

Regional Rivers Water Quality Monitoring Programme Data Report 2010

Prepared by:
Asaeli Tulagi

For:
Waikato Regional Council
PO Box 4010
HAMILTON EAST

5 September 2011

Document #: 2048051

Peer reviewed by:
Bill Vant

Date 10 October 2011

Approved for release by:
Jim Price

Date 18 October 2011

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Acknowledgement

Thanks to Nicola Cowie, Kane Lynn, Naomi Crawford, Claire Kotze, Ralph Ostertag, Chris Service and Paul Stanley for their commitment and reliability in undertaking field measurements and sample collection; and Ian Buchanan for co-ordinating the laboratory analyses and assisting with co-ordination of the field aspects of sample collection. Thanks also to Cara Graham, Stuart Beard and Bevan Jenkins for their assistance and sound advice with data analysis.

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1 Introduction

1.1 Background

To effectively manage water quality, the regional rivers monitoring programme addresses the following questions:

1. What is the quality of the water now?
2. Why is the water of the observed level of quality?
3. Is water quality getting better or worse? If so - what makes it change?
4. How can we improve the quality, ecological health and integrity of the region's rivers and streams?

The monitoring information allows Waikato Regional Council to:

- determine compliance with classification standards
- assess the suitability of the resource for various beneficial uses and values of the water
- monitor the impact of major discrete point source discharges on water quality
- monitor the impacts of diffuse discharges on water quality
- provide a basis for evaluating the effectiveness of resource management measures.

This dataset is invaluable for the evaluation of the region's rivers: their state, the pressures on them and our response to these pressures. We need to continue to gather comprehensive, reliable and good quality data on the region's rivers to protect and enhance their values into the future.

This report is the 15th since the implementation of the regional rivers monitoring programme (RERIMP) in 1993¹ and follows the format of the previous data report (Beard, 2010). Copies of reports as described in the list of references (page 30) can be obtained by contacting Waikato Regional Council (the Library) on 0800 800 401, or in electronic format from the publications page of the Waikato Regional Council website: www.waikatoregion.govt.nz/publications or email: inforeq@waikatoregion.govt.nz

1.2 Report content

The report provides information on the routine monthly monitoring of water quality at 100 locations across the Waikato region, and includes:

- year 2010 summary statistics tabulated by parameter and reported together
- spatial contour plots for four water quality parameters using spatial interpolation of the median of the previous 5 years
- summary tables identifying the number of samples meeting 'satisfactory' and 'excellent' water quality guidelines and standards.

1.3 Water quality guidelines and standards

Table 1 lists the physical, chemical (physico-chemical) and microbiological water quality guidelines and standards used to assess the condition of the region's rivers in 2010. The standards relate to either the protection of the ecological health of rivers and streams or to the suitability for direct-contact water-based recreation (for example swimming).

¹ Waikato River reported on separately — see Beard, 2009.

Table 1: Guidelines and standards for physico-chemical water quality for ecological health and for human uses of water. See Appendix I for a description of the guidelines and standards used.

Water quality measure	Relevance ¹	Satisfactory	Excellent
Ecological health			
Dissolved oxygen (% of saturation)	aquatic life (breathing)	>80	>90
pH	aquatic life (acidity)	6.5–9	7–8
Turbidity (NTU)	plant growth (clarity)	<5	<2
Ammoniacal-N (g N/m ³)	aquatic life (toxicity)	<0.88	<0.1
Temperature (°C)	(May-Sep)	<12	<10
	(Oct-Apr)	<20	<16
Total phosphorus (g/m ³)	nuisance plant growth	<0.04	<0.01
Total nitrogen (g/m ³)	nuisance plant growth	<0.5	<0.1
Human uses—recreation			
Baseflow water clarity (m)	visibility	>1.6	>4
<i>Escherichia coli</i> (no./100 mL)	human health	<550	<55
Median <i>E. coli</i> (no./100 mL)	human health	<126	<23

¹ Refer to Appendix II for further information. These guidelines and standards are also described on the Waikato Regional Council Internet site - www.waikatoregion.govt.nz

In each case two values are shown. The less stringent values define water that is “satisfactory” for the desired use; these are mostly based on existing national and other guidelines and standards (Appendix I). The more stringent values identify “excellent” water, and reflect expert opinion.

2 Regional rivers monitoring design

2.1 Sampling locations

Routine water quality monitoring locations of the regional rivers monitoring programme are summarised in *Table 2* and illustrated in *Figure 1*. One hundred sites were sampled monthly by Waikato Regional Council. A further five locations form part of NIWA’s National Water Quality Network, whose data can be found on the NIWA website (www.niwa.co.nz).

Table 2: Waikato Regional Council's sampling locations

Map No.	Location	Location Id	Map Ref.
Coromandel			
1	Hikutaia River at Old Maratoto Rd	169.2	T12:471-312
2	Kauaeranga River at Smiths Cableway/Recorder	234.11	T12:404-461
9	Ohinemuri River at Queens Head	619.19	T13:576-170
8	Ohinemuri River at SH25 Bridge	619.20	T13:641-213
6	Tairua River at Morrisons Bridge Hikuia	940.10	T12:567-548
3	Tapu River at Tapu-Coroglen Rd	954.5	T11:332-658
4	Waiau River at E309 Rd Ford	1105.3	T11:357-866
10	Waitekauri River at U/S Ohinemuri Confluence	1239.32	T13:566-168
5	Waiwawa River at SH25 Coroglen	1257.3	T11:503-717
7	Wharekawa River at SH25	1312.3	T12:628-478
Hauraki			
12	Mangawhero Stm (Kaihere) at Mangawara Rd	489.2	S13:249-195
20	Oraka Stm at Lake Rd	669.6	T15:536-607
15	Piako River at Kiwitahi	749.10	T14:398-856
13	Piako River at Paeroa-Tahuna Rd Bridge	749.15	T13:318-068
17	Piakonui Stm at Piakonui Rd	753.4	T14:417-719
18	Waihou River at Okauia	1122.18	T14:602-756
21	Waihou River at Whites Rd	1122.41	T15:572-500
22	Waiohotu Stm at Waiohotu Rd (Off SH5)	1173.2	T15:665-513
19	Waiomou Stm at Matamata-Tauranga Rd	1174.4	T15:623-683
11	Waitakaruru River (Hauraki Plains) at Coxhead Rd Bridge	1230.1	S12:194-339
16	Waitoa River at Landsdowne Rd Bridge	1249.15	T14:517-783
14	Waitoa River at Mellon Rd Recorder	1249.18	T13:426-047
Tributaries to the lower Waikato River			
23	Awaroa River (Waiuku) at Otaua Rd Bridge opp Moseley Rd	41.9	R12:662-319
34	Awaroa Stm (Rotowaro) at Sansons Bridge–Rotowaro-Huntly	39.11	S14:948-997
44	Karapiro Stm at Hickey Rd Bridge	230.5	T15:331-639
37	Kirikiroa Stm at Tauhara Drive	253.4	S14:095-817
36	Komakorau Stm at Henry Rd	258.4	S14:091-949
45	Little Waipa Stm at Arapuni – Putaruru Rd	335.1	T15:489-462
39	Mangakotukutuku Stm (Rukuhia) at Peacock Rd	398.1	S14:127-743
47	Mangamingi Stm (Tokoroa) at Paraonui Rd Bridge	407.1	T16:588-302
40	Mangaone Stm at Annebrooke Rd Bridge	417.7	S14:159-744
41	Mangaonua Stm at Hoeka Rd	421.10	S14:205-776
42	Mangaonua Stm at Harbutt Rd	421.50	T14:315-732
28	Mangatangi River at SH2 Maramarua	453.6	S12:042-372
27	Mangatawhiri River at Lyons Rd at Buckingham Bridge	459.6	S12:997-427
35	Mangawara Stm at Rutherford Rd Bridge	481.7	S13:084-023
43	Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	488.1	S15:217-653
33	Matahuru Stm at Waiterimu Rd Br	516.5	S13:083-109
25	Ohaeroa Stm at SH22 Bridge	612.9	R12:834-303
24	Opuatia Stm at Ponganui Rd	665.5	R13:773-245
46	Pokaiwhenua Stm at Arapuni-Putaruru Rd	786.2	T15:491-458
31	Waerenga Stm at Taniwha Rd	1098.1	S13:131-217
38	Waitawhiriwhiri Stm at Edgecumbe Street	1236.2	S14:102-787
26	Whakapipi Stm at SH22 Bridge	1282.8	R12:812-365
48	Whakauru Stm at U/S SH1 Bridge	1287.7	T16:614-282
29	Whangamarino River at Island Block Rd	1293.7	S12:954-308
30	Whangamarino River at Jefferies Rd Bridge	1293.9	S13:084-273
32	Whangape Stm at Rangiriri-Glen Murray Rd	1302.1	S13:950-154

Map No.	Location	Location Id	Map Ref.
Waipa River and tributaries			
50	Kaniwhaniwha Stm at Wright Rd	222.16	S15:985-680
56	Mangaohoi Stm at South Branch Maru Rd	411.9	T15:329-471
61	Mangaokewa Stm at Lawrence St Bridge	414.6	S16:998-162
51	Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	438.3	S15:093-560
58	Mangapu River at Otorohanga	443.3	S16:033-318
55	Mangatutu Stm (Waikeria) at Walker Rd Bridge	476.7	S15:203-422
52	Mangauika Stm at Te Awamutu Borough Water Supply Intake	477.10	S15:980-504
49	Ohote Stm at Whatawhata/Horotiu Rd	624.5	S14:997-794
54	Puniu River at Bartons Corner Rd Bridge	818.2	S15:115-500
62	Waipa River at Mangaokewa Rd	1191.5	S17:233-028
53	Waipa River at Pirongia-Ngutunui Rd Bridge	1191.10	S15:037-529
59	Waipa River at SH3 Otorohanga	1191.12	S16:036-322
57	Waitomo Stm at SH31 Otorohanga	1253.5	S16:022-335
60	Waitomo Stm at Tumutumu Rd	1253.7	S16:938-249
Tributaries to the upper Waikato River			
69	Kawaunui Stm at SH5 Bridge	240.5	U17:021-081
65	Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	359.1	U16:733-129
71	Mangakara Stm (Reporoa) at SH5	380.2	U17:996-003
63	Mangakino River (Whakamaru) at Sandel Rd	388.1	T17:486-013
67	Otamakokore Stm at Hossack Rd	683.4	U16:955-166
74	Pueto Stm at Broadlands Rd Bridge	802.1	U17:938-827
66	Tahunaatara Stm at Ohakuri Rd	934.1	U16:785-138
73	Torepatutahi Stm at Vaile Rd Bridge	1057.6	U17:985-965
70	Waiotapu Stm at Campbell Rd Bridge	1186.2	U17:024-082
72	Waiotapu Stm at Homestead Rd Bridge	1186.4	U17:003-000
64	Waipapa Stm (Mokai) at Tirohanga Rd Bridge	1202.7	T17:685-047
68	Whirinaki Stm at Corbett Rd	1323.1	U16:957-171
West coast			
84	Awakino River at Gribbon Rd	33.6	R17:702-918
82	Awakino River at SH3 Awakau Rd Junction	33.9	R18:588-799
81	Manganui River at Off Manganui Rd	410.4	R17:554-831
85	Mangaotaki River at SH3 Bridge	428.3	R17:764-963
79	Marokopa River at Speedies Rd (Off Te Anga Rd)	513.3	R16:708-256
83	Mokau River at Awakau Rd	556.2	R18:601-785
88	Mokau River at Mangaokewa Rd (Off SH30)	556.5	S17:096-017
86	Mokau River at Totoro Rd Recorder	556.9	R17:759-907
87	Mokauiti Stm at Three Way Point – Aria	557.5	R17:828-929
77	Ohautira River at Waingaro - Te Uku Rd	616.1	R14:842-803
78	Oparau River at Langdon Rd (Off Okupata Rd)	658.1	R15:799-494
80	Tawarau River at Off Speedies Rd	976.1	R16:718-249
75	Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22	1167.4	R14:837-837
76	Waitetuna River at Te Uku-Waingaro Rd	1247.2	R14:842-742
Inflows to Lake Taupo			
91	Hinemaiaia River at SH1	171.5	U18:722-567
96	Kuratau River at Te Rae Street	282.5	T18:502-536
95	Kuratau River at SH41 Moerangi	282.4	T18:356-537
89	Mapara Stm at Off Mapara Rd (Whakaipo Reserve)	504.2	T18:681-750
92	Tauranga-Taupo River at Te Kono Slackline	971.4	T19:636-473
94	Tokaanu Power Station Tailrace Canal at SH41 Bridge	1491.1	T19:504-435
93	Tokaanu Stm at Off SH41 Turangi	1045.3	T19:517-423
99	Waihaha River at SH32	1106.4	T18:434-747
90	Waitahanui River at Blake Rd	1226.1	U18:781-627
100	Whangamata Stm (Kinloch) at Whangamata Rd	1300.1	T17:649-804
98	Whanganui Stream at Lakeside Lake Taupo	1301.1	T18:473-653
97	Whareroa Stream at Lakeside Lake Taupo	1318.4	T18:515-568

2.2 Sample collection

Sample collection occurs monthly. The 100 locations sampled by Waikato Regional Council staff are divided between 7 sampling runs. The runs are sampled in the same order each month, and by the same group of field staff. Sampling is assigned to either the second, third or fourth week of each month. A similar time of sampling (± 1 hour) is maintained for subsequent visits to a location to minimise the effect of any diurnal variation on water quality parameters, thereby increasing long term trend detection power.

2.3 Water quality parameters

Water quality of the region's rivers is assessed by measuring up to 32 parameters (16 routinely). Seventy-four locations are measured quarterly for enterococci, *E. coli* and faecal coliform bacteria. Some parameters are measured in the field, but most are analysed by laboratories using standard analytical methods. Details of field measurements and analytical methods are given in *Appendix II*.

2.4 Quality control, data storage and analysis

Quality control measures are undertaken in accordance with Waikato Regional Council's ISO 9001:2008 standards including procedures for the collection, transport and storage of samples, and methods for data verification and quality assurance to ensure the consistency of data across the programme. Samples are sent to IANZ registered laboratories for analysis. Back-up samples are held for two months until results have been verified by routine quality assurance procedures. All data from field measurements and laboratory analyses are stored in Waikato Regional Council's water quality archiving database (HYDSTRA).

Data analysis was performed using Data Desk (version 6.0.1). For the purpose of data analysis, non-detect results (i.e. results with "less than" values) were assumed to be equal to half the corresponding limit of detection (i.e. $<x = x/2$), and results greater than the value reported were taken as equal to the value reported (i.e. $>x = x$).

The water quality spatial contour plots were created using Surfer (version 8). To present the spatial contour plots the kriging spatial interpolation procedure was used to estimate the variable at unsampled locations, using weighted sums of the variable at neighbouring sample points. The procedure is designed to minimize the variance of the estimation errors. In some cases artificial sites were used at points downstream of lowland sample sites to show a catchment flow-through effect.

2.5 Reports

A report on Regional Water Quality Trends (Vant 2008) summarises the trends and patterns in regional water quality during 1990 to 2007. Waikato Regional Council's State of the Environment Report briefly summarises the state of the rivers in the region, and common pressures (Waikato Regional Council, 1999).

The data contained in these regional rivers reports is updated to the Waikato Regional Council "Healthy Rivers" internet page:

<http://www.waikatoregion.govt.nz/Environmental-information/Rivers-lakes-and-wetlands/>

This page also provides a link to details of the water quality guidelines and standards used to assess the condition of the region's rivers, as well as other information relating to lakes, rivers and wetlands.

3 Results

The results are divided into two sections. Section 3.1 has a statistical summary of routine monitoring of the region's rivers in 2010 and provides the spatial contour plots using water quality data from four parameters, based on median values for the last five years. Section 3.2 compares the results with water quality guidelines and standards for compliance.

3.1 Regional rivers monitoring programme summary statistics

Absorbance of filtered sample at 340 nm (units: cm⁻¹)

Location	Count	Mean	Median	Min	Max	IQR	Skew	06-10 Median
Coromandel								
Hikutaia River at Old Maratoto Rd	12	0.016	0.016	0.007	0.027	0.007	0.28	0.016
Kauaeranga River at Smiths Cableway/Recorder	12	0.015	0.011	0.006	0.044	0.010	1.69	0.014
Ohinemuri River at Queens Head	12	0.016	0.015	0.007	0.032	0.010	0.79	0.015
Ohinemuri River at SH25 Br	12	0.012	0.013	0.005	0.019	0.007	-0.10	0.012
Tairua River at Morrisons Br Hikuai	12	0.015	0.014	0.007	0.029	0.005	1.08	0.015
Tapu River at Tapu-Coroglen Rd	12	0.012	0.009	0.005	0.032	0.011	1.32	0.009
Waiau River at E309 Rd Ford	12	0.017	0.013	0.008	0.059	0.006	2.36	0.015
Waitekauri River at U/S Ohinemuri Conflu	12	0.012	0.012	0.006	0.018	0.006	0.16	0.012
Waiwawa River at SH25 Coroglen	12	0.021	0.020	0.008	0.048	0.009	1.39	0.021
Wharekawa River at SH25	12	0.016	0.018	0.008	0.022	0.007	-0.41	0.016
Hauraki								
Mangawhero Stm (Kaihere) at Mangawara Rd	12	0.016	0.016	0.012	0.022	0.007	0.12	0.020
Oraka Stm at Lake Rd	12	0.014	0.014	0.006	0.019	0.008	-0.37	0.013
Piako River at Kiwitahi	12	0.047	0.038	0.025	0.083	0.027	0.71	0.049
Piako River at Paeroa-Tahuna Rd Br	12	0.076	0.073	0.056	0.120	0.021	1.08	0.073
Piakonui Stm at Piakonui Rd	12	0.035	0.024	0.018	0.106	0.021	<u>1.85</u>	0.029
Waihou River at Okauia	12	0.014	0.014	0.006	0.019	0.007	-0.46	0.013
Waihou River at Whites Rd	12	0.001	0.001	0.001	0.005	0.000	<u>3.02</u>	0.001
Waiohotu Stm at Waiohotu Rd (Off SH5)	12	0.049	0.037	0.027	0.164	0.020	<u>2.68</u>	0.034
Waiomou Stm at Matamata-Tauranga Rd	12	0.021	0.020	0.012	0.047	0.006	<u>2.13</u>	0.017
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	0.054	0.056	0.037	0.073	0.023	0.11	0.061
Waitoa River at Landsdowne Rd Br	12	0.042	0.041	0.026	0.064	0.013	0.54	0.047
Waitoa River at Mellon Rd Recorder	12	0.045	0.043	0.028	0.065	0.017	0.48	0.042
Tributaries to the lower Waikato River								
Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd	12	0.038	0.040	0.016	0.062	0.018	-0.22	0.039
Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd	12	0.020	0.020	0.012	0.029	0.008	0.04	0.023
Karapiro Stm at Hickey Rd Bridge	12	0.051	0.045	0.028	0.150	0.020	<u>2.54</u>	0.047
Kirikiroa Stm at Tauhara Dr	12	0.058	0.055	0.043	0.081	0.015	0.82	0.057
Komakorau Stm at Henry Rd	12	0.143	0.099	0.082	0.350	0.086	1.52	0.110
Little Waipa Stm at Arapuni - Putaruru Rd	12	0.011	0.011	0.004	0.020	0.012	0.14	0.011
Mangakotukutuku Stm (Rukuhia) at Peacocks Rd	12	0.303	0.290	0.080	0.650	0.378	0.37	0.250
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	0.028	0.028	0.021	0.039	0.007	0.54	0.027
Mangaone Stm at Annebrooke Rd Br	12	0.052	0.050	0.038	0.079	0.015	0.93	0.050
Mangaonua Stm at Harbutt Rd Br	12	0.028	0.024	0.016	0.048	0.017	0.65	-
Mangaonua Stm at Hoeka Rd	12	0.031	0.030	0.017	0.045	0.011	0.38	0.034
Mangatangi River at SH2 Maramarua	12	0.047	0.050	0.028	0.067	0.019	-0.07	0.052
Mangatawhiri River at Lyons Rd At Buckingham Br	12	0.022	0.021	0.015	0.034	0.006	0.91	0.025
Mangawara Stm at Rutherford Rd Br	12	0.133	0.118	0.070	0.230	0.100	0.54	0.113
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	10	0.119	0.071	0.059	0.340	0.048	1.52	0.092
Matahuru Stm at Waiterimu Road Below Confluence	12	0.074	0.067	0.042	0.115	0.039	0.49	0.075
Ohaeroa Stm at SH22 Br	12	0.023	0.024	0.018	0.034	0.005	0.94	0.025
Opuatia Stm at Ponganui Rd	11	0.027	0.027	0.020	0.036	0.006	0.35	0.029
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	0.016	0.015	0.008	0.025	0.006	0.18	0.014
Waerenga Stm at Taniwha Rd	12	0.027	0.028	0.016	0.036	0.008	-0.36	0.028
Waitawhiriwhiri Stm at Edgecumbe Street	12	0.161	0.148	0.087	0.310	0.096	0.83	0.130
Whakapipi Stm at SH22 Br	12	0.036	0.036	0.028	0.047	0.012	0.33	0.038
Whakauru Stm at U/S SH1 Br	11	0.025	0.025	0.016	0.036	0.005	0.23	0.025
Whangamarino River at Island Block Rd	12	0.115	0.093	0.039	0.300	0.064	1.47	0.109
Whangamarino River at Jefferies Rd Br	12	0.041	0.042	0.029	0.052	0.011	-0.07	0.045
Whangape Stm at Rangiriri-Glen Murray Rd	12	0.072	0.070	0.043	0.100	0.017	0.14	0.065

Absorbance of filtered sample at 440 nm (units: cm⁻¹)

Count	Mean	Median	Min	Max	IQR	Skew	Median
12	0.003	0.003	0.001	0.005	0.002	-0.04	0.003
12	0.003	0.002	0.001	0.009	0.002	<u>1.90</u>	0.002
12	0.003	0.003	0.001	0.006	0.003	0.64	0.003
12	0.002	0.002	0.001	0.004	0.002	0.13	0.002
12	0.003	0.003	0.001	0.006	0.002	0.75	0.003
12	0.002	0.002	0.001	0.006	0.002	1.44	0.001
12	0.003	0.002	0.001	0.010	0.003	<u>2.07</u>	0.003
12	0.002	0.002	0.001	0.005	0.002	0.69	0.002
12	0.004	0.004	0.001	0.011	0.002	1.35	0.005
12	0.003	0.003	0.001	0.005	0.003	-0.35	0.003
12	0.003	0.003	0.001	0.005	0.002	-0.17	0.004
12	0.002	0.003	0.001	0.004	0.002	-0.35	0.003
12	0.009	0.006	0.005	0.019	0.006	1.04	0.009
12	0.013	0.013	0.008	0.021	0.006	0.55	0.013
12	0.007	0.005	0.003	0.022	0.005	<u>1.77</u>	0.006
12	0.003	0.003	0.001	0.004	0.002	-0.58	0.002
12	0.001	0.001	0.001	0.001	0.000	-1.00	0.001
12	0.010	0.008	0.005	0.033	0.004	<u>2.68</u>	0.007
12	0.004	0.004	0.002	0.010	0.002	<u>1.81</u>	0.003
12	0.010	0.010	0.006	0.016	0.005	0.44	0.012
12	0.007	0.007	0.004	0.011	0.003	0.38	0.008
12	0.008	0.007	0.004	0.011	0.003	0.20	0.007
12	0.006	0.007	0.001	0.012	0.005	-0.22	0.007
12	0.003	0.003	0.001	0.004	0.002	-0.12	0.003
12	0.009	0.009	0.005	0.024	0.003	<u>2.05</u>	0.008
12	0.009	0.009	0.006	0.013	0.003	0.57	0.009
12	0.021	0.015	0.012	0.054	0.013	1.65	0.016
12	0.002	0.002	0.001	0.004	0.002	0.32	0.002
12	0.053	0.050	0.013	0.120	0.062	0.47	0.043
12	0.006	0.006	0.004	0.009	0.001	1.17	0.006
12	0.009	0.009	0.006	0.015	0.002	1.08	0.009
12	0.006	0.005	0.003	0.009	0.004	0.45	-
12	0.005	0.005	0.003	0.007	0.002	0.57	0.005
12	0.009	0.010	0.004	0.012	0.006	-0.30	0.010
12	0.004	0.004	0.003	0.007	0.002	0.77	0.005
12	0.022	0.020	0.012	0.039	0.014	0.72	0.019
10	0.020	0.013	0.010	0.055	0.009	1.53	0.017
12	0.013	0.012	0.007	0.020	0.005	0.69	0.013
12	0.005	0.004	0.003	0.007	0.002	0.40	0.005
11	0.005	0.005	0.003	0.008	0.002	0.41	0.005
12	0.003	0.003	0.001	0.005	0.001	-0.10	0.003
12	0.005	0.005	0.003	0.008	0.003	0.53	0.005
12	0.027	0.024	0.014	0.054	0.016	1.02	0.021
12	0.007	0.007	0.005	0.009	0.003	0.01	0.007
11	0.005	0.005	0.003	0.008	0.001	1.02	0.005
12	0.022	0.018	0.005	0.061	0.014	1.43	0.020
12	0.008	0.008	0.004	0.011	0.003	-0.18	0.008
12	0.012	0.012	0.006	0.018	0.004	-0.06	0.011

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

Waipa River and Tributaries

Kaniwhaniwha Stm at Wright Rd	12	0.031	0.030	0.017	0.053	0.006	0.83	0.028
Mangaohoi Stm at South Branch Maru Rd	12	0.008	0.006	0.004	0.018	0.003	1.48	0.007
Mangaokewa Stm at Lawrence St Bridge	12	0.038	0.039	0.022	0.053	0.012	-0.04	0.035
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	12	0.089	0.078	0.065	0.150	0.032	1.26	0.077
Mangapu River at Otorohanga	12	0.032	0.029	0.022	0.048	0.010	0.86	0.028
Mangatutu Stm (Waikeria) at Walker Rd Br	12	0.023	0.021	0.014	0.048	0.005	<u>1.86</u>	0.020
Mangauika Stm at Te Awamutu Borough W/S Intake	12	0.007	0.006	0.004	0.018	0.002	<u>1.95</u>	0.006
Ohote Stm at Whatawhata/Horotiu Rd	11	0.169	0.170	0.084	0.250	0.096	-0.09	0.156
Puniu River at Bartons Corner Rd Br	12	0.031	0.030	0.021	0.048	0.008	0.87	0.029
Waipa River at Mangaokewa Rd	12	0.047	0.046	0.036	0.061	0.017	0.36	0.044
Waipa River at Pirongia-Ngutunui Rd Br	12	0.029	0.028	0.021	0.040	0.007	0.68	0.029
Waipa River at SH3 Otorohanga	12	0.025	0.025	0.019	0.034	0.010	0.25	0.026
Waitomo Stm at SH31 Otorohanga	12	0.022	0.020	0.014	0.042	0.011	1.06	0.019
Waitomo Stm at Tumutumu Rd	12	0.015	0.013	0.010	0.029	0.008	1.23	0.012

	12	0.006	0.006	0.003	0.010	0.001	0.34	0.005
	12	0.001	0.001	0.001	0.003	0.001	1.25	0.001
	12	0.007	0.008	0.003	0.010	0.003	-0.65	0.007
	12	0.016	0.014	0.010	0.026	0.006	0.93	0.013
	12	0.006	0.005	0.003	0.009	0.003	0.40	0.005
	12	0.005	0.004	0.002	0.010	0.001	<u>1.68</u>	0.004
	12	0.001	0.001	0.001	0.004	0.000	<u>2.49</u>	0.001
	11	0.028	0.029	0.011	0.043	0.016	-0.21	0.026
	12	0.006	0.006	0.003	0.009	0.002	-0.06	0.006
	12	0.009	0.008	0.006	0.012	0.004	0.32	0.008
	12	0.005	0.005	0.004	0.008	0.002	0.59	0.005
	12	0.005	0.004	0.003	0.007	0.001	0.53	0.005
	12	0.004	0.004	0.002	0.007	0.002	0.58	0.004
	12	0.002	0.003	0.001	0.004	0.002	0.16	0.002

Tributaries to the upper Waikato River

Kawaunui Stm at SH5 Br	12	0.034	0.030	0.015	0.099	0.014	<u>2.32</u>	0.027
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	12	0.030	0.025	0.018	0.086	0.005	<u>2.81</u>	0.025
Mangakara Stm (Reporoa) at SH5	12	0.023	0.016	0.014	0.087	0.005	<u>2.87</u>	0.016
Mangakino Stm (Whakamaru) at Sandel Rd	12	0.020	0.012	0.008	0.073	0.006	<u>1.86</u>	0.012
Otamakokore Stm at Hossack Rd	12	0.046	0.034	0.018	0.186	0.026	<u>2.65</u>	0.030
Pueto Stm at Broadlands Rd Br	12	0.012	0.011	0.008	0.026	0.003	<u>2.36</u>	0.011
Tahunaatara Stm at Ohakuri Rd	12	0.035	0.032	0.020	0.072	0.011	1.65	0.030
Torepatutahi Stm at Vaile Rd Br	12	0.015	0.015	0.009	0.026	0.005	1.30	0.012
Waiotapu Stm at Campbell Rd Br	12	0.006	0.005	0.003	0.019	0.003	<u>2.31</u>	0.006
Waiotapu Stm at Homestead Rd Br	12	0.025	0.024	0.018	0.045	0.008	1.63	0.022
Waipapa Stm (Mokai) at Tirohanga Rd Br	12	0.015	0.014	0.008	0.034	0.005	<u>2.09</u>	0.013
Whirinaki Stm at Corbett Rd	12	0.005	0.002	0.001	0.034	0.003	<u>2.84</u>	0.002

	12	0.007	0.006	0.003	0.022	0.003	<u>2.36</u>	0.005
	12	0.005	0.005	0.003	0.017	0.001	<u>2.73</u>	0.005
	12	0.005	0.003	0.001	0.019	0.001	<u>2.66</u>	0.003
	12	0.004	0.002	0.001	0.016	0.002	<u>1.86</u>	0.002
	12	0.010	0.007	0.004	0.042	0.005	<u>2.76</u>	0.007
	12	0.002	0.001	0.001	0.005	0.001	<u>2.50</u>	0.001
	12	0.007	0.006	0.003	0.015	0.003	<u>1.72</u>	0.006
	12	0.002	0.002	0.001	0.005	0.002	0.45	0.002
	12	0.001	0.001	0.001	0.002	0.000	<u>3.02</u>	0.001
	12	0.004	0.004	0.003	0.008	0.002	1.20	0.003
	12	0.003	0.003	0.001	0.008	0.002	<u>1.71</u>	0.002
	12	0.002	0.001	0.001	0.007	0.000	<u>3.02</u>	0.001

West Coast

Awakino River at Gribbon Rd	12	0.010	0.008	0.005	0.022	0.006	1.27	0.006
Awakino River at SH3 Awakau Rd Junction	12	0.016	0.013	0.008	0.028	0.009	0.61	0.012
Manganui River at Off Manganui Rd	12	0.009	0.008	0.005	0.018	0.003	1.59	0.008
Mangaotaki River at SH3 Br	12	0.016	0.016	0.012	0.023	0.002	1.11	0.015
Marokopa River at Speedies Rd (Off Te Anga Rd)	12	0.021	0.018	0.011	0.043	0.011	1.10	0.017
Mokau River at Awakau Rd	12	0.036	0.033	0.023	0.059	0.012	1.02	0.032
Mokau River at Mangaokewa Rd (Off SH30)	12	0.049	0.044	0.033	0.093	0.011	<u>1.94</u>	0.045
Mokau River at Totoro Rd Recorder	12	0.030	0.029	0.021	0.043	0.011	0.48	0.029
Mokauiti Stm at Three Way Point - Aria	12	0.068	0.063	0.029	0.117	0.039	0.37	0.056
Ohautira Stm at Waingaro Te Uku Rd	12	0.021	0.019	0.012	0.039	0.009	1.04	0.021
Oparau River at Langdon Rd (Off Okupata Rd)	12	0.023	0.020	0.012	0.051	0.014	1.26	0.018
Tawarau River at Off Speedies Rd	12	0.021	0.017	0.011	0.040	0.011	1.02	0.016
Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22	12	0.036	0.034	0.019	0.067	0.017	0.86	0.036
Waitetuna River at Te Uku-Waingaro Rd	12	0.026	0.026	0.013	0.042	0.009	0.12	0.024

	12	0.002	0.001	0.001	0.005	0.002	1.00	0.001
	12	0.003	0.003	0.001	0.005	0.003	0.18	0.002
	12	0.002	0.001	0.001	0.004	0.001	1.63	0.001
	12	0.003	0.002	0.001	0.005	0.001	0.69	0.003
	12	0.004	0.003	0.001	0.009	0.003	0.94	0.003
	12	0.007	0.006	0.003	0.012	0.003	0.71	0.006
	12	0.010	0.008	0.006	0.020	0.003	<u>1.92</u>	0.008
	12	0.006	0.005	0.003	0.009	0.003	0.66	0.005
	12	0.013	0.011	0.005	0.022	0.010	0.25	0.010
	12	0.004	0.004	0.002	0.007	0.002	0.38	0.004
	12	0.005	0.004	0.001	0.012	0.003	1.35	0.004
	12	0.004	0.003	0.001	0.008	0.003	0.50	0.003
	12	0.007	0.007	0.003	0.013	0.004	0.49	0.006
	12	0.005	0.005	0.001	0.009	0.002	0.07	0.004

Inflows to Lake Taupo

Hinemaiaia River at SH1	12	0.013	0.012	0.007	0.019	0.004	0.45	0.012
Kuratau River at SH41 Moerangi	12	0.022	0.018	0.015	0.041	0.004	1.63	0.017
Kuratau River at 43 Te Rae Street	12	0.020	0.020	0.004	0.032	0.012	-0.43	0.018
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)	12	0.051	0.041	0.034	0.105	0.012	1.63	0.042
Tauranga-Taupo River at Te Kono Slackline	12	0.011	0.006	0.004	0.034	0.008	1.51	0.006
Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal	12	0.002	0.001	0.001	0.005	0.001	<u>2.41</u>	0.001
Tokaanu Stm at Off SH41 Turangi	12	0.005	0.005	0.002	0.012	0.004	0.89	0.005
Waihaha River at SH32	12	0.014	0.008	0.005	0.044	0.009	1.56	0.007
Waitahanui River at Blake Rd	12	0.003	0.001	0.001	0.015	0.003	<u>2.34</u>	0.002
Whangamata Stm (Kinloch) at Whangamata Rd	12	0.008	0.006	0.004	0.019	0.004	1.43	0.006
Whanganui Stm at Lakeside Lake Taupo	12	0.022	0.015	0.008	0.077	0.008	<u>1.93</u>	0.013
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	12	0.022	0.016	0.011	0.064	0.008	<u>1.88</u>	0.016

	12	0.002	0.002	0.001	0.004	0.002	0.65	0.002
	12	0.004	0.003	0.001	0.008	0.001	0.97	0.003
	12	0.004	0.004	0.001	0.007	0.003	0.13	0.003
	12	0.010	0.008	0.006	0.022	0.003	1.56	0.009
	12	0.002	0.001	0.001	0.007	0.001	1.62	0.001
	12	0.001	0.001	0.001	0.001	0.000	-1.00	0.001
	12	0.001	0.001	0.001	0.003	0.000	<u>3.02</u>	0.001
	12	0.003	0.001	0.001	0.009	0.002	1.45	0.001
	12	0.001	0.001	0.001	0.003	0.000	<u>3.02</u>	0.001
	12	0.002	0.001	0.001	0.004	0.001	1.61	0.001
	12	0.005	0.003	0.001	0.016	0.002	<u>1.73</u>	0.003
	12	0.005	0.003	0.001	0.014	0.002	<u>1.80</u>	0.003

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

Black Disk (m)

Conductivity at 25 °C (mS m⁻¹)

Location	Count	Mean	Median	Min	Max	IQR	Skew	06-10 Median
Coromandel								
Hikutaia River at Old Maratoto Rd	12	1.91	2.01	0.89	2.95	1.04	-0.01	2.16
Kauaeranga River at Smiths Cableway/Recorder	12	2.61	3.05	1.11	3.50	1.66	-0.60	2.87
Ohinemuri River at Queens Head	11	2.37	2.49	1.49	3.10	0.97	-0.16	2.50
Ohinemuri River at SH25 Br	11	2.81	2.85	1.90	3.60	1.10	-0.24	2.70
Tairua River at Morrisons Br Hikua	11	1.61	1.54	0.00	3.05	0.81	-0.21	1.93
Tapu River at Tapu-Coroglen Rd	12	3.36	3.53	1.15	6.60	2.03	0.35	3.50
Waiau River at E309 Rd Ford	12	2.03	1.82	0.33	4.05	1.41	0.32	1.71
Waitekauri River at U/S Ohinemuri Conflu	11	2.48	2.31	0.77	4.21	1.31	0.10	2.69
Waiawa River at SH25 Coroglen	12	2.57	2.63	1.46	3.50	0.83	-0.30	2.35
Wharekawa River at SH25	11	1.73	1.76	0.72	2.40	0.71	-0.69	1.55
Hauraki								
Mangawhero Stm (Kaihere) at Mangawara Rd	11	1.16	1.11	0.34	2.35	0.99	0.46	0.83
Oraka Stm at Lake Rd	12	0.88	0.76	0.50	1.90	0.43	1.36	0.89
Piako River at Kiwitahi	11	0.91	0.86	0.41	1.78	0.58	0.81	1.05
Piako River at Paeroa-Tahunu Rd Br	12	0.52	0.56	0.34	0.77	0.19	0.31	0.57
Piakonui Stm at Piakonui Rd	12	1.07	1.22	0.29	1.73	0.67	-0.45	1.24
Waihou River at Okauia	12	1.11	1.04	0.64	1.75	0.82	0.26	0.96
Waihou River at Whites Rd	12	4.84	5.23	2.22	6.70	2.30	-0.50	5.19
Waiohotu Stm at Waiohotu Rd (Off SH5)	-	-	-	-	-	-	-	-
Waiomou Stm at Matamata-Tauranga Rd	12	1.13	1.12	0.63	1.98	0.83	0.36	1.18
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	0.75	0.69	0.22	1.54	0.47	0.59	0.64
Waitoa River at Landsdowne Rd Br	12	1.24	1.01	0.49	3.25	1.21	1.27	0.97
Waitoa River at Mellon Rd Recorder	12	0.91	0.74	0.34	1.72	0.74	0.68	0.80
Tributaries to the lower Waikato River								
Awaroa River (Waiuku) at Otaua Rd Br opp Moseley Rd	11	0.41	0.39	0.11	0.80	0.31	0.16	0.30
Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd	12	0.93	1.09	0.16	1.56	1.04	-0.17	1.02
Karapiro Stm at Hickey Rd Bridge	12	0.95	0.86	0.12	2.05	0.69	0.41	0.74
Kirikirihoa Stm at Tauhara Dr	12	0.42	0.38	0.15	0.68	0.30	0.09	0.37
Komakorau Stm at Henry Rd	12	0.16	0.14	0.08	0.40	0.05	<u>2.23</u>	0.16
Little Waipa Stm at Arapuni - Putaruru Rd	12	1.44	1.49	0.70	2.39	1.01	0.28	1.51
Mangakotukutuku Stm (Rukuhia) at Peacocks Rd	12	0.39	0.42	0.07	0.59	0.26	-0.58	0.36
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	0.79	0.73	0.29	1.41	0.38	0.49	0.97
Mangaone Stm at Annebrooke Rd Br	12	0.66	0.60	0.13	1.04	0.28	-0.37	0.71
Mangaonua Stm at Harbutt Rd Br	12	1.03	1.07	0.16	1.53	0.72	-0.47	-
Mangaonua Stm at Hoeka Rd	12	0.59	0.54	0.20	1.01	0.26	0.33	0.62
Mangatangi River at SH2 Maramarua	12	0.61	0.59	0.30	1.00	0.37	0.50	0.55
Mangatawhiri River at Lyons Rd At Buckingham Br	11	1.32	1.62	0.20	3.35	1.44	0.48	1.57
Mangawara Stm at Rutherford Rd Br	12	0.22	0.22	0.17	0.28	0.07	0.04	0.21
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	10	0.26	0.28	0.13	0.39	0.11	-0.14	0.24
Matahuru Stm at Waiterimu Road Below Confluence	12	0.26	0.26	0.10	0.49	0.12	0.34	0.25
Ohaeroa Stm at SH22 Br	11	1.07	1.13	0.19	1.79	1.12	-0.13	0.64
Opuatia Stm at Ponganui Rd	11	0.60	0.59	0.34	0.99	0.26	0.64	0.63
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	1.13	0.98	0.32	2.28	0.71	0.59	1.17
Waerenga Stm at Taniwha Rd	12	0.73	0.83	0.10	1.46	0.28	0.25	0.80
Waitawhiririri Stm at Edgcombe Street	12	0.38	0.34	0.16	0.71	0.18	0.73	0.29
Whakapipi Stm at SH22 Br	11	0.98	1.03	0.17	1.65	0.83	-0.10	1.13
Whakauru Stm at U/S SH1 Br	11	0.78	0.67	0.52	1.78	0.26	<u>2.24</u>	0.79
Whangamarino River at Island Block Rd	12	0.25	0.21	0.12	0.52	0.16	1.03	0.18
Whangamarino River at Jefferies Rd Br	12	0.41	0.38	0.10	0.76	0.27	0.29	0.37
Whangape Stm at Rangiriri-Glen Murray Rd	12	0.15	0.13	0.09	0.28	0.10	0.91	0.15

Count	Mean	Median	Min	Max	IQR	Skew	06-10 Median
12	8.5	8.6	7.1	9.9	1.5	0.01	8.2
12	8.2	8.3	6.2	9.4	1.7	-0.52	8.1
12	23.8	22.0	9.1	44.2	21.7	0.25	20.1
12	7.9	7.9	7.1	9.1	1.0	0.29	7.7
12	6.2	6.4	5.3	6.8	1.1	-0.54	6.1
12	10.6	11.2	8.5	12.0	2.2	-0.57	10.4
12	9.4	10.0	7.0	10.9	2.1	-0.65	9.5
12	12.4	12.8	8.0	16.5	7.0	-0.17	11.8
12	7.0	7.4	5.4	8.1	1.5	-0.53	6.8
12	7.4	7.4	6.7	8.1	1.0	-0.09	7.4
Hauraki							
12	11.4	11.8	9.2	12.5	1.1	-1.10	11.4
12	13.4	12.0	10.2	20.7	3.7	1.30	11.4
12	14.5	14.6	13.8	15.8	0.6	0.92	14.7
12	21.0	20.9	18.4	24.8	2.2	0.60	21.4
12	7.6	7.5	5.9	9.4	2.4	0.06	7.2
12	10.2	9.9	9.3	11.7	1.6	0.60	9.8
12	8.1	8.1	8.0	8.2	0.2	-0.14	8.0
12	5.5	5.5	4.8	6.0	0.6	-0.19	5.5
12	7.1	7.0	6.2	8.2	1.0	0.44	6.8
12	18.1	18.0	13.9	23.4	2.7	0.18	17.5
12	16.5	17.4	13.3	18.7	3.3	-0.51	16.0
12	26.7	27.2	19.5	32.5	8.2	-0.37	28.0
Tributaries to the lower Waikato River							
12	27.5	26.1	24.1	36.2	4.4	1.25	26.2
12	75.1	76.5	36.8	104.6	34.0	-0.47	62.1
12	14.6	14.7	10.5	21.6	5.9	0.48	13.4
12	20.1	21.7	9.3	23.3	3.0	<u>-1.92</u>	21.1
12	25.5	24.4	22.9	32.9	2.2	1.68	25.7
12	10.0	9.9	9.6	10.6	0.6	0.45	9.8
12	19.3	19.5	15.5	24.1	2.0	0.61	19.4
12	14.2	14.6	9.1	15.9	1.3	<u>-1.97</u>	14.5
12	26.9	27.5	21.0	28.4	1.8	<u>-2.10</u>	27.0
12	9.5	9.5	8.1	10.9	1.8	0.04	-
12	20.4	21.0	16.3	22.3	2.6	-0.94	20.2
12	13.0	13.0	11.0	15.3	1.1	0.25	13.3
12	12.7	13.2	9.1	14.6	2.6	-0.74	12.1
12	22.6	22.3	18.6	29.0	1.6	1.16	22.5
10	21.5	22.6	16.8	23.1	2.0	-1.36	21.5
12	13.7	13.3	11.7	17.2	1.3	1.16	14.0
12	16.9	17.4	13.5	19.9	4.7	-0.14	15.8
11	17.3	16.8	15.6	19.2	1.7	0.43	17.1
12	10.7	10.7	10.1	11.3	0.7	0.02	10.4
12	12.0	12.1	10.1	13.6	1.0	-0.16	12.0
12	20.4	21.9	14.0	22.3	2.5	-1.51	20.5
12	20.4	21.5	16.2	23.7	5.4	-0.29	19.1
11	7.0	7.0	6.7	7.2	0.1	-0.17	6.8
12	18.0	16.6	13.9	26.3	3.9	1.20	16.2
12	15.6	15.0	14.2	19.3	1.3	1.67	16.0
12	21.4	20.8	15.7	27.9	5.2	0.27	20.0

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

Waipa River and Tributaries

Kaniwhaniwha Stm at Wright Rd	12	0.80	0.82	0.17	1.27	0.51	-0.27	0.84
Mangaohoi Stm at South Branch Maru Rd	11	1.16	1.13	0.47	1.80	0.70	-0.02	1.37
Mangaokewa Stm at Lawrence St Bridge	12	0.83	0.74	0.16	1.63	1.00	0.30	0.91
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	11	0.43	0.41	0.21	0.79	0.25	0.54	0.53
Mangapu River at Otorohanga	9	0.67	0.59	0.18	1.33	0.82	0.34	0.60
Mangatutu Stm (Waikeria) at Walker Rd Br	10	1.13	1.06	0.28	2.05	0.58	0.22	1.22
Mangauika Stm at Te Awamutu Borough W/S Intake	12	3.16	3.06	1.70	5.60	1.70	0.65	3.65
Ohote Stm at Whatawhata/Horotiu Rd	12	0.57	0.53	0.13	0.92	0.24	-0.07	0.57
Puniu River at Bartons Corner Rd Br	10	0.89	0.70	0.31	2.25	0.43	1.36	0.89
Waipa River at Mangaokewa Rd	11	1.29	1.41	0.58	1.93	0.56	-0.41	1.45
Waipa River at Pirongia-Ngutunui Rd Br	12	0.84	0.79	0.22	1.53	0.74	0.37	0.77
Waipa River at SH3 Otorohanga	11	1.20	1.11	0.25	2.41	1.57	0.15	1.08
Waitomo Stm at SH31 Otorohanga	12	0.87	0.85	0.10	1.55	0.96	0.00	0.68
Waitomo Stm at Tumutumu Rd	7	0.99	1.33	0.07	1.98	1.43	-0.14	0.93

	12	10.2	10.3	8.4	11.9	2.3	-0.12	9.9
	12	7.8	7.9	5.9	9.4	2.2	-0.17	7.8
	12	16.6	18.6	10.7	21.7	6.8	-0.35	15.3
	12	18.1	17.1	14.3	23.0	6.5	0.29	18.4
	12	19.8	21.3	14.4	24.1	6.3	-0.27	19.1
	12	6.4	6.5	5.3	7.6	1.4	0.08	6.7
	12	6.8	7.1	5.4	7.7	1.2	-0.69	6.6
	11	18.3	17.8	14.8	27.3	2.7	<u>1.73</u>	17.7
	12	8.1	8.2	6.8	9.6	1.2	0.09	8.2
	12	5.6	5.6	4.6	6.4	1.2	-0.05	5.1
	12	12.0	12.2	10.2	13.8	1.7	-0.13	11.7
	12	8.4	8.3	6.7	9.6	1.4	-0.31	8.2
	12	19.7	20.3	13.8	24.2	6.0	-0.35	19.0
	12	19.3	19.9	14.6	22.7	4.1	-0.47	19.0

Tributaries to the upper Waikato River

Kawaunui Stm at SH5 Br	12	0.94	0.98	0.15	1.63	0.71	-0.36	1.06
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	12	0.93	0.95	0.44	1.32	0.36	-0.36	1.04
Mangakara Stm (Reporoa) at SH5	12	0.71	0.72	0.28	1.10	0.32	-0.20	0.73
Mangakino Stm (Whakamaru) at Sandel Rd	11	1.15	0.98	0.38	2.31	0.83	0.42	1.83
Otamakokore Stm at Hossack Rd	12	0.91	0.91	0.22	1.50	0.31	-0.14	0.96
Pueto Stm at Broadlands Rd Br	12	1.57	1.53	0.66	2.81	0.94	0.52	1.72
Tahunaatara Stm at Ohakuri Rd	12	1.03	1.06	0.24	1.53	0.54	-0.56	1.22
Torepatutahi Stm at Vaile Rd Br	-	-	-	-	-	-	-	-
Waiotapu Stm at Campbell Rd Br	12	1.21	1.25	0.36	1.68	0.45	-0.79	1.11
Waiotapu Stm at Homestead Rd Br	-	-	-	-	-	-	-	-
Waipapa Stm (Mokai) at Tirohanga Rd Br	12	0.97	1.06	0.32	1.75	0.47	0.10	0.95
Whirinaki Stm at Corbett Rd	-	-	-	-	-	-	-	-

	12	13.4	13.3	12.5	14.7	0.9	0.65	13.5
	12	8.9	8.9	8.7	9.2	0.2	0.17	8.8
	12	9.8	10.0	9.1	10.4	0.5	-0.47	9.5
	12	6.7	7.1	5.5	7.4	1.0	-0.66	6.5
	12	37.7	37.9	31.8	43.4	6.3	-0.09	37.3
	12	11.6	11.6	11.2	11.8	0.4	-0.45	11.5
	12	7.7	7.6	7.5	7.9	0.2	0.39	7.5
	12	10.1	10.0	9.0	12.2	1.6	0.73	9.4
	12	69.4	70.0	57.7	78.1	8.5	-0.45	70.0
	12	46.4	47.2	34.8	54.2	10.2	-0.48	47.2
	12	39.2	39.8	33.5	42.6	3.3	-0.77	38.4
	12	6.8	6.8	6.6	7.2	0.2	1.01	6.7

West Coast

Awakino River at Gribbon Rd	12	1.61	1.55	0.22	3.75	2.11	0.42	1.65
Awakino River at SH3 Awakau Rd Junction	12	1.07	1.11	0.17	2.18	1.27	0.00	0.99
Manganui River at Off Manganui Rd	12	1.09	1.05	0.14	2.35	1.14	0.13	0.73
Mangaotaki River at SH3 Br	12	1.15	1.45	0.12	2.15	1.36	-0.28	0.81
Marokopa River at Speedies Rd (Off Te Angra Rd)	12	1.02	0.97	0.32	1.83	1.08	0.11	0.93
Mokau River at Awakau Rd	12	0.61	0.60	0.11	1.53	0.52	0.78	0.40
Mokau River at Mangaokewa Rd (Off SH30)	11	1.01	0.69	0.25	2.70	1.25	0.90	1.07
Mokau River at Totoro Rd Recorder	12	0.85	0.82	0.12	1.81	1.12	0.38	0.76
Mokauiti Stm at Three Way Point - Aria	11	0.53	0.53	0.09	1.22	0.63	0.34	0.57
Ohautira Stm at Waingaro Te Uku Rd	12	0.74	0.78	0.06	1.55	0.48	0.21	0.73
Oparau River at Langdon Rd (Off Okupata Rd)	12	1.24	1.49	0.21	2.11	1.07	-0.39	1.45
Tawarau River at Off Speedies Rd	12	0.99	1.10	0.22	1.62	0.86	-0.34	0.97
Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22	12	0.64	0.58	0.02	1.34	0.49	0.36	0.71
Waitetuna River at Te Uku-Waingaro Rd	12	0.77	0.74	0.13	1.42	0.57	-0.02	0.72

	12	7.0	7.2	5.9	7.7	0.9	-0.60	6.9
	12	14.4	15.0	8.8	19.5	6.2	-0.22	12.2
	12	11.1	11.3	8.5	12.9	2.2	-0.52	10.4
	12	13.7	14.3	11.6	15.1	2.1	-0.55	13.3
	12	14.1	14.9	11.3	16.0	2.7	-0.56	13.7
	12	14.8	15.2	9.4	20.5	6.1	-0.09	13.0
	12	6.6	6.6	5.7	7.6	1.3	0.10	6.5
	12	12.5	13.1	9.9	14.6	2.9	-0.42	11.9
	12	11.1	11.4	8.7	13.2	2.0	-0.10	10.8
	12	13.6	13.8	11.2	15.6	2.6	-0.41	13.8
	12	8.7	8.9	6.6	10.2	1.8	-0.37	8.5
	12	13.3	14.0	10.6	15.2	2.5	-0.58	13.0
	12	14.9	15.6	9.1	17.7	2.9	-1.06	14.4
	12	10.5	10.8	9.0	12.4	1.8	0.12	10.0

Inflows to Lake Taupo

Hinemaiaia River at SH1	12	1.93	1.82	1.11	3.35	0.84	0.63	2.42
Kuratau River at SH41 Moerangi	12	1.70	1.58	0.82	2.41	0.82	-0.04	2.33
Kuratau River at 43 Te Rae Street	-	-	-	-	-	-	-	-
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)	12	1.20	1.07	0.67	1.79	0.68	0.15	1.30
Tauranga-Taupo River at Te Kono Slackline	11	1.76	1.80	0.55	2.56	1.02	-0.59	2.75
Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal	-	-	-	-	-	-	-	-
Tokaanu Stm at Off SH41 Turangi	-	-	-	-	-	-	-	-
Waihaha River at SH32	11	2.20	2.28	0.43	3.80	1.73	-0.17	3.30
Waitahanui River at Blake Rd	12	2.31	2.42	1.16	2.95	0.81	-0.70	2.87
Whangamata Stm (Kinloch) at Whangamata Rd	-	-	-	-	-	-	-	-
Whanganui Stm at Lakeside Lake Taupo	-	-	-	-	-	-	-	-
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	-	-	-	-	-	-	-	-

	12	6.1	6.5	4.8	7.2	1.4	-0.47	6.1
	12	4.3	4.3	3.7	5.2	1.1	0.17	4.2
	12	7.4	7.0	5.4	11.3	1.5	1.28	6.6
	12	12.3	12.4	11.8	12.4	0.3	-1.46	12.0
	12	4.9	5.3	3.0	6.5	1.4	-0.31	4.9
	12	10.0	10.1	9.8	10.3	0.1	0.05	9.9
	12	12.6	12.7	9.2	14.9	3.0	-0.53	12.7
	12	4.9	4.9	3.8	5.8	1.3	-0.12	4.9
	12	7.3	7.4	6.8	7.7	0.4	-0.58	7.4
	12	8.8	8.8	8.7	8.9	0.1	0.23	8.8
	12	5.9	6.0	4.0	7.4	2.1	-0.23	5.9
	12	7.9	8.0	6.8	8.8	1.1	-0.34	8.0

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

Dissolved Oxygen (% Saturation)

Location	Count	Mean	Median	Min	Max	IQR	Skew	06-10 Median
Coromandel								
Hikutaia River at Old Maratoto Rd	12	104.4	97.1	89.9	181.2	6.7	<u>2.86</u>	95.1
Kauaeranga River at Smiths Cableway/Recorder	12	102.8	101.2	94.9	119.8	10.5	0.94	99.2
Ohinemuri River at Queens Head	12	112.7	110.5	94.2	135.2	27.3	0.35	105.6
Ohinemuri River at SH25 Br	12	103.7	105.2	90.3	112.3	10.6	-0.62	104.1
Tairua River at Morrisons Br Hikuai	12	101.5	100.7	93.2	113.9	8.4	0.52	98.5
Tapu River at Tapu-Coroglen Rd	12	107.8	107.5	95.4	134.6	11.8	1.16	102.7
Waiau River at E309 Rd Ford	12	102.7	100.0	94.1	117.9	11.5	0.74	101.0
Waitekauri River at U/S Ohinemuri Conflu	12	105.2	106.3	95.1	114.6	12.9	-0.15	103.0
Waiawa River at SH25 Coroglen	12	106.9	106.8	95.7	131.3	12.3	1.16	100.8
Wharekawa River at SH25	12	98.0	96.4	91.0	107.7	10.2	0.52	95.2
Hauraki								
Mangawhero Stm (Kaihere) at Mangawara Rd	12	100.2	99.6	92.2	108.2	5.8	-0.10	97.3
Oraka Stm at Lake Rd	12	93.4	93.8	82.3	99.3	4.0	-1.19	93.3
Piako River at Kiwitahi	12	92.0	91.2	58.2	129.7	24.4	0.22	86.2
Piako River at Paeroa-Tahuna Rd Br	12	91.3	89.7	82.3	104.8	8.1	0.77	85.4
Piakonui Stm at Piakonui Rd	12	102.4	100.9	94.8	111.0	11.6	0.23	98.6
Waihou River at Okauia	12	96.1	96.0	91.4	100.6	6.2	0.02	93.7
Waihou River at Whites Rd	12	104.0	103.6	96.3	111.1	7.8	0.05	100.7
Waiohotu Stm at Waiohotu Rd (Off SH5)	12	90.2	91.9	78.0	98.4	11.0	-0.54	92.7
Waiomou Stm at Matamata-Tauranga Rd	12	98.6	97.9	94.2	104.6	6.6	0.27	95.3
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	102.5	103.8	89.4	112.5	12.4	-0.27	95.8
Waitoa River at Landsdowne Rd Br	12	92.1	91.2	79.1	103.6	11.9	0.06	89.0
Waitoa River at Mellon Rd Recorder	12	79.8	77.9	71.2	91.9	7.5	0.62	77.4
Tributaries to the lower Waikato River								
Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd	12	98.7	101.1	60.1	120.8	13.8	-1.22	92.8
Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd	12	85.8	84.8	76.0	94.2	12.1	-0.08	85.6
Karapiro Stm at Hickey Rd Bridge	12	98.6	97.3	88.7	108.5	16.1	0.10	92.5
Kirikiroa Stm at Tauhara Dr	12	71.5	69.2	49.5	91.1	13.2	-0.01	67.7
Komakorau Stm at Henry Rd	12	55.9	56.7	4.2	84.7	25.5	-0.93	62.1
Little Waipa Stm at Arapuni - Putaruru Rd	12	105.5	104.9	87.6	118.7	13.7	-0.29	102.4
Mangakotukutuku Stm (Rukuhia) at Peacockes Rd	11	92.0	90.7	80.8	106.5	4.4	0.80	88.9
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	104.0	106.3	93.5	113.0	8.7	-0.45	102.3
Mangaone Stm at Annebrooke Rd Br	12	86.4	85.3	78.0	97.7	8.9	0.62	80.2
Mangaonua Stm at Harburt Rd Br	12	103.9	101.4	94.8	117.4	11.1	0.53	-
Mangaonua Stm at Hoeka Rd	12	86.1	85.3	77.2	97.3	8.2	0.28	83.2
Mangatangi River at SH2 Maramarua	12	90.3	89.1	82.3	100.2	7.7	0.34	84.2
Mangatawhiri River at Lyons Rd At Buckingham Br	12	109.0	108.9	93.8	125.4	10.4	0.18	106.7
Mangawara Stm at Rutherford Rd Br	12	80.4	81.6	74.1	84.1	6.5	-0.62	74.3
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	10	89.6	87.1	81.7	103.9	9.5	0.97	84.9
Matahuru Stm at Waiterimu Road Below Confluence	12	90.1	89.9	84.9	96.4	4.1	0.20	86.8
Ohaeroa Stm at SH22 Br	12	104.3	104.5	92.0	112.4	5.1	-0.86	99.6
Opuatia Stm at Ponganui Rd	11	98.9	98.5	91.7	104.2	7.0	-0.33	97.0
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	106.2	108.2	95.6	120.7	13.1	0.02	101.1
Waerenga Stm at Taniwha Rd	12	103.1	104.5	93.8	107.6	5.5	-1.00	98.1
Waitawhinwhiri Stm at Edgcombe Street	12	86.4	84.4	78.7	104.8	9.8	1.12	82.4
Whakapipi Stm at SH22 Br	12	88.4	88.5	71.1	108.3	13.1	0.17	88.0
Whakauri Stm at U/S SH1 Br	11	102.2	101.1	95.2	112.4	6.5	0.51	97.7
Whangamarino River at Island Block Rd	12	72.3	57.0	26.4	140.9	57.4	0.63	50.5
Whangamarino River at Jefferies Rd Br	12	83.9	83.9	71.8	98.2	14.0	-0.01	80.1
Whangape Stm at Rangiriri-Glen Murray Rd	12	91.0	93.2	60.4	115.7	26.6	-0.32	94.4

Dissolved Oxygen (g m⁻³)

Count	Mean	Median	Min	Max	IQR	Skew	06-10 Median
12	10.6	10.1	8.7	16.9	1.9	<u>1.97</u>	9.7
12	10.2	10.2	8.8	12.2	1.4	0.61	10.1
12	10.8	11.0	9.4	12.4	1.5	0.16	10.4
12	10.0	9.7	8.9	12.1	1.3	0.86	10.1
12	10.0	9.8	8.7	11.9	1.4	0.59	9.9
12	10.7	10.3	9.5	13.1	1.8	0.79	10.4
12	10.4	10.2	9.2	12.8	1.7	0.72	10.3
12	10.4	10.0	9.4	13.3	1.2	1.50	10.1
12	10.3	10.0	9.3	12.6	1.5	0.92	10.1
12	9.7	9.8	8.3	12.0	1.8	0.43	9.7
Hauraki							
12	10.3	10.4	8.8	11.2	1.6	-0.37	10.0
12	9.6	9.5	8.5	10.4	0.6	-0.12	9.4
12	9.3	9.4	5.6	12.4	4.0	-0.23	8.8
12	9.4	9.1	7.3	12.6	1.6	0.81	8.6
12	10.7	10.3	9.5	13.1	1.6	1.01	10.3
12	9.8	9.8	9.1	10.5	0.5	0.21	9.6
12	10.8	10.7	10.0	11.5	0.6	0.25	10.4
12	9.6	9.7	8.1	10.8	1.4	-0.50	9.8
12	10.2	10.0	9.6	11.1	1.0	0.41	9.9
12	10.0	10.0	8.9	11.3	0.6	0.42	9.7
12	9.4	9.1	7.6	12.0	1.1	1.05	9.1
12	8.1	7.9	6.5	11.0	1.3	1.20	7.7
Tributaries to the lower Waikato River							
12	9.5	9.7	5.1	11.6	1.3	-1.63	9.1
12	8.7	8.7	6.8	10.5	1.8	-0.08	8.8
12	10.1	9.7	8.4	12.9	1.6	0.90	9.4
12	7.3	7.0	4.6	10.1	1.8	0.38	6.6
12	5.7	5.6	0.4	9.1	3.1	-0.61	6.1
12	10.7	10.8	9.0	11.9	0.9	-0.68	10.5
11	9.3	9.3	7.9	12.1	0.5	<u>1.73</u>	9.0
12	10.2	10.1	9.6	11.1	0.6	0.78	10.2
12	9.0	8.9	7.4	11.5	1.3	1.02	8.4
12	10.6	10.4	9.1	13.1	1.3	0.80	-
12	8.9	8.3	8.0	11.4	1.2	1.28	8.5
12	8.9	8.7	7.3	10.6	1.6	0.20	8.3
12	10.5	10.5	9.2	11.7	1.2	-0.27	10.3
12	8.1	8.3	6.6	9.5	1.9	-0.15	7.5
10	9.0	8.9	7.4	11.9	1.1	1.20	8.8
12	9.2	9.2	7.6	10.8	1.8	0.07	8.7
12	10.6	10.7	9.3	12.0	1.0	-0.05	10.3
11	9.9	9.7	8.5	11.3	2.2	0.06	9.8
12	10.7	10.7	9.9	12.0	0.6	0.84	10.3
12	10.6	11.0	8.8	11.7	1.6	-0.55	10.1
12	8.6	8.1	7.1	11.4	1.1	1.21	8.0
12	8.9	8.9	6.3	10.8	2.8	-0.16	8.7
11	10.4	10.1	9.7	11.5	1.1	0.62	10.1
12	6.7	5.8	2.6	11.8	4.6	0.37	5.1
12	8.5	8.8	6.3	10.3	2.3	-0.26	8.3
12	9.0	10.3	5.6	11.0	3.9	-0.51	9.5

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

Waipa River and Tributaries

Kaniwhaniwha Stm at Wright Rd	12	83.3	90.1	4.5	96.2	4.7	<u>-2.94</u>	88.0
Mangaohoi Stm at South Branch Maru Rd	12	101.6	100.8	95.4	113.2	5.6	0.98	100.1
Mangaokewa Stm at Lawrence St Bridge	12	96.0	95.9	89.4	104.1	8.4	0.36	93.2
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	12	96.1	93.9	65.8	134.1	12.0	0.60	90.9
Mangapu River at Otorohanga	12	95.7	95.6	89.2	108.2	4.5	1.13	92.7
Mangatutu Stm (Waikeria) at Walker Rd Br	12	96.1	96.6	81.2	105.3	4.4	-1.02	95.2
Mangauika Stm at Te Awamutu Borough W/S Intake	12	100.1	99.8	94.0	106.3	9.3	0.07	98.3
Ohote Stm at Whatawhata/Horotiu Rd	12	52.5	48.9	17.5	92.1	36.1	0.14	48.8
Puniu River at Bartons Corner Rd Br	12	97.5	95.8	84.4	113.1	9.8	0.44	94.2
Waipa River at Mangaokewa Rd	12	102.8	102.7	97.0	109.0	5.2	0.22	100.2
Waipa River at Pirongia-Ngutunui Rd Br	12	96.3	93.0	86.6	117.4	8.9	1.26	90.1
Waipa River at SH3 Otorohanga	12	103.3	103.1	95.6	114.2	5.6	0.61	98.7
Waitomo Stm at SH31 Otorohanga	12	101.5	101.7	83.5	114.1	7.6	-0.40	98.0
Waitomo Stm at Tumutumu Rd	12	102.8	101.1	93.5	114.4	12.2	0.40	99.8

12	8.5	9.2	0.4	10.3	1.9	<u>-2.45</u>	8.9
12	10.2	10.2	9.2	11.9	1.1	0.68	10.0
12	9.9	10.2	8.2	11.6	1.9	-0.21	9.7
12	9.2	9.5	5.8	11.2	0.7	-1.53	9.1
12	9.4	9.8	7.8	10.6	1.6	-0.47	9.3
12	9.8	9.8	8.7	11.4	1.4	0.34	9.6
12	10.3	10.5	8.9	11.4	1.2	-0.44	10.3
12	5.4	5.0	1.7	10.4	4.1	0.39	4.7
12	9.8	9.8	7.5	11.5	1.3	-0.17	9.5
12	10.2	10.5	8.6	11.6	1.9	-0.25	9.9
12	9.5	9.7	7.7	11.8	1.8	0.11	9.2
12	10.3	10.5	8.9	11.2	1.6	-0.50	10.0
12	10.0	10.2	8.8	10.9	1.1	-0.44	9.9
12	10.4	10.5	8.5	11.5	1.0	-0.86	10.2

Tributaries to the upper Waikato River

Kawaunui Stm at SH5 Br	12	87.2	86.6	82.6	93.3	5.6	0.57	85.5
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	12	96.5	96.7	91.0	102.6	7.8	0.05	93.5
Mangakara Stm (Reporoa) at SH5	12	93.9	93.0	89.6	101.1	4.6	0.89	91.5
Mangakino Stm (Whakamaru) at Sandel Rd	12	104.3	103.9	97.7	113.6	5.5	0.67	102.4
Otamakokore Stm at Hossack Rd	12	100.3	99.7	80.4	115.4	12.4	-0.38	95.6
Pueto Stm at Broadlands Rd Br	12	96.7	95.3	90.7	104.5	4.7	0.81	94.4
Tahunaatara Stm at Ohakuri Rd	12	105.0	105.7	96.3	113.3	9.5	-0.29	101.7
Torepatutahi Stm at Vaile Rd Br	12	103.6	102.1	85.1	123.7	14.7	0.18	101.4
Waiotapu Stm at Campbell Rd Br	12	88.8	88.6	82.6	95.8	4.0	0.05	87.1
Waiotapu Stm at Homestead Rd Br	12	90.8	91.7	77.7	101.4	9.8	-0.31	87.5
Waipapa Stm (Mokai) at Tirohanga Rd Br	12	102.0	100.9	98.3	107.9	4.9	0.64	99.3
Whirinaki Stm at Corbett Rd	12	99.0	99.6	90.6	107.4	7.7	0.08	97.1

12	8.5	8.6	7.8	9.3	1.1	-0.02	8.3
12	9.8	9.7	9.2	10.6	0.8	0.37	9.6
12	9.5	9.5	8.6	10.4	1.3	0.05	9.2
12	10.9	10.9	9.7	11.7	1.1	-0.30	10.7
12	8.6	8.9	7.2	10.0	1.0	-0.20	8.5
12	9.7	9.6	9.0	10.2	0.9	-0.03	9.5
12	10.5	10.6	9.7	11.5	0.8	0.07	10.3
12	10.2	10.3	8.7	11.8	1.0	0.31	10.2
12	6.7	6.7	6.1	7.3	0.9	0.04	6.5
12	8.2	8.4	6.7	9.4	1.2	-0.61	8.0
12	8.7	8.7	8.2	9.2	0.8	0.10	8.4
12	10.1	10.1	8.8	10.9	0.7	-0.61	9.9

West Coast

Awakino River at Gribbon Rd	12	103.5	104.2	97.6	108.8	5.4	-0.33	100.5
Awakino River at SH3 Awakau Rd Junction	12	110.6	110.8	97.2	120.7	14.6	-0.10	102.3
Manganui River at Off Manganui Rd	12	103.3	103.2	96.2	109.8	5.4	0.22	98.3
Mangaotaki River at SH3 Br	12	104.5	103.2	98.3	113.5	7.0	0.46	100.6
Marokopa River at Speedies Rd (Off Te Anga Rd)	12	106.2	104.8	95.4	120.7	11.2	0.44	102.3
Mokau River at Awakau Rd	12	96.9	96.1	90.0	109.8	9.5	0.70	93.6
Mokau River at Mangaokewa Rd (Off SH30)	12	99.4	98.6	94.1	106.1	6.4	0.45	97.2
Mokau River at Totoro Rd Recorder	12	105.2	105.1	97.9	110.3	5.5	-0.22	102.0
Mokauiti Stm at Three Way Point - Aria	12	93.8	95.3	83.3	99.0	4.7	-1.25	94.0
Ohautira Stm at Waingaro Te Uku Rd	12	98.0	97.2	90.8	119.6	6.1	<u>2.08</u>	94.0
Oparau River at Langdon Rd (Off Okupata Rd)	12	108.2	108.7	96.6	120.7	5.4	0.15	105.6
Tawarau River at Off Speedies Rd	12	105.4	104.9	96.0	116.5	8.8	0.18	101.2
Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22	12	100.7	98.5	89.9	125.7	5.9	<u>1.77</u>	94.1
Waitetuna River at Te Uku-Waingaro Rd	12	99.9	97.1	91.0	133.5	6.0	<u>2.46</u>	96.0

12	10.7	11.1	9.1	11.7	1.7	-0.40	10.6
12	11.1	11.4	9.3	12.1	1.1	-0.81	10.8
12	10.6	10.8	9.2	11.5	1.4	-0.43	10.3
12	10.7	10.9	9.2	12.0	1.7	-0.26	10.5
12	10.8	10.6	9.4	12.6	1.6	0.10	10.6
12	9.7	9.7	7.9	11.4	2.1	-0.14	9.5
12	10.2	10.4	8.5	11.7	2.0	-0.25	10.1
12	10.6	10.9	8.6	12.0	1.5	-0.52	10.4
12	9.4	9.7	7.4	10.5	1.9	-0.46	9.6
12	10.1	10.2	8.5	11.4	1.5	-0.27	10.1
12	10.9	10.8	9.7	12.3	1.1	0.51	10.6
12	10.8	10.7	9.5	11.8	1.1	-0.16	10.7
12	10.0	9.8	8.7	11.2	1.0	0.23	9.6
12	10.2	10.3	8.3	12.3	1.9	0.14	10.0

Inflows to Lake Taupo

Hinemaiaia River at SH1	12	104.0	105.0	95.4	113.5	10.3	0.12	99.9
Kuratau River at SH41 Moerangi	12	95.7	94.4	92.6	102.2	3.9	1.06	94.1
Kuratau River at 43 Te Rae Street	12	102.5	101.5	94.8	115.5	7.7	0.77	100.3
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)	12	90.8	90.4	85.3	97.8	3.4	0.51	87.4
Tauranga-Taupo River at Te Kono Slackline	12	104.7	103.0	95.7	122.0	7.4	1.09	101.1
Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal	12	84.7	83.5	80.5	93.5	2.4	1.37	81.7
Tokaanu Stm at Off SH41 Turangi	12	102.5	103.1	80.0	119.9	14.1	-0.37	100.9
Waihaha River at SH32	12	102.6	102.0	91.2	118.1	8.9	0.53	100.4
Waitahanui River at Blake Rd	12	101.7	100.8	96.4	110.3	5.0	0.75	98.5
Whangamata Stm (Kinloch) at Whangamata Rd	12	99.3	97.7	93.2	114.6	5.4	<u>1.70</u>	96.400
Whanganui Stm at Lakeside Lake Taupo	12	103.1	101.7	95.1	117.2	6.7	1.06	100.5
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	12	97.2	96.7	89.5	103.9	6.3	-0.01	95.4

12	10.9	11.0	9.6	12.0	0.8	-0.46	10.7
12	10.1	10.2	9.1	11.1	1.1	-0.07	10.0
12	10.3	10.4	9.1	11.6	1.2	-0.17	10.4
12	9.7	9.9	8.7	10.6	1.0	-0.41	9.3
12	11.1	11.1	9.0	12.8	1.5	-0.34	11.0
12	8.7	8.6	8.1	9.5	0.5	0.63	8.4
12	10.4	10.5	7.0	11.8	1.7	-1.22	10.4
12	10.6	10.5	9.2	11.8	1.2	0.00	10.6
12	10.9	10.9	10.2	11.7	0.8	0.21	10.5
12	10.8	10.9	9.7	12.3	1.2	0.41	10.40
12	10.7	10.7	9.3	12.0	1.1	-0.25	10.7
12	10.2	10.2	9.2	10.7	0.8	-0.50	10.0

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

Dissolved Reactive Phosphorus (g m⁻³)

Location	Count	Mean	Median	Min	Max	IQR	Skew	06-10 Median
Coromandel								
Hikutaia River at Old Maratoto Rd	12	0.004	0.003	0.002	0.008	0.003	0.63	0.002
Kauaeranga River at Smiths Cableway/Recorder	12	0.002	0.002	0.002	0.002	0.000	-1.00	0.002
Ohinemuri River at Queens Head	12	0.004	0.002	0.002	0.009	0.003	1.00	0.002
Ohinemuri River at SH25 Br	12	0.004	0.003	0.002	0.008	0.003	0.64	0.004
Tairua River at Morrisons Br Hikuai	12	0.002	0.002	0.002	0.002	0.000	-1.00	0.002
Tapu River at Tapu-Coroglen Rd	12	0.002	0.002	0.002	0.004	0.000	<u>3.02</u>	0.002
Waiau River at E309 Rd Ford	12	0.002	0.002	0.002	0.002	0.000	-1.00	0.002
Waitekauri River at U/S Ohinemuri Conflu	12	0.002	0.002	0.002	0.002	0.000	-1.00	0.002
Waiwawa River at SH25 Coroglen	12	0.002	0.002	0.002	0.002	0.000	-1.00	0.002
Wharekawa River at SH25	12	0.002	0.002	0.002	0.002	0.000	-1.00	0.002
Hauraki								
Mangawhero Stm (Kaihere) at Mangawara Rd	12	0.037	0.039	0.022	0.049	0.008	-0.75	0.040
Oraka Stm at Lake Rd	12	0.105	0.084	0.058	0.170	0.061	0.50	0.086
Piako River at Kiwitahi	12	0.047	0.047	0.025	0.068	0.029	-0.14	0.059
Piako River at Paeroa-Tahuna Rd Br	12	0.164	0.205	0.046	0.290	0.162	-0.23	0.188
Piakonui Stm at Piakonui Rd	12	0.011	0.011	0.005	0.017	0.009	0.04	0.009
Waihou River at Okauia	12	0.064	0.065	0.051	0.075	0.009	-0.36	0.065
Waihou River at Whites Rd	12	0.073	0.074	0.066	0.078	0.005	-0.59	0.076
Waihotu Stm at Waihotu Rd (Off SH5)	12	0.014	0.014	0.009	0.019	0.007	0.09	0.012
Waiomou Stm at Matamata-Tauranga Rd	12	0.022	0.022	0.014	0.026	0.006	-0.53	0.022
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	0.022	0.021	0.013	0.032	0.014	0.15	0.033
Waitoa River at Landsdowne Rd Br	12	0.025	0.024	0.009	0.045	0.014	0.26	0.030
Waitoa River at Mellon Rd Recorder	12	0.062	0.049	0.038	0.106	0.038	0.84	0.072
Tributaries to the lower Waikato River								
Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd	12	0.003	0.002	0.002	0.009	0.002	<u>1.71</u>	0.002
Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd	12	0.002	0.002	0.002	0.002	0.000	-1.00	0.002
Karapiro Stm at Hickey Rd Bridge	12	0.043	0.043	0.012	0.079	0.033	0.15	0.045
Kirikiriou Stm at Tauhara Dr	12	0.013	0.015	0.008	0.018	0.005	-0.38	0.015
Komakorau Stm at Henry Rd	12	0.015	0.007	0.004	0.043	0.013	1.34	0.007
Little Waipa Stm at Arapuni - Putaruru Rd	12	0.050	0.048	0.040	0.074	0.011	1.13	0.053
Mangakotukutuku Stm (Rukuhia) at Peacockes Rd	12	0.447	0.245	0.064	1.200	0.773	0.83	0.190
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	0.406	0.415	0.166	0.560	0.240	-0.29	0.423
Mangaone Stm at Annebrooke Rd Br	12	0.066	0.064	0.047	0.110	0.016	1.55	0.066
Mangaonua Stm at Harbutt Rd Br	12	0.013	0.014	0.006	0.020	0.003	-0.20	-
Mangaonua Stm at Hoeka Rd	12	0.012	0.012	0.008	0.020	0.003	1.30	0.011
Mangatangi River at SH2 Maramarua	12	0.026	0.025	0.015	0.040	0.012	0.18	0.031
Mangatawhiri River at Lyons Rd At Buckingham Br	12	0.014	0.013	0.009	0.027	0.006	1.39	0.012
Mangawara Stm at Rutherford Rd Br	12	0.065	0.038	0.014	0.181	0.065	1.11	0.052
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	10	0.080	0.041	0.019	0.300	0.055	1.59	0.041
Matahuru Stm at Waiterimu Road Below Confluence	12	0.026	0.024	0.019	0.041	0.006	1.32	0.029
Ohaeroa Stm at SH22 Br	12	0.008	0.007	0.004	0.015	0.002	1.26	0.008
Opuatia Stm at Ponganui Rd	11	0.009	0.007	0.002	0.038	0.003	<u>2.52</u>	0.006
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	0.089	0.084	0.058	0.134	0.024	0.69	0.098
Waerenga Stm at Taniwha Rd	12	0.020	0.019	0.013	0.039	0.008	1.26	0.023
Waitawhiriwhiri Stm at Edgcombe Street	12	0.048	0.039	0.017	0.112	0.043	0.98	0.036
Whakapipi Stm at SH22 Br	12	0.019	0.017	0.009	0.059	0.010	<u>2.39</u>	0.022
Whakauru Stm at U/S SH1 Br	11	0.018	0.018	0.015	0.025	0.003	1.34	0.015
Whangamarino River at Island Block Rd	12	0.013	0.006	0.002	0.074	0.013	<u>2.31</u>	0.006
Whangamarino River at Jefferies Rd Br	12	0.030	0.033	0.019	0.038	0.012	-0.49	0.034
Whangape Stm at Rangiriri-Glen Murray Rd	12	0.002	0.002	0.002	0.004	0.000	<u>3.02</u>	0.002

Total Phosphorus (g m⁻³)

Count	Mean	Median	Min	Max	IQR	Skew	06-10 Median	
12	0.010	0.010	0.005	0.019	0.007	0.69	0.010	
12	0.006	0.003	0.002	0.017	0.005	1.30	0.004	
12	0.014	0.012	0.005	0.036	0.008	1.58	0.016	
12	0.011	0.011	0.006	0.015	0.004	-0.54	0.014	
12	0.013	0.004	0.002	0.114	0.003	<u>2.99</u>	0.005	
12	0.005	0.002	0.002	0.011	0.006	0.66	0.002	
12	0.010	0.005	0.002	0.042	0.011	<u>2.00</u>	0.008	
12	0.009	0.008	0.004	0.017	0.004	1.00	0.009	
12	0.003	0.003	0.002	0.006	0.003	0.40	0.005	
12	0.004	0.005	0.002	0.008	0.004	0.11	0.007	
Hauraki								
12	0.048	0.047	0.035	0.064	0.009	0.65	0.053	
12	0.152	0.143	0.086	0.270	0.096	0.59	0.138	
12	0.115	0.076	0.047	0.490	0.045	<u>2.77</u>	0.097	
12	0.241	0.255	0.118	0.340	0.167	-0.29	0.268	
12	0.031	0.018	0.013	0.083	0.030	1.18	0.023	
12	0.086	0.088	0.068	0.102	0.019	-0.23	0.092	
12	0.074	0.074	0.069	0.080	0.006	0.09	0.078	
12	0.031	0.026	0.019	0.063	0.016	1.35	0.029	
12	0.044	0.046	0.032	0.065	0.016	0.48	0.044	
12	0.060	0.056	0.032	0.118	0.020	1.50	0.075	
12	0.049	0.057	0.016	0.073	0.037	-0.50	0.066	
12	0.122	0.103	0.067	0.260	0.067	1.22	0.138	
Tributaries to the lower Waikato River								
12	0.044	0.043	0.012	0.133	0.020	<u>2.09</u>	0.055	
12	0.013	0.009	0.004	0.043	0.006	<u>2.09</u>	0.013	
12	0.129	0.084	0.050	0.350	0.089	1.40	0.095	
12	0.065	0.067	0.040	0.112	0.022	1.12	0.074	
12	0.114	0.104	0.074	0.230	0.049	1.62	0.103	
12	0.064	0.056	0.049	0.088	0.024	0.63	0.071	
12	0.795	0.430	0.175	3.300	0.845	<u>1.99</u>	0.408	
12	0.463	0.515	0.230	0.610	0.160	-0.73	0.491	
12	0.160	0.134	0.112	0.320	0.053	<u>2.00</u>	0.161	
12	0.041	0.031	0.015	0.129	0.023	<u>1.98</u>	-	
12	0.063	0.055	0.027	0.122	0.050	0.74	0.068	
12	0.074	0.070	0.038	0.145	0.048	0.86	0.086	
12	0.041	0.023	0.017	0.210	0.013	<u>2.87</u>	0.027	
12	0.229	0.225	0.113	0.410	0.125	0.49	0.236	
10	0.213	0.154	0.092	0.590	0.090	1.67	0.180	
12	0.127	0.097	0.064	0.430	0.047	<u>2.40</u>	0.110	
12	0.035	0.021	0.012	0.105	0.020	1.59	0.036	
11	0.071	0.028	0.020	0.500	0.014	<u>2.84</u>	0.033	
12	0.110	0.104	0.082	0.151	0.028	0.71	0.120	
12	0.060	0.040	0.025	0.280	0.016	<u>2.93</u>	0.048	
12	0.126	0.098	0.057	0.270	0.080	0.97	0.116	
12	0.053	0.040	0.020	0.188	0.023	<u>2.39</u>	0.055	
11	0.044	0.044	0.031	0.062	0.009	0.59	0.040	
12	0.156	0.154	0.060	0.330	0.079	1.18	0.150	
12	0.097	0.080	0.052	0.250	0.036	<u>1.96</u>	0.093	
12	0.149	0.160	0.054	0.250	0.136	-0.07	0.116	

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

Waipa River and Tributaries

Kaniwhaniwha Stm at Wright Rd	12	0.007	0.007	0.002	0.013	0.003	0.07	0.006
Mangaohoi Stm at South Branch Maru Rd	12	0.039	0.039	0.015	0.067	0.024	0.15	0.041
Mangaokewa Stm at Lawrence St Bridge	12	0.016	0.014	0.009	0.024	0.006	0.40	0.015
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	12	0.187	0.131	0.080	0.400	0.219	0.65	0.143
Mangapu River at Otorohanga	12	0.036	0.034	0.010	0.073	0.035	0.54	0.034
Mangatutu Stm (Waikeria) at Walker Rd Br	12	0.011	0.011	0.007	0.015	0.005	0.32	0.009
Mangauika Stm at Te Awamutu Borough W/S Intake	12	0.004	0.004	0.002	0.006	0.002	0.38	0.002
Ohote Stm at Whatawhata/Horotiu Rd	11	0.021	0.021	0.010	0.042	0.015	0.68	0.022
Puniu River at Bartons Corner Rd Br	12	0.027	0.025	0.014	0.050	0.020	0.70	0.024
Waipa River at Mangaokewa Rd	12	0.016	0.007	0.002	0.122	0.006	<u>2.97</u>	0.005
Waipa River at Pirongia-Ngutuunui Rd Br	12	0.018	0.016	0.009	0.030	0.011	0.42	0.019
Waipa River at SH3 Otorohanga	12	0.006	0.007	0.002	0.010	0.003	-0.33	0.007
Waitomo Stm at SH31 Otorohanga	12	0.008	0.006	0.002	0.024	0.006	1.33	0.006
Waitomo Stm at Tumutumu Rd	12	0.011	0.011	0.004	0.018	0.005	-0.05	0.009

12	0.034	0.034	0.016	0.051	0.010	-0.22	0.032
12	0.057	0.050	0.023	0.178	0.038	<u>2.12</u>	0.051
12	0.055	0.050	0.026	0.155	0.033	<u>1.94</u>	0.042
12	0.363	0.325	0.220	0.520	0.230	0.25	0.295
12	0.080	0.077	0.052	0.128	0.033	0.62	0.085
12	0.027	0.027	0.016	0.051	0.011	1.24	0.028
12	0.017	0.009	0.002	0.087	0.010	<u>2.64</u>	0.008
12	0.079	0.072	0.032	0.167	0.041	1.03	0.076
12	0.059	0.055	0.044	0.110	0.015	<u>1.94</u>	0.057
12	0.045	0.021	0.012	0.180	0.018	<u>1.80</u>	0.023
12	0.053	0.052	0.032	0.078	0.024	0.35	0.056
12	0.038	0.024	0.013	0.105	0.036	1.22	0.028
12	0.046	0.028	0.014	0.169	0.032	<u>1.83</u>	0.033
12	0.041	0.021	0.016	0.142	0.016	<u>1.73</u>	0.024

Tributaries to the upper Waikato River

Kawaunui Stm at SH5 Br	12	0.074	0.060	0.049	0.194	0.018	<u>2.50</u>	0.069
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	12	0.033	0.034	0.021	0.056	0.007	1.44	0.034
Mangakara Stm (Reporoa) at SH5	12	0.088	0.051	0.032	0.540	0.014	<u>3.00</u>	0.053
Mangakino Stm (Whakamaru) at Sandel Rd	12	0.043	0.045	0.023	0.068	0.023	0.06	0.043
Otamakokore Stm at Hossack Rd	12	0.159	0.166	0.119	0.200	0.035	-0.11	0.153
Pueto Stm at Broadlands Rd Br	12	0.078	0.079	0.070	0.088	0.005	0.16	0.082
Tahunaatara Stm at Ohakuri Rd	12	0.033	0.032	0.021	0.060	0.009	1.42	0.032
Torepatutahi Stm at Vaile Rd Br	12	0.083	0.085	0.049	0.108	0.010	-0.87	0.085
Waiotapu Stm at Campbell Rd Br	12	0.003	0.002	0.002	0.011	0.000	<u>2.13</u>	0.002
Waiotapu Stm at Homestead Rd Br	12	0.034	0.032	0.010	0.058	0.023	0.04	0.038
Waipapa Stm (Mokai) at Tirohanga Rd Br	12	0.089	0.083	0.056	0.165	0.021	1.67	0.083
Whirinaki Stm at Corbett Rd	12	0.063	0.062	0.053	0.096	0.007	<u>2.14</u>	0.064

12	0.150	0.108	0.076	0.540	0.059	<u>2.65</u>	0.123
12	0.062	0.053	0.044	0.184	0.011	<u>2.91</u>	0.056
12	0.148	0.087	0.071	0.820	0.023	<u>3.00</u>	0.085
12	0.071	0.056	0.038	0.250	0.025	<u>2.75</u>	0.053
12	0.190	0.185	0.146	0.290	0.045	1.22	0.190
12	0.117	0.100	0.087	0.280	0.017	<u>2.80</u>	0.102
12	0.061	0.046	0.041	0.166	0.017	<u>2.38</u>	0.053
12	0.101	0.100	0.082	0.128	0.023	0.49	0.100
12	0.190	0.153	0.115	0.530	0.050	<u>2.61</u>	0.153
12	0.188	0.182	0.100	0.470	0.093	<u>1.92</u>	0.174
12	0.131	0.130	0.109	0.195	0.027	1.53	0.125
12	0.072	0.065	0.062	0.118	0.007	<u>1.94</u>	0.070

West Coast

Awakino River at Gribbon Rd	12	0.013	0.013	0.009	0.017	0.004	0.06	0.012
Awakino River at SH3 Awakau Rd Junction	12	0.007	0.007	0.002	0.012	0.005	-0.13	0.008
Manganui River at Off Manganui Rd	12	0.013	0.012	0.005	0.028	0.004	<u>1.70</u>	0.011
Mangaotaki River at SH3 Br	12	0.010	0.010	0.006	0.017	0.006	0.65	0.010
Marokopa River at Speedies Rd (Off Te Anga Rd)	12	0.014	0.013	0.010	0.017	0.003	0.13	0.013
Mokau River at Awakau Rd	12	0.006	0.006	0.002	0.013	0.006	0.28	0.007
Mokau River at Mangaokewa Rd (Off SH30)	12	0.017	0.018	0.005	0.032	0.012	0.28	0.015
Mokau River at Totoro Rd Recorder	12	0.010	0.009	0.005	0.021	0.006	1.15	0.010
Mokauiti Stm at Three Way Point - Aria	12	0.012	0.013	0.002	0.029	0.010	0.51	0.008
Ohautira Stm at Waingarua Te Uku Rd	12	0.020	0.019	0.013	0.030	0.009	0.54	0.020
Oparau River at Langdon Rd (Off Okupata Rd)	12	0.006	0.006	0.002	0.010	0.002	0.13	0.005
Tawarau River at Off Speedies Rd	12	0.014	0.014	0.011	0.018	0.004	0.38	0.014
Waingarua River (Pukemiro) at Ruakiwi Rd Off SH22	12	0.011	0.011	0.002	0.023	0.009	0.34	0.010
Waitetuna River at Te Uku-Waingarua Rd	12	0.013	0.013	0.007	0.020	0.003	0.40	0.011

12	0.027	0.026	0.011	0.070	0.018	1.34	0.019
12	0.037	0.017	0.009	0.147	0.039	<u>1.80</u>	0.023
12	0.044	0.022	0.014	0.171	0.037	<u>1.82</u>	0.031
12	0.062	0.020	0.015	0.300	0.033	<u>1.95</u>	0.031
12	0.032	0.025	0.016	0.072	0.013	1.42	0.028
12	0.049	0.029	0.015	0.128	0.046	1.13	0.045
12	0.048	0.032	0.025	0.200	0.011	<u>2.81</u>	0.034
12	0.050	0.027	0.016	0.172	0.048	1.57	0.035
12	0.068	0.044	0.030	0.183	0.053	1.39	0.044
12	0.048	0.038	0.026	0.149	0.023	<u>2.46</u>	0.042
12	0.021	0.016	0.007	0.052	0.020	1.06	0.016
12	0.031	0.026	0.017	0.064	0.012	1.41	0.029
12	0.111	0.039	0.018	0.910	0.018	<u>2.99</u>	0.040
12	0.042	0.032	0.026	0.123	0.015	<u>2.57</u>	0.037

Inflows to Lake Taupo

Hinemaiaia River at SH1	12	0.027	0.026	0.019	0.036	0.013	0.23	0.029
Kuratau River at SH41 Moerangi	12	0.002	0.002	0.002	0.002	0.000	-1.00	0.002
Kuratau River at 43 Te Rae Street	12	0.007	0.004	0.002	0.028	0.003	<u>1.78</u>	0.002
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)	12	0.131	0.132	0.114	0.150	0.022	0.04	0.130
Tauranga-Taupo River at Te Kono Slackline	12	0.015	0.015	0.009	0.022	0.006	0.24	0.014
Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal	12	0.076	0.076	0.071	0.080	0.003	-0.06	0.077
Tokaanu Stm at Off SH41 Turangi	12	0.004	0.002	0.002	0.028	0.000	<u>3.02</u>	0.002
Waihaha River at SH32	12	0.021	0.022	0.010	0.030	0.012	-0.13	0.020
Waitahanui River at Blake Rd	12	0.042	0.043	0.038	0.045	0.005	-0.27	0.045
Whangamata Stm (Kinloch) at Whangamata Rd	12	0.065	0.066	0.059	0.069	0.003	-0.72	0.066
Whanganui Stm at Lakeside Lake Taupo	12	0.011	0.012	0.005	0.018	0.007	0.17	0.010
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	12	0.020	0.021	0.012	0.028	0.007	-0.13	0.020

12	0.037	0.038	0.023	0.061	0.012	0.71	0.038
12	0.008	0.006	0.002	0.039	0.007	<u>2.52</u>	0.005
12	0.017	0.015	0.008	0.034	0.013	0.75	0.015
12	0.158	0.155	0.137	0.180	0.022	0.14	0.165
12	0.020	0.020	0.012	0.030	0.007	0.40	0.019
12	0.076	0.076	0.072	0.080	0.006	0.04	0.079
12	0.019	0.015	0.008	0.058	0.007	<u>2.30</u>	0.013
12	0.026	0.027	0.015	0.042	0.016	0.29	0.025
12	0.043	0.044	0.036	0.049	0.005	-0.48	0.048
12	0.075	0.074	0.067	0.082	0.012	0.08	0.073
12	0.024	0.018	0.010	0.054	0.022	0.91	0.017
12	0.040	0.034	0.026	0.074	0.019	1.18	0.035

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

Ammoniacal Nitrogen (g N m⁻³)

Location	06-10							
	Count	Mean	Median	Min	Max	IQR	Skew	Median
Coromandel								
Hikutaia River at Old Maratoto Rd	12	0.01	0.01	0.01	0.02	0.00	<u>2.46</u>	0.01
Kauaeranga River at Smiths Cableway/Recorder	12	0.01	0.01	0.01	0.01	0.00	<u>3.02</u>	0.01
Ohinemuri River at Queens Head	12	0.03	0.03	0.01	0.08	0.04	0.60	0.03
Ohinemuri River at SH25 Br	12	0.01	0.01	0.01	0.01	0.00	<u>3.02</u>	0.01
Tairua River at Morrissons Br Hikuai	12	0.01	0.01	0.01	0.01	0.00	1.00	0.01
Tapu River at Tapu-Coroglen Rd	12	0.01	0.01	0.01	0.01	0.00	1.00	0.01
Waiau River at E309 Rd Ford	12	0.01	0.01	0.01	0.01	0.00	1.00	0.01
Waitekauri River at U/S Ohinemuri Conflu	12	0.01	0.01	0.01	0.01	0.00	<u>1.93</u>	0.01
Waiwawa River at SH25 Coroglen	12	0.01	0.01	0.01	0.01	0.00	1.00	0.01
Wharekawa River at SH25	12	0.01	0.01	0.01	0.01	0.00	1.00	0.01
Hauraki								
Mangawhero Stm (Kaihere) at Mangawara Rd	12	0.01	0.01	0.01	0.02	0.00	<u>1.93</u>	0.01
Oraka Stm at Lake Rd	12	0.14	0.01	0.01	0.74	0.06	<u>1.76</u>	0.02
Piako River at Kiwitahi	12	0.03	0.03	0.01	0.09	0.04	0.97	0.03
Piako River at Paeroa-Tahuna Rd Br	12	0.04	0.03	0.01	0.10	0.07	0.35	0.04
Piakonui Stm at Piakonui Rd	12	0.01	0.01	0.01	0.01	0.00	<u>3.02</u>	0.01
Waihou River at Okauia	12	0.01	0.01	0.01	0.03	0.01	0.81	0.01
Waihou River at Whites Rd	12	0.01	0.01	0.01	0.02	0.00	<u>3.02</u>	0.01
Waiohotu Stm at Waiohotu Rd (Off SH5)	12	0.01	0.01	0.01	0.02	0.00	1.26	0.01
Waiomou Stm at Matamata-Tauranga Rd	12	0.01	0.01	0.01	0.02	0.01	0.16	0.01
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	0.03	0.02	0.01	0.14	0.03	<u>2.21</u>	0.03
Waitoa River at Landsdowne Rd Br	12	0.01	0.01	0.01	0.04	0.02	<u>0.97</u>	0.02
Waitoa River at Mellon Rd Recorder	12	0.07	0.03	0.01	0.24	0.12	1.07	0.03
Tributaries to the lower Waikato River								
Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd	12	0.05	0.04	0.01	0.18	0.06	1.40	0.05
Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd	12	0.05	0.04	0.02	0.10	0.03	1.08	0.04
Karapiro Stm at Hickey Rd Bridge	12	0.03	0.02	0.01	0.13	0.01	<u>1.89</u>	0.02
Kirikirioua Stm at Tauhara Dr	12	0.29	0.24	0.07	0.52	0.29	0.44	0.25
Komakorau Stm at Henry Rd	12	0.63	0.52	0.36	1.20	0.31	1.16	0.68
Little Waipa Stm at Arapuni - Putaruru Rd	12	0.01	0.01	0.01	0.02	0.00	<u>2.09</u>	0.01
Mangakotukutuku Stm (Rukuhia) at Peacockes Rd	12	0.28	0.27	0.11	0.56	0.19	0.71	0.24
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	0.20	0.17	0.02	0.57	0.21	1.03	0.08
Mangaone Stm at Annebrooke Rd Br	12	0.02	0.02	0.02	0.04	0.01	0.95	0.02
Mangaonua Stm at Harburt Rd Br	12	0.01	0.01	0.01	0.03	0.00	<u>1.97</u>	-
Mangaonua Stm at Hoeka Rd	12	0.09	0.09	0.05	0.13	0.05	0.08	0.09
Mangatangi River at SH2 Maramarua	12	0.02	0.01	0.01	0.09	0.02	<u>2.19</u>	0.01
Mangatawhiri River at Lyons Rd At Buckingham Br	12	0.01	0.01	0.01	0.03	0.00	<u>2.48</u>	0.01
Mangawara Stm at Rutherford Rd Br	12	0.30	0.27	0.16	0.53	0.13	0.97	0.32
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	10	0.11	0.10	0.02	0.20	0.11	0.29	0.10
Matahuru Stm at Waiterimu Road Below Confluence	12	0.05	0.04	0.01	0.13	0.03	1.29	0.05
Ohaeroa Stm at SH22 Br	12	0.01	0.01	0.01	0.03	0.00	<u>2.02</u>	0.01
Opuatia Stm at Ponganui Rd	11	0.01	0.01	0.01	0.02	0.01	0.32	0.01
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	0.01	0.01	0.01	0.02	0.00	<u>3.02</u>	0.01
Waerenga Stm at Taniwha Rd	12	0.01	0.01	0.01	0.05	0.01	<u>1.95</u>	0.01
Waitawhiriwhiri Stm at Edgcumbe Street	12	0.56	0.60	0.19	0.80	0.35	-0.47	0.62
Whakapipi Stm at SH22 Br	12	0.04	0.01	0.01	0.34	0.02	<u>2.95</u>	0.01
Whakauru Stm at U/S SH1 Br	11	0.01	0.01	0.01	0.02	0.00	<u>2.85</u>	0.01
Whangamarino River at Island Block Rd	12	0.10	0.01	0.01	0.84	0.03	<u>2.77</u>	0.03
Whangamarino River at Jefferies Rd Br	12	0.04	0.03	0.01	0.16	0.03	<u>1.75</u>	0.03
Whangape Stm at Rangiri-Glen Murray Rd	12	0.02	0.01	0.01	0.08	0.02	<u>2.26</u>	0.01

Nitrate/Nitrite (g m⁻³)

Location	06-10							
	Count	Mean	Median	Min	Max	IQR	Skew	Median
Coromandel								
Hikutaia River at Old Maratoto Rd	12	0.082	0.017	0.001	0.330	0.148	1.18	0.025
Kauaeranga River at Smiths Cableway/Recorder	12	0.042	0.013	0.001	0.133	0.072	0.77	0.016
Ohinemuri River at Queens Head	12	0.911	1.025	0.037	1.500	0.570	-0.56	1.040
Ohinemuri River at SH25 Br	12	0.470	0.375	0.140	0.910	0.570	0.41	0.411
Tairua River at Morrissons Br Hikuai	12	0.035	0.007	0.001	0.124	0.066	1.00	0.015
Tapu River at Tapu-Coroglen Rd	12	0.011	0.006	0.001	0.042	0.013	1.55	0.003
Waiau River at E309 Rd Ford	12	0.045	0.016	0.001	0.142	0.087	0.91	0.028
Waitekauri River at U/S Ohinemuri Conflu	12	0.141	0.097	0.001	0.380	0.276	0.55	0.122
Waiwawa River at SH25 Coroglen	12	0.013	0.005	0.001	0.044	0.023	1.03	0.009
Wharekawa River at SH25	12	0.068	0.020	0.003	0.230	0.137	0.87	0.044
Hauraki								
Mangawhero Stm (Kaihere) at Mangawara Rd	12	0.353	0.330	0.200	0.560	0.170	0.52	0.300
Oraka Stm at Lake Rd	12	2.178	2.050	1.900	2.900	0.445	1.18	2.005
Piako River at Kiwitahi	12	1.476	0.990	0.060	3.500	2.747	0.28	0.840
Piako River at Paeroa-Tahuna Rd Br	12	1.574	1.115	0.480	3.400	1.855	0.60	1.615
Piakonui Stm at Piakonui Rd	12	0.322	0.265	0.130	0.690	0.255	0.88	0.215
Waihou River at Okauia	12	1.180	1.140	0.910	1.480	0.360	0.19	1.100
Waihou River at Whites Rd	12	0.702	0.700	0.640	0.760	0.040	0.09	0.670
Waiohotu Stm at Waiohotu Rd (Off SH5)	12	0.193	0.181	0.150	0.240	0.054	0.36	0.200
Waiomou Stm at Matamata-Tauranga Rd	12	0.543	0.440	0.280	1.020	0.430	0.72	0.455
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	0.261	0.025	0.007	1.100	0.420	1.28	0.211
Waitoa River at Landsdowne Rd Br	12	1.618	1.660	0.910	2.300	1.045	-0.07	1.445
Waitoa River at Mellon Rd Recorder	12	2.377	2.300	1.650	3.300	0.715	0.35	2.050
Tributaries to the lower Waikato River								
Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd	12	1.501	1.540	0.180	2.600	1.680	-0.17	1.335
Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd	12	0.724	0.665	0.191	2.200	0.700	1.24	0.595
Karapiro Stm at Hickey Rd Bridge	12	0.933	0.980	0.190	1.800	1.115	0.08	0.570
Kirikirioua Stm at Tauhara Dr	12	1.067	0.950	0.700	1.980	0.435	1.31	0.945
Komakorau Stm at Henry Rd	12	1.749	1.415	1.140	4.500	0.375	<u>2.54</u>	1.450
Little Waipa Stm at Arapuni - Putaruru Rd	12	1.573	1.485	1.390	2.100	0.320	1.20	1.500
Mangakotukutuku Stm (Rukuhia) at Peacockes Rd	12	1.423	0.965	0.780	4.000	0.355	<u>1.75</u>	0.990
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	2.848	3.000	1.780	3.400	0.500	-0.95	2.900
Mangaone Stm at Annebrooke Rd Br	12	2.833	2.950	1.900	3.400	0.500	-0.89	2.600
Mangaonua Stm at Harburt Rd Br	12	0.733	0.615	0.320	1.210	0.770	0.20	-
Mangaonua Stm at Hoeka Rd	12	1.694	1.705	1.300	2.100	0.240	0.24	1.500
Mangatangi River at SH2 Maramarua	12	0.404	0.079	0.011	1.890	0.612	1.56	0.165
Mangatawhiri River at Lyons Rd At Buckingham Br	12	0.085	0.011	0.001	0.390	0.126	1.43	0.017
Mangawara Stm at Rutherford Rd Br	12	1.100	0.785	0.580	2.900	0.500	1.63	0.844
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	10	2.082	2.250	0.360	2.900	0.500	-1.56	1.920
Matahuru Stm at Waiterimu Road Below Confluence	12	0.735	0.605	0.140	1.930	0.745	0.88	0.721
Ohaeroa Stm at SH22 Br	12	1.688	1.690	1.300	2.200	0.290	0.54	1.400
Opuatia Stm at Ponganui Rd	11	0.892	0.900	0.610	1.140	0.368	-0.28	0.790
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	1.723	1.750	1.300	2.300	0.505	0.25	1.590
Waerenga Stm at Taniwha Rd	12	0.793	0.675	0.380	1.410	0.740	0.37	0.741
Waitawhiriwhiri Stm at Edgcumbe Street	12	1.071	1.035	0.790	1.700	0.325	1.18	0.900
Whakapipi Stm at SH22 Br	12	4.167	4.300	2.500	6.100	1.900	0.11	3.650
Whakauru Stm at U/S SH1 Br	11	0.188	0.171	0.120	0.290	0.088	0.64	0.120
Whangamarino River at Island Block Rd	12	0.158	0.005	0.001	0.670	0.344	1.12	0.060
Whangamarino River at Jefferies Rd Br	12	0.830	0.440	0.030	3.100	1.128	1.35	0.597
Whangape Stm at Rangiri-Glen Murray Rd	12	0.184	0.018	0.001	0.770	0.337	1.20	0.014

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

Waipa River and Tributaries

Kaniwhaniwha Stm at Wright Rd	12	0.02	0.02	0.01	0.04	0.02	0.63	0.02
Mangaohoi Stm at South Branch Maru Rd	12	0.01	0.01	0.01	0.02	0.01	0.91	0.01
Mangaokewa Stm at Lawrence St Bridge	12	0.02	0.01	0.01	0.04	0.02	1.12	0.01
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	12	0.06	0.06	0.01	0.14	0.07	0.37	0.06
Mangapu River at Otorohanga	12	0.02	0.02	0.01	0.04	0.02	0.37	0.03
Mangatutu Stm (Waikeria) at Walker Rd Br	12	0.01	0.01	0.01	0.02	0.01	0.07	0.01
Mangauika Stm at Te Awamutu Borough W/S Intake	12	0.01	0.01	0.01	0.01	0.00	1.00	0.01
Ohote Stm at Whatawhata/Horotiu Rd	12	0.09	0.09	0.03	0.14	0.07	-0.10	0.06
Puniu River at Bartons Corner Rd Br	12	0.02	0.02	0.01	0.04	0.01	0.31	0.02
Waipa River at Mangaokewa Rd	12	0.01	0.01	0.01	0.05	0.01	<u>2.25</u>	0.01
Waipa River at Pirongia-Ngutunui Rd Br	12	0.02	0.02	0.01	0.04	0.01	0.64	0.02
Waipa River at SH3 Otorohanga	12	0.01	0.01	0.01	0.05	0.01	<u>2.72</u>	0.01
Waitomo Stm at SH31 Otorohanga	12	0.02	0.01	0.01	0.06	0.02	<u>1.98</u>	0.02
Waitomo Stm at Tumutumu Rd	12	0.01	0.01	0.01	0.01	0.00	<u>3.02</u>	0.01

12	0.323	0.189	0.051	0.810	0.553	0.59	0.273
12	0.266	0.235	0.140	0.490	0.190	0.65	0.250
12	0.516	0.435	0.130	0.980	0.495	0.44	0.513
12	1.731	1.890	0.950	2.500	1.040	-0.18	1.900
12	0.928	0.935	0.590	1.340	0.280	0.21	0.935
12	0.364	0.220	0.057	0.870	0.464	0.63	0.272
12	0.212	0.210	0.171	0.280	0.036	0.82	0.191
12	0.838	0.600	0.049	3.100	1.160	1.43	0.558
12	0.707	0.625	0.250	1.230	0.505	0.36	0.583
12	0.448	0.445	0.260	0.750	0.200	0.63	0.395
12	0.641	0.515	0.240	1.210	0.625	0.32	0.633
12	0.425	0.290	0.049	0.930	0.561	0.40	0.452
12	0.503	0.480	0.290	0.810	0.320	0.30	0.494
12	0.633	0.635	0.530	0.770	0.110	0.32	0.630

Tributaries to the upper Waikato River

Kawaunui Stm at SH5 Br	12	0.03	0.02	0.01	0.12	0.02	<u>1.84</u>	0.02
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	12	0.01	0.01	0.01	0.04	0.00	<u>2.55</u>	0.01
Mangakara Stm (Reporoa) at SH5	12	0.02	0.02	0.01	0.10	0.02	<u>2.49</u>	0.02
Mangakino Stm (Whakamaru) at Sandel Rd	12	0.01	0.01	0.01	0.06	0.00	<u>3.02</u>	0.01
Otamakokore Stm at Hossack Rd	12	0.01	0.01	0.01	0.05	0.00	<u>2.28</u>	0.01
Pueto Stm at Broadlands Rd Br	12	0.01	0.01	0.01	0.02	0.01	<u>0.90</u>	0.01
Tahunaatara Stm at Ohakuri Rd	12	0.01	0.01	0.01	0.03	0.00	<u>2.56</u>	0.01
Torepatutahi Stm at Vaile Rd Br	12	0.01	0.01	0.01	0.02	0.00	<u>2.14</u>	0.01
Waiotapu Stm at Campbell Rd Br	12	0.86	0.87	0.73	0.97	0.15	-0.40	0.85
Waiotapu Stm at Homestead Rd Br	12	0.28	0.29	0.07	0.52	0.23	-0.01	0.29
Waipapa Stm (Mokai) at Tirohanga Rd Br	12	0.01	0.01	0.01	0.01	0.00	1.00	0.01
Whirinaki Stm at Corbett Rd	12	0.01	0.01	0.01	0.01	0.00	1.00	0.01

12	2.504	2.450	1.850	3.200	0.300	0.56	2.480
12	0.543	0.575	0.370	0.740	0.250	-0.14	0.410
12	1.402	1.415	1.150	1.690	0.300	0.21	1.205
12	0.682	0.670	0.400	0.900	0.220	-0.12	0.594
12	0.857	0.720	0.550	1.450	0.335	1.10	0.733
12	0.424	0.420	0.360	0.490	0.060	0.06	0.407
12	0.567	0.515	0.370	0.870	0.210	0.81	0.520
12	0.565	0.525	0.310	0.970	0.330	0.54	0.440
12	0.857	0.840	0.680	1.020	0.150	0.12	0.847
12	1.353	1.345	0.980	1.680	0.175	0.11	1.350
12	1.231	1.215	0.920	1.570	0.415	0.08	1.100
12	0.733	0.725	0.640	0.860	0.070	0.65	0.680

West Coast

Awakino River at Gribbon Rd	12	0.01	0.01	0.01	0.01	0.00	1.00	0.01
Awakino River at SH3 Awakau Rd Junction	12	0.01	0.01	0.01	0.02	0.00	<u>1.79</u>	0.01
Manganui River at Off Manganui Rd	12	0.01	0.01	0.01	0.01	0.00	<u>1.83</u>	0.01
Mangaotaki River at SH3 Br	12	0.01	0.01	0.01	0.03	0.01	1.08	0.01
Marokopa River at Speedies Rd (Off Te Anga Rd)	12	0.01	0.01	0.01	0.01	0.00	1.00	0.01
Mokau River at Awakau Rd	12	0.01	0.01	0.01	0.04	0.02	0.89	0.01
Mokau River at Mangaokewa Rd (Off SH30)	12	0.01	0.01	0.01	0.02	0.00	<u>3.02</u>	0.01
Mokau River at Totoro Rd Recorder	12	0.01	0.01	0.01	0.02	0.01	0.27	0.01
Mokauiti Stm at Three Way Point - Aria	12	0.03	0.02	0.01	0.13	0.03	<u>2.07</u>	0.02
Ohautira Stm at Waingarō Te Uku Rd	12	0.01	0.01	0.01	0.02	0.00	<u>3.02</u>	0.01
Oparau River at Langdon Rd (Off Okupata Rd)	12	0.01	0.01	0.01	0.01	0.00	<u>3.02</u>	0.01
Tawarau River at Off Speedies Rd	12	0.01	0.01	0.01	0.01	0.00	1.00	0.01
Waingarō River (Pukemiō) at Ruakiwi Rd Off SH22	12	0.01	0.01	0.01	0.02	0.01	0.45	0.01
Waitetuna River at Te Uku-Waingarō Rd	12	0.01	0.01	0.01	0.01	0.01	-0.29	0.01

12	0.088	0.064	0.027	0.178	0.122	0.47	0.110
12	0.166	0.102	0.029	0.400	0.271	0.53	0.210
12	0.115	0.067	0.020	0.270	0.176	0.60	0.128
12	0.640	0.585	0.420	1.000	0.290	0.59	0.696
12	0.253	0.240	0.160	0.370	0.149	0.43	0.264
12	0.423	0.425	0.100	0.800	0.405	0.24	0.457
12	0.323	0.245	0.197	0.590	0.170	1.06	0.283
12	0.565	0.490	0.280	1.000	0.440	0.50	0.568
12	0.374	0.285	0.045	1.000	0.558	0.71	0.294
12	0.243	0.190	0.036	0.530	0.363	0.46	0.252
12	0.107	0.052	0.004	0.340	0.190	0.90	0.059
12	0.295	0.280	0.210	0.430	0.155	0.52	0.291
12	0.353	0.245	0.001	0.980	0.686	0.49	0.339
12	0.333	0.255	0.088	0.640	0.432	0.29	0.295

Inflows to Lake Taupo

Hinemaiaia River at SH1	12	0.01	0.01	0.01	0.01	0.00	1.00	0.01
Kuratau River at SH41 Moerangi	12	0.01	0.01	0.01	0.01	0.00	1.00	0.01
Kuratau River at 43 Te Rae Street	12	0.01	0.01	0.01	0.06	0.01	<u>2.43</u>	0.01
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)	12	0.01	0.01	0.01	0.01	0.01	0.78	0.01
Tauranga-Taupo River at Te Kono Slackline	12	0.01	0.01	0.01	0.01	0.00	1.00	0.01
Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal	12	0.01	0.01	0.01	0.01	0.00	1.00	0.01
Tokaanu Stm at Off SH41 Turangi	12	0.01	0.01	0.01	0.03	0.00	<u>1.89</u>	0.01
Waihaha River at SH32	12	0.01	0.01	0.01	0.01	0.00	1.00	0.01
Waitahanui River at Blake Rd	12	0.01	0.01	0.01	0.01	0.00	<u>3.02</u>	0.01
Whangamata Stm (Kinloch) at Whangamata Rd	12	0.01	0.01	0.01	0.01	0.00	<u>3.02</u>	0.005
Whanganui Stm at Lakeside Lake Taupo	12	0.01	0.01	0.01	0.01	0.00	<u>3.02</u>	0.01
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	12	0.01	0.01	0.01	0.01	0.00	1.00	0.01

12	0.053	0.048	0.007	0.099	0.067	0.04	0.056
12	0.074	0.062	0.035	0.135	0.066	0.49	0.070
12	0.677	0.645	0.330	1.230	0.440	0.51	0.568
12	0.730	0.735	0.600	0.900	0.085	0.31	0.720
12	0.101	0.108	0.052	0.145	0.030	-0.33	0.075
12	0.435	0.430	0.410	0.470	0.040	0.41	0.410
12	0.005	0.003	0.001	0.015	0.007	0.85	0.003
12	0.117	0.110	0.078	0.164	0.035	0.30	0.106
12	0.450	0.450	0.410	0.500	0.030	0.27	0.440
12	1.493	1.485	1.400	1.560	0.080	-0.22	1.500
12	0.336	0.340	0.190	0.510	0.125	0.29	0.322
12	0.759	0.770	0.520	1.140	0.390	0.29	0.713

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

Total Kjeldahl Nitrogen (g m⁻³)

Location	Count	Mean	Median	Min	Max	IQR	Skew	06-10 Median
Coromandel								
Hikutaia River at Old Maratoto Rd	12	0.10	0.10	0.05	0.20	0.05	0.96	0.10
Kauaeranga River at Smiths Headway/Recorder	12	0.10	0.07	0.03	0.38	0.09	<u>1.90</u>	0.08
Ohinemuri River at Queens Head	12	0.27	0.27	0.16	0.44	0.11	0.51	0.27
Ohinemuri River at SH25 Br	12	0.16	0.15	0.07	0.39	0.03	<u>2.39</u>	0.15
Tairua River at Morrisons Br Hikuaui	12	0.08	0.08	0.03	0.14	0.02	0.42	0.08
Tapu River at Tapu-Coroglen Rd	12	0.08	0.06	0.03	0.19	0.08	0.89	0.07
Waiau River at E309 Rd Ford	12	0.09	0.07	0.03	0.33	0.05	<u>2.21</u>	0.08
Waitekauri River at U/S Ohinemuri Conflu	12	0.12	0.11	0.06	0.22	0.05	1.06	0.12
Waiwawa River at SH25 Coroglen	12	0.08	0.07	0.03	0.14	0.05	0.17	0.08
Wharekawa River at SH25	12	0.08	0.07	0.03	0.12	0.03	-0.18	0.10
Hauraki								
Mangawhero Stm (Kaihere) at Mangawara Rd	12	0.13	0.11	0.06	0.27	0.08	1.02	0.13
Oraka Stm at Lake Rd	12	0.40	0.28	0.14	1.11	0.25	1.46	0.30
Piako River at Kiwitahi	12	0.44	0.37	0.28	0.97	0.17	<u>1.88</u>	0.44
Piako River at Paeroa-Tahuna Rd Br	12	0.65	0.66	0.40	0.99	0.18	0.49	0.70
Piakonui Stm at Piakonui Rd	12	0.23	0.16	0.08	0.73	0.07	<u>1.80</u>	0.18
Waihou River at Okauia	12	0.21	0.22	0.12	0.32	0.14	0.08	0.23
Waihou River at Whites Rd	12	0.04	0.03	0.03	0.07	0.02	1.20	0.03
Waiohotu Stm at Waiohotu Rd (Off SH5)	12	0.17	0.15	0.09	0.49	0.05	<u>2.45</u>	0.15
Waioumu Stm at Matamata-Tauranga Rd	12	0.22	0.21	0.11	0.36	0.10	0.26	0.20
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	0.39	0.32	0.22	1.00	0.15	<u>2.14</u>	0.41
Waitoa River at Landsdowne Rd Br	12	0.42	0.42	0.29	0.63	0.16	0.46	0.46
Waitoa River at Mellon Rd Recorder	12	0.58	0.54	0.35	0.87	0.26	0.36	0.49
Tributaries to the lower Waikato River								
Awaroa River (Waiuku) at Otawa Rd Br opp Moseley Rd	12	0.51	0.49	0.31	1.03	0.09	<u>2.12</u>	0.57
Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd	12	0.32	0.32	0.18	0.46	0.17	-0.12	0.33
Karapiro Stm at Hickey Rd Bridge	12	0.47	0.31	0.20	1.62	0.23	<u>2.15</u>	0.33
Kirikiriroa Stm at Tauhara Dr	12	0.73	0.69	0.48	0.99	0.40	0.23	0.70
Komakorau Stm at Henry Rd	12	1.70	1.71	1.14	2.40	0.79	0.16	1.92
Little Waipa Stm at Arapuni - Putaruru Rd	12	0.18	0.17	0.09	0.28	0.12	0.36	0.20
Mangakotukutuku Stm (Rukuhia) at Peacockes Rd	12	1.58	1.23	0.53	4.80	1.54	1.56	1.26
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	0.68	0.71	0.40	1.02	0.27	0.27	0.53
Mangaone Stm at Annebrooke Rd Br	12	0.54	0.48	0.37	1.00	0.21	1.57	0.54
Mangaonua Stm at Harbutt Rd Br	12	0.31	0.24	0.15	1.03	0.12	<u>2.66</u>	-
Mangaonua Stm at Hoeka Rd	12	0.46	0.47	0.31	0.62	0.10	0.23	0.47
Mangatangi River at SH2 Maramarua	12	0.37	0.35	0.15	0.73	0.22	0.75	0.38
Mangatawhiri River at Lyons Rd At Buckingham Br	12	0.16	0.13	0.08	0.47	0.08	<u>2.05</u>	0.15
Mangawara Stm at Rutherford Rd Br	12	1.12	1.01	0.65	1.69	0.76	0.25	1.20
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	10	0.90	0.71	0.35	1.76	0.64	0.72	0.78
Matahuru Stm at Waiteimu Road Below Confluence	12	0.66	0.45	0.33	1.83	0.41	1.64	0.66
Ohaeroa Stm at SH22 Br	12	0.31	0.28	0.20	0.56	0.14	1.07	0.32
Opuatia Stm at Ponganui Rd	11	0.32	0.29	0.20	0.57	0.07	<u>1.72</u>	0.30
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	0.25	0.28	0.13	0.34	0.10	-0.50	0.25
Waerenga Stm at Taniwha Rd	12	0.32	0.24	0.18	1.14	0.08	<u>2.86</u>	0.26
Waitawhirwhiri Stm at Edgcombe Street	12	1.34	1.33	1.10	1.59	0.27	0.01	1.30
Whakapipi Stm at SH22 Br	12	0.46	0.42	0.35	0.77	0.10	1.58	0.43
Whakauru Stm at U/S SH1 Br	11	0.20	0.19	0.13	0.39	0.09	1.58	0.17
Whangamarino River at Island Block Rd	12	1.59	1.64	0.84	2.40	0.84	0.05	1.74
Whangamarino River at Jefferies Rd Br	12	0.49	0.43	0.26	0.97	0.21	1.20	0.47
Whangape Stm at Rangiriri-Glen Murray Rd	12	2.05	2.00	0.75	5.00	1.18	1.55	1.79

Total Nitrogen (g m⁻³)

Location	Count	Mean	Median	Min	Max	IQR	Skew	06-10 Median
Coromandel								
	12	0.19	0.12	0.07	0.53	0.15	1.41	0.13
	12	0.15	0.10	0.03	0.46	0.11	1.44	0.11
	12	1.19	1.32	0.24	1.78	0.52	-0.71	1.35
	12	0.63	0.52	0.28	1.23	0.54	0.64	0.58
	12	0.11	0.09	0.07	0.25	0.06	1.59	0.12
	12	0.09	0.07	0.03	0.23	0.08	1.16	0.08
	12	0.14	0.08	0.05	0.47	0.10	<u>2.10</u>	0.13
	12	0.26	0.24	0.11	0.44	0.27	0.24	0.23
	12	0.09	0.09	0.07	0.15	0.04	0.89	0.10
	12	0.14	0.11	0.08	0.33	0.12	1.17	0.15
Hauraki								
	12	0.48	0.43	0.36	0.73	0.14	0.97	0.45
	12	2.58	2.29	2.09	4.01	0.64	1.36	2.31
	12	1.91	1.38	0.34	4.37	2.96	0.35	1.40
	12	2.22	1.77	0.95	4.39	2.09	0.62	2.41
	12	0.55	0.44	0.21	1.04	0.50	0.52	0.42
	12	1.39	1.37	1.05	1.80	0.47	0.15	1.34
	12	0.74	0.73	0.70	0.79	0.05	0.11	0.71
	12	0.37	0.34	0.29	0.64	0.06	<u>2.47</u>	0.34
	12	0.76	0.70	0.42	1.29	0.52	0.47	0.71
	12	0.65	0.34	0.23	1.52	0.85	0.80	0.63
	12	2.04	2.12	1.20	2.80	1.15	-0.14	1.97
	12	2.96	2.88	2.02	3.94	1.00	0.11	2.59
Tributaries to the lower Waikato River								
	12	2.02	2.29	0.56	3.10	1.76	-0.31	2.13
	12	1.04	0.99	0.38	2.61	0.86	1.05	0.93
	12	1.40	1.28	0.46	2.72	1.45	0.33	0.99
	12	1.79	1.68	1.21	2.61	0.87	0.39	1.64
	12	3.45	3.13	2.50	6.90	0.78	<u>2.20</u>	3.23
	12	1.75	1.67	1.49	2.38	0.30	1.28	1.69
	12	3.00	2.07	1.38	8.80	1.81	<u>1.72</u>	2.16
	12	3.53	3.62	2.57	4.12	0.28	-1.23	3.60
	12	3.37	3.44	2.90	3.89	0.37	-0.02	3.11
	12	1.05	0.81	0.52	2.06	0.87	0.61	-
	12	2.15	2.12	1.80	2.57	0.28	0.47	2.05
	12	0.78	0.52	0.16	2.35	0.75	1.29	0.59
	12	0.25	0.13	0.09	0.53	0.33	0.53	0.20
	12	2.22	1.81	1.32	4.59	1.35	1.16	2.13
	10	2.98	3.08	0.71	3.95	1.00	-1.47	2.80
	12	1.40	1.11	0.53	2.73	1.52	0.63	1.50
	12	2.00	2.05	1.65	2.40	0.42	0.06	1.77
	11	1.21	1.18	0.89	1.64	0.38	0.17	1.10
	12	1.98	2.00	1.49	2.64	0.56	0.20	1.83
	12	1.12	0.93	0.59	2.14	0.84	0.65	1.05
	12	2.41	2.29	2.08	3.06	0.46	0.78	2.22
	12	4.62	4.80	2.95	6.52	2.10	0.06	4.08
	11	0.38	0.38	0.26	0.57	0.18	0.39	0.28
	12	1.74	1.71	0.89	2.63	0.90	0.01	1.89
	12	1.32	0.81	0.29	3.70	1.49	1.03	1.02
	12	2.23	2.06	0.93	5.00	0.63	<u>1.91</u>	1.93

QR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

Waipa River and Tributaries

Kaniwhaniwha Stm at Wright Rd	12	0.24	0.22	0.12	0.47	0.10	1.20	0.23
Mangaohoi Stm at South Branch Maru Rd	12	0.14	0.13	0.09	0.23	0.06	0.96	0.13
Mangaokewa Stm at Lawrence St Bridge	12	0.39	0.37	0.22	0.96	0.18	<u>2.02</u>	0.27
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	12	0.76	0.71	0.40	1.20	0.55	0.32	0.69
Mangapu River at Otorohanga	12	0.39	0.36	0.21	0.70	0.15	0.96	0.35
Mangatutu Stm (Waikeria) at Walker Rd Br	12	0.18	0.18	0.12	0.26	0.05	0.37	0.19
Mangauika Stm at Te Awamutu Borough W/S Intake	12	0.11	0.05	0.03	0.48	0.12	<u>1.99</u>	0.06
Ohote Stm at Whatawhata/Horotiu Rd	12	0.84	0.82	0.50	1.46	0.27	0.88	0.80
Puniu River at Bartons Corner Rd Br	12	0.30	0.28	0.18	0.53	0.08	0.97	0.29
Waipa River at Mangaokewa Rd	12	0.24	0.21	0.15	0.53	0.09	<u>1.88</u>	0.22
Waipa River at Pirongia-Ngutunui Rd Br	12	0.28	0.26	0.16	0.45	0.14	0.33	0.26
Waipa River at SH3 Otorohanga	12	0.24	0.20	0.13	0.49	0.16	0.94	0.22
Waitomo Stm at SH31 Otorohanga	12	0.28	0.23	0.13	0.70	0.18	1.57	0.21
Waitomo Stm at Tumutumui Rd	12	0.20	0.13	0.09	0.57	0.09	1.61	0.12

12	0.56	0.47	0.18	1.13	0.62	0.54	0.52
12	0.41	0.39	0.24	0.64	0.19	0.42	0.42
12	0.90	0.78	0.38	1.57	0.80	0.44	0.79
12	2.49	2.46	1.58	3.47	1.35	0.00	2.60
12	1.32	1.28	0.80	1.86	0.44	0.35	1.27
12	0.55	0.41	0.19	1.05	0.49	0.60	0.48
12	0.32	0.28	0.21	0.70	0.15	<u>1.81</u>	0.25
12	1.68	1.46	0.60	4.28	1.32	1.15	1.39
12	1.01	0.97	0.44	1.58	0.55	0.15	0.93
12	0.69	0.72	0.45	1.02	0.26	0.32	0.63
12	0.93	0.83	0.40	1.58	0.66	0.29	0.94
12	0.66	0.48	0.21	1.23	0.81	0.44	0.72
12	0.78	0.76	0.42	1.38	0.44	0.61	0.77
12	0.84	0.76	0.67	1.25	0.19	1.31	0.76

Tributaries to the upper Waikato River

Kawaunui Stm at SH5 Br	12	0.53	0.41	0.19	1.76	0.30	<u>2.17</u>	0.41
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	12	0.21	0.15	0.09	0.79	0.07	<u>2.77</u>	0.17
Mangakara Stm (Reporoa) at SH5	12	0.36	0.28	0.19	1.25	0.09	<u>2.62</u>	0.28
Mangakino Stm (Whakamaru) at Sandel Rd	12	0.20	0.12	0.07	0.91	0.10	<u>2.62</u>	0.12
Otamakokore Stm at Hossack Rd	12	0.31	0.25	0.14	1.12	0.14	<u>2.61</u>	0.24
Pueto Stm at Broadlands Rd Br	12	0.11	0.09	0.03	0.33	0.05	<u>2.27</u>	0.10
Tahunaaatara Stm at Ohakuri Rd	12	0.22	0.20	0.10	0.61	0.08	<u>2.23</u>	0.19
Torepatutahi Stm at Vaile Rd Br	12	0.15	0.16	0.07	0.25	0.05	0.50	0.11
Waiotapu Stm at Campbell Rd Br	12	1.07	1.03	0.90	1.54	0.11	<u>1.81</u>	1.05
Waiotapu Stm at Homestead Rd Br	12	0.66	0.69	0.24	1.11	0.44	-0.19	0.63
Waipapa Stm (Mokai) at Tirohanga Rd Br	12	0.18	0.16	0.11	0.33	0.07	1.12	0.17
Whirinaki Stm at Corbett Rd	12	0.06	0.03	0.03	0.34	0.02	<u>2.79</u>	0.07

12	3.04	2.90	2.39	3.84	0.70	0.60	2.89
12	0.75	0.73	0.48	1.43	0.26	1.46	0.60
12	1.76	1.73	1.40	2.40	0.40	0.74	1.55
12	0.88	0.78	0.62	1.65	0.26	<u>1.99</u>	0.71
12	1.16	1.02	0.75	1.83	0.69	0.69	1.04
12	0.53	0.51	0.46	0.73	0.06	1.66	0.50
12	0.79	0.76	0.53	1.14	0.36	0.40	0.76
12	0.71	0.69	0.45	1.13	0.34	0.57	0.56
12	1.93	1.92	1.72	2.22	0.19	0.37	1.93
12	2.01	2.02	1.55	2.56	0.57	0.22	1.96
12	1.41	1.45	1.07	1.86	0.49	0.12	1.24
12	0.79	0.75	0.67	1.09	0.08	1.58	0.75

West Coast

Awakino River at Gribbon Rd	12	0.11	0.10	0.05	0.27	0.06	1.54	0.07
Awakino River at SH3 Awakau Rd Junction	12	0.23	0.22	0.08	0.58	0.12	<u>1.68</u>	0.14
Manganui River at Off Manganui Rd	12	0.13	0.11	0.06	0.34	0.06	<u>1.90</u>	0.11
Mangaotaki River at SH3 Br	12	0.38	0.25	0.15	1.12	0.12	<u>1.70</u>	0.18
Marokopa River at Speedies Rd (Off Te Anka Rd)	12	0.16	0.14	0.09	0.37	0.13	1.22	0.13
Mokau River at Awakau Rd	12	0.33	0.30	0.21	0.57	0.14	1.06	0.29
Mokau River at Mangaokewa Rd (Off SH30)	12	0.26	0.22	0.12	0.93	0.13	<u>2.63</u>	0.21
Mokau River at Totoro Rd Recorder	12	0.32	0.25	0.19	0.66	0.20	1.08	0.24
Mokauiti Stm at Three Way Point - Aria	12	0.49	0.43	0.27	0.94	0.24	1.11	0.35
Ohautira Stm at Waingaro Te Uku Rd	12	0.19	0.16	0.08	0.53	0.06	<u>2.16</u>	0.16
Oparau River at Langdon Rd (Off Okupata Rd)	12	0.15	0.14	0.06	0.30	0.11	0.61	0.13
Tawarau River at Off Speedies Rd	12	0.16	0.14	0.09	0.30	0.09	0.95	0.14
Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22	12	0.55	0.29	0.16	3.60	0.14	<u>2.98</u>	0.29
Waitetuna River at Te Uku-Waingaro Rd	12	0.22	0.19	0.12	0.46	0.11	1.30	0.20

12	0.20	0.19	0.10	0.43	0.10	1.37	0.18
12	0.39	0.30	0.13	0.98	0.36	1.06	0.38
12	0.25	0.19	0.10	0.61	0.24	1.10	0.27
12	1.02	0.82	0.61	1.92	0.46	1.23	0.90
12	0.42	0.40	0.26	0.67	0.19	0.52	0.42
12	0.75	0.71	0.36	1.26	0.50	0.53	0.74
12	0.58	0.48	0.34	1.16	0.37	1.03	0.54
12	0.89	0.75	0.47	1.53	0.68	0.60	0.81
12	0.87	0.69	0.32	1.68	0.87	0.58	0.65
12	0.43	0.34	0.12	0.99	0.37	0.89	0.44
12	0.26	0.20	0.08	0.56	0.26	0.80	0.22
12	0.45	0.41	0.30	0.65	0.19	0.49	0.45
12	0.90	0.56	0.16	4.30	0.82	<u>2.38</u>	0.66
12	0.55	0.46	0.23	1.04	0.48	0.47	0.49

Inflows to Lake Taupo

Hinemaiaia River at SH1	12	0.08	0.09	0.03	0.14	0.04	0.06	0.08
Kuratau River at SH41 Moerangi	12	0.10	0.10	0.03	0.28	0.11	0.93	0.08
Kuratau River at 43 Te Rae Street	12	0.14	0.12	0.07	0.31	0.05	<u>1.70</u>	0.15
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)	12	0.23	0.22	0.16	0.34	0.05	1.04	0.23
Tauranga-Taupo River at Te Kono Slackline	12	0.08	0.05	0.03	0.24	0.10	1.03	0.05
Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal	12	0.03	0.03	0.03	0.07	0.00	<u>1.90</u>	0.03
Tokaanu Stm at Off SH41 Turangi	12	0.11	0.12	0.03	0.16	0.05	-0.75	0.10
Waihaha River at SH32	12	0.08	0.06	0.03	0.29	0.07	<u>1.96</u>	0.07
Waitahanui River at Blake Rd	12	0.07	0.07	0.03	0.15	0.06	0.54	0.06
Whangamata Stm (Kinloch) at Whangamata Rd	12	0.15	0.15	0.10	0.25	0.05	1.02	0.15
Whanganui Stm at Lakeside Lake Taupo	12	0.14	0.11	0.06	0.50	0.09	<u>2.28</u>	0.11
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	12	0.21	0.15	0.11	0.58	0.16	<u>1.85</u>	0.17

12	0.14	0.13	0.08	0.23	0.04	0.84	0.13
12	0.18	0.16	0.09	0.32	0.08	0.99	0.16
12	0.82	0.80	0.45	1.30	0.33	0.32	0.74
12	0.96	0.94	0.80	1.14	0.11	0.35	0.94
12	0.18	0.16	0.08	0.39	0.10	1.13	0.12
12	0.47	0.47	0.44	0.50	0.05	0.01	0.46
12	0.11	0.13	0.03	0.17	0.05	-0.68	0.10
12	0.20	0.18	0.10	0.39	0.04	1.67	0.17
12	0.52	0.52	0.47	0.60	0.03	0.69	0.51
12	1.64	1.65	1.50	1.74	0.08	-0.65	1.65
12	0.48	0.45	0.36	0.69	0.10	0.90	0.45
12	0.96	0.95	0.66	1.43	0.36	0.45	0.92

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

Turbidity (NTU)

Location	Count	Mean	Median	Min	Max	IQR	Skew	06-10 Median
Coromandel								
Hikutaia River at Old Maratoto Rd	12	2.4	1.6	0.9	6.3	2.2	1.20	1.5
Kauaeranga River at Smiths Cableway/Recorder	12	2.1	1.3	0.5	6.4	2.7	1.08	1.1
Ohinemuri River at Queens Head	12	1.5	1.1	0.5	3.0	0.9	0.93	1.0
Ohinemuri River at SH25 Br	12	1.3	1.2	0.7	2.5	0.6	1.10	1.1
Tairua River at Morrisons Br Hikuai	12	4.6	1.7	0.7	32.0	2.1	2.87	1.3
Tapu River at Tapu-Coroglen Rd	12	2.0	1.0	0.4	6.5	3.2	1.06	0.8
Waiau River at E309 Rd Ford	12	6.6	2.7	1.0	26.0	8.8	1.55	2.9
Waitekauri River at U/S Ohinemuri Conflu	12	1.7	1.1	0.6	4.1	1.6	1.00	0.9
Waiwawa River at SH25 Coroglen	12	1.6	1.1	0.7	3.1	1.8	0.67	1.3
Wharekawa River at SH25	12	3.8	3.2	1.5	7.9	2.9	0.86	3.4
Hauraki								
Mangawhero Stm (Kaihere) at Mangawara Rd	12	9.8	7.2	2.1	30.0	6.0	1.46	6.3
Oraka Stm at Lake Rd	12	6.8	5.8	2.9	17.9	3.8	1.68	5.3
Piako River at Kiwitahi	12	7.8	5.8	2.4	20.0	5.5	1.26	4.9
Piako River at Paeroa-Tahuna Rd Br	12	13.4	13.6	6.8	21.0	8.2	0.03	10.4
Piakonui Stm at Piakonui Rd	12	7.9	4.0	2.5	25.0	8.4	1.27	3.4
Waihou River at Okauia	12	5.1	5.1	2.6	8.3	2.4	0.39	4.8
Waihou River at Whites Rd	12	0.7	0.5	0.3	1.1	0.6	0.39	0.4
Waiohotu Stm at Waiohotu Rd (Off SH5)	12	5.3	4.2	2.4	13.7	2.7	1.65	3.9
Waiomou Stm at Matamata-Tauranga Rd	12	5.3	4.4	1.9	12.3	2.8	1.15	4.2
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	10.9	7.8	3.3	39.0	5.7	1.89	9.4
Waitoa River at Landsdowne Rd Br	12	5.4	4.3	1.2	14.2	4.9	1.03	5.6
Waitoa River at Mellon Rd Recorder	12	9.3	8.6	3.7	16.5	6.6	0.42	7.5
Tributaries to the lower Waikato River								
Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd	12	15.5	13.5	2.6	56.0	8.9	2.26	16.0
Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd	12	10.2	6.0	3.4	43.0	4.5	2.13	6.2
Karapiro Stm at Hickey Rd Bridge	12	19.0	8.7	2.8	105.0	11.6	2.50	7.5
Kirikiroa Stm at Tauhara Dr	12	27.2	29.0	15.8	43.0	11.7	0.27	28.0
Komakorau Stm at Henry Rd	12	83.5	94.0	24.0	125.0	62.5	-0.55	79.0
Little Waipa Stm at Arapuni - Putaruru Rd	12	1.6	1.3	0.6	3.5	1.4	0.71	1.6
Mangakotukutuku Stm (Rukuhia) at Peacocks Rd	12	30.8	24.5	11.2	124.0	6.8	2.80	23.0
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	6.8	5.2	3.0	16.5	4.3	1.31	3.6
Mangaone Stm at Annebrooke Rd Br	12	12.9	11.1	6.9	31.0	3.9	2.25	11.0
Mangaonua Stm at Harbutt Rd Br	12	10.8	5.2	3.0	47.0	7.3	2.06	-
Mangaonua Stm at Hoeka Rd	12	19.0	16.8	10.9	35.0	11.5	0.84	17.0
Mangatangi River at SH2 Maramarua	12	14.8	10.7	6.3	43.0	11.8	1.63	11.4
Mangatawhiri River at Lyons Rd At Buckingham Br	12	19.5	2.1	1.0	157.0	12.6	2.81	3.3
Mangawara Stm at Rutherford Rd Br	12	46.8	46.0	23.0	78.0	20.0	0.37	41.8
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	10	42.6	48.0	6.3	61.0	17.0	-0.99	47.6
Matahuru Stm at Waiterimu Road Below Confluence	12	50.9	32.5	18.8	192.0	22.0	2.14	36.0
Ohaeroa Stm at SH22 Br	12	11.7	4.9	1.8	43.0	10.6	1.53	8.2
Oputia Stm at Ponganui Rd	11	40.5	14.5	5.8	320.0	9.8	2.83	11.5
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	2.8	2.7	1.2	5.9	1.8	0.88	2.7
Waerenga Stm at Taniwha Rd	12	21.4	6.0	2.8	178.0	4.7	2.98	7.5
Waitawhinwhiri Stm at Edgcombe Street	12	35.5	33.5	15.7	72.0	19.8	0.98	34.0
Whakapipi Stm at SH22 Br	12	9.8	4.7	2.0	56.0	5.9	2.78	4.5
Whakauri Stm at U/S SH1 Br	11	6.5	5.9	3.7	12.5	2.5	1.23	4.9
Whangamarino River at Island Block Rd	12	33.1	32.0	2.6	57.0	20.5	-0.08	35.9
Whangamarino River at Jefferies Rd Br	12	27.7	18.9	7.8	106.0	11.4	2.19	17.0
Whangape Stm at Rangiriri-Glen Murray Rd	12	71.9	62.0	19.1	150.0	41.5	0.85	54.7

pH (pH units)

Count	Mean	Median	Min	Max	IQR	Skew	06-10 Median
12	7.0	7.1	6.2	7.5	0.4	-1.15	7.2
12	7.1	7.1	6.5	7.4	0.3	-0.68	7.2
12	7.3	7.2	6.6	8.6	0.9	0.86	7.2
12	7.1	7.2	6.5	7.3	0.2	-1.29	7.1
12	7.2	7.2	6.3	7.6	0.3	-1.74	7.1
12	7.5	7.4	6.8	8.0	0.6	-0.26	7.6
12	7.4	7.4	6.8	7.8	0.3	-0.67	7.4
12	7.2	7.2	6.7	7.7	0.5	-0.03	7.2
12	7.3	7.3	6.7	7.6	0.3	-0.82	7.2
12	7.1	7.1	6.4	7.3	0.3	-1.50	7.0
Hauraki							
12	7.4	7.4	6.9	7.6	0.4	-0.51	7.4
12	7.1	7.2	6.8	7.5	0.3	0.17	7.2
12	7.1	7.2	6.7	7.4	0.5	-0.23	7.1
12	7.3	7.4	6.8	7.6	0.4	-0.59	7.3
12	7.3	7.3	7.0	7.5	0.4	-0.08	7.3
12	7.2	7.3	6.6	7.6	0.5	-0.58	7.3
12	6.9	6.9	6.8	7.2	0.2	0.85	6.9
12	7.1	7.1	6.9	7.4	0.2	0.52	7.2
12	7.1	7.2	6.5	7.5	0.5	-0.73	7.2
12	7.2	7.4	6.6	7.6	0.5	-0.68	7.2
12	7.1	7.2	6.6	7.3	0.3	-0.67	7.2
12	7.2	7.4	6.8	7.5	0.4	-0.61	7.3
Tributaries to the lower Waikato River							
12	7.2	7.2	6.4	8.4	0.6	0.36	7.3
12	7.7	7.7	7.3	8.1	0.2	-0.05	7.7
12	7.2	7.2	6.9	7.4	0.3	-0.29	7.3
12	6.9	6.9	6.5	7.0	0.2	-1.00	6.8
12	6.7	6.7	6.4	7.1	0.5	0.39	6.6
12	7.0	7.0	6.8	7.2	0.2	-0.01	7.0
12	6.9	7.0	6.0	7.3	0.5	-1.26	7.0
12	7.4	7.5	6.9	7.8	0.5	-0.28	7.5
12	7.3	7.3	6.9	7.5	0.2	-0.98	7.3
12	7.3	7.4	6.9	7.6	0.4	-0.33	-
12	7.1	7.1	6.8	7.4	0.3	-0.08	7.0
12	7.1	7.2	6.6	7.5	0.4	-0.41	7.1
12	7.3	7.4	6.6	7.7	0.7	-0.52	7.4
12	6.9	6.9	6.0	7.3	0.4	-1.27	6.8
10	7.0	7.0	6.6	7.4	0.1	-0.18	7.0
12	7.1	7.2	6.4	7.5	0.4	-1.14	7.1
12	7.6	7.7	7.0	7.9	0.5	-0.49	7.6
11	7.5	7.4	7.1	7.8	0.3	-0.23	7.6
12	7.1	7.1	6.9	7.4	0.2	0.34	7.2
12	7.3	7.4	6.7	7.5	0.2	-1.88	7.3
12	6.9	7.0	6.5	7.2	0.3	-0.64	7.0
12	7.3	7.4	6.8	7.6	0.4	-0.56	7.3
11	7.4	7.5	7.0	7.7	0.3	-0.93	7.5
12	7.1	7.1	6.4	7.7	0.6	-0.22	6.9
12	7.2	7.3	6.5	7.4	0.1	-1.71	7.2
12	7.5	7.4	6.9	9.1	0.5	1.68	7.5

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

Waipa River and Tributaries

Kaniwhaniwha Stm at Wright Rd	12	9.5	9.2	3.2	21.0	4.8	1.06	6.9
Mangaohoi Stm at South Branch Maru Rd	12	6.7	2.2	0.5	56.0	1.4	<u>2.99</u>	1.6
Mangaokewa Stm at Lawrence St Bridge	12	11.5	6.2	3.3	49.0	10.7	<u>2.23</u>	5.0
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	12	22.9	25.0	8.6	35.0	15.1	-0.42	16.7
Mangapu River at Otorohanga	12	14.7	4.7	1.8	53.0	19.7	1.27	9.0
Mangatutu Stm (Waikeria) at Walker Rd Br	12	5.9	4.1	1.7	19.4	5.7	1.48	3.5
Manguaika Stm at Te Awamutu Borough W/S Intake	12	6.2	2.6	1.3	38.0	1.9	<u>2.69</u>	1.5
Ohote Stm at Whatawhata/Horotiu Rd	11	17.9	13.4	7.4	53.0	8.6	<u>2.12</u>	12.0
Puniu River at Bartons Corner Rd Br	12	7.8	7.2	1.9	17.0	6.1	0.72	5.8
Waipa River at Mangaokewa Rd	12	3.2	2.2	1.3	14.0	1.3	<u>2.82</u>	2.2
Waipa River at Pirongia-Ngutunui Rd Br	12	11.2	8.1	3.6	24.0	10.6	0.75	8.8
Waipa River at SH3 Otorohanga	12	11.1	3.6	1.1	44.0	17.5	1.34	3.7
Waitomo Stm at SH31 Otorohanga	12	18.2	7.8	2.3	67.0	21.4	1.36	7.8
Waitomo Stm at Tumutumu Rd	12	16.5	4.8	1.9	80.0	8.5	<u>1.77</u>	4.8

12	7.2	7.3	6.8	7.4	0.2	-1.30	7.1
12	7.4	7.4	7.0	7.7	0.2	-0.58	7.4
12	7.3	7.4	6.8	7.5	0.4	-0.88	7.3
12	7.2	7.2	6.7	7.9	0.6	0.43	7.2
12	7.6	7.4	6.9	8.4	0.9	0.55	7.5
12	7.3	7.3	6.9	7.6	0.2	-0.39	7.2
12	7.3	7.4	6.6	7.6	0.4	-1.24	7.3
11	6.7	6.8	6.3	7.0	0.4	-0.77	6.7
12	7.2	7.2	6.7	7.4	0.1	-1.27	7.1
12	7.3	7.4	6.9	7.6	0.5	-0.42	7.3
12	7.2	7.3	6.8	7.5	0.3	-0.80	7.2
12	7.3	7.4	6.8	7.8	0.5	-0.42	7.3
12	7.8	7.9	7.2	8.2	0.6	-0.54	7.8
12	7.9	8.0	7.4	8.2	0.4	-0.58	7.9

Tributaries to the upper Waikato River

Kawaunui Stm at SH5 Br	12	8.7	4.7	2.0	31.0	7.9	1.57	4.3
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	12	6.7	4.5	3.2	30.0	2.6	<u>2.88</u>	4.5
Mangakara Stm (Reporoa) at SH5	12	9.3	6.3	2.6	32.0	3.3	<u>2.00</u>	5.4
Mangakino Stm (Whakamaru) at Sandel Rd	12	5.5	2.5	1.8	34.0	2.3	<u>2.93</u>	1.6
Otamakokore Stm at Hossack Rd	12	5.0	4.2	2.2	18.1	2.4	<u>2.61</u>	3.5
Pueto Stm at Broadlands Rd Br	12	3.6	2.9	1.5	11.5	2.5	<u>2.11</u>	2.3
Tahunaatara Stm at Ohakuri Rd	12	4.7	3.2	1.9	21.0	1.2	<u>2.86</u>	2.9
Torepatutahi Stm at Vaile Rd Br	12	1.4	1.4	0.8	2.4	0.8	0.43	1.0
Waiotapu Stm at Campbell Rd Br	12	8.6	7.2	4.2	21.0	5.0	1.62	6.6
Waiotapu Stm at Homestead Rd Br	12	14.7	13.3	5.2	31.0	14.0	0.58	12.8
Waipapa Stm (Mokai) at Tirohanga Rd Br	12	5.5	5.2	2.9	10.1	3.1	0.67	4.6
Whirinaki Stm at Corbett Rd	12	0.8	0.4	0.2	3.6	0.5	<u>2.65</u>	0.5

12	6.8	6.8	6.4	7.2	0.4	0.28	6.9
12	7.4	7.4	7.2	7.5	0.3	-0.46	7.4
12	6.9	6.9	6.6	7.1	0.3	-0.34	7.0
12	7.3	7.4	6.9	7.5	0.3	-0.71	7.4
12	8.0	8.0	7.4	8.2	0.3	-1.13	8.0
12	7.3	7.3	7.0	7.5	0.2	-0.07	7.4
12	7.4	7.4	6.8	7.8	0.4	-0.67	7.5
12	7.1	7.1	6.8	7.3	0.2	-0.47	7.2
12	5.4	5.5	3.9	5.8	0.4	<u>-1.71</u>	5.6
12	6.7	6.7	6.5	7.0	0.2	0.59	6.8
12	7.6	7.6	7.4	7.8	0.2	0.00	7.7
12	7.2	7.3	6.4	7.5	0.3	<u>-2.00</u>	7.3

West Coast

Awakino River at Gribbon Rd	12	7.5	3.9	0.7	25.0	9.5	1.19	1.9
Awakino River at SH3 Awakau Rd Junction	12	15.0	3.1	1.4	80.0	21.7	<u>1.95</u>	4.5
Manganui River at Off Manganui Rd	12	16.8	3.8	2.4	90.0	13.6	<u>1.90</u>	6.0
Mangaotaki River at SH3 Br	12	19.7	3.1	1.6	109.0	16.8	<u>1.93</u>	5.9
Marokopa River at Speedies Rd (Off Te Anga Rd)	12	8.7	3.8	2.2	30.0	7.9	1.49	3.9
Mokau River at Awakau Rd	12	27.1	9.7	4.4	105.0	35.0	1.37	16.1
Mokau River at Mangaokewa Rd (Off SH30)	12	5.5	3.4	2.1	20.0	2.9	<u>1.92</u>	3.0
Mokau River at Totoro Rd Recorder	12	19.2	3.2	1.8	86.0	26.7	1.49	7.3
Mokauiti Stm at Three Way Point - Aria	12	32.3	9.9	4.2	122.0	44.8	1.28	11.4
Ohautira Stm at Waingarō Te Uku Rd	12	24.1	9.5	5.2	134.0	19.4	<u>2.47</u>	9.1
Oparau River at Langdon Rd (Off Okupata Rd)	12	9.1	2.9	1.8	36.0	9.7	1.52	2.7
Tawarau River at Off Speedies Rd	12	7.3	3.4	1.7	25.0	7.9	1.36	3.6
Waingarō River (Pukemiro) at Ruakiwi Rd Off SH22	12	115.3	8.2	4.2	1210.0	16.8	<u>3.00</u>	8.9
Waitetuna River at Te Uku-Waingarō Rd	12	18.5	9.7	5.8	90.0	14.1	<u>2.52</u>	10.5

12	7.4	7.5	6.9	7.7	0.5	-0.42	7.4
12	7.5	7.6	6.9	8.1	0.6	-0.01	7.5
12	7.4	7.5	6.8	7.7	0.3	-1.12	7.4
12	7.6	7.8	7.0	8.0	0.4	-0.73	7.7
12	7.9	7.9	7.2	8.6	0.5	0.00	7.9
12	7.4	7.4	6.8	7.7	0.4	-0.61	7.4
12	7.2	7.3	6.8	7.5	0.4	-0.37	7.2
12	7.6	7.6	6.9	8.0	0.6	-0.48	7.6
12	7.3	7.5	6.8	7.6	0.6	-0.56	7.3
12	7.4	7.5	7.0	7.7	0.3	-0.62	7.3
12	7.5	7.7	6.9	7.9	0.7	-0.46	7.5
12	8.0	8.0	7.3	8.6	0.3	-0.29	7.9
12	7.6	7.6	7.1	7.9	0.6	-0.40	7.6
12	7.3	7.4	6.9	7.5	0.3	-1.06	7.3

Inflows to Lake Taupo

Hinemaiaia River at SH1	12	1.9	1.3	0.8	5.6	1.4	<u>1.70</u>	1.1
Kuratau River at SH41 Moerangi	12	2.0	1.9	1.3	3.9	1.2	1.04	1.6
Kuratau River at 43 Te Rae Street	12	1.4	1.3	0.7	2.9	0.8	1.06	1.2
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)	12	3.3	3.2	1.4	6.8	1.5	1.01	2.9
Tauranga-Taupo River at Te Kono Slackline	12	2.3	1.4	0.5	10.0	2.0	<u>2.14</u>	0.7
Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal	12	0.3	0.2	0.1	1.3	0.1	<u>2.65</u>	0.2
Tokaanu Stm at Off SH41 Turangi	12	1.6	1.8	1.1	2.2	0.7	-0.11	1.2
Waihaha River at SH32	12	1.4	0.8	0.4	7.2	0.6	<u>2.80</u>	0.6
Waitahanui River at Blake Rd	12	1.0	0.8	0.5	1.9	0.7	0.64	0.7
Whangamata Stm (Kinloch) at Whangamata Rd	12	2.4	2.0	1.0	5.3	1.1	1.25	1.85
Whanganui Stm at Lakeside Lake Taupo	12	3.0	2.7	0.7	10.0	2.3	<u>1.83</u>	1.3
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	12	4.8	3.7	2.0	10.0	3.7	0.88	3.0

12	7.4	7.5	7.0	7.9	0.3	0.23	7.4
12	7.1	7.2	6.8	7.3	0.2	-0.97	7.1
12	7.4	7.4	7.0	7.7	0.3	-0.19	7.5
12	7.3	7.4	7.0	7.8	0.3	0.38	7.4
12	7.3	7.4	6.7	7.7	0.3	-0.66	7.4
12	7.1	7.1	6.8	7.5	0.2	0.39	7.2
12	7.3	7.3	6.8	7.7	0.2	0.00	7.4
12	7.3	7.3	6.9	7.5	0.3	-0.75	7.3
12	7.4	7.4	7.0	7.8	0.2	0.23	7.5
12	7.3	7.3	6.6	8.0	0.4	0.12	7.4
12	7.4	7.4	7.0	7.7	0.2	-0.27	7.4
12	7.3	7.3	7.0	7.5	0.2	-0.55	7.4

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

E. Coli (n/100mL)

Location	E. Coli (n/100mL)							06-10
	Count	Mean	Median	Min	Max	IQR	Skew	Median
Coromandel								
Hikutaia River at Old Maratoto Rd	4	430	320	180	900	410	0.96	265
Kauaeranga River at Smiths Cableway/Recorder	4	193	215	71	270	105	-0.82	135
Ohinemuri River at Queens Head	4	235	104	31	700	401	1.02	145
Ohinemuri River at SH25 Br	4	240	250	90	370	170	-0.27	220
Tairua River at Morrisons Br Hikuai	4	94	105	47	120	52	-0.67	155
Tapu River at Tapu-Coroglen Rd	4	78	78	16	140	104	0.00	95
Waiau River at E309 Rd Ford	4	290	205	100	650	330	0.92	160
Waitekauri River at U/S Ohinemuri Conflu	4	160	130	40	340	211	0.52	115
Waiwawa River at SH25 Coroglen	4	88	75	30	170	75	0.68	180
Wharekawa River at SH25	4	213	215	100	320	195	-0.02	365
Hauraki								
Mangawhero Stm (Kaihere) at Mangawara Rd	4	25	22	7	50	25	0.57	55
Oraka Stm at Lake Rd	4	450	460	180	700	310	-0.15	555
Piako River at Kiritahi	4	723	795	300	1000	355	-0.78	645
Piako River at Paeroa-Tahuna Rd Br	4	598	445	400	1100	365	1.14	460
Piakonui Stm at Piakonui Rd	4	360	90	60	1200	570	1.15	90
Waihou River at Okauia	4	538	230	190	1500	665	1.15	280
Waihou River at Whites Rd	4	39	34	16	73	40	0.50	35
Waiohotu Stm at Waiohotu Rd (Off SH5)	4	56	29	17	150	68	1.13	29
Waiomou Stm at Matamata-Tauranga Rd	4	408	345	240	700	295	0.78	400
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	4	795	680	320	1500	810	0.53	460
Waitoa River at Landsdowne Rd Br	4	580	645	130	900	540	-0.45	465
Waitoa River at Mellon Rd Recorder	4	885	750	240	1800	830	0.67	800
Tributaries to the lower Waikato River								
Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd	-	-	-	-	-	-	-	-
Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd	4	348	370	150	500	185	-0.52	335
Karapiro Stm at Hickey Rd Bridge	4	2175	600	500	7000	3350	1.15	510
Kirikirihoa Stm at Tauhara Dr	4	453	445	170	750	295	0.11	660
Komakorau Stm at Henry Rd	4	1650	1550	600	2900	2000	0.09	2200
Little Waipa Stm at Arapuni - Putaruru Rd	4	130	120	90	190	60	0.69	120
Mangakotukutuku Stm (Rukuhia) at Peacockes Rd	4	9860	1550	340	36000	18780	1.14	1550
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	4	563	640	170	800	375	-0.81	650
Mangaone Stm at Annebrooke Rd Br	4	2400	1350	700	6200	3000	1.08	1050
Mangaonua Stm at Harburt Rd Br	4	1170	270	140	4000	2030	1.14	-
Mangaonua Stm at Hoeka Rd	4	1850	1600	900	3300	1600	0.60	2350
Mangatangi River at SH2 Maramarua	-	-	-	-	-	-	-	-
Mangatawhiri River at Lyons Rd At Buckingham Br	-	-	-	-	-	-	-	-
Mangawara Stm at Rutherford Rd Br	-	-	-	-	-	-	-	-
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	3	817	1000	150	1300	863	-0.51	1500
Matahuru Stm at Waiterimu Road Below Confluence	-	-	-	-	-	-	-	-
Ohaeroa Stm at SH22 Br	-	-	-	-	-	-	-	-
Opuatia Stm at Ponganui Rd	3	207	200	170	250	60	0.29	250
Pokaiwhenua Stm at Arapuni - Putaruru Rd	4	435	175	90	1300	630	1.13	180
Waerenga Stm at Taniwha Rd	4	2115	540	380	7000	3320	1.15	530
Waitawhirihiri Stm at Edgcombe Street	4	1725	1100	400	4300	2350	0.93	1400
Whakapipi Stm at SH22 Br	-	-	-	-	-	-	-	-
Whakauru Stm at U/S SH1 Br	3	640	600	320	1000	510	0.21	460
Whangamarino River at Island Block Rd	-	-	-	-	-	-	-	-
Whangamarino River at Jefferies Rd Br	-	-	-	-	-	-	-	-
Whangape Stm at Rangiri-Glen Murray Rd	-	-	-	-	-	-	-	-

Enterococci (n/100ml)

Location	Enterococci (n/100ml)							06-10
	Count	Mean	Median	Min	Max	IQR	Skew	Median
Coromandel								
Hikutaia River at Old Maratoto Rd	4	194	155	64	400	243	0.52	120
Kauaeranga River at Smiths Cableway/Recorder	4	173	135	30	390	195	0.77	105
Ohinemuri River at Queens Head	4	57	22	15	170	80	1.15	23
Ohinemuri River at SH25 Br	4	110	115	9	200	121	-0.20	67
Tairua River at Morrisons Br Hikuai	4	65	35	11	180	87	1.08	51
Tapu River at Tapu-Coroglen Rd	4	115	86	20	270	180	0.55	70
Waiau River at E309 Rd Ford	4	1030	155	110	3700	1830	1.15	155
Waitekauri River at U/S Ohinemuri Conflu	4	31	31	8	55	30	0.04	21
Waiwawa River at SH25 Coroglen	4	107	135	8	150	86	-1.01	150
Wharekawa River at SH25	4	211	255	13	320	169	-0.95	250
Hauraki								
Mangawhero Stm (Kaihere) at Mangawara Rd	4	107	35	19	340	161	1.15	170
Oraka Stm at Lake Rd	4	255	165	90	600	330	0.89	290
Piako River at Kiritahi	4	315	330	90	510	300	-0.19	360
Piako River at Paeroa-Tahuna Rd Br	4	363	240	120	850	425	0.99	370
Piakonui Stm at Piakonui Rd	4	454	405	6	1000	792	0.17	125
Waihou River at Okauia	4	628	300	110	1800	925	1.09	200
Waihou River at Whites Rd	4	55	48	30	95	45	0.59	27
Waiohotu Stm at Waiohotu Rd (Off SH5)	4	131	20	4	480	248	1.15	19
Waiomou Stm at Matamata-Tauranga Rd	4	1060	390	160	3300	1620	1.13	220
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	4	310	250	130	610	320	0.69	220
Waitoa River at Landsdowne Rd Br	4	288	330	40	450	295	-0.49	330
Waitoa River at Mellon Rd Recorder	4	598	660	70	1000	805	-0.13	335
Tributaries to the lower Waikato River								
Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd	-	-	-	-	-	-	-	-
Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd	4	121	110	35	230	98	0.47	86
Karapiro Stm at Hickey Rd Bridge	4	1933	315	100	7000	3615	1.15	205
Kirikirihoa Stm at Tauhara Dr	4	2072	625	39	7000	3756	1.12	500
Komakorau Stm at Henry Rd	4	1113	690	270	2800	1425	1.01	875
Little Waipa Stm at Arapuni - Putaruru Rd	4	138	83	75	310	120	1.15	76
Mangakotukutuku Stm (Rukuhia) at Peacockes Rd	4	7938	1150	450	29000	14925	1.15	505
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	4	345	290	150	650	280	0.79	280
Mangaone Stm at Annebrooke Rd Br	4	1795	1350	180	4300	2410	0.75	690
Mangaonua Stm at Harburt Rd Br	4	1308	800	30	3600	1785	0.96	-
Mangaonua Stm at Hoeka Rd	4	2120	1150	180	6000	3260	1.01	835
Mangatangi River at SH2 Maramarua	-	-	-	-	-	-	-	-
Mangatawhiri River at Lyons Rd At Buckingham Br	-	-	-	-	-	-	-	-
Mangawara Stm at Rutherford Rd Br	-	-	-	-	-	-	-	-
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	3	963	1000	390	1500	833	-0.12	700
Matahuru Stm at Waiterimu Road Below Confluence	-	-	-	-	-	-	-	-
Ohaeroa Stm at SH22 Br	-	-	-	-	-	-	-	-
Opuatia Stm at Ponganui Rd	3	197	210	90	290	150	-0.24	160
Pokaiwhenua Stm at Arapuni - Putaruru Rd	4	173	160	80	290	115	0.47	125
Waerenga Stm at Taniwha Rd	4	408	395	140	700	365	0.15	240
Waitawhirihiri Stm at Edgcombe Street	4	3725	360	180	14000	6950	1.15	1250
Whakapipi Stm at SH22 Br	-	-	-	-	-	-	-	-
Whakauru Stm at U/S SH1 Br	3	473	510	170	740	428	-0.23	430
Whangamarino River at Island Block Rd	-	-	-	-	-	-	-	-
Whangamarino River at Jefferies Rd Br	-	-	-	-	-	-	-	-
Whangape Stm at Rangiri-Glen Murray Rd	-	-	-	-	-	-	-	-

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

Waipa River and Tributaries

Kaniwhaniwha Stm at Wright Rd	-	-	-	-	-	-	-	-	-
Mangaohoi Stm at South Branch Maru Rd	4	370	310	9	850	501	0.52	46	-
Mangaokewa Stm at Lawrence St Bridge	-	-	-	-	-	-	-	-	-
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	-	-	-	-	-	-	-	-	-
Mangapu River at Otorohanga	4	503	365	180	1100	545	0.92	485	-
Mangatutu Stm (Waikeria) at Walker Rd Br	4	260	245	150	400	140	0.47	245	-
Manguaika Stm at Te Awamutu Borough W/S Intake	4	282	57	12	1000	527	1.14	15	-
Ohote Stm at Whatawhata/Horotui Rd	4	2200	275	250	8000	3900	1.15	300	-
Puniu River at Bartons Corner Rd Br	-	-	-	-	-	-	-	-	-
Waipa River at Mangaokewa Rd	-	-	-	-	-	-	-	-	-
Waipa River at Pirongia-Ngutunui Rd Br	4	216	190	34	450	208	0.51	350	-
Waipa River at SH3 Otorohanga	4	229	180	57	500	322	0.51	290	-
Waitomo Stm at SH31 Otorohanga	4	325	265	200	570	200	1.02	355	-
Waitomo Stm at Tumutumu Rd	4	388	300	50	900	475	0.75	245	-

-	-	-	-	-	-	-	-	-	-
4	295	325	8	520	401	-0.22	80	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
4	253	190	42	590	354	0.69	155	-	-
4	427	235	39	1200	596	1.04	140	-	-
4	106	39	16	330	157	1.14	18	-	-
4	1399	37	21	5500	2743	1.15	42	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
4	191	200	42	320	179	-0.23	135	-	-
4	328	44	25	1200	594	1.15	115	-	-
4	149	95	34	370	203	0.93	125	-	-
4	293	240	110	580	275	0.77	115	-	-

Tributaries to the upper Waikato River

Kawaunui Stm at SH5 Br	4	1118	455	260	3300	1695	1.11	840	-
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	4	203	170	60	410	185	0.71	240	-
Mangakara Stm (Reporoa) at SH5	4	908	920	90	1700	1585	0.00	455	-
Mangakino Stm (Whakamaru) at Sandel Rd	-	-	-	-	-	-	-	-	-
Otamakokore Stm at Hossack Rd	4	283	280	160	410	145	0.08	400	-
Pueto Stm at Broadlands Rd Br	4	39	40	15	60	34	-0.10	31	-
Tahunaatara Stm at Ohakuri Rd	4	133	110	110	200	45	1.15	180	-
Torepatutahi Stm at Vaile Rd Br	-	-	-	-	-	-	-	-	-
Waiotapu Stm at Campbell Rd Br	4	8	2	1	25	12	1.15	2	-
Waiotapu Stm at Homestead Rd Br	-	-	-	-	-	-	-	-	-
Waipapa Stm (Mokai) at Tirohanga Rd Br	4	193	185	100	300	135	0.23	190	-
Whirinaki Stm at Corbett Rd	-	-	-	-	-	-	-	-	-

4	1808	655	20	5900	3075	1.11	230	-	-
4	153	135	30	310	175	0.43	110	-	-
4	2174	1879	40	4900	4252	0.11	380	-	-
-	-	-	-	-	-	-	-	-	-
4	177	60	39	550	256	1.15	150	-	-
4	59	18	9	190	98	1.13	22	-	-
4	89	70	25	190	93	0.80	105	-	-
-	-	-	-	-	-	-	-	-	-
4	9	5	5	21	8	1.15	5	-	-
-	-	-	-	-	-	-	-	-	-
4	293	280	110	500	325	0.09	145	-	-
-	-	-	-	-	-	-	-	-	-

West Coast

Awakino River at Gribbon Rd	4	139	89	26	350	193	0.92	115	-
Awakino River at SH3 Awakau Rd Junction	4	920	750	180	2000	1360	0.40	305	-
Manganui River at Off Manganui Rd	4	263	240	170	400	125	0.73	240	-
Mangaotaki River at SH3 Br	-	-	-	-	-	-	-	-	-
Marokopa River at Speedies Rd (Off Te Anga Rd)	4	535	460	220	1000	450	0.69	350	-
Mokau River at Awakau Rd	4	275	240	70	550	400	0.19	270	-
Mokau River at Mangaokewa Rd (Off SH30)	4	163	170	50	260	125	-0.27	185	-
Mokau River at Totoro Rd Recorder	4	880	315	190	2700	1290	1.14	560	-
Mokauiti Stm at Three Way Point - Aria	4	1083	515	200	3100	1635	1.07	465	-
Ohautira Stm at Waingaro Te Uku Rd	4	380	385	270	480	150	-0.13	500	-
Oparau River at Langdon Rd (Off Okupata Rd)	-	-	-	-	-	-	-	-	-
Tawarau River at Off Speedies Rd	-	-	-	-	-	-	-	-	-
Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22	-	-	-	-	-	-	-	-	-
Waitetuna River at Te Uku-Waingaro Rd	4	408	415	220	580	185	-0.18	560	-

4	107	65	9	290	186	0.79	39	-	-
4	111	110	42	180	79	0.03	42	-	-
4	89	43	21	250	122	1.11	43	-	-
-	-	-	-	-	-	-	-	-	-
4	117	108	21	230	187	0.07	64	-	-
4	85	26	17	270	133	1.15	29	-	-
4	82	52	24	200	97	1.04	49	-	-
4	193	160	32	420	244	0.57	140	-	-
4	343	340	160	530	245	0.04	155	-	-
4	98	56	10	270	155	0.96	140	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
4	332	300	29	700	486	0.24	245	-	-

Inflows to Lake Taupo

Hinemaiaia River at SH1	3	911	23	10	2700	2018	0.71	16	-
Kuratau River at SH41 Moerangi	-	-	-	-	-	-	-	-	-
Kuratau River at 43 Te Rae Street	4	73	28	7	230	115	1	33	-
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)	3	61	43	40	100	45	0.70	53	-
Tauranga-Taupo River at Te Kono Slackline	-	-	-	-	-	-	-	-	-
Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal	-	-	-	-	-	-	-	-	-
Tokaanu Stm at Off SH41 Turangi	-	-	-	-	-	-	-	-	-
Waihaha River at SH32	4	23	12	1	70	39	1.02	9	-
Waitahanui River at Blake Rd	4	55	14	2	190	96	1.14	16	-
Whangamata Stm (Kinloch) at Whangamata Rd	-	-	-	-	-	-	-	-	-
Whanganui Stm at Lakeside Lake Taupo	4	114	109	6	230	213	0.01	51	-
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	4	113	120	80	130	25	-0.99	115	-

3	335	5	1	1000	749	0.71	6	-	-
-	-	-	-	-	-	-	-	-	-
4	162	107	5	430	306	1	33	-	-
3	197	250	12	330	239	-0.53	41	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
4	81	77	1	170	158	0.02	6	-	-
4	56	22	2	180	98	1.09	11	-	-
-	-	-	-	-	-	-	-	-	-
4	426	99	4	1500	839	1.11	24	-	-
4	254	200	14	600	473	0.28	105	-	-

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

Temperature (°C)

Location	Count	Mean	Median	Min	Max	IQR	Skew	06-10 Median
Coromandel								
Hikutaia River at Old Maratoto Rd	12	14.8	15.8	7.2	20.0	5.7	-0.43	15.3
Kauaeranga River at Smiths Cableway/Recorder	12	15.6	16.4	8.0	20.7	7.1	-0.32	15.6
Ohinemuri River at Queens Head	12	16.8	15.7	10.1	22.9	7.9	0.07	16.6
Ohinemuri River at SH25 Br	12	16.5	16.8	10.0	21.9	6.3	-0.13	16.7
Tairua River at Morrisons Br Hikuai	12	16.4	16.9	9.2	22.1	6.8	-0.21	16.8
Tapu River at Tapu-Coroglen Rd	12	15.7	16.7	6.2	22.1	7.4	-0.50	15.3
Waiau River at E309 Rd Ford	12	14.9	15.7	7.9	20.2	5.3	-0.44	14.9
Waitekauri River at U/S Ohinemuri Conflu	12	15.9	15.7	8.8	21.4	7.3	-0.11	15.9
Waiwawa River at SH25 Coroglen	12	17.2	16.7	8.7	23.6	7.9	-0.26	15.7
Wharekawa River at SH25	12	15.9	16.6	8.3	21.1	6.1	-0.34	16.4
Hauraki								
Mangawhero Stm (Kaihere) at Mangawara Rd	12	14.1	13.7	9.0	19.3	4.8	0.06	13.5
Oraka Stm at Lake Rd	12	14.3	15.0	10.3	16.9	3.9	-0.57	14.8
Piako River at Kiwitahi	12	15.3	14.5	7.7	22.1	5.9	-0.07	16.0
Piako River at Paeroa-Tahuna Rd Br	12	15.0	14.7	6.4	21.8	7.0	-0.27	15.2
Piakonui Stm at Piakonui Rd	12	13.1	13.2	7.8	17.8	2.8	-0.25	13.0
Waihou River at Okauia	12	14.7	15.3	10.8	17.5	4.1	-0.50	14.8
Waihou River at Whites Rd	12	13.5	13.7	12.2	14.2	1.0	-0.75	13.6
Waiohotu Stm at Waiohotu Rd (Off SH5)	12	11.9	12.2	7.4	15.0	4.0	-0.41	11.4
Waiomou Stm at Matamata-Tauranga Rd	12	14.1	14.9	9.5	17.7	4.0	-0.50	13.7
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	16.7	15.7	10.4	23.4	7.3	0.20	16.2
Waitoa River at Landsdowne Rd Br	12	14.8	15.3	7.5	20.2	4.6	-0.56	14.9
Waitoa River at Mellon Rd Recorder	12	15.5	15.6	7.8	21.7	6.1	-0.35	15.6
Tributaries to the lower Waikato River								
Awaroa River (Waiuku) at Otawa Rd Br opp Moseley Rd	12	17.6	16.9	11.6	25.4	8.8	0.27	17.1
Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd	12	15.1	14.4	9.2	20.8	6.4	0.06	14.7
Karapiro Stm at Hickey Rd Bridge	12	14.7	14.5	7.3	21.0	4.1	-0.29	15.0
Kirikiriira Stm at Tauhara Dr	12	14.9	14.9	10.3	19.6	3.6	-0.02	15.0
Komakorau Stm at Henry Rd	12	15.7	14.8	11.1	21.2	6.2	0.34	14.9
Little Waipa Stm at Arapuni - Putaruru Rd	12	14.5	15.0	11.8	16.8	3.2	-0.31	14.8
Mangakotukutuku Stm (Rukuhia) at Peacocks Rd	12	15.1	15.1	9.8	20.9	4.5	0.05	15.3
Mangamingi Stm (Tokoroa) at Paraonui Rd Br	12	14.9	15.6	9.6	19.5	5.2	-0.23	14.9
Mangaone Stm at Annebrooke Rd Br	12	13.9	14.5	7.7	18.4	3.3	-0.68	13.6
Mangaonua Stm at Harbutt Rd Br	12	14.1	14.0	7.8	20.0	3.4	-0.14	-
Mangaonua Stm at Hoeka Rd	12	14.0	14.6	8.6	18.2	3.5	-0.56	13.8
Mangatangi River at SH2 Maramara	12	16.6	16.4	10.9	22.4	7.1	0.02	16.3
Mangatawhiri River at Lyons Rd At Buckingham Br	12	17.3	17.6	10.5	23.8	8.3	0.03	17.1
Mangawara Stm at Rutherford Rd Br	12	15.4	13.8	9.9	21.4	7.5	0.29	15.0
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	10	14.9	15.3	10.0	19.2	2.5	-0.27	14.3
Matahuru Stm at Waiterimu Road Below Confluence	12	15.0	13.6	9.5	21.2	7.2	0.24	14.7
Ohaeroa Stm at SH22 Br	12	14.9	14.1	9.7	20.6	5.6	0.11	14.4
Opuatia Stm at Ponganui Rd	11	15.6	15.4	9.3	22.7	7.8	0.05	15.1
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	14.5	15.0	10.3	18.3	4.4	-0.21	14.5
Waerenga Stm at Taniwha Rd	12	14.5	13.0	7.8	20.5	6.5	0.12	14.2
Waitawhiriwhiri Stm at Edgecumbe Street	12	16.0	15.8	11.4	21.2	3.7	0.15	16.2
Whakapipi Stm at SH22 Br	12	15.4	14.7	10.5	20.9	5.8	0.17	15.3
Whakauru Stm at U/S SH1 Br	11	13.1	13.8	8.4	16.2	3.2	-0.66	13.0
Whangamarino River at Island Block Rd	12	18.3	18.1	10.3	24.4	9.4	-0.15	17.4
Whangamarino River at Jefferies Rd Br	12	15.1	13.5	9.2	21.4	6.6	0.17	14.5
Whangape Stm at Rangiriri-Glen Murray Rd	12	16.9	15.4	10.5	25.0	8.4	0.22	16.5

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

Waipa River and Tributaries								
Kaniwhaniwha Stm at Wright Rd	12	15.1	14.6	10.4	20.3	7.3	0.17	14.5
Mangaohoi Stm at South Branch Maru Rd	12	14.0	13.8	10.4	19.7	4.6	0.58	13.7
Mangaokewa Stm at Lawrence St Bridge	12	14.0	12.9	9.5	19.6	6.9	0.40	13.5
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	12	16.9	16.4	11.0	24.0	8.2	0.30	16.1
Mangapu River at Otorohanga	12	16.1	15.2	11.8	21.6	9.1	0.35	15.6
Mangatutu Stm (Waikeria) at Walker Rd Br	12	14.7	13.8	9.9	21.0	5.5	0.56	13.9
Mangauika Stm at Te Awamutu Borough W/S Intake	12	13.1	12.8	9.5	16.8	4.5	0.15	12.5
Ohote Stm at Whatawhata/Horotiu Rd	12	15.1	14.8	8.5	21.3	4.2	-0.16	15.3
Puniu River at Bartons Corner Rd Br	12	15.5	14.4	10.3	21.4	7.3	0.37	14.6
Waipa River at Mangaokewa Rd	12	13.7	12.3	9.4	19.9	8.4	0.48	13.9
Waipa River at Pirongia-Ngutunui Rd Br	12	16.1	15.4	10.3	21.7	8.4	0.09	15.1
Waipa River at SH3 Otorohanga	12	15.4	14.4	10.9	21.1	8.4	0.33	15.1
Waitomo Stm at SH31 Otorohanga	12	15.8	15.3	10.4	20.9	7.7	0.10	14.9
Waitomo Stm at Tumutumu Rd	12	14.6	14.5	10.7	19.1	5.6	0.13	13.9
Tributaries to the upper Waikato River								
Kawaunui Stm at SH5 Br	12	15.1	16.0	10.9	18.8	4.3	-0.41	15.5
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	12	13.4	13.6	10.3	16.0	3.3	-0.36	13.4
Mangakara Stm (Reporoa) at SH5	12	13.5	14.2	9.5	17.1	3.4	-0.36	14.0
Mangakino Stm (Whakamaru) at Sandel Rd	12	12.5	13.2	8.6	15.6	4.5	-0.33	12.3
Otamakokore Stm at Hossack Rd	12	20.9	21.3	16.5	25.0	5.5	-0.18	21.2
Pueto Stm at Broadlands Rd Br	12	14.3	14.5	10.4	18.8	3.8	0.01	14.2
Tahunaatara Stm at Ohakuri Rd	12	14.1	14.9	8.5	19.1	6.0	-0.25	14.2
Torepatutahi Stm at Vaile Rd Br	12	14.7	15.5	10.0	18.0	4.3	-0.51	14.7
Waiotapu Stm at Campbell Rd Br	12	28.5	29.2	24.1	32.4	5.4	-0.23	28.6
Waiotapu Stm at Homestead Rd Br	12	18.9	19.9	13.7	23.5	5.6	-0.18	19.1
Waipapa Stm (Mokai) at Tirohanga Rd Br	12	22.6	23.0	19.1	25.9	4.6	-0.17	22.2
Whirinaki Stm at Corbett Rd	12	12.7	13.1	10.6	14.3	2.1	-0.48	12.6
West Coast								
Awakino River at Gribbon Rd	12	13.8	12.4	10.3	19.6	7.2	0.50	12.8
Awakino River at SH3 Awakau Rd Junction	12	15.4	14.5	10.7	21.2	9.7	0.25	14.7
Manganui River at Off Manganui Rd	12	14.3	13.0	10.7	19.9	6.6	0.48	13.7
Mangaotaki River at SH3 Br	12	14.1	13.1	10.5	19.4	7.2	0.41	13.6
Marokopa River at Speedies Rd (Off Te Anga Rd)	12	14.5	14.6	9.6	19.3	6.0	0.08	14.4
Mokau River at Awakau Rd	12	15.7	14.4	10.2	22.0	9.6	0.28	14.9
Mokau River at Mangaokewa Rd (Off SH30)	12	13.0	12.0	8.7	17.9	6.9	0.31	12.7
Mokau River at Totoro Rd Recorder	12	15.1	14.3	10.5	20.6	8.7	0.29	14.9
Mokauiti Stm at Three Way Point - Aria	12	15.3	14.0	10.4	22.2	10.2	0.38	14.9
Ohautira Stm at Waingaro Te Uku Rd	12	13.9	13.2	8.9	19.0	5.7	0.27	13.0
Oparau River at Langdon Rd (Off Okupata Rd)	12	15.4	14.9	9.9	20.7	7.3	0.15	14.7
Tawarau River at Off Speedies Rd	12	14.4	14.0	9.4	19.3	6.0	0.06	13.7
Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22	12	16.1	15.1	9.5	22.1	8.1	0.13	15.4
Waitetuna River at Te Uku-Waingaro Rd	12	14.8	14.0	9.8	19.6	7.0	0.13	14.4
Inflows to Lake Taupo								
Hinemaiaia River at SH1	12	11.9	12.5	6.5	16.6	5.7	-0.28	11.6
Kuratau River at SH41 Moerangi	12	9.8	10.2	6.7	12.8	3.7	-0.13	9.2
Kuratau River at 43 Te Rae Street	12	13.5	14.3	8.2	19.4	6.2	-0.05	13.4
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)	12	10.8	10.9	8.0	13.1	2.1	-0.18	10.8
Tauranga-Taupo River at Te Kono Slackline	12	10.9	11.7	6.3	16.1	4.7	-0.08	10.2
Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal	12	12.6	12.3	11.4	15.6	1.3	1.47	12.2
Tokaanu Stm at Off SH41 Turangi	12	13.4	13.2	7.8	20.1	8.1	0.09	13.3
Waihaha River at SH32	12	11.6	11.8	7.4	16.0	4.6	-0.07	11.1
Waitahanui River at Blake Rd	12	10.8	10.9	8.3	12.6	2.1	-0.51	10.7
Whangamata Stm (Kinloch) at Whangamata Rd	12	10.0	10.1	7.3	11.9	1.8	-0.50	9.95
Whanganui Stm at Lakeside Lake Taupo	12	12.1	12.3	7.6	16.1	5.4	-0.14	11.3
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	12	11.7	11.8	8.0	15.0	3.9	-0.13	11.7

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions

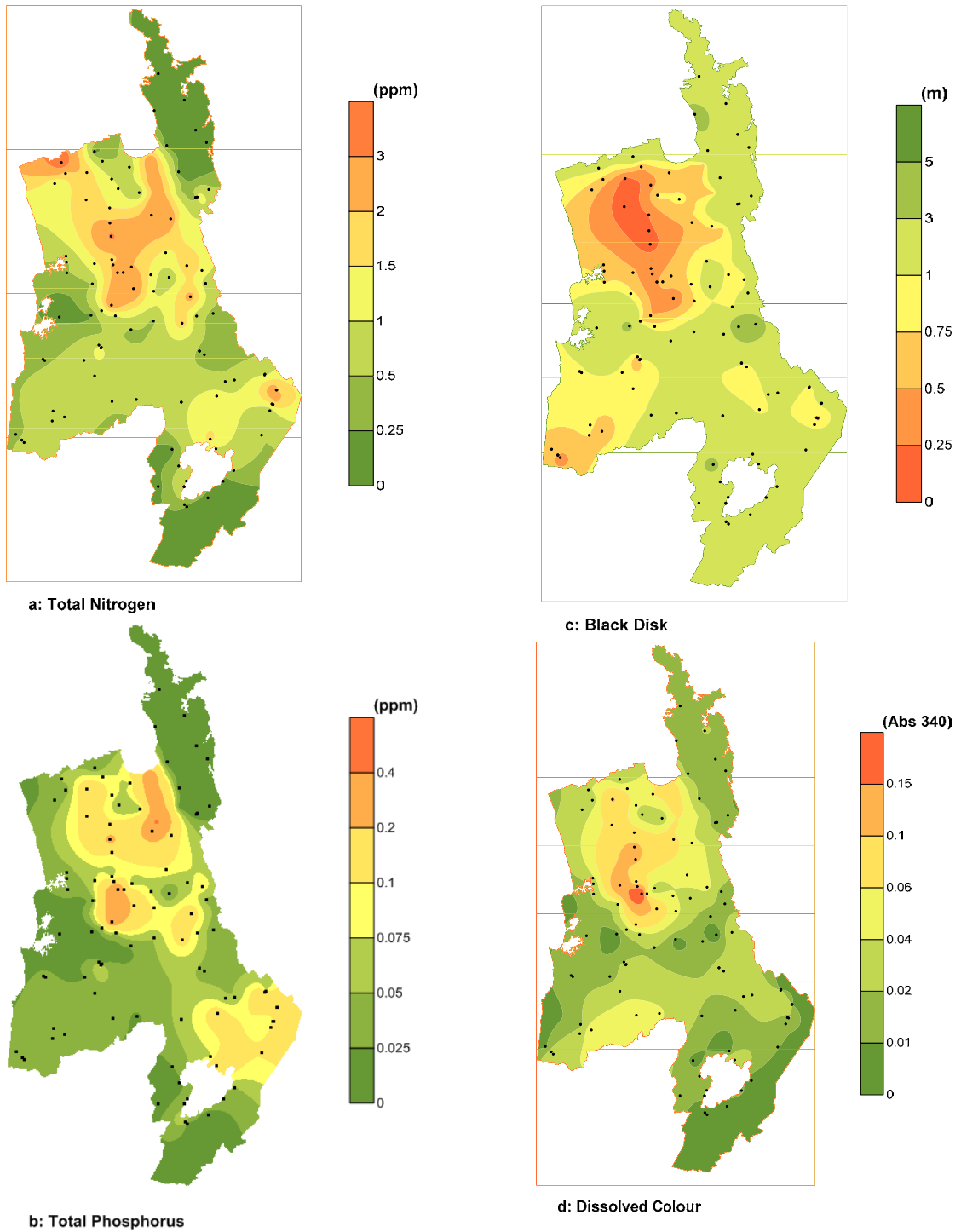


Figure 2: Spatial contour plots of four water quality parameters (based on 5 year median values, 2006-2010); a: Total Nitrogen, b: Total Phosphorus, c: Black disk, d: Dissolved colour (Abs 340).

3.2 Regional rivers monitoring programme comparison with water quality guidelines and standards

Number of samples (2010) that comply with satisfactory water quality standards and with excellent water quality standards and guidelines (+n=7, *n=9, ^n=10, ^n=11)

Location	SATISFACTORY										
	ECOLOGICAL HEALTH							RECREATION			
	DO	pH	Turb	NH4	Temp	TP	TN	Bdisk	E.coli	E.coli-m	

Coromandel											
Hikutaia River at Old Maratoto Rd	12	11	11	12	8	12	11	7	3/4	N	
Kauaeranga River at Smiths Cableway/Recorder	12	12	11	12	7	12	12	9	4/4	N	
Ohinemuri River at Queens Head	12	12	12	12	4	12	1	10^	3/4	Y	
Ohinemuri River at SH25 Br	12	12	12	12	5	12	6	11	4/4	N	
Tairua River at Morrisons Br Hikuai	12	11	10	12	5	11	12	5^	4/4	Y	
Tapu River at Tapu-Coroglen Rd	12	12	11	12	6	12	12	9	4/4	Y	
Waiau River at E309 Rd Ford	12	12	8	12	8	11	12	6	3/4	N	
Waitekauri River at U/S Ohinemuri Conflu	12	12	12	12	6	12	12	9^	4/4	N	
Waiwawa River at SH25 Coroglen	12	12	12	12	4	12	12	11	4/4	Y	
Wharekawa River at SH25	12	11	9	12	7	12	12	8^	4/4	N	

Hauraki											
Mangawhero Stm (Kaihere) at Mangawara Rd	12	12	4	12	10	1	7	3	4/4	Y	
Oraka Stm at Lake Rd	12	12	4	12	10	0	0	2	3/4	N	
Piako River at Kiwitahi	9	12	4	12	7	0	4	1	1/4	N	
Piako River at Paeroa-Tahuna Rd Br	12	12	0	12	8	0	0	0	3/4	N	
Piakonui Stm at Piakonui Rd	12	12	8	12	10	9	7	1	3/4	Y	
Waihou River at Okauia	12	12	6	12	10	0	0	1	3/4	N	
Waihou River at Whites Rd	12	12	12	12	7	0	0	12	4/4	Y	
Waiohotu Stm at Waiohotu Rd (Off SH5)	11	12	7	12	12	10	11	n/a	4/4	Y	
Waiomou Stm at Matamata-Tauranga Rd	12	12	7	12	10	4	3	1	3/4	N	
Waitakaruru River (Hauraki Plains) at Coxhead Rd Br	12	12	4	12	5	1	7	0	2/4	N	
Waitoa River at Landsdowne Rd Br	11	12	7	12	9	4	0	4	2/4	N	
Waitoa River at Mellon Rd Recorder	4	12	1	12	9	0	0	2	1/4	N	

Tributaries to the Lower Waikato River											
Awaroa River (Waiuku) at Otawa Rd Br opp Moseley Rd	11	10	1	12	4	5	0	0^	n/a	n/a	
Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly f	9	12	5	12	8	11	4	0	4/4	N	
Karapiro Stm at Hickey Rd Bridge	12	12	3	12	8	0	1	2	2/4	N	
Kirikiri River at Tauhara Dr	3	12	0	12	9	0	0	0	3/4	N	
Komakorau Stm at Henry Rd	1	10	0	10	6	0	0	0	0/4	N	
Little Waipa Stm at Arapuni - Putaruru Rd	12	12	12	12	8	0	0	4	4/4	Y	
Mangakotukutuku Stm (Rukuhia) at Peacockes Rd	11^	11	0	12	8	0	0	0	1/4	N	
Mangamingi Stm (Tokoroa) at Paraoanui Rd Br	12	12	5	12	10	0	0	0	1/4	N	
Mangaone Stm at Annebrooke Rd Br	11	12	0	12	9	0	0	0	0/4	N	
Mangaonua Stm at Harbutt Road Bridge	12	12	5	12	8	8	0	0	3/4	N	
Mangaonua Stm at Hoeka Rd	10	12	0	12	9	4	0	0	0/4	N	
Mangatangi River at SH2 Maramarua	12	12	0	12	5	1	6	0	n/a	n/a	
Mangatawhiri River at Lyons Rd At Buckingham Br	12	12	7	12	5	10	11	6^	n/a	n/a	
Mangawara Stm at Rutherford Rd Br	8	11	0	12	7	0	0	0	n/a	n/a	
Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd	10^	10^	0^	10^	8^	0^	0^	0^	1/3	N	
Matahuru Stm at Waiterimu Road Below Confluence	12	11	0	12	8	0	0	0	n/a	n/a	
Ohaeroa Stm at SH22 Br	12	12	6	12	9	9	0	3^	n/a	n/a	
Opuatia Stm at Ponganui Rd	11^	11^	0^	11^	8^	10^	0^	0^	3/3	N	
Pokaiwhenua Stm at Arapuni - Putaruru Rd	12	12	11	12	10	0	0	2	3/4	N	
Waerenga Stm at Taniwha Rd	12	12	5	12	8	6	0	0	2/4	N	
Waitawhiriwhiri Stm at Edgecumbe Street	8	12	0	12	7	0	0	0	1/4	N	
Whakapipi Stm at SH22 Br	9	12	6	12	7	5	0	1^	n/a	n/a	
Whakauru Stm at U/S SH1 Br	11^	11^	3^	11^	10^	3^	9^	1^	1/3	N	
Whangamarino River at Island Block Rd	5	11	1	12	4	0	0	0	n/a	n/a	
Whangamarino River at Jefferies Rd Br	9	12	0	12	7	0	2	0	n/a	n/a	
Whangape Stm at Rangiriri-Glen Murray Rd	8	11	0	12	5	0	0	0	n/a	n/a	

Location	EXCELLENT										
	ECOLOGICAL HEALTH							RECREATION			
	DO	pH	Turb	NH4	Temp	TP	TN	Bdisk	E.coli	E.coli-m	

	11	8	7	12	2	6	3	0	0/4	N
	12	9	7	12	2	10	6	0	0/4	N
	12	5	10	12	1	4	0	0^	2/4	N
	12	9	11	12	1	3	0	0	0/4	N
	12	11	7	12	2	11	7	0^	1/4	N
	12	11	8	12	2	10	9	3	2/4	N
	12	10	3	12	3	8	7	1	0/4	N
	12	10	9	12	3	9	0	1^	1/4	N
	12	10	8	12	2	12	7	0	1/4	N
	12	10	3	12	2	12	4	0^	0/4	N

	12	11	0	12	4	0	0	0	4/4	Y
	10	9	0	9	3	0	0	0	0/4	N
	6	7	0	12	4	0	0	0	0/4	N
	6	10	0	12	5	0	0	0	0/4	N
	12	12	0	12	7	0	0	0	0/4	N
	12	9	0	12	3	0	0	0	0/4	N
	12	4	12	12	7	0	0	9	3/4	N
	7	11	0	12	10	0	0	n/a	3/4	N
	12	9	1	12	4	0	0	0	0/4	N
	11	10	0	11	1	0	0	0	0/4	N
	7	7	3	12	4	0	0	0	0/4	N
	1	10	0	9	4	0	0	0	0/4	N

	10	8	0	11	0	0	0	0^	n/a	n/a
	5	11	0	12	3	7	0	0	0/4	N
	11	10	0	11	4	0	0	0	0/4	N
	1	4	0	1	3	0	0	0	0/4	N
	0	3	0	0	2	0	0	0	0/4	N
	11	8	8	12	3	0	0	0	0/4	N
	6^	8	0	0	4	0	0	0	0/4	N
	12	11	0	5	3	0	0	0	0/4	N
	3	11	0	12	6	0	0	0	0/4	N
	12	11	0	12	5	0	0	0	0/4	N
	3	9	0	7	6	0	0	0	0/4	N
	5	9	0	12	1	0	0	0	n/a	n/a
	12	9	6	12	0	0	2	0	n/a	n/a
	0	5	0	0	3	0	0	0	n/a	n/a
	4^	8^	0^	5^	4^	0^	0^	0^	0/3	N
	6	9	0	10	4	0	0	0	n/a	n/a
	12	12	1	12	3	0	0	0^	n/a	n/a
	11^	11^	0^	11^	3^	0^	0^	0^	0/3	N
	12	10	4	12	3	0	0	0	0/4	N
	12	11	0	12	3	0	0	0	0/4	N
	3	6	0	0	1	0	0	0	0/4	N
	5	10	0	11	2	0	0	0^	n/a	n/a
	11^	11^	0^	11^	8^	0^	0^	0^	0/3	N
	3	8	0	10	0	0	0	0	n/a	n/a
	3	10	0	10	4	0	0	0	n/a	n/a
	7	10	0	12	1	0	0	0	n/a	n/a

Waipa River and Tributaries																				
Kaniwhaniwha Stm at Wright Rd	11	12	2	12	9	9	6	0	n/a	n/a	6	10	0	12	2	0	0	0	n/a	n/a
Mangaohoi Stm at South Branch Maru Rd	12	12	11	12	11	5	9	2^	3/4	N	12	12	5	12	4	0	0	0^	1/4	N
Mangaokewa Stm at Lawrence Street Br	12	12	4	12	12	5	1	1	n/a	n/a	11	10	0	12	4	0	0	0	n/a	n/a
Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd	11	12	0	12	4	0	0	0^	n/a	n/a	9	9	0	9	0	0	0	0^	n/a	n/a
Mangapu River at Otorohanga	12	12	7	12	4	0	0	0*	3/4	N	10	8	1	12	2	0	0	0*	0/4	N
Mangatutu Stm (Waikeria) at Walker Rd Br	12	12	6	12	9	11	7	2`	4/4	N	11	11	3	12	4	0	0	0`	0/4	N
Mangauika Stm at Te Awamutu Borough W/S Intake	12	12	10	12	11	11	11	12	3/4	Y	12	11	3	12	6	7	0	3	2/4	N
Ohote Stm at Whatawhata/Horotiu Rd	1	9^	0^	12	8	1	0	0	3/4	N	1	1^	0^	6	3	0	0	0	0/4	N
Puniu River at Bartons Corner Rd Br	12	12	4	12	7	0	1	1`	n/a	n/a	10	10	1	12	3	0	0	0`	n/a	n/a
Waipa River at Mangaokewa Rd	12	12	11	12	12	10	1	3^	n/a	n/a	12	11	3	12	5	0	0	0^	n/a	n/a
Waipa River at Pirongia-Ngutunui Rd Br	12	12	3	12	5	2	2	0	4/4	N	9	10	0	12	2	0	0	0	1/4	N
Waipa River at SH3 Otorohanga	12	12	7	12	8	8	7	4^	4/4	N	12	10	3	12	2	0	0	0^	0/4	N
Waitomo Stm at SH31 Otorohanga	12	12	5	12	6	7	3	0	3/4	N	11	8	0	12	2	0	0	0	0/4	N
Waitomo Stm at Tumutumu Rd	12	12	6	12	10	10	0	2^	3/4	N	12	8	1	12	3	0	0	0'	1/4	N
Tributaries to the Upper Waikato River																				
Kawaunui Stm at SH5 Br	12	11	6	12	10	0	0	1	2/4	N	3	2	1	11	1	0	0	0	0/4	N
Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)	12	12	7	12	10	0	1	0	4/4	N	12	12	0	12	6	0	0	0	0/4	N
Mangakara Stm (Reporoa) at SH5	12	12	3	12	10	0	0	0	2/4	N	11	5	0	11	7	0	0	0	0/4	N
Mangakino Stm (Whakamaru) at Sandel Rd	12	12	10	12	12	2	0	1^	n/a	n/a	12	11	3	12	10	0	0	0^	n/a	n/a
Otamakokore Stm at Hossack Rd	12	12	7	12	0	0	0	0	4/4	N	11	8	0	12	0	0	0	0	0/4	N
Pueto Stm at Broadlands Rd Br	12	12	11	12	10	0	4	4	4/4	Y	12	12	4	12	4	0	0	0	3/4	N
Tahunaatara Stm at Ohakuri Rd	12	12	10	12	11	0	0	0	4/4	Y	12	11	1	12	5	0	0	0	0/4	N
Torepatutahi Stm at Vaile Rd Br	12	12	12	12	9	0	3	n/a	n/a	n/a	11	10	10	12	2	0	0	n/a	n/a	n/a
Waiotapu Stm at Campbell Rd Br	12	0	2	6	0	0	0	2	4/4	Y	3	0	0	0	0	0	0	0	4/4	Y
Waiotapu Stm at Homestead Rd Br	11	12	0	12	1	0	0	n/a	n/a	n/a	7	1	0	2	0	0	0	n/a	n/a	n/a
Waipapa Stm at Tirohanga Rd Br	12	12	6	12	0	0	0	1	4/4	N	12	12	0	12	0	0	0	0	0/4	N
Whirinaki Stm at Corbett Rd	12	11	12	12	10	0	0	n/a	n/a	n/a	12	11	11	12	7	0	0	n/a	n/a	n/a
West Coast																				
Awakino River at Gribbon Rd	12	12	6	12	12	10	12	6	4/4	Y	12	11	6	12	3	0	1	0	1/4	N
Awakino River at SH3 Awakau Rd Junction	12	12	8	12	8	9	8	3	2/4	N	12	10	4	12	2	2	0	0	0/4	N
Manganui River at Off Manganui Rd	12	12	8	12	12	8	11	2	4/4	N	12	11	0	12	3	0	1	0	0/4	N
Mangaotaki River at SH3 Br	12	12	7	12	12	8	0	5	n/a	n/a	12	12	1	12	3	0	0	0	n/a	n/a
Marokopa River at Speedies Rd (Off Te Anga Rd)	12	12	7	12	11	10	9	2	3/4	N	12	8	0	12	4	0	0	0	0/4	N
Mokau River at Awakau Rd	12	12	2	12	7	7	3	0	3/4	N	11	11	0	12	2	0	0	0	0/4	N
Mokau River at Mangaokewa Rd (Off SH30)	12	12	9	12	12	9	6	3^	4/4	N	12	11	0	12	6	0	0	0^	1/4	N
Mokau River at Totoro Rd Recorder	12	12	7	12	9	8	1	3	3/4	N	12	11	1	12	2	0	0	0	0/4	N
Mokauti Stm at Three Way Point - Aria	12	12	3	12	8	3	2	0^	2/4	N	9	10	0	11	2	0	0	0^	0/4	N
Ohautira Stm at Waingaro Te Uku Rd	12	12	0	12	11	6	8	0	4/4	N	12	12	0	12	5	0	0	0	0/4	N
Oparau River at Langdon Rd (Off Okupata Rd)	12	12	8	12	6	10	10	4	n/a	n/a	12	11	1	12	3	4	1	0	n/a	n/a
Tawarau River at Off Speedies Rd	12	12	8	12	11	10	7	1	n/a	n/a	12	7	1	12	4	0	0	0	n/a	n/a
Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22	12	12	2	12	7	6	6	0	n/a	n/a	11	12	0	12	3	0	0	0	n/a	n/a
Waitetuna River at Te Uku-Waingaro Rd	12	12	0	12	11	7	7	0	3/4	N	12	11	0	12	3	0	0	0	0/4	N
Inflows to Lake Taupo																				
Hinemaiaia River at SH1	12	12	11	12	12	7	12	9	2/3	Y	12	12	9	12	8	0	2	0	2/3	N
Kuratau River at SH41 Moerangi	12	12	12	12	12	12	12	6	n/a	n/a	12	10	8	12	12	11	1	0	n/a	n/a
Kuratau River at Te Rae Street	12	12	12	12	12	12	2	n/a	4/4	Y	12	12	10	12	7	3	0	n/a	3/4	N
Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Re	12	12	10	12	12	0	0	3	3/3	Y	6	12	2	12	10	0	0	0	2/3	N
Tauranga-Taupo River at Te Kono Slackline	12	12	11	12	12	12	12	8^	n/a	n/a	12	11	9	12	11	0	1	0^	n/a	n/a
Tokaanu at Off SH41 Turangi	12	12	12	12	11	0	11	n/a	n/a	n/a	2	10	12	12	7	0	0	n/a	n/a	n/a
Tokaanu Power Station Tailrace Canal at SH41 Bridge Ove	11	12	12	12	11	11	12	n/a	n/a	n/a	11	11	9	12	6	1	3	n/a	n/a	n/a
Waihaha River at SH32	12	12	11	12	12	10	12	7^	4/4	Y	12	11	11	12	9	0	0	0^	3/4	Y
Waitahanui River at Blake Rd	12	12	12	12	12	1	2	11	4/4	Y	12	12	12	12	10	0	0	0	3/4	Y
Whangamata Stm (Kinloch) at Whangamata Rd	12	12	11	12	12	0	0	n/a	n/a	n/a	12	10	6	12	10	0	0	n/a	n/a	n/a
Whanganui Stm at Lakeside Lake Taupo	12	12	11	12	12	9	8	n/a	4/4	Y	12	12	5	12	9	0	0	n/a	2/4	N
Whareroa Stm (Taupo District) at Lakeside Lake Taupo	12	12	8	12	12	8	0	n/a	4/4	Y	11	12	0	12	10	0	0	n/a	0/4	N

E.coli-m refers to whether the 2010 sample median meets the satisfactory median *E.coli* guideline of <126/100 ml or the Excellent guideline value of <23/100 ml for recreational use of water

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Appendix I: Water quality guidelines and standards

Details of water quality guidelines and standards for “satisfactory” water quality

Parameter	Critical Value(s)	Source
Dissolved oxygen	>80% of saturation concentration	RMA Third Schedule, Classes AE, F, and FS.
pH	6.5–9	ANZECC (1992) and Canadian guidelines for freshwater aquatic life (1987).
Turbidity	<5 NTU	Studies of adverse effects on underwater light—and thus on plant and invertebrate production—in certain South Island streams (Davies-Colley 1991).
Ammoniacal-nitrogen	<0.88 g N/m ³	USEPA (1998) value for 1-hour exposure at pH 9.
Temperature	<12°C (May – Sep) <20°C (Oct – Apr)	Waikato Regional Council Draft Regional Plan standards for trout fisheries and trout spawning (1997).
Total phosphorus	<0.04 g/m ³	From upper quartile values for 77 New Zealand rivers in NIWA’s National Water Quality Network (after Smith & Maasdam 1994)—note that the guidelines for “excellent” conditions are the lower quartile concentrations for these rivers.
Total nitrogen	<0.5 g/m ³	From upper quartile values for 77 New Zealand rivers in NIWA’s National Water Quality Network (after Smith & Maasdam 1994)—note that the guidelines for “excellent” conditions are the lower quartile concentrations for these rivers.
Water clarity at baseflow	>1.6 m	“Baseflow” defined as flows less than the upper decile flow. Guideline from Ministry for the Environment (1994).
<i>Escherichia coli</i>	<550/100 mL	Ministry of the Environment (2003) guidelines for the management of recreational and marine shellfish-gathering waters.
Median <i>Escherichia coli</i>	<126/100 mL	Ministry of the Environment (1999) guidelines for the management of recreational and marine shellfish-gathering waters.

Appendix II: Water quality monitoring parameters

Field instruments and analytical methods

Regional rivers water quality monitoring parameters

Water Quality Parameter	Reason For Monitoring	Parameter Monitored ¹	Comments ²
Dissolved Oxygen	- requirement for aquatic life	DO (conc.)	routine (field)
	- indicator of organic pollution	DO (%sat.)	routine (field)
	- indicator of photosynthesis (plant growth)		
Temperature	- indicator of biological activity	Temperature	routine (field)
	- requirement for aquatic life		
	- mixing processes		
	- modelling studies (e.g. nutrient uptake)		
Conductivity	- indicator of total salts dissolved in water	Conductivity	routine
pH	- aquatic life protection	pH	routine
	- indicator of industrial discharges, mining		
Clarity turbidity black disk (visual clarity)	- aesthetic appearance	Turbidity	routine
	- light availability for excessive plant growth	Black disk	routine (field)
	- aquatic life protection		
	- indicator of catchment condition, land use		
Colour light absorption	- light availability for excessive plant growth	Filtered Absorbance at:	routine
	- indicator of presence of organic matter	340,440,780nm	
Nutrients (N and P)	- enrichment, excessive plant growth	NO ₃ -N+NO ₂ -N	routine
	- nutrient limitation for plant/algal growth	NH ₄ -N,TKN DRP, TP	
Faecal Indicators <i>E. coli</i> enterococci faecal coliforms	- indicator of pollution with faecal matter	E.coli ENT	quarterly
	- disease risk for swimming etc.	FC	

¹ see the next table for the meaning of the abbreviations.

² routine means sampled monthly.

Regional rivers monitoring - water quality parameters and analytical methods of analysis

Id ¹	Parameter	Method
A340F	Absorbance at 340 nm Filtered	Spectrophotometer, 1 cm path length, APHA method 5910B
A440F	Absorbance at 440 nm Filtered	Spectrophotometer, 1 cm path length, APHA method 5910B
A780F	Absorbance at 780 nm Filtered	Spectrophotometer, 1 cm path length, APHA method 5910B
BDISK	Black Disk	Field measurement, horizontal water transparency (20mm, 60mm, 100mm, 200mm disk) in river or trough (20mm only)
COND	Conductivity	Lab Meter at 25°C. APHA method 2510B
DO	Dissolved Oxygen	Field measurement (WTW DO meter, model 340A)
DO (% Sat)	Dissolved Oxygen (percent saturation)	Field measurement (WTW DO meter, model 340A)
pH	pH	Lab Meter at 25°C. APHA method 4500-H+B
TEMP	Temperature	Field measurement (WTW DO Meter, model 340A)
E. coli	Escherichia coli	Membrane Filtration (mFC Agar) confirmation by NA-MUG Agar. APHA method 9222G
ENT	Enterococci bacteria	Membrane Filtration (mE Agar) confirmation by EIA Agar. APHA method 9230
FC	Faecal Coliforms	Membrane Filtration (mFC Agar). APHA method 9222
NH ₄ -N	Ammoniacal Nitrogen	Phenol/Hypochlorite Colorimetry. Flow injection analyser. APHA method 4500-NC (modified)
NNN	Nitrite/Nitrate Nitrogen	Automated Cadmium reduction. Flow injection analyser. APHA method 4500 – NO ₃ (proposed).
TKN	Total Kjeldahl-Nitrogen	Acid digestion. Phenol/Hypochlorite Colorimetry. APHA method 4500-N _{org} C (modified)
TN	Total Nitrogen	Calculated from NNN + TKN (Nitrite/Nitrate Nitrogen + Total Kjeldahl-Nitrogen)
DRP	Dissolved Reactive Phosphorus	Molybdenum Blue Colorimetry. Flow injection analyser. APHA 4500 PG (proposed)
TP	Total Phosphorus	Persulphate digestion, Colorimetry. NAWASCO method 8.
TURB	Turbidity	Turbidity Meter. APHA method 2130B

¹Parameter Id ref