Memorandum

Level 7, 177 Pacific Highway
North Sydney NSW 2060 Australia
PO Box 632 North Sydney
NSW 2059 Australia
T +61 2 9928 2100
F +61 2 9928 2444
www.jacobs.com

Subject	Review of Windsor Bridge Replacement Construction Water Quality Results for Potential PASS Influences	Project Name	Windsor Bridge Replacement
Attention	Graham Standen (RMS Senior Project Manager) Karina Rubenis (RMS Senior Environment Officer)	Project No.	IA098200
From	Quan Bui (Jacobs Hydrogeologist) Reviewed by Greg Sheppard (Jacobs Senior Associate Hydrogeologist) / Damien Wagner (Jacobs Environment Manager)		
Date	13/06/2019		
Copies to	Tim Rodham (Jacobs Project Manager), Bruno Dalla- Palma (Jacobs Design Manager), Damien Wagner (Jacobs Environmental Manager), Eilin Edisho (RMS Project Engineer)		

1. Introduction

The Windsor Bridge Replacement (WBR) project involves earthworks that have potential to disturb potential acid sulfate soils (PASS) which can result in negative environmental impacts.

Roads and Maritime Service (Roads and Maritime) has commissioned Jacobs to conduct a specialist review of construction phase surface water and groundwater quality monitoring results in relation to possible impacts from PASS. Data reviewed covers the construction phase period between October 2018 and April 2019.

2. Project Approval Requirements

Condition C24 of the Infrastructure Approval for the WBR states:

The applicant shall prepare and implement a Water Quality Management Program (WQMP) to monitor and minimise the impacts of the project on surface and groundwater quality and resources and wetlands, during construction and operation of the proposed Windsor Bridge, and demolition of the existing bridge.

The Windsor Bridge Replacement Project, Water Quality Management Program was approved by the Department of Planning and Environment on 2 August 2019. Jacobs has considered this plan in conducting this review.

The review also considered the implemented management measures being undertaken onsite for management of PASS in accordance with the WBR Construction Acid Sulfate Material Management Plan (Roads and Maritime, 2018).

3. Potential Acid Sulfate Soils

PASS are naturally occurring soils and sediments containing sulphide minerals (predominantly iron sulphides) that, when disturbed and exposed to oxygen, have potential to generate sulfuric acid which, in groundwater, has potential to dissolve and mobilise iron, aluminium and heavy metals from the aquifer formation. Actual acid sulfate soils are acidic soils where sulphide oxidation and acidification have already occurred. The occurrence of PASS is generally limited to low lying sections of coastal floodplains, rivers and creeks.

A review of the online acid sulfate soils maps from the Hawkesbury Local Environmental Plan for the project area found there was a medium to high risk of encountering PASS for this project within the river sediments. Refer to **Attachment A**, Figure 1.

Acid sulfate soils have been classified based on the likelihood of the acid sulfate soils being present in a particular area and at certain depths. There are five classifications with Class 1 requiring consent for any works; Class 4 for works beyond 2m below natural ground and works which are likely to lower the water table beyond 2m below natural ground; Class 5 for works which are likely to lower table below 1m AHD on adjacent Class 1,2,3 or 4 land.

In the acid sulfate soil planning map, Class 1 land was mapped in the Hawkesbury river sediment, Class 4 in the northern bank of the river, and Class 5 in the southern bank.

3.1 Preconstruction PASS analysis

Jacobs conducted preliminary screening for PASS as part of the Geotechnical Factual Report (Jacobs, 2017). Selected samples of saturated sediment were retrieved from boreholes and sent for laboratory testing. The analysis indicated the presence of PASS at five bores and was catergorised as very low-level acid sulfate soil.

3.2 Management of PASS

The Roads and Maritime (RMS, 2018) Construction Acid Sulfate Materials Management Plan outlines the management of PASS. The Geotechnical Report (Jacobs, 2017), test results indicated that a liming rate of 5kg/T of sediment would be sufficient to neutralize the most acidic sediment likely to be encountered in the project area. The onsite treatment area has been designed to contain any leachate runoff, prevent leachate infiltration and withstand a 1:5 ARI storm event. A conservative management approach was adopted by the Contractor assuming the entirety of the excavated sediment comprised of acid sulfate soil (ASS) or PASS, with post treatment verification testing to be conducted to confirm effective neutralisation. Treated soil is proposed to be buried and incorporated into general fill for the road or disposed of to a suitably licensed waste management facility in accordance with the Acid Sulfate Material Management Plan.

4. Review of Site Data

Water quality data was reviewed from four groundwater monitoring bores and ten surface water sites in the project area. The groundwater monitoring and surface water monitoring captures data from October 2017 to March 2019. Both the surface and groundwater monitoring data collected during the construction period was as per the frequency as stated in the approved WQMP. Groundwater was sampled for field parameters and surface water was sampled with a combination of field and laboratory sampling as per the WQMP.

The location of the surface and groundwater water sampling locations during Pre-construction can be found on Figure 2 in **Attachment B.**

4.1 Surface water

Surface water sampling from the Hawkesbury River within the project area during construction shows no indication of PASS impacts to the surface water quality. Surface water quality samples are summarised in Table 1, and typically display the following characteristics:

- Neutral to alkaline pH;
- Low sulfate content;
- Low alkalinity with available buffering capacity; and,
- Low dissolved metal content.

Averaged water quality parameters are presented in Table 1 below.

Table 1 Average Surface Water Quality Summary

Phase	pH	Sulfate as SO_4 (mg/L)	Total Alkalinity as $CaCO_3$ (mg/L)	Iron (mg/L)	Aluminium (mg/L)
Preconstruction	7.51	21.28	57.9	0.105	0.030
Construction	7.84	14.48	41.6	0.154	0.059
Wet Preconstruction	7.44	23.11	57.9	0.163	0.043
Wet Construction	7.91	15.16	40.84	0.238	0.091
ANZECC 2000 Guidelines	6.5 – 8.5	-	-	0.3	0.055

Surface water samples display mixed indicators of acid generation between the preconstruction and construction phase sampling:

- Increased pH (ASS would result in reduced pH)
- Reduced sulfate (ASS would result in increased sulfate)
- Reduced alkalinity (ASS would consume alkalinity in buffering pH)
- Increased dissolved iron and aluminium (ASS would lead to increased dissolved metals)

Observed pH levels remain within ANZECC guideline values, while dissolved iron and aluminium approach, and exceed, the guideline values respectively.

The location of surface water quality monitoring locations during construction can be found on Figure 3 in **Attachment C.**

4.2 Groundwater

The results of groundwater sampling are provided on Table 2 (pre-construction) and Table 3 (construction phase). A different set of boreholes were monitored due to the decommissioning of some pre-construction boreholes for the construction phase. The location of these boreholes during construction can be found on Figure 4 in **Attachment D**.

Table 2 and Table 3 display the averaged groundwater quality results. It is noted that only insitu field parameters was collected for groundwater quality during the construction phase.

Table 2 Groundwater Quality Pre-Construction Summary

Borehole	pH	Sulfate as SO_4 (mg/L)	Total Alkalinity as $CaCO_3$ (mg/L)	Iron (mg/L)	Aluminum (mg/L)
South Bank	6.86	309.9	726.1	0.145	0.04
North Bank	6.57	2.0	674.6	1.51	0.01
North bore Shallow	6.24	73.5	164.7	20.87	0.16
North bore Deep	6.77	12.8	478.4	6.27	0.02

Table 3 Groundwater Quality Construction Summary

Borehole	pH
South Reference	6.97
South Bank	7.43
North Reference	6.82
North Bank East (deep borehole)	6.83
North Bank West (shallow borehole)	7.08

Groundwater quality results show there may be minor pre-construction impacts from PASS due to elevated levels of iron and metals. Sulfate concentrations are elevated in South Bank samples and in the North Bore – shallow samples with respect to surface water, however the pre-construction conditions are only slightly acidic, with construction phase groundwater quality slightly acidic to neutral, and the groundwater has natural alkalinity with buffering capacity in the form of $CaCO_3$.

According to the assessment guidelines of the Acid Sulfate Soil Management Advisory Committee ASSMAC (1998) in actual acid sulfate soils, the pH of adjacent waters is typically less than 5.5 pH. Based on the available water quality results the soils are not actual acid sulfate soils or impacted by acidification.

The hydrograph for the monitoring bores (refer to Figure 5 and 6, **Attachment E**) indicates groundwater levels have remained stable indicating potential for acid generation due to dewatering is minimal. The brief water level drawdowns that are apparent are due to sampling events and are not a representation of the local water table. The minor fluctuations are due to tidal influences.

Two slightly different sets of data are presented in Figure 5 and Figure 6 as the construction phase monitors a different group of boreholes. Boreholes in the pre – construction phase were sacrificial being located within the footprint of the new bridge.

4.3 Piper Plots

The Piper plots (refer to Figure 7, **Attachment F**) for the boreholes, produced from the pre-construction monitoring data, suggest the soils are typically of the carbonate and chloride type with a buffering capacity that may help mitigate the effects of acidic soils. However, it is noted that for NPRB01S there is a strong trend of decreasing bicarbonate in preference to sulphate, which is an indication of PASS in the pre-construction phase. A similar but less pronounced trend is apparent in some of the data at NPRB01D. This observation is in line with the Geotechnical Factual Report (Jacobs, 2017) which found indications of PASS at these locations and the recommendation for the lime dosing rate of 5kg/T.

4.4 Water Quality Monitoring Results

Construction surface and ground water quality monitoring results are provided in **Attachment G.**

5. Summary

Based on the water quality data collected, there have been no observable impacts from ASS on surface water quality in the Hawkesbury River due to the project. There are also no indications that groundwater level in proximity to the project area have been affected by construction, and the groundwater quality data shows there is no significant change in groundwater pH since construction began. The level of dissolved metals in surface water exceeds the ANZECC 2000 guideline values but this is considered to be pre-existing background levels and not influenced by construction activities.

6. Reference

Acid Sulfate Soil Management Advisory Committee (ASSMAC) (1998), Acid Sulfate Soils Manual, Australia

ANZECC (2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality

CSIRO Australia (2006), Australian Soil Resource Information System ASRIS, accessed 02/12/2011, http://www.asris.csiro.au/mapping/viewer.htm.

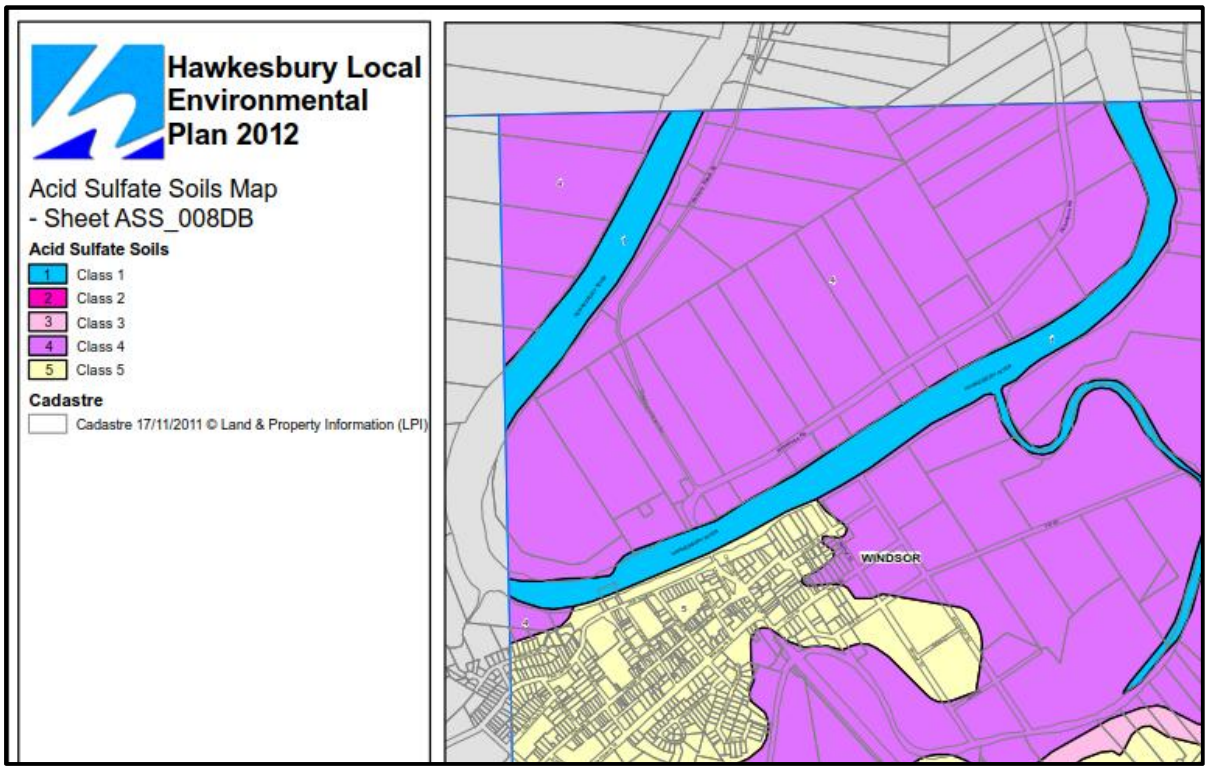
Jacobs (2017), Windsor Bridge Replacement- Detailed Design: Geotechnical Factual Report

Jacobs (2018) Windsor Bridge Replacement Water Quality Monitoring Program Pre-construction report (WQMP)

RMS (2018), Appendix 10 Construction Acid Sulfate Materials Management Plan: Windsor Bridge Replacement Project.

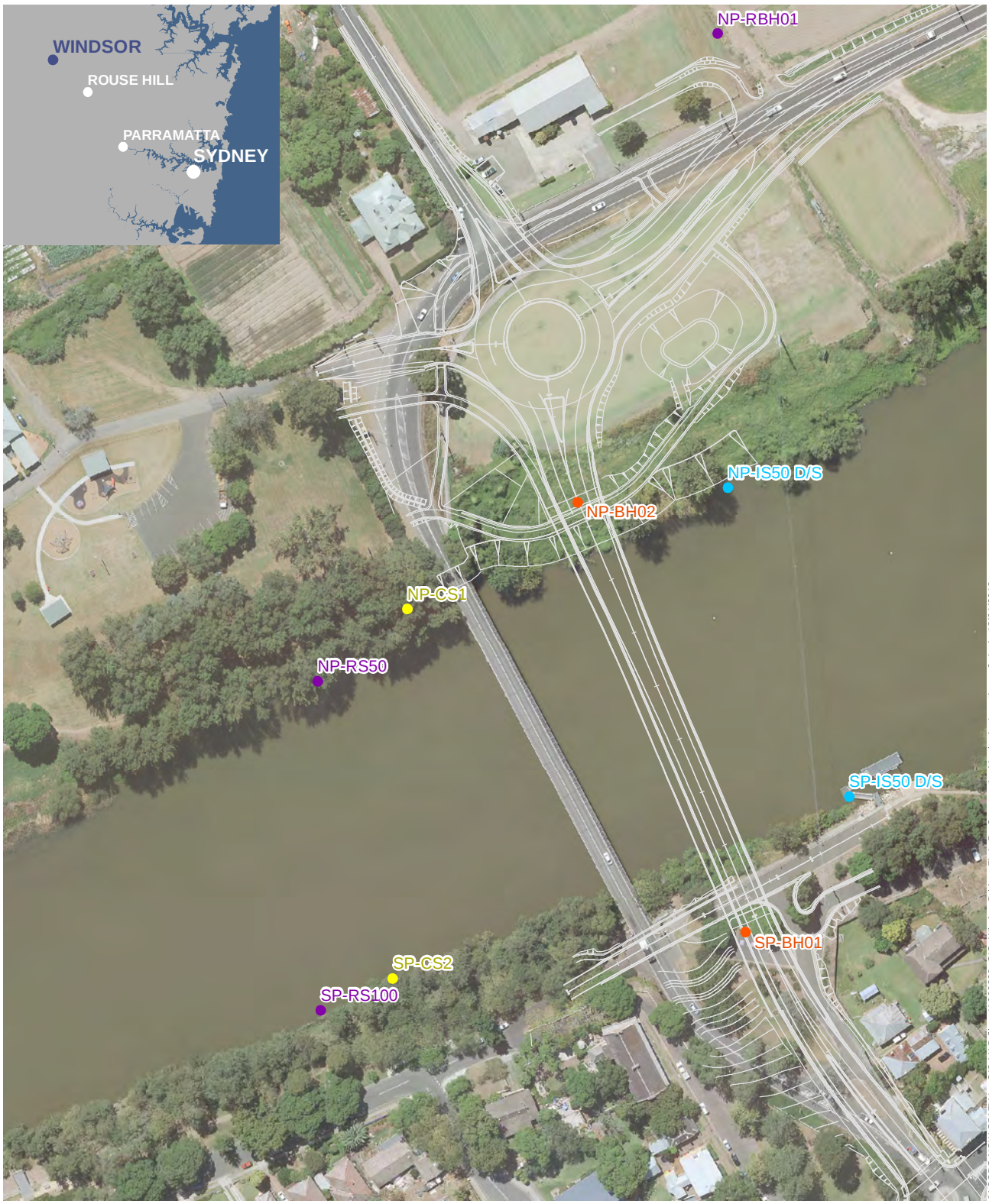
Attachment A

Figure 1 - Online Acid Sulfate Soils Map of Project Area (Hawkesbury Local Environmental Plan 2012)



Attachment B

Figure 2 Pre-Construction Surface and Groundwater Water Quality Monitoring Locations



Legend

Concept design

Monitoring Locations

- Borehole
- Control Site
- Impact Site
- Reference Site

0 20 40 60Metres

1:2,000 @ A4

N

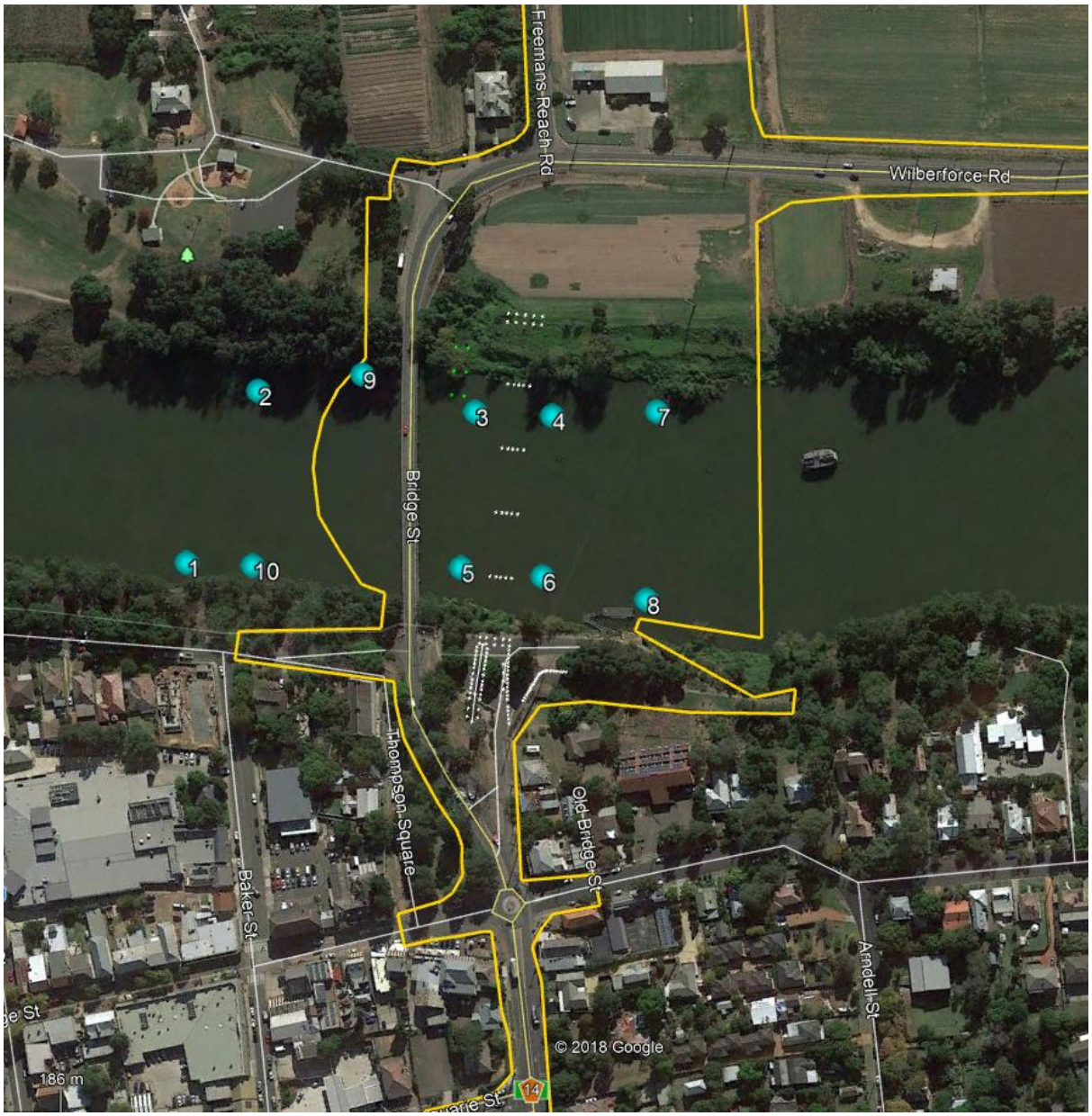
Data sources

Jacobs 2015
Ausimage 2014
RMS 2015
LPI 2015

Figure 2 | Windsor Bridge Pre-construction Monitoring Locations

Attachment C

Figure 3 – Construction Surface Water Quality Monitoring Locations



ATTACHMENT D

Figure 4 Construction Ground Water Monitoring Locations

Legend

Detail design

Groundwater Monitoring Locations and Type

- Pre-construction sacrificial borehole
- Approved construction borehole
- Reference borehole

0 20 40 60Metres

1:2,000 @ A4

N

Data sources

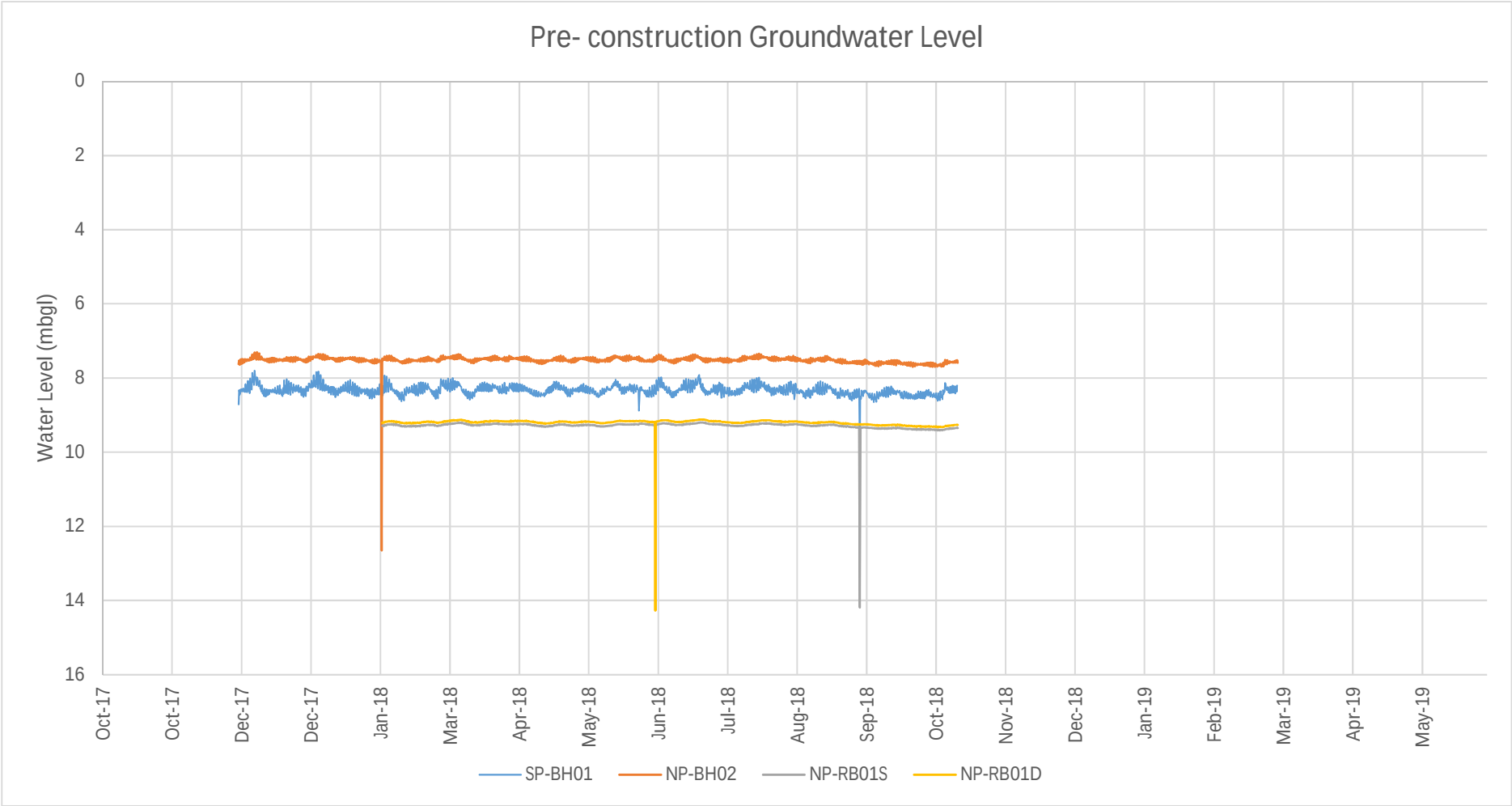
Jacobs 2015
Ausimage 2018
RMS 2015
LPI 2018

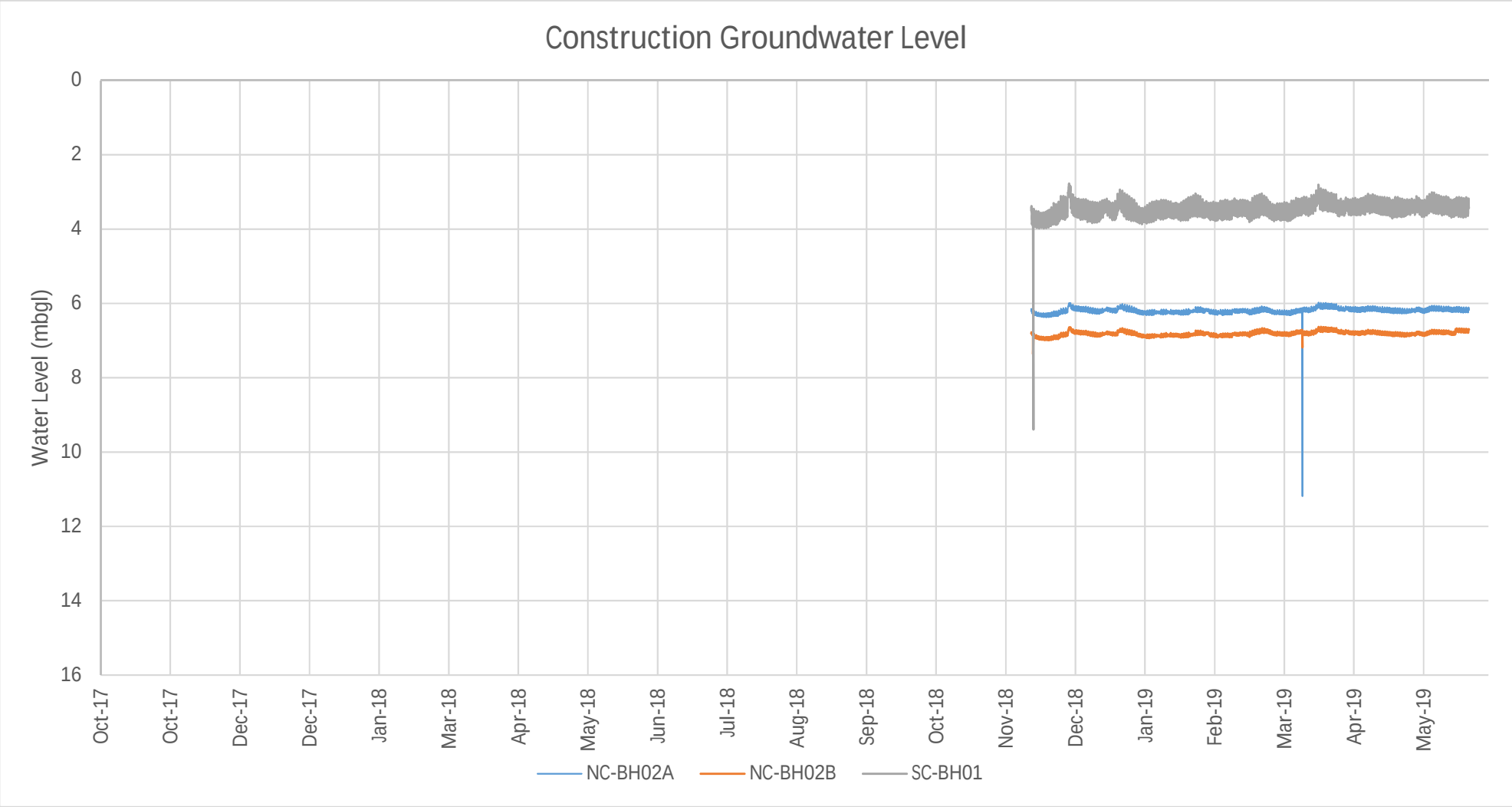
Figure 4 | Windsor Bridge Construction Ground Water Quality Monitoring Locations

Attachment E

Figure 5 Pre-construction Groundwater levels

Figure 6 Construction Groundwater levels

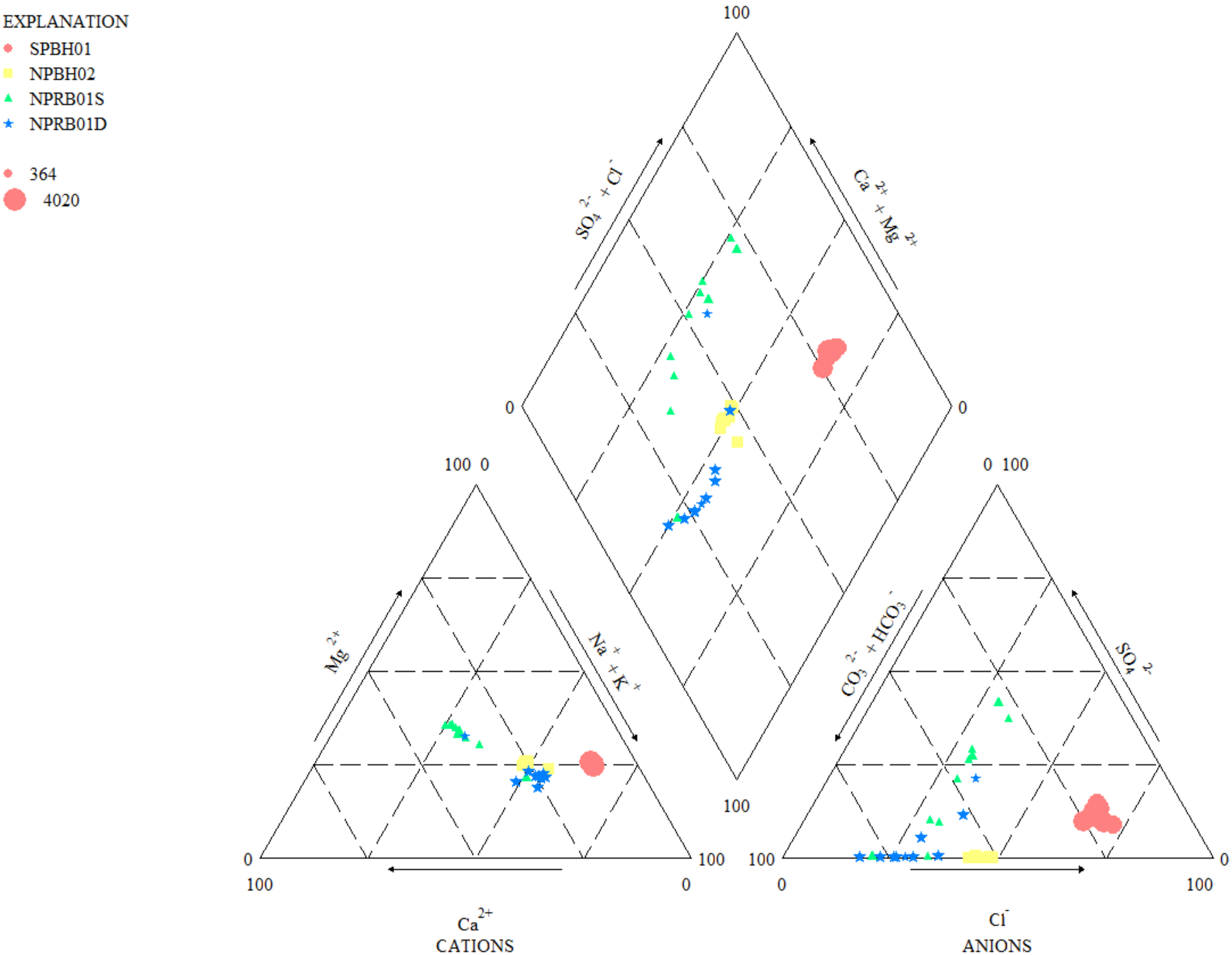

Pre- construction Groundwater Level
Water Level (mbgl)
0
2
4
6
8
10
12
14
16
Oct-17
Oct-17
Dec-17
Dec-17
Jan-18
Mar-18
Apr-18
May-18
Jun-18
Jul-18
Aug-18
Sep-18
Oct-18
Nov-18
Dec-18
Jan-19
Feb-19
Mar-19
Apr-19
May-19
SP-BH01
NP-BH02
NP-RB01S
NP-RB01D


Construction Groundwater Level
Water Level (mbgl)
0
2
4
6
8
10
12
14
16
Oct-17
Oct-17
Dec-17
Dec-17
Jan-18
Mar-18
Apr-18
May-18
Jun-18
Jul-18
Aug-18
Sep-18
Oct-18
Nov-18
Dec-18
Jan-19
Feb-19
Mar-19
Apr-19
May-19
NC-BH02A
NC-BH02B
SC-BH01

Attachment F

Figure 7 Piper plots

Windsor Bridge



Attachment G

Construction Surface and Groundwater Monitoring Results

Site 1 – 50m Upstream South Bank

	Unit	Guideline	31-Oct-18	29-Nov-18	18-Dec-18	21-Dec-18	25-Jan-19	26-Feb-19	15-Mar-19
Weather			dry	wet	dry	wet	dry	dry	wet
pH	pH Units	6.5-8.5	7.710	7.290	8.980	9.000	5.410	7.570	7.43
Turbidity (NTU)	NTU	<50	27.900	89.700	24.700	55.000	11.000	31.600	27.2
Temperature	ºC	NG	23.520	19.330	28.100	27.010	30.200	25.610	26.47
DO %	%	85-110	115.300	171.000	84.400	70.000	86.100	79.500	77
EC (ms/cm)	mS/cm	0.125-2.2	0.298	0.108	0.255	0.241	0.239	0.314	0.432
Redox Potential (mV)	MV	NG		220.000	118.000	140.000	286.000	151.000	120
Salinity (ppt)	ppt	NG	0.140	0.050	0.120	0.110	0.120	0.150	0.21
LAB RESULTS									
Total Dissolved Solids @180Â°C	mg/L	NG	170	143	150	121	129	188	236
Suspended Solids (SS)	mg/L	50	17	34	10	12	12	21	11
Hydroxide Alkalinity as CaCO3	mg/L	NG	<1	<1	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	mg/L	NG	<1	<1	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	mg/L	NG	40	12	31	39	45	54	67
Total Alkalinity as CaCO3	mg/L	NG	40	12	31	39	45	54	67
Sulfate as SO4 - Turbidimetric	mg/L	NG	16	5	12	13	11	16	26
Chloride	mg/L	NG	53	21	50	43	50	53	71
Dissolved Major Cations									
Calcium	mg/L	NG	8	3	8	7	7	10	13
Magnesium	mg/L	NG	6	2	6	6	5	6	8
Sodium	mg/L	NG	36	14	32	30	32	39	57
Potassium	mg/L	NG	4	2	3	3	3	4	6
Dissolved Metals									
Aluminium	mg/L	0.055	0.02	0.23	0.02	0.07	0.02	0.03	0.03
Antimony	mg/L	NG	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	mg/L	0.024	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	mg/L	NG	0.025	0.013	0.025	0.022	0.025	0.031	0.039
Cadmium	mg/L	0.0002	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001
Chromium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	mg/L	0.0014	<0.001	0.001	<0.001	0.002	<0.001	0.001	0.001
Lead	mg/L	0.0034	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lithium	mg/L	NG	0.006	0.003	0.009	0.008	0.012	0.008	0.008
Manganese	mg/L	1.9	0.004	0.063	<0.001	0.005	0.004	0.015	0.012
Nickel	mg/L	0.011	<0.001	0.002	<0.001	0.003	0.001	0.002	0.002
Selenium	mg/L	0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	mg/L	0.00005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	mg/L	0.008	<0.005	0.012	<0.005	<0.005	<0.005	<0.005	<0.005
Boron	mg/L	0.37	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Iron	mg/L	0.3	0.05	0.36	0.12	0.14	0.1	0.06	<0.05
Dissolved Mercury by FIMS									

	Unit	Guideline	31-Oct-18	29-Nov-18	18-Dec-18	21-Dec-18	25-Jan-19	26-Feb-19	15-Mar-19
Mercury	mg/L	0.00006	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	mg/L	0.04	0.41	0.18	0.19	0.26	0.12	0.19	0.4
Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	mg/L	NG	0.3	0.6	0.3	0.2	0.3	0.6	0.4
Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
Total Nitrogen as N	mg/L	0.35	0.7	0.8	0.5	0.5	0.4	0.8	0.8
Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	mg/L	0.025	0.05	0.06	<0.01	0.03	<0.01	0.02	0.02
Ionic Balance		NG							
Total Anions	meq/L	NG	2.63	0.94	2.28	2.26	2.54	2.91	3.88
Total Cations	meq/L	NG	2.56	0.97	2.36	2.22	2.23	2.79	3.94
									0.73
Organochlorine Pesticides (OC)									
alpha-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
beta-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
gamma-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
delta-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor	Âµg/L	0.09	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Aldrin	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor epoxide	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
trans-Chlordane	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
alpha-Endosulfan	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
cis-Chlordane	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dieldrin	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4.4`-DDE	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin	Âµg/L	0.01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
beta-Endosulfan	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4.4`-DDD	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin aldehyde	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endosulfan sulfate	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4.4`-DDT	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Endrin ketone	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Methoxychlor	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Chlordane (sum)	Âµg/L	0.03	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of DDD + DDE + DDT	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of Aldrin + Dieldrin	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

	Unit	Guideline	31-Oct-18	29-Nov-18	18-Dec-18	21-Dec-18	25-Jan-19	26-Feb-19	15-Mar-19
Organophosphorus Pesticides (OP)									
Dichlorvos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	Âµg/L	0.01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	Âµg/L	0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	Âµg/L	0.01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	Âµg/L	0.004	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos Methyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Organochlorine Pesticide Surrogate									
Dibromo-DDE	%		70.6	94.6	76.4	113	88.7	84.2	89.6
Organophosphorus Pesticide Surrogate									
DEF	%		76.7	77.7	105	80.5	90	72.9	68.5
Polynuclear Aromatic Hydrocarbons									
Naphthalene	Âµg/L	16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b+j)fluoranthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.6
Indeno(1.2.3.cd)pyrene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Sum of polycyclic aromatic hydrocarbons	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

	Unit	Guideline	31-Oct-18	29-Nov-18	18-Dec-18	21-Dec-18	25-Jan-19	26-Feb-19	15-Mar-19
Benzo(a)pyrene TEQ (zero)	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenolic Compound Surrogates									
Phenol-d6	%		22.6	25.2	23.8	25.4	25.8	28.4	41.1
2-Chlorophenol-D4	%		55.9	58.4	60.2	62.6	67.6	69.5	64.8
2.4.6-Tribromophenol	%		58.8	59.2	66.7	52.4	71	40.7	74.4
PAH Surrogates									
2-Fluorobiphenyl	%		84.8	93.3	97	80	86.9	68.2	69.7
Anthracene-d10	%		90.9	82	83.9	91.3	94.3	88.1	90.8
4-Terphenyl-d14	%		91.8	91.8	92.8	92.1	89.2	95.7	95.5
Total Petroleum Hydrocarbons									
C6 - C9 Fraction	Âµg/L	NG	<20	<20	<20	<20	<20	<20	<20
C10 - C14 Fraction	Âµg/L	NG	<50	<50	<50	<50	<50	<50	<50
C15 - C28 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
C29 - C36 Fraction	Âµg/L	NG	<50	<50	<50	<50	<50	<50	<50
C10 - C36 Fraction (sum)	Âµg/L	NG	<50	<50	<50	<50	<50	<50	<50
Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	Âµg/L	NG	<20	<20	<20	<20	<20	<20	<20
C6 - C10 Fraction minus BTEX (F1)	Âµg/L	NG	<20	<20	<20	<20	<20	<20	<20
>C10 - C16 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C16 - C34 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C34 - C40 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C10 - C40 Fraction (sum)	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C10 - C16 Fraction minus Naphthalene (F2)	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
BTEXN									
Benzene	Âµg/L	950	<1	<1	<1	<1	<1	<1	<1
Toluene	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
Ethylbenzene	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
meta- & para-Xylene	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
ortho-Xylene	Âµg/L	350	<2	<2	<2	<2	<2	<2	<2
Total Xylenes	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
Sum of BTEX	Âµg/L	NG	<1	<1	<1	<1	<1	<1	<1
Naphthalene	Âµg/L	NG	<5	<5	<5	<5	<5	<5	<5
TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	%		106	94.4	95.6	106	91.7	88.2	104
Toluene-D8	%		99.3	109	104	100	99.2	110	102
4-Bromofluorobenzene	%		100	104	97.4	88.3	95.5	116	96.7

Site 2 – 100m Upstream North Bank

	Unit	Guideline	31-Jan-18	29-Nov-18	18-Dec-18	21-Dec-18	25-Jan-19	26-Feb-19	15-Mar-19
Weather			dry	wet	dry	wet	dry	dry	
pH	pH Units	6.5-8.5	8.000	7.230	8.890	8.860	6.630	7.520	7.53
Turbidity (NTU)	NTU	<50	25.800	89.900	34.000	69.700	14.300	36.900	30
Temperature	ºC	NG	23.250	19.260	28.140	29.190	30.270	25.630	26.26
DO %	%	85-110	100.570	141.200	90.200	68.600	81.000	74.800	105.7
EC (ms/cm)	mS/cm	0.125-2.2	0.305	0.109	0.261	149.000	0.267	0.330	0.444
Redox Potential (mV)	MV	NG		221.000	94.000	0.255	266.000	177.000	117
Salinity (ppt)	ppt	NG	0.140	0.050	0.120	0.120	0.130	0.160	0.21
LAB RESULTS									
Total Dissolved Solids @180Â°C	mg/L	NG	166	89	151	152	132	191	230
Suspended Solids (SS)	mg/L	50	14	35	10	16	12	25	10
Hydroxide Alkalinity as CaCO3	mg/L	NG	<1	<1	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	mg/L	NG	<1	<1	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	mg/L	NG	40	12	36	40	44	55	67
Total Alkalinity as CaCO3	mg/L	NG	40	12	36	40	44	55	67
Sulfate as SO4 - Turbidimetric	mg/L	NG	15	5	12	13	12	17	26
Chloride	mg/L	NG	51	22	47	44	53	54	73
Dissolved Major Cations									
Calcium	mg/L	NG	9	3	8	7	7	10	13
Magnesium	mg/L	NG	6	2	6	6	5	7	8
Sodium	mg/L	NG	35	13	33	31	32	43	59
Potassium	mg/L	NG	4	2	4	3	3	4	6
Dissolved Metals									
Aluminium	mg/L	0.055	0.03	0.19	0.03	0.09	0.02	0.03	0.02
Antimony	mg/L	NG	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	mg/L	0.024	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	mg/L	NG	0.025	0.012	0.026	0.022	0.026	0.032	0.04
Cadmium	mg/L	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	mg/L	0.0014	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001
Lead	mg/L	0.0034	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lithium	mg/L	NG	0.005	0.003	0.008	0.008	0.012	0.008	0.008
Manganese	mg/L	1.9	0.002	0.061	<0.001	0.008	0.008	0.02	0.012
Nickel	mg/L	0.011	<0.001	0.002	0.001	<0.001	0.001	0.001	0.002
Selenium	mg/L	0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	mg/L	0.00005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	mg/L	0.008	<0.005	0.005	<0.005	<0.005	0.011	<0.005	<0.005
Boron	mg/L	0.37	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Iron	mg/L	0.3	0.05	0.34	0.14	0.18	0.16	<0.05	<0.05
Dissolved Mercury by FIMS									

	Unit	Guideline	31-Jan-18	29-Nov-18	18-Dec-18	21-Dec-18	25-Jan-19	26-Feb-19	15-Mar-19
Mercury	mg/L	0.00006	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	mg/L	0.04	0.4	0.17	0.23	0.23	0.13	0.22	0.41
Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	mg/L	NG	0.4	0.8	0.2	0.2	0.2	0.4	0.3
Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
Total Nitrogen as N	mg/L	0.35	0.8	1	0.4	0.4	0.3	0.6	0.7
Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	mg/L	0.025	0.02	0.06	0.02	0.07	0.01	0.02	0.02
Ionic Balance		NG							
Total Anions	meq/L	NG	2.55	0.96	2.29	2.31	2.62	2.98	3.94
Total Cations	meq/L	NG	2.57	0.93	2.43	2.27	2.23	3.05	4.03
									1.1
Organochlorine Pesticides (OC)									
alpha-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
beta-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
gamma-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
delta-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor	Âµg/L	0.09	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Aldrin	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor epoxide	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
trans-Chlordane	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
alpha-Endosulfan	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
cis-Chlordane	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dieldrin	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4.4`-DDE	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin	Âµg/L	0.01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
beta-Endosulfan	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4.4`-DDD	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin aldehyde	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endosulfan sulfate	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4.4`-DDT	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Endrin ketone	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Methoxychlor	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Chlordane (sum)	Âµg/L	0.03	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of DDD + DDE + DDT	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of Aldrin + Dieldrin	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

	Unit	Guideline	31-Jan-18	29-Nov-18	18-Dec-18	21-Dec-18	25-Jan-19	26-Feb-19	15-Mar-19
Organophosphorus Pesticides (OP)									
Dichlorvos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	Âµg/L	0.01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	Âµg/L	0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	Âµg/L	0.01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	Âµg/L	0.004	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos Methyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Organochlorine Pesticide Surrogate									
Dibromo-DDE	%		80.4	85	70.6	103	108	86.3	86.6
Organophosphorus Pesticide Surrogate									
DEF	%		85.8	106	75.7	85.8	105	79.2	67.6
Polynuclear Aromatic Hydrocarbons									
Naphthalene	Âµg/L	16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b+j)fluoranthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.6
Indeno(1.2.3.cd)pyrene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Sum of polycyclic aromatic hydrocarbons	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

	Unit	Guideline	31-Jan-18	29-Nov-18	18-Dec-18	21-Dec-18	25-Jan-19	26-Feb-19	15-Mar-19
Benzo(a)pyrene TEQ (zero)	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenolic Compound Surrogates									
Phenol-d6	%		22.9	23.8	22.4	19	26.7	28.5	45.4
2-Chlorophenol-D4	%		54.8	57	54.6	48.1	64.1	63.2	72.9
2.4.6-Tribromophenol	%		49.5	41.4	54.4	49.4	82.5	48.4	78.4
PAH Surrogates									
2-Fluorobiphenyl	%		85	69.4	87.7	68.6	89.4	86.7	78.8
Anthracene-d10	%		89.7	94.2	88.7	97.1	94.1	92.1	91
4-Terphenyl-d14	%		84.4	74.9	87.1	93.2	96.3	91.2	93.9
Total Petroleum Hydrocarbons									
C6 - C9 Fraction	Âµg/L	NG	<20	<20	<20	<20	<20	<20	<20
C10 - C14 Fraction	Âµg/L	NG	<50	<50	<50	<50	<50	<50	<50
C15 - C28 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
C29 - C36 Fraction	Âµg/L	NG	<50	<50	<50	<50	<50	<50	<50
C10 - C36 Fraction (sum)	Âµg/L	NG	<50	<50	<50	<50	<50	<50	<50
Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	Âµg/L	NG	<20	<20	<20	<20	<20	<20	<20
C6 - C10 Fraction minus BTEX (F1)	Âµg/L	NG	<20	<20	<20	<20	<20	<20	<20
>C10 - C16 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C16 - C34 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C34 - C40 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C10 - C40 Fraction (sum)	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C10 - C16 Fraction minus Naphthalene (F2)	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
BTEXN									
Benzene	Âµg/L	950	<1	<1	<1	<1	<1	<1	<1
Toluene	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
Ethylbenzene	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
meta- & para-Xylene	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
ortho-Xylene	Âµg/L	350	<2	<2	<2	<2	<2	<2	<2
Total Xylenes	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
Sum of BTEX	Âµg/L	NG	<1	<1	<1	<1	<1	<1	<1
Naphthalene	Âµg/L	NG	<5	<5	<5	<5	<5	<5	<5
TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	%		106	94.3	97.8	110	93.4	83.4	95
Toluene-D8	%		97.2	111	111	105	97.3	97.9	89.6
4-Bromofluorobenzene	%		99.5	104	104	94.2	93.8	102	88

Site 3 – 10mDownstream of Bridge, North Bank

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	26/02/2019	15/03/2019
Weather			dry	wet	dry	wet	dry	dry	
pH	pH Units	6.5-8.5	7.450	7.260	8.860	8.990	7.620	7.530	7.47
Turbidity (NTU)	NTU	<50	24.300	87.200	88.200	60.900	14.200	35.400	32.1
Temperature	ºC	NG	23.820	19.230	27.650	27.240	30.410	25.680	26.32
DO %	%	85-110	92.300	121.100	105.400	70.100	82.500	75.900	100.3
EC (ms/cm)	mS/cm	0.125-2.2	0.228	0.108	0.187	0.248	0.236	0.328	0.461
Redox Potential (mV)	MV	NG		224.000	130.000	138.000	198.000	194.000	130
Salinity (ppt)	ppt	NG	0.140	0.050	0.090	0.120	0.120	0.160	0.22
LAB RESULTS									
Total Dissolved Solids @180Â°C	mg/L	NG	164	85	149	135	133	199	240
Suspended Solids (SS)	mg/L	50	16	34	12	14	10	25	14
Hydroxide Alkalinity as CaCO3	mg/L	NG	<1	<1	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	mg/L	NG	<1	<1	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	mg/L	NG	40	12	35	39	40	54	70
Total Alkalinity as CaCO3	mg/L	NG	40	12	35	39	40	54	70
Sulfate as SO4 - Turbidimetric	mg/L	NG	16	5	11	13	13	17	28
Chloride	mg/L	NG	52	20	44	44	51	55	77
Dissolved Major Cations									
Calcium	mg/L	NG	8	3	8	7	8	10	14
Magnesium	mg/L	NG	6	2	6	6	5	7	8
Sodium	mg/L	NG	36	13	32	31	32	42	63
Potassium	mg/L	NG	4	2	3	3	3	4	7
Dissolved Metals									
Aluminium	mg/L	0.055	0.02	0.21	0.02	0.06	0.03	0.02	0.02
Antimony	mg/L	NG	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	mg/L	0.024	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	mg/L	NG	0.025	0.012	0.026	0.021	0.026	0.033	0.041
Cadmium	mg/L	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	mg/L	0.0014	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001
Lead	mg/L	0.0034	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lithium	mg/L	NG	0.006	0.003	0.009	0.008	0.012	0.008	0.007
Manganese	mg/L	1.9	0.002	0.062	<0.001	0.006	0.005	0.025	0.015
Nickel	mg/L	0.011	0.001	0.001	<0.001	<0.001	0.001	0.001	0.001
Selenium	mg/L	0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	mg/L	0.00005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	mg/L	0.008	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Boron	mg/L	0.37	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Iron	mg/L	0.3	0.05	0.37	0.11	0.15	0.11	0.05	<0.05
Dissolved Mercury by FIMS									

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	26/02/2019	15/03/2019
Mercury	mg/L	0.00006	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	mg/L	0.04	0.44	0.17	0.2	0.24	0.12	0.21	0.46
Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	mg/L	NG	0.4	0.7	0.2	0.2	0.1	0.3	0.3
Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
Total Nitrogen as N	mg/L	0.35	0.8	0.9	0.4	0.4	0.2	0.5	0.8
Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	mg/L	0.025	0.04	0.06	<0.01	0.07	<0.01	0.02	0.02
Ionic Balance		NG							
Total Anions	meq/L	NG	2.6	0.91	2.17	2.29	2.51	2.98	4.15
Total Cations	meq/L	NG	2.56	0.93	2.36	2.27	2.28	3	4.28
									1.46
Organochlorine Pesticides (OC)									
alpha-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
beta-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
gamma-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
delta-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor	Âµg/L	0.09	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Aldrin	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor epoxide	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
trans-Chlordane	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
alpha-Endosulfan	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
cis-Chlordane	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dieldrin	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4.4`-DDE	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin	Âµg/L	0.01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
beta-Endosulfan	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4.4`-DDD	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin aldehyde	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endosulfan sulfate	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4.4`-DDT	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Endrin ketone	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Methoxychlor	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Chlordane (sum)	Âµg/L	0.03	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of DDD + DDE + DDT	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of Aldrin + Dieldrin	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	26/02/2019	15/03/2019
Organophosphorus Pesticides (OP)									
Dichlorvos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	Âµg/L	0.01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	Âµg/L	0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	Âµg/L	0.01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	Âµg/L	0.004	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos Methyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Organochlorine Pesticide Surrogate									
Dibromo-DDE	%		87.4	87.7	75.4	84.5	74.2	93.2	90.6
Organophosphorus Pesticide Surrogate									
DEF	%		86.4	87.9	78.6	65.7	67.8	85.1	71
Polynuclear Aromatic Hydrocarbons									
Naphthalene	Âµg/L	16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b+j)fluoranthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Sum of polycyclic aromatic hydrocarbons	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	26/02/2019	15/03/2019
Benzo(a)pyrene TEQ (zero)	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenolic Compound Surrogates									
Phenol-d6	%		25.8	23.9	21.3	22.5	26	28.1	40.8
2-Chlorophenol-D4	%		61.4	54.3	49.9	53.4	58.3	69.4	73.2
2.4.6-Tribromophenol	%		42.8	47	66.9	53.6	51.9	67.9	77.8
PAH Surrogates									
2-Fluorobiphenyl	%		92.6	92.8	90.6	73.5	88	93.5	77.7
Anthracene-d10	%		84.8	91.1	92.4	99.2	87.2	100	93.1
4-Terphenyl-d14	%		98	94.9	95.5	90.1	77.1	96.6	103
Total Petroleum Hydrocarbons									
C6 - C9 Fraction	Âµg/L	NG	<20	<20	<20	<20	<20	<20	<20
C10 - C14 Fraction	Âµg/L	NG	<50	<50	<50	<50	<50	<50	<50
C15 - C28 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
C29 - C36 Fraction	Âµg/L	NG	<50	<50	<50	<50	<50	<50	<50
C10 - C36 Fraction (sum)	Âµg/L	NG	<50	<50	<50	<50	<50	<50	<50
Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	Âµg/L	NG	<20	<20	<20	<20	<20	<20	<20
C6 - C10 Fraction minus BTEX (F1)	Âµg/L	NG	<20	<20	<20	<20	<20	<20	<20
>C10 - C16 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C16 - C34 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C34 - C40 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C10 - C40 Fraction (sum)	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C10 - C16 Fraction minus Naphthalene (F2)	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
BTEXN									
Benzene	Âµg/L	950	<1	<1	<1	<1	<1	<1	<1
Toluene	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
Ethylbenzene	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
meta- & para-Xylene	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
ortho-Xylene	Âµg/L	350	<2	<2	<2	<2	<2	<2	<2
Total Xylenes	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
Sum of BTEX	Âµg/L	NG	<1	<1	<1	<1	<1	<1	<1
Naphthalene	Âµg/L	NG	<5	<5	<5	<5	<5	<5	<5
TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	%		104	92.9	99.2	110	95.6	88.7	95.4
Toluene-D8	%		98.3	110	109	99	107	104	91.2
4-Bromofluorobenzene	%		101	103	102	90.7	95.3	108	89.2

Site 4 10m Downstream of Bridge, North Bank

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	26/02/2019	15//2019
Weather			dry	wet	dry	wet	dry	dry	
pH	pH Units	6.5-8.5	7.450	7.110	8.910	8.990	7.330	7.500	7.47
Turbidity (NTU)	NTU	<50	22.100	87.600	26.400	57.700	12.300	34.100	34.7
Temperature	ºC	NG	23.860	19.470	28.100	27.240	30.410	25.610	26.22
DO %	%	85-110	100.300	91.800	84.000	69.600	94.300	75.400	115
EC (ms/cm)	mS/cm	0.125-2.2	0.290	0.116	0.253	0.247	0.266	0.321	0.481
Redox Potential (mV)	MV	NG		225.000	141.000	138.000	193.000	201.000	134
Salinity (ppt)	ppt	NG	0.140	0.050	0.120	0.120	0.130	0.150	0.23
LAB RESULTS									
Total Dissolved Solids @180Â°C	mg/L	NG	188	90	147	118	146	187	246
Suspended Solids (SS)	mg/L	50	14	33	13	12	13	25	13
Hydroxide Alkalinity as CaCO3	mg/L	NG	<1	<1	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	mg/L	NG	<1	<1	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	mg/L	NG	40	14	35	39	44	49	72
Total Alkalinity as CaCO3	mg/L	NG	40	14	35	39	44	49	72
Sulfate as SO4 - Turbidimetric	mg/L	NG	16	5	11	13	12	17	28
Chloride	mg/L	NG	52	22	44	44	52	52	78
Dissolved Major Cations									
Calcium	mg/L	NG	8	3	7	7	7	10	14
Magnesium	mg/L	NG	6	2	5	6	5	7	8
Sodium	mg/L	NG	35	14	30	31	32	41	62
Potassium	mg/L	NG	3	2	3	3	3	4	7
Dissolved Metals									
Aluminium	mg/L	0.055	0.02	0.21	0.02	0.06	0.03	0.03	0.03
Antimony	mg/L	NG	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	mg/L	0.024	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	mg/L	NG	0.027	0.013	0.025	0.022	0.025	0.032	0.042
Cadmium	mg/L	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	mg/L	0.0014	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	0.001
Lead	mg/L	0.0034	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lithium	mg/L	NG	0.005	0.004	0.009	0.008	0.012	0.008	0.008
Manganese	mg/L	1.9	0.002	0.058	<0.001	0.006	0.004	0.017	0.016
Nickel	mg/L	0.011	0.001	0.001	0.002	0.001	0.001	0.001	0.002
Selenium	mg/L	0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	mg/L	0.00005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	mg/L	0.008	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Boron	mg/L	0.37	<0.05	0.23	<0.05	<0.05	<0.05	<0.05	<0.05
Iron	mg/L	0.3	0.06	0.33	0.11	0.16	0.11	0.05	<0.05
Dissolved Mercury by FIMS									

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	26/02/2019	15//2019
Mercury	mg/L	0.00006	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	mg/L	0.04	0.4	0.19	0.2	0.24	0.13	0.2	0.48
Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	mg/L	NG	0.3	0.5	0.2	0.3	0.2	0.3	0.4
Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
Total Nitrogen as N	mg/L	0.35	0.7	0.7	0.4	0.5	0.3	0.5	0.9
Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	mg/L	0.025	0.02	0.06	<0.01	0.05	0.01	0.02	0.02
Ionic Balance		NG							
Total Anions	meq/L	NG	2.6	1	2.17	2.29	2.6	2.8	4.22
Total Cations	meq/L	NG	2.49	0.97	2.14	2.27	2.23	2.96	4.23
									0.13
Organochlorine Pesticides (OC)									
alpha-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
beta-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
gamma-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
delta-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor	Âµg/L	0.09	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Aldrin	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor epoxide	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
trans-Chlordane	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
alpha-Endosulfan	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
cis-Chlordane	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dieldrin	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4.4`-DDE	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin	Âµg/L	0.01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
beta-Endosulfan	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4.4`-DDD	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin aldehyde	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endosulfan sulfate	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4.4`-DDT	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Endrin ketone	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Methoxychlor	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Chlordane (sum)	Âµg/L	0.03	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of DDD + DDE + DDT	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of Aldrin + Dieldrin	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	26/02/2019	15//2019
Organophosphorus Pesticides (OP)									
Dichlorvos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	Âµg/L	0.01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	Âµg/L	0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	Âµg/L	0.01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	Âµg/L	0.004	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos Methyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Organochlorine Pesticide Surrogate									
Dibromo-DDE	%		76.2	93.4	89.2	89.3	115	64.9	87.4
Organophosphorus Pesticide Surrogate									
DEF	%		68.9	81.7	71.3	85.8	113	65.5	69.1
Polynuclear Aromatic Hydrocarbons									
Naphthalene	Âµg/L	16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b+j)fluoranthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Sum of polycyclic aromatic hydrocarbons	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	26/02/2019	15//2019
Benzo(a)pyrene TEQ (zero)	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenolic Compound Surrogates									
Phenol-d6	%		21	21.5	18.5	23.2	23	27.4	38.8
2-Chlorophenol-D4	%		51.8	47.3	47.5	59.2	64.2	63.6	67.6
2.4.6-Tribromophenol	%		53.3	48.1	63.7	45.5	91.8	45.6	76.9
PAH Surrogates									
2-Fluorobiphenyl	%		90.7	82	98.3	82.8	89.5	85	77.2
Anthracene-d10	%		80	83.3	79.7	82.8	95.7	84.6	91.9
4-Terphenyl-d14	%		81.4	92.7	89.7	90.7	96.9	78.6	94.5
Total Petroleum Hydrocarbons									
C6 - C9 Fraction	Âµg/L	NG	<20	<20	<20	<20	<20	<20	<20
C10 - C14 Fraction	Âµg/L	NG	<50	<50	<50	<50	<50	<50	<50
C15 - C28 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
C29 - C36 Fraction	Âµg/L	NG	<50	<50	<50	<50	<50	<50	<50
C10 - C36 Fraction (sum)	Âµg/L	NG	<50	<50	<50	<50	<50	<50	<50
Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	Âµg/L	NG	<20	<20	<20	<20	<20	<20	<20
C6 - C10 Fraction minus BTEX (F1)	Âµg/L	NG	<20	<20	<20	<20	<20	<20	<20
>C10 - C16 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C16 - C34 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C34 - C40 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C10 - C40 Fraction (sum)	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C10 - C16 Fraction minus Naphthalene (F2)	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
BTEXN									
Benzene	Âµg/L	950	<1	<1	<1	<1	<1	<1	<1
Toluene	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
Ethylbenzene	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
meta- & para-Xylene	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
ortho-Xylene	Âµg/L	350	<2	<2	<2	<2	<2	<2	<2
Total Xylenes	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
Sum of BTEX	Âµg/L	NG	<1	<1	<1	<1	<1	<1	<1
Naphthalene	Âµg/L	NG	<5	<5	<5	<5	<5	<5	<5
TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	%		108	88.1	102	104	98.8	78.3	92
Toluene-D8	%		96	103	114	90.3	117	88.3	82.3
4-Bromofluorobenzene	%		101	97.4	103	83.5	103	94.2	85.2

Site 5 – 10m Upstream of Bridge, South Bank

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	26/02/2019	15/03/2019
Weather			dry	wet	dry	wet	dry	dry	
pH	pH Units	6.5-8.5	7.440	7.230	8.990	8.920	7.190	7.533	7.48
Turbidity (NTU)	NTU	<50	22.300	90.300	27.600	52.500	11.800	32.900	28.2
Temperature	ºC	NG	23.970	19.420	28.260	27.330	30.320	25.640	26.38
DO %	%	85-110	89.700	90.950	78.100	67.100	85.600	80.100	75.1
EC (ms/cm)	mS/cm	0.125-2.2	0.292	0.119	0.265	0.244	0.250	0.315	0.441
Redox Potential (mV)	MV	NG		225.000	146.000	142.000	200.000	205.000	137
Salinity (ppt)	ppt	NG	0.140	0.050	0.120	0.110	0.110	0.150	0.21
LAB RESULTS									
Total Dissolved Solids @180Â°C	mg/L	NG	190	111	142	116	123	187	235
Suspended Solids (SS)	mg/L	50	17	37	6	7	11	24	11
Hydroxide Alkalinity as CaCO3	mg/L	NG	<1	<1	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	mg/L	NG	<1	<1	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	mg/L	NG	40	13	35	39	43	49	67
Total Alkalinity as CaCO3	mg/L	NG	40	13	35	39	43	49	67
Sulfate as SO4 - Turbidimetric	mg/L	NG	14	5	11	12	12	16	26
Chloride	mg/L	NG	52	22	44	43	50	52	73
Dissolved Major Cations									
Calcium	mg/L	NG	8	3	8	7	7	10	13
Magnesium	mg/L	NG	6	2	6	6	5	6	8
Sodium	mg/L	NG	35	14	31	31	31	40	59
Potassium	mg/L	NG	3	2	3	3	3	4	6
Dissolved Metals									
Aluminium	mg/L	0.055	0.02	0.18	0.02	0.05	0.03	0.02	0.02
Antimony	mg/L	NG	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	mg/L	0.024	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	mg/L	NG	0.025	0.012	0.025	0.022	0.026	0.031	0.039
Cadmium	mg/L	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	mg/L	0.0014	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001
Lead	mg/L	0.0034	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lithium	mg/L	NG	0.006	0.004	0.009	0.008	0.012	0.008	0.008
Manganese	mg/L	1.9	0.002	0.059	0.001	0.005	0.003	0.014	0.013
Nickel	mg/L	0.011	0.001	0.001	0.001	0.002	0.001	0.001	0.001
Selenium	mg/L	0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	mg/L	0.00005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	mg/L	0.008	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Boron	mg/L	0.37	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Iron	mg/L	0.3	0.05	0.33	0.15	0.13	0.1	0.06	<0.05
Dissolved Mercury by FIMS									

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	26/02/2019	15/03/2019
Mercury	mg/L	0.00006	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	mg/L	0.04	0.42	0.18	0.2	0.23	0.12	0.21	0.41
Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	mg/L	NG	0.4	0.7	0.3	0.2	0.1	0.3	0.3
Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
Total Nitrogen as N	mg/L	0.35	0.8	0.9	0.5	0.4	0.2	0.5	0.7
Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	mg/L	0.025	0.02	0.06	<0.01	0.05	0.01	0.02	0.03
Ionic Balance		NG							
Total Anions	meq/L	NG	2.56	0.98	2.17	2.24	2.52	2.78	3.94
Total Cations	meq/L	NG	2.49	0.97	2.32	2.27	2.18	2.84	4.03
									1.1
Organochlorine Pesticides (OC)									
alpha-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
beta-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
gamma-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
delta-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor	Âµg/L	0.09	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Aldrin	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor epoxide	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
trans-Chlordane	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
alpha-Endosulfan	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
cis-Chlordane	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dieldrin	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4.4`-DDE	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin	Âµg/L	0.01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
beta-Endosulfan	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4.4`-DDD	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin aldehyde	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endosulfan sulfate	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4.4`-DDT	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Endrin ketone	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Methoxychlor	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Chlordane (sum)	Âµg/L	0.03	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of DDD + DDE + DDT	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of Aldrin + Dieldrin	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	26/02/2019	15/03/2019
Organophosphorus Pesticides (OP)									
Dichlorvos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	Âµg/L	0.01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	Âµg/L	0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	Âµg/L	0.01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	Âµg/L	0.004	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos Methyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Organochlorine Pesticide Surrogate									
Dibromo-DDE	%		72.4	97.6	79.6	83.3	96.5	82.9	97.3
Organophosphorus Pesticide Surrogate									
DEF	%		75.4	94.4	82.9	79.6	92.3	74.8	74.9
Polynuclear Aromatic Hydrocarbons									
Naphthalene	Âµg/L	16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b+j)fluoranthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	Âµg/L	NG	<0.5	<0.5	<0.6	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Sum of polycyclic aromatic hydrocarbons	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	26/02/2019	15/03/2019
Benzo(a)pyrene TEQ (zero)	Âµg/L	NG	<0.5	<0.5	<0.6	<0.5	<0.5	<0.5	<0.5
Phenolic Compound Surrogates									
Phenol-d6	%		20.9	20	19.1	19.5	29.3	24.4	42.4
2-Chlorophenol-D4	%		49.4	52.4	53.4	51.9	62.1	68	68.1
2.4.6-Tribromophenol	%		47.8	51.5	55.6	61.3	74	55.1	75.8
PAH Surrogates									
2-Fluorobiphenyl	%		86.5	94.2	78.6	83.8	98.6	95.8	75.1
Anthracene-d10	%		87.9	87.9	88	78.8	98.4	93	93.2
4-Terphenyl-d14	%		85	99	88.9	87.7	87.5	95	99
Total Petroleum Hydrocarbons									
C6 - C9 Fraction	Âµg/L	NG	<20	<20	<20	<20	<20	<20	<20
C10 - C14 Fraction	Âµg/L	NG	<50	<50	<50	<50	<50	<50	<50
C15 - C28 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
C29 - C36 Fraction	Âµg/L	NG	<50	<50	<50	<50	<50	<50	<50
C10 - C36 Fraction (sum)	Âµg/L	NG	<50	<50	<50	<50	<50	<50	<50
Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	Âµg/L	NG	<20	<20	<20	<20	<20	<20	<20
C6 - C10 Fraction minus BTEX (F1)	Âµg/L	NG	<20	<20	<20	<20	<20	<20	<20
>C10 - C16 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C16 - C34 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C34 - C40 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C10 - C40 Fraction (sum)	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C10 - C16 Fraction minus Naphthalene (F2)	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
BTEXN									
Benzene	Âµg/L	950	<1	<1	<1	<1	<1	<1	<1
Toluene	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
Ethylbenzene	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
meta- & para-Xylene	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
ortho-Xylene	Âµg/L	350	<2	<2	<2	<2	<2	<2	<2
Total Xylenes	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
Sum of BTEX	Âµg/L	NG	<1	<1	<1	<1	<1	<1	<1
Naphthalene	Âµg/L	NG	<5	<5	<5	<5	<5	<5	<5
TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	%		107	92.6	98.9	117	97.8	82.2	100
Toluene-D8	%		95.9	110	102	108	125	88.9	95.2
4-Bromofluorobenzene	%		100	103	99	94.3	107	102	94.4

Site 6 – 10m Downstream of Bridge, South Bank

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	26/02/2019	15/03/2019
Weather			dry	wet	dry	wet	dry	dry	
pH	pH Units	6.5-8.5	7.480	7.290	8.860	8.910	7.200	7.500	7.49
Turbidity (NTU)	NTU	<50	24.000	90.000	29.800	49.700	13.300	32.200	28.5
Temperature	ºC	NG	23.880	19.550	28.110	27.340	30.240	25.650	26.38
DO %	%	85-110	99.200	89.900	83.000	70.600	83.400	77.100	83.6
EC (ms/cm)	mS/cm	0.125-2.2	0.284	0.120	0.259	0.242	0.244	0.320	0.441
Redox Potential (mV)	MV	NG		207.000	150.000	142.000	200.000	211.000	143
Salinity (ppt)	ppt	NG	0.130	0.060	0.120	0.110	0.110	0.150	0.21
LAB RESULTS									
Total Dissolved Solids @180Â°C	mg/L	NG	168	117	128	154	133	184	238
Suspended Solids (SS)	mg/L	50	15	35	6	12	14	24	13
Hydroxide Alkalinity as CaCO3	mg/L	NG	<1	<1	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	mg/L	NG	<1	<1	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	mg/L	NG	40	14	35	39	43	48	67
Total Alkalinity as CaCO3	mg/L	NG	40	14	35	39	43	48	67
Sulfate as SO4 - Turbidimetric	mg/L	NG	15	5	11	12	12	16	26
Chloride	mg/L	NG	52	23	44	43	50	53	73
Dissolved Major Cations									
Calcium	mg/L	NG	9	3	7	7	7	10	13
Magnesium	mg/L	NG	6	2	5	5	5	6	8
Sodium	mg/L	NG	35	15	30	31	31	40	58
Potassium	mg/L	NG	4	2	3	3	3	4	6
Dissolved Metals									
Aluminium	mg/L	0.055	0.02	0.19	0.02	0.06	0.06	0.02	0.02
Antimony	mg/L	NG	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	mg/L	0.024	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	mg/L	NG	0.026	0.014	0.023	0.022	0.026	0.031	0.041
Cadmium	mg/L	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	mg/L	0.0014	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001
Lead	mg/L	0.0034	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lithium	mg/L	NG	0.005	0.004	0.009	0.008	0.012	0.008	0.007
Manganese	mg/L	1.9	0.002	0.06	<0.001	0.006	0.004	0.016	0.012
Nickel	mg/L	0.011	0.001	0.002	<0.001	<0.001	0.002	<0.001	0.001
Selenium	mg/L	0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	mg/L	0.00005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	mg/L	0.008	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Boron	mg/L	0.37	<0.05	<0.05	<0.05	<0.05	0.28	<0.05	<0.05
Iron	mg/L	0.3	0.05	0.36	0.13	0.13	0.1	0.05	<0.05
Dissolved Mercury by FIMS									

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	26/02/2019	15/03/2019
Mercury	mg/L	0.00006	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	mg/L	0.04	0.42	0.18	0.2	0.23	0.12	0.2	0.42
Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	mg/L	NG	0.5	0.6	0.3	0.2	0.2	0.3	0.3
Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
Total Nitrogen as N	mg/L	0.35	0.9	0.8	0.5	0.4	0.3	0.5	0.7
Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	mg/L	0.025	0.02	0.06	<0.01	0.06	<0.01	0.03	0.02
Ionic Balance		NG							
Total Anions	meq/L	NG	2.58	1.03	2.17	2.24	2.52	2.79	3.94
Total Cations	meq/L	NG	2.57	1.02	2.14	2.18	2.18	2.84	3.98
									0.56
Organochlorine Pesticides (OC)									
alpha-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
beta-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
gamma-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
delta-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor	Âµg/L	0.09	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Aldrin	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor epoxide	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
trans-Chlordane	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
alpha-Endosulfan	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
cis-Chlordane	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dieldrin	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4.4`-DDE	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin	Âµg/L	0.01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
beta-Endosulfan	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4.4`-DDD	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin aldehyde	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endosulfan sulfate	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4.4`-DDT	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Endrin ketone	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Methoxychlor	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Chlordane (sum)	Âµg/L	0.03	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of DDD + DDE + DDT	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of Aldrin + Dieldrin	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	26/02/2019	15/03/2019
Organophosphorus Pesticides (OP)									
Dichlorvos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	Âµg/L	0.01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	Âµg/L	0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	Âµg/L	0.01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	Âµg/L	0.004	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos Methyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Organochlorine Pesticide Surrogate									
Dibromo-DDE	%		79.2	111	72.3	83.4	126	72.9	85.2
Organophosphorus Pesticide Surrogate									
DEF	%		79.3	114	89.1	68.3	119	64.6	67.1
Polynuclear Aromatic Hydrocarbons									
Naphthalene	Âµg/L	16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b+j)fluoranthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Sum of polycyclic aromatic hydrocarbons	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	26/02/2019	15/03/2019
Benzo(a)pyrene TEQ (zero)	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenolic Compound Surrogates									
Phenol-d6	%		19.4	25	18.2	19.1	28.1	28.1	33.2
2-Chlorophenol-D4	%		46.8	56.6	46.2	46.8	67.3	66.6	62
2.4.6-Tribromophenol	%		53	56.8	48.3	61.6	83.6	49.5	72.7
PAH Surrogates									
2-Fluorobiphenyl	%		83.5	73.8	74.7	71.2	94.3	94.6	70.6
Anthracene-d10	%		93.6	97.3	80.6	80.3	101	83.5	85.1
4-Terphenyl-d14	%		84.8	82.5	89.6	79.4	96.6	85.6	89.7
Total Petroleum Hydrocarbons									
C6 - C9 Fraction	Âµg/L	NG	<20	<20	<20	<20	<20	<20	<20
C10 - C14 Fraction	Âµg/L	NG	<50	<50	<50	<50	<50	<50	<50
C15 - C28 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
C29 - C36 Fraction	Âµg/L	NG	<50	<50	<50	<50	<50	<50	<50
C10 - C36 Fraction (sum)	Âµg/L	NG	<50	<50	<50	<50	<50	<50	<50
Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	Âµg/L	NG	<20	<20	<20	<20	<20	<20	<20
C6 - C10 Fraction minus BTEX (F1)	Âµg/L	NG	<20	<20	<20	<20	<20	<20	<20
>C10 - C16 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C16 - C34 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C34 - C40 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C10 - C40 Fraction (sum)	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C10 - C16 Fraction minus Naphthalene (F2)	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
BTEXN									
Benzene	Âµg/L	950	<1	<1	<1	<1	<1	<1	<1
Toluene	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
Ethylbenzene	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
meta- & para-Xylene	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
ortho-Xylene	Âµg/L	350	<2	<2	<2	<2	<2	<2	<2
Total Xylenes	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
Sum of BTEX	Âµg/L	NG	<1	<1	<1	<1	<1	<1	<1
Naphthalene	Âµg/L	NG	<5	<5	<5	<5	<5	<5	<5
TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	%		105	96.4	102	109	96.3	82.3	98.3
Toluene-D8	%		97.1	110	114	94.4	115	88.5	82.2
4-Bromofluorobenzene	%		97.5	105	105	85	105	101	88.2

Site 7 – 50m Downstream of Bridge, North Bank

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	26/02/2019	15/03/2019
Weather			dry	wet	dry	wet	dry	dry	
pH	pH Units	6.5-8.5	7.590	7.380	8.990	8.840	7.100	7.500	7.46
Turbidity (NTU)	NTU	<50	23.700	89.700	27.600	56.700	14.300	51.800	28.8
Temperature	ºC	NG	23.920	19.750	28.260	27.250	30.000	28.630	26.33
DO %	%	85-110	94.300	107.300	78.100	71.800	80.900	75.000	81.5
EC (ms/cm)	mS/cm	0.125-2.2	0.291	0.126	0.265	0.248	0.267	0.327	0.442
Redox Potential (mV)	MV	NG		197.000	146.000	148.000	197.000	213.000	144
Salinity (ppt)	ppt	NG	0.140	0.060	0.120	0.120	0.130	0.160	0.21
LAB RESULTS									
Total Dissolved Solids @180Â°C	mg/L	NG	180	88	131	121	149	194	234
Suspended Solids (SS)	mg/L	50	19	33	22	15	19	39	12
Hydroxide Alkalinity as CaCO3	mg/L	NG	<1	<1	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	mg/L	NG	<1	<1	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	mg/L	NG	41	16	35	40	45	49	66
Total Alkalinity as CaCO3	mg/L	NG	41	16	35	40	45	49	66
Sulfate as SO4 - Turbidimetric	mg/L	NG	15	6	12	12	14	18	26
Chloride	mg/L	NG	52	24	45	44	56	53	73
Dissolved Major Cations									
Calcium	mg/L	NG	8	3	7	7	8	10	13
Magnesium	mg/L	NG	6	2	6	6	5	6	8
Sodium	mg/L	NG	34	15	31	30	32	41	58
Potassium	mg/L	NG	3	2	3	3	3	4	6
Dissolved Metals									
Aluminium	mg/L	0.055	0.03	0.19	0.03	0.07	0.03	0.02	0.02
Antimony	mg/L	NG	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	mg/L	0.024	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	mg/L	NG	0.024	0.014	0.023	0.022	0.026	0.033	0.04
Cadmium	mg/L	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	mg/L	0.0014	<0.001	<0.001	<0.001	0.002	0.003	<0.001	<0.001
Lead	mg/L	0.0034	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lithium	mg/L	NG	0.005	0.004	0.008	0.008	0.012	0.008	0.008
Manganese	mg/L	1.9	<0.001	0.054	<0.001	0.007	0.009	0.022	0.012
Nickel	mg/L	0.011	0.001	0.002	<0.001	<0.001	0.001	<0.001	0.001
Selenium	mg/L	0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	mg/L	0.00005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	mg/L	0.008	<0.005	<0.005	<0.005	<0.005	0.007	<0.005	<0.005
Boron	mg/L	0.37	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Iron	mg/L	0.3	0.05	0.35	0.13	0.15	0.15	0.06	<0.05
Dissolved Mercury by FIMS									

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	26/02/2019	15/03/2019
Mercury	mg/L	0.00006	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	mg/L	0.04	0.4	0.19	0.21	0.24	0.14	0.2	0.42
Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	mg/L	NG	0.3	0.6	0.2	0.3	0.1	0.3	0.2
Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
Total Nitrogen as N	mg/L	0.35	0.7	0.8	0.4	0.5	0.2	0.5	0.6
Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	mg/L	0.025	0.02	0.04	0.01	0.07	0.01	0.03	0.03
Ionic Balance		NG							
Total Anions	meq/L	NG	2.6	1.12	2.22	2.29	2.77	2.85	3.92
Total Cations	meq/L	NG	2.45	1.02	2.27	2.22	2.28	2.88	3.98
									0.81
Organochlorine Pesticides (OC)									
alpha-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
beta-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
gamma-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
delta-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor	Âµg/L	0.09	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Aldrin	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor epoxide	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
trans-Chlordane	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
alpha-Endosulfan	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
cis-Chlordane	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dieldrin	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4.4`-DDE	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin	Âµg/L	0.01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
beta-Endosulfan	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4.4`-DDD	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin aldehyde	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endosulfan sulfate	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4.4`-DDT	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Endrin ketone	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Methoxychlor	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Chlordane (sum)	Âµg/L	0.03	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of DDD + DDE + DDT	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of Aldrin + Dieldrin	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	26/02/2019	15/03/2019
Organophosphorus Pesticides (OP)									
Dichlorvos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	Âµg/L	0.01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	Âµg/L	0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	Âµg/L	0.01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	Âµg/L	0.004	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos Methyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Organochlorine Pesticide Surrogate									
Dibromo-DDE	%		79.3	97.3	83.1	84.9	120	77.1	92.6
Organophosphorus Pesticide Surrogate									
DEF	%		83.6	93.9	113	90.3	116	67.8	73.1
Polynuclear Aromatic Hydrocarbons									
Naphthalene	Âµg/L	16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b+j)fluoranthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Sum of polycyclic aromatic hydrocarbons	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	26/02/2019	15/03/2019
Benzo(a)pyrene TEQ (zero)	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenolic Compound Surrogates									
Phenol-d6	%		22.3	22.4	25.2	18	28.2	28.2	40.7
2-Chlorophenol-D4	%		54.1	49.1	68.7	43	59.1	64.5	71.2
2.4.6-Tribromophenol	%		56.7	52.2	62.9	40.8	99	54.5	76.9
PAH Surrogates									
2-Fluorobiphenyl	%		91.2	79.9	96.3	70.6	95.1	93.2	76.6
Anthracene-d10	%		92.3	77.2	90.3	76.4	92.6	90	94.5
4-Terphenyl-d14	%		91.8	85.3	86.8	70.2	89.8	86.2	98.8
Total Petroleum Hydrocarbons									
C6 - C9 Fraction	Âµg/L	NG	<20	<20	<20	<20	<20	<20	<20
C10 - C14 Fraction	Âµg/L	NG	<50	<50	<50	<50	<50	<50	<50
C15 - C28 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
C29 - C36 Fraction	Âµg/L	NG	<50	<50	<50	<50	<50	<50	<50
C10 - C36 Fraction (sum)	Âµg/L	NG	<50	<50	<50	<50	<50	<50	<50
Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	Âµg/L	NG	<20	<20	<20	<20	<20	<20	<20
C6 - C10 Fraction minus BTEX (F1)	Âµg/L	NG	<20	<20	<20	<20	<20	<20	<20
>C10 - C16 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C16 - C34 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C34 - C40 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C10 - C40 Fraction (sum)	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C10 - C16 Fraction minus Naphthalene (F2)	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
BTEXN									
Benzene	Âµg/L	950	<1	<1	<1	<1	<1	<1	<1
Toluene	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
Ethylbenzene	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
meta- & para-Xylene	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
ortho-Xylene	Âµg/L	350	<2	<2	<2	<2	<2	<2	<2
Total Xylenes	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
Sum of BTEX	Âµg/L	NG	<1	<1	<1	<1	<1	<1	<1
Naphthalene	Âµg/L	NG	<5	<5	<5	<5	<5	<5	<5
TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	%		108	94.7	99.2	106	85.9	79.7	90.6
Toluene-D8	%		98	110	106	93.4	91.7	84.8	83.5
4-Bromofluorobenzene	%		99.6	102	102	85.8	86.2	97.1	82.4

Site 8 – 50m Downstream of Bridge, South Bank

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	26/02/2019	15/03/2019
Weather			dry	wet	dry	wet	dry	dry	
pH	pH Units	6.5-8.5	7.460	8.400	8.920	8.83	7.220	7.51	7.45
Turbidity (NTU)	NTU	<50	24.300	84.400	43.900	50.900	13.200	34.6	29.6
Temperature	ºC	NG	24.010	19.770	28.170	27.310	30.200	25.66	26.37
DO %	%	85-110	90.900	101.400	82.000	70.400	88.600	74.6	85.7
EC (ms/cm)	mS/cm	0.125-2.2	0.300	0.128	0.261	0.243	0.263	0.33	0.458
Redox Potential (mV)	MV	NG		157.000	152.000	150.000	174.000	-45	151
Salinity (ppt)	ppt	NG	0.140	0.060	0.120	0.110	0.120	0.16	0.22
LAB RESULTS									
Total Dissolved Solids @180Â°C	mg/L	NG	180	95	155	120	131	190	239
Suspended Solids (SS)	mg/L	50	17	33	12	12	13	24	13
Hydroxide Alkalinity as CaCO3	mg/L	NG	<1	<1	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	mg/L	NG	<1	<1	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	mg/L	NG	41	16	36	39	46	49	69
Total Alkalinity as CaCO3	mg/L	NG	41	16	36	39	46	49	69
Sulfate as SO4 - Turbidimetric	mg/L	NG	16	6	12	14	12	16	28
Chloride	mg/L	NG	54	24	55	39	51	54	77
Dissolved Major Cations									
Calcium	mg/L	NG	8	3	8	7	7	10	13
Magnesium	mg/L	NG	6	2	6	6	5	6	8
Sodium	mg/L	NG	35	16	32	31	33	41	60
Potassium	mg/L	NG	3	2	4	3	3	4	6
Dissolved Metals									
Aluminium	mg/L	0.055	0.03	0.16	0.02	0.04	0.02	0.02	0.02
Antimony	mg/L	NG	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001
Arsenic	mg/L	0.024	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	mg/L	NG	0.026	0.014	0.026	0.022	0.026	0.032	0.041
Cadmium	mg/L	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	mg/L	0.0014	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001
Lead	mg/L	0.0034	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lithium	mg/L	NG	0.005	0.004	0.009	0.008	0.012	0.008	0.007
Manganese	mg/L	1.9	<0.001	0.055	0.003	0.002	0.006	0.022	0.014
Nickel	mg/L	0.011	0.001	0.002	0.001	<0.001	0.001	0.002	0.001
Selenium	mg/L	0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	mg/L	0.00005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	mg/L	0.008	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Boron	mg/L	0.37	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Iron	mg/L	0.3	0.05	0.29	0.16	0.13	0.07	0.05	<0.05
Dissolved Mercury by FIMS									

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	26/02/2019	15/03/2019
Mercury	mg/L	0.00006	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	mg/L	0.04	0.42	0.21	0.21	0.23	0.12	0.21	0.42
Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	mg/L	NG	0.5	0.7	0.4	0.2	0.1	0.3	0.3
Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
Total Nitrogen as N	mg/L	0.35	0.9	0.9	0.6	0.4	0.2	0.5	0.7
Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	mg/L	0.025	0.07	0.06	0.02	0.07	<0.01	0.02	0.04
Ionic Balance		NG							
Total Anions	meq/L	NG	2.68	1.12	2.52	2.17	2.61	2.84	4.13
Total Cations	meq/L	NG	2.49	1.06	2.39	2.27	2.27	2.88	4.07
									0.77
Organochlorine Pesticides (OC)									
alpha-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
beta-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
gamma-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
delta-BHC	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor	Âµg/L	0.09	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Aldrin	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor epoxide	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
trans-Chlordane	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
alpha-Endosulfan	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
cis-Chlordane	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dieldrin	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4.4`-DDE	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin	Âµg/L	0.01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
beta-Endosulfan	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4.4`-DDD	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin aldehyde	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endosulfan sulfate	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4.4`-DDT	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Endrin ketone	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Methoxychlor	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Chlordane (sum)	Âµg/L	0.03	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of DDD + DDE + DDT	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of Aldrin + Dieldrin	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	26/02/2019	15/03/2019
Organophosphorus Pesticides (OP)									
Dichlorvos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	Âµg/L	0.01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	Âµg/L	NG	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	Âµg/L	0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	Âµg/L	0.01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	Âµg/L	0.004	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos Methyl	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Organochlorine Pesticide Surrogate									
Dibromo-DDE	%		81.1	98	84.2	99.6	104	62.5	92.1
Organophosphorus Pesticide Surrogate									
DEF	%		80.6	83.6	85.2	106	98.4	63.8	71.4
Polynuclear Aromatic Hydrocarbons									
Naphthalene	Âµg/L	16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b+j)fluoranthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	Âµg/L	NG	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Sum of polycyclic aromatic hydrocarbons	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	26/02/2019	15/03/2019
Benzo(a)pyrene TEQ (zero)	Âµg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenolic Compound Surrogates									
Phenol-d6	%		24.8	23.4	24	25.9	25.4	25.4	34.5
2-Chlorophenol-D4	%		58.5	52.2	60.1	66	63.4	57.5	59
2.4.6-Tribromophenol	%		49.1	48.5	61.2	51.2	77.9	41.8	75.4
PAH Surrogates									
2-Fluorobiphenyl	%		85.8	77.8	95.6	98.4	91.3	75.9	71
Anthracene-d10	%		87.1	76.5	85.5	82.3	92.3	89.2	92.5
4-Terphenyl-d14	%		86.3	96.1	94.8	83.4	91.9	77.6	104
Total Petroleum Hydrocarbons									
C6 - C9 Fraction	Âµg/L	NG	<20	<20	<20	<20	<20	<20	<20
C10 - C14 Fraction	Âµg/L	NG	<50	<50	<50	<50	<50	<50	<50
C15 - C28 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
C29 - C36 Fraction	Âµg/L	NG	<50	<50	<50	<50	<50	<50	<50
C10 - C36 Fraction (sum)	Âµg/L	NG	<50	<50	<50	<50	<50	<50	<50
Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	Âµg/L	NG	<20	<20	<20	<20	<20	<20	<20
C6 - C10 Fraction minus BTEX (F1)	Âµg/L	NG	<20	<20	<20	<20	<20	<20	<20
>C10 - C16 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C16 - C34 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C34 - C40 Fraction	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C10 - C40 Fraction (sum)	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
>C10 - C16 Fraction minus Naphthalene (F2)	Âµg/L	NG	<100	<100	<100	<100	<100	<100	<100
BTEXN									
Benzene	Âµg/L	950	<1	<1	<1	<1	<1	<1	<1
Toluene	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
Ethylbenzene	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
meta- & para-Xylene	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
ortho-Xylene	Âµg/L	350	<2	<2	<2	<2	<2	<2	<2
Total Xylenes	Âµg/L	NG	<2	<2	<2	<2	<2	<2	<2
Sum of BTEX	Âµg/L	NG	<1	<1	<1	<1	<1	<1	<1
Naphthalene	Âµg/L	NG	<5	<5	<5	<5	<5	<5	<5
TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	%		110	93.2	104	103	94.9	82.1	95.9
Toluene-D8	%		98.1	104	114	84.3	109	97.4	90.2
4-Bromofluorobenzene	%		101	97.3	102	80.8	100	105	88.4

Site 9 – Control Site at Outlet – North Bank (Wet weather only i.e >20mm)

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	15/03/2019
Weather			dry	wet	dry	wet	dry	
pH	pH Units	6.5-8.5		7.25		9.04		7.47
Turbidity (NTU)	NTU	<50		88.00		70.1		34.7
Temperature	ºC	NG		19.51		27.09		26.22
DO %	%	85-110		139.39		72.8		115
EC (ms/cm)	mS/cm	0.125-2.2		0.119		0.252		0.481
Redox Potential (mV)	MV	NG		224		137		134
Salinity (ppt)	ppt	NG		0.05		0.12		0.23
LAB RESULTS								
Total Dissolved Solids @180Â°C	mg/L	NG		95		144		266
Suspended Solids (SS)	mg/L	50		35		14		14
Hydroxide Alkalinity as CaCO3	mg/L	NG		<1		<1		<1
Carbonate Alkalinity as CaCO3	mg/L	NG		<1		<1		<1
Bicarbonate Alkalinity as CaCO3	mg/L	NG		14		40		72
Total Alkalinity as CaCO3	mg/L	NG		14		40		72
Sulfate as SO4 - Turbidimetric	mg/L	NG		5		13		30
Chloride	mg/L	NG		22		44		81
Dissolved Major Cations								
Calcium	mg/L	NG		3		7		14
Magnesium	mg/L	NG		2		6		8
Sodium	mg/L	NG		14		31		65
Potassium	mg/L	NG		2		4		7
Dissolved Metals								
Aluminium	mg/L	0.055		0.19		0.08		0.01
Antimony	mg/L	NG		<0.001		<0.001		<0.001
Arsenic	mg/L	0.024		<0.001		<0.001		<0.001
Barium	mg/L	NG		0.013		0.023		0.042
Cadmium	mg/L	0.0002		<0.0001		<0.0001		<0.0001
Chromium	mg/L	0.001		<0.001		<0.001		<0.001
Copper	mg/L	0.0014		<0.001		0.002		<0.001
Lead	mg/L	0.0034		<0.001		0.002		<0.001
Lithium	mg/L	NG		0.004		0.009		0.007
Manganese	mg/L	1.9		0.06		0.007		0.018
Nickel	mg/L	0.011		0.001		0.002		0.001
Selenium	mg/L	0.005		<0.01		<0.01		<0.01
Silver	mg/L	0.00005		<0.001		<0.001		<0.001
Zinc	mg/L	0.008		<0.005		<0.005		<0.005
Boron	mg/L	0.37		<0.05		<0.05		<0.05
Iron	mg/L	0.3		0.36		0.19		<0.05
Dissolved Mercury by FIMS								

Mercury	mg/L	0.00006		<0.0001		<0.0001		<0.0001
Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	mg/L	0.04		0.18		0.24		0.53
Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	mg/L	NG		0.5		0.3		0.2
Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
Total Nitrogen as N	mg/L	0.35		0.7		0.5		0.7
Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	mg/L	0.025		0.04		0.09		0.02
Ionic Balance		NG						
Total Anions	meq/L	NG		1		2.31		4.35
Total Cations	meq/L	NG		0.97		2.29		4.36
								0.18
Organochlorine Pesticides (OC)								
alpha-BHC	Âµg/L	NG		<0.5		<0.5		<0.5
Hexachlorobenzene (HCB)	Âµg/L	NG		<0.5		<0.5		<0.5
beta-BHC	Âµg/L	NG		<0.5		<0.5		<0.5
gamma-BHC	Âµg/L	NG		<0.5		<0.5		<0.5
delta-BHC	Âµg/L	NG		<0.5		<0.5		<0.5
Heptachlor	Âµg/L	0.09		<0.5		<0.5		<0.5
Aldrin	Âµg/L	NG		<0.5		<0.5		<0.5
Heptachlor epoxide	Âµg/L	NG		<0.5		<0.5		<0.5
trans-Chlordane	Âµg/L	NG		<0.5		<0.5		<0.5
alpha-Endosulfan	Âµg/L	NG		<0.5		<0.5		<0.5
cis-Chlordane	Âµg/L	NG		<0.5		<0.5		<0.5
Dieldrin	Âµg/L	NG		<0.5		<0.5		<0.5
4.4`-DDE	Âµg/L	NG		<0.5		<0.5		<0.5
Endrin	Âµg/L	0.01		<0.5		<0.5		<0.5
beta-Endosulfan	Âµg/L	NG		<0.5		<0.5		<0.5
4.4`-DDD	Âµg/L	NG		<0.5		<0.5		<0.5
Endrin aldehyde	Âµg/L	NG		<0.5		<0.5		<0.5
Endosulfan sulfate	Âµg/L	NG		<0.5		<0.5		<0.5
4.4`-DDT	Âµg/L	NG		<2.0		<2.0		<2.0
Endrin ketone	Âµg/L	NG		<0.5		<0.5		<0.5
Methoxychlor	Âµg/L	NG		<2.0		<2.0		<2.0
Total Chlordane (sum)	Âµg/L	0.03		<0.5		<0.5		<0.5
Sum of DDD + DDE + DDT	Âµg/L	NG		<0.5		<0.5		<0.5
Sum of Aldrin + Dieldrin	Âµg/L	NG		<0.5		<0.5		<0.5
Organophosphorus Pesticides (OP)								

Dichlorvos	Âµg/L	NG		<0.5		<0.5		<0.5
Demeton-S-methyl	Âµg/L	NG		<0.5		<0.5		<0.5
Monocrotophos	Âµg/L	NG		<2.0		<2.0		<2.0
Dimethoate	Âµg/L	NG		<0.5		<0.5		<0.5
Diazinon	Âµg/L	NG		<0.5		<0.5		<0.5
Chlorpyrifos-methyl	Âµg/L	0.01		<0.5		<0.5		<0.5
Parathion-methyl	Âµg/L	NG		<2.0		<2.0		<2.0
Malathion	Âµg/L	0.05		<0.5		<0.5		<0.5
Fenthion	Âµg/L	NG		<0.5		<0.5		<0.5
Chlorpyrifos	Âµg/L	0.01		<0.5		<0.5		<0.5
Parathion	Âµg/L	0.004		<2.0		<2.0		<2.0
Pirimphos-ethyl	Âµg/L	NG		<0.5		<0.5		<0.5
Chlorfenvinphos	Âµg/L	NG		<0.5		<0.5		<0.5
Bromophos-ethyl	Âµg/L	NG		<0.5		<0.5		<0.5
Fenamiphos	Âµg/L	NG		<0.5		<0.5		<0.5
Prothiofos	Âµg/L	NG		<0.5		<0.5		<0.5
Ethion	Âµg/L	NG		<0.5		<0.5		<0.5
Carbophenothion	Âµg/L	NG		<0.5		<0.5		<0.5
Azinphos Methyl	Âµg/L	NG		<0.5		<0.5		<0.5
Organochlorine Pesticide Surrogate								
Dibromo-DDE	%			100		81.2		71.3
Organophosphorus Pesticide Surrogate								
DEF	%			110		75.7		63.8
Polynuclear Aromatic Hydrocarbons								
Naphthalene	Âµg/L	16		<1.0		<1.0		<1.0
Acenaphthylene	Âµg/L	NG		<1.0		<1.0		<1.0
Acenaphthene	Âµg/L	NG		<1.0		<1.0		<1.0
Fluorene	Âµg/L	NG		<1.0		<1.0		<1.0
Phenanthrene	Âµg/L	NG		<1.0		<1.0		<1.0
Anthracene	Âµg/L	NG		<1.0		<1.0		<1.0
Fluoranthene	Âµg/L	NG		<1.0		<1.0		<1.0
Pyrene	Âµg/L	NG		<1.0		<1.0		<1.0
Benz(a)anthracene	Âµg/L	NG		<1.0		<1.0		<1.0
Chrysene	Âµg/L	NG		<1.0		<1.0		<1.0
Benzo(b+j)fluoranthene	Âµg/L	NG		<1.0		<1.0		<1.0
Benzo(k)fluoranthene	Âµg/L	NG		<1.0		<1.0		<1.0
Benzo(a)pyrene	Âµg/L	NG		<0.5		<0.5		<0.5
Indeno(1.2.3.cd)pyrene	Âµg/L	NG		<1.0		<1.0		<1.0
Dibenz(a.h)anthracene	Âµg/L	NG		<1.0		<1.0		<1.0
Benzo(g.h.i)perylene	Âµg/L	NG		<1.0		<1.0		<1.0
Sum of polycyclic aromatic hydrocarbons	Âµg/L	NG		<0.5		<0.5		<0.5
Benzo(a)pyrene TEQ (zero)	Âµg/L	NG		<0.5		<0.5		<0.5

Phenolic Compound Surrogates								
Phenol-d6	%			17.8		20.9		26.1
2-Chlorophenol-D4	%			42.8		53.6		44.8
2.4.6-Tribromophenol	%			53.8		42		57.5
PAH Surrogates								
2-Fluorobiphenyl	%			86.2		88.9		55.2
Anthracene-d10	%			92.5		77.5		73.7
4-Terphenyl-d14	%			82.7		88.4		78.1
Total Petroleum Hydrocarbons								
C6 - C9 Fraction	Âµg/L	NG		<20		<20		<20
C10 - C14 Fraction	Âµg/L	NG		<50		<50		<50
C15 - C28 Fraction	Âµg/L	NG		<100		<100		<100
C29 - C36 Fraction	Âµg/L	NG		<50		<50		<50
C10 - C36 Fraction (sum)	Âµg/L	NG		<50		<50		<50
Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	Âµg/L	NG		<20		<20		<20
C6 - C10 Fraction minus BTEX (F1)	Âµg/L	NG		<20		<20		<20
>C10 - C16 Fraction	Âµg/L	NG		<100		<100		<100
>C16 - C34 Fraction	Âµg/L	NG		<100		<100		<100
>C34 - C40 Fraction	Âµg/L	NG		<100		<100		<100
>C10 - C40 Fraction (sum)	Âµg/L	NG		<100		<100		<100
>C10 - C16 Fraction minus Naphthalene (F2)	Âµg/L	NG		<100		<100		<100
BTEXN								
Benzene	Âµg/L	950		<1		<1		<1
Toluene	Âµg/L	NG		<2		<2		<2
Ethylbenzene	Âµg/L	NG		<2		<2		<2
meta- & para-Xylene	Âµg/L	NG		<2		<2		<2
ortho-Xylene	Âµg/L	350		<2		<2		<2
Total Xylenes	Âµg/L	NG		<2		<2		<2
Sum of BTEX	Âµg/L	NG		<1		<1		<1
Naphthalene	Âµg/L	NG		<5		<5		<5
TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	%			96.5		104		96.7
Toluene-D8	%			109		92.5		95.5
4-Bromofluorobenzene	%			103		86.1		92.3

Site 10 – Control Site at Outlet – South Bank (wet weather only i.e >20mm)

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	15/03/2019
Weather			dry	wet	dry	wet	dry	
pH	pH Units	6.5-8.5		7.020		8.97		7.5
Turbidity (NTU)	NTU	<50		88.100		52.8		40.2
Temperature	ºC	NG		19.510		27.33		26.36
DO %	%	85-110		91.200		69.4		103.1
EC (ms/cm)	mS/cm	0.125-2.2		0.120		0.243		0.452
Redox Potential (mV)	MV	NG		236.000		141		138
Salinity (ppt)	ppt	NG		0.060		0.11		0.22
LAB RESULTS								
Total Dissolved Solids @180Â°C	mg/L	NG		107		107		238
Suspended Solids (SS)	mg/L	50		36		12		12
Hydroxide Alkalinity as CaCO3	mg/L	NG		<1		<1		<1
Carbonate Alkalinity as CaCO3	mg/L	NG		<1		<1		<1
Bicarbonate Alkalinity as CaCO3	mg/L	NG		15		39		69
Total Alkalinity as CaCO3	mg/L	NG		15		39		69
Sulfate as SO4 - Turbidimetric	mg/L	NG		6		12		28
Chloride	mg/L	NG		23		43		75
Dissolved Major Cations								
Calcium	mg/L	NG		3		7		13
Magnesium	mg/L	NG		2		5		8
Sodium	mg/L	NG		14		31		60
Potassium	mg/L	NG		2		3		7
Dissolved Metals								
Aluminium	mg/L	0.055		0.19		0.06		0.02
Antimony	mg/L	NG		<0.001		<0.001		<0.001
Arsenic	mg/L	0.024		<0.001		<0.001		<0.001
Barium	mg/L	NG		0.013		0.023		0.04
Cadmium	mg/L	0.0002		<0.0001		<0.0001		<0.0001
Chromium	mg/L	0.001		<0.001		<0.001		<0.001
Copper	mg/L	0.0014		<0.001		0.002		<0.001
Lead	mg/L	0.0034		<0.001		0.002		<0.001
Lithium	mg/L	NG		0.004		0.01		0.008
Manganese	mg/L	1.9		0.059		0.005		0.014
Nickel	mg/L	0.011		0.001		<0.001		0.001
Selenium	mg/L	0.005		<0.01		<0.01		<0.01
Silver	mg/L	0.00005		<0.001		<0.001		<0.001
Zinc	mg/L	0.008		<0.005		<0.005		<0.005
Boron	mg/L	0.37		<0.05		<0.05		<0.05
Iron	mg/L	0.3		0.34		0.14		<0.05
Dissolved Mercury by FIMS								

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	15/03/2019
Mercury	mg/L	0.00006		<0.0001		<0.0001		<0.0001
Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	mg/L	0.04		2.26		0.23		0.43
Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	mg/L	NG		0.9		0.3		0.3
Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
Total Nitrogen as N	mg/L	0.35		3.2		0.5		0.7
Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	mg/L	0.025		0.09		0.08		0.02
Ionic Balance		NG						
Total Anions	meq/L	NG		1.07		2.24		4.08
Total Cations	meq/L	NG		0.97		2.18		4.1
								0.23
Organochlorine Pesticides (OC)								
alpha-BHC	Âµg/L	NG		<0.5		<0.5		<0.5
Hexachlorobenzene (HCB)	Âµg/L	NG		<0.5		<0.5		<0.5
beta-BHC	Âµg/L	NG		<0.5		<0.5		<0.5
gamma-BHC	Âµg/L	NG		<0.5		<0.5		<0.5
delta-BHC	Âµg/L	NG		<0.5		<0.5		<0.5
Heptachlor	Âµg/L	0.09		<0.5		<0.5		<0.5
Aldrin	Âµg/L	NG		<0.5		<0.5		<0.5
Heptachlor epoxide	Âµg/L	NG		<0.5		<0.5		<0.5
trans-Chlordane	Âµg/L	NG		<0.5		<0.5		<0.5
alpha-Endosulfan	Âµg/L	NG		<0.5		<0.5		<0.5
cis-Chlordane	Âµg/L	NG		<0.5		<0.5		<0.5
Dieldrin	Âµg/L	NG		<0.5		<0.5		<0.5
4.4`-DDE	Âµg/L	NG		<0.5		<0.5		<0.5
Endrin	Âµg/L	0.01		<0.5		<0.5		<0.5
beta-Endosulfan	Âµg/L	NG		<0.5		<0.5		<0.5
4.4`-DDD	Âµg/L	NG		<0.5		<0.5		<0.5
Endrin aldehyde	Âµg/L	NG		<0.5		<0.5		<0.5
Endosulfan sulfate	Âµg/L	NG		<0.5		<0.5		<0.5
4.4`-DDT	Âµg/L	NG		<2.0		<2.0		<2.0
Endrin ketone	Âµg/L	NG		<0.5		<0.5		<0.5
Methoxychlor	Âµg/L	NG		<2.0		<2.0		<2.0
Total Chlordane (sum)	Âµg/L	0.03		<0.5		<0.5		<0.5
Sum of DDD + DDE + DDT	Âµg/L	NG		<0.5		<0.5		<0.5
Sum of Aldrin + Dieldrin	Âµg/L	NG		<0.5		<0.5		<0.5

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	15/03/2019
Organophosphorus Pesticides (OP)								
Dichlorvos	Âµg/L	NG		<0.5		<0.5		<0.5
Demeton-S-methyl	Âµg/L	NG		<0.5		<0.5		<0.5
Monocrotophos	Âµg/L	NG		<2.0		<2.0		<2.0
Dimethoate	Âµg/L	NG		<0.5		<0.5		<0.5
Diazinon	Âµg/L	NG		<0.5		<0.5		<0.5
Chlorpyrifos-methyl	Âµg/L	0.01		<0.5		<0.5		<0.5
Parathion-methyl	Âµg/L	NG		<2.0		<2.0		<2.0
Malathion	Âµg/L	0.05		<0.5		<0.5		<0.5
Fenthion	Âµg/L	NG		<0.5		<0.5		<0.5
Chlorpyrifos	Âµg/L	0.01		<0.5		<0.5		<0.5
Parathion	Âµg/L	0.004		<2.0		<2.0		<2.0
Pirimphos-ethyl	Âµg/L	NG		<0.5		<0.5		<0.5
Chlorfenvinphos	Âµg/L	NG		<0.5		<0.5		<0.5
Bromophos-ethyl	Âµg/L	NG		<0.5		<0.5		<0.5
Fenamiphos	Âµg/L	NG		<0.5		<0.5		<0.5
Prothiofos	Âµg/L	NG		<0.5		<0.5		<0.5
Ethion	Âµg/L	NG		<0.5		<0.5		<0.5
Carbophenothion	Âµg/L	NG		<0.5		<0.5		<0.5
Azinphos Methyl	Âµg/L	NG		<0.5		<0.5		<0.5
Organochlorine Pesticide Surrogate								
Dibromo-DDE	%			95.3		97.1		95
Organophosphorus Pesticide Surrogate								
DEF	%			97.5		94.5		74.9
Polynuclear Aromatic Hydrocarbons								
Naphthalene	Âµg/L	16		<1.0		<1.0		<1.0
Acenaphthylene	Âµg/L	NG		<1.0		<1.0		<1.0
Acenaphthene	Âµg/L	NG		<1.0		<1.0		<1.0
Fluorene	Âµg/L	NG		<1.0		<1.0		<1.0
Phenanthrene	Âµg/L	NG		<1.0		<1.0		<1.0
Anthracene	Âµg/L	NG		<1.0		<1.0		<1.0
Fluoranthene	Âµg/L	NG		<1.0		<1.0		<1.0
Pyrene	Âµg/L	NG		<1.0		<1.0		<1.0
Benz(a)anthracene	Âµg/L	NG		<1.0		<1.0		<1.0
Chrysene	Âµg/L	NG		<1.0		<1.0		<1.0
Benzo(b+j)fluoranthene	Âµg/L	NG		<1.0		<1.0		<1.0
Benzo(k)fluoranthene	Âµg/L	NG		<1.0		<1.0		<1.0
Benzo(a)pyrene	Âµg/L	NG		<0.5		<0.5		<0.5
Indeno(1.2.3.cd)pyrene	Âµg/L	NG		<1.0		<1.0		<1.0
Dibenz(a.h)anthracene	Âµg/L	NG		<1.0		<1.0		<1.0
Benzo(g.h.i)perylene	Âµg/L	NG		<1.0		<1.0		<1.0
Sum of polycyclic aromatic hydrocarbons	Âµg/L	NG		<0.5		<0.5		<0.5

	Unit	Guideline	31/01/2018	29/11/2018	18/12/2018	21/12/2018	25/01/2019	15/03/2019
Benzo(a)pyrene TEQ (zero)	Âµg/L	NG		<0.5		<0.5		<0.5
Phenolic Compound Surrogates								
Phenol-d6	%			24.1		26.2		45.7
2-Chlorophenol-D4	%			42.9		65.4		77.8
2.4.6-Tribromophenol	%			49.6		44.1		87.9
PAH Surrogates								
2-Fluorobiphenyl	%			69.4		73		88.5
Anthracene-d10	%			79.7		79.4		104
4-Terphenyl-d14	%			85.2		96.1		106
Total Petroleum Hydrocarbons								
C6 - C9 Fraction	Âµg/L	NG		<20		<20		<20
C10 - C14 Fraction	Âµg/L	NG		<50		<50		<50
C15 - C28 Fraction	Âµg/L	NG		<100		<100		<100
C29 - C36 Fraction	Âµg/L	NG		<50		<50		<50
C10 - C36 Fraction (sum)	Âµg/L	NG		<50		<50		<50
Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	Âµg/L	NG		<20		<20		<20
C6 - C10 Fraction minus BTEX (F1)	Âµg/L	NG		<20		<20		<20
>C10 - C16 Fraction	Âµg/L	NG		<100		<100		<100
>C16 - C34 Fraction	Âµg/L	NG		<100		<100		<100
>C34 - C40 Fraction	Âµg/L	NG		<100		<100		<100
>C10 - C40 Fraction (sum)	Âµg/L	NG		<100		<100		<100
>C10 - C16 Fraction minus Naphthalene (F2)	Âµg/L	NG		<100		<100		<100
BTEXN								
Benzene	Âµg/L	950		<1		<1		<1
Toluene	Âµg/L	NG		<2		<2		<2
Ethylbenzene	Âµg/L	NG		<2		<2		<2
meta- & para-Xylene	Âµg/L	NG		<2		<2		<2
ortho-Xylene	Âµg/L	350		<2		<2		<2
Total Xylenes	Âµg/L	NG		<2		<2		<2
Sum of BTEX	Âµg/L	NG		<1		<1		<1
Naphthalene	Âµg/L	NG		<5		<5		<5
TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	%			95.3		106		94.7
Toluene-D8	%			111		92.6		91.2
4-Bromofluorobenzene	%			104		82.9		91.9

Groundwater Monitoring – Field Parameters

Sacrificial Borehole - North	31-Jan-18	29-Nov-18
Weather	dry	wet
Recent rainfall (mm)	-	>70mm (minor flood)
Level		
pH	7.12	6.49
Turbidity (NTU)	23.2	25.00
Temperature	20.27	19.83
DO %	32.2	30.23
EC (ms/cm)	1.84	1.990
Redox Potential (mV)	-14	-6.000
Salinity (ppt)	0.93	0.940

Reference Borehole - South	31-Oct-18	29-Nov-18	18-Dec-18	21-Dec-18	25-Jan-19	26-Feb-19	29-Mar-19	29-Apr-19
Weather	dry	wet	dry	wet	dry	dry	dry	
Recent rainfall (mm)	-	>70mm (minor flood)	40mm 4 days ago	40mm 19/12, 13mm 20/12	-	scattered showers		
Level								
pH	7.14	7.21	6.93	7.13	6.64	6.94	6.96	6.83
Turbidity (NTU)	31.00	27.00	32.80	28.30	25.40	31.60	30.50	35.40
Temperature	21.38	22.34	20.40	22.87	22.60	22.91	21.44	21.47
DO %	39.00	45.00	35.00	41.00	105.30	116.50	50.30	32.90
EC (ms/cm)	0.692	0.920	2.030	0.425	0.640	0.689	0.694	0.730
Redox Potential (mV)	-38.00	-29.00	-24.00	22.00	-22.00	-97.00	-63.00	-73.00
Salinity (ppt)	0.34	0.94	0.28	0.35	0.26	0.34	0.31	0.36

Reference Borehole - South		
	31-Jan-18	29-Nov-18
Weather	dry	wet
Recent rainfall (mm)	-	>70mm (minor flood)
Level		
pH	7.14	7.21
Turbidity (NTU)	31	27.00
Temperature	21.38	21.02
DO %	39	45.00
EC (ms/cm)	0.692	1.53
Redox Potential (mV)	-38	-30.00
Salinity (ppt)	0.34	0.21

Reference Borehole - South								
	31-Oct-18	29-Nov-18	18-Dec-18	21-Dec-18	25-Jan-19	26-Feb-19	29-Mar-19	29-Apr-19
Weather	dry	wet	dry	wet	dry	dry	dry	
Recent rainfall (mm)	-	>70mm (minor flood)	40mm 4 days ago	40mm 19/12, 13mm 20/12	-	scattered showers		
Level								
pH	7.14	7.21	6.93	7.13	6.64	6.94	6.96	6.83
Turbidity (NTU)	31.00	27.00	32.80	28.30	25.40	31.60	30.50	35.40
Temperature	21.38	22.34	20.40	22.87	22.60	22.91	21.44	21.47
DO %	39.00	45.00	35.00	41.00	105.30	116.50	50.30	32.90
EC (ms/cm)	0.692	0.920	2.030	0.425	0.640	0.689	0.694	0.730
Redox Potential (mV)	-38.00	-29.00	-24.00	22.00	-22.00	-97.00	-63.00	-73.00
Salinity (ppt)	0.34	0.94	0.28	0.35	0.26	0.34	0.31	0.36

North Bank Borehole - East

	31-Oct-18	29-Nov-18	18-Dec-18	21-Dec-18	25-Jan-19	26-Feb-19	29-Mar-19	29-Apr-19
Weather	dry	wet	dry	wet	dry	dry		
Recent rainfall (mm)	-	>70mm (minor flood)	40mm 4 days ago	40mm 19/12, 13mm 20/12	-	scattered showers		
Level								
pH	6.80	7.43	6.82	7.02	6.83	7.31	7.19	7.27
Turbidity (NTU)	22.40	34.70	29.60	32.10	26.60	27.00	25.30	26.80
Temperature	21.30	20.80	22.30	21.40	21.40	21.50	19.86	19.13
DO %	60.10	21.60	43.00	26.80	74.30	81.40	33.40	28.20
EC (ms/cm)	0.400	0.880	0.650	0.540	0.530	0.674	0.689	0.712
Redox Potential (mV)	-58.00	-55.00	-87.30	-48.60	-49.80	-57.00	-56.00	-58.00
Salinity (ppt)	0.20	0.64	0.72	0.76	0.34	0.33	0.34	0.35

North Bank Borehole - West

	31-Oct-18	29-Nov-18	18-Dec-18	21-Dec-18	25-Jan-19	26-Feb-19	29-Mar-19	29-Apr-19
Weather	dry	wet	dry	wet	dry	dry		
Recent rainfall (mm)	-	>70mm (minor flood)	40mm 4 days ago	40mm 19/12, 13mm 20/12	-	scattered showers		
Level								
pH	6.75	7.43	6.84	7.10	6.89	6.28	6.78	6.55
Turbidity (NTU)	23.40	36.70	32.10	31.20	24.60	23.10	19.50	14.50
Temperature	20.40	20.80	21.60	20.50	21.90	21.80	20.60	19.42
DO %	63.10	21.60	58.90	26.70	42.30	41.80	36.40	23.10
EC (ms/cm)	0.450	0.880	0.513	0.622	0.483	0.421	0.447	0.463
Redox Potential (mV)	-56.90	-55.00	-55.30	-61.80	-52.00	-54.00	-31.00	-22.00
Salinity (ppt)	0.20	0.64	0.36	0.71	0.10	0.20	0.21	0.22

South Bank Borehole

	31-Oct-18	29-Nov-18	18-Dec-18	21-Dec-18	25-Jan-19	26-Feb-19	29-Mar-19	29-Apr-19
Weather	dry	wet	dry	wet	could not access	dry	dry	dry
Recent rainfall (mm)	-	>70mm (minor flood)	40mm 4 days ago	40mm 19/12, 13mm 20/12	-	scattered showers		
Level					-			
pH	6.94	6.95	7.91	7.32	-	7.67	7.85	7.38
Turbidity (NTU)	230	215	488	126	-	576	386	184
Temperature	23.10	22.10	23.79	21.90	-	23.74	23.00	24.20
DO %	25.60	27.80	29.60	34.60	-	29.40	60.70	66.30
EC (ms/cm)	1.850	1.300	0.542	2.230	-	1.980	0.716	1.740
Redox Potential (mV)	163.40	134.50	12.00	53.66	-	-7.00	70.00	74.00
Salinity (ppt)	2.300	0.66	0.26	1.840	-	1.000	0.94	0.88