**Sent:** Wednesday, 19 February 2020 11:12 AM  
**To:** Vicki Davies <Vicki.Davies@ghd.com>; Amy Hestehauge <Amy.Hestehauge@ghd.com>  
**Subject:** #6137041

Hi Vicki and Amy,

We have received 1x water sample labelled FS01, from project number 6137041. The COC attached has Ground Watering Suite Not selected for analysis. There are also volatile bottles within this sample. Could you please confirm the analysis required for these samples and we will proceed accordingly.

Kind regards,  
Caitlyn

**Eurofins | Environment Testing**  
Unit 2, 91 Leach Highway  
KEWDALE WA 6105  
Australia

Phone : +61 8 9251 9692  
Email : [EnviroSampleWA@eurofins.com](mailto:EnviroSampleWA@eurofins.com)

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## CERTIFICATE OF ANALYSIS

**Work Order** : **EP2002914**  
**Client** : **GHD PTY LTD**  
**Contact** : **MS VICKI DAVIES**  
**Address** : **999 HAY STREET**  
**PERTH WA, AUSTRALIA 6000**  
**Telephone** : **----**  
**Project** : **6137041**  
**Order number** : **6137041 08.0831**  
**C-O-C number** : **----**  
**Sampler** : **AMY HESTEHAUGE, DS**  
**Site** : **----**  
**Quote number** : **EP/489/19 V4**  
**No. of samples received** : **31**  
**No. of samples analysed** : **31**

**Page** : 1 of 29  
**Laboratory** : Environmental Division Perth  
**Contact** : Marnie Thomsett  
**Address** : 26 Rigali Way Wangara WA Australia 6065  
**Telephone** : 08 9406 1311  
**Date Samples Received** : 19-Mar-2020 10:15  
**Date Analysis Commenced** : 19-Mar-2020  
**Issue Date** : 03-Apr-2020 10:11



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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
Daniel Fisher	Inorganics Analyst	Perth Inorganics, Wangara, WA
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Vanessa Nguyen	Organic Chemist	Perth Organics, Wangara, WA



## General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP204 and EP234-1 conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- EK055G (Ammonia): LOR for sample EP2002914-027 raised due to possible sample matrix interference.
- EK055G (Ammonia): LOR for sample EP2002914-014 raised due to possible sample matrix interference.
- ED041G (Sulfate Turbidimetric): LOR for samples EP2002914-012 and -015 raised due to possible sample matrix interference.
- EK061G/EK067G (TKN/TP): LOR for sample EP2002914-008 raised due to possible sample matrix interference.
- TDS by method EA-015 may bias high for sample #13 and 29 due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- EP234: Poor matrix spike recovery for particular compounds due to matrix interferences.
- Ionic balances were calculated using: major anions - chloride, alkalinity, sulfate and NOx; and major cations - calcium, magnesium, potassium and sodium for #8.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW137	RB01	FB01	BH32.1	North Creek 2
Client sampling date / time				16-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002914-001	EP2002914-002	EP2002914-003	EP2002914-004	EP2002914-005	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	----	----	----	6.65	7.00	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	1140	773	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	----	----	----	696	471	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	18	16	
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	18	16	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	----	----	----	64	9	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	27	27	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	----	----	----	370	249	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	----	----	----	5	5	
Magnesium	7439-95-4	1	mg/L	----	----	----	23	16	
Sodium	7440-23-5	1	mg/L	----	----	----	182	120	
Potassium	7440-09-7	1	mg/L	----	----	----	7	8	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	----	0.04	0.02	
Arsenic	7440-38-2	0.001	mg/L	----	----	----	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	----	----	----	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	----	----	----	<0.001	0.001	
Copper	7440-50-8	0.001	mg/L	----	----	----	0.010	0.010	
Lead	7439-92-1	0.001	mg/L	----	----	----	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	----	----	----	0.065	0.106	
Nickel	7440-02-0	0.001	mg/L	----	----	----	0.003	0.005	
Selenium	7782-49-2	0.01	mg/L	----	----	----	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	----	----	----	0.051	0.046	
Iron	7439-89-6	0.05	mg/L	----	----	----	6.73	0.33	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW137	RB01	FB01	BH32.1	North Creek 2
Client sampling date / time				16-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002914-001	EP2002914-002	EP2002914-003	EP2002914-004	EP2002914-005	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	----	1.64	0.05	
Arsenic	7440-38-2	0.001	mg/L	----	<0.001	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	----	<0.0001	----	----	----	
Chromium	7440-47-3	0.001	mg/L	----	<0.001	----	----	----	
Copper	7440-50-8	0.001	mg/L	----	<0.001	----	----	----	
Nickel	7440-02-0	0.001	mg/L	----	<0.001	----	----	----	
Lead	7439-92-1	0.001	mg/L	----	<0.001	----	----	----	
Zinc	7440-66-6	0.005	mg/L	----	<0.005	----	----	----	
Iron	7439-89-6	0.05	mg/L	----	----	----	11.3	1.87	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	----	----	----	0.08	0.02	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	----	----	----	0.08	0.02	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	----	----	----	<0.01	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	----	----	0.3	0.2	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	----	----	----	0.3	0.2	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	----	----	----	0.09	<0.01	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	----	----	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	----	----	----	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	----	----	----	11.4	7.90	
∅ Total Cations	----	0.01	meq/L	----	----	----	10.2	6.99	
∅ Ionic Balance	----	0.01	%	----	----	----	5.19	6.14	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	----	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	----	----	----	<50	<50	
C15 - C28 Fraction	----	100	µg/L	----	----	----	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW137	RB01	FB01	BH32.1	North Creek 2
Client sampling date / time				16-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002914-001	EP2002914-002	EP2002914-003	EP2002914-004	EP2002914-005	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>									
C29 - C36 Fraction	----	50	µg/L	----	----	----	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	----	----	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	----	----	----	<100	<100	
>C16 - C34 Fraction	----	100	µg/L	----	----	----	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	----	----	----	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	----	----	----	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	----	----	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	----	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	----	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	----	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	----	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	----	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	----	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	----	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	----	----	----	<10	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	----	----	----	<0.02	
Azinphos-methyl	86-50-0	0.02	µg/L	----	----	----	----	<0.02	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	----	----	----	<0.10	
Carbofenthoion	786-19-6	0.02	µg/L	----	----	----	----	<0.02	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	----	----	----	<0.02	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	----	----	----	<0.02	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	----	----	----	<0.2	
Coumaphos	56-72-4	0.01	µg/L	----	----	----	----	<0.01	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	----	----	----	<0.02	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	----	----	----	<0.02	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW137	RB01	FB01	BH32.1	North Creek 2
Client sampling date / time					16-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00
Compound	CAS Number	LOR	Unit	EP2002914-001	EP2002914-002	EP2002914-003	EP2002914-004	EP2002914-005	
				Result	Result	Result	Result	Result	
<b>EP234A: OP Pesticides - Continued</b>									
Demeton-O	298-03-3	0.02	µg/L	----	----	----	----	----	<0.02
Demeton-S	126-75-0	0.02	µg/L	----	----	----	----	----	<0.02
Diazinon	333-41-5	0.01	µg/L	----	----	----	----	----	<0.01
Dichlorvos	62-73-7	0.20	µg/L	----	----	----	----	----	<0.20
Dimethoate	60-51-5	0.02	µg/L	----	----	----	----	----	<0.02
Disulfoton	298-04-4	0.05	µg/L	----	----	----	----	----	<0.05
Ethion	563-12-2	0.02	µg/L	----	----	----	----	----	<0.02
EPN	2104-64-5	0.05	µg/L	----	----	----	----	----	<0.05
Ethoprophos	13194-48-4	0.01	µg/L	----	----	----	----	----	<0.01
Fenamiphos	22224-92-6	0.01	µg/L	----	----	----	----	----	<0.01
Fenchlorphos (Ronnel)	299-84-3	10	µg/L	----	----	----	----	----	<10
Fenitrothion	122-14-5	2	µg/L	----	----	----	----	----	<2
Fensulfothion	115-90-2	0.01	µg/L	----	----	----	----	----	<0.01
Fenthion	55-38-9	0.05	µg/L	----	----	----	----	----	<0.05
Malathion	121-75-5	0.02	µg/L	----	----	----	----	----	<0.02
Mevinphos	7786-34-7	0.02	µg/L	----	----	----	----	----	<0.02
Monocrotophos	6923-22-4	0.02	µg/L	----	----	----	----	----	<0.02
Omethoate	1113-02-6	0.01	µg/L	----	----	----	----	----	<0.01
Parathion	56-38-2	0.2	µg/L	----	----	----	----	----	<0.2
Parathion-methyl	298-00-0	0.5	µg/L	----	----	----	----	----	<0.5
Phorate	298-02-2	0.1	µg/L	----	----	----	----	----	<0.1
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	----	----	----	----	----	<0.01
Pirimiphos-methyl	29232-93-7	0.01	µg/L	----	----	----	----	----	<0.01
Profenofos	41198-08-7	0.01	µg/L	----	----	----	----	----	<0.01
Prothiofos	34643-46-4	0.1	µg/L	----	----	----	----	----	<0.1
Sulfotep	3689-24-5	0.005	µg/L	----	----	----	----	----	<0.005
Sulprofos	35400-43-2	0.05	µg/L	----	----	----	----	----	<0.05
Terbufos	13071-79-9	0.01	µg/L	----	----	----	----	----	<0.01
Temephos	3383-96-8	0.02	µg/L	----	----	----	----	----	<0.02
Tetrachlorvinphos	22248-79-9	0.01	µg/L	----	----	----	----	----	<0.01
Triazophos	24017-47-8	0.005	µg/L	----	----	----	----	----	<0.005
Trichlorfon	52-68-6	0.02	µg/L	----	----	----	----	----	<0.02
Trichloronate	327-98-0	0.5	µg/L	----	----	----	----	----	<0.5
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	103	----	98.1	102	101	



**Analytical Results**

Sub-Matrix: <b>WATER</b> (Matrix: <b>WATER</b> )				Client sample ID	TBW137	RB01	FB01	BH32.1	North Creek 2
Client sampling date / time				16-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002914-001	EP2002914-002	EP2002914-003	EP2002914-004	EP2002914-005	
				Result	Result	Result	Result	Result	
<b>EP080S: TPH(V)/BTEX Surrogates - Continued</b>									
Toluene-D8	2037-26-5	2	%	99.0	----	98.3	98.4	98.5	
4-Bromofluorobenzene	460-00-4	2	%	103	----	101	102	103	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		SW07	North Creek 4	BORR_MW18	BORR_MW13	Northern 5
Client sampling date / time				16-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00
Compound	CAS Number	LOR	Unit	EP2002914-006	EP2002914-007	EP2002914-008	EP2002914-009	EP2002914-010
				Result	Result	Result	Result	Result
<b>EA005P: pH by PC Titrator</b>								
pH Value	----	0.01	pH Unit	7.10	7.71	4.92	7.15	7.94
<b>EA010P: Conductivity by PC Titrator</b>								
Electrical Conductivity @ 25°C	----	1	µS/cm	870	2880	386	843	1920
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
Total Dissolved Solids @180°C	----	10	mg/L	544	2140	292	625	1090
<b>ED037P: Alkalinity by PC Titrator</b>								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	22	39	<1	223	293
Total Alkalinity as CaCO3	----	1	mg/L	22	39	<1	223	293
<b>ED038A: Acidity</b>								
Acidity as CaCO3	----	1	mg/L	28	4	18	20	6
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	29	56	25	120	14
<b>ED045G: Chloride by Discrete Analyser</b>								
Chloride	16887-00-6	1	mg/L	276	900	67	63	504
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	6	46	11	6	50
Magnesium	7439-95-4	1	mg/L	18	88	6	12	34
Sodium	7440-23-5	1	mg/L	134	393	41	177	293
Potassium	7440-09-7	1	mg/L	9	10	22	2	11
<b>EG020F: Dissolved Metals by ICP-MS</b>								
Aluminium	7429-90-5	0.01	mg/L	0.02	0.03	0.32	0.04	0.02
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0002	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.001	0.005	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.014	0.017	0.013	<0.001	0.010
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese	7439-96-5	0.001	mg/L	0.096	0.126	0.237	0.011	0.123
Nickel	7440-02-0	0.001	mg/L	0.004	0.006	0.007	0.005	0.003
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	0.132	0.148	0.049	0.038	0.034
Iron	7439-89-6	0.05	mg/L	0.47	0.32	<0.05	8.75	0.13



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW07	North Creek 4	BORR_MW18	BORR_MW13	Northern 5
Client sampling date / time				16-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002914-006	EP2002914-007	EP2002914-008	EP2002914-009	EP2002914-010	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.06	0.72	0.68	0.14	0.05	
Iron	7439-89-6	0.05	mg/L	1.96	2.86	0.05	10.7	0.77	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.01	0.06	0.01	0.27	0.04	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	<0.01	0.06	<0.01	0.27	0.04	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	12.5	<0.01	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.5	1.3	2.1	1.1	1.2	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.5	1.3	14.6	1.1	1.2	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.08	0.10	<0.05	0.01	1.19	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.01	<0.01	<0.01	<0.01	1.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	----	----	3.30	----	----	
∅ Total Anions	----	0.01	meq/L	8.83	27.3	----	8.73	20.4	
∅ Total Cations	----	0.01	meq/L	7.84	26.9	3.39	9.04	18.3	
∅ Ionic Balance	----	0.01	%	----	----	1.28	----	----	
∅ Ionic Balance	----	0.01	%	5.93	0.82	----	1.72	5.28	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	60	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	60	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW07	North Creek 4	BORR_MW18	BORR_MW13	Northern 5
Client sampling date / time				16-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002914-006	EP2002914-007	EP2002914-008	EP2002914-009	EP2002914-010	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
>C16 - C34 Fraction	----	100	µg/L	<100	110	<100	<100	140	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	110	<100	<100	140	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	<10	<10	----	----	<10	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	----	----	<0.02	
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	----	----	<0.02	
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	----	----	<0.10	
Carbofenthoion	786-19-6	0.02	µg/L	<0.02	<0.02	----	----	<0.02	
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	----	----	<0.02	
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	----	----	<0.02	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	----	----	<0.2	
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	----	----	<0.01	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	----	----	<0.02	
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	----	----	<0.02	
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	----	----	<0.02	
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	----	----	<0.02	
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	----	----	<0.01	
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	----	----	<0.20	
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	----	----	<0.02	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW07	North Creek 4	BORR_MW18	BORR_MW13	Northern 5
Client sampling date / time					16-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00
Compound	CAS Number	LOR	Unit		EP2002914-006	EP2002914-007	EP2002914-008	EP2002914-009	EP2002914-010
					Result	Result	Result	Result	Result
<b>EP234A: OP Pesticides - Continued</b>									
Disulfoton	298-04-4	0.05	µg/L		<0.05	<0.05	----	----	<0.05
Ethion	563-12-2	0.02	µg/L		<0.02	<0.02	----	----	<0.02
EPN	2104-64-5	0.05	µg/L		<0.05	<0.05	----	----	<0.05
Ethoprophos	13194-48-4	0.01	µg/L		<0.01	<0.01	----	----	<0.01
Fenamiphos	22224-92-6	0.01	µg/L		<0.01	<0.01	----	----	<0.01
Fenchlorphos (Ronnell)	299-84-3	10	µg/L		<10	<10	----	----	<10
Fenitrothion	122-14-5	2	µg/L		<2	<2	----	----	<2
Fensulfothion	115-90-2	0.01	µg/L		<0.01	<0.01	----	----	<0.01
Fenthion	55-38-9	0.05	µg/L		<0.05	<0.05	----	----	<0.05
Malathion	121-75-5	0.02	µg/L		<0.02	<0.02	----	----	<0.02
Mevinphos	7786-34-7	0.02	µg/L		<0.02	<0.02	----	----	<0.02
Monocrotophos	6923-22-4	0.02	µg/L		<0.02	<0.02	----	----	<0.02
Omethoate	1113-02-6	0.01	µg/L		<0.01	<0.01	----	----	<0.01
Parathion	56-38-2	0.2	µg/L		<0.2	<0.2	----	----	<0.2
Parathion-methyl	298-00-0	0.5	µg/L		<0.5	<0.5	----	----	<0.5
Phorate	298-02-2	0.1	µg/L		<0.1	<0.1	----	----	<0.1
Pirimiphos-ethyl	23505-41-1	0.01	µg/L		<0.01	<0.01	----	----	<0.01
Pirimiphos-methyl	29232-93-7	0.01	µg/L		<0.01	<0.01	----	----	<0.01
Profenofos	41198-08-7	0.01	µg/L		<0.01	<0.01	----	----	<0.01
Prothiofos	34643-46-4	0.1	µg/L		<0.1	<0.1	----	----	<0.1
Sulfotep	3689-24-5	0.005	µg/L		<0.005	<0.005	----	----	<0.005
Sulprofos	35400-43-2	0.05	µg/L		<0.05	<0.05	----	----	<0.05
Terbufos	13071-79-9	0.01	µg/L		<0.01	<0.01	----	----	<0.01
Temephos	3383-96-8	0.02	µg/L		<0.02	<0.02	----	----	<0.02
Tetrachlorvinphos	22248-79-9	0.01	µg/L		<0.01	<0.01	----	----	<0.01
Triazophos	24017-47-8	0.005	µg/L		<0.005	<0.005	----	----	<0.005
Trichlorfon	52-68-6	0.02	µg/L		<0.02	<0.02	----	----	<0.02
Trichloronate	327-98-0	0.5	µg/L		<0.5	<0.5	----	----	<0.5
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%		101	99.4	98.4	101	97.7
Toluene-D8	2037-26-5	2	%		95.3	96.9	97.5	97.3	97.5
4-Bromofluorobenzene	460-00-4	2	%		106	104	102	104	106



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BH11.1	BORR_MW32	BORR_MW39	BH9.2	BORR_MW31
Client sampling date / time				17-Mar-2020 00:00	17-Mar-2020 00:00	17-Mar-2020 00:00	17-Mar-2020 00:00	17-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002914-011	EP2002914-012	EP2002914-013	EP2002914-014	EP2002914-015	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.83	6.22	6.10	3.60	5.98	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	2160	290	280	7670	234	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	1280	211	358	5090	130	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	72	30	11	<1	14	
Total Alkalinity as CaCO3	----	1	mg/L	72	30	11	<1	14	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	21	22	322	3630	31	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	72	<20	52	93	<20	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	628	74	43	2700	60	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	14	3	<1	57	2	
Magnesium	7439-95-4	1	mg/L	50	6	<1	256	4	
Sodium	7440-23-5	1	mg/L	321	40	57	948	33	
Potassium	7440-09-7	1	mg/L	14	3	<1	<1	4	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	<0.01	0.89	0.72	28.7	1.23	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	0.002	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	0.002	<0.001	<0.001	0.001	
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	0.033	<0.001	
Copper	7440-50-8	0.001	mg/L	<0.001	0.005	0.007	0.020	0.005	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	0.025	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.354	0.004	0.009	0.019	0.007	
Nickel	7440-02-0	0.001	mg/L	<0.001	0.002	0.002	0.015	0.003	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.015	0.031	0.019	0.041	0.028	
Iron	7439-89-6	0.05	mg/L	14.8	0.63	0.36	68.6	1.36	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BH11.1	BORR_MW32	BORR_MW39	BH9.2	BORR_MW31
Client sampling date / time				17-Mar-2020 00:00	17-Mar-2020 00:00	17-Mar-2020 00:00	17-Mar-2020 00:00	17-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002914-011	EP2002914-012	EP2002914-013	EP2002914-014	EP2002914-015	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.02	1.83	4.05	29.9	1.96	
Iron	7439-89-6	0.05	mg/L	17.7	0.89	5.58	70.6	1.91	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.26	0.50	0.01	<0.10	0.92	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.26	0.50	<0.01	<0.01	0.92	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.02	<0.01	<0.01	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.4	1.2	0.3	0.3	2.0	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.4	1.2	0.3	0.3	2.0	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.08	0.01	0.26	<0.01	0.02	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.01	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	0.3	<0.1	<0.1	0.8	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	20.6	2.69	2.52	78.1	1.97	
∅ Total Cations	----	0.01	meq/L	19.1	2.46	2.48	65.1	1.97	
∅ Ionic Balance	----	0.01	%	3.82	4.40	0.72	9.04	0.14	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BH11.1	BORR_MW32	BORR_MW39	BH9.2	BORR_MW31
Client sampling date / time				17-Mar-2020 00:00	17-Mar-2020 00:00	17-Mar-2020 00:00	17-Mar-2020 00:00	17-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002914-011	EP2002914-012	EP2002914-013	EP2002914-014	EP2002914-015	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	97.9	99.4	99.1	95.4	97.1	
Toluene-D8	2037-26-5	2	%	99.8	96.6	99.0	99.3	95.3	
4-Bromofluorobenzene	460-00-4	2	%	98.9	104	105	103	114	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW146	RB02	BORR_MW22B	SW06	BORR_MW20
Client sampling date / time				17-Mar-2020 00:00	17-Mar-2020 00:00	16-Mar-2020 00:00	17-Mar-2020 00:00	16-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002914-016	EP2002914-017	EP2002914-018	EP2002914-019	EP2002914-020	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	----	----	6.44	7.63	6.36	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	12400	3070	4100	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	----	----	9120	2250	2880	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	56	78	39	
Total Alkalinity as CaCO3	----	1	mg/L	----	----	56	78	39	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	----	----	59	21	17	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	353	40	64	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	----	----	4190	928	1250	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	----	----	120	50	36	
Magnesium	7439-95-4	1	mg/L	----	----	316	96	105	
Sodium	7440-23-5	1	mg/L	----	----	1980	401	626	
Potassium	7440-09-7	1	mg/L	----	----	5	11	5	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	0.02	0.03	0.01	
Arsenic	7440-38-2	0.001	mg/L	----	----	0.002	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	----	----	<0.0001	<0.0001	0.0001	
Chromium	7440-47-3	0.001	mg/L	----	----	<0.001	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	----	----	0.131	0.001	0.008	
Copper	7440-50-8	0.001	mg/L	----	----	0.002	0.014	0.012	
Lead	7439-92-1	0.001	mg/L	----	----	<0.001	0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	----	----	0.504	0.215	0.187	
Nickel	7440-02-0	0.001	mg/L	----	----	0.063	0.004	0.008	
Selenium	7782-49-2	0.01	mg/L	----	----	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	----	----	0.058	0.047	0.159	
Iron	7439-89-6	0.05	mg/L	----	----	23.5	0.61	4.04	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW146	RB02	BORR_MW22B	SW06	BORR_MW20
Client sampling date / time				17-Mar-2020 00:00	17-Mar-2020 00:00	16-Mar-2020 00:00	17-Mar-2020 00:00	16-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002914-016	EP2002914-017	EP2002914-018	EP2002914-019	EP2002914-020	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	0.32	0.61	1.48	
Arsenic	7440-38-2	0.001	mg/L	----	<0.001	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	----	<0.0001	----	----	----	
Chromium	7440-47-3	0.001	mg/L	----	<0.001	----	----	----	
Copper	7440-50-8	0.001	mg/L	----	<0.001	----	----	----	
Nickel	7440-02-0	0.001	mg/L	----	<0.001	----	----	----	
Lead	7439-92-1	0.001	mg/L	----	<0.001	----	----	----	
Zinc	7440-66-6	0.005	mg/L	----	<0.005	----	----	----	
Iron	7439-89-6	0.05	mg/L	----	----	25.5	2.90	6.52	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	----	----	0.10	0.06	0.05	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	----	----	0.10	0.06	0.05	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	----	----	<0.01	0.03	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	----	0.3	2.0	0.2	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	----	----	0.3	2.0	0.2	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	----	----	<0.01	0.24	<0.01	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	----	<0.01	0.14	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	----	----	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	----	----	127	28.6	37.4	
∅ Total Cations	----	0.01	meq/L	----	----	118	28.1	37.8	
∅ Ionic Balance	----	0.01	%	----	----	3.44	0.79	0.56	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	----	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	----	----	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	----	----	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW146	RB02	BORR_MW22B	SW06	BORR_MW20
Client sampling date / time				17-Mar-2020 00:00	17-Mar-2020 00:00	16-Mar-2020 00:00	17-Mar-2020 00:00	16-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002914-016	EP2002914-017	EP2002914-018	EP2002914-019	EP2002914-020	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>									
C29 - C36 Fraction	----	50	µg/L	----	----	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	----	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	----	----	<100	<100	<100	
>C16 - C34 Fraction	----	100	µg/L	----	----	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	----	----	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	----	----	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	----	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	----	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	----	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	----	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	----	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	----	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	----	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	----	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	----	----	<10	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	----	----	<0.02	----	
Azinphos-methyl	86-50-0	0.02	µg/L	----	----	----	<0.02	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	----	----	<0.10	----	
Carbofenthion	786-19-6	0.02	µg/L	----	----	----	<0.02	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	----	----	<0.02	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	----	----	<0.02	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	----	----	<0.2	----	
Coumaphos	56-72-4	0.01	µg/L	----	----	----	<0.01	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	----	----	<0.02	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	----	----	<0.02	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW146	RB02	BORR_MW22B	SW06	BORR_MW20
Client sampling date / time					17-Mar-2020 00:00	17-Mar-2020 00:00	16-Mar-2020 00:00	17-Mar-2020 00:00	16-Mar-2020 00:00
Compound	CAS Number	LOR	Unit	EP2002914-016	EP2002914-017	EP2002914-018	EP2002914-019	EP2002914-020	
				Result	Result	Result	Result	Result	
<b>EP234A: OP Pesticides - Continued</b>									
Demeton-O	298-03-3	0.02	µg/L	----	----	----	<0.02	----	
Demeton-S	126-75-0	0.02	µg/L	----	----	----	<0.02	----	
Diazinon	333-41-5	0.01	µg/L	----	----	----	<0.01	----	
Dichlorvos	62-73-7	0.20	µg/L	----	----	----	<0.20	----	
Dimethoate	60-51-5	0.02	µg/L	----	----	----	<0.02	----	
Disulfoton	298-04-4	0.05	µg/L	----	----	----	<0.05	----	
Ethion	563-12-2	0.02	µg/L	----	----	----	<0.02	----	
EPN	2104-64-5	0.05	µg/L	----	----	----	<0.05	----	
Ethoprophos	13194-48-4	0.01	µg/L	----	----	----	<0.01	----	
Fenamiphos	22224-92-6	0.01	µg/L	----	----	----	<0.01	----	
Fenchlorphos (Ronnel)	299-84-3	10	µg/L	----	----	----	<10	----	
Fenitrothion	122-14-5	2	µg/L	----	----	----	<2	----	
Fensulfothion	115-90-2	0.01	µg/L	----	----	----	<0.01	----	
Fenthion	55-38-9	0.05	µg/L	----	----	----	<0.05	----	
Malathion	121-75-5	0.02	µg/L	----	----	----	<0.02	----	
Mevinphos	7786-34-7	0.02	µg/L	----	----	----	<0.02	----	
Monocrotophos	6923-22-4	0.02	µg/L	----	----	----	<0.02	----	
Omethoate	1113-02-6	0.01	µg/L	----	----	----	<0.01	----	
Parathion	56-38-2	0.2	µg/L	----	----	----	<0.2	----	
Parathion-methyl	298-00-0	0.5	µg/L	----	----	----	<0.5	----	
Phorate	298-02-2	0.1	µg/L	----	----	----	<0.1	----	
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	----	----	----	<0.01	----	
Pirimiphos-methyl	29232-93-7	0.01	µg/L	----	----	----	<0.01	----	
Profenofos	41198-08-7	0.01	µg/L	----	----	----	<0.01	----	
Prothiofos	34643-46-4	0.1	µg/L	----	----	----	<0.1	----	
Sulfotep	3689-24-5	0.005	µg/L	----	----	----	<0.005	----	
Sulprofos	35400-43-2	0.05	µg/L	----	----	----	<0.05	----	
Terbufos	13071-79-9	0.01	µg/L	----	----	----	<0.01	----	
Temephos	3383-96-8	0.02	µg/L	----	----	----	<0.02	----	
Tetrachlorvinphos	22248-79-9	0.01	µg/L	----	----	----	<0.01	----	
Triazophos	24017-47-8	0.005	µg/L	----	----	----	<0.005	----	
Trichlorfon	52-68-6	0.02	µg/L	----	----	----	<0.02	----	
Trichloronate	327-98-0	0.5	µg/L	----	----	----	<0.5	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	93.4	----	92.1	94.2	95.6	



### Analytical Results

Sub-Matrix: <b>WATER</b> (Matrix: <b>WATER</b> )				Client sample ID	TBW146	RB02	BORR_MW22B	SW06	BORR_MW20
Client sampling date / time				17-Mar-2020 00:00	17-Mar-2020 00:00	16-Mar-2020 00:00	17-Mar-2020 00:00	16-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002914-016	EP2002914-017	EP2002914-018	EP2002914-019	EP2002914-020	
				Result	Result	Result	Result	Result	
<b>EP080S: TPH(V)/BTEX Surrogates - Continued</b>									
<b>Toluene-D8</b>	2037-26-5	2	%	<b>98.4</b>	----	<b>98.7</b>	<b>97.9</b>	<b>99.0</b>	
<b>4-Bromofluorobenzene</b>	460-00-4	2	%	<b>102</b>	----	<b>100</b>	<b>106</b>	<b>102</b>	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW25	FD01	FD02	JT01	FD03
Client sampling date / time				17-Mar-2020 00:00	16-Mar-2020 00:00	17-Mar-2020 00:00	17-Mar-2020 00:00	17-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002914-021	EP2002914-022	EP2002914-023	EP2002914-024	EP2002914-025	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.15	7.08	7.30	7.42	6.93	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	3550	834	4740	4770	2160	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	2130	615	3010	3000	1200	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	41	225	42	43	70	
Total Alkalinity as CaCO3	----	1	mg/L	41	225	42	43	70	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	27	12	9	19	19	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	87	119	137	137	72	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	1060	63	1410	1410	630	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	25	7	54	54	15	
Magnesium	7439-95-4	1	mg/L	58	12	126	126	51	
Sodium	7440-23-5	1	mg/L	578	172	731	739	326	
Potassium	7440-09-7	1	mg/L	4	2	20	20	14	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.04	0.04	<0.01	<0.01	<0.01	
Arsenic	7440-38-2	0.001	mg/L	0.002	<0.001	<0.001	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	0.033	<0.001	<0.001	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.004	<0.001	<0.001	<0.001	<0.001	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.432	0.010	0.106	0.108	0.359	
Nickel	7440-02-0	0.001	mg/L	0.018	0.003	<0.001	<0.001	<0.001	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.052	<0.005	0.008	0.005	0.017	
Iron	7439-89-6	0.05	mg/L	7.39	8.81	0.05	0.07	14.9	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW25	FD01	FD02	JT01	FD03
Client sampling date / time				17-Mar-2020 00:00	16-Mar-2020 00:00	17-Mar-2020 00:00	17-Mar-2020 00:00	17-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002914-021	EP2002914-022	EP2002914-023	EP2002914-024	EP2002914-025	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	3.85	0.11	0.02	0.02	0.12	
Iron	7439-89-6	0.05	mg/L	13.5	11.3	1.24	1.19	17.0	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.04	0.26	0.06	0.07	0.24	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.04	0.26	0.06	0.07	0.24	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.02	<0.01	0.02	0.03	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	1.3	0.5	0.6	0.4	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.2	1.3	0.5	0.6	0.4	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.06	0.01	0.05	0.04	0.10	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	32.5	8.75	43.5	43.5	20.7	
∅ Total Cations	----	0.01	meq/L	31.3	8.87	45.4	45.7	19.5	
∅ Ionic Balance	----	0.01	%	1.98	0.68	2.15	2.50	2.95	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW25	FD01	FD02	JT01	FD03
Client sampling date / time				17-Mar-2020 00:00	16-Mar-2020 00:00	17-Mar-2020 00:00	17-Mar-2020 00:00	17-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002914-021	EP2002914-022	EP2002914-023	EP2002914-024	EP2002914-025	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	----	<10	<10	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	----	<0.02	<0.02	----	
Azinphos-methyl	86-50-0	0.02	µg/L	----	----	<0.02	<0.02	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	----	<0.10	<0.10	----	
Carbofenthiion	786-19-6	0.02	µg/L	----	----	<0.02	<0.02	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	----	<0.02	<0.02	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	----	<0.02	<0.02	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	----	<0.2	<0.2	----	
Coumaphos	56-72-4	0.01	µg/L	----	----	<0.01	<0.01	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	----	<0.02	<0.02	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	----	<0.02	<0.02	----	
Demeton-O	298-03-3	0.02	µg/L	----	----	<0.02	<0.02	----	
Demeton-S	126-75-0	0.02	µg/L	----	----	<0.02	<0.02	----	
Diazinon	333-41-5	0.01	µg/L	----	----	<0.01	<0.01	----	
Dichlorvos	62-73-7	0.20	µg/L	----	----	<0.20	<0.20	----	
Dimethoate	60-51-5	0.02	µg/L	----	----	<0.02	<0.02	----	
Disulfoton	298-04-4	0.05	µg/L	----	----	<0.05	<0.05	----	
Ethion	563-12-2	0.02	µg/L	----	----	<0.02	<0.02	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW25	FD01	FD02	JT01	FD03
Client sampling date / time					17-Mar-2020 00:00	16-Mar-2020 00:00	17-Mar-2020 00:00	17-Mar-2020 00:00	17-Mar-2020 00:00
Compound	CAS Number	LOR	Unit	EP2002914-021	EP2002914-022	EP2002914-023	EP2002914-024	EP2002914-025	EP2002914-025
				Result	Result	Result	Result	Result	Result
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L	----	----	<0.05	<0.05	----	----
Ethoprophos	13194-48-4	0.01	µg/L	----	----	<0.01	<0.01	----	----
Fenamiphos	22224-92-6	0.01	µg/L	----	----	<0.01	<0.01	----	----
Fenchlorphos (Rannel)	299-84-3	10	µg/L	----	----	<10	<10	----	----
Fenitrothion	122-14-5	2	µg/L	----	----	<2	<2	----	----
Fensulfothion	115-90-2	0.01	µg/L	----	----	<0.01	<0.01	----	----
Fenthion	55-38-9	0.05	µg/L	----	----	<0.05	<0.05	----	----
Malathion	121-75-5	0.02	µg/L	----	----	<0.02	<0.02	----	----
Mevinphos	7786-34-7	0.02	µg/L	----	----	<0.02	<0.02	----	----
Monocrotophos	6923-22-4	0.02	µg/L	----	----	<0.02	<0.02	----	----
Omethoate	1113-02-6	0.01	µg/L	----	----	<0.01	<0.01	----	----
Parathion	56-38-2	0.2	µg/L	----	----	<0.2	<0.2	----	----
Parathion-methyl	298-00-0	0.5	µg/L	----	----	<0.5	<0.5	----	----
Phorate	298-02-2	0.1	µg/L	----	----	<0.1	<0.1	----	----
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	----	----	<0.01	<0.01	----	----
Pirimiphos-methyl	29232-93-7	0.01	µg/L	----	----	<0.01	<0.01	----	----
Profenofos	41198-08-7	0.01	µg/L	----	----	<0.01	<0.01	----	----
Prothiofos	34643-46-4	0.1	µg/L	----	----	<0.1	<0.1	----	----
Sulfotep	3689-24-5	0.005	µg/L	----	----	<0.005	<0.005	----	----
Sulprofos	35400-43-2	0.05	µg/L	----	----	<0.05	<0.05	----	----
Terbufos	13071-79-9	0.01	µg/L	----	----	<0.01	<0.01	----	----
Temephos	3383-96-8	0.02	µg/L	----	----	<0.02	<0.02	----	----
Tetrachlorvinphos	22248-79-9	0.01	µg/L	----	----	<0.01	<0.01	----	----
Triazophos	24017-47-8	0.005	µg/L	----	----	<0.005	<0.005	----	----
Trichlorfon	52-68-6	0.02	µg/L	----	----	<0.02	<0.02	----	----
Trichloronate	327-98-0	0.5	µg/L	----	----	<0.5	<0.5	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	92.3	96.3	114	114	107	107
Toluene-D8	2037-26-5	2	%	97.5	98.1	94.9	95.2	97.2	97.2
4-Bromofluorobenzene	460-00-4	2	%	102	103	107	104	101	101





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW37	SW09	SW08	BORR_MW29	BORR_MW15
Client sampling date / time				17-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00	17-Mar-2020 00:00	16-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002914-026	EP2002914-027	EP2002914-028	EP2002914-029	EP2002914-030	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.18	7.51	7.13	5.69	6.51	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	3330	770	886	1050	137	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	1980	499	542	838	101	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	26	123	22	10	14	
Total Alkalinity as CaCO3	----	1	mg/L	26	123	22	10	14	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	28	10	8	21	8	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	71	<1	29	163	1	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	998	182	274	245	32	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	14	18	7	23	2	
Magnesium	7439-95-4	1	mg/L	67	14	19	37	2	
Sodium	7440-23-5	1	mg/L	541	111	136	128	16	
Potassium	7440-09-7	1	mg/L	2	22	9	8	5	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.02	0.08	0.02	0.61	0.51	
Arsenic	7440-38-2	0.001	mg/L	0.002	0.002	<0.001	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	0.003	<0.001	0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	0.040	<0.001	<0.001	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.011	0.001	0.007	0.007	0.007	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.245	0.082	0.102	0.019	0.003	
Nickel	7440-02-0	0.001	mg/L	0.019	0.001	0.003	0.012	0.003	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.051	0.011	0.034	0.065	0.035	
Iron	7439-89-6	0.05	mg/L	9.71	1.81	0.47	1.67	1.96	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW37	SW09	SW08	BORR_MW29	BORR_MW15
Client sampling date / time				17-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00	17-Mar-2020 00:00	16-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002914-026	EP2002914-027	EP2002914-028	EP2002914-029	EP2002914-030	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	2.61	0.15	0.05	1.42	0.87	
Iron	7439-89-6	0.05	mg/L	11.2	3.34	2.05	1.79	2.72	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.04	<0.02	<0.01	0.45	0.84	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.04	<0.01	<0.01	0.45	0.84	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.06	<0.01	<0.01	0.01	0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	1.3	0.4	1.7	1.3	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.3	1.3	0.4	1.7	1.3	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.03	0.09	0.04	0.03	0.02	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.02	0.01	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	0.3	0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	30.2	7.59	8.77	10.5	1.20	
∅ Total Cations	----	0.01	meq/L	29.8	7.44	8.06	9.96	1.09	
∅ Ionic Balance	----	0.01	%	0.59	1.00	4.24	2.64	5.02	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	320	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	60	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	380	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW37	SW09	SW08	BORR_MW29	BORR_MW15
Client sampling date / time				17-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00	17-Mar-2020 00:00	16-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002914-026	EP2002914-027	EP2002914-028	EP2002914-029	EP2002914-030	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	340	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	340	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	<10	<10	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	<0.02	<0.02	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	----	<0.02	<0.02	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	<0.10	<0.10	----	----	
Carbofenthion	786-19-6	0.02	µg/L	----	<0.02	<0.02	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	<0.02	<0.02	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	<0.02	<0.02	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	<0.2	<0.2	----	----	
Coumaphos	56-72-4	0.01	µg/L	----	<0.01	<0.01	----	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	<0.02	<0.02	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	<0.02	<0.02	----	----	
Demeton-O	298-03-3	0.02	µg/L	----	<0.02	<0.02	----	----	
Demeton-S	126-75-0	0.02	µg/L	----	<0.02	<0.02	----	----	
Diazinon	333-41-5	0.01	µg/L	----	<0.01	<0.01	----	----	
Dichlorvos	62-73-7	0.20	µg/L	----	<0.20	<0.20	----	----	
Dimethoate	60-51-5	0.02	µg/L	----	<0.02	<0.02	----	----	
Disulfoton	298-04-4	0.05	µg/L	----	<0.05	<0.05	----	----	
Ethion	563-12-2	0.02	µg/L	----	<0.02	<0.02	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW37	SW09	SW08	BORR_MW29	BORR_MW15
Client sampling date / time					17-Mar-2020 00:00	16-Mar-2020 00:00	16-Mar-2020 00:00	17-Mar-2020 00:00	16-Mar-2020 00:00
Compound	CAS Number	LOR	Unit	EP2002914-026	EP2002914-027	EP2002914-028	EP2002914-029	EP2002914-030	
				Result	Result	Result	Result	Result	
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L	----	<0.05	<0.05	----	----	
Ethoprophos	13194-48-4	0.01	µg/L	----	<0.01	<0.01	----	----	
Fenamiphos	22224-92-6	0.01	µg/L	----	<0.01	<0.01	----	----	
Fenchlorphos (Rannel)	299-84-3	10	µg/L	----	<10	<10	----	----	
Fenitrothion	122-14-5	2	µg/L	----	<2	<2	----	----	
Fensulfothion	115-90-2	0.01	µg/L	----	<0.01	<0.01	----	----	
Fenthion	55-38-9	0.05	µg/L	----	<0.05	<0.05	----	----	
Malathion	121-75-5	0.02	µg/L	----	<0.02	<0.02	----	----	
Mevinphos	7786-34-7	0.02	µg/L	----	<0.02	<0.02	----	----	
Monocrotophos	6923-22-4	0.02	µg/L	----	<0.02	<0.02	----	----	
Omethoate	1113-02-6	0.01	µg/L	----	<0.01	<0.01	----	----	
Parathion	56-38-2	0.2	µg/L	----	<0.2	<0.2	----	----	
Parathion-methyl	298-00-0	0.5	µg/L	----	<0.5	<0.5	----	----	
Phorate	298-02-2	0.1	µg/L	----	<0.1	<0.1	----	----	
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	----	<0.01	<0.01	----	----	
Pirimiphos-methyl	29232-93-7	0.01	µg/L	----	<0.01	<0.01	----	----	
Profenofos	41198-08-7	0.01	µg/L	----	<0.01	<0.01	----	----	
Prothiofos	34643-46-4	0.1	µg/L	----	<0.1	<0.1	----	----	
Sulfotep	3689-24-5	0.005	µg/L	----	<0.005	<0.005	----	----	
Sulprofos	35400-43-2	0.05	µg/L	----	<0.05	<0.05	----	----	
Terbufos	13071-79-9	0.01	µg/L	----	<0.01	<0.01	----	----	
Temephos	3383-96-8	0.02	µg/L	----	<0.02	<0.02	----	----	
Tetrachlorvinphos	22248-79-9	0.01	µg/L	----	<0.01	<0.01	----	----	
Triazophos	24017-47-8	0.005	µg/L	----	<0.005	<0.005	----	----	
Trichlorfon	52-68-6	0.02	µg/L	----	<0.02	<0.02	----	----	
Trichloronate	327-98-0	0.5	µg/L	----	<0.5	<0.5	----	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	106	118	117	123	117	
Toluene-D8	2037-26-5	2	%	100	94.4	94.2	96.0	93.7	
4-Bromofluorobenzene	460-00-4	2	%	99.6	101	101	104	101	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID			FB02	----	----	----	----
Client sampling date / time		17-Mar-2020 00:00			----	----	----	----	----
Compound	CAS Number	LOR	Unit	EP2002914-031	-----	-----	-----	-----	-----
				Result	----	----	----	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	----	----	----	----
<sup>^</sup> C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----	----
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	----	----	----	----	----
Toluene	108-88-3	2	µg/L	<2	----	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	----	----	----	----	----
<sup>^</sup> Total Xylenes	----	2	µg/L	<2	----	----	----	----	----
<sup>^</sup> Sum of BTEX	----	1	µg/L	<1	----	----	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	117	----	----	----	----	----
Toluene-D8	2037-26-5	2	%	95.0	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	102	----	----	----	----	----



## Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	61	141
Toluene-D8	2037-26-5	73	126
4-Bromofluorobenzene	460-00-4	60	125

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP2002914	Page	: 1 of 19
Client	: GHD PTY LTD	Laboratory	: Environmental Division Perth
Contact	: MS VICKI DAVIES	Telephone	: 08 9406 1311
Project	: 6137041	Date Samples Received	: 19-Mar-2020
Site	: ----	Issue Date	: 03-Apr-2020
Sampler	: AMY HESTEHAUGE, DS	No. of samples received	: 31
Order number	: 6137041 08.0831	No. of samples analysed	: 31

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.

Page : 2 of 19  
 Work Order : EP2002914  
 Client : GHD PTY LTD  
 Project : 6137041



**Outliers : Quality Control Samples**

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
EP234A: OP Pesticides	EB2007715--001	Anonymous	Ethion	563-12-2	58.5 %	70.0-130%	Recovery less than lower data quality objective

**Outliers : Analysis Holding Time Compliance**

Matrix: **WATER**

Method	Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EA005P: pH by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural</b>							
BH32.1, SW07, BORR_MW18, Northern 5, BORR_MW20, SW09, BORR_MW15	North Creek 2, North Creek 4, BORR_MW13, BORR_MW22B, FD01, SW08,	----	----	----	24-Mar-2020	16-Mar-2020	8
<b>Clear Plastic Bottle - Natural</b>							
BH11.1, BORR_MW39, BORR_MW31, BORR_MW25, JT01, BORR_MW37,	BORR_MW32, BH9.2, SW06, FD02, FD03, BORR_MW29	----	----	----	24-Mar-2020	17-Mar-2020	7
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>							
<b>Clear Plastic Bottle - Natural</b>							
BH32.1, SW07, BORR_MW18, Northern 5, BORR_MW20, SW09, BORR_MW15	North Creek 2, North Creek 4, BORR_MW13, BORR_MW22B, FD01, SW08,	----	----	----	19-Mar-2020	18-Mar-2020	1

**Outliers : Frequency of Quality Control Samples**

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
TRH - Semivolatile Fraction	3	38	7.89	10.00	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>					





Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Method					
<b>Matrix Spikes (MS) - Continued</b>					
TRH - Semivolatile Fraction	1	38	2.63	5.00	NEPM 2013 B3 & ALS QC Standard

## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA005P: pH by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA005-P)</b>								
BH32.1, SW07, BORR_MW18, Northern 5, BORR_MW20, SW09, BORR_MW15	North Creek 2, North Creek 4, BORR_MW13, BORR_MW22B, FD01, SW08,	16-Mar-2020	----	----	----	24-Mar-2020	16-Mar-2020	*
<b>Clear Plastic Bottle - Natural (EA005-P)</b>								
BH11.1, BORR_MW39, BORR_MW31, BORR_MW25, JT01, BORR_MW37,	BORR_MW32, BH9.2, SW06, FD02, FD03, BORR_MW29	17-Mar-2020	----	----	----	24-Mar-2020	17-Mar-2020	*



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA010P: Conductivity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA010-P)</b> BH32.1, SW07, BORR_MW18, Northern 5, BORR_MW20, SW09, BORR_MW15	North Creek 2, North Creek 4, BORR_MW13, BORR_MW22B, FD01, SW08,	16-Mar-2020	----	----	----	24-Mar-2020	13-Apr-2020	✓
<b>Clear Plastic Bottle - Natural (EA010-P)</b> BH11.1, BORR_MW39, BORR_MW31, BORR_MW25, JT01, BORR_MW37,	BORR_MW32, BH9.2, SW06, FD02, FD03, BORR_MW29	17-Mar-2020	----	----	----	24-Mar-2020	14-Apr-2020	✓
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
<b>Clear Plastic Bottle - Natural (EA015H)</b> BH32.1, SW07, BORR_MW18, Northern 5, BORR_MW20, SW09, BORR_MW15	North Creek 2, North Creek 4, BORR_MW13, BORR_MW22B, FD01, SW08,	16-Mar-2020	----	----	----	23-Mar-2020	23-Mar-2020	✓
<b>Clear Plastic Bottle - Natural (EA015H)</b> SW06,	BORR_MW29	17-Mar-2020	----	----	----	23-Mar-2020	24-Mar-2020	✓
<b>Clear Plastic Bottle - Natural (EA015H)</b> BH11.1, BORR_MW39, BORR_MW31, FD02, FD03,	BORR_MW32, BH9.2, BORR_MW25, JT01, BORR_MW37	17-Mar-2020	----	----	----	24-Mar-2020	24-Mar-2020	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>ED037P: Alkalinity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (ED037-P)</b> BH32.1, SW07, BORR_MW18, Northern 5, BORR_MW20, SW09, BORR_MW15	North Creek 2, North Creek 4, BORR_MW13, BORR_MW22B, FD01, SW08,	16-Mar-2020	----	----	----	24-Mar-2020	30-Mar-2020	✓
<b>Clear Plastic Bottle - Natural (ED037-P)</b> BH11.1, BORR_MW39, BORR_MW31, BORR_MW25, JT01, BORR_MW37,	BORR_MW32, BH9.2, SW06, FD02, FD03, BORR_MW29	17-Mar-2020	----	----	----	24-Mar-2020	31-Mar-2020	✓
<b>ED038A: Acidity</b>								
<b>Clear Plastic Bottle - Natural (ED038)</b> BH32.1, SW07, BORR_MW18, Northern 5, BORR_MW20, SW09, BORR_MW15	North Creek 2, North Creek 4, BORR_MW13, BORR_MW22B, FD01, SW08,	16-Mar-2020	----	----	----	20-Mar-2020	30-Mar-2020	✓
<b>Clear Plastic Bottle - Natural (ED038)</b> BH11.1, BORR_MW39, BORR_MW31, BORR_MW25, JT01, BORR_MW37,	BORR_MW32, BH9.2, SW06, FD02, FD03, BORR_MW29	17-Mar-2020	----	----	----	20-Mar-2020	31-Mar-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>							
<b>Clear Plastic Bottle - Natural (ED041G)</b> BH32.1, North Creek 2, SW07, North Creek 4, BORR_MW18, BORR_MW13, Northern 5, BORR_MW22B, BORR_MW20, FD01, SW09, SW08, BORR_MW15	16-Mar-2020	----	----	----	19-Mar-2020	13-Apr-2020	✓
<b>Clear Plastic Bottle - Natural (ED041G)</b> BH11.1, BORR_MW32, BORR_MW39, BH9.2, BORR_MW31, SW06, BORR_MW25, FD02, JT01, FD03, BORR_MW37, BORR_MW29	17-Mar-2020	----	----	----	19-Mar-2020	14-Apr-2020	✓
<b>ED045G: Chloride by Discrete Analyser</b>							
<b>Clear Plastic Bottle - Natural (ED045G)</b> BH32.1, North Creek 2, SW07, North Creek 4, BORR_MW18, BORR_MW13, Northern 5, BORR_MW22B, BORR_MW20, FD01, SW09, SW08, BORR_MW15	16-Mar-2020	----	----	----	19-Mar-2020	13-Apr-2020	✓
<b>Clear Plastic Bottle - Natural (ED045G)</b> BH11.1, BORR_MW32, BORR_MW39, BH9.2, BORR_MW31, SW06, BORR_MW25, FD02, JT01, FD03, BORR_MW37, BORR_MW29	17-Mar-2020	----	----	----	19-Mar-2020	14-Apr-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>ED093F: Dissolved Major Cations</b>							
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> BH32.1, North Creek 2, SW07, North Creek 4, BORR_MW18, BORR_MW13, Northern 5, BORR_MW22B, BORR_MW20, FD01, SW09, SW08, BORR_MW15	16-Mar-2020	----	----	----	20-Mar-2020	13-Apr-2020	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> BH11.1, BORR_MW32, BORR_MW39, BH9.2, BORR_MW31, SW06, BORR_MW25, FD02, JT01, FD03, BORR_MW37, BORR_MW29	17-Mar-2020	----	----	----	20-Mar-2020	14-Apr-2020	✓
<b>EG020F: Dissolved Metals by ICP-MS</b>							
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> BH32.1, North Creek 2, SW07, North Creek 4, BORR_MW18, BORR_MW13, Northern 5, BORR_MW22B, BORR_MW20, FD01, SW09, SW08, BORR_MW15	16-Mar-2020	----	----	----	20-Mar-2020	12-Sep-2020	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> BH11.1, BORR_MW32, BORR_MW39, BH9.2, BORR_MW31, SW06, BORR_MW25, FD02, JT01, FD03, BORR_MW37, BORR_MW29	17-Mar-2020	----	----	----	20-Mar-2020	13-Sep-2020	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EG020T: Total Metals by ICP-MS</b>							
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> RB01, North Creek 2, North Creek 4, BORR_MW13, BORR_MW22B, FD01, SW08, BH32.1, SW07, BORR_MW18, Northern 5, BORR_MW20, SW09, BORR_MW15	16-Mar-2020	20-Mar-2020	12-Sep-2020	✓	20-Mar-2020	12-Sep-2020	✓
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> BH11.1, BORR_MW39, BORR_MW31, SW06, FD02, FD03, BORR_MW29, BORR_MW32, BH9.2, RB02, BORR_MW25, JT01, BORR_MW37,	17-Mar-2020	20-Mar-2020	13-Sep-2020	✓	20-Mar-2020	13-Sep-2020	✓
<b>EK055G: Ammonia as N by Discrete Analyser</b>							
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> BH32.1, SW07, BORR_MW18, Northern 5, BORR_MW20, SW09, BORR_MW15, North Creek 2, North Creek 4, BORR_MW13, BORR_MW22B, FD01, SW08,	16-Mar-2020	----	----	----	19-Mar-2020	13-Apr-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> BH11.1, BORR_MW39, BORR_MW31, BORR_MW25, JT01, BORR_MW37, BORR_MW32, BH9.2, SW06, FD02, FD03, BORR_MW29	17-Mar-2020	----	----	----	19-Mar-2020	14-Apr-2020	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>							
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> BH32.1, North Creek 2, SW07, North Creek 4, BORR_MW18, BORR_MW13, Northern 5, BORR_MW22B, BORR_MW20, FD01, SW09, SW08, BORR_MW15	16-Mar-2020	----	----	----	19-Mar-2020	13-Apr-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> BH11.1, BORR_MW32, BORR_MW39, BH9.2, BORR_MW31, SW06, BORR_MW25, FD02, JT01, FD03, BORR_MW37, BORR_MW29	17-Mar-2020	----	----	----	19-Mar-2020	14-Apr-2020	✓
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>							
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> BH32.1, North Creek 2, SW07, North Creek 4, BORR_MW18, BORR_MW13, Northern 5, BORR_MW22B, BORR_MW20, FD01, SW09, SW08, BORR_MW15	16-Mar-2020	24-Mar-2020	13-Apr-2020	✓	24-Mar-2020	13-Apr-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> BH11.1, BORR_MW32, BORR_MW39, BH9.2, BORR_MW31, SW06, BORR_MW25, FD02, JT01, FD03, BORR_MW37, BORR_MW29	17-Mar-2020	24-Mar-2020	14-Apr-2020	✓	24-Mar-2020	14-Apr-2020	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> BH32.1, North Creek 2, SW07, North Creek 4, BORR_MW18, BORR_MW13, Northern 5, BORR_MW22B, BORR_MW20, FD01, SW09, SW08, BORR_MW15	16-Mar-2020	24-Mar-2020	13-Apr-2020	✓	24-Mar-2020	13-Apr-2020	✓	
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> BH11.1, BORR_MW32, BORR_MW39, BH9.2, BORR_MW31, SW06, BORR_MW25, FD02, JT01, FD03, BORR_MW37, BORR_MW29	17-Mar-2020	24-Mar-2020	14-Apr-2020	✓	24-Mar-2020	14-Apr-2020	✓	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>								
<b>Clear Plastic Bottle - Natural (EK071G)</b> BH32.1, North Creek 2, SW07, North Creek 4, BORR_MW18, BORR_MW13, Northern 5, BORR_MW22B, BORR_MW20, FD01, SW09, SW08, BORR_MW15	16-Mar-2020	----	----	----	19-Mar-2020	18-Mar-2020	*	
<b>Clear Plastic Bottle - Natural (EK071G)</b> BH11.1, BORR_MW32, BORR_MW39, BH9.2, BORR_MW31, SW06, BORR_MW25, FD02, JT01, FD03, BORR_MW37, BORR_MW29	17-Mar-2020	----	----	----	19-Mar-2020	19-Mar-2020	✓	



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 Work Order : EP2002914  
 Client : GHD PTY LTD  
 Project : 6137041



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK085M: Sulfide as S2-</b>								
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> BH32.1, SW07, BORR_MW18, Northern 5, BORR_MW20, SW09, BORR_MW15	North Creek 2, North Creek 4, BORR_MW13, BORR_MW22B, FD01, SW08,	16-Mar-2020	----	----	----	20-Mar-2020	23-Mar-2020	✓
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> BH11.1, BORR_MW39, BORR_MW31, BORR_MW25, JT01, BORR_MW37,	BORR_MW32, BH9.2, SW06, FD02, FD03, BORR_MW29	17-Mar-2020	----	----	----	20-Mar-2020	24-Mar-2020	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BH32.1, SW07, BORR_MW18, Northern 5, BORR_MW20, SW09, BORR_MW15	North Creek 2, North Creek 4, BORR_MW13, BORR_MW22B, FD01, SW08,	16-Mar-2020	23-Mar-2020	23-Mar-2020	✓	24-Mar-2020	02-May-2020	✓	
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BH11.1, BORR_MW39, FD03, BORR_MW29	BORR_MW32, JT01, BORR_MW37,	17-Mar-2020	23-Mar-2020	24-Mar-2020	✓	24-Mar-2020	02-May-2020	✓	
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BH9.2, SW06, FD02	BORR_MW31, BORR_MW25,	17-Mar-2020	24-Mar-2020	24-Mar-2020	✓	24-Mar-2020	03-May-2020	✓	
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> SW09, BORR_MW15	SW08,	16-Mar-2020	20-Mar-2020	30-Mar-2020	✓	20-Mar-2020	30-Mar-2020	✓	
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> TBW137, BH32.1, SW07, BORR_MW18, Northern 5, BORR_MW20,	FB01, North Creek 2, North Creek 4, BORR_MW13, BORR_MW22B, FD01	16-Mar-2020	24-Mar-2020	30-Mar-2020	✓	24-Mar-2020	30-Mar-2020	✓	
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> FD02, FD03, BORR_MW29,	JT01, BORR_MW37, FB02	17-Mar-2020	20-Mar-2020	31-Mar-2020	✓	20-Mar-2020	31-Mar-2020	✓	
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BH11.1, BORR_MW39, BORR_MW31, SW06,	BORR_MW32, BH9.2, TBW146, BORR_MW25	17-Mar-2020	24-Mar-2020	31-Mar-2020	✓	24-Mar-2020	31-Mar-2020	✓	



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>								
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BH32.1, SW07, BORR_MW18, Northern 5, BORR_MW20, SW09, BORR_MW15	North Creek 2, North Creek 4, BORR_MW13, BORR_MW22B, FD01, SW08,	16-Mar-2020	23-Mar-2020	23-Mar-2020	✓	24-Mar-2020	02-May-2020	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BH11.1, BORR_MW39, FD03, BORR_MW29	BORR_MW32, JT01, BORR_MW37,	17-Mar-2020	23-Mar-2020	24-Mar-2020	✓	24-Mar-2020	02-May-2020	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BH9.2, SW06, FD02	BORR_MW31, BORR_MW25,	17-Mar-2020	24-Mar-2020	24-Mar-2020	✓	24-Mar-2020	03-May-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> SW09, BORR_MW15	SW08,	16-Mar-2020	20-Mar-2020	30-Mar-2020	✓	20-Mar-2020	30-Mar-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> TBW137, BH32.1, SW07, BORR_MW18, Northern 5, BORR_MW20,	FB01, North Creek 2, North Creek 4, BORR_MW13, BORR_MW22B, FD01	16-Mar-2020	24-Mar-2020	30-Mar-2020	✓	24-Mar-2020	30-Mar-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> FD02, FD03, BORR_MW29,	JT01, BORR_MW37, FB02	17-Mar-2020	20-Mar-2020	31-Mar-2020	✓	20-Mar-2020	31-Mar-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BH11.1, BORR_MW39, BORR_MW31, SW06,	BORR_MW32, BH9.2, TBW146, BORR_MW25	17-Mar-2020	24-Mar-2020	31-Mar-2020	✓	24-Mar-2020	31-Mar-2020	✓



Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080: BTEXN</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> SW09, BORR_MW15	SW08,	16-Mar-2020	20-Mar-2020	30-Mar-2020	✓	20-Mar-2020	30-Mar-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> TBW137, BH32.1, SW07, BORR_MW18, Northern 5, BORR_MW20,	FB01, North Creek 2, North Creek 4, BORR_MW13, BORR_MW22B, FD01	16-Mar-2020	24-Mar-2020	30-Mar-2020	✓	24-Mar-2020	30-Mar-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> FD02, FD03, BORR_MW29,	JT01, BORR_MW37, FB02	17-Mar-2020	20-Mar-2020	31-Mar-2020	✓	20-Mar-2020	31-Mar-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BH11.1, BORR_MW39, BORR_MW31, SW06,	BORR_MW32, BH9.2, TBW146, BORR_MW25	17-Mar-2020	24-Mar-2020	31-Mar-2020	✓	24-Mar-2020	31-Mar-2020	✓
<b>EP204: Glyphosate and AMPA</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b> North Creek 2, North Creek 4, SW09,	SW07, Northern 5, SW08	16-Mar-2020	----	----	----	23-Mar-2020	30-Mar-2020	✓
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b> SW06, JT01	FD02,	17-Mar-2020	----	----	----	23-Mar-2020	31-Mar-2020	✓
<b>EP234A: OP Pesticides</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> North Creek 2, North Creek 4, SW09,	SW07, Northern 5, SW08	16-Mar-2020	----	----	----	23-Mar-2020	23-Mar-2020	✓
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> SW06, JT01	FD02,	17-Mar-2020	----	----	----	23-Mar-2020	24-Mar-2020	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaural	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity as Calcium Carbonate	ED038	4	30	13.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	4	36	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	6	60	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	3	25	12.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	3	25	12.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	2	15	13.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	4	33	12.12	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	36	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	3	28	10.71	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	37	10.81	10.53	✔	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	4	38	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	3	27	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	4	38	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	3	38	7.89	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	39	10.26	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Acidity as Calcium Carbonate	ED038	2	30	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	4	36	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	3	60	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	25	8.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	25	8.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	15	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	33	6.06	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	36	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	28	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	37	10.81	10.53	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Alkalinity by PC Titrator	ED037-P	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	3	60	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	37	5.41	5.26	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	38	2.63	5.00	*	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3)  Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3)  Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ammonium as N	EK055G-NH4	WATER	Ammonium in the sample is reported as the ionised / unionised fractions by the use of a nomograph and the initial pH and Temperature. Ammonia is determined by direct colorimetry by Discrete Analyser according to APHA 4500-NH3 G. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Sulfide as S2-	EK085	WATER	In house: Referenced to APHA 4500-S2- D. Sulfide species present in water samples are immediately precipitated when collected in pretreated caustic/zinc acetate preserved sample containers. The sulphides are coloured using methylene blue indicator. Non-detects may be screened by comparison against a standard at half-LOR, otherwise samples are measured using UV-VIS detection at 664nm. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatle Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Glyphosate and AMPA	EP204	WATER	In house: Pre-column derivatisation LCMS (ES in negative mode). Water samples are derivatised with 9-fluorenyl methoxycarbonyl chloroformate (Fmoc) in alkaline condition. The derivatives of glyphosate and AMPA are separated by a C8 column and determined by MS.
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.





<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.



<u>Sample ID</u>	<u>Date</u>	As per GW suite	As per SW suite
18 BORR-MW22B	16-3-20	✓	
19 SW06	17-3-20		✓
20 BORR-MW20	16-3-20	✓	
21 BORR-MW25	17-3-20	✓	
22 FDO1	16-3-20	✓	
23 FDO2	17-3-20		✓
24 JTO1	17-3-20		✓
25 FDO3	17-3-20	✓	
26 BORR-MW37	17-3-20	✓	
27 SW09	16-3-20		✓
28 SW08	16-3-20		✓
29 BORR-MW29	17-3-20	✓	
30 BORR-MW15	16-3-20	✓	
31 FBO2	17/3		

## CERTIFICATE OF ANALYSIS

**Work Order** : **EP2002968**  
**Client** : **GHD PTY LTD**  
**Contact** : **MS VICKI DAVIES**  
**Address** : **999 HAY STREET**  
**PERTH WA, AUSTRALIA 6000**  
**Telephone** : **----**  
**Project** : **6137041**  
**Order number** : **6137041 8.0831**  
**C-O-C number** : **----**  
**Sampler** : **AMY HESTEHAUGE**  
**Site** : **----**  
**Quote number** : **EP/489/19 V4**  
**No. of samples received** : **17**  
**No. of samples analysed** : **17**

**Page** : 1 of 14  
**Laboratory** : Environmental Division Perth  
**Contact** : Marnie Thomsett  
**Address** : 26 Rigali Way Wangara WA Australia 6065  
**Telephone** : 08 9406 1311  
**Date Samples Received** : 20-Mar-2020 11:15  
**Date Analysis Commenced** : 20-Mar-2020  
**Issue Date** : 31-Mar-2020 12:25



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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Vanessa Nguyen	Organic Chemist	Perth Organics, Wangara, WA



## General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EG020: Metals LOR for sample EP2002968-011 raised due to high TDS content.
- EP204 and EP234-1 conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- ED041G (Sulfate Turbidimetric): LOR for sample EP2002968-014 raised due to possible sample matrix interference.
- TDS by method EA-015 may bias high for samples #10 and #14 due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- EP234: Poor matrix spike recovery for particular compounds due to matrix interferences.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW12	SOUTHERN 4	BORR MW19b	BORR MW06	BORR MW05
Client sampling date / time				18-Mar-2020 00:00	18-Mar-2020 00:00	18-Mar-2020 00:00	18-Mar-2020 00:00	18-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002968-001	EP2002968-002	EP2002968-003	EP2002968-004	EP2002968-005	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	7.03	8.40	6.47	7.15	7.09	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	555	14100	2210	629	1230	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	325	9240	1330	432	744	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	14	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	30	278	44	60	72	
Total Alkalinity as CaCO3	----	1	mg/L	30	291	44	60	72	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	17	<1	52	17	13	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	39	199	35	48	127	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	132	4440	707	136	283	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	5	131	17	22	32	
Magnesium	7439-95-4	1	mg/L	11	318	50	11	21	
Sodium	7440-23-5	1	mg/L	86	2380	350	86	196	
Potassium	7440-09-7	1	mg/L	6	56	5	13	7	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.04	0.08	0.02	0.17	0.08	
Arsenic	7440-38-2	0.001	mg/L	0.003	0.004	<0.001	<0.001	0.001	
Cadmium	7440-43-9	0.0001	mg/L	0.0001	0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.002	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.025	0.013	0.010	0.005	0.008	
Lead	7439-92-1	0.001	mg/L	<0.001	0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.005	0.013	0.133	0.058	0.014	
Nickel	7440-02-0	0.001	mg/L	0.006	0.006	0.013	0.002	0.003	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.127	0.219	0.090	0.030	0.041	
Iron	7439-89-6	0.05	mg/L	3.02	0.09	5.53	2.94	1.85	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW12	SOUTHERN 4	BORR MW19b	BORR MW06	BORR MW05
Client sampling date / time				18-Mar-2020 00:00	18-Mar-2020 00:00	18-Mar-2020 00:00	18-Mar-2020 00:00	18-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002968-001	EP2002968-002	EP2002968-003	EP2002968-004	EP2002968-005	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.26	0.21	0.25	2.31	0.70	
Iron	7439-89-6	0.05	mg/L	3.85	0.16	5.87	11.6	2.66	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.24	<0.01	0.02	0.25	0.10	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.24	<0.01	0.02	0.25	0.10	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.10	<0.01	<0.01	<0.01	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.4	7.4	0.1	1.0	1.3	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.5	7.4	0.1	1.0	1.3	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.01	0.35	<0.01	0.05	0.04	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	5.13	135	21.6	6.03	12.1	
∅ Total Cations	----	0.01	meq/L	5.05	138	20.3	6.08	12.0	
∅ Ionic Balance	----	0.01	%	0.84	0.90	2.95	0.34	0.15	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	150	<100	<100	<100	
C29 - C36 Fraction	----	50	µg/L	<50	50	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	200	<50	<50	<50	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW12	SOUTHERN 4	BORR MW19b	BORR MW06	BORR MW05
Client sampling date / time				18-Mar-2020 00:00	18-Mar-2020 00:00	18-Mar-2020 00:00	18-Mar-2020 00:00	18-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002968-001	EP2002968-002	EP2002968-003	EP2002968-004	EP2002968-005	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	180	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	180	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
<b>EP204: Glyphosate and AMPA</b>									
Glyphosate	1071-83-6	10	µg/L	----	<10	----	----	----	
<b>EP234A: OP Pesticides</b>									
Azinphos-ethyl	2642-71-9	0.02	µg/L	----	<0.02	----	----	----	
Azinphos-methyl	86-50-0	0.02	µg/L	----	<0.02	----	----	----	
Bromophos-ethyl	4824-78-6	0.10	µg/L	----	<0.10	----	----	----	
Carbofenthion	786-19-6	0.02	µg/L	----	<0.02	----	----	----	
Chlorfenvinphos	470-90-6	0.02	µg/L	----	<0.02	----	----	----	
Chlorpyrifos	2921-88-2	0.02	µg/L	----	<0.02	----	----	----	
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	----	<0.2	----	----	----	
Coumaphos	56-72-4	0.01	µg/L	----	<0.01	----	----	----	
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	----	<0.02	----	----	----	
Demeton-S-methyl	919-86-8	0.02	µg/L	----	<0.02	----	----	----	
Demeton-O	298-03-3	0.02	µg/L	----	<0.02	----	----	----	
Demeton-S	126-75-0	0.02	µg/L	----	<0.02	----	----	----	
Diazinon	333-41-5	0.01	µg/L	----	<0.01	----	----	----	
Dichlorvos	62-73-7	0.20	µg/L	----	<0.20	----	----	----	
Dimethoate	60-51-5	0.02	µg/L	----	<0.02	----	----	----	
Disulfoton	298-04-4	0.05	µg/L	----	<0.05	----	----	----	
Ethion	563-12-2	0.02	µg/L	----	<0.02	----	----	----	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW12	SOUTHERN 4	BORR MW19b	BORR MW06	BORR MW05
Client sampling date / time				18-Mar-2020 00:00	18-Mar-2020 00:00	18-Mar-2020 00:00	18-Mar-2020 00:00	18-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002968-001	EP2002968-002	EP2002968-003	EP2002968-004	EP2002968-005	
				Result	Result	Result	Result	Result	
<b>EP234A: OP Pesticides - Continued</b>									
EPN	2104-64-5	0.05	µg/L	----	<0.05	----	----	----	
Ethoprophos	13194-48-4	0.01	µg/L	----	<0.01	----	----	----	
Fenamiphos	22224-92-6	0.01	µg/L	----	<0.01	----	----	----	
Fenchlorphos (Rannel)	299-84-3	10	µg/L	----	<10	----	----	----	
Fenitrothion	122-14-5	2	µg/L	----	<2	----	----	----	
Fensulfothion	115-90-2	0.01	µg/L	----	<0.01	----	----	----	
Fenthion	55-38-9	0.05	µg/L	----	<0.05	----	----	----	
Malathion	121-75-5	0.02	µg/L	----	<0.02	----	----	----	
Mevinphos	7786-34-7	0.02	µg/L	----	<0.02	----	----	----	
Monocrotophos	6923-22-4	0.02	µg/L	----	<0.02	----	----	----	
Omethoate	1113-02-6	0.01	µg/L	----	<0.01	----	----	----	
Parathion	56-38-2	0.2	µg/L	----	<0.2	----	----	----	
Parathion-methyl	298-00-0	0.5	µg/L	----	<0.5	----	----	----	
Phorate	298-02-2	0.1	µg/L	----	<0.1	----	----	----	
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	----	<0.01	----	----	----	
Pirimiphos-methyl	29232-93-7	0.01	µg/L	----	<0.01	----	----	----	
Profenofos	41198-08-7	0.01	µg/L	----	<0.01	----	----	----	
Prothiofos	34643-46-4	0.1	µg/L	----	<0.1	----	----	----	
Sulfotep	3689-24-5	0.005	µg/L	----	<0.005	----	----	----	
Sulprofos	35400-43-2	0.05	µg/L	----	<0.05	----	----	----	
Terbufos	13071-79-9	0.01	µg/L	----	<0.01	----	----	----	
Temephos	3383-96-8	0.02	µg/L	----	<0.02	----	----	----	
Tetrachlorvinphos	22248-79-9	0.01	µg/L	----	<0.01	----	----	----	
Triazophos	24017-47-8	0.005	µg/L	----	<0.005	----	----	----	
Trichlorfon	52-68-6	0.02	µg/L	----	<0.02	----	----	----	
Trichloronate	327-98-0	0.5	µg/L	----	<0.5	----	----	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	98.3	99.1	95.0	102	98.2	
Toluene-D8	2037-26-5	2	%	98.0	97.8	98.1	96.1	97.8	
4-Bromofluorobenzene	460-00-4	2	%	99.3	99.4	106	99.6	101	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW04	MW46	FB03	RB03	BORR MW24
Client sampling date / time				18-Mar-2020 00:00	18-Mar-2020 00:00	18-Mar-2020 00:00	18-Mar-2020 00:00	19-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002968-006	EP2002968-007	EP2002968-008	EP2002968-009	EP2002968-010	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	7.40	4.54	----	----	4.96	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	3850	444	----	----	1720	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	2420	296	----	----	1520	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	----	----	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	250	<1	----	----	1	
Total Alkalinity as CaCO3	----	1	mg/L	250	<1	----	----	1	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	16	73	----	----	24	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	231	176	----	----	38	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	998	19	----	----	538	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	171	37	----	----	<1	
Magnesium	7439-95-4	1	mg/L	61	18	----	----	9	
Sodium	7440-23-5	1	mg/L	566	17	----	----	333	
Potassium	7440-09-7	1	mg/L	5	4	----	----	<1	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	<0.01	0.02	----	----	0.16	
Arsenic	7440-38-2	0.001	mg/L	0.002	0.006	----	----	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	0.001	
Cobalt	7440-48-4	0.001	mg/L	0.001	0.006	----	----	0.006	
Copper	7440-50-8	0.001	mg/L	0.008	0.010	----	----	0.018	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	0.001	
Manganese	7439-96-5	0.001	mg/L	0.150	0.073	----	----	0.006	
Nickel	7440-02-0	0.001	mg/L	0.003	0.006	----	----	0.010	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.036	0.061	----	----	0.149	
Iron	7439-89-6	0.05	mg/L	7.07	51.9	----	----	0.22	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW04	MW46	FB03	RB03	BORR MW24
Client sampling date / time				18-Mar-2020 00:00	18-Mar-2020 00:00	18-Mar-2020 00:00	18-Mar-2020 00:00	19-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002968-006	EP2002968-007	EP2002968-008	EP2002968-009	EP2002968-010	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	1.23	1.82	----	----	23.3	
Arsenic	7440-38-2	0.001	mg/L	----	----	----	<0.001	----	
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	<0.0001	----	
Chromium	7440-47-3	0.001	mg/L	----	----	----	<0.001	----	
Copper	7440-50-8	0.001	mg/L	----	----	----	<0.001	----	
Nickel	7440-02-0	0.001	mg/L	----	----	----	<0.001	----	
Lead	7439-92-1	0.001	mg/L	----	----	----	<0.001	----	
Zinc	7440-66-6	0.005	mg/L	----	----	----	<0.005	----	
Iron	7439-89-6	0.05	mg/L	14.1	49.8	----	----	24.8	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.22	0.26	----	----	0.02	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.22	0.26	----	----	0.02	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.01	0.01	----	----	0.02	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.4	0.6	----	----	0.6	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.4	0.6	----	----	0.6	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.10	0.02	----	----	0.13	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	----	----	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	----	----	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	38.0	4.20	----	----	16.0	
∅ Total Cations	----	0.01	meq/L	38.3	4.17	----	----	15.2	
∅ Ionic Balance	----	0.01	%	0.45	0.37	----	----	2.44	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	60	
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	<100	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW04	MW46	FB03	RB03	BORR MW24
Client sampling date / time				18-Mar-2020 00:00	18-Mar-2020 00:00	18-Mar-2020 00:00	18-Mar-2020 00:00	19-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002968-006	EP2002968-007	EP2002968-008	EP2002968-009	EP2002968-010	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>									
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	----	----	<b>60</b>	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	----	----	<100	
>C16 - C34 Fraction	----	100	µg/L	<100	<100	----	----	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	----	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	----	----	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	----	----	<100	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	<2	
^ Total Xylenes	----	2	µg/L	<2	<2	<2	----	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	----	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	<5	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	<b>96.3</b>	<b>99.0</b>	<b>94.0</b>	----	<b>98.8</b>	
Toluene-D8	2037-26-5	2	%	<b>97.7</b>	<b>98.3</b>	<b>98.8</b>	----	<b>97.9</b>	
4-Bromofluorobenzene	460-00-4	2	%	<b>99.1</b>	<b>101</b>	<b>101</b>	----	<b>100</b>	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MR MM05	BORR MW10	BORR MW09	BORR MW08a	FB04
Client sampling date / time				19-Mar-2020 00:00	19-Mar-2020 00:00	19-Mar-2020 00:00	19-Mar-2020 00:00	19-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002968-011	EP2002968-012	EP2002968-013	EP2002968-014	EP2002968-015	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.20	6.44	6.70	6.49	----	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	22300	553	171	498	----	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	16600	380	114	370	----	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	81	24	11	52	----	
Total Alkalinity as CaCO3	----	1	mg/L	81	24	11	52	----	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	36	18	8	18	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	1070	54	24	<20	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	7540	126	28	131	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	197	15	8	16	----	
Magnesium	7439-95-4	1	mg/L	704	15	1	10	----	
Sodium	7440-23-5	1	mg/L	4050	62	20	70	----	
Potassium	7440-09-7	1	mg/L	47	6	6	8	----	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	<0.05	0.12	0.15	0.36	----	
Arsenic	7440-38-2	0.001	mg/L	0.012	0.002	<0.001	<0.001	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0005	<0.0001	<0.0001	<0.0001	----	
Chromium	7440-47-3	0.001	mg/L	<0.005	0.002	<0.001	0.001	----	
Cobalt	7440-48-4	0.001	mg/L	<0.005	<0.001	<0.001	<0.001	----	
Copper	7440-50-8	0.001	mg/L	<0.005	0.009	0.011	0.005	----	
Lead	7439-92-1	0.001	mg/L	<0.005	<0.001	<0.001	<0.001	----	
Manganese	7439-96-5	0.001	mg/L	0.222	0.015	0.002	0.054	----	
Nickel	7440-02-0	0.001	mg/L	<0.005	0.003	0.003	0.003	----	
Selenium	7782-49-2	0.01	mg/L	<0.05	<0.01	<0.01	<0.01	----	
Zinc	7440-66-6	0.005	mg/L	0.030	0.050	0.039	0.038	----	
Iron	7439-89-6	0.05	mg/L	18.8	3.73	<0.05	0.98	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MR MM05	BORR MW10	BORR MW09	BORR MW08a	FB04
Client sampling date / time				19-Mar-2020 00:00	19-Mar-2020 00:00	19-Mar-2020 00:00	19-Mar-2020 00:00	19-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002968-011	EP2002968-012	EP2002968-013	EP2002968-014	EP2002968-015	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	1.57	0.83	0.46	1.34	----	
Iron	7439-89-6	0.05	mg/L	22.6	5.11	0.15	1.33	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.37	0.40	<0.01	0.26	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.37	0.40	<0.01	0.26	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.16	<0.01	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.1	1.1	0.2	2.4	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	1.1	1.1	0.4	2.4	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.10	0.02	0.02	1.22	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	0.96	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	236	5.16	1.51	4.73	----	
∅ Total Cations	----	0.01	meq/L	245	4.83	1.50	4.87	----	
∅ Ionic Balance	----	0.01	%	1.77	3.25	0.15	1.42	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	----	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	----	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MR MM05	BORR MW10	BORR MW09	BORR MW08a	FB04
Client sampling date / time				19-Mar-2020 00:00	19-Mar-2020 00:00	19-Mar-2020 00:00	19-Mar-2020 00:00	19-Mar-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2002968-011	EP2002968-012	EP2002968-013	EP2002968-014	EP2002968-015	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	----
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	<5
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	95.6	100	94.9	96.5	97.2	
Toluene-D8	2037-26-5	2	%	95.1	98.2	100	96.7	97.6	
4-Bromofluorobenzene	460-00-4	2	%	99.0	98.0	99.3	104	103	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB04	TB02	----	----	----
Client sampling date / time				19-Mar-2020 00:00	19-Mar-2020 00:00	----	----	----	
Compound	CAS Number	LOR	Unit	EP2002968-016	EP2002968-017	-----	-----	-----	
				Result	Result	----	----	----	
<b>EG020T: Total Metals by ICP-MS</b>									
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	----	<20	----	----	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	----	<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	----	<20	----	----	----	----
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	----	<1	----	----	----	----
Toluene	108-88-3	2	µg/L	----	<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L	----	<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	----	<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L	----	<2	----	----	----	----
^ Total Xylenes	----	2	µg/L	----	<2	----	----	----	----
^ Sum of BTEX	----	1	µg/L	----	<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L	----	<5	----	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	----	96.9	----	----	----	----
Toluene-D8	2037-26-5	2	%	----	98.0	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	----	101	----	----	----	----





## Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	61	141
Toluene-D8	2037-26-5	73	126
4-Bromofluorobenzene	460-00-4	60	125

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP2002968	Page	: 1 of 13
Client	: GHD PTY LTD	Laboratory	: Environmental Division Perth
Contact	: MS VICKI DAVIES	Telephone	: 08 9406 1311
Project	: 6137041	Date Samples Received	: 20-Mar-2020
Site	: ----	Issue Date	: 31-Mar-2020
Sampler	: AMY HESTEHAUGE	No. of samples received	: 17
Order number	: 6137041 8.0831	No. of samples analysed	: 17

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



### Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
EP234A: OP Pesticides	EP2002968--002	SOUTHERN 4	Demeton-S-methyl	919-86-8	44.0 %	70.0-130%	Recovery less than lower data quality objective

### Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EA005P: pH by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural</b>							
BORR_MW12, BORR MW19b, BORR MW05, MW46	SOUTHERN 4, BORR MW06, BORR MW04,	----	----	----	25-Mar-2020	18-Mar-2020	7
<b>Clear Plastic Bottle - Natural</b>							
BORR MW24, BORR MW10, BORR MW08a	MR MM05, BORR MW09,	----	----	----	25-Mar-2020	19-Mar-2020	6

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EA005P: pH by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural (EA005-P)</b>							
BORR_MW12, BORR MW19b, BORR MW05, MW46	SOUTHERN 4, BORR MW06, BORR MW04,	18-Mar-2020	----	----	25-Mar-2020	18-Mar-2020	*
<b>Clear Plastic Bottle - Natural (EA005-P)</b>							
BORR MW24, BORR MW10, BORR MW08a	MR MM05, BORR MW09,	19-Mar-2020	----	----	25-Mar-2020	19-Mar-2020	*



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA010P: Conductivity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA010-P)</b> BORR_MW12, BORR MW19b, BORR MW05, MW46	SOUTHERN 4, BORR MW06, BORR MW04,	18-Mar-2020	----	----	----	25-Mar-2020	15-Apr-2020	✓
<b>Clear Plastic Bottle - Natural (EA010-P)</b> BORR MW24, BORR MW10, BORR MW08a	MR MM05, BORR MW09,	19-Mar-2020	----	----	----	25-Mar-2020	16-Apr-2020	✓
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
<b>Clear Plastic Bottle - Natural (EA015H)</b> BORR_MW12, BORR MW19b, BORR MW05, MW46	SOUTHERN 4, BORR MW06, BORR MW04,	18-Mar-2020	----	----	----	25-Mar-2020	25-Mar-2020	✓
<b>Clear Plastic Bottle - Natural (EA015H)</b> BORR MW24, BORR MW10, BORR MW08a	MR MM05, BORR MW09,	19-Mar-2020	----	----	----	26-Mar-2020	26-Mar-2020	✓
<b>ED037P: Alkalinity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (ED037-P)</b> BORR_MW12, BORR MW19b, BORR MW05, MW46	SOUTHERN 4, BORR MW06, BORR MW04,	18-Mar-2020	----	----	----	25-Mar-2020	01-Apr-2020	✓
<b>Clear Plastic Bottle - Natural (ED037-P)</b> BORR MW24, BORR MW10, BORR MW08a	MR MM05, BORR MW09,	19-Mar-2020	----	----	----	25-Mar-2020	02-Apr-2020	✓
<b>ED038A: Acidity</b>								
<b>Clear Plastic Bottle - Natural (ED038)</b> BORR_MW12, BORR MW19b, BORR MW05, MW46	SOUTHERN 4, BORR MW06, BORR MW04,	18-Mar-2020	----	----	----	23-Mar-2020	01-Apr-2020	✓
<b>Clear Plastic Bottle - Natural (ED038)</b> BORR MW24, BORR MW10, BORR MW08a	MR MM05, BORR MW09,	19-Mar-2020	----	----	----	23-Mar-2020	02-Apr-2020	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
<b>Clear Plastic Bottle - Natural (ED041G)</b> BORR_MW12, BORR MW19b, BORR MW05, MW46	SOUTHERN 4, BORR MW06, BORR MW04,	18-Mar-2020	----	----	----	20-Mar-2020	15-Apr-2020	✓
<b>Clear Plastic Bottle - Natural (ED041G)</b> BORR MW24, BORR MW10, BORR MW08a	MR MM05, BORR MW09,	19-Mar-2020	----	----	----	20-Mar-2020	16-Apr-2020	✓
<b>ED045G: Chloride by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Natural (ED045G)</b> BORR_MW12, BORR MW19b, BORR MW05, MW46	SOUTHERN 4, BORR MW06, BORR MW04,	18-Mar-2020	----	----	----	20-Mar-2020	15-Apr-2020	✓
<b>Clear Plastic Bottle - Natural (ED045G)</b> BORR MW24, BORR MW10, BORR MW08a	MR MM05, BORR MW09,	19-Mar-2020	----	----	----	20-Mar-2020	16-Apr-2020	✓
<b>ED093F: Dissolved Major Cations</b>								
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> BORR_MW12, BORR MW19b, BORR MW05, MW46	SOUTHERN 4, BORR MW06, BORR MW04,	18-Mar-2020	----	----	----	23-Mar-2020	15-Apr-2020	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> BORR MW24, BORR MW10, BORR MW08a	MR MM05, BORR MW09,	19-Mar-2020	----	----	----	23-Mar-2020	16-Apr-2020	✓
<b>EG020F: Dissolved Metals by ICP-MS</b>								
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> BORR_MW12, BORR MW19b, BORR MW05, MW46	SOUTHERN 4, BORR MW06, BORR MW04,	18-Mar-2020	----	----	----	23-Mar-2020	14-Sep-2020	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> BORR MW24, BORR MW10, BORR MW08a	MR MM05, BORR MW09,	19-Mar-2020	----	----	----	23-Mar-2020	15-Sep-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EG020T: Total Metals by ICP-MS</b>								
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> BORR_MW12, SOUTHERN 4, BORR MW19b, BORR MW06, BORR MW05, BORR MW04, MW46, RB03	18-Mar-2020	23-Mar-2020	14-Sep-2020	✓	23-Mar-2020	14-Sep-2020	✓	
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> BORR MW24, MR MM05, BORR MW10, BORR MW09, BORR MW08a, RB04	19-Mar-2020	23-Mar-2020	15-Sep-2020	✓	23-Mar-2020	15-Sep-2020	✓	
<b>EK055G: Ammonia as N by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> BORR_MW12, SOUTHERN 4, BORR MW19b, BORR MW06, BORR MW05, BORR MW04, MW46	18-Mar-2020	----	----	----	20-Mar-2020	15-Apr-2020	✓	
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> BORR MW24, MR MM05, BORR MW10, BORR MW09, BORR MW08a	19-Mar-2020	----	----	----	20-Mar-2020	16-Apr-2020	✓	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> BORR_MW12, SOUTHERN 4, BORR MW19b, BORR MW06, BORR MW05, BORR MW04, MW46	18-Mar-2020	----	----	----	20-Mar-2020	15-Apr-2020	✓	
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> BORR MW24, MR MM05, BORR MW10, BORR MW09, BORR MW08a	19-Mar-2020	----	----	----	20-Mar-2020	16-Apr-2020	✓	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> BORR_MW12, SOUTHERN 4, BORR MW19b, BORR MW06, BORR MW05, BORR MW04, MW46	18-Mar-2020	26-Mar-2020	15-Apr-2020	✓	27-Mar-2020	15-Apr-2020	✓	
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> BORR MW24, MR MM05, BORR MW10, BORR MW09, BORR MW08a	19-Mar-2020	26-Mar-2020	16-Apr-2020	✓	27-Mar-2020	16-Apr-2020	✓	



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> BORR_MW12, BORR MW19b, BORR MW05, MW46	SOUTHERN 4, BORR MW06, BORR MW04,	18-Mar-2020	26-Mar-2020	15-Apr-2020	✓	27-Mar-2020	15-Apr-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> BORR MW24, BORR MW10, BORR MW08a	MR MM05, BORR MW09,	19-Mar-2020	26-Mar-2020	16-Apr-2020	✓	27-Mar-2020	16-Apr-2020	✓
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>								
<b>Clear Plastic Bottle - Natural (EK071G)</b> BORR_MW12, BORR MW19b, BORR MW05, MW46	SOUTHERN 4, BORR MW06, BORR MW04,	18-Mar-2020	----	----	----	20-Mar-2020	20-Mar-2020	✓
<b>Clear Plastic Bottle - Natural (EK071G)</b> BORR MW24, BORR MW10, BORR MW08a	MR MM05, BORR MW09,	19-Mar-2020	----	----	----	20-Mar-2020	21-Mar-2020	✓
<b>EK085M: Sulfide as S2-</b>								
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> BORR_MW12, BORR MW19b, BORR MW05, MW46	SOUTHERN 4, BORR MW06, BORR MW04,	18-Mar-2020	----	----	----	25-Mar-2020	25-Mar-2020	✓
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> BORR MW24, BORR MW10, BORR MW08a	MR MM05, BORR MW09,	19-Mar-2020	----	----	----	25-Mar-2020	26-Mar-2020	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BORR_MW12, BORR MW19b, BORR MW05, MW46	SOUTHERN 4, BORR MW06, BORR MW04,	18-Mar-2020	25-Mar-2020	25-Mar-2020	✓	27-Mar-2020	04-May-2020	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BORR MW24, BORR MW10, BORR MW08a	MR MM05, BORR MW09,	19-Mar-2020	25-Mar-2020	26-Mar-2020	✓	27-Mar-2020	04-May-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BORR_MW12, BORR MW19b, BORR MW05, MW46,	SOUTHERN 4, BORR MW06, BORR MW04, FB03	18-Mar-2020	25-Mar-2020	01-Apr-2020	✓	25-Mar-2020	01-Apr-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BORR MW24, BORR MW10, BORR MW08a, TB02	MR MM05, BORR MW09, FB04,	19-Mar-2020	25-Mar-2020	02-Apr-2020	✓	25-Mar-2020	02-Apr-2020	✓
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>								
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BORR_MW12, BORR MW19b, BORR MW05, MW46	SOUTHERN 4, BORR MW06, BORR MW04,	18-Mar-2020	25-Mar-2020	25-Mar-2020	✓	27-Mar-2020	04-May-2020	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b> BORR MW24, BORR MW10, BORR MW08a	MR MM05, BORR MW09,	19-Mar-2020	25-Mar-2020	26-Mar-2020	✓	27-Mar-2020	04-May-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BORR_MW12, BORR MW19b, BORR MW05, MW46,	SOUTHERN 4, BORR MW06, BORR MW04, FB03	18-Mar-2020	25-Mar-2020	01-Apr-2020	✓	25-Mar-2020	01-Apr-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BORR MW24, BORR MW10, BORR MW08a, TB02	MR MM05, BORR MW09, FB04,	19-Mar-2020	25-Mar-2020	02-Apr-2020	✓	25-Mar-2020	02-Apr-2020	✓





Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080: BTEXN</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BORR_MW12, BORR MW19b, BORR MW05, MW46,	SOUTHERN 4, BORR MW06, BORR MW04, FB03	18-Mar-2020	25-Mar-2020	01-Apr-2020	✓	25-Mar-2020	01-Apr-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BORR MW24, BORR MW10, BORR MW08a, TB02	MR MM05, BORR MW09, FB04,	19-Mar-2020	25-Mar-2020	02-Apr-2020	✓	25-Mar-2020	02-Apr-2020	✓
<b>EP204: Glyphosate and AMPA</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP204)</b> SOUTHERN 4		18-Mar-2020	----	----	----	26-Mar-2020	01-Apr-2020	✓
<b>EP234A: OP Pesticides</b>								
<b>Amber Bottle Unpreserved for Specialist Organics (EP234-1)</b> SOUTHERN 4		18-Mar-2020	----	----	----	25-Mar-2020	25-Mar-2020	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity as Calcium Carbonate	ED038	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	3	24	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	6	55	10.91	10.53	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Acidity as Calcium Carbonate	ED038	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	6	55	10.91	10.53	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Alkalinity by PC Titrator	ED037-P	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	55	5.45	5.26	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Glyphosate and AMPA	EP204	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3)  Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3)  Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ammonium as N	EK055G-NH4	WATER	Ammonium in the sample is reported as the ionised / unionised fractions by the use of a nomograph and the initial pH and Temperature. Ammonia is determined by direct colorimetry by Discrete Analyser according to APHA 4500-NH3 G. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Sulfide as S2-	EK085	WATER	In house: Referenced to APHA 4500-S2- D. Sulfide species present in water samples are immediately precipitated when collected in pretreated caustic/zinc acetate preserved sample containers. The sulphides are coloured using methylene blue indicator. Non-detects may be screened by comparison against a standard at half-LOR, otherwise samples are measured using UV-VIS detection at 664nm. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatle Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Glyphosate and AMPA	EP204	WATER	In house: Pre-column derivatisation LCMS (ES in negative mode). Water samples are derivatised with 9-fluorenyl methoxycarbonyl chloroformate (FMOC) in alkaline condition. The derivatives of glyphosate and AMPA are separated by a C8 column and determined by MS.
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.



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The results of the tests, calibrations and/or  
measurements included in this document are traceable  
to Australian/national standards.

Attention: **Vicki Davies**

Report **708662-W**  
Project name **6137041**  
Received Date **Mar 19, 2020**

Client Sample ID			<b>FS01</b>
Sample Matrix			<b>Water</b>
Eurofins Sample No.			<b>M20-Ma27926</b>
Date Sampled			<b>Mar 17, 2020</b>
Test/Reference	LOR	Unit	
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>			
TRH C6-C9	0.02	mg/L	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1
TRH C10-C36 (Total)	0.1	mg/L	< 0.1
<b>BTEX</b>			
Benzene	0.001	mg/L	< 0.001
Toluene	0.001	mg/L	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002
o-Xylene	0.001	mg/L	< 0.001
Xylenes - Total*	0.003	mg/L	< 0.003
4-Bromofluorobenzene (surr.)	1	%	82
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>			
Naphthalene <sup>N02</sup>	0.01	mg/L	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	0.02	mg/L	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	0.05	mg/L	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1
<b>Acidity (as CaCO3)</b>			
	10	mg/L	33
<b>Ammonia (as N)</b>			
	0.01	mg/L	0.25
<b>Chloride</b>			
	1	mg/L	680
<b>Conductivity (at 25°C)</b>			
	10	uS/cm	2300
<b>Nitrate &amp; Nitrite (as N)</b>			
	0.05	mg/L	< 0.05
<b>pH (at 25°C)</b>			
	0.1	pH Units	6.6
<b>Phosphate total (as P)</b>			
	0.01	mg/L	0.10
<b>Phosphorus reactive (as P)</b>			
	0.01	mg/L	< 0.01
<b>Sulphate (as SO4)</b>			
	5	mg/L	63
<b>Sulphide (as S)</b>			
	0.05	mg/L	< 0.05
<b>Total Dissolved Solids Dried at 180°C ± 2°C</b>			
	10	mg/L	1500
<b>Total Kjeldahl Nitrogen (as N)</b>			
	0.2	mg/L	0.3
<b>Total Nitrogen (as N)</b>			
	0.2	mg/L	21



<b>Client Sample ID</b>			<b>FS01</b>
<b>Sample Matrix</b>			<b>Water</b>
<b>Eurofins Sample No.</b>			<b>M20-Ma27926</b>
<b>Date Sampled</b>			<b>Mar 17, 2020</b>
Test/Reference	LOR	Unit	
<b>Alkalinity (speciated)</b>			
Total Alkalinity (as CaCO <sub>3</sub> )	20	mg/L	85
<b>Heavy Metals</b>			
Aluminium	0.05	mg/L	< 0.05
Aluminium (filtered)	0.05	mg/L	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001
Cadmium (filtered)	0.0002	mg/L	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001
Cobalt (filtered)	0.001	mg/L	< 0.001
Copper (filtered)	0.001	mg/L	0.008
Iron	0.05	mg/L	11
Lead (filtered)	0.001	mg/L	< 0.001
Manganese	0.005	mg/L	0.42
Manganese (filtered)	0.005	mg/L	0.37
Nickel (filtered)	0.001	mg/L	0.014
Selenium (filtered)	0.001	mg/L	< 0.001
Zinc (filtered)	0.005	mg/L	0.044
<b>Alkali Metals</b>			
Calcium (filtered)	0.5	mg/L	23
Magnesium (filtered)	0.5	mg/L	73
Potassium	0.5	mg/L	38
Sodium	0.5	mg/L	350

**Sample History**

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Melbourne	Mar 20, 2020	7 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Melbourne	Mar 20, 2020	7 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Melbourne	Mar 20, 2020	
BTEX and Naphthalene			
BTEX - Method: LTM-ORG-2010 TRH C6-C40	Melbourne	Mar 20, 2020	14 Days
Acidity (as CaCO <sub>3</sub> ) - Method: LTM-INO-4210 Acidity	Melbourne	Mar 20, 2020	14 Days
Ammonia (as N) - Method: LTM-INO-4200 Ammonia by Discrete Analyser	Melbourne	Mar 20, 2020	28 Days
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Mar 20, 2020	28 Days
Conductivity (at 25°C) - Method: LTM-INO-4030 Conductivity	Melbourne	Mar 20, 2020	28 Days
Nitrate & Nitrite (as N) - Method: LTM-INO-4120 Analysis of NO <sub>x</sub> NO <sub>2</sub> NH <sub>3</sub> by FIA	Melbourne	Mar 20, 2020	28 Days
pH (at 25°C) - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Mar 20, 2020	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorus	Melbourne	Mar 20, 2020	28 Days
Phosphorus reactive (as P) - Method: APHA 4500-P	Melbourne	Mar 20, 2020	2 Days
Sulphate (as SO <sub>4</sub> ) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Mar 20, 2020	28 Days
Sulphide (as S) - Method: APHA 4500-S C & D - Sulphide	Melbourne	Mar 20, 2020	7 Days
Total Kjeldahl Nitrogen (as N) - Method: LTM-INO-4310 TKN in Waters & Soils by FIA	Melbourne	Mar 20, 2020	7 Days
Alkalinity (speciated) - Method: LTM-INO-4250 Alkalinity by Electrometric Titration	Melbourne	Mar 20, 2020	14 Days
Heavy Metals - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Melbourne	Mar 23, 2020	180 Days
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Melbourne	Mar 20, 2020	180 Days
Alkali Metals (filtered) - Method: LTM-MET-3010 Alkali Metals Sulfur Silicon Phosphorus by ICP-AES	Melbourne	Mar 20, 2020	180 Days
Alkali Metals - Method: LTM-MET-3010 Alkali Metals Sulfur Silicon Phosphorus by ICP-AES	Melbourne	Mar 20, 2020	180 Days
Total Dissolved Solids Dried at 180°C ± 2°C - Method: LTM-INO-4170 Total Dissolved Solids in Water	Melbourne	Mar 20, 2020	7 Days



## Internal Quality Control Review and Glossary

### General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
- All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
- This report replaces any interim results previously issued.

### Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

**\*\*NOTE:** pH duplicates are reported as a range NOT as RPD

### Units

**mg/kg:** milligrams per kilogram

**mg/L:** milligrams per litre

**ug/L:** micrograms per litre

**ppm:** Parts per million

**ppb:** Parts per billion

**%:** Percentage

**org/100mL:** Organisms per 100 millilitres

**NTU:** Nephelometric Turbidity Units

**MPN/100mL:** Most Probable Number of organisms per 100 millilitres

### Terms

<b>Dry</b>	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
<b>LOR</b>	Limit of Reporting.
<b>SPIKE</b>	Addition of the analyte to the sample and reported as percentage recovery.
<b>RPD</b>	Relative Percent Difference between two Duplicate pieces of analysis.
<b>LCS</b>	Laboratory Control Sample - reported as percent recovery.
<b>CRM</b>	Certified Reference Material - reported as percent recovery.
<b>Method Blank</b>	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
<b>Surr - Surrogate</b>	The addition of a like compound to the analyte target and reported as percentage recovery.
<b>Duplicate</b>	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
<b>USEPA</b>	United States Environmental Protection Agency
<b>APHA</b>	American Public Health Association
<b>TCLP</b>	Toxicity Characteristic Leaching Procedure
<b>COC</b>	Chain of Custody
<b>SRA</b>	Sample Receipt Advice
<b>QSM</b>	US Department of Defense Quality Systems Manual Version 5.3
<b>CP</b>	Client Parent - QC was performed on samples pertaining to this report
<b>NCP</b>	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
<b>TEQ</b>	Toxic Equivalency Quotient

### QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

### QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

**Quality Control Results**

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
<b>Method Blank</b>							
<b>BTEX</b>							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total*	mg/L	< 0.003			0.003	Pass	
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
<b>Method Blank</b>							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Conductivity (at 25°C)	uS/cm	< 10			10	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Phosphate total (as P)	mg/L	< 0.01			0.01	Pass	
Phosphorus reactive (as P)	mg/L	< 0.01			0.01	Pass	
Sulphate (as SO <sub>4</sub> )	mg/L	< 5			5	Pass	
Sulphide (as S)	mg/L	< 0.05			0.05	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
<b>Method Blank</b>							
<b>Alkalinity (speciated)</b>							
Total Alkalinity (as CaCO <sub>3</sub> )	mg/L	< 20			20	Pass	
<b>Method Blank</b>							
<b>Heavy Metals</b>							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Cobalt (filtered)	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
<b>Method Blank</b>							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
<b>Alkali Metals</b>								
Calcium (filtered)	mg/L	< 0.5			0.5	Pass		
Magnesium (filtered)	mg/L	< 0.5			0.5	Pass		
Potassium	mg/L	< 0.5			0.5	Pass		
Sodium	mg/L	< 0.5			0.5	Pass		
<b>LCS - % Recovery</b>								
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>								
TRH C6-C9	%	94			70-130	Pass		
TRH C10-C14	%	96			70-130	Pass		
<b>LCS - % Recovery</b>								
<b>BTEX</b>								
Benzene	%	90			70-130	Pass		
Toluene	%	88			70-130	Pass		
Ethylbenzene	%	84			70-130	Pass		
m&p-Xylenes	%	84			70-130	Pass		
Xylenes - Total*	%	82			70-130	Pass		
<b>LCS - % Recovery</b>								
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>								
Naphthalene	%	92			70-130	Pass		
TRH C6-C10	%	94			70-130	Pass		
TRH >C10-C16	%	90			70-130	Pass		
<b>LCS - % Recovery</b>								
Ammonia (as N)	%	91			70-130	Pass		
Chloride	%	102			70-130	Pass		
Conductivity (at 25°C)	%	114			70-130	Pass		
Nitrate & Nitrite (as N)	%	104			70-130	Pass		
Phosphate total (as P)	%	97			70-130	Pass		
Phosphorus reactive (as P)	%	98			70-130	Pass		
Sulphate (as SO4)	%	102			70-130	Pass		
Sulphide (as S)	%	90			70-130	Pass		
Total Dissolved Solids Dried at 180°C ± 2°C	%	116			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	92			70-130	Pass		
<b>LCS - % Recovery</b>								
<b>Alkalinity (speciated)</b>								
Total Alkalinity (as CaCO3)	%	121			70-130	Pass		
<b>LCS - % Recovery</b>								
<b>Heavy Metals</b>								
Aluminium	%	96			80-120	Pass		
Iron	%	96			80-120	Pass		
Manganese	%	96			80-120	Pass		
<b>LCS - % Recovery</b>								
<b>Alkali Metals</b>								
Calcium (filtered)	%	102			70-130	Pass		
Magnesium (filtered)	%	99			70-130	Pass		
Potassium	%	98			70-130	Pass		
Sodium	%	109			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
<b>Spike - % Recovery</b>								
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>								
TRH C10-C14	B20-Ma26075	NCP	%	86		70-130	Pass	
<b>Spike - % Recovery</b>								
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>								
TRH >C10-C16	B20-Ma26075	NCP	%	82		70-130	Pass	
<b>Spike - % Recovery</b>								

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
				Result 1					
Ammonia (as N)	M20-Ma29669	NCP	%	72			70-130	Pass	
Chloride	S20-Ma29169	NCP	%	99			70-130	Pass	
Nitrate & Nitrite (as N)	M20-Ma29669	NCP	%	121			70-130	Pass	
Phosphate total (as P)	B20-Ma21757	NCP	%	97			70-130	Pass	
Sulphate (as SO4)	P20-Ma27285	NCP	%	95			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M20-Ma28168	NCP	%	79			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Heavy Metals</b>				Result 1					
Aluminium	P20-Ma28735	NCP	%	103			75-125	Pass	
Aluminium (filtered)	S20-Ma29138	NCP	%	96			75-125	Pass	
Arsenic (filtered)	S20-Ma29138	NCP	%	116			70-130	Pass	
Cadmium (filtered)	S20-Ma29138	NCP	%	99			70-130	Pass	
Chromium (filtered)	S20-Ma29138	NCP	%	94			70-130	Pass	
Cobalt (filtered)	S20-Ma29138	NCP	%	96			75-125	Pass	
Copper (filtered)	S20-Ma29138	NCP	%	94			70-130	Pass	
Iron	P20-Ma28735	NCP	%	101			75-125	Pass	
Lead (filtered)	S20-Ma29138	NCP	%	96			70-130	Pass	
Manganese	M20-Ma28720	NCP	%	86			75-125	Pass	
Manganese (filtered)	P20-Ma35729	NCP	%	100			70-130	Pass	
Nickel (filtered)	S20-Ma29138	NCP	%	95			70-130	Pass	
Selenium (filtered)	S20-Ma29138	NCP	%	84			70-130	Pass	
Zinc (filtered)	S20-Ma29138	NCP	%	78			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Alkali Metals</b>				Result 1					
Calcium (filtered)	M20-Ma27926	CP	%	88			70-130	Pass	
Magnesium (filtered)	M20-Ma27926	CP	%	91			70-130	Pass	
Potassium	M20-Ma27926	CP	%	83			70-130	Pass	
Sodium	B20-Ma30782	NCP	%	116			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Duplicate</b>									
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>				Result 1	Result 2	RPD			
TRH C6-C9	M20-Ma31909	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	M20-Ma25635	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	M20-Ma25635	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	M20-Ma25635	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
<b>Duplicate</b>									
<b>BTEX</b>				Result 1	Result 2	RPD			
Benzene	M20-Ma31909	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	M20-Ma31909	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	M20-Ma31909	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	M20-Ma31909	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	M20-Ma31909	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total*	M20-Ma31909	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
<b>Duplicate</b>									
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1	Result 2	RPD			
Naphthalene	M20-Ma31909	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	M20-Ma31909	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH >C10-C16	M20-Ma25635	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	M20-Ma25635	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	M20-Ma25635	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	

Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO <sub>3</sub> )	M20-Ma25668	NCP	mg/L	48	45	6.7	30%	Pass
Ammonia (as N)	M20-Ma29672	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Chloride	P20-Ma27896	NCP	mg/L	120	130	8.0	30%	Pass
Conductivity (at 25°C)	M20-Ma26575	NCP	uS/cm	4800	4800	2.0	30%	Pass
Nitrate & Nitrite (as N)	M20-Ma29672	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
pH (at 25°C)	M20-Ma26575	NCP	pH Units	8.4	8.4	pass	30%	Pass
Phosphate total (as P)	B20-Ma21747	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Sulphate (as SO <sub>4</sub> )	P20-Ma27896	NCP	mg/L	< 5	< 5	<1	30%	Pass
Sulphide (as S)	M20-Ma28659	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Total Dissolved Solids Dried at 180°C ± 2°C	P20-Ma28614	NCP	mg/L	500	510	2.0	30%	Pass
Total Kjeldahl Nitrogen (as N)	M20-Ma28167	NCP	mg/L	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Total Alkalinity (as CaCO <sub>3</sub> )	M20-Ma26575	NCP	mg/L	400	400	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	P20-Ma28726	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Aluminium (filtered)	S20-Ma29138	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Arsenic (filtered)	S20-Ma29138	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	S20-Ma29138	NCP	mg/L	< 0.0002	0.0002	140	30%	Fail Q15
Chromium (filtered)	S20-Ma29138	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cobalt (filtered)	S20-Ma29138	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	S20-Ma29138	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	P20-Ma28726	NCP	mg/L	0.21	0.23	5.0	30%	Pass
Lead (filtered)	S20-Ma29138	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M20-Ma28720	NCP	mg/L	0.18	0.18	2.0	30%	Pass
Manganese (filtered)	P20-Ma35729	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Nickel (filtered)	S20-Ma29138	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium (filtered)	S20-Ma29138	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	S20-Ma29138	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium (filtered)	M20-Ma27926	CP	mg/L	23	14	53	30%	Fail Q15
Magnesium (filtered)	M20-Ma27926	CP	mg/L	73	51	35	30%	Fail Q15
Potassium	M20-Ma27926	CP	mg/L	38	14	93	30%	Fail Q15
Sodium	B20-Ma30782	NCP	mg/L	680	780	14	30%	Pass



**Comments**
**Sample Integrity**

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

**Qualifier Codes/Comments**

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

**Authorised By**

Robert Johnston	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Scott Beddoes	Senior Analyst-Inorganic (VIC)


**Glenn Jackson  
General Manager**

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

\* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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## #AU06\_EnviroSampleWA

---

**From:** Vicki Davies <Vicki.Davies@ghd.com>  
**Sent:** Wednesday, 18 March 2020 9:58 AM  
**To:** #AU06\_EnviroSampleWA; Amy Hestehauge  
**Subject:** RE: 6137041 analysis confirmation

**Follow Up Flag:** Follow up  
**Flag Status:** Completed

Hi Rob

Yes thanks that is the one. Sorry I thought the CoC should come across from ALS but it seems pretty hit and miss.

Kind regards



**Vicki Davies**  
Environmental Scientist

PO Box 2776  
Cloisters Square 6850  
T: 08 98405104



Australian Government

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**From:** [EnviroSampleWA@eurofins.com](mailto:EnviroSampleWA@eurofins.com) <[EnviroSampleWA@eurofins.com](mailto:EnviroSampleWA@eurofins.com)>  
**Sent:** Wednesday, 18 March 2020 9:51 AM  
**To:** Vicki Davies <[Vicki.Davies@ghd.com](mailto:Vicki.Davies@ghd.com)>; Amy Hestehauge <[Amy.Hestehauge@ghd.com](mailto:Amy.Hestehauge@ghd.com)>  
**Subject:** 6137041 analysis confirmation

Hi Vicki and Amy,

We have received FS01 for project 6137041. Can you please confirm that the analysis required is for the table below?

708662  
Addit (L)  
R



Parameter	ALS Code	Technique/ Method Reference	Limit Of Reporting (LOR)
TRH/BTEXN	W-04	USEPA 8015A, USEPA 8260B	1 - 100 µg/L
Acid Sulphate Soil GW Suite - Extended Cl, SO <sub>4</sub> , Alkalinity, Acidity, pH, E.C., TDS, Dissolved Ca, Mg, Na, K, Fe, Mn, Al by ICP-AES or MS. Total N, TKN, NO <sub>x</sub> , Ammonia, Total & Reactive P; Total Al & Fe; Sulfide; Dissolved As, Cd, Co, Cu, Pb, Fe, Mn, Al, Cr, Ni, Se, Zn by ICPMS	ASSGW-2	Various	0.0001 - 10 mg/L, 0.01 pH Unit, 1 µS/cm, 0.01 %, 0.01 meq/L
Ammonium as N	EK055G- NH4	Calculation	0.01 mg/L

Kind Regards,  
Rob

**Eurofins | Environment Testing**  
Unit 2, 91 Leach Highway  
KEWDALE WA 6105  
Australia

Phone : +61 8 9251 9692  
Email : [EnviroSampleWA@eurofins.com](mailto:EnviroSampleWA@eurofins.com)

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## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>EP2004114</b> <b>Amendment</b> : <b>1</b> <b>Client</b> : <b>GHD PTY LTD</b> <b>Contact</b> : <b>Julia Roberts</b> <b>Address</b> : <b>999 HAY STREET</b> <b>PERTH WA, AUSTRALIA 6000</b> <b>Telephone</b> : <b>----</b> <b>Project</b> : <b>6137041</b> <b>Order number</b> : <b>61370410831</b> <b>C-O-C number</b> : <b>----</b> <b>Sampler</b> : <b>DS+BS</b> <b>Site</b> : <b>----</b> <b>Quote number</b> : <b>EP/489/19 V4</b> <b>No. of samples received</b> : <b>19</b> <b>No. of samples analysed</b> : <b>19</b>	<b>Page</b> : 1 of 13  <b>Laboratory</b> : Environmental Division Perth <b>Contact</b> : Rebecca Shaw <b>Address</b> : 26 Rigali Way Wangara WA Australia 6065  <b>Telephone</b> : +61-8-9406 1301 <b>Date Samples Received</b> : 22-Apr-2020 11:45 <b>Date Analysis Commenced</b> : 22-Apr-2020 <b>Issue Date</b> : 08-Jul-2020 09:48
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Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
Daniel Fisher	Inorganics Analyst	Perth Inorganics, Wangara, WA
Vanessa Nguyen	Organic Chemist	Perth Organics, Wangara, WA



## General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
∅ = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- ED041G (Sulfate Turbidimetric): LOR for sample EP2004114-016 raised due to possible sample matrix interference.
- Amendment (08/07/2020): This report has been amended as a result of a request to change sample identification numbers (IDs) received by ALS. All analysis results are as per the previous report.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	North Creek 2	Northern 5	SW06	SW07	SW08
Client sampling date / time					20-Apr-2020 00:00	20-Apr-2020 00:00	20-Apr-2020 00:00	20-Apr-2020 00:00	20-Apr-2020 00:00
Compound	CAS Number	LOR	Unit	EP2004114-001	EP2004114-002	EP2004114-003	EP2004114-004	EP2004114-005	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.99	7.88	7.71	7.28	7.24	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	820	1710	2640	1260	1230	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	457	942	1620	718	704	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	15	197	49	25	24	
Total Alkalinity as CaCO3	----	1	mg/L	15	197	49	25	24	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	9	18	10	21	28	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	30	16	57	36	36	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	247	464	808	397	395	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	5	41	42	14	12	
Magnesium	7439-95-4	1	mg/L	16	30	82	32	32	
Sodium	7440-23-5	1	mg/L	121	263	350	179	179	
Potassium	7440-09-7	1	mg/L	7	10	6	8	8	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.02	<0.01	0.03	<0.01	<0.01	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	0.005	<0.001	
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.009	0.005	0.016	0.002	0.007	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.060	0.140	0.059	0.055	0.052	
Nickel	7440-02-0	0.001	mg/L	0.012	<0.001	0.016	0.002	0.002	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.223	<0.005	0.128	0.017	0.043	
Iron	7439-89-6	0.05	mg/L	0.06	0.05	0.12	0.24	<0.05	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	North Creek 2	Northern 5	SW06	SW07	SW08
Client sampling date / time					20-Apr-2020 00:00	20-Apr-2020 00:00	20-Apr-2020 00:00	20-Apr-2020 00:00	20-Apr-2020 00:00
Compound	CAS Number	LOR	Unit		EP2004114-001	EP2004114-002	EP2004114-003	EP2004114-004	EP2004114-005
					Result	Result	Result	Result	Result
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L		0.08	0.20	0.17	0.07	0.10
Iron	7439-89-6	0.05	mg/L		1.67	0.97	0.77	1.30	1.52
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L		0.02	<0.01	<0.01	0.03	0.02
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L		0.02	<0.01	<0.01	0.03	0.02
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L		0.02	0.05	<0.01	0.04	0.04
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.3	1.6	1.1	0.6	0.5
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L		0.3	1.6	1.1	0.6	0.5
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L		0.03	1.07	0.12	0.04	0.06
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	0.67	0.02	<0.01	<0.01
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L		7.89	17.4	25.0	12.4	12.4
∅ Total Cations	----	0.01	meq/L		7.01	16.2	24.2	11.3	11.2
∅ Ionic Balance	----	0.01	%		5.93	3.42	1.50	4.73	4.87





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW09	TBW296	FB01	FB02	RB01
Client sampling date / time				20-Apr-2020 00:00	20-Apr-2020 00:00	20-Apr-2020 00:00	21-Apr-2020 00:00	21-Apr-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2004114-006	EP2004114-007	EP2004114-008	EP2004114-009	EP2004114-010	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	7.40	----	----	----	----	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	1050	----	----	----	----	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	616	----	----	----	----	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	129	----	----	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	129	----	----	----	----	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	17	----	----	----	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	8	----	----	----	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	223	----	----	----	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	19	----	----	----	----	
Magnesium	7439-95-4	1	mg/L	15	----	----	----	----	
Sodium	7440-23-5	1	mg/L	168	----	----	----	----	
Potassium	7440-09-7	1	mg/L	22	----	----	----	----	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.02	----	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----	
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	0.006	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	
Manganese	7439-96-5	0.001	mg/L	0.034	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	0.010	----	----	----	----	
Iron	7439-89-6	0.05	mg/L	1.05	----	----	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW09	TBW296	FB01	FB02	RB01
Client sampling date / time				20-Apr-2020 00:00	20-Apr-2020 00:00	20-Apr-2020 00:00	21-Apr-2020 00:00	21-Apr-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2004114-006	EP2004114-007	EP2004114-008	EP2004114-009	EP2004114-010	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.67	----	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	----	----	----	----	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	----	<0.0001	
Chromium	7440-47-3	0.001	mg/L	----	----	----	----	<0.001	
Copper	7440-50-8	0.001	mg/L	----	----	----	----	<0.001	
Nickel	7440-02-0	0.001	mg/L	----	----	----	----	<0.001	
Lead	7439-92-1	0.001	mg/L	----	----	----	----	<0.001	
Zinc	7440-66-6	0.005	mg/L	----	----	----	----	<0.005	
Iron	7439-89-6	0.05	mg/L	4.86	----	----	----	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	----	----	----	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	<0.01	----	----	----	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	----	----	----	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	4.3	----	----	----	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	4.3	----	----	----	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.57	----	----	----	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.04	----	----	----	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	----	----	----	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	9.03	----	----	----	----	
∅ Total Cations	----	0.01	meq/L	10.0	----	----	----	----	
∅ Ionic Balance	----	0.01	%	5.34	----	----	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	----	<20	<20	<20	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	----	<20	<20	<20	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW09	TBW296	FB01	FB02	RB01
Client sampling date / time				20-Apr-2020 00:00	20-Apr-2020 00:00	20-Apr-2020 00:00	21-Apr-2020 00:00	21-Apr-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2004114-006	EP2004114-007	EP2004114-008	EP2004114-009	EP2004114-010	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
<sup>^</sup> C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	----	<20	<20	<20	<20	----
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	----	<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L	----	<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L	----	<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	----	<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L	----	<2	<2	<2	<2	----
<sup>^</sup> Total Xylenes	----	2	µg/L	----	<2	<2	<2	<2	----
<sup>^</sup> Sum of BTEX	----	1	µg/L	----	<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L	----	<5	<5	<5	<5	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	----	96.7	85.6	86.2	86.2	----
Toluene-D8	2037-26-5	2	%	----	101	98.1	95.4	95.4	----
4-Bromofluorobenzene	460-00-4	2	%	----	94.7	91.1	90.7	90.7	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BH32.1	FD01	BORR MW04	BORR MW05	BORR MW06
Client sampling date / time				21-Apr-2020 00:00	21-Apr-2020 00:00	21-Apr-2020 00:00	21-Apr-2020 00:00	21-Apr-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2004114-011	EP2004114-012	EP2004114-013	EP2004114-014	EP2004114-015	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.11	6.07	7.33	7.06	7.09	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	1150	1170	4260	1210	721	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	673	660	2670	788	479	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	24	22	260	79	58	
Total Alkalinity as CaCO3	----	1	mg/L	24	22	260	79	58	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	28	20	22	16	17	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	28	28	255	127	70	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	374	370	1080	299	169	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	4	4	173	27	31	
Magnesium	7439-95-4	1	mg/L	24	23	65	19	13	
Sodium	7440-23-5	1	mg/L	186	182	599	186	83	
Potassium	7440-09-7	1	mg/L	7	7	5	7	14	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.03	0.03	0.02	0.24	0.09	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.002	0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.001	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.002	<0.001	0.002	0.005	0.002	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.061	0.058	0.150	0.010	0.060	
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.001	0.001	<0.001	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.015	0.013	0.017	0.007	0.009	
Iron	7439-89-6	0.05	mg/L	6.87	7.10	7.76	1.63	2.71	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BH32.1	FD01	BORR MW04	BORR MW05	BORR MW06
Client sampling date / time				21-Apr-2020 00:00	21-Apr-2020 00:00	21-Apr-2020 00:00	21-Apr-2020 00:00	21-Apr-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2004114-011	EP2004114-012	EP2004114-013	EP2004114-014	EP2004114-015	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	2.34	2.02	1.49	5.69	1.76	
Iron	7439-89-6	0.05	mg/L	13.7	10.4	12.9	4.70	4.88	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.06	0.07	0.18	0.14	0.26	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.06	0.07	0.18	0.14	0.26	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.4	0.4	0.5	1.4	1.0	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.4	0.4	0.5	1.4	1.0	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.22	0.18	0.03	<0.01	0.32	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	11.6	11.4	41.0	12.6	7.38	
∅ Total Cations	----	0.01	meq/L	10.4	10.2	40.2	11.2	6.58	
∅ Ionic Balance	----	0.01	%	5.30	5.87	0.99	6.19	5.72	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW08a	BORR MW09	BORR MW10	TBW293	----
Client sampling date / time				21-Apr-2020 00:00	21-Apr-2020 00:00	21-Apr-2020 00:00	20-Apr-2020 00:00	----	
Compound	CAS Number	LOR	Unit	EP2004114-016	EP2004114-017	EP2004114-018	EP2004114-019	-----	
				Result	Result	Result	Result	----	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.69	6.82	6.48	----	----	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	529	196	598	----	----	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	393	127	409	----	----	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	51	13	23	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	51	13	23	----	----	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	20	9	20	----	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<5	21	73	----	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	144	35	131	----	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	16	9	13	----	----	
Magnesium	7439-95-4	1	mg/L	10	1	17	----	----	
Sodium	7440-23-5	1	mg/L	68	23	65	----	----	
Potassium	7440-09-7	1	mg/L	8	6	6	----	----	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.37	0.02	0.09	----	----	
Arsenic	7440-38-2	0.001	mg/L	0.001	<0.001	0.002	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----	
Chromium	7440-47-3	0.001	mg/L	0.001	<0.001	0.004	----	----	
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----	
Copper	7440-50-8	0.001	mg/L	0.001	0.003	0.006	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----	
Manganese	7439-96-5	0.001	mg/L	0.051	<0.001	0.020	----	----	
Nickel	7440-02-0	0.001	mg/L	0.001	<0.001	0.002	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----	
Zinc	7440-66-6	0.005	mg/L	0.054	0.027	0.017	----	----	
Iron	7439-89-6	0.05	mg/L	0.71	<0.05	5.67	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW08a	BORR MW09	BORR MW10	TBW293	----
Client sampling date / time				21-Apr-2020 00:00	21-Apr-2020 00:00	21-Apr-2020 00:00	20-Apr-2020 00:00	----	----
Compound	CAS Number	LOR	Unit	EP2004114-016	EP2004114-017	EP2004114-018	EP2004114-019	-----	----
				Result	Result	Result	Result	----	----
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	2.08	0.25	1.11	----	----	----
Iron	7439-89-6	0.05	mg/L	1.54	0.06	7.64	----	----	----
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.27	<0.01	0.40	----	----	----
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.27	<0.01	0.40	----	----	----
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.04	<0.01	----	----	----
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.0	0.2	1.2	----	----	----
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	2.0	0.2	1.2	----	----	----
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.96	0.03	0.07	----	----	----
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.81	<0.01	<0.01	----	----	----
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	----	----	----
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	5.08	1.68	5.67	----	----	----
∅ Total Cations	----	0.01	meq/L	4.78	1.68	5.03	----	----	----
∅ Ionic Balance	----	0.01	%	3.01	0.03	6.04	----	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	----	----	----	<20	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	----	----	----	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	----	----	----	<20	----	----
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	----	----	----	<1	----	----
Toluene	108-88-3	2	µg/L	----	----	----	<2	----	----
Ethylbenzene	100-41-4	2	µg/L	----	----	----	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	----	----	----	<2	----	----



### Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW08a	BORR MW09	BORR MW10	TBW293	----
Client sampling date / time				21-Apr-2020 00:00	21-Apr-2020 00:00	21-Apr-2020 00:00	20-Apr-2020 00:00	----	
Compound	CAS Number	LOR	Unit	EP2004114-016	EP2004114-017	EP2004114-018	EP2004114-019	-----	
				Result	Result	Result	Result	----	
<b>EP080: BTEXN - Continued</b>									
ortho-Xylene	95-47-6	2	µg/L	----	----	----	<2	----	
^ Total Xylenes	----	2	µg/L	----	----	----	<2	----	
^ Sum of BTEX	----	1	µg/L	----	----	----	<1	----	
Naphthalene	91-20-3	5	µg/L	----	----	----	<5	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	----	----	----	88.8	----	
Toluene-D8	2037-26-5	2	%	----	----	----	97.1	----	
4-Bromofluorobenzene	460-00-4	2	%	----	----	----	89.1	----	





## Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	61	141
Toluene-D8	2037-26-5	73	126
4-Bromofluorobenzene	460-00-4	60	125

## QA/QC Compliance Assessment to assist with Quality Review

Work Order : EP2004114

Page : 1 of 11

Amendment : 1

Client : GHD PTY LTD

Laboratory : Environmental Division Perth

Contact : Julia Roberts

Telephone : +61-8-9406 1301

Project : 6137041

Date Samples Received : 22-Apr-2020

Site : ----

Issue Date : 08-Jul-2020

Sampler : DS+BS

No. of samples received : 19

Order number : 61370410831

No. of samples analysed : 19

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



### Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	EP2004103--001	Anonymous	Nitrite + Nitrate as N	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

### Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EA005P: pH by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural</b>							
North Creek 2, SW06, SW08,	Northern 5, SW07, SW09	----	----	----	28-Apr-2020	20-Apr-2020	8
<b>Clear Plastic Bottle - Natural</b>							
BH32.1, BORR MW04, BORR MW06, BORR MW09,	FD01, BORR MW05, BORR MW08a, BORR MW10	----	----	----	28-Apr-2020	21-Apr-2020	7

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
		Container / Client Sample ID(s)	Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA005P: pH by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA005-P)</b> North Creek 2, SW06, SW08,	Northern 5, SW07, SW09	20-Apr-2020	----	----	----	28-Apr-2020	20-Apr-2020	*
<b>Clear Plastic Bottle - Natural (EA005-P)</b> BH32.1, BORR MW04, BORR MW06, BORR MW09,	FD01, BORR MW05, BORR MW08a, BORR MW10	21-Apr-2020	----	----	----	28-Apr-2020	21-Apr-2020	*
<b>EA010P: Conductivity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA010-P)</b> North Creek 2, SW06, SW08,	Northern 5, SW07, SW09	20-Apr-2020	----	----	----	28-Apr-2020	18-May-2020	✓
<b>Clear Plastic Bottle - Natural (EA010-P)</b> BH32.1, BORR MW04, BORR MW06, BORR MW09,	FD01, BORR MW05, BORR MW08a, BORR MW10	21-Apr-2020	----	----	----	28-Apr-2020	19-May-2020	✓
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
<b>Clear Plastic Bottle - Natural (EA015H)</b> North Creek 2, SW06, SW08,	Northern 5, SW07, SW09	20-Apr-2020	----	----	----	24-Apr-2020	27-Apr-2020	✓
<b>Clear Plastic Bottle - Natural (EA015H)</b> BH32.1, BORR MW04, BORR MW06,	FD01, BORR MW05, BORR MW08a	21-Apr-2020	----	----	----	24-Apr-2020	28-Apr-2020	✓
<b>Clear Plastic Bottle - Natural (EA015H)</b> BORR MW09,	BORR MW10	21-Apr-2020	----	----	----	28-Apr-2020	28-Apr-2020	✓
<b>ED037P: Alkalinity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (ED037-P)</b> North Creek 2, SW06, SW08,	Northern 5, SW07, SW09	20-Apr-2020	----	----	----	28-Apr-2020	04-May-2020	✓
<b>Clear Plastic Bottle - Natural (ED037-P)</b> BH32.1, BORR MW04, BORR MW06, BORR MW09,	FD01, BORR MW05, BORR MW08a, BORR MW10	21-Apr-2020	----	----	----	28-Apr-2020	05-May-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>ED038A: Acidity</b>								
<b>Clear Plastic Bottle - Natural (ED038)</b> North Creek 2, SW06, SW08,	Northern 5, SW07, SW09	20-Apr-2020	----	----	----	28-Apr-2020	04-May-2020	✓
<b>Clear Plastic Bottle - Natural (ED038)</b> BH32.1, BORR MW04, BORR MW06, BORR MW09,	FD01, BORR MW05, BORR MW08a, BORR MW10	21-Apr-2020	----	----	----	28-Apr-2020	05-May-2020	✓
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
<b>Clear Plastic Bottle - Natural (ED041G)</b> North Creek 2, SW06, SW08,	Northern 5, SW07, SW09	20-Apr-2020	----	----	----	22-Apr-2020	18-May-2020	✓
<b>Clear Plastic Bottle - Natural (ED041G)</b> BH32.1, BORR MW04, BORR MW06, BORR MW09,	FD01, BORR MW05, BORR MW08a, BORR MW10	21-Apr-2020	----	----	----	22-Apr-2020	19-May-2020	✓
<b>ED045G: Chloride by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Natural (ED045G)</b> North Creek 2, SW06, SW08,	Northern 5, SW07, SW09	20-Apr-2020	----	----	----	22-Apr-2020	18-May-2020	✓
<b>Clear Plastic Bottle - Natural (ED045G)</b> BH32.1, BORR MW04, BORR MW06, BORR MW09,	FD01, BORR MW05, BORR MW08a, BORR MW10	21-Apr-2020	----	----	----	22-Apr-2020	19-May-2020	✓
<b>ED093F: Dissolved Major Cations</b>								
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> North Creek 2, SW06, SW08,	Northern 5, SW07, SW09	20-Apr-2020	----	----	----	23-Apr-2020	18-May-2020	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> BH32.1, BORR MW04, BORR MW06, BORR MW09,	FD01, BORR MW05, BORR MW08a, BORR MW10	21-Apr-2020	----	----	----	23-Apr-2020	19-May-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EG020F: Dissolved Metals by ICP-MS</b>								
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> North Creek 2, SW06, SW08,	Northern 5, SW07, SW09	20-Apr-2020	----	----	----	23-Apr-2020	17-Oct-2020	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> BH32.1, BORR MW04, BORR MW06, BORR MW09,	FD01, BORR MW05, BORR MW08a, BORR MW10	21-Apr-2020	----	----	----	23-Apr-2020	18-Oct-2020	✓
<b>EG020T: Total Metals by ICP-MS</b>								
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> North Creek 2, SW06, SW08,	Northern 5, SW07, SW09	20-Apr-2020	24-Apr-2020	17-Oct-2020	✓	24-Apr-2020	17-Oct-2020	✓
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> RB01, FD01, BORR MW05, BORR MW08a, BORR MW10	BH32.1, BORR MW04, BORR MW06, BORR MW09,	21-Apr-2020	24-Apr-2020	18-Oct-2020	✓	24-Apr-2020	18-Oct-2020	✓
<b>EK055G: Ammonia as N by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> North Creek 2, SW06, SW08,	Northern 5, SW07, SW09	20-Apr-2020	----	----	----	22-Apr-2020	18-May-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> BH32.1, BORR MW04, BORR MW06, BORR MW09,	FD01, BORR MW05, BORR MW08a, BORR MW10	21-Apr-2020	----	----	----	22-Apr-2020	19-May-2020	✓
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> North Creek 2, SW06, SW08,	Northern 5, SW07, SW09	20-Apr-2020	----	----	----	22-Apr-2020	18-May-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> BH32.1, BORR MW04, BORR MW06, BORR MW09,	FD01, BORR MW05, BORR MW08a, BORR MW10	21-Apr-2020	----	----	----	22-Apr-2020	19-May-2020	✓



Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> North Creek 2, SW06, SW08,	Northern 5, SW07, SW09	20-Apr-2020	30-Apr-2020	18-May-2020	✓	30-Apr-2020	18-May-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> BH32.1, BORR MW04, BORR MW06, BORR MW09,	FD01, BORR MW05, BORR MW08a, BORR MW10	21-Apr-2020	30-Apr-2020	19-May-2020	✓	30-Apr-2020	19-May-2020	✓
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> North Creek 2, SW06, SW08,	Northern 5, SW07, SW09	20-Apr-2020	30-Apr-2020	18-May-2020	✓	30-Apr-2020	18-May-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> BH32.1, BORR MW04, BORR MW06, BORR MW09,	FD01, BORR MW05, BORR MW08a, BORR MW10	21-Apr-2020	30-Apr-2020	19-May-2020	✓	30-Apr-2020	19-May-2020	✓
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>								
<b>Clear Plastic Bottle - Natural (EK071G)</b> North Creek 2, SW06, SW08,	Northern 5, SW07, SW09	20-Apr-2020	----	----	----	22-Apr-2020	22-Apr-2020	✓
<b>Clear Plastic Bottle - Natural (EK071G)</b> BH32.1, BORR MW04, BORR MW06, BORR MW09,	FD01, BORR MW05, BORR MW08a, BORR MW10	21-Apr-2020	----	----	----	22-Apr-2020	23-Apr-2020	✓
<b>EK085M: Sulfide as S2-</b>								
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> North Creek 2, SW06, SW08,	Northern 5, SW07, SW09	20-Apr-2020	----	----	----	24-Apr-2020	27-Apr-2020	✓
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> BH32.1, BORR MW04, BORR MW06, BORR MW09,	FD01, BORR MW05, BORR MW08a, BORR MW10	21-Apr-2020	----	----	----	24-Apr-2020	28-Apr-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
Amber VOC Vial - Sulfuric Acid (EP080) TBW296, FB01, TBW293	20-Apr-2020	28-Apr-2020	04-May-2020	✓	28-Apr-2020	04-May-2020	✓
Amber VOC Vial - Sulfuric Acid (EP080) FB02	21-Apr-2020	28-Apr-2020	05-May-2020	✓	28-Apr-2020	05-May-2020	✓
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>							
Amber VOC Vial - Sulfuric Acid (EP080) TBW296, FB01, TBW293	20-Apr-2020	28-Apr-2020	04-May-2020	✓	28-Apr-2020	04-May-2020	✓
Amber VOC Vial - Sulfuric Acid (EP080) FB02	21-Apr-2020	28-Apr-2020	05-May-2020	✓	28-Apr-2020	05-May-2020	✓
<b>EP080: BTEXN</b>							
Amber VOC Vial - Sulfuric Acid (EP080) TBW296, FB01, TBW293	20-Apr-2020	28-Apr-2020	04-May-2020	✓	28-Apr-2020	04-May-2020	✓
Amber VOC Vial - Sulfuric Acid (EP080) FB02	21-Apr-2020	28-Apr-2020	05-May-2020	✓	28-Apr-2020	05-May-2020	✓





## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Laboratory Duplicates (DUP)</b>							
Acidity as Calcium Carbonate	ED038	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	38	10.53	10.53	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Acidity as Calcium Carbonate	ED038	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	38	10.53	10.53	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							



Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Method Blanks (MB) - Continued</b>							
Alkalinity by PC Titrator	ED037-P	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	38	5.26	5.26	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	3	39	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Ammonia as N by Discrete analyser	EK055G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3)  Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3)  Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ammonium as N	EK055G-NH4	WATER	Ammonium in the sample is reported as the ionised / unionised fractions by the use of a nomograph and the initial pH and Temperature. Ammonia is determined by direct colorimetry by Discrete Analyser according to APHA 4500-NH3 G. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Sulfide as S2-	EK085	WATER	In house: Referenced to APHA 4500-S2- D. Sulfide species present in water samples are immediately precipitated when collected in pretreated caustic/zinc acetate preserved sample containers. The sulphides are coloured using methylene blue indicator. Non-detects may be screened by comparison against a standard at half-LOR, otherwise samples are measured using UV-VIS detection at 664nm. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260D Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.





## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>EP2004276</b> <b>Amendment</b> : <b>2</b> <b>Client</b> : <b>GHD PTY LTD</b> <b>Contact</b> : <b>Julia Roberts</b> <b>Address</b> : <b>999 HAY STREET</b> <b>PERTH WA, AUSTRALIA 6000</b> <b>Telephone</b> : <b>----</b> <b>Project</b> : <b>6137041</b> <b>Order number</b> : <b>61370410831</b> <b>C-O-C number</b> : <b>----</b> <b>Sampler</b> : <b>DS + BS</b> <b>Site</b> : <b>----</b> <b>Quote number</b> : <b>EP/489/19 V4</b> <b>No. of samples received</b> : <b>31</b> <b>No. of samples analysed</b> : <b>31</b>	<b>Page</b> : 1 of 19  <b>Laboratory</b> : Environmental Division Perth <b>Contact</b> : Rebecca Shaw <b>Address</b> : 26 Rigali Way Wangara WA Australia 6065  <b>Telephone</b> : +61-8-9406 1301 <b>Date Samples Received</b> : 28-Apr-2020 13:30 <b>Date Analysis Commenced</b> : 28-Apr-2020 <b>Issue Date</b> : 08-Jul-2020 09:41
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Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
Daniel Fisher	Inorganics Analyst	Perth Inorganics, Wangara, WA
Vanessa Nguyen	Organic Chemist	Perth Organics, Wangara, WA



## General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EG020: It is recognised that total iron concentration is less than dissolved for sample EP2004276-014. However, the difference is within experimental variation of the methods.
- ED041G (Turbidimetric Sulfate): LOR for samples EP2004276-011 and 012 raised due to possible sample matrix interference.
- EK055G (Ammonia): LOR for sample EP2004276-014 raised due to possible sample matrix interference.
- TDS by method EA-015 may bias high for sample #6, #12 and #16 due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- Amendment (06/07/2020): This report has been amended as a result of a request to change sample identification numbers (IDs) received by ALS. All analysis results are as per the previous report.
- Amendment (08/07/2020): This report has been amended as a result of a request to change sample identification numbers (IDs) received by ALS. All analysis results are as per the previous report.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium, sodium and iron for #21.
- Ionic balances were calculated using: major anions - chloride, alkalinity, sulfate and NOx; and major cations - calcium, magnesium, potassium and sodium for #22.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium, sodium, ammonia and manganese for #24.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW 294	RB02	FB03	FD02	BORR MW29
Client sampling date / time				22-Apr-2020 00:00	22-Apr-2020 00:00	22-Apr-2020 00:00	22-Apr-2020 00:00	22-Apr-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2004276-001	EP2004276-002	EP2004276-003	EP2004276-004	EP2004276-005	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	----	----	----	7.42	5.83	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	3880	864	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	----	----	----	2370	608	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	44	12	
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	44	12	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	----	----	----	8	30	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	110	155	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	----	----	----	1120	193	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	----	----	----	42	18	
Magnesium	7439-95-4	1	mg/L	----	----	----	100	28	
Sodium	7440-23-5	1	mg/L	----	----	----	552	111	
Potassium	7440-09-7	1	mg/L	----	----	----	15	7	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	----	<0.01	0.73	
Arsenic	7440-38-2	0.001	mg/L	----	----	----	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	----	----	----	<0.001	0.002	
Cobalt	7440-48-4	0.001	mg/L	----	----	----	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	----	----	----	0.003	0.002	
Lead	7439-92-1	0.001	mg/L	----	----	----	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	----	----	----	0.111	0.015	
Nickel	7440-02-0	0.001	mg/L	----	----	----	<0.001	<0.001	
Selenium	7782-49-2	0.01	mg/L	----	----	----	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	----	----	----	0.009	0.008	
Iron	7439-89-6	0.05	mg/L	----	----	----	<0.05	1.26	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW 294	RB02	FB03	FD02	BORR MW29
Client sampling date / time				22-Apr-2020 00:00	22-Apr-2020 00:00	22-Apr-2020 00:00	22-Apr-2020 00:00	22-Apr-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2004276-001	EP2004276-002	EP2004276-003	EP2004276-004	EP2004276-005	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	----	----	----	0.08	5.41	
Arsenic	7440-38-2	0.001	mg/L	----	<0.001	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	----	<0.0001	----	----	----	
Chromium	7440-47-3	0.001	mg/L	----	<0.001	----	----	----	
Copper	7440-50-8	0.001	mg/L	----	<0.001	----	----	----	
Nickel	7440-02-0	0.001	mg/L	----	<0.001	----	----	----	
Lead	7439-92-1	0.001	mg/L	----	<0.001	----	----	----	
Zinc	7440-66-6	0.005	mg/L	----	<0.005	----	----	----	
Iron	7439-89-6	0.05	mg/L	----	----	----	1.11	2.45	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	----	----	----	0.04	0.46	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	----	----	----	0.04	0.46	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	----	----	----	0.07	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	----	----	0.5	2.9	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	----	----	----	0.6	2.9	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	----	----	----	0.03	0.13	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	----	----	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	----	----	----	<0.1	0.4	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	----	----	----	34.8	8.91	
∅ Total Cations	----	0.01	meq/L	----	----	----	34.7	8.21	
∅ Ionic Balance	----	0.01	%	----	----	----	0.06	4.10	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	----	<20	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	<20	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TBW 294	RB02	FB03	FD02	BORR MW29
Client sampling date / time					22-Apr-2020 00:00	22-Apr-2020 00:00	22-Apr-2020 00:00	22-Apr-2020 00:00	22-Apr-2020 00:00
Compound	CAS Number	LOR	Unit	EP2004276-001	EP2004276-002	EP2004276-003	EP2004276-004	EP2004276-005	EP2004276-005
				Result	Result	Result	Result	Result	Result
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
<sup>^</sup> C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	<20	----	----	----
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	----	<1	----	----	----
Toluene	108-88-3	2	µg/L	<2	----	<2	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	----	<2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	<2	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	----	<2	----	----	----
<sup>^</sup> Total Xylenes	----	2	µg/L	<2	----	<2	----	----	----
<sup>^</sup> Sum of BTEX	----	1	µg/L	<1	----	<1	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	----	<5	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	85.0	----	87.1	----	----	----
Toluene-D8	2037-26-5	2	%	99.5	----	98.6	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	85.1	----	89.3	----	----	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW39	JT01	BH 11.1	Northern 3	FB04
Client sampling date / time				22-Apr-2020 00:00	22-Apr-2020 00:00	22-Apr-2020 00:00	22-Apr-2020 00:00	23-Apr-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2004276-006	EP2004276-007	EP2004276-008	EP2004276-009	EP2004276-010	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.12	7.37	6.82	5.29	----	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	325	3880	2690	21900	----	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	440	2410	1610	15700	----	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	16	40	45	<1	----	
Total Alkalinity as CaCO3	----	1	mg/L	16	40	45	<1	----	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	23	6	13	15	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	64	111	90	1280	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	46	1110	800	6800	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	<1	44	16	442	----	
Magnesium	7439-95-4	1	mg/L	<1	101	64	459	----	
Sodium	7440-23-5	1	mg/L	66	565	398	3530	----	
Potassium	7440-09-7	1	mg/L	<1	15	15	96	----	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.02	<0.01	0.01	0.16	----	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	0.0020	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	0.001	----	
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	0.086	----	
Copper	7440-50-8	0.001	mg/L	0.003	0.001	0.002	0.007	----	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----	
Manganese	7439-96-5	0.001	mg/L	0.045	0.115	0.392	4.31	----	
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	0.020	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----	
Zinc	7440-66-6	0.005	mg/L	0.015	<0.005	0.031	0.071	----	
Iron	7439-89-6	0.05	mg/L	0.18	<0.05	16.6	0.42	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW39	JT01	BH 11.1	Northern 3	FB04
Client sampling date / time				22-Apr-2020 00:00	22-Apr-2020 00:00	22-Apr-2020 00:00	22-Apr-2020 00:00	23-Apr-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2004276-006	EP2004276-007	EP2004276-008	EP2004276-009	EP2004276-010	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	4.45	0.10	0.12	7.98	----	
Iron	7439-89-6	0.05	mg/L	5.22	1.11	18.3	9.91	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.03	0.29	7.58	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	<0.01	0.03	0.29	7.58	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.05	<0.01	3.84	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.3	0.5	0.4	12.5	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.3	0.6	0.4	16.3	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.12	0.02	0.08	0.27	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.01	<0.01	<0.01	<0.01	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	2.95	34.4	25.3	218	----	
∅ Total Cations	----	0.01	meq/L	2.87	35.5	23.8	216	----	
∅ Ionic Balance	----	0.01	%	1.36	1.50	3.21	0.61	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	----	----	----	----	<20	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	----	----	----	----	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	----	----	----	----	<20	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	----	----	----	----	<1	
Toluene	108-88-3	2	µg/L	----	----	----	----	<2	
Ethylbenzene	100-41-4	2	µg/L	----	----	----	----	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	----	----	----	----	<2	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW39	JT01	BH 11.1	Northern 3	FB04
Client sampling date / time				22-Apr-2020 00:00	22-Apr-2020 00:00	22-Apr-2020 00:00	22-Apr-2020 00:00	23-Apr-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2004276-006	EP2004276-007	EP2004276-008	EP2004276-009	EP2004276-010	
				Result	Result	Result	Result	Result	
<b>EP080: BTEXN - Continued</b>									
ortho-Xylene	95-47-6	2	µg/L	----	----	----	----	<2	
^ Total Xylenes	----	2	µg/L	----	----	----	----	<2	
^ Sum of BTEX	----	1	µg/L	----	----	----	----	<1	
Naphthalene	91-20-3	5	µg/L	----	----	----	----	<5	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	----	----	----	----	91.1	
Toluene-D8	2037-26-5	2	%	----	----	----	----	103	
4-Bromofluorobenzene	460-00-4	2	%	----	----	----	----	87.9	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW32	BORR MW31	BORR MW37	BH 9.2	BORR MW25
Client sampling date / time				22-Apr-2020 00:00	22-Apr-2020 00:00	22-Apr-2020 00:00	22-Apr-2020 00:00	22-Apr-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2004276-011	EP2004276-012	EP2004276-013	EP2004276-014	EP2004276-015	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.67	6.37	5.88	3.39	6.27	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	261	253	3390	8140	3660	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	222	196	2150	5240	2300	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	31	22	17	<1	39	
Total Alkalinity as CaCO3	----	1	mg/L	31	22	17	<1	39	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	17	20	24	342	18	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<20	<20	69	98	91	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	62	63	1050	2690	1090	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	3	3	15	60	28	
Magnesium	7439-95-4	1	mg/L	6	5	70	267	60	
Sodium	7440-23-5	1	mg/L	42	37	567	1030	628	
Potassium	7440-09-7	1	mg/L	3	4	2	<1	4	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.74	0.95	0.02	29.7	0.02	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.001	0.003	0.002	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.001	0.001	<0.001	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.048	0.035	0.036	
Copper	7440-50-8	0.001	mg/L	0.002	0.002	0.004	0.018	0.005	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	0.027	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.003	0.007	0.222	0.017	0.474	
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.017	0.013	0.019	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.018	<0.005	0.026	0.014	0.058	
Iron	7439-89-6	0.05	mg/L	0.54	1.60	7.21	65.9	5.99	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW32	BORR MW31	BORR MW37	BH 9.2	BORR MW25
Client sampling date / time				22-Apr-2020 00:00	22-Apr-2020 00:00	22-Apr-2020 00:00	22-Apr-2020 00:00	22-Apr-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2004276-011	EP2004276-012	EP2004276-013	EP2004276-014	EP2004276-015	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	1.44	2.24	3.89	30.6	5.33	
Iron	7439-89-6	0.05	mg/L	0.72	1.95	10.3	65.3	15.9	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.43	0.94	0.05	<0.05	0.04	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.43	0.94	0.05	<0.01	0.04	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.4	2.2	0.3	0.4	0.3	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	1.4	2.2	0.3	0.4	0.3	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.02	0.01	0.04	<0.01	0.11	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	0.1	0.5	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	2.37	2.22	31.4	77.9	33.4	
∅ Total Cations	----	0.01	meq/L	2.55	2.27	31.2	69.8	33.8	
∅ Ionic Balance	----	0.01	%	3.64	1.25	0.27	5.52	0.50	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW24	BOR MW22a	North Creek 4	BORR MW20	BORR MW19b
Client sampling date / time				22-Apr-2020 00:00	22-Apr-2020 00:00	22-Apr-2020 00:00	22-Apr-2020 00:00	23-Apr-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2004276-016	EP2004276-017	EP2004276-018	EP2004276-019	EP2004276-020	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	5.06	5.79	7.61	6.71	6.79	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	1780	13500	2330	4310	2270	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	1480	8850	1550	2690	1340	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	2	8	51	47	38	
Total Alkalinity as CaCO3	----	1	mg/L	2	8	51	47	38	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	24	46	5	14	14	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	39	422	42	67	35	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	562	4220	715	1250	681	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	<1	118	32	34	16	
Magnesium	7439-95-4	1	mg/L	9	340	66	105	50	
Sodium	7440-23-5	1	mg/L	339	2160	315	649	348	
Potassium	7440-09-7	1	mg/L	<1	4	9	5	5	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.16	0.02	<0.01	0.02	0.01	
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.002	<0.001	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.002	<0.001	<0.001	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	0.006	0.148	<0.001	0.009	0.002	
Copper	7440-50-8	0.001	mg/L	0.027	0.003	0.003	0.011	0.006	
Lead	7439-92-1	0.001	mg/L	0.002	<0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.005	0.510	0.191	0.177	0.134	
Nickel	7440-02-0	0.001	mg/L	0.011	0.069	<0.001	0.009	0.008	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.056	0.034	0.009	0.040	0.049	
Iron	7439-89-6	0.05	mg/L	0.10	24.9	0.05	3.99	5.04	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW24	BOR MW22a	North Creek 4	BORR MW20	BORR MW19b
Client sampling date / time				22-Apr-2020 00:00	22-Apr-2020 00:00	22-Apr-2020 00:00	22-Apr-2020 00:00	23-Apr-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2004276-016	EP2004276-017	EP2004276-018	EP2004276-019	EP2004276-020	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	16.5	3.09	0.09	4.24	1.04	
Iron	7439-89-6	0.05	mg/L	18.6	31.2	0.73	9.82	5.86	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.03	0.11	0.03	0.02	0.03	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.03	0.11	0.03	0.02	0.03	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.02	<0.01	<0.01	0.01	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.8	0.3	0.8	0.2	0.2	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.8	0.3	0.8	0.2	0.2	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.11	0.04	0.04	0.02	0.02	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	16.7	128	22.1	37.6	20.7	
∅ Total Cations	----	0.01	meq/L	15.5	128	21.0	38.7	20.2	
∅ Ionic Balance	----	0.01	%	3.79	0.02	2.56	1.44	1.27	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW15	BORR MW18	BORR MW13	BORR MW46	Northern 5
Client sampling date / time				23-Apr-2020 00:00	23-Apr-2020 00:00	23-Apr-2020 00:00	23-Apr-2020 00:00	23-Apr-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2004276-021	EP2004276-022	EP2004276-023	EP2004276-024	EP2004276-025	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.01	5.68	7.33	3.24	8.09	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	142	407	881	652	1690	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	117	300	620	386	918	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	3	2	225	<1	191	
Total Alkalinity as CaCO3	----	1	mg/L	3	2	225	<1	191	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	10	11	13	59	<1	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	20	30	130	206	14	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	34	72	62	18	461	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	2	9	5	34	43	
Magnesium	7439-95-4	1	mg/L	3	5	13	17	30	
Sodium	7440-23-5	1	mg/L	18	49	183	16	265	
Potassium	7440-09-7	1	mg/L	5	22	1	4	10	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.36	0.14	0.04	0.01	0.02	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	0.003	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.004	<0.001	0.004	<0.001	
Copper	7440-50-8	0.001	mg/L	0.012	0.009	0.002	0.011	0.007	
Lead	7439-92-1	0.001	mg/L	<0.001	0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.003	0.197	0.010	0.080	0.117	
Nickel	7440-02-0	0.001	mg/L	0.005	0.006	0.003	0.004	0.003	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.040	0.050	<0.005	0.038	0.034	
Iron	7439-89-6	0.05	mg/L	1.48	<0.05	12.5	41.8	0.12	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW15	BORR MW18	BORR MW13	BORR MW46	Northern 5
Client sampling date / time				23-Apr-2020 00:00	23-Apr-2020 00:00	23-Apr-2020 00:00	23-Apr-2020 00:00	23-Apr-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2004276-021	EP2004276-022	EP2004276-023	EP2004276-024	EP2004276-025	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.71	0.41	0.11	1.84	0.06	
Iron	7439-89-6	0.05	mg/L	3.28	0.05	13.3	59.6	0.85	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.78	<0.01	0.28	0.39	0.05	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.78	<0.01	0.28	0.39	0.05	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.02	11.4	<0.01	<0.01	0.02	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.4	2.1	1.3	0.8	1.2	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	1.4	13.5	1.3	0.8	1.2	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.04	0.05	0.03	0.02	0.88	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.70	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	----	3.51	----	----	----	
∅ Total Anions	----	0.01	meq/L	1.44	----	8.95	4.80	17.1	
∅ Total Cations	----	0.01	meq/L	1.34	----	----	3.92	----	
∅ Total Cations	----	0.01	meq/L	----	3.55	9.30	----	16.4	
∅ Ionic Balance	----	0.01	%	3.55	0.64	----	10.0	----	
∅ Ionic Balance	----	0.01	%	----	----	1.94	----	2.13	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Southern 4	BORR MW12	MR MW05	FD03	TBW 292
Client sampling date / time				23-Apr-2020 00:00	23-Apr-2020 00:00	23-Apr-2020 00:00	23-Apr-2020 00:00	23-Apr-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2004276-026	EP2004276-027	EP2004276-028	EP2004276-029	EP2004276-030	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	8.59	6.90	6.81	7.45	----	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	16100	576	23500	887	----	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	10500	354	15600	626	----	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	43	<1	<1	<1	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	305	33	71	228	----	
Total Alkalinity as CaCO3	----	1	mg/L	348	33	71	228	----	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	<1	8	22	13	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	254	39	1120	132	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	5640	150	8190	68	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	142	5	175	6	----	
Magnesium	7439-95-4	1	mg/L	363	11	667	13	----	
Sodium	7440-23-5	1	mg/L	2690	82	3910	186	----	
Potassium	7440-09-7	1	mg/L	60	6	43	1	----	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.03	0.03	0.01	0.04	----	
Arsenic	7440-38-2	0.001	mg/L	0.004	0.003	0.007	<0.001	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.001	<0.001	----	
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.008	<0.001	----	
Copper	7440-50-8	0.001	mg/L	0.016	0.010	0.008	0.003	----	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----	
Manganese	7439-96-5	0.001	mg/L	0.014	0.004	0.201	0.012	----	
Nickel	7440-02-0	0.001	mg/L	0.005	0.003	0.007	0.008	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----	
Zinc	7440-66-6	0.005	mg/L	0.024	0.039	0.057	<0.005	----	
Iron	7439-89-6	0.05	mg/L	0.06	2.78	8.95	11.9	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Southern 4	BORR MW12	MR MW05	FD03	TBW 292
Client sampling date / time				23-Apr-2020 00:00	23-Apr-2020 00:00	23-Apr-2020 00:00	23-Apr-2020 00:00	23-Apr-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2004276-026	EP2004276-027	EP2004276-028	EP2004276-029	EP2004276-030	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.26	0.74	2.83	0.14	----	
Iron	7439-89-6	0.05	mg/L	0.24	4.24	17.3	13.1	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.14	0.29	0.21	0.29	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.11	0.29	0.21	0.28	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.06	<0.01	0.01	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	9.7	0.7	0.9	1.4	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	9.7	0.8	0.9	1.4	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.37	0.03	0.07	0.02	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	171	5.70	256	9.22	----	
∅ Total Cations	----	0.01	meq/L	156	4.88	235	9.48	----	
∅ Ionic Balance	----	0.01	%	4.84	7.82	4.27	1.41	----	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	----	----	----	----	<20	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	----	----	----	----	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	----	----	----	----	<20	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	----	----	----	----	<1	
Toluene	108-88-3	2	µg/L	----	----	----	----	<2	
Ethylbenzene	100-41-4	2	µg/L	----	----	----	----	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	----	----	----	----	<2	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Southern 4	BORR MW12	MR MW05	FD03	TBW 292
Client sampling date / time				23-Apr-2020 00:00	23-Apr-2020 00:00	23-Apr-2020 00:00	23-Apr-2020 00:00	23-Apr-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2004276-026	EP2004276-027	EP2004276-028	EP2004276-029	EP2004276-030	
				Result	Result	Result	Result	Result	
<b>EP080: BTEXN - Continued</b>									
ortho-Xylene	95-47-6	2	µg/L	----	----	----	----	<2	
^ Total Xylenes	----	2	µg/L	----	----	----	----	<2	
^ Sum of BTEX	----	1	µg/L	----	----	----	----	<1	
Naphthalene	91-20-3	5	µg/L	----	----	----	----	<5	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	----	----	----	----	89.6	
Toluene-D8	2037-26-5	2	%	----	----	----	----	96.7	
4-Bromofluorobenzene	460-00-4	2	%	----	----	----	----	83.8	



**Analytical Results**

Sub-Matrix: <b>WATER</b> (Matrix: <b>WATER</b> )				Client sample ID	RB03	----	----	----	----
Client sampling date / time				23-Apr-2020 00:00	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EP2004276-031	-----	-----	-----	-----	-----
				Result	----	----	----	----	----
<b>EG020T: Total Metals by ICP-MS</b>									
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----	----





## Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	61	141
Toluene-D8	2037-26-5	73	126
4-Bromofluorobenzene	460-00-4	60	125

## QA/QC Compliance Assessment to assist with Quality Review

Work Order : EP2004276

Page : 1 of 15

Amendment : 2

Client : GHD PTY LTD

Laboratory : Environmental Division Perth

Contact : Julia Roberts

Telephone : +61-8-9406 1301

Project : 6137041

Date Samples Received : 28-Apr-2020

Site : ----

Issue Date : 08-Jul-2020

Sampler : DS + BS

No. of samples received : 31

Order number : 61370410831

No. of samples analysed : 31

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



**Outliers : Quality Control Samples**

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	EP2004264--001	Anonymous	<b>Sulfate as SO4 - Turbidimetric</b>	14808-79-8	Not Determined	----	<b>MS recovery not determined, background level greater than or equal to 4x spike level.</b>
ED045G: Chloride by Discrete Analyser	EP2004264--002	Anonymous	<b>Chloride</b>	16887-00-6	Not Determined	----	<b>MS recovery not determined, background level greater than or equal to 4x spike level.</b>

**Outliers : Analysis Holding Time Compliance**

Matrix: **WATER**

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EA005P: pH by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural</b>							
FD02, BORR MW39, BH 11.1, BORR MW32, BORR MW37, BORR MW25, BOR MW22a, BORR MW20	BORR MW29, JT01, Northern 3, BORR MW31, BH 9.2, BORR MW24, North Creek 4,	----	----	----	04-May-2020	22-Apr-2020	<b>12</b>
<b>Clear Plastic Bottle - Natural</b>							
BORR MW19b, BORR MW18, BORR MW46, Southern 4, MR MW05,	BORR MW15, BORR MW13, Northern 5, BORR MW12, FD03	----	----	----	04-May-2020	23-Apr-2020	<b>11</b>
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>							
<b>Clear Plastic Bottle - Natural</b>							
FD02, BORR MW39, BH 11.1, BORR MW32, BORR MW37, BORR MW25, BOR MW22a, BORR MW20	BORR MW29, JT01, Northern 3, BORR MW31, BH 9.2, BORR MW24, North Creek 4,	----	----	----	28-Apr-2020	24-Apr-2020	<b>4</b>



Matrix: **WATER**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EK071G: Reactive Phosphorus as P by discrete analyser - Analysis Holding Time Compliance</b>						
<b>Clear Plastic Bottle - Natural</b> BORR MW19b, BORR MW18, BORR MW46, Southern 4, MR MW05, BORR MW15, BORR MW13, Northern 5, BORR MW12, FD03	----	----	----	28-Apr-2020	25-Apr-2020	3

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EA005P: pH by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural (EA005-P)</b> FD02, BORR MW39, BH 11.1, BORR MW32, BORR MW37, BORR MW25, BORR MW22a, BORR MW20, BORR MW29, JT01, Northern 3, BORR MW31, BH 9.2, BORR MW24, North Creek 4,	22-Apr-2020	----	----	----	04-May-2020	22-Apr-2020	✖
<b>Clear Plastic Bottle - Natural (EA005-P)</b> BORR MW19b, BORR MW18, BORR MW46, Southern 4, MR MW05, BORR MW15, BORR MW13, Northern 5, BORR MW12, FD03	23-Apr-2020	----	----	----	04-May-2020	23-Apr-2020	✖



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA010P: Conductivity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA010-P)</b> FD02, BORR MW39, BH 11.1, BORR MW32, BORR MW37, BORR MW25, BOR MW22a, BORR MW20	BORR MW29, JT01, Northern 3, BORR MW31, BH 9.2, BORR MW24, North Creek 4,	22-Apr-2020	----	----	----	04-May-2020	20-May-2020	✓
<b>Clear Plastic Bottle - Natural (EA010-P)</b> BORR MW19b, BORR MW18, BORR MW46, Southern 4, MR MW05,	BORR MW15, BORR MW13, Northern 5, BORR MW12, FD03	23-Apr-2020	----	----	----	04-May-2020	21-May-2020	✓
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
<b>Clear Plastic Bottle - Natural (EA015H)</b> FD02, BORR MW39, BH 11.1, BORR MW32, BORR MW37, BORR MW25, BOR MW22a, BORR MW20	BORR MW29, JT01, Northern 3, BORR MW31, BH 9.2, BORR MW24, North Creek 4,	22-Apr-2020	----	----	----	29-Apr-2020	29-Apr-2020	✓
<b>Clear Plastic Bottle - Natural (EA015H)</b> BORR MW19b, BORR MW18, BORR MW46, Southern 4, MR MW05,	BORR MW15, BORR MW13, Northern 5, BORR MW12, FD03	23-Apr-2020	----	----	----	30-Apr-2020	30-Apr-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>ED037P: Alkalinity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (ED037-P)</b> FD02, BORR MW39, BH 11.1, BORR MW32, BORR MW37, BORR MW25, BOR MW22a, BORR MW20	BORR MW29, JT01, Northern 3, BORR MW31, BH 9.2, BORR MW24, North Creek 4,	22-Apr-2020	----	----	----	04-May-2020	06-May-2020	✓
<b>Clear Plastic Bottle - Natural (ED037-P)</b> BORR MW19b, BORR MW18, BORR MW46, Southern 4, MR MW05,	BORR MW15, BORR MW13, Northern 5, BORR MW12, FD03	23-Apr-2020	----	----	----	04-May-2020	07-May-2020	✓
<b>ED038A: Acidity</b>								
<b>Clear Plastic Bottle - Natural (ED038)</b> FD02, BORR MW39, BH 11.1, BORR MW32, BORR MW37, BORR MW25, BOR MW22a, BORR MW20	BORR MW29, JT01, Northern 3, BORR MW31, BH 9.2, BORR MW24, North Creek 4,	22-Apr-2020	----	----	----	29-Apr-2020	06-May-2020	✓
<b>Clear Plastic Bottle - Natural (ED038)</b> BORR MW19b, BORR MW18, BORR MW46, Southern 4, MR MW05,	BORR MW15, BORR MW13, Northern 5, BORR MW12, FD03	23-Apr-2020	----	----	----	29-Apr-2020	07-May-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
<b>Clear Plastic Bottle - Natural (ED041G)</b> FD02, BORR MW39, BH 11.1, BORR MW32, BORR MW37, BORR MW25, BOR MW22a, BORR MW20	BORR MW29, JT01, Northern 3, BORR MW31, BH 9.2, BORR MW24, North Creek 4,	22-Apr-2020	----	----	----	28-Apr-2020	20-May-2020	✓
<b>Clear Plastic Bottle - Natural (ED041G)</b> BORR MW19b, BORR MW18, BORR MW46, Southern 4, MR MW05,	BORR MW15, BORR MW13, Northern 5, BORR MW12, FD03	23-Apr-2020	----	----	----	28-Apr-2020	21-May-2020	✓
<b>ED045G: Chloride by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Natural (ED045G)</b> FD02, BORR MW39, BH 11.1, BORR MW32, BORR MW37, BORR MW25, BOR MW22a, BORR MW20	BORR MW29, JT01, Northern 3, BORR MW31, BH 9.2, BORR MW24, North Creek 4,	22-Apr-2020	----	----	----	28-Apr-2020	20-May-2020	✓
<b>Clear Plastic Bottle - Natural (ED045G)</b> BORR MW19b, BORR MW18, BORR MW46, Southern 4, MR MW05,	BORR MW15, BORR MW13, Northern 5, BORR MW12, FD03	23-Apr-2020	----	----	----	28-Apr-2020	21-May-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>ED093F: Dissolved Major Cations</b>							
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> FD02, BORR MW39, BH 11.1, BORR MW32, BORR MW37, BORR MW25, BOR MW22a, BORR MW20 BORR MW29, JT01, Northern 3, BORR MW31, BH 9.2, BORR MW24, North Creek 4,	22-Apr-2020	----	----	----	29-Apr-2020	20-May-2020	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> BORR MW19b, BORR MW18, BORR MW46, Southern 4, MR MW05, BORR MW15, BORR MW13, Northern 5, BORR MW12, FD03	23-Apr-2020	----	----	----	29-Apr-2020	21-May-2020	✓
<b>EG020F: Dissolved Metals by ICP-MS</b>							
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> FD02, BORR MW39, BH 11.1, BORR MW32, BORR MW37, BORR MW25, BOR MW22a, BORR MW20 BORR MW29, JT01, Northern 3, BORR MW31, BH 9.2, BORR MW24, North Creek 4,	22-Apr-2020	----	----	----	29-Apr-2020	19-Oct-2020	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> BORR MW19b, BORR MW18, BORR MW46, Southern 4, MR MW05, BORR MW15, BORR MW13, Northern 5, BORR MW12, FD03	23-Apr-2020	----	----	----	29-Apr-2020	20-Oct-2020	✓





Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EG020T: Total Metals by ICP-MS</b>							
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> RB02, BORR MW29, JT01, Northern 3, BORR MW31, BH 9.2, BORR MW24, North Creek 4, FD02, BORR MW39, BH 11.1, BORR MW32, BORR MW37, BORR MW25, BOR MW22a, BORR MW20	22-Apr-2020	29-Apr-2020	19-Oct-2020	✓	29-Apr-2020	19-Oct-2020	✓
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> BORR MW19b, BORR MW18, BORR MW46, Southern 4, MR MW05, RB03, BORR MW15, BORR MW13, Northern 5, BORR MW12, FD03	23-Apr-2020	29-Apr-2020	20-Oct-2020	✓	29-Apr-2020	20-Oct-2020	✓
<b>EK055G: Ammonia as N by Discrete Analyser</b>							
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> FD02, BORR MW39, BH 11.1, BORR MW32, BORR MW37, BORR MW25, BOR MW22a, BORR MW20, BORR MW29, JT01, Northern 3, BORR MW31, BH 9.2, BORR MW24, North Creek 4,	22-Apr-2020	----	----	----	28-Apr-2020	20-May-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> BORR MW19b, BORR MW18, BORR MW46, Southern 4, MR MW05, BORR MW15, BORR MW13, Northern 5, BORR MW12, FD03	23-Apr-2020	----	----	----	28-Apr-2020	21-May-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>							
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> FD02, BORR MW39, BH 11.1, BORR MW32, BORR MW37, BORR MW25, BOR MW22a, BORR MW20 BORR MW29, JT01, Northern 3, BORR MW31, BH 9.2, BORR MW24, North Creek 4,	22-Apr-2020	----	----	----	28-Apr-2020	20-May-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> BORR MW19b, BORR MW18, BORR MW46, Southern 4, MR MW05, BORR MW15, BORR MW13, Northern 5, BORR MW12, FD03	23-Apr-2020	----	----	----	28-Apr-2020	21-May-2020	✓
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>							
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> FD02, BORR MW39, BH 11.1, BORR MW32, BORR MW37, BORR MW25, BOR MW22a, BORR MW20 BORR MW29, JT01, Northern 3, BORR MW31, BH 9.2, BORR MW24, North Creek 4,	22-Apr-2020	04-May-2020	20-May-2020	✓	05-May-2020	20-May-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> BORR MW19b, BORR MW18, BORR MW46, Southern 4, MR MW05, BORR MW15, BORR MW13, Northern 5, BORR MW12, FD03	23-Apr-2020	04-May-2020	21-May-2020	✓	05-May-2020	21-May-2020	✓



Matrix: **WATER** Evaluation: ✘ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> FD02, BORR MW39, BH 11.1, BORR MW32, BORR MW37, BORR MW25, BOR MW22a, BORR MW20 BORR MW29, JT01, Northern 3, BORR MW31, BH 9.2, BORR MW24, North Creek 4,	22-Apr-2020	04-May-2020	20-May-2020	✔	05-May-2020	20-May-2020	✔	
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> BORR MW19b, BORR MW18, BORR MW46, Southern 4, MR MW05, BORR MW15, BORR MW13, Northern 5, BORR MW12, FD03	23-Apr-2020	04-May-2020	21-May-2020	✔	05-May-2020	21-May-2020	✔	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>								
<b>Clear Plastic Bottle - Natural (EK071G)</b> FD02, BORR MW39, BH 11.1, BORR MW32, BORR MW37, BORR MW25, BOR MW22a, BORR MW20 BORR MW29, JT01, Northern 3, BORR MW31, BH 9.2, BORR MW24, North Creek 4,	22-Apr-2020	----	----	----	28-Apr-2020	24-Apr-2020	✘	
<b>Clear Plastic Bottle - Natural (EK071G)</b> BORR MW19b, BORR MW18, BORR MW46, Southern 4, MR MW05, BORR MW15, BORR MW13, Northern 5, BORR MW12, FD03	23-Apr-2020	----	----	----	28-Apr-2020	25-Apr-2020	✘	



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK085M: Sulfide as S2-</b>								
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> FD02, BORR MW39, BH 11.1, BORR MW32, BORR MW37, BORR MW25, BOR MW22a, BORR MW20	BORR MW29, JT01, Northern 3, BORR MW31, BH 9.2, BORR MW24, North Creek 4,	22-Apr-2020	----	----	----	29-Apr-2020	29-Apr-2020	✓
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> BORR MW19b, BORR MW18, BORR MW46, Southern 4, MR MW05,	BORR MW15, BORR MW13, Northern 5, BORR MW12, FD03	23-Apr-2020	----	----	----	29-Apr-2020	30-Apr-2020	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> TBW 294,	FB03	22-Apr-2020	30-Apr-2020	06-May-2020	✓	30-Apr-2020	06-May-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> FB04,	TBW 292	23-Apr-2020	30-Apr-2020	07-May-2020	✓	30-Apr-2020	07-May-2020	✓
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> TBW 294,	FB03	22-Apr-2020	30-Apr-2020	06-May-2020	✓	30-Apr-2020	06-May-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> FB04,	TBW 292	23-Apr-2020	30-Apr-2020	07-May-2020	✓	30-Apr-2020	07-May-2020	✓
<b>EP080: BTEXN</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> TBW 294,	FB03	22-Apr-2020	30-Apr-2020	06-May-2020	✓	30-Apr-2020	06-May-2020	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> FB04,	TBW 292	23-Apr-2020	30-Apr-2020	07-May-2020	✓	30-Apr-2020	07-May-2020	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Laboratory Duplicates (DUP)</b>							
Acidity as Calcium Carbonate	ED038	5	42	11.90	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	5	47	10.64	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	4	38	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	4	35	11.43	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	3	29	10.34	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	3	27	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	3	27	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	4	33	12.12	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	35	11.43	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	4	36	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	6	53	11.32	10.53	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	26	11.54	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	4	35	11.43	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	26	11.54	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Acidity as Calcium Carbonate	ED038	3	42	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	6	47	12.77	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	4	35	11.43	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	35	11.43	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	6	53	11.32	10.53	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							



Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Method Blanks (MB) - Continued</b>							
Alkalinity by PC Titrator	ED037-P	3	47	6.38	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	53	5.66	5.26	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	3	35	8.57	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Ammonia as N by Discrete analyser	EK055G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3)  Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3)  Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ammonium as N	EK055G-NH4	WATER	Ammonium in the sample is reported as the ionised / unionised fractions by the use of a nomograph and the initial pH and Temperature. Ammonia is determined by direct colorimetry by Discrete Analyser according to APHA 4500-NH3 G. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Sulfide as S2-	EK085	WATER	In house: Referenced to APHA 4500-S2- D. Sulfide species present in water samples are immediately precipitated when collected in pretreated caustic/zinc acetate preserved sample containers. The sulphides are coloured using methylene blue indicator. Non-detects may be screened by comparison against a standard at half-LOR, otherwise samples are measured using UV-VIS detection at 664nm. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260D Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.





CHAIN OF CUSTODY RECORD  
AND ANALYSIS REQUEST



GHD  
Level 10, 999 Hay Street  
Perth WA 6000

PO Box 3106  
Perth WA 6832

Reception Ph: 08 6222 8222

Project ID (as per ESDot set up; no spaces) <b>6137041</b>	PO Number (to be invoiced) <b>61370410831</b>	Laboratory: <b>ALS Laboratories</b> Address: <b>26 Rigall Way</b> Laboratory Contact: <b>Marnie Thompson</b>
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Laboratory Quote No. <b>EP/489/19 v4</b>	Turnaround Time Standard	Analyses	Remarks
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Job Manager (Invoice) & GHD accounts <b>Julia Roberts</b>	Email Address (Results) <b>amy.hestehauge@ghd.com</b> <b>dominique.shuttleworth@ghd.com</b>
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GHD Sample ID	Lab Sample ID	Date	Time	Sample Matrix S-Soil/SL- Sludge/W-Water/A-Air	Container				Analyses										HOLD	Remarks					
					Type B-Bottle/H-HV/ Vin/Bag/G-Glass/P-Plastic	Preservative Unpreserved/HCl/ H2SO4/HNO3/Other	No	ASS-GWZ	EKOSSG-N4	trip blank	rinsate blank	field blank													
BORR MW39	SNR	22.4.20		W	B	5	X	X																	
BH11.1	SNR	22.4.20																							
JT01	SNR	22.4.20																							
BORR MW24	16	22.4.20																							
BORR MW22a	17	22.4.20																							
North Creek 4	18	22.4.20																							
BORR MW20	19	22.4.20																							
BORR MW19a	SNR	23.4.20																							
BORR MW19b	20	23.4.20																							
BORR MW15	21	23.4.20																							
BORR MW18	22	23.4.20																							
BORR MW13	23	23.4.20																							
WRM North Site 5	24	23.4.20																							
Southern 3	25	23.4.20																							
Southern 4	26	23.4.20																							
BORR MW12	27	23.4.20																							
MW4b	SNR	23.4.20																							

Sampled by: <b>DS + BS</b>	Date/Time: <b>22-23 April</b>	Relinquished by: <b>DS + BS</b>	Date/Time: <b>23.4.20</b>
Received by: <b>NO</b>	Date/Time: <b>28/4/2020</b>	Relinquished by:	Date/Time:



GHD Pty Ltd WA  
999 Hay Street Perth  
Perth  
WA 6004



NATA Accredited  
Accreditation Number 1261  
Site Number 23736

Accredited for compliance with ISO/IEC 17025 – Testing  
The results of the tests, calibrations and/or  
measurements included in this document are traceable  
to Australian/national standards.

**Attention:** **Dominique Shuttleworth**

**Report** **715089-W**  
Project name  
Project ID **6137041**  
Received Date **Apr 22, 2020**

Client Sample ID			<b>FS01</b>
Sample Matrix			<b>Water</b>
Eurofins Sample No.			<b>P20-Ap31439</b>
Date Sampled			<b>Apr 21, 2020</b>
Test/Reference	LOR	Unit	
Acidity (as CaCO <sub>3</sub> )	10	mg/L	110
Ammonia (as N)	0.01	mg/L	0.06
Ammonium Ion (as N)	0.01	mg/L	0.07
Chloride	1	mg/L	720
Conductivity (at 25°C)	10	uS/cm	1800
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02
Organic Nitrogen (as N)*	0.2	mg/L	0.34
pH (at 25°C)	0.1	pH Units	5.8
Phosphorus reactive (as P)	0.01	mg/L	< 0.01
Sulphate (as SO <sub>4</sub> )	5	mg/L	31
Sulphide (as S)	0.05	mg/L	0.10
Total Dissolved Solids Dried at 180°C ± 2°C	10	mg/L	820
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4
Total Nitrogen (as N)*	0.2	mg/L	0.4
<b>Alkalinity (speciated)</b>			
Bicarbonate Alkalinity (as CaCO <sub>3</sub> )	20	mg/L	29
Carbonate Alkalinity (as CaCO <sub>3</sub> )	20	mg/L	< 20
Hydroxide Alkalinity (as CaCO <sub>3</sub> )	20	mg/L	< 20
Total Alkalinity (as CaCO <sub>3</sub> )	20	mg/L	29
<b>Heavy Metals</b>			
Arsenic	0.001	mg/L	0.004
Arsenic (filtered)	0.001	mg/L	< 0.001
Cadmium	0.0002	mg/L	< 0.0002
Cadmium (filtered)	0.0002	mg/L	< 0.0002
Chromium	0.001	mg/L	0.005
Chromium (filtered)	0.001	mg/L	< 0.001
Copper	0.001	mg/L	0.003
Copper (filtered)	0.001	mg/L	< 0.001
Lead	0.001	mg/L	0.007
Lead (filtered)	0.001	mg/L	< 0.001
Mercury	0.0001	mg/L	0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001
Nickel	0.001	mg/L	0.004

<b>Client Sample ID</b>			<b>FS01</b>
<b>Sample Matrix</b>			<b>Water</b>
<b>Eurofins Sample No.</b>			<b>P20-Ap31439</b>
<b>Date Sampled</b>			<b>Apr 21, 2020</b>
Test/Reference	LOR	Unit	
<b>Heavy Metals</b>			
Nickel (filtered)	0.001	mg/L	< 0.001
Zinc	0.005	mg/L	0.012
Zinc (filtered)	0.005	mg/L	< 0.005
<b>Eurofins   mgt Suite B11C: Na/K/Ca/Mg</b>			
Calcium	0.5	mg/L	4.3
Magnesium	0.5	mg/L	26
Potassium	0.5	mg/L	7.2
Sodium	0.5	mg/L	190

**Sample History**

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

<b>Description</b>	<b>Testing Site</b>	<b>Extracted</b>	<b>Holding Time</b>
Acidity (as CaCO <sub>3</sub> ) - Method: LTM-INO-4210 Acidity	Perth	Apr 22, 2020	14 Days
Ammonium Ion (as N) - Method: APHA 4500-NH <sub>3</sub> Ammonia Nitrogen by FIA	Perth	Apr 22, 2020	7 Days
Conductivity (at 25°C) - Method: LTM-INO-4030 Conductivity	Perth	Apr 22, 2020	28 Days
pH (at 25°C) - Method: LTM-GEN-7090 pH in water by ISE	Perth	Apr 22, 2020	0 Hours
Phosphorus reactive (as P) - Method: APHA 4500-P	Melbourne	Apr 23, 2020	2 Days
Sulphide (as S) - Method: APHA 4500-S C & D - Sulphide	Melbourne	Apr 23, 2020	7 Days
Metals M8 - Method: LTM-MET-3040 Metals in Waters Soils Sediments by ICP-MS	Perth	Apr 22, 2020	180 Days
Metals M8 filtered - Method: LTM-MET-3040 Metals in Waters Soils Sediments by ICP-MS	Perth	Apr 22, 2020	28 Days
Eurofins   mgt Suite B11C: Na/K/Ca/Mg - Method: LTM-MET-3010 Alkali Metals, S, Si and P by ICP-AES	Perth	Apr 22, 2020	180 Days
<b>Nitrogens (speciated)</b>			
Ammonia (as N) - Method: LTM-INO-4200 Ammonia by Discrete Analyser	Perth	Apr 22, 2020	28 Days
Nitrate & Nitrite (as N) - Method: LTM-INO-4350 Aqueous Inorganic Analytes by Discrete Analyser	Perth	Apr 22, 2020	28 Days
Nitrate (as N) - Method: LTM-INO-4350 Aqueous Inorganic Analytes by Discrete Analyser	Perth	Apr 22, 2020	2 Days
Nitrite (as N) - Method: LTM-INO-4350 Aqueous Inorganic Analytes by Discrete Analyser	Perth	Apr 22, 2020	2 Days
Organic Nitrogen (as N)* - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Apr 22, 2020	7 Days
Total Kjeldahl Nitrogen (as N) - Method: LTM-INO-4310 TKN in Waters & Soils by FIA	Melbourne	Apr 23, 2020	7 Days
<b>Eurofins   mgt Suite B11E: Cl/SO<sub>4</sub>/Alkalinity</b>			
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Apr 23, 2020	28 Days
Sulphate (as SO <sub>4</sub> ) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Apr 23, 2020	28 Days
Alkalinity (speciated) - Method: LTM-INO-4250 Alkalinity by Electrometric Titration	Perth	Apr 22, 2020	14 Days
Total Dissolved Solids Dried at 180°C ± 2°C - Method: LTM-INO-4170 Total Dissolved Solids in Water	Melbourne	Apr 23, 2020	7 Days

Australia

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NATA # 1261 Site # 20794

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Site # 23736

New Zealand

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Phone : +64 9 526 45 51  
IANZ # 1327

**Christchurch**  
43 Detroit Drive  
Rolleston, Christchurch 7675  
Phone : 0800 856 450  
IANZ # 1290

**Company Name:** GHD Pty Ltd WA  
**Address:** 999 Hay Street Perth  
Perth  
WA 6004

**Order No.:** 61370410831  
**Report #:** 715089  
**Phone:** 08 6222 8222  
**Fax:** 08 9429 6555

**Received:** Apr 22, 2020 1:45 PM  
**Due:** Apr 29, 2020  
**Priority:** 5 Day  
**Contact Name:** Dominique Shuttleworth

**Project Name:**  
**Project ID:** 6137041

Eurofins Analytical Services Manager : Robert Johnston

Sample Detail						Acidity (as CaCO3)	Ammonium Ion (as N)	Conductivity (at 25°C)	pH (at 25°C)	Phosphorus reactive (as P)	Sulphide (as S)	Metals M8	Metals M8 filtered	Nitrogens (speciated)	Eurofins   mgt Suite B1 1E: Cl/SO4/Alkalinity	Eurofins   mgt Suite B1 1C: Na/K/Ca/Mg	Total Dissolved Solids Dried at 180°C ± 2°C
<b>Melbourne Laboratory - NATA Site # 1254 &amp; 14271</b>										X	X			X	X		X
<b>Sydney Laboratory - NATA Site # 18217</b>																	
<b>Brisbane Laboratory - NATA Site # 20794</b>																	
<b>Perth Laboratory - NATA Site # 23736</b>						X	X	X	X			X	X	X	X	X	
<b>External Laboratory</b>																	
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID												
1	FS01	Apr 21, 2020		Water	P20-Ap31439	X	X	X	X	X	X	X	X	X	X	X	X
<b>Test Counts</b>						1	1	1	1	1	1	1	1	1	1	1	1

## Internal Quality Control Review and Glossary

### General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
- All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
- This report replaces any interim results previously issued.

### Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

**\*\*NOTE:** pH duplicates are reported as a range NOT as RPD

### Units

**mg/kg:** milligrams per kilogram

**mg/L:** milligrams per litre

**ug/L:** micrograms per litre

**ppm:** Parts per million

**ppb:** Parts per billion

**%:** Percentage

**org/100mL:** Organisms per 100 millilitres

**NTU:** Nephelometric Turbidity Units

**MPN/100mL:** Most Probable Number of organisms per 100 millilitres

### Terms

<b>Dry</b>	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
<b>LOR</b>	Limit of Reporting.
<b>SPIKE</b>	Addition of the analyte to the sample and reported as percentage recovery.
<b>RPD</b>	Relative Percent Difference between two Duplicate pieces of analysis.
<b>LCS</b>	Laboratory Control Sample - reported as percent recovery.
<b>CRM</b>	Certified Reference Material - reported as percent recovery.
<b>Method Blank</b>	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
<b>Surr - Surrogate</b>	The addition of a like compound to the analyte target and reported as percentage recovery.
<b>Duplicate</b>	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
<b>USEPA</b>	United States Environmental Protection Agency
<b>APHA</b>	American Public Health Association
<b>TCLP</b>	Toxicity Characteristic Leaching Procedure
<b>COC</b>	Chain of Custody
<b>SRA</b>	Sample Receipt Advice
<b>QSM</b>	US Department of Defense Quality Systems Manual Version 5.3
<b>CP</b>	Client Parent - QC was performed on samples pertaining to this report
<b>NCP</b>	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
<b>TEQ</b>	Toxic Equivalency Quotient

### QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

### QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.



**Quality Control Results**

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Method Blank</b>							
Acidity (as CaCO <sub>3</sub> )	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Ammonium Ion (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Conductivity (at 25°C)	uS/cm	< 10			10	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphorus reactive (as P)	mg/L	< 0.01			0.01	Pass	
Sulphate (as SO <sub>4</sub> )	mg/L	< 5			5	Pass	
Sulphide (as S)	mg/L	< 0.05			0.05	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
<b>Method Blank</b>							
<b>Alkalinity (speciated)</b>							
Bicarbonate Alkalinity (as CaCO <sub>3</sub> )	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO <sub>3</sub> )	mg/L	< 20			20	Pass	
Hydroxide Alkalinity (as CaCO <sub>3</sub> )	mg/L	< 20			20	Pass	
Total Alkalinity (as CaCO <sub>3</sub> )	mg/L	< 20			20	Pass	
<b>Method Blank</b>							
<b>Heavy Metals</b>							
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
<b>Method Blank</b>							
<b>Eurofins   mgt Suite B11C: Na/K/Ca/Mg</b>							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
<b>LCS - % Recovery</b>							
Acidity (as CaCO <sub>3</sub> )	%	102			70-130	Pass	
Ammonia (as N)	%	102			70-130	Pass	
Ammonium Ion (as N)	%	102			70-130	Pass	
Chloride	%	111			70-130	Pass	
Conductivity (at 25°C)	%	97			70-130	Pass	
Nitrate & Nitrite (as N)	%	107			70-130	Pass	
Nitrate (as N)	%	107			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Nitrite (as N)	%	101			70-130	Pass		
Phosphorus reactive (as P)	%	99			70-130	Pass		
Sulphate (as SO <sub>4</sub> )	%	107			70-130	Pass		
Sulphide (as S)	%	100			70-130	Pass		
Total Dissolved Solids Dried at 180°C ± 2°C	%	106			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	99			70-130	Pass		
<b>LCS - % Recovery</b>								
<b>Alkalinity (speciated)</b>								
Total Alkalinity (as CaCO <sub>3</sub> )	%	103			70-130	Pass		
<b>LCS - % Recovery</b>								
<b>Heavy Metals</b>								
Arsenic	%	104			80-120	Pass		
Arsenic (filtered)	%	98			80-120	Pass		
Cadmium	%	107			80-120	Pass		
Cadmium (filtered)	%	96			80-120	Pass		
Chromium	%	104			80-120	Pass		
Chromium (filtered)	%	95			80-120	Pass		
Copper	%	99			80-120	Pass		
Copper (filtered)	%	87			80-120	Pass		
Lead	%	105			80-120	Pass		
Lead (filtered)	%	95			80-120	Pass		
Mercury	%	115			70-130	Pass		
Mercury (filtered)	%	97			70-130	Pass		
Nickel	%	101			80-120	Pass		
Nickel (filtered)	%	93			80-120	Pass		
Zinc	%	104			80-120	Pass		
Zinc (filtered)	%	96			80-120	Pass		
<b>LCS - % Recovery</b>								
<b>Eurofins   mgt Suite B11C: Na/K/Ca/Mg</b>								
Calcium	%	96			70-130	Pass		
Magnesium	%	114			70-130	Pass		
Potassium	%	106			70-130	Pass		
Sodium	%	112			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
<b>Spike - % Recovery</b>								
				Result 1				
Ammonia (as N)	P20-Ap31495	NCP	%	104		70-130	Pass	
Ammonium Ion (as N)	P20-Ap31495	NCP	%	104		70-130	Pass	
Chloride	M20-Ap32006	NCP	%	103		70-130	Pass	
Nitrate & Nitrite (as N)	P20-Ap31439	CP	%	95		70-130	Pass	
Nitrate (as N)	P20-Ap31439	CP	%	95		70-130	Pass	
Nitrite (as N)	P20-Ap31495	NCP	%	100		70-130	Pass	
Sulphate (as SO <sub>4</sub> )	M20-Ap32006	NCP	%	101		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M20-Ap33397	NCP	%	83		70-130	Pass	
<b>Spike - % Recovery</b>								
<b>Alkalinity (speciated)</b>								
Total Alkalinity (as CaCO <sub>3</sub> )	P20-Ap31480	NCP	%	93		70-130	Pass	
<b>Spike - % Recovery</b>								
<b>Heavy Metals</b>								
				Result 1				
Arsenic	P20-Ap31480	NCP	%	100		75-125	Pass	
Arsenic (filtered)	P20-Ap31480	NCP	%	107		70-130	Pass	
Cadmium	P20-Ap31480	NCP	%	93		75-125	Pass	
Cadmium (filtered)	P20-Ap31480	NCP	%	97		70-130	Pass	
Chromium	P20-Ap31480	NCP	%	87		75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chromium (filtered)	P20-Ap31480	NCP	%	89			70-130	Pass	
Copper	P20-Ap31480	NCP	%	79			75-125	Pass	
Copper (filtered)	P20-Ap31826	NCP	%	80			70-130	Pass	
Lead	P20-Ap31480	NCP	%	84			75-125	Pass	
Lead (filtered)	P20-Ap31480	NCP	%	87			70-130	Pass	
Mercury	P20-Ap31480	NCP	%	94			70-130	Pass	
Nickel	P20-Ap31480	NCP	%	78			75-125	Pass	
Nickel (filtered)	P20-Ap31480	NCP	%	82			70-130	Pass	
Zinc	P20-Ap31480	NCP	%	84			75-125	Pass	
Zinc (filtered)	P20-Ap31480	NCP	%	88			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Eurofins   mgt Suite B11C: Na/K/Ca/Mg</b>				Result 1					
Calcium	P20-Ap31480	NCP	%	92			70-130	Pass	
Magnesium	P20-Ap31818	NCP	%	91			70-130	Pass	
Potassium	P20-Ap31480	NCP	%	91			70-130	Pass	
Sodium	P20-Ap31818	NCP	%	81			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Duplicate</b>									
				Result 1	Result 2	RPD			
Acidity (as CaCO <sub>3</sub> )	P20-Ap31479	NCP	mg/L	210	200	6.0	30%	Pass	
Ammonia (as N)	P20-Ap31439	CP	mg/L	0.06	0.06	2.0	30%	Pass	
Ammonium Ion (as N)	P20-Ap31439	CP	mg/L	0.07	0.07	2.0	30%	Pass	
Chloride	P20-Ap31829	NCP	mg/L	100	77	29	30%	Pass	
Conductivity (at 25°C)	P20-Ap31479	NCP	uS/cm	2200	2200	<1	30%	Pass	
Nitrate & Nitrite (as N)	P20-Ap31439	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	P20-Ap31439	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	P20-Ap31439	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
pH (at 25°C)	P20-Ap31479	NCP	pH Units	4.0	4.0	<1	30%	Pass	
Sulphate (as SO <sub>4</sub> )	P20-Ap31829	NCP	mg/L	66	69	3.0	30%	Pass	
Sulphide (as S)	P20-Ap31439	CP	mg/L	0.10	0.10	<1	30%	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	M20-Ap37181	NCP	mg/L	4600	4200	10	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M20-Ap33376	NCP	mg/L	5.0	6.6	27	30%	Pass	
<b>Duplicate</b>									
<b>Alkalinity (speciated)</b>				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO <sub>3</sub> )	P20-Ap31479	NCP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO <sub>3</sub> )	P20-Ap31479	NCP	mg/L	< 20	< 20	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO <sub>3</sub> )	P20-Ap31479	NCP	mg/L	< 20	< 20	<1	30%	Pass	
Total Alkalinity (as CaCO <sub>3</sub> )	P20-Ap31479	NCP	mg/L	< 20	< 20	<1	30%	Pass	
<b>Duplicate</b>									
<b>Heavy Metals</b>				Result 1	Result 2	RPD			
Arsenic	P20-Ap31479	NCP	mg/L	0.001	0.001	2.0	30%	Pass	
Arsenic (filtered)	P20-Ap31479	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	P20-Ap31479	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Cadmium (filtered)	P20-Ap31479	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	P20-Ap31479	NCP	mg/L	0.004	0.004	10	30%	Pass	
Chromium (filtered)	P20-Ap31479	NCP	mg/L	0.002	0.003	22	30%	Pass	
Copper	P20-Ap31479	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	P20-Ap31479	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead	P20-Ap31479	NCP	mg/L	0.003	0.003	2.0	30%	Pass	
Lead (filtered)	P20-Ap31479	NCP	mg/L	0.002	0.002	7.0	30%	Pass	
Mercury	P20-Ap31479	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	P20-Ap31479	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	P20-Ap31479	NCP	mg/L	0.001	0.001	1.0	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Nickel (filtered)	P20-Ap31479	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	P20-Ap31479	NCP	mg/L	0.005	< 0.005	16	30%	Pass
Zinc (filtered)	P20-Ap31479	NCP	mg/L	< 0.005	0.005	3.0	30%	Pass
Duplicate								
Eurofins   mgt Suite B11C: Na/K/Ca/Mg				Result 1	Result 2	RPD		
Calcium	P20-Ap31479	NCP	mg/L	5.5	5.6	1.0	30%	Pass
Magnesium	P20-Ap31479	NCP	mg/L	46	47	4.0	30%	Pass
Potassium	P20-Ap31479	NCP	mg/L	18	18	1.0	30%	Pass
Sodium	P20-Ap31479	NCP	mg/L	350	360	3.0	30%	Pass

**Comments**
**Sample Integrity**

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	N/A
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

**Authorised By**

Robert Johnston	Analytical Services Manager
Elden Garrett	Senior Analyst-Metal (WA)
Rhys Thomas	Senior Analyst-Inorganic (WA)
Scott Beddoes	Senior Analyst-Inorganic (VIC)


**Glenn Jackson  
General Manager**

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

\* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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## CERTIFICATE OF ANALYSIS

**Work Order** : **EP2005242**  
**Client** : **GHD PTY LTD**  
**Contact** : Julia Roberts  
**Address** : 999 HAY STREET  
 PERTH WA, AUSTRALIA 6000  
  
**Telephone** : ----  
**Project** : 6137041  
**Order number** : 61370410831  
**C-O-C number** : ----  
**Sampler** : DS + IO + SI  
**Site** : ----  
**Quote number** : EP/489/19 V4  
**No. of samples received** : 20  
**No. of samples analysed** : 16

**Page** : 1 of 9  
**Laboratory** : Environmental Division Perth  
**Contact** : Rebecca Shaw  
**Address** : 26 Rigali Way Wangara WA Australia 6065  
  
**Telephone** : +61-8-9406 1301  
**Date Samples Received** : 21-May-2020 13:25  
**Date Analysis Commenced** : 21-May-2020  
**Issue Date** : 27-May-2020 10:49



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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
Daniel Fisher	Inorganics Analyst	Perth Inorganics, Wangara, WA



## General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- ED041G (Sulfate Turbidimetric): LOR for samples EP2005242-006, -008 and -010 raised due to possible sample matrix interference.
- EG020A-T: Metals results for EP2005242 #3 and 4 have been confirmed by re-preparation and re-analysis.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW46	BORR MW04	BORR MW05	FD01	BORR MW06
Client sampling date / time				18-May-2020 00:00	18-May-2020 00:00	18-May-2020 00:00	18-May-2020 00:00	18-May-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2005242-001	EP2005242-002	EP2005242-003	EP2005242-004	EP2005242-005	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	3.72	7.46	7.13	7.32	7.11	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	468	3750	1140	1230	779	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	302	2310	686	736	532	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	236	66	67	59	
Total Alkalinity as CaCO3	----	1	mg/L	<1	236	66	67	59	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	37	19	15	14	13	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	150	189	108	123	74	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	15	909	275	294	182	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	42	158	26	26	42	
Magnesium	7439-95-4	1	mg/L	10	56	18	19	13	
Sodium	7440-23-5	1	mg/L	14	526	189	192	76	
Potassium	7440-09-7	1	mg/L	4	5	7	7	11	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.02	<0.01	0.09	0.08	0.18	
Arsenic	7440-38-2	0.001	mg/L	0.003	0.002	0.001	0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	
Cobalt	7440-48-4	0.001	mg/L	0.004	0.001	<0.001	<0.001	0.001	
Copper	7440-50-8	0.001	mg/L	0.008	<0.001	0.005	0.002	0.007	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.001	<0.001	0.001	
Manganese	7439-96-5	0.001	mg/L	0.077	0.143	0.012	0.009	0.142	
Nickel	7440-02-0	0.001	mg/L	0.007	<0.001	0.002	0.001	0.011	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.028	0.005	0.035	<0.005	0.095	
Iron	7439-89-6	0.05	mg/L	20.2	7.33	1.73	1.74	5.78	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW46	BORR MW04	BORR MW05	FD01	BORR MW06
Client sampling date / time				18-May-2020 00:00	18-May-2020 00:00	18-May-2020 00:00	18-May-2020 00:00	18-May-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2005242-001	EP2005242-002	EP2005242-003	EP2005242-004	EP2005242-005	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	1.89	1.01	5.44	3.04	1.62	
Iron	7439-89-6	0.05	mg/L	27.4	8.94	2.84	2.36	9.50	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.28	0.21	0.13	0.13	0.26	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.28	0.21	0.13	0.13	0.26	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.4	0.3	1.1	1.0	1.5	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.4	0.3	1.1	1.0	1.5	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.05	0.08	0.08	0.06	0.05	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	3.55	34.3	11.3	12.2	7.85	
∅ Total Cations	----	0.01	meq/L	3.63	35.5	11.2	11.4	6.75	
∅ Ionic Balance	----	0.01	%	1.17	1.73	0.65	3.40	7.54	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW08a	BORR BH9.2	BORR MW32	BORR MW37	BORR MW31
Client sampling date / time				18-May-2020 00:00	18-May-2020 00:00	18-May-2020 00:00	18-May-2020 00:00	19-May-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2005242-006	EP2005242-007	EP2005242-008	EP2005242-009	EP2005242-010	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.70	4.19	6.46	5.87	5.98	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	557	7850	284	3460	259	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	368	5060	220	2120	212	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	49	<1	29	24	15	
Total Alkalinity as CaCO3	----	1	mg/L	49	<1	29	24	15	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	19	302	17	31	22	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<20	90	<20	67	<20	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	155	2580	70	1000	69	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	20	59	3	15	3	
Magnesium	7439-95-4	1	mg/L	12	251	7	67	5	
Sodium	7440-23-5	1	mg/L	74	990	48	567	39	
Potassium	7440-09-7	1	mg/L	9	<1	3	2	4	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.27	28.4	0.97	0.02	0.97	
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.003	<0.001	0.002	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	0.001	<0.001	0.003	<0.001	0.001	
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.030	<0.001	0.040	<0.001	
Copper	7440-50-8	0.001	mg/L	<0.001	0.009	0.004	<0.001	0.009	
Lead	7439-92-1	0.001	mg/L	<0.001	0.026	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.064	0.022	0.006	0.213	0.009	
Nickel	7440-02-0	0.001	mg/L	<0.001	0.013	0.004	0.016	0.013	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	<0.005	0.010	0.035	0.017	0.062	
Iron	7439-89-6	0.05	mg/L	0.98	60.2	0.85	8.85	1.58	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW08a	BORR BH9.2	BORR MW32	BORR MW37	BORR MW31
Client sampling date / time				18-May-2020 00:00	18-May-2020 00:00	18-May-2020 00:00	18-May-2020 00:00	19-May-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2005242-006	EP2005242-007	EP2005242-008	EP2005242-009	EP2005242-010	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	2.06	33.1	2.51	1.73	1.68	
Iron	7439-89-6	0.05	mg/L	1.58	64.9	0.92	10.3	1.99	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.32	0.08	0.46	0.07	0.94	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.32	0.08	0.46	0.07	0.94	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.6	0.2	1.3	0.1	1.7	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	1.6	0.2	1.3	0.1	1.7	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.83	0.03	0.06	0.04	0.03	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.80	<0.01	<0.01	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	0.2	<0.1	0.6	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	5.35	74.6	2.55	30.1	2.25	
∅ Total Cations	----	0.01	meq/L	5.43	66.7	2.89	31.0	2.36	
∅ Ionic Balance	----	0.01	%	0.77	5.65	6.18	1.46	2.47	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW29	BORR MW22b	SW06	North Creek 4	RB01
Client sampling date / time				19-May-2020 00:00	19-May-2020 00:00	19-May-2020 00:00	19-May-2020 00:00	18-May-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2005242-011	EP2005242-012	EP2005242-013	EP2005242-014	EP2005242-015	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	5.90	6.36	7.39	7.49	----	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	744	13100	2900	2540	----	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	524	8730	1880	1600	----	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	15	53	52	46	----	
Total Alkalinity as CaCO3	----	1	mg/L	15	53	52	46	----	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	22	61	8	4	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	137	369	60	78	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	152	3960	837	732	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	17	131	46	41	----	
Magnesium	7439-95-4	1	mg/L	23	329	89	72	----	
Sodium	7440-23-5	1	mg/L	99	2200	391	354	----	
Potassium	7440-09-7	1	mg/L	7	5	10	12	----	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.55	0.03	0.03	0.02	----	
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.002	<0.001	<0.001	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----	
Chromium	7440-47-3	0.001	mg/L	0.002	<0.001	<0.001	<0.001	----	
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.124	0.001	0.001	----	
Copper	7440-50-8	0.001	mg/L	0.006	0.007	0.025	0.016	----	
Lead	7439-92-1	0.001	mg/L	0.001	<0.001	0.001	0.001	----	
Manganese	7439-96-5	0.001	mg/L	0.015	0.549	0.255	0.514	----	
Nickel	7440-02-0	0.001	mg/L	0.011	0.065	0.014	0.006	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----	
Zinc	7440-66-6	0.005	mg/L	0.054	0.087	0.076	0.060	----	
Iron	7439-89-6	0.05	mg/L	0.89	24.1	0.16	0.14	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR MW29	BORR MW22b	SW06	North Creek 4	RB01
Client sampling date / time				19-May-2020 00:00	19-May-2020 00:00	19-May-2020 00:00	19-May-2020 00:00	18-May-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2005242-011	EP2005242-012	EP2005242-013	EP2005242-014	EP2005242-015	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	1.38	1.05	0.13	1.02	----	
Arsenic	7440-38-2	0.001	mg/L	----	----	----	----	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	----	<0.0001	
Chromium	7440-47-3	0.001	mg/L	----	----	----	----	<0.001	
Copper	7440-50-8	0.001	mg/L	----	----	----	----	<0.001	
Nickel	7440-02-0	0.001	mg/L	----	----	----	----	<0.001	
Lead	7439-92-1	0.001	mg/L	----	----	----	----	<0.001	
Zinc	7440-66-6	0.005	mg/L	----	----	----	----	<0.005	
Iron	7439-89-6	0.05	mg/L	1.03	26.1	1.19	2.84	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.48	0.13	0.08	0.02	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.48	0.13	0.08	0.02	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.02	<0.01	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.3	0.2	1.0	1.1	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	1.3	0.2	1.0	1.1	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.03	0.04	0.12	0.15	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	1.3	<0.1	<0.1	<0.1	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	7.44	120	25.9	23.2	----	
∅ Total Cations	----	0.01	meq/L	7.23	129	26.9	23.7	----	
∅ Ionic Balance	----	0.01	%	1.45	3.60	1.86	1.03	----	



**Analytical Results**

Sub-Matrix: <b>WATER</b> (Matrix: <b>WATER</b> )				Client sample ID	RB02	----	----	----	----
Client sampling date / time				19-May-2020 00:00	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EP2005242-016	-----	-----	-----	-----	-----
				Result	----	----	----	----	----
<b>EG020T: Total Metals by ICP-MS</b>									
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----	----

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP2005242	Page	: 1 of 12
Client	: GHD PTY LTD	Laboratory	: Environmental Division Perth
Contact	: Julia Roberts	Telephone	: +61-8-9406 1301
Project	: 6137041	Date Samples Received	: 21-May-2020
Site	: ----	Issue Date	: 27-May-2020
Sampler	: DS + IO + SI	No. of samples received	: 20
Order number	: 61370410831	No. of samples analysed	: 16

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.





**Outliers : Quality Control Samples**

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
EG020F: Dissolved Metals by ICP-MS	EP2005216--002	Anonymous	Manganese	7439-96-5	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

**Outliers : Analysis Holding Time Compliance**

Matrix: **WATER**

Method	Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EA005P: pH by PC Titrator</b>							
<b>Clear Plastic Bottle - Natural</b>							
MW46, BORR MW05, BORR MW06, BORR BH9.2, BORR MW37	BORR MW04, FD01, BORR MW08a, BORR MW32,	----	----	----	26-May-2020	18-May-2020	8
<b>Clear Plastic Bottle - Natural</b>							
BORR MW31, BORR MW22b, North Creek 4	BORR MW29, SW06,	----	----	----	26-May-2020	19-May-2020	7
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>							
<b>Clear Plastic Bottle - Natural</b>							
MW46, BORR MW05, BORR MW06, BORR BH9.2, BORR MW37	BORR MW04, FD01, BORR MW08a, BORR MW32,	----	----	----	21-May-2020	20-May-2020	1
<b>EK085M: Sulfide as S2-</b>							
<b>Clear Plastic Bottle - Zinc Acetate/NaOH</b>							
MW46, BORR MW05, BORR MW06, BORR BH9.2, BORR MW37	BORR MW04, FD01, BORR MW08a, BORR MW32,	----	----	----	26-May-2020	25-May-2020	1



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA005P: pH by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA005-P)</b> MW46, BORR MW05, BORR MW06, BORR BH9.2, BORR MW37	BORR MW04, FD01, BORR MW08a, BORR MW32,	18-May-2020	----	----	----	26-May-2020	18-May-2020	*
<b>Clear Plastic Bottle - Natural (EA005-P)</b> BORR MW31, BORR MW22b, North Creek 4	BORR MW29, SW06,	19-May-2020	----	----	----	26-May-2020	19-May-2020	*
<b>EA010P: Conductivity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (EA010-P)</b> MW46, BORR MW05, BORR MW06, BORR BH9.2, BORR MW37	BORR MW04, FD01, BORR MW08a, BORR MW32,	18-May-2020	----	----	----	26-May-2020	15-Jun-2020	✓
<b>Clear Plastic Bottle - Natural (EA010-P)</b> BORR MW31, BORR MW22b, North Creek 4	BORR MW29, SW06,	19-May-2020	----	----	----	26-May-2020	16-Jun-2020	✓
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
<b>Clear Plastic Bottle - Natural (EA015H)</b> MW46, BORR MW05, BORR MW06, BORR BH9.2, BORR MW37	BORR MW04, FD01, BORR MW08a, BORR MW32,	18-May-2020	----	----	----	25-May-2020	25-May-2020	✓
<b>Clear Plastic Bottle - Natural (EA015H)</b> BORR MW31, BORR MW22b, North Creek 4	BORR MW29, SW06,	19-May-2020	----	----	----	25-May-2020	26-May-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>ED037P: Alkalinity by PC Titrator</b>								
<b>Clear Plastic Bottle - Natural (ED037-P)</b> MW46, BORR MW05, BORR MW06, BORR BH9.2, BORR MW37	BORR MW04, FD01, BORR MW08a, BORR MW32,	18-May-2020	----	----	----	26-May-2020	01-Jun-2020	✓
<b>Clear Plastic Bottle - Natural (ED037-P)</b> BORR MW31, BORR MW22b, North Creek 4	BORR MW29, SW06,	19-May-2020	----	----	----	26-May-2020	02-Jun-2020	✓
<b>ED038A: Acidity</b>								
<b>Clear Plastic Bottle - Natural (ED038)</b> MW46, BORR MW05, BORR MW06, BORR BH9.2, BORR MW37	BORR MW04, FD01, BORR MW08a, BORR MW32,	18-May-2020	----	----	----	21-May-2020	01-Jun-2020	✓
<b>Clear Plastic Bottle - Natural (ED038)</b> BORR MW31, BORR MW22b, North Creek 4	BORR MW29, SW06,	19-May-2020	----	----	----	21-May-2020	02-Jun-2020	✓
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
<b>Clear Plastic Bottle - Natural (ED041G)</b> MW46, BORR MW05, BORR MW06, BORR BH9.2, BORR MW37	BORR MW04, FD01, BORR MW08a, BORR MW32,	18-May-2020	----	----	----	21-May-2020	15-Jun-2020	✓
<b>Clear Plastic Bottle - Natural (ED041G)</b> BORR MW31, BORR MW22b, North Creek 4	BORR MW29, SW06,	19-May-2020	----	----	----	21-May-2020	16-Jun-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>ED045G: Chloride by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Natural (ED045G)</b> MW46, BORR MW05, BORR MW06, BORR BH9.2, BORR MW37	BORR MW04, FD01, BORR MW08a, BORR MW32,	18-May-2020	----	----	----	21-May-2020	15-Jun-2020	✓
<b>Clear Plastic Bottle - Natural (ED045G)</b> BORR MW31, BORR MW22b, North Creek 4	BORR MW29, SW06,	19-May-2020	----	----	----	21-May-2020	16-Jun-2020	✓
<b>ED093F: Dissolved Major Cations</b>								
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> MW46, BORR MW05, BORR MW06, BORR BH9.2, BORR MW37	BORR MW04, FD01, BORR MW08a, BORR MW32,	18-May-2020	----	----	----	22-May-2020	15-Jun-2020	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)</b> BORR MW31, BORR MW22b, North Creek 4	BORR MW29, SW06,	19-May-2020	----	----	----	22-May-2020	16-Jun-2020	✓
<b>EG020F: Dissolved Metals by ICP-MS</b>								
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> MW46, BORR MW05, BORR MW06, BORR BH9.2, BORR MW37	BORR MW04, FD01, BORR MW08a, BORR MW32,	18-May-2020	----	----	----	22-May-2020	14-Nov-2020	✓
<b>Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)</b> BORR MW31, BORR MW22b, North Creek 4	BORR MW29, SW06,	19-May-2020	----	----	----	22-May-2020	15-Nov-2020	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EG020T: Total Metals by ICP-MS</b>							
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> MW46, BORR MW05, BORR MW06, BORR BH9.2, BORR MW37, BORR MW04, FD01, BORR MW08a, BORR MW32, RB01	18-May-2020	22-May-2020	14-Nov-2020	✓	22-May-2020	14-Nov-2020	✓
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b> BORR MW31, BORR MW22b, North Creek 4, BORR MW29, SW06, RB02	19-May-2020	22-May-2020	15-Nov-2020	✓	22-May-2020	15-Nov-2020	✓
<b>EK055G: Ammonia as N by Discrete Analyser</b>							
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> MW46, BORR MW05, BORR MW06, BORR BH9.2, BORR MW37, BORR MW04, FD01, BORR MW08a, BORR MW32,	18-May-2020	----	----	----	21-May-2020	15-Jun-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK055G)</b> BORR MW31, BORR MW22b, North Creek 4, BORR MW29, SW06,	19-May-2020	----	----	----	21-May-2020	16-Jun-2020	✓
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>							
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> MW46, BORR MW05, BORR MW06, BORR BH9.2, BORR MW37, BORR MW04, FD01, BORR MW08a, BORR MW32,	18-May-2020	----	----	----	21-May-2020	15-Jun-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK059G)</b> BORR MW31, BORR MW22b, North Creek 4, BORR MW29, SW06,	19-May-2020	----	----	----	21-May-2020	16-Jun-2020	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> MW46, BORR MW05, BORR MW06, BORR BH9.2, BORR MW37	BORR MW04, FD01, BORR MW08a, BORR MW32,	18-May-2020	25-May-2020	15-Jun-2020	✓	26-May-2020	15-Jun-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK061G)</b> BORR MW31, BORR MW22b, North Creek 4	BORR MW29, SW06,	19-May-2020	25-May-2020	16-Jun-2020	✓	26-May-2020	16-Jun-2020	✓
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>								
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> MW46, BORR MW05, BORR MW06, BORR BH9.2, BORR MW37	BORR MW04, FD01, BORR MW08a, BORR MW32,	18-May-2020	25-May-2020	15-Jun-2020	✓	26-May-2020	15-Jun-2020	✓
<b>Clear Plastic Bottle - Sulfuric Acid (EK067G)</b> BORR MW31, BORR MW22b, North Creek 4	BORR MW29, SW06,	19-May-2020	25-May-2020	16-Jun-2020	✓	26-May-2020	16-Jun-2020	✓
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>								
<b>Clear Plastic Bottle - Natural (EK071G)</b> MW46, BORR MW05, BORR MW06, BORR BH9.2, BORR MW37	BORR MW04, FD01, BORR MW08a, BORR MW32,	18-May-2020	----	----	----	21-May-2020	20-May-2020	*
<b>Clear Plastic Bottle - Natural (EK071G)</b> BORR MW31, BORR MW22b, North Creek 4	BORR MW29, SW06,	19-May-2020	----	----	----	21-May-2020	21-May-2020	✓

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 Client : GHD PTY LTD  
 Project : 6137041



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EK085M: Sulfide as S2-</b>								
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> MW46, BORR MW05, BORR MW06, BORR BH9.2, BORR MW37	BORR MW04, FD01, BORR MW08a, BORR MW32,	18-May-2020	----	----	----	26-May-2020	25-May-2020	✖
<b>Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)</b> BORR MW31, BORR MW22b, North Creek 4	BORR MW29, SW06,	19-May-2020	----	----	----	26-May-2020	26-May-2020	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Acidity as Calcium Carbonate	ED038	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	5	40	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	4	34	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	15	13.33	10.53	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	4	35	11.43	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Acidity as Calcium Carbonate	ED038	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	15	13.33	10.53	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Alkalinity by PC Titrator	ED037-P	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard





Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Method Blanks (MB) - Continued</b>							
Chloride by Discrete Analyser	ED045G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	15	6.67	5.26	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Ammonia as N by Discrete analyser	EK055G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3)  Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3)  Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ammonium as N	EK055G-NH4	WATER	Ammonium in the sample is reported as the ionised / unionised fractions by the use of a nomograph and the initial pH and Temperature. Ammonia is determined by direct colorimetry by Discrete Analyser according to APHA 4500-NH3 G. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Sulfide as S2-	EK085	WATER	In house: Referenced to APHA 4500-S2- D. Sulfide species present in water samples are immediately precipitated when collected in pretreated caustic/zinc acetate preserved sample containers. The sulphides are coloured using methylene blue indicator. Non-detects may be screened by comparison against a standard at half-LOR, otherwise samples are measured using UV-VIS detection at 664nm. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)





## CERTIFICATE OF ANALYSIS

<b>Work Order</b>	<b>: EP2005328</b>	<b>Page</b>	<b>: 1 of 18</b>
<b>Client</b>	<b>: GHD PTY LTD</b>	<b>Laboratory</b>	<b>: Environmental Division Perth</b>
<b>Contact</b>	<b>: Julia Roberts</b>	<b>Contact</b>	<b>: Rebecca Shaw</b>
<b>Address</b>	<b>: 999 HAY STREET PERTH WA, AUSTRALIA 6000</b>	<b>Address</b>	<b>: 26 Rigali Way Wangara WA Australia 6065</b>
<b>Telephone</b>	<b>: ----</b>	<b>Telephone</b>	<b>: +61-8-9406 1301</b>
<b>Project</b>	<b>: 6137041</b>	<b>Date Samples Received</b>	<b>: 25-May-2020 10:30</b>
<b>Order number</b>	<b>: 61041.0831</b>	<b>Date Analysis Commenced</b>	<b>: 25-May-2020</b>
<b>C-O-C number</b>	<b>: ----</b>	<b>Issue Date</b>	<b>: 03-Jun-2020 13:18</b>
<b>Sampler</b>	<b>: DS + SI</b>		
<b>Site</b>	<b>: ----</b>		
<b>Quote number</b>	<b>: EP/489/19 V4</b>		
<b>No. of samples received</b>	<b>: 31</b>		
<b>No. of samples analysed</b>	<b>: 31</b>		



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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
ShukHui Li	Client Services - Technical Manager	Perth Organics, Wangara, WA



## General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EG020: Metals LOR for samples EP2005328-009, 010, 021 raised due to high TDS content.
- EG020: It is recognised that total aluminium concentration is less than dissolved for sample EP2005328-001. However, the difference is within experimental variation of the methods.
- EG020F: Results for zinc for samples EP2005328-007-010 have been confirmed by re-analysis.
- TDS by method EA-015 may bias high for sample #3 due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper. Confirmed by re-preparation and re-analysis.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium, sodium and iron for #29.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Northern 5	BORR_MW18	BORR_MW39	JT01	BH11.1
Client sampling date / time				20-May-2020 00:00	20-May-2020 00:00	20-May-2020 00:00	20-May-2020 00:00	20-May-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2005328-001	EP2005328-002	EP2005328-003	EP2005328-004	EP2005328-005	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	7.74	6.03	5.85	7.20	6.45	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	997	379	306	6200	2630	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	578	278	498	4100	1660	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	119	5	11	46	50	
Total Alkalinity as CaCO3	----	1	mg/L	119	5	11	46	50	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	13	15	22	12	21	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	31	21	54	188	86	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	271	76	58	2050	812	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	30	10	<1	62	19	
Magnesium	7439-95-4	1	mg/L	18	5	<1	140	65	
Sodium	7440-23-5	1	mg/L	143	44	60	956	396	
Potassium	7440-09-7	1	mg/L	8	21	<1	29	15	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.02	0.35	0.60	0.02	0.02	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.006	<0.001	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.011	0.015	0.009	0.010	0.004	
Lead	7439-92-1	0.001	mg/L	<0.001	0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.094	0.218	0.015	0.135	0.409	
Nickel	7440-02-0	0.001	mg/L	0.005	0.008	0.004	0.006	0.004	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.035	0.053	0.045	0.059	0.070	
Iron	7439-89-6	0.05	mg/L	0.16	<0.05	0.35	0.07	19.4	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Northern 5	BORR_MW18	BORR_MW39	JT01	BH11.1
Client sampling date / time				20-May-2020 00:00	20-May-2020 00:00	20-May-2020 00:00	20-May-2020 00:00	20-May-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2005328-001	EP2005328-002	EP2005328-003	EP2005328-004	EP2005328-005	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	1.05	1.25	4.98	0.08	0.02	
Iron	7439-89-6	0.05	mg/L	1.63	0.40	6.38	2.56	19.6	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.19	0.06	<0.01	0.10	0.28	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.18	0.06	<0.01	0.10	0.28	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.11	14.8	<0.01	0.03	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.9	1.8	0.1	0.2	0.3	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	1.0	16.6	0.1	0.2	0.3	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.77	0.02	0.07	0.02	0.08	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.38	<0.01	0.02	0.01	0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	----	3.74	----	----	----	
∅ Total Anions	----	0.01	meq/L	10.7	----	2.98	62.7	25.7	
∅ Total Cations	----	0.01	meq/L	9.40	3.36	2.61	56.9	23.9	
∅ Ionic Balance	----	0.01	%	----	5.31	----	----	----	
∅ Ionic Balance	----	0.01	%	6.30	----	----	4.78	3.61	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW19	BORR_MW19b	FD02	Northern 3	FD03
Client sampling date / time				20-May-2020 00:00	20-May-2020 00:00	20-May-2020 00:00	20-May-2020 00:00	20-May-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2005328-006	EP2005328-007	EP2005328-008	EP2005328-009	EP2005328-010	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	7.50	6.51	6.58	7.02	6.95	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	12800	2200	2280	21900	21500	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	8700	1410	1430	15400	14500	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	210	38	44	17	15	
Total Alkalinity as CaCO3	----	1	mg/L	210	38	44	17	15	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	17	23	24	8	10	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	287	40	39	944	942	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	4120	705	715	7460	7480	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	71	17	17	226	223	
Magnesium	7439-95-4	1	mg/L	218	49	48	513	509	
Sodium	7440-23-5	1	mg/L	1940	336	333	4070	4050	
Potassium	7440-09-7	1	mg/L	2	5	5	130	130	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.05	<0.01	0.01	0.08	0.06	
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.001	0.001	<0.005	<0.005	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0005	<0.0005	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.005	<0.005	
Cobalt	7440-48-4	0.001	mg/L	0.011	0.002	0.002	<0.005	<0.005	
Copper	7440-50-8	0.001	mg/L	0.011	<0.001	0.003	<0.005	<0.005	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.005	<0.005	
Manganese	7439-96-5	0.001	mg/L	0.344	0.121	0.121	0.122	0.117	
Nickel	7440-02-0	0.001	mg/L	0.010	0.003	0.007	0.006	<0.005	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.05	<0.05	
Zinc	7440-66-6	0.005	mg/L	0.049	0.016	0.071	0.046	<0.025	
Iron	7439-89-6	0.05	mg/L	0.32	4.86	4.81	<0.25	<0.25	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW19	BORR_MW19b	FD02	Northern 3	FD03
Client sampling date / time				20-May-2020 00:00	20-May-2020 00:00	20-May-2020 00:00	20-May-2020 00:00	20-May-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2005328-006	EP2005328-007	EP2005328-008	EP2005328-009	EP2005328-010	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	8.60	0.28	0.26	0.77	0.76	
Iron	7439-89-6	0.05	mg/L	8.79	5.31	5.10	1.14	1.25	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.05	0.02	0.02	0.67	0.69	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.05	0.02	0.02	0.67	0.69	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	6.58	<0.01	<0.01	0.66	0.65	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.0	<0.1	<0.1	1.8	1.7	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	8.6	<0.1	<0.1	2.5	2.4	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.15	0.01	0.01	0.07	0.05	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.04	<0.01	<0.01	0.01	0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	0.1	0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	126	21.5	21.9	230	231	
∅ Total Cations	----	0.01	meq/L	106	19.6	19.4	234	232	
∅ Ionic Balance	----	0.01	%	8.81	4.51	5.93	0.74	0.34	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		BORR_MW24	RB03	FB03	TBW421	BORR_MW25
Client sampling date / time		20-May-2020 00:00		20-May-2020 00:00	20-May-2020 00:00	20-May-2020 00:00	20-May-2020 00:00	20-May-2020 00:00
Compound	CAS Number	LOR	Unit	EP2005328-011	EP2005328-012	EP2005328-013	EP2005328-014	EP2005328-015
				Result	Result	Result	Result	Result
<b>EA005P: pH by PC Titrator</b>								
pH Value	----	0.01	pH Unit	5.04	----	----	----	6.06
<b>EA010P: Conductivity by PC Titrator</b>								
Electrical Conductivity @ 25°C	----	1	µS/cm	1770	----	----	----	3650
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>								
Total Dissolved Solids @180°C	----	10	mg/L	1320	----	----	----	2330
<b>ED037P: Alkalinity by PC Titrator</b>								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	2	----	----	----	32
Total Alkalinity as CaCO3	----	1	mg/L	2	----	----	----	32
<b>ED038A: Acidity</b>								
Acidity as CaCO3	----	1	mg/L	29	----	----	----	26
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	40	----	----	----	87
<b>ED045G: Chloride by Discrete Analyser</b>								
Chloride	16887-00-6	1	mg/L	588	----	----	----	1130
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	<1	----	----	----	28
Magnesium	7439-95-4	1	mg/L	10	----	----	----	59
Sodium	7440-23-5	1	mg/L	336	----	----	----	609
Potassium	7440-09-7	1	mg/L	<1	----	----	----	4
<b>EG020F: Dissolved Metals by ICP-MS</b>								
Aluminium	7429-90-5	0.01	mg/L	0.15	----	----	----	0.03
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	0.003
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	<0.0001
Chromium	7440-47-3	0.001	mg/L	0.002	----	----	----	<0.001
Cobalt	7440-48-4	0.001	mg/L	0.006	----	----	----	0.036
Copper	7440-50-8	0.001	mg/L	0.015	----	----	----	0.006
Lead	7439-92-1	0.001	mg/L	0.001	----	----	----	<0.001
Manganese	7439-96-5	0.001	mg/L	0.004	----	----	----	0.453
Nickel	7440-02-0	0.001	mg/L	0.011	----	----	----	0.019
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	<0.01
Zinc	7440-66-6	0.005	mg/L	0.137	----	----	----	0.062
Iron	7439-89-6	0.05	mg/L	0.16	----	----	----	7.01



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW24	RB03	FB03	TBW421	BORR_MW25
Client sampling date / time				20-May-2020 00:00	20-May-2020 00:00	20-May-2020 00:00	20-May-2020 00:00	20-May-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2005328-011	EP2005328-012	EP2005328-013	EP2005328-014	EP2005328-015	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	17.5	----	----	----	----	2.76
Arsenic	7440-38-2	0.001	mg/L	----	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	----	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	----	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	----	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	----	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	----	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	----	<0.005	----	----	----	----
Iron	7439-89-6	0.05	mg/L	20.4	----	----	----	----	11.6
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.03	----	----	----	----	0.03
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.03	----	----	----	----	0.03
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.01	----	----	----	----	0.01
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.8	----	----	----	----	0.1
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.8	----	----	----	----	0.1
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.18	----	----	----	----	0.03
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.01	----	----	----	----	0.01
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	----	----	----	----	<0.1
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	17.4	----	----	----	----	34.3
∅ Total Cations	----	0.01	meq/L	15.4	----	----	----	----	32.8
∅ Ionic Balance	----	0.01	%	6.14	----	----	----	----	2.20
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	----	----	<20	<20	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	----	----	<20	<20	----	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW24	RB03	FB03	TBW421	BORR_MW25
Client sampling date / time				20-May-2020 00:00	20-May-2020 00:00	20-May-2020 00:00	20-May-2020 00:00	20-May-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2005328-011	EP2005328-012	EP2005328-013	EP2005328-014	EP2005328-015	
				Result	Result	Result	Result	Result	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued</b>									
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	----	----	<20	<20	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	----	----	<1	<1	----	
Toluene	108-88-3	2	µg/L	----	----	<2	<2	----	
Ethylbenzene	100-41-4	2	µg/L	----	----	<2	<2	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	----	----	<2	<2	----	
ortho-Xylene	95-47-6	2	µg/L	----	----	<2	<2	----	
^ Total Xylenes	----	2	µg/L	----	----	<2	<2	----	
^ Sum of BTEX	----	1	µg/L	----	----	<1	<1	----	
Naphthalene	91-20-3	5	µg/L	----	----	<5	<5	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	----	----	97.0	97.5	----	
Toluene-D8	2037-26-5	2	%	----	----	99.6	100	----	
4-Bromofluorobenzene	460-00-4	2	%	----	----	97.0	96.8	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW20	BORR_MW15	Southern 4	TBW413	BORR_MW12
Client sampling date / time				20-May-2020 00:00	20-May-2020 00:00	21-May-2020 00:00	21-May-2020 00:00	21-May-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2005328-016	EP2005328-017	EP2005328-018	EP2005328-019	EP2005328-020	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.26	6.52	8.79	----	6.88	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	4200	180	14600	----	490	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	2920	124	10600	----	292	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	142	----	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	32	16	243	----	27	
Total Alkalinity as CaCO3	----	1	mg/L	32	16	385	----	27	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	21	11	<1	----	9	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	74	3	218	----	40	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	1320	52	4760	----	133	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	37	4	146	----	5	
Magnesium	7439-95-4	1	mg/L	104	4	341	----	11	
Sodium	7440-23-5	1	mg/L	638	20	2530	----	74	
Potassium	7440-09-7	1	mg/L	5	6	56	----	6	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.02	0.18	0.04	----	0.03	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.004	----	0.002	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	<0.001	
Cobalt	7440-48-4	0.001	mg/L	0.008	<0.001	<0.001	----	<0.001	
Copper	7440-50-8	0.001	mg/L	0.012	0.006	0.012	----	0.009	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	----	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.181	0.004	0.018	----	0.004	
Nickel	7440-02-0	0.001	mg/L	0.008	0.005	0.005	----	0.002	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.041	0.035	0.074	----	0.038	
Iron	7439-89-6	0.05	mg/L	4.26	1.63	0.08	----	1.41	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW20	BORR_MW15	Southern 4	TBW413	BORR_MW12
Client sampling date / time				20-May-2020 00:00	20-May-2020 00:00	21-May-2020 00:00	21-May-2020 00:00	21-May-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2005328-016	EP2005328-017	EP2005328-018	EP2005328-019	EP2005328-020	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	2.18	0.49	0.21	----	0.62	
Iron	7439-89-6	0.05	mg/L	7.10	3.22	0.17	----	3.46	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.03	1.05	<0.01	----	0.14	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.03	1.05	<0.01	----	0.14	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.01	<0.01	----	0.29	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	1.2	9.6	----	0.3	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	<0.1	1.2	9.6	----	0.6	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.02	<0.01	1.07	----	0.02	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.01	<0.01	0.01	----	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	0.1	<0.1	----	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	39.4	1.85	146	----	5.12	
∅ Total Cations	----	0.01	meq/L	38.3	1.55	147	----	4.53	
∅ Ionic Balance	----	0.01	%	1.46	----	0.11	----	6.18	
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	----	----	----	<20	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	----	----	----	<20	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	----	----	----	<20	----	
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	----	----	----	<1	----	
Toluene	108-88-3	2	µg/L	----	----	----	<2	----	
Ethylbenzene	100-41-4	2	µg/L	----	----	----	<2	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	----	----	----	<2	----	





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	BORR_MW20	BORR_MW15	Southern 4	TBW413	BORR_MW12
Client sampling date / time				20-May-2020 00:00	20-May-2020 00:00	21-May-2020 00:00	21-May-2020 00:00	21-May-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2005328-016	EP2005328-017	EP2005328-018	EP2005328-019	EP2005328-020	
				Result	Result	Result	Result	Result	
<b>EP080: BTEXN - Continued</b>									
ortho-Xylene	95-47-6	2	µg/L	----	----	----	<2	----	
^ Total Xylenes	----	2	µg/L	----	----	----	<2	----	
^ Sum of BTEX	----	1	µg/L	----	----	----	<1	----	
Naphthalene	91-20-3	5	µg/L	----	----	----	<5	----	
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	----	----	----	101	----	
Toluene-D8	2037-26-5	2	%	----	----	----	97.7	----	
4-Bromofluorobenzene	460-00-4	2	%	----	----	----	97.0	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MR_MW05	BORR_MW13	North Creek 2	BH32.1	SW09
Client sampling date / time				21-May-2020 00:00	21-May-2020 00:00	21-May-2020 00:00	21-May-2020 00:00	21-May-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2005328-021	EP2005328-022	EP2005328-023	EP2005328-024	EP2005328-025	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	6.34	7.40	7.00	5.96	7.38	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	22500	960	786	1170	708	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	16500	645	467	682	402	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	59	213	13	17	74	
Total Alkalinity as CaCO3	----	1	mg/L	59	213	13	17	74	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	30	14	7	22	11	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	1050	74	34	30	8	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	7700	97	255	390	206	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	191	48	5	5	16	
Magnesium	7439-95-4	1	mg/L	697	29	16	23	9	
Sodium	7440-23-5	1	mg/L	4030	125	119	181	122	
Potassium	7440-09-7	1	mg/L	46	1	7	7	13	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	<0.05	0.03	<0.01	0.03	0.04	
Arsenic	7440-38-2	0.001	mg/L	<0.005	<0.001	<0.001	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.005	<0.001	<0.001	<0.001	<0.001	
Cobalt	7440-48-4	0.001	mg/L	0.006	<0.001	0.001	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	0.008	0.015	<0.001	0.005	0.012	
Lead	7439-92-1	0.001	mg/L	<0.005	<0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.179	0.010	0.057	0.060	0.046	
Nickel	7440-02-0	0.001	mg/L	0.007	0.006	0.002	0.003	0.003	
Selenium	7782-49-2	0.01	mg/L	<0.05	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.043	0.068	0.011	0.035	0.038	
Iron	7439-89-6	0.05	mg/L	4.20	0.45	<0.05	7.18	0.89	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MR_MW05	BORR_MW13	North Creek 2	BH32.1	SW09
Client sampling date / time				21-May-2020 00:00	21-May-2020 00:00	21-May-2020 00:00	21-May-2020 00:00	21-May-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2005328-021	EP2005328-022	EP2005328-023	EP2005328-024	EP2005328-025	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	2.35	1.08	0.08	1.68	1.15	
Iron	7439-89-6	0.05	mg/L	19.0	1.41	0.70	10.8	2.80	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.16	0.02	0.03	0.08	<0.01	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.16	0.02	0.03	0.08	<0.01	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	23.3	0.10	<0.01	<0.01	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.4	2.7	<0.1	0.1	1.1	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	0.4	26.0	0.1	0.1	1.1	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	0.08	0.02	<0.01	0.08	0.10	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	240	8.53	8.16	12.0	7.46	
∅ Total Cations	----	0.01	meq/L	243	10.2	6.92	10.2	7.18	
∅ Ionic Balance	----	0.01	%	0.64	9.12	8.22	7.99	1.90	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW07	SW08	BORR_MW09	BORR_MW10	RB04
Client sampling date / time				21-May-2020 00:00	21-May-2020 00:00	21-May-2020 00:00	21-May-2020 00:00	21-May-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2005328-026	EP2005328-027	EP2005328-028	EP2005328-029	EP2005328-030	
				Result	Result	Result	Result	Result	
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	7.03	7.02	6.71	6.51	----	
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	806	802	247	623	----	
<b>EA015: Total Dissolved Solids dried at 180 ± 5 °C</b>									
Total Dissolved Solids @180°C	----	10	mg/L	482	462	152	424	----	
<b>ED037P: Alkalinity by PC Titrator</b>									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	13	13	12	27	----	
Total Alkalinity as CaCO3	----	1	mg/L	13	13	12	27	----	
<b>ED038A: Acidity</b>									
Acidity as CaCO3	----	1	mg/L	7	7	8	13	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	36	36	20	70	----	
<b>ED045G: Chloride by Discrete Analyser</b>									
Chloride	16887-00-6	1	mg/L	264	264	63	158	----	
<b>ED093F: Dissolved Major Cations</b>									
Calcium	7440-70-2	1	mg/L	6	6	14	12	----	
Magnesium	7439-95-4	1	mg/L	17	16	2	20	----	
Sodium	7440-23-5	1	mg/L	122	122	27	72	----	
Potassium	7440-09-7	1	mg/L	7	7	7	8	----	
<b>EG020F: Dissolved Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.02	0.02	0.03	0.10	----	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	0.002	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	0.002	----	
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.001	<0.001	<0.001	----	
Copper	7440-50-8	0.001	mg/L	0.001	0.017	0.005	0.007	----	
Lead	7439-92-1	0.001	mg/L	<0.001	0.001	<0.001	<0.001	----	
Manganese	7439-96-5	0.001	mg/L	0.059	0.063	0.002	0.015	----	
Nickel	7440-02-0	0.001	mg/L	0.002	0.005	0.004	0.003	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----	
Zinc	7440-66-6	0.005	mg/L	0.013	0.060	0.027	0.050	----	
Iron	7439-89-6	0.05	mg/L	0.43	0.22	0.05	3.58	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SW07	SW08	BORR_MW09	BORR_MW10	RB04
Client sampling date / time				21-May-2020 00:00	21-May-2020 00:00	21-May-2020 00:00	21-May-2020 00:00	21-May-2020 00:00	
Compound	CAS Number	LOR	Unit	EP2005328-026	EP2005328-027	EP2005328-028	EP2005328-029	EP2005328-030	
				Result	Result	Result	Result	Result	
<b>EG020T: Total Metals by ICP-MS</b>									
Aluminium	7429-90-5	0.01	mg/L	0.06	0.06	0.19	0.98	----	
Arsenic	7440-38-2	0.001	mg/L	----	----	----	----	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	----	<0.0001	
Chromium	7440-47-3	0.001	mg/L	----	----	----	----	<0.001	
Copper	7440-50-8	0.001	mg/L	----	----	----	----	<0.001	
Nickel	7440-02-0	0.001	mg/L	----	----	----	----	<0.001	
Lead	7439-92-1	0.001	mg/L	----	----	----	----	<0.001	
Zinc	7440-66-6	0.005	mg/L	----	----	----	----	<0.005	
Iron	7439-89-6	0.05	mg/L	0.65	0.82	0.11	5.11	----	
<b>EK055G: Ammonia as N by Discrete Analyser</b>									
Ammonia as N	7664-41-7	0.01	mg/L	0.02	<0.01	<0.01	0.45	----	
<b>EK055G-NH4: Ammonium as N by DA</b>									
Ammonium as N	14798-03-9_N	0.01	mg/L	0.02	<0.01	<0.01	0.45	----	
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>									
Nitrite + Nitrate as N	----	0.01	mg/L	0.07	0.07	<0.01	<0.01	----	
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	<0.1	0.1	0.9	----	
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>									
^ Total Nitrogen as N	----	0.1	mg/L	<0.1	<0.1	0.1	0.9	----	
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>									
Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----	
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----	
<b>EK085M: Sulfide as S2-</b>									
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	----	
<b>EN055: Ionic Balance</b>									
∅ Total Anions	----	0.01	meq/L	8.46	8.46	2.43	6.45	----	
∅ Total Cations	----	0.01	meq/L	----	----	----	5.77	----	
∅ Total Cations	----	0.01	meq/L	7.18	7.10	2.22	----	----	
∅ Ionic Balance	----	0.01	%	----	----	----	5.57	----	
∅ Ionic Balance	----	0.01	%	8.13	8.70	4.66	----	----	



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID			FB04	----	----	----	----
Client sampling date / time		21-May-2020 00:00			----	----	----	----	----
Compound	CAS Number	LOR	Unit	EP2005328-031	-----	-----	-----	-----	-----
				Result	----	----	----	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>									
C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	----	----	----	----
<sup>^</sup> C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----	----
<b>EP080: BTEXN</b>									
Benzene	71-43-2	1	µg/L	<1	----	----	----	----	----
Toluene	108-88-3	2	µg/L	<2	----	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	----	----	----	----	----
<sup>^</sup> Total Xylenes	----	2	µg/L	<2	----	----	----	----	----
<sup>^</sup> Sum of BTEX	----	1	µg/L	<1	----	----	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>									
1,2-Dichloroethane-D4	17060-07-0	2	%	98.8	----	----	----	----	----
Toluene-D8	2037-26-5	2	%	98.1	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	96.9	----	----	----	----	----



## Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	61	141
Toluene-D8	2037-26-5	73	126
4-Bromofluorobenzene	460-00-4	60	125