

# Regional rivers water quality monitoring programme: Data report 2012

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19 March 2013

Document #: 2367083

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# Acknowledgement

Thanks to Nicola Cowie, Kane Lynn, Naomi Crawford, Chris Ormandy, Dale Hawe, Claire Littler, Phil Hook, Ian Weir 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.



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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 17<sup>th</sup> since the implementation of the regional rivers monitoring programme (RERIMP) in 1993<sup>1</sup> and follows the format of the previous data report (Tulagi, 2012). 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](http://www.waikatoregion.govt.nz/publications) or email: [inforeq@waikatoregion.govt.nz](mailto: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 2012 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 2012. 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).

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<sup>1</sup> Waikato River reported separately — see Tulagi, 2013.

**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 <sup>1</sup>   | Satisfactory | Excellent |
|--------------------------------------|--------------------------|--------------|-----------|
| <b>Ecological health</b>             |                          |              |           |
| 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 <sup>3</sup> )   | aquatic life (toxicity)  | <0.88        | <0.1      |
| Temperature (°C)                     | (May-Sep)                | <12          | <10       |
|                                      | (Oct-Apr)                | <20          | <16       |
| Total phosphorus (g/m <sup>3</sup> ) | nuisance plant growth    | <0.04        | <0.01     |
| Total nitrogen (g/m <sup>3</sup> )   | nuisance plant growth    | <0.5         | <0.1      |
| <b>Human uses—recreation</b>         |                          |              |           |
| 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       |

<sup>1</sup> 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](http://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 Rivers Water Quality Network, whose data can be found on the NIWA website ([www.niwa.co.nz](http://www.niwa.co.nz)).

**Table 2: Waikato Regional Council's sampling locations**

| Map No.                                       | Location  | Location Id | Map Ref.    |
|---|---|-------------|-------------|
| <b>Coromandel</b>                             |   |             |             |
| 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 |
| <b>Hauraki</b>                                |   |             |             |
| 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 |
| <b>Tributaries to the lower Waikato River</b> |   |             |             |
| 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 Buckingsham 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.    |
|---|---|-------------|-------------|
| <b>Waipa River and tributaries</b>            |   |             |             |
| 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 |
| <b>Tributaries to the upper Waikato River</b> |   |             |             |
| 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 |
| <b>West coast</b>                             |   |             |             |
| 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 |
| <b>Inflows to Lake Taupo</b>                  |   |             |             |
| 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 20 Metres U/S SH1 Bridge        | 971.5       | T18:614-506 |
| 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 ( $\pm 1$  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 (TimeStudio).

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 2012 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<sup>-1</sup>)

| Location  | Count | Mean  | Median | Min   | Max   | IQR   | Skew        | 08-12<br>Median |
|---|-------|-------|--------|-------|-------|-------|-------------|-----------------|
| <b>Coromandel</b>                                       |       |       |        |       |       |       |             |                 |
| Hikutaia River at Old Maratoto Rd                       | 12    | 0.018 | 0.014  | 0.008 | 0.073 | 0.006 | 2.82        | 0.015           |
| Kauaeranga River at Smiths Cableway/Recorder            | 12    | 0.025 | 0.014  | 0.009 | 0.104 | 0.017 | 2.48        | 0.012           |
| Ohinemuri River at Queens Head                          | 11    | 0.018 | 0.014  | 0.007 | 0.055 | 0.012 | 1.94        | 0.014           |
| Ohinemuri River at SH25 Br                              | 12    | 0.013 | 0.011  | 0.006 | 0.050 | 0.005 | 2.69        | 0.012           |
| Tairua River at Morrisons Br Hikuai                     | 12    | 0.020 | 0.016  | 0.008 | 0.072 | 0.011 | 2.50        | 0.015           |
| Tapu River at Tapu-Coroglen Rd                          | 12    | 0.017 | 0.012  | 0.006 | 0.071 | 0.011 | 2.63        | 0.010           |
| Waiau River at E309 Rd Ford                             | 12    | 0.020 | 0.014  | 0.008 | 0.070 | 0.006 | 2.50        | 0.014           |
| Waitekauri River at U/S Ohinemuri Conflu                | 11    | 0.011 | 0.011  | 0.006 | 0.023 | 0.005 | 1.52        | 0.011           |
| Waiwawa River at SH25 Coroglen                          | 12    | 0.029 | 0.020  | 0.012 | 0.105 | 0.021 | 2.26        | 0.020           |
| Wharekawa River at SH25                                 | 12    | 0.018 | 0.015  | 0.008 | 0.061 | 0.006 | 2.73        | 0.016           |
| <b>Hauraki</b>  |       |       |        |       |       |       |             |                 |
| Mangawhero Stm (Kaihere) at Mangawara Rd                | 12    | 0.027 | 0.016  | 0.012 | 0.113 | 0.009 | <u>2.53</u> | 0.017           |
| Oraka Stm at Lake Rd                                    | 12    | 0.015 | 0.012  | 0.008 | 0.043 | 0.006 | <u>2.42</u> | 0.012           |
| Piako River at Kiwitahi                                 | 12    | 0.046 | 0.047  | 0.027 | 0.067 | 0.017 | 0.05        | 0.045           |
| Piako River at Paeroa-Tahuna Rd Br                      | 12    | 0.077 | 0.070  | 0.050 | 0.138 | 0.025 | 1.34        | 0.075           |
| Piakonui Stm at Piakonui Rd                             | 12    | 0.027 | 0.027  | 0.015 | 0.044 | 0.008 | 0.72        | 0.028           |
| Waihou River at Okauia                                  | 12    | 0.017 | 0.013  | 0.008 | 0.060 | 0.008 | <u>2.68</u> | 0.013           |
| Waihou River at Whites Rd                               | 12    | 0.001 | 0.001  | 0.001 | 0.006 | 0.000 | <u>3.02</u> | 0.001           |
| Waiohotu Stm at Waiohotu Rd (Off SH5)                   | 12    | 0.038 | 0.037  | 0.022 | 0.078 | 0.015 | 1.65        | 0.037           |
| Waiomou Stm at Matamata-Tauranga Rd                     | 12    | 0.022 | 0.019  | 0.012 | 0.061 | 0.011 | <u>1.94</u> | 0.018           |
| Waitakaruru River (Hauraki Plains) at Coxhead Rd Br     | 12    | 0.072 | 0.066  | 0.039 | 0.113 | 0.041 | 0.30        | 0.060           |
| Waitoa River at Landsdowne Rd Br                        | 12    | 0.045 | 0.044  | 0.027 | 0.078 | 0.012 | 1.20        | 0.044           |
| Waitoa River at Mellon Rd Recorder                      | 12    | 0.046 | 0.040  | 0.030 | 0.084 | 0.020 | 1.16        | 0.042           |
| <b>Tributaries to the lower Waikato River</b>           |       |       |        |       |       |       |             |                 |
| Awaroa River (Waiuku) at Otara Rd Br opp Moseley Rd     | 12    | 0.054 | 0.046  | 0.027 | 0.097 | 0.024 | 1.00        | 0.042           |
| Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd | 12    | 0.024 | 0.024  | 0.017 | 0.034 | 0.008 | 0.56        | 0.022           |
| Karapiro Stm at Hickey Rd Bridge                        | 12    | 0.045 | 0.044  | 0.026 | 0.063 | 0.022 | -0.01       | 0.045           |
| Kirikiri River at Tauhara Dr                            | 12    | 0.060 | 0.062  | 0.029 | 0.075 | 0.013 | -1.26       | 0.058           |
| Komakorau Stm at Henry Rd                               | 12    | 0.125 | 0.097  | 0.078 | 0.210 | 0.097 | 0.67        | 0.107           |
| Little Waipa Stm at Arapuni - Putaruru Rd               | 12    | 0.015 | 0.009  | 0.005 | 0.060 | 0.011 | <u>2.38</u> | 0.011           |
| Mangakotukutuku Stm (Rukuhia) at Peacockes Rd           | 12    | 0.277 | 0.196  | 0.086 | 0.660 | 0.216 | 0.95        | 0.260           |
| Mangamingi Stm (Tokoroa) at Paraonui Rd Br              | 12    | 0.025 | 0.022  | 0.018 | 0.042 | 0.013 | 0.84        | 0.026           |
| Mangaone Stm at Annebrooke Rd Br                        | 12    | 0.052 | 0.046  | 0.034 | 0.092 | 0.016 | 1.21        | 0.051           |
| Mangaonua Stm at Hoeka Rd                               | 12    | 0.028 | 0.028  | 0.018 | 0.038 | 0.008 | 0.12        | 0.027           |
| Mangaonua Stm at Te Miro Rd                             | 12    | 0.040 | 0.040  | 0.024 | 0.063 | 0.018 | 0.31        | 0.034           |
| Mangatangi River at SH2 Maramarua                       | 12    | 0.056 | 0.056  | 0.031 | 0.105 | 0.023 | 1.04        | 0.051           |
| Mangatawhiri River at Lyons Rd At Buckingham Br         | 12    | 0.031 | 0.025  | 0.015 | 0.081 | 0.012 | <u>2.08</u> | 0.024           |
| Mangawara Stm at Rutherford Rd Br                       | 12    | 0.123 | 0.105  | 0.083 | 0.196 | 0.074 | 0.68        | 0.122           |
| Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd       | 12    | 0.166 | 0.095  | 0.061 | 0.530 | 0.141 | 1.58        | 0.099           |
| Matahuru Stm at Waiterimu Road Below Confluence         | 12    | 0.082 | 0.084  | 0.051 | 0.112 | 0.041 | -0.03       | 0.076           |
| Ohaeroa Stm at SH22 Br                                  | 12    | 0.026 | 0.023  | 0.019 | 0.048 | 0.010 | 1.57        | 0.025           |
| Opuatia Stm at Ponganui Rd                              | 12    | 0.032 | 0.029  | 0.020 | 0.049 | 0.014 | 0.66        | 0.028           |
| Pokaiwhenua Stm at Arapuni - Putaruru Rd                | 12    | 0.017 | 0.014  | 0.009 | 0.040 | 0.010 | 1.41        | 0.014           |
| Waerenga Stm at Taniwha Rd                              | 12    | 0.030 | 0.027  | 0.019 | 0.067 | 0.013 | <u>2.02</u> | 0.028           |
| Waitawhiriwhiri Stm at Edgecumbe Street                 | 12    | 0.155 | 0.120  | 0.093 | 0.330 | 0.067 | 1.45        | 0.131           |
| Whakapipi Stm at SH22 Br                                | 12    | 0.037 | 0.036  | 0.023 | 0.054 | 0.009 | 0.61        | 0.038           |
| Whakauru Stm at U/S SH1 Br                              | 12    | 0.027 | 0.024  | 0.016 | 0.064 | 0.007 | <u>2.20</u> | 0.024           |
| Whangamarino River at Island Block Rd                   | 12    | 0.122 | 0.115  | 0.059 | 0.184 | 0.077 | 0.10        | 0.103           |
| Whangamarino River at Jefferies Rd Br                   | 12    | 0.046 | 0.042  | 0.027 | 0.080 | 0.014 | 1.27        | 0.044           |
| Whangape Stm at Rangiriri-Glen Murray Rd                | 12    | 0.060 | 0.062  | 0.028 | 0.095 | 0.020 | 0.13        | 0.067           |

Absorbance of filtered sample at 440 nm (units: cm<sup>-1</sup>)

| Count   | Mean  | Median | Min   | Max   | IQR   | Skew        | 08-12<br>Median |
|---|-------|--------|-------|-------|-------|-------------|-----------------|
| <b>Coromandel</b>                             |       |        |       |       |       |             |                 |
| 12  | 0.003 | 0.003  | 0.001 | 0.014 | 0.002 | <u>2.62</u> | 0.003           |
| 12  | 0.005 | 0.003  | 0.001 | 0.020 | 0.003 | <u>2.31</u> | 0.002           |
| 11  | 0.003 | 0.003  | 0.001 | 0.011 | 0.003 | 1.50        | 0.003           |
| 12  | 0.002 | 0.001  | 0.001 | 0.010 | 0.002 | <u>2.44</u> | 0.002           |
| 12  | 0.004 | 0.003  | 0.001 | 0.013 | 0.002 | <u>2.06</u> | 0.003           |
| 12  | 0.003 | 0.002  | 0.001 | 0.013 | 0.002 | <u>2.50</u> | 0.002           |
| 12  | 0.003 | 0.003  | 0.001 | 0.012 | 0.003 | <u>2.10</u> | 0.003           |
| 11  | 0.002 | 0.001  | 0.001 | 0.004 | 0.002 | 1.03        | 0.002           |
| 12  | 0.006 | 0.005  | 0.002 | 0.020 | 0.004 | <u>2.01</u> | 0.004           |
| 12  | 0.003 | 0.003  | 0.001 | 0.011 | 0.003 | <u>1.90</u> | 0.003           |
| <b>Hauraki</b>                                |       |        |       |       |       |             |                 |
| 12  | 0.005 | 0.003  | 0.002 | 0.022 | 0.002 | <u>2.54</u> | 0.004           |
| 12  | 0.002 | 0.001  | 0.001 | 0.008 | 0.002 | <u>2.30</u> | 0.002           |
| 12  | 0.008 | 0.008  | 0.004 | 0.013 | 0.003 | 0.26        | 0.008           |
| 12  | 0.014 | 0.012  | 0.008 | 0.023 | 0.006 | 0.80        | 0.013           |
| 12  | 0.005 | 0.005  | 0.001 | 0.009 | 0.002 | 0.12        | 0.005           |
| 12  | 0.003 | 0.002  | 0.001 | 0.013 | 0.003 | <u>2.48</u> | 0.002           |
| 12  | 0.001 | 0.001  | 0.001 | 0.001 | 0.000 | -1.00       | 0.001           |
| 12  | 0.008 | 0.007  | 0.004 | 0.015 | 0.004 | 1.10        | 0.007           |
| 12  | 0.005 | 0.003  | 0.002 | 0.013 | 0.004 | 1.34        | 0.004           |
| 12  | 0.013 | 0.012  | 0.006 | 0.022 | 0.007 | 0.39        | 0.012           |
| 12  | 0.008 | 0.008  | 0.004 | 0.013 | 0.003 | 0.46        | 0.007           |
| 12  | 0.008 | 0.007  | 0.004 | 0.015 | 0.004 | 1.07        | 0.007           |
| <b>Tributaries to the lower Waikato River</b> |       |        |       |       |       |             |                 |
| 12  | 0.009 | 0.008  | 0.004 | 0.019 | 0.005 | 1.18        | 0.007           |
| 12  | 0.004 | 0.004  | 0.001 | 0.005 | 0.002 | -0.65       | 0.003           |
| 12  | 0.007 | 0.008  | 0.004 | 0.011 | 0.004 | -0.10       | 0.008           |
| 12  | 0.009 | 0.010  | 0.005 | 0.011 | 0.002 | -1.07       | 0.009           |
| 12  | 0.017 | 0.014  | 0.010 | 0.032 | 0.014 | 0.71        | 0.016           |
| 12  | 0.003 | 0.002  | 0.001 | 0.012 | 0.003 | <u>1.96</u> | 0.002           |
| 12  | 0.048 | 0.035  | 0.014 | 0.117 | 0.038 | 1.00        | 0.047           |
| 12  | 0.005 | 0.005  | 0.003 | 0.009 | 0.002 | 0.94        | 0.005           |
| 12  | 0.009 | 0.008  | 0.004 | 0.014 | 0.003 | 0.65        | 0.009           |
| 12  | 0.006 | 0.006  | 0.002 | 0.008 | 0.003 | -0.34       | 0.005           |
| 12  | 0.006 | 0.006  | 0.003 | 0.010 | 0.003 | 0.21        | 0.005           |
| 12  | 0.010 | 0.010  | 0.005 | 0.019 | 0.006 | 0.76        | 0.009           |
| 12  | 0.006 | 0.005  | 0.001 | 0.016 | 0.003 | <u>1.76</u> | 0.005           |
| 12  | 0.019 | 0.016  | 0.012 | 0.030 | 0.011 | 0.67        | 0.020           |
| 12  | 0.027 | 0.015  | 0.009 | 0.090 | 0.023 | 1.62        | 0.016           |
| 12  | 0.013 | 0.014  | 0.008 | 0.019 | 0.006 | -0.04       | 0.012           |
| 12  | 0.004 | 0.004  | 0.003 | 0.008 | 0.003 | 0.97        | 0.004           |
| 12  | 0.005 | 0.005  | 0.003 | 0.009 | 0.003 | 0.69        | 0.005           |
| 12  | 0.003 | 0.003  | 0.001 | 0.009 | 0.003 | 1.07        | 0.003           |
| 12  | 0.006 | 0.005  | 0.003 | 0.012 | 0.002 | <u>1.93</u> | 0.005           |
| 12  | 0.025 | 0.020  | 0.013 | 0.056 | 0.011 | 1.45        | 0.021           |
| 12  | 0.006 | 0.006  | 0.004 | 0.010 | 0.002 | 0.76        | 0.007           |
| 12  | 0.005 | 0.004  | 0.003 | 0.012 | 0.002 | <u>1.88</u> | 0.004           |
| 12  | 0.023 | 0.021  | 0.011 | 0.035 | 0.018 | 0.27        | 0.020           |
| 12  | 0.008 | 0.007  | 0.004 | 0.015 | 0.002 | 1.38        | 0.008           |
| 12  | 0.010 | 0.009  | 0.005 | 0.015 | 0.004 | 0.30        | 0.011           |

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



| Waipa River and Tributaries                                    |    |       |       |       |       |       |             |       |    |       |       |       |       |       |             |       |
|--|----|-------|-------|-------|-------|-------|-------------|-------|----|-------|-------|-------|-------|-------|-------------|-------|
| Kaniwhaniwha Stm at Wright Rd                                  | 12 | 0.028 | 0.026 | 0.017 | 0.051 | 0.013 | 1.00        | 0.027 | 12 | 0.005 | 0.005 | 0.003 | 0.009 | 0.003 | 0.75        | 0.005 |
| Mangaohoi Stm at South Branch Maru Rd                          | 12 | 0.008 | 0.007 | 0.004 | 0.015 | 0.005 | 0.95        | 0.007 | 12 | 0.002 | 0.001 | 0.001 | 0.004 | 0.001 | 1.34        | 0.001 |
| Mangaokewa Stm at Lawrence St Bridge                           | 12 | 0.030 | 0.030 | 0.020 | 0.064 | 0.011 | <u>2.00</u> | 0.032 | 12 | 0.005 | 0.005 | 0.003 | 0.012 | 0.002 | <u>2.12</u> | 0.006 |
| Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd               | 12 | 0.078 | 0.070 | 0.057 | 0.137 | 0.017 | 1.50        | 0.075 | 12 | 0.013 | 0.012 | 0.008 | 0.024 | 0.003 | 1.43        | 0.013 |
| Mangapu River at Otorohanga                                    | 11 | 0.026 | 0.025 | 0.016 | 0.051 | 0.011 | 1.64        | 0.027 | 11 | 0.004 | 0.004 | 0.001 | 0.009 | 0.002 | 0.85        | 0.005 |
| Mangatutu Stm (Waikeria) at Walker Rd Br                       | 12 | 0.019 | 0.017 | 0.012 | 0.040 | 0.006 | <u>1.89</u> | 0.020 | 12 | 0.004 | 0.003 | 0.002 | 0.008 | 0.003 | 1.11        | 0.004 |
| Mangauika Stm at Te Awamutu Borough W/S Intake                 | 12 | 0.008 | 0.004 | 0.003 | 0.027 | 0.002 | <u>1.76</u> | 0.006 | 12 | 0.002 | 0.001 | 0.001 | 0.007 | 0.000 | <u>2.22</u> | 0.001 |
| Ohote Stm at Whatawhata/Horotiu Rd                             | 12 | 0.161 | 0.156 | 0.095 | 0.220 | 0.059 | 0.04        | 0.169 | 12 | 0.026 | 0.026 | 0.014 | 0.036 | 0.011 | -0.06       | 0.028 |
| Puniu River at Bartons Corner Rd Br                            | 12 | 0.028 | 0.027 | 0.017 | 0.050 | 0.007 | 1.54        | 0.028 | 12 | 0.006 | 0.005 | 0.003 | 0.011 | 0.003 | 1.16        | 0.005 |
| Waipa River at Mangaokewa Rd                                   | 12 | 0.045 | 0.039 | 0.030 | 0.109 | 0.015 | <u>2.40</u> | 0.044 | 12 | 0.008 | 0.007 | 0.005 | 0.020 | 0.003 | <u>2.39</u> | 0.008 |
| Waipa River at Pirongia-Ngutunui Rd Br                         | 12 | 0.030 | 0.028 | 0.020 | 0.049 | 0.011 | 0.92        | 0.028 | 12 | 0.005 | 0.005 | 0.003 | 0.009 | 0.003 | 0.80        | 0.005 |
| Waipa River at SH3 Otorohanga                                  | 12 | 0.028 | 0.025 | 0.016 | 0.070 | 0.010 | <u>2.34</u> | 0.026 | 12 | 0.005 | 0.005 | 0.001 | 0.013 | 0.002 | 1.63        | 0.005 |
| Waitomo Stm at SH31 Otorohanga                                 | 11 | 0.021 | 0.019 | 0.011 | 0.036 | 0.012 | 0.66        | 0.019 | 11 | 0.003 | 0.004 | 0.001 | 0.007 | 0.004 | 0.21        | 0.004 |
| Waitomo Stm at Tumutumu Rd                                     | 12 | 0.012 | 0.010 | 0.008 | 0.026 | 0.004 | 1.59        | 0.012 | 12 | 0.002 | 0.001 | 0.001 | 0.005 | 0.001 | <u>1.74</u> | 0.002 |
| Tributaries to the upper Waikato River                         |    |       |       |       |       |       |             |       |    |       |       |       |       |       |             |       |
| Kawaunui Stm at SH5 Br   | 12 | 0.032 | 0.026 | 0.017 | 0.119 | 0.010 | <u>2.82</u> | 0.026 | 12 | 0.007 | 0.005 | 0.003 | 0.026 | 0.002 | <u>2.33</u> | 0.005 |
| Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)             | 12 | 0.029 | 0.027 | 0.019 | 0.060 | 0.010 | <u>1.94</u> | 0.025 | 12 | 0.005 | 0.005 | 0.003 | 0.011 | 0.002 | 1.65        | 0.005 |
| Mangakara Stm (Reporoa) at SH5                                 | 12 | 0.019 | 0.016 | 0.012 | 0.049 | 0.006 | <u>2.59</u> | 0.016 | 12 | 0.004 | 0.003 | 0.002 | 0.010 | 0.002 | 1.60        | 0.003 |
| Mangakino Stm (Whakamaru) at Sandel Rd                         | 12 | 0.012 | 0.011 | 0.007 | 0.027 | 0.007 | 1.39        | 0.011 | 12 | 0.003 | 0.001 | 0.001 | 0.009 | 0.002 | 1.61        | 0.001 |
| Otamakokore Stm at Hossack Rd                                  | 12 | 0.040 | 0.030 | 0.019 | 0.145 | 0.015 | <u>2.63</u> | 0.032 | 12 | 0.009 | 0.007 | 0.004 | 0.032 | 0.004 | <u>2.71</u> | 0.007 |
| Pueto Stm at Broadlands Rd Br                                  | 12 | 0.010 | 0.010 | 0.008 | 0.011 | 0.002 | -0.66       | 0.010 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 | -1.00       | 0.001 |
| Tahunaatara Stm at Ohakuri Rd                                  | 12 | 0.034 | 0.030 | 0.019 | 0.084 | 0.012 | <u>2.09</u> | 0.031 | 12 | 0.006 | 0.006 | 0.004 | 0.017 | 0.002 | <u>2.14</u> | 0.006 |
| Torepatutahi Stm at Vaile Rd Br                                | 12 | 0.012 | 0.012 | 0.008 | 0.015 | 0.005 | -0.04       | 0.013 | 12 | 0.002 | 0.001 | 0.001 | 0.003 | 0.001 | 0.93        | 0.002 |
| Waiotapu Stm at Campbell Rd Br                                 | 12 | 0.006 | 0.005 | 0.002 | 0.025 | 0.003 | <u>2.61</u> | 0.005 | 12 | 0.001 | 0.001 | 0.001 | 0.005 | 0.000 | <u>3.02</u> | 0.001 |
| Waiotapu Stm at Homestead Rd Br                                | 12 | 0.025 | 0.023 | 0.019 | 0.054 | 0.004 | <u>2.70</u> | 0.022 | 12 | 0.004 | 0.004 | 0.003 | 0.009 | 0.001 | <u>2.30</u> | 0.003 |
| Waipapa Stm (Mokai) at Tirohanga Rd Br                         | 12 | 0.013 | 0.012 | 0.010 | 0.026 | 0.004 | <u>2.23</u> | 0.012 | 12 | 0.002 | 0.001 | 0.001 | 0.005 | 0.001 | <u>1.76</u> | 0.002 |
| Whirinaki Stm at Corbett Rd                                    | 12 | 0.004 | 0.003 | 0.001 | 0.014 | 0.004 | 1.48        | 0.002 | 12 | 0.001 | 0.001 | 0.001 | 0.003 | 0.000 | <u>3.02</u> | 0.001 |
| West Coast   |    |       |       |       |       |       |             |       |    |       |       |       |       |       |             |       |
| Awakino River at Gribbon Rd                                    | 12 | 0.009 | 0.005 | 0.003 | 0.043 | 0.003 | <u>2.79</u> | 0.006 | 12 | 0.002 | 0.001 | 0.001 | 0.009 | 0.000 | <u>2.74</u> | 0.001 |
| Awakino River at SH3 Awakau Rd Junction                        | 12 | 0.013 | 0.010 | 0.005 | 0.050 | 0.003 | <u>2.82</u> | 0.011 | 12 | 0.002 | 0.001 | 0.001 | 0.009 | 0.001 | <u>2.82</u> | 0.002 |
| Manganui River at Off Manganui Rd                              | 12 | 0.009 | 0.008 | 0.004 | 0.034 | 0.002 | <u>2.86</u> | 0.008 | 12 | 0.002 | 0.001 | 0.001 | 0.006 | 0.001 | <u>2.67</u> | 0.001 |
| Mangaotaki River at SH3 Br                                     | 12 | 0.017 | 0.013 | 0.008 | 0.062 | 0.007 | <u>2.76</u> | 0.015 | 12 | 0.003 | 0.002 | 0.001 | 0.012 | 0.002 | <u>2.54</u> | 0.002 |
| Marokopa River at Speedies Rd (Off Te Angra Rd)                | 12 | 0.017 | 0.013 | 0.010 | 0.049 | 0.003 | <u>2.24</u> | 0.015 | 12 | 0.003 | 0.002 | 0.001 | 0.009 | 0.002 | 1.32        | 0.003 |
| Mokau River at Awakau Rd                                       | 12 | 0.034 | 0.032 | 0.021 | 0.088 | 0.011 | <u>2.44</u> | 0.032 | 12 | 0.006 | 0.005 | 0.003 | 0.017 | 0.003 | <u>2.33</u> | 0.006 |
| Mokau River at Mangaokewa Rd (Off SH30)                        | 12 | 0.042 | 0.037 | 0.024 | 0.099 | 0.022 | <u>1.93</u> | 0.041 | 12 | 0.008 | 0.007 | 0.004 | 0.019 | 0.005 | 1.60        | 0.008 |
| Mokau River at Totoro Rd Recorder                              | 12 | 0.029 | 0.029 | 0.020 | 0.058 | 0.013 | 1.63        | 0.029 | 12 | 0.005 | 0.005 | 0.003 | 0.011 | 0.002 | <u>1.84</u> | 0.005 |
| Mokauiti Stm at Three Way Point - Aria                         | 12 | 0.051 | 0.047 | 0.024 | 0.098 | 0.039 | 0.61        | 0.053 | 12 | 0.009 | 0.008 | 0.003 | 0.018 | 0.007 | 0.58        | 0.009 |
| Ohautira Stm at Waingaro Te Uku Rd                             | 12 | 0.024 | 0.018 | 0.012 | 0.054 | 0.011 | 1.41        | 0.018 | 12 | 0.004 | 0.003 | 0.001 | 0.009 | 0.003 | 0.90        | 0.004 |
| Oparau River at Langdon Rd (Off Okupata Rd)                    | 12 | 0.020 | 0.014 | 0.013 | 0.058 | 0.005 | <u>2.33</u> | 0.017 | 12 | 0.003 | 0.003 | 0.001 | 0.010 | 0.002 | 1.61        | 0.004 |
| Tawarau River at Off Speedies Rd                               | 12 | 0.017 | 0.013 | 0.010 | 0.048 | 0.003 | <u>2.33</u> | 0.015 | 12 | 0.003 | 0.002 | 0.001 | 0.009 | 0.003 | 1.55        | 0.003 |
| Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22               | 12 | 0.033 | 0.034 | 0.018 | 0.058 | 0.013 | 0.75        | 0.034 | 12 | 0.006 | 0.005 | 0.003 | 0.010 | 0.002 | 0.74        | 0.006 |
| Waitetuna River at Te Uku-Waingaro Rd                          | 12 | 0.024 | 0.019 | 0.013 | 0.045 | 0.020 | 0.72        | 0.024 | 12 | 0.004 | 0.003 | 0.001 | 0.008 | 0.004 | 0.54        | 0.004 |
| Inflows to Lake Taupo  |    |       |       |       |       |       |             |       |    |       |       |       |       |       |             |       |
| Hinemaiaia River at SH1  | 12 | 0.013 | 0.012 | 0.008 | 0.024 | 0.005 | 1.37        | 0.012 | 12 | 0.002 | 0.001 | 0.001 | 0.005 | 0.001 | 1.68        | 0.002 |
| Kuratau River at SH41 Moerangi                                 | 12 | 0.016 | 0.016 | 0.012 | 0.021 | 0.003 | 0.46        | 0.016 | 12 | 0.003 | 0.002 | 0.001 | 0.010 | 0.001 | <u>2.13</u> | 0.003 |
| Kuratau River at 43 Te Rae Street                              | 12 | 0.018 | 0.017 | 0.009 | 0.033 | 0.006 | 1.12        | 0.018 | 12 | 0.003 | 0.002 | 0.001 | 0.006 | 0.002 | 0.84        | 0.003 |
| Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)        | 12 | 0.039 | 0.037 | 0.033 | 0.051 | 0.007 | 1.04        | 0.039 | 12 | 0.007 | 0.007 | 0.005 | 0.010 | 0.002 | 0.82        | 0.008 |
| Tauranga-Taupo River at 20 Metres U/S SH1 Bridge               | 12 | 0.007 | 0.006 | 0.004 | 0.011 | 0.003 | 0.82        | 0.006 | 12 | 0.001 | 0.001 | 0.001 | 0.003 | 0.000 | <u>3.02</u> | 0.001 |
| Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal | 12 | 0.009 | 0.004 | 0.001 | 0.043 | 0.004 | <u>2.30</u> | 0.005 | 12 | 0.002 | 0.001 | 0.001 | 0.005 | 0.000 | <u>1.88</u> | 0.001 |
| Tokaanu Stm at Off SH41 Turangi                                | 12 | 0.003 | 0.002 | 0.001 | 0.006 | 0.004 | 0.49        | 0.001 | 12 | 0.001 | 0.001 | 0.001 | 0.002 | 0.000 | <u>3.02</u> | 0.001 |
| Waihaha River at SH32  | 12 | 0.008 | 0.008 | 0.004 | 0.016 | 0.003 | 1.31        | 0.007 | 12 | 0.001 | 0.001 | 0.001 | 0.004 | 0.000 | <u>1.97</u> | 0.001 |
| Waitahanui River at Blake Rd                                   | 12 | 0.002 | 0.001 | 0.001 | 0.004 | 0.002 | 1.00        | 0.002 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 | -1.00       | 0.001 |
| Whangamata Stm (Kinloch) at Whangamata Rd                      | 12 | 0.005 | 0.005 | 0.001 | 0.008 | 0.001 | -0.15       | 0.006 | 12 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 | -1.00       | 0.001 |
| Whanganui Stm at Lakeside Lake Taupo                           | 12 | 0.014 | 0.015 | 0.008 | 0.023 | 0.005 | 0.49        | 0.013 | 12 | 0.003 | 0.003 | 0.001 | 0.005 | 0.002 | 0.44        | 0.002 |
| Whareroa Stm (Taupo District) at Lakeside Lake Taupo           | 12 | 0.015 | 0.014 | 0.010 | 0.020 | 0.003 | 0.31        | 0.015 | 12 | 0.002 | 0.002 | 0.001 | 0.004 | 0.001 | 0.49        | 0.003 |

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

**Black Disk (m)**

| Location  | Count | Mean | Median | Min  | Max  | IQR  | Skew  | 08-12<br>Median |
|---|-------|------|--------|------|------|------|-------|-----------------|
| <b>Coromandel</b>                                       |       |      |        |      |      |      |       |                 |
| Hikutaia River at Old Maratoto Rd                       | 11    | 2.30 | 2.54   | 0.30 | 3.40 | 1.39 | -0.82 | 2.04            |
| Kauaeanga River at Smiths Cableway/Recorder             | 11    | 2.83 | 2.88   | 0.36 | 5.00 | 1.99 | -0.13 | 2.88            |
| Ohinemuri River at Queens Head                          | 10    | 2.28 | 2.66   | 0.21 | 3.65 | 2.29 | -0.49 | 2.50            |
| Ohinemuri River at SH25 Br                              | 11    | 2.40 | 2.30   | 0.32 | 3.75 | 1.54 | -0.54 | 2.21            |
| Tairua River at Morrisons Br Hikuaui                    | 11    | 2.76 | 3.10   | 0.25 | 4.50 | 1.44 | -0.68 | 1.88            |
| Tapu River at Tapu-Coroglen Rd                          | 11    | 4.06 | 3.20   | 0.35 | 8.50 | 3.61 | 0.31  | 3.29            |
| Waiau River at E309 Rd Ford                             | 11    | 2.28 | 2.14   | 0.30 | 4.50 | 1.16 | 0.40  | 1.82            |
| Waitekauri River at U/S Ohinemuri Conflu                | 10    | 2.89 | 2.78   | 0.23 | 5.50 | 1.97 | 0.03  | 2.38            |
| Waiwawa River at SH25 Coroglen                          | 11    | 2.76 | 3.00   | 0.32 | 5.25 | 1.30 | 0.11  | 2.34            |
| Wharekawa River at SH25                                 | 11    | 2.33 | 2.74   | 0.18 | 3.35 | 1.06 | -1.17 | 1.73            |
| <b>Hauraki</b>  |       |      |        |      |      |      |       |                 |
| Mangawhero Stm (Kaihere) at Mangawara Rd                | 12    | 0.89 | 0.91   | 0.05 | 1.66 | 0.95 | -0.22 | 0.86            |
| Oraka Stm at Lake Rd                                    | 12    | 0.96 | 0.98   | 0.24 | 1.87 | 0.59 | 0.49  | 0.85            |
| Piako River at Kiwitahi                                 | 12    | 1.20 | 1.20   | 0.26 | 2.23 | 1.14 | 0.04  | 0.92            |
| Piako River at Paeroa-Tahuna Rd Br                      | 12    | 0.71 | 0.68   | 0.15 | 1.56 | 0.67 | 0.55  | 0.56            |
| Piakonui Stm at Piakonui Rd                             | 12    | 1.16 | 1.20   | 0.51 | 1.92 | 1.02 | 0.06  | 1.16            |
| Waihou River at Okauia                                  | 11    | 1.02 | 1.00   | 0.25 | 1.47 | 0.41 | -0.67 | 0.99            |
| Waihou River at Whites Rd                               | 12    | 3.96 | 3.96   | 0.99 | 5.61 | 2.13 | -0.64 | 4.63            |
| Waiohotu Stm at Waiohotu Rd (Off SH5)                   | -     | -    | -      | -    | -    | -    | -     | -               |
| Waiomou Stm at Matamata-Tauranga Rd                     | 12    | 1.01 | 0.92   | 0.24 | 1.85 | 0.72 | 0.48  | 1.04            |
| Waitakaruru River (Hauraki Plains) at Coxhead Rd Br     | 12    | 0.62 | 0.57   | 0.09 | 1.27 | 0.70 | 0.17  | 0.60            |
| Waitoa River at Landsdowne Rd Br                        | 12    | 1.09 | 1.18   | 0.15 | 1.80 | 1.20 | -0.29 | 0.97            |
| Waitoa River at Mellon Rd Recorder                      | 12    | 0.95 | 0.89   | 0.20 | 2.18 | 0.90 | 0.54  | 0.72            |
| <b>Tributaries to the lower Waikato River</b>           |       |      |        |      |      |      |       |                 |
| Awaroa River (Waiuku) at Otawa Rd Br opp Moseley Rd     | 12    | 0.34 | 0.36   | 0.12 | 0.57 | 0.30 | -0.07 | 0.33            |
| Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd | 12    | 0.81 | 0.75   | 0.26 | 1.60 | 0.63 | 0.56  | 0.82            |
| Karapiro Stm at Hickey Rd Bridge                        | 10    | 0.97 | 0.96   | 0.20 | 1.79 | 1.17 | 0.07  | 0.85            |
| Kirikiri Stm at Tauhara Dr                              | 11    | 0.35 | 0.37   | 0.12 | 0.53 | 0.21 | -0.25 | 0.36            |
| Komakorau Stm at Henry Rd                               | 12    | 0.20 | 0.19   | 0.06 | 0.51 | 0.09 | 1.61  | 0.17            |
| Little Waipa Stm at Arapuni - Putaruru Rd               | 12    | 1.37 | 1.44   | 0.25 | 2.41 | 0.77 | -0.29 | 1.46            |
| Mangakotukutuku Stm (Rukuhia) at Peacocks Rd            | 12    | 0.37 | 0.38   | 0.12 | 0.57 | 0.31 | -0.14 | 0.36            |
| Mangamingi Stm (Tokoroa) at Paraonui Rd Br              | 12    | 0.85 | 0.94   | 0.27 | 1.22 | 0.43 | -0.74 | 0.87            |
| Mangaone Stm at Annebrooke Rd Br                        | 11    | 1.02 | 0.87   | 0.30 | 2.70 | 0.68 | 1.39  | 0.70            |
| Mangaonua Stm at Hoeka Rd                               | 12    | 1.00 | 1.04   | 0.22 | 1.60 | 0.85 | -0.28 | 0.97            |
| Mangaonua Stm at Te Miro Rd                             | 12    | 0.75 | 0.78   | 0.20 | 1.28 | 0.58 | -0.27 | 0.64            |
| Mangatangi River at SH2 Maramara                        | 10    | 0.57 | 0.49   | 0.14 | 1.25 | 0.39 | 0.80  | 0.48            |
| Mangatawhiri River at Lyons Rd At Buckingham Br         | 12    | 1.24 | 0.96   | 0.27 | 3.35 | 1.58 | 0.78  | 1.61            |
| Mangawara Stm at Rutherford Rd Br                       | 12    | 0.22 | 0.21   | 0.03 | 0.41 | 0.16 | 0.14  | 0.20            |
| Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd       | 12    | 0.23 | 0.18   | 0.12 | 0.43 | 0.17 | 0.68  | 0.24            |
| Matahuru Stm at Waiterimu Road Below Confluence         | 12    | 0.28 | 0.24   | 0.06 | 0.59 | 0.28 | 0.56  | 0.23            |
| Ohaeroa Stm at SH22 Br                                  | 8     | 0.94 | 0.95   | 0.48 | 1.80 | 0.61 | 0.70  | 0.71            |
| Opatia Stm at Ponganui Rd                               | 12    | 0.46 | 0.40   | 0.06 | 1.06 | 0.57 | 0.41  | 0.56            |
| Pokaiwhenua Stm at Arapuni - Putaruru Rd                | 12    | 1.09 | 1.07   | 0.24 | 1.98 | 0.61 | -0.05 | 1.09            |
| Waerenga Stm at Taniwha Rd                              | 12    | 0.68 | 0.68   | 0.12 | 1.90 | 0.70 | 1.00  | 0.72            |
| Waitawhiriwhiri Stm at Edgumbe Street                   | 12    | 0.33 | 0.32   | 0.22 | 0.51 | 0.10 | 0.97  | 0.31            |
| Whakapipi Stm at SH22 Br                                | 10    | 1.06 | 1.10   | 0.33 | 1.95 | 1.19 | 0.14  | 1.06            |
| Whakauru Stm at U/S SH1 Br                              | 12    | 0.62 | 0.60   | 0.15 | 0.98 | 0.38 | -0.24 | 0.68            |
| Whangamarino River at Island Block Rd                   | 12    | 0.18 | 0.19   | 0.09 | 0.32 | 0.11 | 0.38  | 0.18            |
| Whangamarino River at Jefferies Rd Br                   | 12    | 0.42 | 0.36   | 0.09 | 1.09 | 0.33 | 1.06  | 0.37            |
| Whangape Stm at Rangiri-Glen Murray Rd                  | 12    | 0.20 | 0.19   | 0.13 | 0.35 | 0.08 | 1.17  | 0.15            |

**Conductivity at 25 °C (mS/m)**

| Count | Mean | Median | Min  | Max   | IQR  | Skew         | 08-12<br>Median |
|-------|------|--------|------|-------|------|--------------|-----------------|
| 12    | 7.8  | 8.0    | 5.1  | 9.5   | 1.1  | -1.07        | 8.2             |
| 12    | 7.8  | 8.1    | 4.5  | 9.7   | 1.8  | -0.94        | 8.1             |
| 11    | 23.6 | 19.6   | 10.2 | 50.5  | 21.0 | 0.88         | 21.7            |
| 12    | 7.5  | 7.5    | 6.2  | 8.6   | 0.7  | -0.22        | 7.6             |
| 12    | 5.8  | 5.9    | 4.2  | 7.0   | 0.7  | -0.60        | 6.1             |
| 12    | 9.8  | 10.0   | 6.8  | 12.4  | 1.4  | -0.43        | 10.2            |
| 12    | 9.0  | 9.0    | 6.7  | 10.5  | 1.0  | -0.75        | 9.3             |
| 11    | 9.9  | 9.7    | 6.2  | 14.0  | 3.5  | 0.12         | 11.0            |
| 12    | 6.4  | 6.6    | 4.1  | 7.7   | 1.2  | -0.95        | 6.7             |
| 12    | 7.1  | 7.1    | 5.2  | 8.4   | 0.4  | -0.90        | 7.3             |
| 12    | 10.6 | 11.4   | 6.2  | 12.0  | 1.8  | -1.57        | 11.3            |
| 12    | 13.9 | 12.3   | 10.6 | 18.5  | 5.2  | 0.53         | 12.0            |
| 12    | 14.1 | 14.3   | 12.2 | 15.8  | 1.3  | -0.12        | 14.5            |
| 12    | 20.2 | 20.6   | 14.2 | 25.6  | 3.6  | -0.15        | 20.9            |
| 12    | 7.3  | 7.3    | 6.1  | 8.8   | 1.5  | 0.19         | 7.2             |
| 12    | 10.0 | 10.1   | 7.8  | 10.9  | 1.4  | -1.13        | 10.0            |
| 12    | 8.1  | 8.2    | 8.0  | 8.3   | 0.2  | -0.34        | 8.1             |
| 12    | 5.3  | 5.5    | 3.9  | 5.9   | 0.3  | <u>-2.18</u> | 5.4             |
| 12    | 6.9  | 6.9    | 5.8  | 8.1   | 0.8  | 0.08         | 6.8             |
| 12    | 16.4 | 16.8   | 11.6 | 21.2  | 3.4  | -0.38        | 17.4            |
| 12    | 15.2 | 15.4   | 10.8 | 18.1  | 3.3  | -0.54        | 15.9            |
| 12    | 25.5 | 27.0   | 16.5 | 31.5  | 7.6  | -0.68        | 25.4            |
| 12    | 25.1 | 24.2   | 20.6 | 34.9  | 4.1  | 1.33         | 25.5            |
| 12    | 67.8 | 65.8   | 29.0 | 115.0 | 15.5 | 0.29         | 67.6            |
| 12    | 12.9 | 13.2   | 9.8  | 18.3  | 2.2  | 0.79         | 13.4            |
| 12    | 19.5 | 20.2   | 12.9 | 22.1  | 2.5  | -1.52        | 21.0            |
| 12    | 25.1 | 25.2   | 23.1 | 28.5  | 2.0  | 0.80         | 25.4            |
| 12    | 10.3 | 10.3   | 9.5  | 11.0  | 0.6  | -0.08        | 10.1            |
| 12    | 17.0 | 17.8   | 13.9 | 18.8  | 3.1  | -0.64        | 18.6            |
| 12    | 13.6 | 13.7   | 11.8 | 14.5  | 0.6  | -1.45        | 14.0            |
| 12    | 25.5 | 26.6   | 18.0 | 27.7  | 2.7  | <u>-1.73</u> | 27.0            |
| 12    | 9.5  | 9.5    | 8.1  | 11.0  | 1.5  | 0.10         | 9.4             |
| 12    | 19.2 | 19.7   | 15.4 | 21.8  | 3.0  | -0.63        | 20.3            |
| 12    | 12.0 | 12.3   | 10.5 | 13.7  | 1.5  | -0.03        | 12.8            |
| 12    | 10.9 | 11.6   | 8.2  | 13.0  | 3.4  | -0.32        | 12.1            |
| 12    | 20.2 | 20.2   | 14.6 | 23.1  | 1.2  | -1.18        | 22.1            |
| 12    | 20.8 | 21.6   | 15.8 | 22.6  | 2.7  | -1.23        | 22.1            |
| 12    | 13.3 | 12.8   | 11.3 | 16.9  | 1.9  | 1.03         | 13.6            |
| 12    | 15.3 | 15.6   | 12.6 | 17.2  | 2.3  | -0.52        | 15.4            |
| 12    | 15.7 | 16.6   | 10.8 | 17.9  | 2.2  | -1.25        | 16.8            |
| 12    | 10.7 | 11.0   | 9.6  | 11.2  | 0.7  | -0.96        | 10.6            |
| 12    | 11.5 | 11.7   | 10.1 | 12.5  | 1.7  | -0.40        | 11.8            |
| 12    | 18.5 | 19.1   | 11.8 | 21.0  | 3.3  | -1.37        | 20.4            |
| 12    | 17.8 | 17.7   | 12.5 | 22.8  | 4.6  | 0.07         | 18.8            |
| 12    | 7.0  | 7.2    | 5.6  | 7.2   | 0.1  | <u>-2.82</u> | 7.0             |
| 12    | 14.8 | 14.8   | 12.3 | 17.4  | 2.2  | -0.05        | 15.8            |
| 12    | 14.7 | 14.7   | 12.9 | 16.9  | 1.3  | 0.42         | 15.1            |
| 12    | 17.9 | 19.4   | 12.5 | 21.9  | 6.0  | -0.41        | 19.6            |

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

| Waipa River and Tributaries                                    |    |      |      |      |      |      |             |      |    |      |      |      |      |     |              |      |  |
|--|----|------|------|------|------|------|-------------|------|----|------|------|------|------|-----|--------------|------|--|
| Kaniwhaniwha Stm at Wright Rd                                  | 10 | 0.87 | 0.90 | 0.08 | 1.45 | 0.75 | -0.22       | 0.70 | 12 | 9.5  | 9.6  | 8.6  | 10.6 | 1.4 | 0.01         | 9.9  |  |
| Mangaohoi Stm at South Branch Maru Rd                          | 12 | 1.68 | 1.58 | 1.08 | 3.14 | 0.32 | <u>2.12</u> | 1.51 | 12 | 7.8  | 8.1  | 6.6  | 8.7  | 1.2 | -0.50        | 8.0  |  |
| Mangaokewa Stm at Lawrence St Bridge                           | 12 | 1.02 | 0.95 | 0.38 | 1.93 | 1.00 | 0.25        | 0.97 | 12 | 14.7 | 14.1 | 10.9 | 19.1 | 3.4 | 0.33         | 14.9 |  |
| Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd               | 12 | 0.67 | 0.56 | 0.08 | 1.46 | 0.36 | 0.78        | 0.51 | 12 | 16.8 | 16.6 | 13.5 | 22.6 | 2.6 | 1.15         | 17.7 |  |
| Mangapu River at Otorohanga                                    | 8  | 0.52 | 0.35 | 0.27 | 0.92 | 0.57 | 0.53        | 0.50 | 11 | 17.4 | 16.8 | 14.7 | 21.4 | 3.1 | 0.50         | 18.0 |  |
| Mangatutu Stm (Waikeria) at Walker Rd Br                       | 12 | 1.40 | 1.36 | 0.50 | 3.01 | 0.92 | 0.75        | 1.21 | 12 | 6.8  | 6.9  | 5.8  | 7.7  | 0.8 | -0.18        | 6.7  |  |
| Mangauika Stm at Te Awamutu Borough W/S Intake                 | 12 | 3.21 | 3.51 | 1.55 | 4.51 | 1.86 | -0.40       | 3.31 | 12 | 6.3  | 6.3  | 5.3  | 7.0  | 0.9 | -0.26        | 6.4  |  |
| Ohote Stm at Whatawhata/Horotiu Rd                             | 12 | 0.62 | 0.60 | 0.20 | 1.08 | 0.16 | 0.30        | 0.52 | 12 | 15.0 | 15.5 | 12.5 | 16.3 | 2.0 | -0.68        | 17.3 |  |
| Puniu River at Bartons Corner Rd Br                            | -  | -    | -    | -    | -    | -    | -           | -    | 12 | 8.2  | 8.3  | 7.5  | 9.1  | 0.6 | 0.27         | 8.3  |  |
| Waipa River at Mangaokewa Rd                                   | 12 | 1.30 | 1.17 | 0.38 | 2.71 | 1.10 | 0.57        | 1.31 | 12 | 4.9  | 4.9  | 3.6  | 5.8  | 0.6 | -0.64        | 5.1  |  |
| Waipa River at Pirongia-Ngutunui Rd Br                         | -  | -    | -    | -    | -    | -    | -           | -    | 12 | 11.1 | 11.3 | 8.3  | 12.8 | 1.4 | -0.83        | 11.8 |  |
| Waipa River at SH3 Otorohanga                                  | 12 | 0.96 | 0.83 | 0.33 | 1.86 | 1.12 | 0.35        | 0.95 | 12 | 7.8  | 8.0  | 6.7  | 8.8  | 1.5 | -0.25        | 8.3  |  |
| Waitomo Stm at SH31 Otorohanga                                 | 12 | 0.60 | 0.53 | 0.05 | 1.50 | 0.53 | 0.77        | 0.50 | 11 | 18.2 | 18.2 | 14.5 | 21.4 | 4.3 | -0.12        | 18.2 |  |
| Waitomo Stm at Tumutumu Rd                                     | 10 | 0.78 | 0.71 | 0.20 | 1.32 | 0.49 | 0.04        | 0.75 | 12 | 18.5 | 18.8 | 15.3 | 20.8 | 3.0 | -0.35        | 18.5 |  |
| Tributaries to the upper Waikato River                         |    |      |      |      |      |      |             |      |    |      |      |      |      |     |              |      |  |
| Kawaunui Stm at SH5 Br   | 12 | 1.09 | 1.15 | 0.20 | 1.88 | 0.74 | -0.13       | 1.18 | 12 | 13.1 | 13.1 | 11.1 | 13.7 | 0.5 | <u>-2.23</u> | 13.4 |  |
| Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)             | 11 | 1.03 | 1.14 | 0.26 | 1.42 | 0.25 | -1.27       | 1.02 | 12 | 8.8  | 8.8  | 8.0  | 9.4  | 0.3 | -0.62        | 8.9  |  |
| Mangakara Stm (Reporoa) at SH5                                 | 11 | 0.80 | 0.83 | 0.23 | 1.13 | 0.29 | -0.73       | 0.73 | 12 | 9.4  | 9.6  | 8.3  | 9.8  | 0.6 | -1.48        | 9.7  |  |
| Mangakino Stm (Whakamaru) at Sandel Rd                         | 12 | 1.35 | 1.50 | 0.60 | 2.12 | 0.72 | -0.24       | 1.55 | 12 | 6.6  | 6.7  | 5.1  | 7.6  | 0.9 | -0.66        | 6.6  |  |
| Otamakokore Stm at Hossack Rd                                  | 12 | 1.20 | 1.19 | 0.36 | 1.70 | 0.35 | -0.73       | 1.04 | 12 | 34.6 | 35.5 | 22.6 | 37.7 | 4.1 | <u>-2.01</u> | 37.1 |  |
| Pueto Stm at Broadlands Rd Br                                  | 12 | 1.58 | 1.73 | 0.68 | 2.32 | 0.67 | -0.66       | 1.56 | 12 | 11.5 | 11.5 | 11.0 | 11.7 | 0.2 | -1.03        | 11.5 |  |
| Tahunaatara Stm at Ohakuri Rd                                  | 12 | 1.20 | 1.31 | 0.29 | 1.85 | 0.35 | -0.92       | 1.18 | 12 | 7.5  | 7.6  | 5.9  | 8.1  | 0.3 | <u>-2.26</u> | 7.6  |  |
| Torepatutahi Stm at Vaile Rd Br                                | -  | -    | -    | -    | -    | -    | -           | -    | 12 | 9.8  | 9.8  | 9.3  | 10.4 | 0.5 | 0.15         | 9.8  |  |
| Waiotapu Stm at Campbell Rd Br                                 | 12 | 1.05 | 1.14 | 0.35 | 1.45 | 0.29 | -1.19       | 1.14 | 12 | 62.5 | 63.1 | 50.0 | 68.3 | 4.5 | -1.42        | 66.8 |  |
| Waiotapu Stm at Homestead Rd Br                                | -  | -    | -    | -    | -    | -    | -           | -    | 12 | 41.9 | 43.1 | 33.1 | 47.0 | 5.2 | -0.81        | 44.7 |  |
| Waipapa Stm (Mokai) at Tirohanga Rd Br                         | 12 | 1.08 | 1.16 | 0.42 | 1.66 | 0.42 | -0.41       | 0.89 | 12 | 38.4 | 39.2 | 35.3 | 40.1 | 2.8 | -0.77        | 39.1 |  |
| Whirinaki Stm at Corbett Rd                                    | -  | -    | -    | -    | -    | -    | -           | -    | 12 | 6.9  | 6.9  | 6.7  | 7.2  | 0.2 | 0.77         | 6.8  |  |
| West Coast   |    |      |      |      |      |      |             |      |    |      |      |      |      |     |              |      |  |
| Awakino River at Gribbon Rd                                    | 12 | 1.96 | 1.73 | 0.34 | 4.10 | 2.07 | 0.26        | 1.69 | 12 | 6.9  | 6.9  | 6.1  | 7.6  | 0.8 | -0.13        | 6.9  |  |
| Awakino River at SH3 Awakau Rd Junction                        | 12 | 1.22 | 1.12 | 0.12 | 2.61 | 1.35 | 0.40        | 0.99 | 12 | 12.7 | 12.1 | 9.5  | 17.1 | 4.2 | 0.49         | 12.6 |  |
| Manganui River at Off Manganui Rd                              | 11 | 1.37 | 0.93 | 0.13 | 4.00 | 1.69 | 0.98        | 0.99 | 12 | 10.5 | 10.3 | 8.6  | 12.4 | 1.8 | 0.16         | 10.6 |  |
| Mangaotaki River at SH3 Br                                     | 12 | 0.91 | 0.68 | 0.22 | 1.92 | 0.97 | 0.37        | 0.81 | 12 | 13.2 | 13.4 | 11.1 | 14.5 | 1.7 | -0.62        | 13.2 |  |
| Marokopa River at Speedies Rd (Off Te Anga Rd)                 | 12 | 1.05 | 0.94 | 0.20 | 1.95 | 0.65 | 0.05        | 0.88 | 12 | 13.6 | 13.9 | 10.7 | 15.3 | 2.2 | -0.57        | 13.4 |  |
| Mokau River at Awakau Rd                                       | 12 | 0.55 | 0.32 | 0.09 | 1.55 | 0.78 | 0.90        | 0.46 | 12 | 12.2 | 11.6 | 8.4  | 16.3 | 3.9 | 0.42         | 12.6 |  |
| Mokau River at Mangaokewa Rd (Off SH30)                        | -  | -    | -    | -    | -    | -    | -           | -    | 12 | 6.5  | 6.4  | 5.8  | 7.3  | 1.0 | 0.22         | 6.5  |  |
| Mokau River at Totoro Rd Recorder                              | 12 | 0.78 | 0.44 | 0.14 | 1.83 | 1.02 | 0.75        | 0.66 | 12 | 11.5 | 11.4 | 9.6  | 13.4 | 2.0 | 0.09         | 11.8 |  |
| Mokauiti Stm at Three Way Point - Aria                         | 12 | 0.54 | 0.46 | 0.10 | 1.33 | 0.48 | 0.89        | 0.55 | 12 | 10.2 | 10.1 | 9.0  | 11.7 | 0.9 | 0.31         | 10.4 |  |
| Ohautira Stm at Waingaro Te Uku Rd                             | 12 | 0.78 | 0.80 | 0.11 | 1.36 | 0.63 | -0.28       | 0.74 | 12 | 13.0 | 13.3 | 10.6 | 14.6 | 2.3 | -0.36        | 13.6 |  |
| Oparau River at Langdon Rd (Off Okupata Rd)                    | 12 | 1.29 | 1.46 | 0.12 | 1.85 | 0.59 | -1.06       | 1.44 | 12 | 8.3  | 8.2  | 6.3  | 9.6  | 1.5 | -0.44        | 8.3  |  |
| Tawarau River at Off Speedies Rd                               | 12 | 1.11 | 1.10 | 0.26 | 1.91 | 0.56 | -0.24       | 0.98 | 12 | 12.7 | 13.3 | 10.1 | 14.4 | 2.0 | -0.57        | 12.9 |  |
| Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22               | 11 | 0.69 | 0.64 | 0.11 | 1.18 | 0.68 | -0.15       | 0.65 | 12 | 13.9 | 14.3 | 11.7 | 15.6 | 1.8 | -0.40        | 14.4 |  |
| Waitetuna River at Te Uku-Waingaro Rd                          | 12 | 0.62 | 0.55 | 0.07 | 1.22 | 0.56 | 0.26        | 0.60 | 12 | 9.8  | 10.0 | 8.6  | 10.5 | 1.2 | -0.48        | 10.0 |  |
| Inflows to Lake Taupo  |    |      |      |      |      |      |             |      |    |      |      |      |      |     |              |      |  |
| Hinemaiaia River at SH1  | 12 | 2.14 | 2.08 | 1.41 | 3.31 | 0.51 | 0.69        | 2.10 | 12 | 5.8  | 5.7  | 5.1  | 6.7  | 1.1 | 0.24         | 6.0  |  |
| Kuratau River at SH41 Moerangi                                 | 12 | 2.28 | 2.09 | 0.99 | 3.50 | 1.62 | 0.27        | 2.16 | 12 | 4.4  | 4.4  | 3.8  | 4.9  | 0.4 | -0.53        | 4.3  |  |
| Kuratau River at 43 Te Rae Street                              | -  | -    | -    | -    | -    | -    | -           | -    | 12 | 6.7  | 6.7  | 5.7  | 7.7  | 0.7 | 0.16         | 6.7  |  |
| Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)        | 12 | 1.44 | 1.48 | 0.85 | 1.92 | 0.45 | -0.38       | 1.37 | 12 | 12.3 | 12.4 | 11.9 | 12.6 | 0.3 | -0.78        | 12.2 |  |
| Tauranga-Taupo River at 20 Metres U/S SH1 Bridge               | 12 | 2.70 | 2.55 | 1.26 | 4.50 | 1.39 | 0.31        | 2.75 | 12 | 4.8  | 4.7  | 3.5  | 6.0  | 1.2 | 0.18         | 4.8  |  |
| Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal | -  | -    | -    | -    | -    | -    | -           | -    | 12 | 15.0 | 12.1 | 10.1 | 48.4 | 2.0 | <u>2.97</u>  | 12.6 |  |
| Tokaanu Stm at Off SH41 Turangi                                | -  | -    | -    | -    | -    | -    | -           | -    | 12 | 9.9  | 10.0 | 9.6  | 10.2 | 0.3 | -0.45        | 10.0 |  |
| Waihaha River at SH32  | 11 | 2.73 | 2.89 | 0.90 | 3.50 | 0.89 | -1.14       | 2.96 | 12 | 4.7  | 4.7  | 3.8  | 5.4  | 0.6 | -0.44        | 4.9  |  |
| Waitahanui River at Blake Rd                                   | 12 | 2.69 | 2.72 | 1.79 | 3.80 | 0.31 | 0.36        | 2.69 | 12 | 7.4  | 7.5  | 7.1  | 7.6  | 0.3 | -0.58        | 7.4  |  |
| Whangamata Stm (Kinloch) at Whangamata Rd                      | -  | -    | -    | -    | -    | -    | -           | -    | 12 | 8.8  | 8.8  | 8.5  | 9.0  | 0.1 | -0.64        | 8.8  |  |
| Whanganui Stm at Lakeside Lake Taupo                           | -  | -    | -    | -    | -    | -    | -           | -    | 12 | 5.7  | 5.7  | 4.4  | 6.7  | 0.9 | -0.20        | 5.9  |  |
| Whareroa Stm (Taupo District) at Lakeside Lake Taupo           | -  | -    | -    | -    | -    | -    | -           | -    | 12 | 7.6  | 7.7  | 6.1  | 8.2  | 0.7 | -1.32        | 7.9  |  |

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

## Dissolved Oxygen (% Saturation)

| Location  | Dissolved Oxygen (% Saturation) |        |       |      |       |      |        | 08-12 |
|---|---------------------------------|--------|-------|------|-------|------|--------|-------|
|   | Mean                            | Median | Min   | Max  | IQR   | Skew | Median |       |
| <b>Coromandel</b>                                       |                                 |        |       |      |       |      |        |       |
| Hikutaia River at Old Maratoto Rd                       | 12                              | 98.5   | 97.9  | 89.1 | 115.5 | 6.2  | 1.21   | 96.1  |
| Kauaeranga River at Smiths Cableway/Recorder            | 12                              | 101.4  | 100.6 | 93.0 | 115.1 | 4.8  | 1.10   | 99.6  |
| Ohinemuri River at Queens Head                          | 11                              | 102.1  | 102.0 | 94.7 | 110.0 | 5.3  | 0.06   | 103.5 |
| Ohinemuri River at SH25 Br                              | 12                              | 105.1  | 104.5 | 97.1 | 114.3 | 7.3  | 0.33   | 103.1 |
| Tairua River at Morrisons Br Hikuai                     | 12                              | 96.1   | 96.8  | 84.8 | 105.2 | 9.9  | -0.29  | 97.6  |
| Tapu River at Tapu-Coroglen Rd                          | 12                              | 101.8  | 102.5 | 96.5 | 104.8 | 4.0  | -0.71  | 102.2 |
| Waiau River at E309 Rd Ford                             | 12                              | 102.2  | 101.3 | 93.9 | 110.4 | 5.7  | 0.04   | 101.1 |
| Waitekauri River at U/S Ohinemuri Conflu                | 11                              | 102.8  | 103.5 | 95.4 | 109.1 | 3.2  | -0.44  | 102.4 |
| Waiwawa River at SH25 Coroglen                          | 12                              | 102.0  | 102.1 | 93.7 | 107.4 | 5.4  | -0.41  | 101.1 |
| Wharekawa River at SH25                                 | 12                              | 98.2   | 98.2  | 90.7 | 101.9 | 3.0  | -1.09  | 97.7  |
| <b>Hauraki</b>  |                                 |        |       |      |       |      |        |       |
| Mangawhero Stm (Kaihere) at Mangawara Rd                | 12                              | 101.3  | 100.9 | 90.2 | 118.7 | 3.0  | 1.14   | 98.0  |
| Oraka Stm at Lake Rd                                    | 12                              | 94.8   | 96.4  | 87.6 | 100.2 | 7.9  | -0.48  | 93.3  |
| Piako River at Kiwitahi                                 | 12                              | 94.4   | 94.3  | 71.0 | 127.3 | 11.0 | 0.82   | 89.6  |
| Piako River at Paeroa-Tahuna Rd Br                      | 12                              | 86.3   | 87.3  | 66.5 | 99.1  | 14.1 | -0.53  | 86.1  |
| Piakonui Stm at Piakonui Rd                             | 12                              | 98.5   | 100.0 | 89.1 | 105.1 | 9.0  | -0.51  | 98.7  |
| Waihou River at Okauia                                  | 12                              | 96.5   | 97.3  | 87.6 | 103.5 | 8.5  | -0.44  | 93.6  |
| Waihou River at Whites Rd                               | 12                              | 103.8  | 104.6 | 92.6 | 111.3 | 8.3  | -0.54  | 100.8 |
| Waiohotu Stm at Waiohotu Rd (Off SH5)                   | 12                              | 95.8   | 98.1  | 86.9 | 101.4 | 9.1  | -0.62  | 92.0  |
| Waiomou Stm at Matamata-Tauranga Rd                     | 12                              | 97.9   | 98.2  | 88.7 | 104.1 | 7.0  | -0.47  | 95.7  |
| Waitakaruru River (Hauraki Plains) at Coxhead Rd Br     | 12                              | 97.3   | 97.6  | 77.1 | 119.0 | 15.7 | 0.11   | 95.5  |
| Waitoa River at Landsdowne Rd Br                        | 12                              | 89.7   | 92.3  | 62.5 | 101.3 | 6.4  | -1.54  | 88.8  |
| Waitoa River at Mellon Rd Recorder                      | 12                              | 77.6   | 79.5  | 62.1 | 87.4  | 12.0 | -0.76  | 78.4  |
| <b>Tributaries to the lower Waikato River</b>           |                                 |        |       |      |       |      |        |       |
| Awaroa River (Waiuku) at Oraua Rd Br opp Moseley Rd     | 12                              | 93.8   | 91.3  | 69.8 | 119.4 | 27.8 | 0.30   | 94.0  |
| Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd | 12                              | 88.5   | 89.9  | 71.5 | 109.9 | 12.9 | 0.38   | 84.9  |
| Karapiro Stm at Hickey Rd Bridge                        | 12                              | 92.5   | 95.6  | 77.4 | 102.6 | 10.5 | -0.59  | 94.3  |
| Kirikiri River at Tauhara Dr                            | 12                              | 72.6   | 70.0  | 59.8 | 92.6  | 12.6 | 0.70   | 69.4  |
| Komakorau Stm at Henry Rd                               | 12                              | 61.8   | 62.5  | 42.3 | 90.6  | 18.2 | 0.50   | 62.1  |
| Little Waipa Stm at Arapuni - Putaruru Rd               | 12                              | 104.7  | 103.0 | 93.5 | 121.3 | 14.0 | 0.46   | 101.9 |
| Mangakotukutuku Stm (Rukuhia) at Peacockes Rd           | 12                              | 91.2   | 91.7  | 83.6 | 101.2 | 6.1  | 0.15   | 90.3  |
| Mangamingi Stm (Tokoroa) at Paronui Rd Br               | 12                              | 103.6  | 103.5 | 95.4 | 112.0 | 5.6  | -0.09  | 101.7 |
| Mangaone Stm at Annebrooke Rd Br                        | 12                              | 79.0   | 81.4  | 62.4 | 85.6  | 9.5  | -1.14  | 81.9  |
| Mangaonua Stm at Hoeka Rd                               | 12                              | 99.6   | 100.4 | 91.7 | 106.1 | 7.7  | -0.29  | 99.5  |
| Mangaonua Stm at Te Miro Rd                             | 12                              | 83.3   | 84.3  | 75.2 | 92.5  | 7.1  | 0.03   | 84.2  |
| Mangatangi River at SH2 Maramarua                       | 12                              | 93.1   | 93.0  | 80.2 | 105.3 | 15.3 | 0.10   | 84.9  |
| Mangatawhiri River at Lyons Rd At Buckingham Br         | 12                              | 114.5  | 113.6 | 99.1 | 143.2 | 17.4 | 0.82   | 105.9 |
| Mangawara Stm at Rutherford Rd Br                       | 12                              | 81.2   | 82.9  | 67.8 | 92.0  | 7.6  | -0.59  | 77.8  |
| Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd       | 12                              | 87.5   | 87.0  | 78.3 | 101.2 | 7.5  | 0.70   | 85.8  |
| Matahuru Stm at Waiterimu Road Below Confluence         | 12                              | 89.3   | 92.1  | 76.2 | 99.8  | 10.0 | -0.47  | 87.9  |
| Ohaeroa Stm at SH22 Br                                  | 12                              | 105.3  | 103.0 | 95.3 | 126.2 | 7.8  | 1.29   | 99.4  |
| Opuatia Stm at Ponganui Rd                              | 12                              | 101.3  | 101.1 | 89.8 | 123.3 | 8.7  | 1.09   | 97.0  |
| Pokaiwhenua Stm at Arapuni - Putaruru Rd                | 12                              | 103.0  | 103.5 | 95.9 | 109.9 | 7.0  | -0.13  | 101.1 |
| Waerenga Stm at Taniwha Rd                              | 12                              | 105.0  | 104.8 | 95.2 | 118.7 | 7.9  | 0.47   | 99.5  |
| Waitawhiriwhiri Stm at Edgcumbe Street                  | 12                              | 85.5   | 86.4  | 75.8 | 109.3 | 9.1  | 1.47   | 83.9  |
| Whakapipi Stm at SH22 Br                                | 12                              | 97.8   | 98.2  | 84.1 | 121.9 | 6.9  | 0.93   | 89.7  |
| Whakauru Stm at U/S SH1 Br                              | 12                              | 100.2  | 101.0 | 89.8 | 108.4 | 9.2  | -0.40  | 98.5  |
| Whangamarino River at Island Block Rd                   | 12                              | 65.7   | 71.1  | 5.7  | 104.6 | 37.2 | -0.84  | 59.5  |
| Whangamarino River at Jefferies Rd Br                   | 12                              | 83.2   | 82.3  | 67.6 | 100.7 | 13.4 | 0.20   | 81.2  |
| Whangape Stm at Rangiri-Glen Murray Rd                  | 12                              | 97.6   | 100.9 | 67.3 | 111.5 | 13.1 | -1.41  | 92.3  |

Dissolved Oxygen (g/m<sup>3</sup>)

| Count   | Dissolved Oxygen (g/m <sup>3</sup> ) |        |     |      |     |       | 08-12  |
|---|--------------------------------------|--------|-----|------|-----|-------|--------|
|   | Mean                                 | Median | Min | Max  | IQR | Skew  | Median |
| <b>Coromandel</b>                             |                                      |        |     |      |     |       |        |
| 12  | 10.4                                 | 10.3   | 8.3 | 13.2 | 1.9 | 0.49  | 9.8    |
| 12  | 10.7                                 | 10.4   | 8.9 | 12.9 | 2.1 | 0.45  | 10.1   |
| 11  | 10.2                                 | 9.8    | 8.3 | 12.7 | 1.9 | 0.49  | 10.5   |
| 12  | 10.5                                 | 10.3   | 9.0 | 13.0 | 1.7 | 0.67  | 9.8    |
| 12  | 9.6                                  | 9.7    | 8.1 | 11.3 | 2.2 | 0.18  | 9.8    |
| 12  | 10.7                                 | 10.4   | 9.4 | 12.9 | 1.2 | 0.69  | 10.3   |
| 12  | 10.7                                 | 10.7   | 8.9 | 12.5 | 1.7 | 0.18  | 10.3   |
| 11  | 10.5                                 | 10.3   | 9.0 | 12.7 | 1.8 | 0.49  | 10.1   |
| 12  | 10.5                                 | 10.3   | 8.9 | 12.3 | 1.7 | 0.24  | 10.1   |
| 12  | 10.1                                 | 9.9    | 8.5 | 11.8 | 1.6 | 0.25  | 9.8    |
| <b>Hauraki</b>                                |                                      |        |     |      |     |       |        |
| 12  | 10.5                                 | 10.7   | 8.9 | 12.9 | 1.2 | 0.60  | 10.1   |
| 12  | 9.8                                  | 10.0   | 8.4 | 10.8 | 1.0 | -0.68 | 9.5    |
| 12  | 9.5                                  | 9.8    | 6.4 | 12.1 | 2.0 | -0.20 | 9.1    |
| 12  | 8.9                                  | 8.9    | 6.1 | 11.0 | 2.5 | -0.23 | 8.8    |
| 12  | 10.4                                 | 10.7   | 8.7 | 12.0 | 1.4 | -0.31 | 10.3   |
| 12  | 9.9                                  | 10.1   | 8.6 | 11.1 | 1.2 | -0.42 | 9.7    |
| 12  | 10.8                                 | 11.0   | 9.5 | 11.7 | 1.1 | -0.61 | 10.5   |
| 12  | 10.3                                 | 10.5   | 8.7 | 11.7 | 1.5 | -0.47 | 9.8    |
| 12  | 10.2                                 | 10.4   | 8.8 | 11.7 | 1.1 | -0.28 | 10.0   |
| 12  | 9.7                                  | 9.9    | 7.1 | 12.2 | 2.0 | -0.15 | 9.7    |
| 12  | 9.1                                  | 9.4    | 5.5 | 11.4 | 1.4 | -1.05 | 9.0    |
| 12  | 7.9                                  | 8.2    | 5.9 | 9.7  | 1.9 | -0.27 | 7.9    |
| <b>Tributaries to the lower Waikato River</b> |                                      |        |     |      |     |       |        |
| 12  | 9.2                                  | 9.0    | 7.3 | 12.0 | 2.5 | 0.41  | 9.1    |
| 12  | 9.3                                  | 9.0    | 6.7 | 11.8 | 3.0 | 0.08  | 8.8    |
| 12  | 9.5                                  | 9.7    | 7.7 | 11.6 | 2.3 | 0.11  | 9.5    |
| 12  | 7.4                                  | 7.1    | 5.8 | 9.6  | 2.3 | 0.58  | 7.0    |
| 12  | 6.3                                  | 6.3    | 4.3 | 9.5  | 2.6 | 0.39  | 6.1    |
| 12  | 10.7                                 | 10.5   | 9.2 | 12.1 | 1.2 | -0.02 | 10.6   |
| 12  | 9.2                                  | 9.3    | 7.6 | 11.0 | 1.6 | 0.09  | 9.1    |
| 12  | 10.4                                 | 10.7   | 9.0 | 11.3 | 1.0 | -0.95 | 10.2   |
| 12  | 8.2                                  | 8.5    | 5.8 | 10.4 | 1.3 | -0.32 | 8.5    |
| 12  | 10.3                                 | 10.7   | 8.4 | 12.0 | 1.7 | -0.21 | 10.3   |
| 12  | 8.7                                  | 8.7    | 7.0 | 10.3 | 1.3 | -0.01 | 8.7    |
| 12  | 9.2                                  | 9.2    | 7.7 | 11.6 | 1.6 | 0.52  | 8.6    |
| 12  | 11.2                                 | 10.8   | 9.5 | 14.7 | 2.0 | 1.01  | 10.4   |
| 12  | 8.2                                  | 8.5    | 6.4 | 9.6  | 1.7 | -0.22 | 7.8    |
| 12  | 9.0                                  | 8.9    | 7.5 | 10.7 | 1.9 | 0.27  | 8.8    |
| 12  | 9.2                                  | 9.4    | 7.7 | 10.6 | 1.9 | -0.01 | 8.7    |
| 12  | 10.8                                 | 10.9   | 9.5 | 13.0 | 1.1 | 0.65  | 10.3   |
| 12  | 10.3                                 | 10.5   | 8.7 | 12.8 | 1.3 | 0.63  | 9.8    |
| 12  | 10.6                                 | 10.9   | 9.3 | 11.5 | 1.3 | -0.69 | 10.3   |
| 12  | 10.9                                 | 10.9   | 9.3 | 12.8 | 1.6 | 0.21  | 10.2   |
| 12  | 8.5                                  | 8.4    | 6.9 | 11.4 | 1.5 | 0.94  | 8.1    |
| 12  | 9.9                                  | 10.1   | 8.0 | 12.8 | 1.7 | 0.35  | 9.1    |
| 12  | 10.5                                 | 10.8   | 8.9 | 11.9 | 1.3 | -0.61 | 10.3   |
| 12  | 6.4                                  | 7.4    | 0.5 | 9.6  | 2.7 | -1.12 | 5.6    |
| 12  | 8.6                                  | 8.6    | 7.2 | 10.6 | 2.4 | 0.23  | 8.4    |
| 12  | 9.8                                  | 10.2   | 6.2 | 12.2 | 2.2 | -0.70 | 9.5    |

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

| Waipa River and Tributaries                                    |    |       |       |       |       |      |       |       |    |      |      |      |      |     |       |      |  |
|--|----|-------|-------|-------|-------|------|-------|-------|----|------|------|------|------|-----|-------|------|--|
| Kaniwhaniwha Stm at Wright Rd                                  | 12 | 88.6  | 91.1  | 57.5  | 107.3 | 10.6 | -1.06 | 87.7  | 12 | 9.2  | 9.6  | 5.5  | 11.8 | 2.0 | -0.72 | 9.0  |  |
| Mangaohoi Stm at South Branch Maru Rd                          | 12 | 101.8 | 102.5 | 96.3  | 105.1 | 4.2  | -0.73 | 100.1 | 12 | 10.4 | 10.4 | 9.2  | 11.8 | 1.2 | 0.14  | 10.1 |  |
| Mangaokewa Stm at Lawrence St Bridge                           | 12 | 98.6  | 100.6 | 89.0  | 107.0 | 7.3  | -0.59 | 97.5  | 12 | 10.5 | 10.8 | 8.2  | 12.2 | 2.5 | -0.35 | 10.4 |  |
| Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd               | 12 | 97.3  | 94.9  | 84.3  | 109.4 | 13.2 | 0.07  | 93.8  | 12 | 9.6  | 9.6  | 8.0  | 11.0 | 0.5 | -0.01 | 9.4  |  |
| Mangapu River at Otorohanga                                    | 11 | 94.2  | 96.7  | 77.5  | 105.8 | 13.0 | -0.58 | 93.1  | 11 | 9.5  | 9.8  | 7.3  | 10.5 | 1.6 | -0.84 | 9.3  |  |
| Mangatutu Stm (Waikeria) at Walker Rd Br                       | 12 | 99.1  | 99.2  | 92.2  | 114.7 | 4.9  | 1.49  | 95.4  | 12 | 10.2 | 10.5 | 9.1  | 12.0 | 1.6 | 0.30  | 9.6  |  |
| Mangauika Stm at Te Awamutu Borough W/S Intake                 | 12 | 102.1 | 102.3 | 91.4  | 110.1 | 6.7  | -0.55 | 97.8  | 12 | 10.8 | 11.0 | 9.0  | 11.9 | 1.4 | -0.52 | 10.3 |  |
| Ohote Stm at Whatawhata/Horotiu Rd                             | 12 | 48.2  | 42.4  | 23.9  | 84.0  | 26.0 | 0.61  | 48.1  | 12 | 5.0  | 4.4  | 2.3  | 8.7  | 3.2 | 0.60  | 5.1  |  |
| Puniu River at Bartons Corner Rd Br                            | 12 | 95.4  | 95.6  | 89.5  | 101.2 | 4.5  | -0.21 | 94.4  | 12 | 9.7  | 9.7  | 8.4  | 11.5 | 1.2 | 0.43  | 9.4  |  |
| Waipa River at Mangaokewa Rd                                   | 12 | 104.3 | 104.9 | 93.2  | 110.9 | 6.1  | -0.64 | 100.5 | 12 | 10.6 | 10.6 | 8.9  | 12.3 | 2.2 | 0.03  | 9.8  |  |
| Waipa River at Pirongia-Ngutunui Rd Br                         | 12 | 91.2  | 92.6  | 77.6  | 98.6  | 10.9 | -0.72 | 90.3  | 12 | 9.3  | 9.5  | 7.8  | 11.1 | 1.6 | 0.12  | 9.2  |  |
| Waipa River at SH3 Otorohanga                                  | 12 | 103.0 | 103.3 | 89.8  | 117.0 | 5.9  | -0.11 | 100.1 | 12 | 10.6 | 11.0 | 8.4  | 11.8 | 1.0 | -1.22 | 10.2 |  |
| Waitomo Stm at SH31 Otorohanga                                 | 12 | 100.3 | 100.6 | 85.9  | 119.6 | 6.8  | 0.71  | 97.1  | 12 | 10.2 | 10.3 | 8.8  | 11.3 | 1.8 | -0.16 | 9.8  |  |
| Waitomo Stm at Tumutumu Rd                                     | 12 | 104.3 | 103.5 | 99.1  | 114.6 | 5.2  | 0.99  | 99.8  | 12 | 10.8 | 11.0 | 9.5  | 11.5 | 0.9 | -0.78 | 10.3 |  |
| Tributaries to the upper Waikato River                         |    |       |       |       |       |      |       |       |    |      |      |      |      |     |       |      |  |
| Kawaunui Stm at SH5 Br   | 12 | 90.3  | 90.7  | 82.1  | 96.7  | 7.2  | -0.47 | 85.7  | 12 | 8.9  | 9.0  | 7.5  | 10.0 | 1.3 | -0.51 | 8.4  |  |
| Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)             | 12 | 96.0  | 97.0  | 83.4  | 106.4 | 8.1  | -0.44 | 93.6  | 12 | 9.9  | 10.2 | 7.8  | 11.0 | 1.1 | -0.93 | 9.6  |  |
| Mangakara Stm (Reporoa) at SH5                                 | 12 | 94.9  | 96.1  | 85.3  | 101.6 | 8.1  | -0.63 | 91.6  | 12 | 9.7  | 9.9  | 8.2  | 10.8 | 1.4 | -0.62 | 9.3  |  |
| Mangakino Stm (Whakamaru) at Sandel Rd                         | 12 | 105.5 | 108.6 | 94.0  | 117.4 | 10.9 | -0.41 | 102.1 | 12 | 11.2 | 11.3 | 8.9  | 13.2 | 2.2 | -0.26 | 10.7 |  |
| Otamakokore Stm at Hossack Rd                                  | 12 | 99.6  | 100.8 | 77.7  | 114.7 | 11.2 | -0.60 | 96.4  | 12 | 8.7  | 8.9  | 7.4  | 9.9  | 1.7 | -0.26 | 8.6  |  |
| Pueto Stm at Broadlands Rd Br                                  | 12 | 95.3  | 97.5  | 85.1  | 102.6 | 11.5 | -0.48 | 94.1  | 12 | 9.6  | 9.9  | 8.2  | 10.6 | 1.6 | -0.46 | 9.5  |  |
| Tahunaatara Stm at Ohakuri Rd                                  | 12 | 104.6 | 105.2 | 94.9  | 116.8 | 6.3  | 0.23  | 102.0 | 12 | 10.7 | 10.9 | 8.9  | 11.9 | 1.3 | -0.74 | 10.4 |  |
| Torepatutahi Stm at Vaile Rd Br                                | 12 | 105.0 | 103.9 | 89.7  | 116.4 | 14.0 | -0.30 | 100.9 | 12 | 10.4 | 10.3 | 8.2  | 12.4 | 1.2 | -0.30 | 10.1 |  |
| Waiotapu Stm at Campbell Rd Br                                 | 12 | 91.7  | 91.5  | 82.8  | 100.4 | 8.0  | -0.21 | 87.4  | 12 | 7.0  | 7.1  | 5.9  | 7.7  | 1.1 | -0.53 | 6.7  |  |
| Waiotapu Stm at Homestead Rd Br                                | 12 | 92.7  | 91.5  | 84.6  | 109.8 | 7.6  | 1.26  | 88.8  | 12 | 8.4  | 8.3  | 7.4  | 9.7  | 1.0 | 0.29  | 8.2  |  |
| Waipapa Stm (Mokai) at Tirohanga Rd Br                         | 12 | 102.7 | 103.8 | 94.0  | 107.1 | 7.1  | -0.84 | 99.5  | 12 | 8.8  | 8.9  | 7.7  | 9.6  | 0.9 | -0.55 | 8.4  |  |
| Whirinaki Stm at Corbett Rd                                    | 12 | 100.5 | 102.2 | 90.1  | 107.5 | 9.7  | -0.55 | 97.6  | 12 | 10.4 | 10.7 | 9.2  | 11.4 | 1.2 | -0.58 | 10.0 |  |
| West Coast   |    |       |       |       |       |      |       |       |    |      |      |      |      |     |       |      |  |
| Awakino River at Gribbon Rd                                    | 11 | 103.9 | 104.0 | 98.2  | 110.3 | 5.7  | 0.00  | 100.0 | 11 | 10.8 | 11.2 | 9.4  | 11.9 | 1.7 | -0.13 | 10.5 |  |
| Awakino River at SH3 Awakau Rd Junction                        | 12 | 110.9 | 109.5 | 93.1  | 127.2 | 15.9 | 0.03  | 104.1 | 12 | 11.2 | 11.3 | 9.0  | 13.9 | 0.8 | 0.21  | 10.8 |  |
| Manganui River at Off Manganui Rd                              | 12 | 104.2 | 104.8 | 90.5  | 132.7 | 13.1 | 1.03  | 99.1  | 12 | 11.1 | 11.1 | 8.8  | 15.3 | 2.4 | 0.86  | 10.4 |  |
| Mangaotaki River at SH3 Br                                     | 12 | 104.8 | 105.4 | 96.2  | 111.0 | 8.3  | -0.35 | 100.7 | 12 | 11.0 | 11.2 | 9.3  | 12.3 | 2.0 | -0.41 | 10.5 |  |
| Marokopa River at Speedies Rd (Off Te Angra Rd)                | 12 | 107.5 | 107.7 | 103.5 | 113.7 | 4.8  | 0.38  | 103.2 | 12 | 11.3 | 11.3 | 10.1 | 12.4 | 1.4 | -0.10 | 10.6 |  |
| Mokau River at Awakau Rd                                       | 12 | 99.3  | 100.4 | 88.4  | 119.2 | 6.3  | 0.95  | 95.0  | 12 | 10.2 | 10.4 | 8.3  | 13.0 | 2.6 | 0.15  | 9.6  |  |
| Mokau River at Mangaokewa Rd (Off SH30)                        | 12 | 102.0 | 103.6 | 90.3  | 108.5 | 5.5  | -0.92 | 98.0  | 12 | 10.8 | 11.1 | 9.0  | 12.1 | 1.9 | -0.48 | 10.1 |  |
| Mokau River at Totoro Rd Recorder                              | 12 | 103.6 | 106.2 | 80.5  | 112.9 | 10.8 | -1.35 | 101.9 | 12 | 10.8 | 10.8 | 9.0  | 12.6 | 2.6 | -0.06 | 10.3 |  |
| Mokauiti Stm at Three Way Point - Aria                         | 12 | 96.9  | 98.1  | 76.6  | 111.8 | 10.3 | -0.59 | 94.5  | 12 | 9.9  | 10.4 | 7.2  | 11.4 | 2.0 | -0.89 | 9.6  |  |
| Ohautira Stm at Waingaro Te Uku Rd                             | 12 | 99.4  | 99.5  | 85.4  | 116.8 | 5.9  | 0.44  | 94.4  | 12 | 10.7 | 10.8 | 8.1  | 13.3 | 1.8 | -0.20 | 10.2 |  |
| Oparau River at Langdon Rd (Off Okupata Rd)                    | 12 | 111.2 | 111.5 | 102.7 | 125.3 | 7.3  | 0.64  | 104.9 | 12 | 11.5 | 11.5 | 9.4  | 12.9 | 1.7 | -0.30 | 10.6 |  |
| Tawarau River at Off Speedies Rd                               | 12 | 106.3 | 105.1 | 101.3 | 112.1 | 4.1  | 0.47  | 101.7 | 12 | 11.2 | 11.2 | 9.5  | 12.3 | 1.8 | -0.25 | 10.6 |  |
| Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22               | 12 | 101.1 | 101.3 | 86.0  | 116.0 | 12.4 | -0.16 | 95.7  | 12 | 10.4 | 10.8 | 7.7  | 12.6 | 1.3 | -0.59 | 9.8  |  |
| Waitetuna River at Te Uku-Waingaro Rd                          | 12 | 101.1 | 101.6 | 88.8  | 121.9 | 6.2  | 1.09  | 96.2  | 12 | 10.7 | 10.7 | 8.3  | 13.5 | 2.1 | 0.13  | 10.2 |  |
| Inflows to Lake Taupo  |    |       |       |       |       |      |       |       |    |      |      |      |      |     |       |      |  |
| Hinemaiaia River at SH1  | 12 | 104.8 | 104.4 | 93.6  | 117.2 | 8.8  | -0.07 | 99.6  | 12 | 11.1 | 11.5 | 9.1  | 12.5 | 1.9 | -0.55 | 10.6 |  |
| Kuratau River at SH41 Moerangi                                 | 12 | 97.7  | 99.4  | 85.8  | 104.5 | 9.0  | -0.76 | 94.1  | 12 | 10.5 | 10.7 | 8.6  | 11.8 | 2.0 | -0.40 | 9.9  |  |
| Kuratau River at 43 Te Rae Street                              | 12 | 105.8 | 106.7 | 95.1  | 118.1 | 7.6  | -0.10 | 101.0 | 12 | 10.8 | 11.1 | 8.9  | 12.6 | 2.0 | -0.33 | 10.4 |  |
| Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)        | 12 | 91.7  | 93.4  | 80.5  | 99.3  | 7.0  | -0.90 | 87.7  | 12 | 9.8  | 9.9  | 8.2  | 11.1 | 1.3 | -0.51 | 9.3  |  |
| Tauranga-Taupo River at 20 Metres U/S SH1 Bridge               | 12 | 103.9 | 103.3 | 88.5  | 129.2 | 6.7  | 0.87  | 101.1 | 12 | 11.1 | 11.1 | 8.7  | 12.9 | 1.8 | -0.46 | 10.7 |  |
| Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal | 12 | 109.0 | 107.7 | 81.1  | 133.4 | 13.1 | -0.05 | 102.7 | 12 | 11.2 | 11.7 | 7.4  | 14.0 | 3.0 | -0.47 | 10.4 |  |
| Tokaanu Stm at Off SH41 Turangi                                | 12 | 87.3  | 88.0  | 77.1  | 98.3  | 9.5  | -0.05 | 83.4  | 12 | 9.0  | 9.2  | 7.7  | 10.0 | 1.1 | -0.48 | 8.5  |  |
| Waihaha River at SH32  | 12 | 104.6 | 105.2 | 92.8  | 113.2 | 7.9  | -0.48 | 100.1 | 12 | 11.0 | 10.9 | 9.3  | 12.8 | 2.0 | 0.19  | 10.6 |  |
| Waitahanui River at Blake Rd                                   | 12 | 102.4 | 103.7 | 90.3  | 111.4 | 9.5  | -0.59 | 98.8  | 12 | 11.0 | 11.2 | 9.2  | 12.0 | 1.6 | -0.63 | 10.5 |  |
| Whangamata Stm (Kinloch) at Whangamata Rd                      | 12 | 99.7  | 100.6 | 89.3  | 108.9 | 9.8  | -0.33 | 96.0  | 12 | 10.8 | 10.8 | 9.3  | 12.3 | 1.5 | -0.07 | 10.3 |  |
| Whanganui Stm at Lakeside Lake Taupo                           | 12 | 103.4 | 106.3 | 90.1  | 110.4 | 10.0 | -0.85 | 100.6 | 12 | 11.0 | 11.0 | 8.9  | 12.8 | 2.3 | -0.09 | 10.6 |  |
| Whareroa Stm (Taupo District) at Lakeside Lake Taupo           | 12 | 99.7  | 101.1 | 88.0  | 106.7 | 9.1  | -0.71 | 95.9  | 12 | 10.6 | 10.8 | 8.8  | 12.2 | 1.9 | -0.29 | 10.1 |  |

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

Dissolved Reactive Phosphorus (g/m<sup>3</sup>)Total Phosphorus (g/m<sup>3</sup>)

| Location  | Count | Mean  | Median | Min   | Max   | IQR   | Skew        | 08-12<br>Median |
|---|-------|-------|--------|-------|-------|-------|-------------|-----------------|
| <b>Coromandel</b>                                       |       |       |        |       |       |       |             |                 |
| Hikutaia River at Old Maratoto Rd                       | 12    | 0.004 | 0.002  | 0.002 | 0.010 | 0.003 | <u>1.79</u> | 0.002           |
| Kauaeanga River at Smiths Cableway/Recorder             | 12    | 0.003 | 0.002  | 0.002 | 0.011 | 0.000 | <u>3.02</u> | 0.002           |
| Ohinemuri River at Queens Head                          | 11    | 0.006 | 0.002  | 0.002 | 0.026 | 0.004 | <u>2.44</u> | 0.002           |
| Ohinemuri River at SH25 Br                              | 12    | 0.007 | 0.005  | 0.002 | 0.027 | 0.004 | <u>2.45</u> | 0.005           |
| Tairua River at Morrisons Br Hikuai                     | 12    | 0.002 | 0.002  | 0.002 | 0.005 | 0.000 | <u>1.97</u> | 0.002           |
| Tapu River at Tapu-Coroglen Rd                          | 12    | 0.002 | 0.002  | 0.002 | 0.002 | 0.000 | -1.00       | 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                | 11    | 0.003 | 0.002  | 0.002 | 0.005 | 0.000 | 1.65        | 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           |
| <b>Hauraki</b>  |       |       |        |       |       |       |             |                 |
| Mangawhero Stm (Kaihere) at Mangawara Rd                | 12    | 0.032 | 0.034  | 0.009 | 0.044 | 0.012 | -0.96       | 0.035           |
| Oraka Stm at Lake Rd                                    | 12    | 0.109 | 0.096  | 0.047 | 0.340 | 0.067 | <u>2.01</u> | 0.087           |
| Piako River at Kiwitahi                                 | 12    | 0.048 | 0.043  | 0.024 | 0.077 | 0.023 | 0.55        | 0.053           |
| Piako River at Paeroa-Tahuna Rd Br                      | 12    | 0.187 | 0.113  | 0.056 | 0.560 | 0.205 | 1.31        | 0.160           |
| Piakonui Stm at Piakonui Rd                             | 12    | 0.009 | 0.009  | 0.002 | 0.016 | 0.005 | 0.15        | 0.009           |
| Waihou River at Okauia                                  | 12    | 0.064 | 0.060  | 0.045 | 0.099 | 0.019 | 1.03        | 0.065           |
| Waihou River at Whites Rd                               | 12    | 0.073 | 0.073  | 0.064 | 0.077 | 0.003 | -1.30       | 0.074           |
| Waihotu Stm at Waihotu Rd (Off SH5)                     | 12    | 0.011 | 0.011  | 0.008 | 0.014 | 0.004 | 0.05        | 0.012           |
| Waiomou Stm at Matamata-Tauranga Rd                     | 12    | 0.021 | 0.020  | 0.016 | 0.031 | 0.006 | 1.01        | 0.021           |
| Waitakaruru River (Hauraki Plains) at Coxhead Rd Br     | 12    | 0.029 | 0.030  | 0.011 | 0.043 | 0.016 | -0.17       | 0.028           |
| Waitoa River at Landsdowne Rd Br                        | 12    | 0.026 | 0.023  | 0.011 | 0.057 | 0.011 | 1.29        | 0.026           |
| Waitoa River at Mellon Rd Recorder                      | 12    | 0.057 | 0.053  | 0.029 | 0.094 | 0.032 | 0.38        | 0.051           |
| <b>Tributaries to the lower Waikato River</b>           |       |       |        |       |       |       |             |                 |
| Awaroa River (Waiuku) at Otawa Rd Br opp Moseley Rd     | 12    | 0.020 | 0.006  | 0.002 | 0.094 | 0.020 | <u>1.71</u> | 0.003           |
| Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd | 12    | 0.002 | 0.002  | 0.002 | 0.004 | 0.000 | <u>3.02</u> | 0.002           |
| Karapiro Stm at Hickey Rd Bridge                        | 12    | 0.041 | 0.037  | 0.013 | 0.070 | 0.032 | 0.16        | 0.040           |
| Kirikiriira Stm at Tauhara Dr                           | 12    | 0.016 | 0.018  | 0.006 | 0.021 | 0.006 | -0.99       | 0.015           |
| Komakorau Stm at Henry Rd                               | 12    | 0.011 | 0.007  | 0.004 | 0.026 | 0.012 | 0.90        | 0.009           |
| Little Waipa Stm at Arapuni - Putaruru Rd               | 12    | 0.059 | 0.051  | 0.037 | 0.130 | 0.022 | <u>1.91</u> | 0.050           |
| Mangakotukutuku Stm (Rukuhia) at Peacockes Rd           | 12    | 0.339 | 0.157  | 0.062 | 1.090 | 0.322 | 1.33        | 0.230           |
| Mangamingi Stm (Tokoroa) at Paronui Rd Br               | 12    | 0.269 | 0.260  | 0.148 | 0.390 | 0.115 | 0.09        | 0.330           |
| Mangaone Stm at Annebrooke Rd Br                        | 12    | 0.065 | 0.059  | 0.045 | 0.098 | 0.018 | 0.84        | 0.062           |
| Mangaonua Stm at Hoeka Rd                               | 12    | 0.011 | 0.011  | 0.006 | 0.018 | 0.004 | 0.43        | 0.012           |
| Mangaonua Stm at Te Miro Rd                             | 12    | 0.017 | 0.014  | 0.008 | 0.043 | 0.013 | 1.42        | 0.011           |
| Mangatangi River at SH2 Maramarua                       | 12    | 0.024 | 0.023  | 0.015 | 0.033 | 0.008 | 0.02        | 0.024           |
| Mangatawhiri River at Lyons Rd At Buckingham Br         | 12    | 0.009 | 0.009  | 0.005 | 0.013 | 0.004 | -0.13       | 0.011           |
| Mangawara Stm at Rutherford Rd Br                       | 12    | 0.048 | 0.043  | 0.025 | 0.088 | 0.030 | 0.80        | 0.045           |
| Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd       | 12    | 0.140 | 0.040  | 0.024 | 0.650 | 0.179 | <u>1.71</u> | 0.056           |
| Matahuru Stm at Waiterimu Road Below Confluence         | 12    | 0.024 | 0.024  | 0.017 | 0.033 | 0.006 | 0.63        | 0.024           |
| Ohaeroa Stm at SH22 Br                                  | 12    | 0.008 | 0.008  | 0.002 | 0.014 | 0.004 | -0.23       | 0.008           |
| Opatia Stm at Ponganui Rd                               | 12    | 0.005 | 0.005  | 0.002 | 0.009 | 0.004 | -0.01       | 0.006           |
| Pokaiwhenua Stm at Arapuni - Putaruru Rd                | 12    | 0.088 | 0.092  | 0.064 | 0.124 | 0.026 | 0.30        | 0.089           |
| Waerenga Stm at Taniwha Rd                              | 12    | 0.028 | 0.022  | 0.005 | 0.087 | 0.014 | <u>1.87</u> | 0.019           |
| Waitawhiriwhiri Stm at Edgumbe Street                   | 12    | 0.043 | 0.028  | 0.019 | 0.112 | 0.029 | 1.36        | 0.036           |
| Whakapipi Stm at SH22 Br                                | 12    | 0.035 | 0.027  | 0.009 | 0.091 | 0.025 | 1.26        | 0.021           |
| Whakauru Stm at U/S SH1 Br                              | 12    | 0.020 | 0.018  | 0.014 | 0.037 | 0.006 | <u>1.77</u> | 0.017           |
| Whangamarino River at Island Block Rd                   | 12    | 0.006 | 0.006  | 0.002 | 0.013 | 0.006 | 0.51        | 0.006           |
| Whangamarino River at Jefferies Rd Br                   | 12    | 0.037 | 0.030  | 0.020 | 0.086 | 0.014 | 1.58        | 0.030           |
| Whangape Stm at Rangiri-Glen Murray Rd                  | 12    | 0.005 | 0.002  | 0.002 | 0.024 | 0.002 | <u>2.44</u> | 0.002           |

| Count   | Mean  | Median | Min   | Max   | IQR   | Skew        | 08-12<br>Median |
|---|-------|--------|-------|-------|-------|-------------|-----------------|
| 12  | 0.011 | 0.007  | 0.002 | 0.057 | 0.007 | <u>2.70</u> | 0.008           |
| 12  | 0.009 | 0.006  | 0.002 | 0.027 | 0.012 | 0.99        | 0.004           |
| 11  | 0.029 | 0.015  | 0.007 | 0.152 | 0.015 | <u>2.63</u> | 0.013           |
| 12  | 0.019 | 0.012  | 0.007 | 0.079 | 0.012 | <u>2.45</u> | 0.013           |
| 12  | 0.007 | 0.003  | 0.002 | 0.030 | 0.006 | <u>2.14</u> | 0.002           |
| 12  | 0.006 | 0.002  | 0.002 | 0.038 | 0.003 | <u>2.84</u> | 0.002           |
| 12  | 0.009 | 0.005  | 0.002 | 0.035 | 0.008 | <u>2.10</u> | 0.006           |
| 11  | 0.009 | 0.006  | 0.002 | 0.038 | 0.007 | <u>2.38</u> | 0.007           |
| 12  | 0.005 | 0.002  | 0.002 | 0.022 | 0.004 | <u>2.22</u> | 0.004           |
| 12  | 0.008 | 0.004  | 0.002 | 0.043 | 0.005 | <u>2.76</u> | 0.005           |
| <b>Hauraki</b>                                |       |        |       |       |       |             |                 |
| 12  | 0.061 | 0.045  | 0.038 | 0.220 | 0.013 | <u>2.91</u> | 0.047           |
| 12  | 0.159 | 0.145  | 0.066 | 0.380 | 0.113 | 1.10        | 0.130           |
| 12  | 0.085 | 0.093  | 0.042 | 0.124 | 0.048 | -0.24       | 0.092           |
| 12  | 0.272 | 0.260  | 0.085 | 0.610 | 0.156 | 0.97        | 0.255           |
| 12  | 0.020 | 0.019  | 0.016 | 0.027 | 0.005 | 0.75        | 0.021           |
| 12  | 0.107 | 0.090  | 0.062 | 0.280 | 0.020 | <u>2.52</u> | 0.092           |
| 12  | 0.076 | 0.074  | 0.072 | 0.087 | 0.004 | 1.32        | 0.075           |
| 12  | 0.025 | 0.026  | 0.016 | 0.032 | 0.006 | -0.44       | 0.026           |
| 12  | 0.051 | 0.042  | 0.025 | 0.162 | 0.016 | <u>2.60</u> | 0.042           |
| 12  | 0.095 | 0.076  | 0.043 | 0.156 | 0.079 | 0.32        | 0.068           |
| 12  | 0.072 | 0.055  | 0.024 | 0.170 | 0.075 | 0.91        | 0.066           |
| 12  | 0.135 | 0.107  | 0.050 | 0.300 | 0.143 | 0.78        | 0.120           |
| <b>Tributaries to the lower Waikato River</b> |       |        |       |       |       |             |                 |
| 12  | 0.115 | 0.068  | 0.034 | 0.380 | 0.097 | 1.49        | 0.055           |
| 12  | 0.029 | 0.016  | 0.007 | 0.118 | 0.013 | <u>1.93</u> | 0.014           |
| 12  | 0.098 | 0.085  | 0.056 | 0.270 | 0.028 | <u>2.61</u> | 0.089           |
| 12  | 0.086 | 0.077  | 0.044 | 0.230 | 0.017 | <u>2.58</u> | 0.072           |
| 12  | 0.105 | 0.100  | 0.060 | 0.163 | 0.051 | 0.31        | 0.100           |
| 12  | 0.095 | 0.069  | 0.049 | 0.360 | 0.033 | <u>2.80</u> | 0.068           |
| 12  | 0.517 | 0.340  | 0.178 | 1.350 | 0.435 | 1.16        | 0.430           |
| 12  | 0.313 | 0.285  | 0.250 | 0.400 | 0.090 | 0.37        | 0.365           |
| 12  | 0.132 | 0.111  | 0.080 | 0.250 | 0.048 | 1.32        | 0.134           |
| 12  | 0.037 | 0.028  | 0.016 | 0.117 | 0.011 | <u>2.50</u> | 0.030           |
| 12  | 0.076 | 0.054  | 0.023 | 0.220 | 0.072 | 1.31        | 0.057           |
| 12  | 0.092 | 0.084  | 0.037 | 0.210 | 0.060 | 1.13        | 0.087           |
| 12  | 0.029 | 0.019  | 0.015 | 0.069 | 0.012 | 1.52        | 0.023           |
| 12  | 0.250 | 0.215  | 0.131 | 0.510 | 0.189 | 0.91        | 0.230           |
| 12  | 0.316 | 0.190  | 0.112 | 1.030 | 0.313 | 1.47        | 0.186           |
| 12  | 0.142 | 0.107  | 0.054 | 0.400 | 0.106 | 1.43        | 0.109           |
| 12  | 0.048 | 0.030  | 0.018 | 0.142 | 0.036 | 1.55        | 0.031           |
| 12  | 0.096 | 0.034  | 0.019 | 0.490 | 0.087 | <u>2.27</u> | 0.033           |
| 12  | 0.126 | 0.113  | 0.084 | 0.260 | 0.027 | <u>2.27</u> | 0.111           |
| 12  | 0.081 | 0.056  | 0.034 | 0.220 | 0.058 | 1.40        | 0.045           |
| 12  | 0.104 | 0.088  | 0.060 | 0.192 | 0.074 | 0.89        | 0.108           |
| 12  | 0.081 | 0.065  | 0.023 | 0.193 | 0.063 | 0.99        | 0.051           |
| 12  | 0.076 | 0.045  | 0.034 | 0.280 | 0.025 | <u>2.16</u> | 0.042           |
| 12  | 0.180 | 0.179  | 0.090 | 0.270 | 0.077 | 0.06        | 0.160           |
| 12  | 0.128 | 0.098  | 0.052 | 0.340 | 0.051 | 1.58        | 0.095           |
| 12  | 0.114 | 0.121  | 0.050 | 0.185 | 0.096 | 0.07        | 0.125           |

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions. TP method changed from October 2012 onwards.

| Waipa River and Tributaries                                    |    |       |       |       |       |       |             |       |    |          |        |       |       |        |             |       |
|--|----|-------|-------|-------|-------|-------|-------------|-------|----|----------|--------|-------|-------|--------|-------------|-------|
| Kaniwhaniwha Stm at Wright Rd                                  | 12 | 0.008 | 0.007 | 0.002 | 0.019 | 0.007 | 0.79        | 0.006 | 12 | 0.036    | 0.031  | 0.015 | 0.101 | 0.023  | <b>1.92</b> | 0.035 |
| Mangaohoi Stm at South Branch Maru Rd                          | 12 | 0.039 | 0.041 | 0.022 | 0.055 | 0.018 | -0.25       | 0.040 | 12 | 0.049    | 0.051  | 0.026 | 0.071 | 0.018  | -0.23       | 0.051 |
| Mangaokewa Stm at Lawrence St Bridge                           | 12 | 0.014 | 0.012 | 0.008 | 0.030 | 0.006 | 1.67        | 0.013 | 12 | 0.042    | 0.036  | 0.018 | 0.107 | 0.016  | <b>1.92</b> | 0.036 |
| Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd               | 12 | 0.124 | 0.106 | 0.042 | 0.390 | 0.063 | <b>2.00</b> | 0.123 | 12 | 0.241    | 0.189  | 0.085 | 0.530 | 0.161  | 1.02        | 0.285 |
| Mangapu River at Otorohanga                                    | 11 | 0.025 | 0.024 | 0.014 | 0.047 | 0.011 | 0.93        | 0.023 | 11 | 0.092    | 0.074  | 0.042 | 0.250 | 0.033  | <b>2.26</b> | 0.080 |
| Mangatutu Stm (Waikeria) at Walker Rd Br                       | 12 | 0.009 | 0.008 | 0.005 | 0.018 | 0.004 | 1.23        | 0.009 | 12 | 0.024    | 0.020  | 0.007 | 0.054 | 0.015  | 0.92        | 0.023 |
| Mangauika Stm at Te Awamutu Borough W/S Intake                 | 12 | 0.002 | 0.002 | 0.002 | 0.002 | 0.000 | -1.00       | 0.002 | 12 | 0.009    | 0.008  | 0.002 | 0.015 | 0.004  | 0.29        | 0.008 |
| Ohote Stm at Whatawhata/Horotiu Rd                             | 12 | 0.021 | 0.021 | 0.015 | 0.030 | 0.008 | 0.25        | 0.021 | 12 | 0.076    | 0.077  | 0.041 | 0.106 | 0.032  | -0.17       | 0.076 |
| Puniu River at Bartons Corner Rd Br                            | 12 | 0.021 | 0.021 | 0.016 | 0.025 | 0.005 | -0.12       | 0.022 | 12 | 0.066    | 0.050  | 0.029 | 0.250 | 0.018  | <b>2.84</b> | 0.053 |
| Waipa River at Mangaokewa Rd                                   | 12 | 0.004 | 0.003 | 0.002 | 0.010 | 0.003 | 1.24        | 0.004 | 12 | 0.023    | 0.014  | 0.008 | 0.074 | 0.017  | <b>1.72</b> | 0.018 |
| Waipa River at Pirongia-Ngutunui Rd Br                         | 12 | 0.016 | 0.014 | 0.012 | 0.025 | 0.005 | 1.34        | 0.016 | 12 | 0.091    | 0.069  | 0.037 | 0.360 | 0.031  | <b>2.68</b> | 0.057 |
| Waipa River at SH3 Otorohanga                                  | 12 | 0.008 | 0.008 | 0.006 | 0.011 | 0.002 | 0.53        | 0.007 | 12 | 0.045    | 0.031  | 0.016 | 0.155 | 0.030  | <b>2.09</b> | 0.029 |
| Waitomo Stm at SH31 Otorohanga                                 | 12 | 0.006 | 0.006 | 0.002 | 0.015 | 0.005 | 0.78        | 0.007 | 12 | 0.054    | 0.047  | 0.020 | 0.117 | 0.050  | 0.79        | 0.040 |
| Waitomo Stm at Tumutumu Rd                                     | 12 | 0.009 | 0.008 | 0.006 | 0.012 | 0.003 | 0.22        | 0.010 | 12 | 0.034    | 0.026  | 0.015 | 0.100 | 0.007  | <b>1.91</b> | 0.025 |
| Tributaries to the upper Waikato River                         |    |       |       |       |       |       |             |       |    |          |        |       |       |        |             |       |
| Kawaunui Stm at SH5 Br   | 12 | 0.066 | 0.057 | 0.042 | 0.144 | 0.021 | 1.66        | 0.060 | 12 | 0.181    | 0.088  | 0.066 | 1.090 | 0.038  | <b>2.94</b> | 0.101 |
| Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)             | 12 | 0.031 | 0.033 | 0.023 | 0.035 | 0.010 | -0.49       | 0.033 | 12 | 0.056    | 0.048  | 0.039 | 0.105 | 0.016  | <b>1.82</b> | 0.055 |
| Mangakara Stm (Reporoa) at SH5                                 | 12 | 0.047 | 0.048 | 0.037 | 0.053 | 0.005 | -0.93       | 0.048 | 12 | 0.088    | 0.072  | 0.064 | 0.200 | 0.015  | <b>2.45</b> | 0.081 |
| Mangakino Stm (Whakamaru) at Sandel Rd                         | 12 | 0.039 | 0.037 | 0.028 | 0.056 | 0.013 | 0.80        | 0.040 | 12 | 0.050    | 0.045  | 0.038 | 0.090 | 0.009  | <b>1.79</b> | 0.048 |
| Otamakokore Stm at Hossack Rd                                  | 12 | 0.150 | 0.151 | 0.119 | 0.210 | 0.025 | 1.06        | 0.158 | 12 | 0.150917 | 0.1445 | 0.132 | 0.21  | 0.0175 | 1.74        | 0.145 |
| Pueto Stm at Broadlands Rd Br                                  | 12 | 0.074 | 0.074 | 0.068 | 0.086 | 0.006 | 0.95        | 0.078 | 12 | 0.105    | 0.101  | 0.087 | 0.168 | 0.016  | <b>1.84</b> | 0.100 |
| Tahunaatara Stm at Ohakuri Rd                                  | 12 | 0.030 | 0.031 | 0.018 | 0.041 | 0.006 | -0.09       | 0.031 | 12 | 0.056    | 0.050  | 0.034 | 0.151 | 0.010  | <b>2.67</b> | 0.050 |
| Torepatutahi Stm at Vaile Rd Br                                | 12 | 0.080 | 0.081 | 0.065 | 0.091 | 0.009 | -0.32       | 0.083 | 12 | 0.098    | 0.094  | 0.084 | 0.125 | 0.017  | 0.98        | 0.100 |
| Waiotapu Stm at Campbell Rd Br                                 | 12 | 0.008 | 0.002 | 0.002 | 0.064 | 0.000 | <b>2.98</b> | 0.002 | 12 | 0.092667 | 0.087  | 0.072 | 0.192 | 0.0145 | 2.72        | 0.087 |
| Waiotapu Stm at Homestead Rd Br                                | 12 | 0.036 | 0.036 | 0.024 | 0.050 | 0.010 | 0.31        | 0.035 | 12 | 0.1365   | 0.1155 | 0.078 | 0.33  | 0.0465 | 2.24        | 0.116 |
| Waipapa Stm (Mokai) at Tirohanga Rd Br                         | 12 | 0.087 | 0.085 | 0.076 | 0.107 | 0.009 | 1.01        | 0.086 | 12 | 0.093417 | 0.095  | 0.076 | 0.108 | 0.016  | -0.28       | 0.095 |
| Whirinaki Stm at Corbett Rd                                    | 12 | 0.061 | 0.062 | 0.055 | 0.071 | 0.005 | 0.78        | 0.062 | 12 | 0.066    | 0.062  | 0.055 | 0.087 | 0.009  | 1.23        | 0.066 |
| West Coast   |    |       |       |       |       |       |             |       |    |          |        |       |       |        |             |       |
| Awakino River at Gribbon Rd                                    | 12 | 0.012 | 0.012 | 0.005 | 0.016 | 0.003 | -0.93       | 0.012 | 12 | 0.020    | 0.016  | 0.007 | 0.040 | 0.016  | 0.69        | 0.017 |
| Awakino River at SH3 Awakau Rd Junction                        | 12 | 0.011 | 0.008 | 0.002 | 0.060 | 0.009 | <b>2.73</b> | 0.008 | 12 | 0.040    | 0.021  | 0.004 | 0.200 | 0.036  | <b>2.31</b> | 0.020 |
| Manganui River at Off Manganui Rd                              | 12 | 0.010 | 0.009 | 0.004 | 0.015 | 0.008 | -0.01       | 0.011 | 12 | 0.044    | 0.022  | 0.007 | 0.185 | 0.030  | <b>1.80</b> | 0.025 |
| Mangaotaki River at SH3 Br                                     | 12 | 0.010 | 0.011 | 0.002 | 0.021 | 0.008 | 0.38        | 0.010 | 12 | 0.042    | 0.030  | 0.010 | 0.159 | 0.037  | <b>1.87</b> | 0.029 |
| Marokopa River at Speedies Rd (Off Te Angra Rd)                | 12 | 0.012 | 0.012 | 0.008 | 0.016 | 0.004 | 0.14        | 0.012 | 12 | 0.029    | 0.023  | 0.018 | 0.077 | 0.005  | <b>2.09</b> | 0.025 |
| Mokau River at Awakau Rd                                       | 12 | 0.006 | 0.007 | 0.002 | 0.010 | 0.003 | -0.28       | 0.007 | 12 | 0.076    | 0.063  | 0.017 | 0.280 | 0.047  | <b>2.09</b> | 0.046 |
| Mokau River at Mangaokewa Rd (Off SH30)                        | 12 | 0.013 | 0.013 | 0.006 | 0.022 | 0.007 | 0.48        | 0.013 | 12 | 0.063    | 0.036  | 0.021 | 0.250 | 0.024  | <b>2.09</b> | 0.034 |
| Mokau River at Totoro Rd Recorder                              | 12 | 0.009 | 0.009 | 0.005 | 0.016 | 0.003 | 1.01        | 0.009 | 12 | 0.053    | 0.038  | 0.017 | 0.173 | 0.046  | 1.65        | 0.032 |
| Mokauiti Stm at Three Way Point - Aria                         | 12 | 0.009 | 0.009 | 0.004 | 0.016 | 0.006 | 0.45        | 0.008 | 12 | 0.066    | 0.047  | 0.031 | 0.280 | 0.015  | <b>2.89</b> | 0.043 |
| Ohautira Stm at Waingaro Te Uku Rd                             | 12 | 0.015 | 0.017 | 0.002 | 0.024 | 0.006 | -0.77       | 0.019 | 12 | 0.047    | 0.035  | 0.021 | 0.150 | 0.019  | <b>2.15</b> | 0.038 |
| Oparau River at Langdon Rd (Off Okupata Rd)                    | 12 | 0.004 | 0.002 | 0.002 | 0.009 | 0.004 | 0.86        | 0.005 | 12 | 0.017    | 0.012  | 0.008 | 0.043 | 0.009  | <b>1.75</b> | 0.014 |
| Tawarau River at Off Speedies Rd                               | 12 | 0.013 | 0.013 | 0.009 | 0.017 | 0.003 | 0.42        | 0.014 | 12 | 0.029    | 0.023  | 0.018 | 0.072 | 0.007  | <b>1.95</b> | 0.026 |
| Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22               | 12 | 0.008 | 0.008 | 0.004 | 0.011 | 0.004 | -0.19       | 0.009 | 12 | 0.046    | 0.034  | 0.022 | 0.109 | 0.034  | 1.22        | 0.037 |
| Waitetuna River at Te Uku-Waingaro Rd                          | 12 | 0.011 | 0.011 | 0.005 | 0.023 | 0.004 | 1.34        | 0.011 | 12 | 0.056    | 0.035  | 0.020 | 0.230 | 0.028  | <b>2.33</b> | 0.038 |
| Inflows to Lake Taupo  |    |       |       |       |       |       |             |       |    |          |        |       |       |        |             |       |
| Hinemaiaia River at SH1  | 12 | 0.025 | 0.025 | 0.017 | 0.031 | 0.004 | -0.25       | 0.026 | 12 | 0.034    | 0.033  | 0.028 | 0.041 | 0.005  | 0.67        | 0.034 |
| Kuratau River at SH41 Moerangi                                 | 12 | 0.002 | 0.002 | 0.002 | 0.002 | 0.000 | -1.00       | 0.002 | 12 | 0.006    | 0.005  | 0.002 | 0.014 | 0.007  | 0.82        | 0.004 |
| Kuratau River at 43 Te Rae Street                              | 12 | 0.003 | 0.002 | 0.002 | 0.005 | 0.000 | <b>1.79</b> | 0.002 | 12 | 0.014    | 0.015  | 0.010 | 0.019 | 0.005  | -0.08       | 0.014 |
| Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)        | 12 | 0.123 | 0.124 | 0.106 | 0.143 | 0.019 | 0.09        | 0.130 | 12 | 0.144    | 0.142  | 0.128 | 0.159 | 0.013  | 0.14        | 0.150 |
| Tauranga-Taupo River at 20 Metres U/S SH1 Bridge               | 12 | 0.010 | 0.011 | 0.002 | 0.014 | 0.004 | -1.26       | 0.011 | 12 | 0.015    | 0.016  | 0.010 | 0.022 | 0.004  | 0.30        | 0.014 |
| Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal | 12 | 0.003 | 0.002 | 0.002 | 0.016 | 0.000 | <b>2.80</b> | 0.002 | 12 | 0.018    | 0.014  | 0.007 | 0.064 | 0.004  | <b>2.77</b> | 0.014 |
| Tokaanu Stm at Off SH41 Turangi                                | 12 | 0.075 | 0.076 | 0.070 | 0.078 | 0.005 | -0.47       | 0.076 | 12 | 0.078    | 0.075  | 0.070 | 0.098 | 0.008  | 1.62        | 0.076 |
| Waihaha River at SH32  | 12 | 0.018 | 0.018 | 0.009 | 0.027 | 0.006 | -0.15       | 0.020 | 12 | 0.027    | 0.025  | 0.018 | 0.056 | 0.008  | <b>1.90</b> | 0.023 |
| Waitahanui River at Blake Rd                                   | 12 | 0.043 | 0.044 | 0.037 | 0.046 | 0.002 | -1.49       | 0.043 | 12 | 0.047    | 0.045  | 0.040 | 0.056 | 0.004  | 1.06        | 0.046 |
| Whangamata Stm (Kinloch) at Whangamata Rd                      | 12 | 0.065 | 0.065 | 0.062 | 0.069 | 0.006 | 0.21        | 0.065 | 12 | 0.072    | 0.072  | 0.062 | 0.083 | 0.010  | 0.02        | 0.073 |
| Whanganui Stm at Lakeside Lake Taupo                           | 12 | 0.009 | 0.009 | 0.004 | 0.017 | 0.006 | 0.54        | 0.010 | 12 | 0.017    | 0.016  | 0.012 | 0.034 | 0.007  | <b>1.74</b> | 0.015 |
| Whareroa Stm (Taupo District) at Lakeside Lake Taupo           | 12 | 0.019 | 0.019 | 0.011 | 0.029 | 0.007 | 0.28        | 0.020 | 12 | 0.036    | 0.033  | 0.025 | 0.074 | 0.005  | <b>2.60</b> | 0.034 |

IQR = Inter quartile range; Underlined values indicate parameters having non-normal distributions. TP method changed from October 2012 onwards.



Ammoniacal Nitrogen (g N/m<sup>3</sup>)

| Location  | Count | Mean | Median | Min  | Max  | IQR  | Skew        | 08-12<br>Median |
|---|-------|------|--------|------|------|------|-------------|-----------------|
| <b>Coromandel</b>                                       |       |      |        |      |      |      |             |                 |
| Hikutaia River at Old Maratoto Rd                       | 12    | 0.01 | 0.01   | 0.01 | 0.02 | 0.01 | 1.54        | 0.01            |
| Kauaeanga River at Smiths Cableway/Recorder             | 12    | 0.01 | 0.01   | 0.01 | 0.03 | 0.00 | <u>3.02</u> | 0.01            |
| Ohinemuri River at Queens Head                          | 11    | 0.11 | 0.09   | 0.01 | 0.23 | 0.11 | 0.30        | 0.04            |
| Ohinemuri River at SH25 Br                              | 12    | 0.02 | 0.01   | 0.01 | 0.10 | 0.02 | <u>2.29</u> | 0.01            |
| Tairua River at Morrisons Br Hikuai                     | 12    | 0.01 | 0.01   | 0.01 | 0.01 | 0.00 | <u>3.02</u> | 0.01            |
| Tapu River at Tapu-Coroglen Rd                          | 12    | 0.01 | 0.01   | 0.01 | 0.01 | 0.00 | <u>3.02</u> | 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                | 11    | 0.01 | 0.01   | 0.01 | 0.02 | 0.00 | <u>2.08</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 | <u>3.02</u> | 0.01            |
| <b>Hauraki</b>  |       |      |        |      |      |      |             |                 |
| Mangawhero Stm (Kaihere) at Mangawara Rd                | 12    | 0.01 | 0.01   | 0.01 | 0.01 | 0.00 | <u>1.79</u> | 0.01            |
| Oraka Stm at Lake Rd                                    | 12    | 0.07 | 0.03   | 0.01 | 0.39 | 0.08 | <u>2.03</u> | 0.02            |
| Piako River at Kiwitahi                                 | 12    | 0.05 | 0.02   | 0.01 | 0.30 | 0.06 | <u>2.17</u> | 0.02            |
| Piako River at Paeroa-Tahuna Rd Br                      | 12    | 0.06 | 0.03   | 0.01 | 0.24 | 0.08 | 1.67        | 0.04            |
| Piakonui Stm at Piakonui Rd                             | 12    | 0.01 | 0.01   | 0.01 | 0.01 | 0.00 | 1.00        | 0.01            |
| Waihou River at Okauia                                  | 12    | 0.03 | 0.01   | 0.01 | 0.12 | 0.03 | <u>1.74</u> | 0.01            |
| Waihou River at Whites Rd                               | 12    | 0.01 | 0.01   | 0.01 | 0.03 | 0.00 | <u>3.02</u> | 0.01            |
| Waiohotu Stm at Waiohotu Rd (Off SH5)                   | 12    | 0.01 | 0.01   | 0.01 | 0.01 | 0.00 | 1.00        | 0.01            |
| Waiomou Stm at Matamata-Tauranga Rd                     | 12    | 0.02 | 0.01   | 0.01 | 0.08 | 0.01 | <u>1.91</u> | 0.01            |
| Waitakaruru River (Hauraki Plains) at Coxhead Rd Br     | 12    | 0.03 | 0.01   | 0.01 | 0.11 | 0.04 | 1.34        | 0.03            |
| Waitoa River at Landsdowne Rd Br                        | 12    | 0.03 | 0.01   | 0.01 | 0.12 | 0.02 | <u>1.73</u> | 0.01            |
| Waitoa River at Mellon Rd Recorder                      | 12    | 0.09 | 0.05   | 0.01 | 0.35 | 0.12 | 1.50        | 0.04            |
| <b>Tributaries to the lower Waikato River</b>           |       |      |        |      |      |      |             |                 |
| Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd    | 12    | 0.10 | 0.05   | 0.01 | 0.53 | 0.10 | <u>2.40</u> | 0.05            |
| Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd | 12    | 0.05 | 0.03   | 0.01 | 0.19 | 0.02 | <u>2.23</u> | 0.03            |
| Karapiro Stm at Hickey rd Bridge                        | 12    | 0.02 | 0.02   | 0.01 | 0.04 | 0.02 | 0.38        | 0.02            |
| Kirikiri Stm at Tauhara Dr                              | 12    | 0.28 | 0.29   | 0.07 | 0.48 | 0.12 | -0.09       | 0.24            |
| Komakorau Stm at Henry Rd                               | 12    | 0.70 | 0.74   | 0.40 | 1.10 | 0.23 | 0.33        | 0.68            |
| Little Waipa Stm at Arapuni - Putaruru Rd               | 12    | 0.03 | 0.01   | 0.01 | 0.20 | 0.02 | <u>2.87</u> | 0.01            |
| Mangakotukutuku Stm (Rukuhia) at Peacockes Rd           | 12    | 0.18 | 0.18   | 0.13 | 0.26 | 0.04 | 0.57        | 0.19            |
| Mangamingi Stm (Tokoroa) at Paraonui Rd Br              | 12    | 0.24 | 0.21   | 0.01 | 0.69 | 0.27 | 0.86        | 0.11            |
| Mangaone Stm at Annebrooke Rd Br                        | 12    | 0.02 | 0.02   | 0.01 | 0.04 | 0.01 | 0.32        | 0.02            |
| Mangaonua Stm at Hoeka Rd                               | 12    | 0.01 | 0.01   | 0.01 | 0.01 | 0.00 | 1.00        | 0.01            |
| Mangaonua Stm at Te Miro Rd                             | 12    | 0.09 | 0.09   | 0.05 | 0.11 | 0.02 | -0.67       | 0.09            |
| Mangatangi River at SH2 Maramarua                       | 12    | 0.02 | 0.01   | 0.01 | 0.09 | 0.02 | 1.65        | 0.01            |
| Mangatawhiri River at Lyons Rd At Buckingham Br         | 12    | 0.01 | 0.01   | 0.01 | 0.04 | 0.00 | <u>3.02</u> | 0.01            |
| Mangawara Stm at Rutherford Rd Br                       | 12    | 0.30 | 0.30   | 0.13 | 0.49 | 0.05 | 0.49        | 0.30            |
| Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd       | 12    | 0.11 | 0.12   | 0.06 | 0.15 | 0.03 | -0.72       | 0.10            |
| Matahuru Stm at Waiterimu Road Below Confluence         | 12    | 0.06 | 0.04   | 0.01 | 0.21 | 0.05 | 1.66        | 0.04            |
| Ohaeroa Stm at SH22 Br                                  | 12    | 0.01 | 0.01   | 0.01 | 0.03 | 0.01 | 1.17        | 0.01            |
| Opuatia Stm at Ponganui Rd                              | 12    | 0.01 | 0.01   | 0.01 | 0.05 | 0.01 | 1.65        | 0.01            |
| Pokaiwhenua Stm at Arapuni - Putaruru Rd                | 12    | 0.02 | 0.01   | 0.01 | 0.11 | 0.01 | <u>2.71</u> | 0.01            |
| Waerenga Stm at Taniwha Rd                              | 12    | 0.01 | 0.01   | 0.01 | 0.05 | 0.01 | <u>2.16</u> | 0.01            |
| Waitawhiriwhiri Stm at Edgcumbe Street                  | 12    | 0.61 | 0.70   | 0.13 | 0.88 | 0.22 | -1.06       | 0.58            |
| Whakapipi Stm at SH22 Br                                | 12    | 0.03 | 0.01   | 0.01 | 0.31 | 0.01 | <u>2.99</u> | 0.01            |
| Whakauru Stm at U/S SH1 Br                              | 12    | 0.01 | 0.01   | 0.01 | 0.06 | 0.01 | <u>1.72</u> | 0.01            |
| Whangamarino River at Island Block Rd                   | 12    | 0.08 | 0.07   | 0.01 | 0.21 | 0.13 | 0.42        | 0.03            |
| Whangamarino River at Jefferies Rd Br                   | 12    | 0.04 | 0.02   | 0.01 | 0.16 | 0.02 | <u>1.99</u> | 0.02            |
| Whangape Stm at Rangiriri-Glen Murray Rd                | 12    | 0.02 | 0.01   | 0.01 | 0.11 | 0.01 | <u>2.28</u> | 0.01            |

Nitrate/Nitrite (g/m<sup>3</sup>)

| Count | Mean  | Median | Min   | Max   | IQR   | Skew        | 08-12<br>Median |
|-------|-------|--------|-------|-------|-------|-------------|-----------------|
| 12    | 0.073 | 0.036  | 0.001 | 0.250 | 0.093 | 1.22        | 0.025           |
| 12    | 0.056 | 0.048  | 0.001 | 0.141 | 0.061 | 0.62        | 0.021           |
| 11    | 1.073 | 1.060  | 0.250 | 1.860 | 0.395 | -0.13       | 1.030           |
| 12    | 0.575 | 0.565  | 0.280 | 0.880 | 0.255 | 0.18        | 0.475           |
| 12    | 0.046 | 0.028  | 0.003 | 0.127 | 0.074 | 0.83        | 0.019           |
| 12    | 0.012 | 0.003  | 0.001 | 0.059 | 0.014 | 1.58        | 0.003           |
| 12    | 0.057 | 0.023  | 0.007 | 0.270 | 0.058 | <u>1.96</u> | 0.026           |
| 11    | 0.190 | 0.129  | 0.005 | 0.420 | 0.264 | 0.45        | 0.119           |
| 12    | 0.017 | 0.011  | 0.001 | 0.047 | 0.021 | 1.02        | 0.010           |
| 12    | 0.101 | 0.071  | 0.008 | 0.260 | 0.141 | 0.64        | 0.061           |
| 12    | 0.389 | 0.365  | 0.290 | 0.640 | 0.105 | 1.30        | 0.330           |
| 12    | 2.325 | 2.150  | 1.910 | 3.300 | 0.450 | 1.25        | 2.100           |
| 12    | 1.063 | 0.975  | 0.101 | 3.000 | 1.090 | 0.99        | 0.955           |
| 12    | 1.352 | 1.465  | 0.290 | 2.300 | 0.430 | -0.44       | 1.465           |
| 12    | 0.293 | 0.220  | 0.138 | 0.750 | 0.203 | 1.55        | 0.230           |
| 12    | 1.210 | 1.135  | 1.060 | 1.440 | 0.245 | 0.49        | 1.125           |
| 12    | 0.746 | 0.735  | 0.720 | 0.790 | 0.040 | 0.50        | 0.715           |
| 12    | 0.171 | 0.177  | 0.115 | 0.220 | 0.070 | -0.09       | 0.181           |
| 12    | 0.578 | 0.510  | 0.370 | 0.950 | 0.275 | 0.82        | 0.495           |
| 12    | 0.346 | 0.310  | 0.026 | 1.020 | 0.348 | 1.07        | 0.285           |
| 12    | 1.439 | 1.470  | 0.880 | 2.000 | 0.420 | -0.34       | 1.545           |
| 12    | 1.967 | 2.050  | 1.320 | 2.400 | 0.395 | -0.78       | 2.100           |
| 12    | 1.329 | 1.240  | 0.920 | 1.940 | 0.580 | 0.37        | 1.500           |
| 12    | 0.647 | 0.705  | 0.197 | 1.190 | 0.605 | -0.02       | 0.695           |
| 12    | 0.675 | 0.550  | 0.260 | 1.770 | 0.540 | 1.34        | 0.570           |
| 12    | 0.894 | 0.810  | 0.510 | 1.580 | 0.305 | 1.09        | 0.855           |
| 12    | 1.718 | 1.405  | 0.980 | 4.800 | 0.450 | <u>2.57</u> | 1.400           |
| 12    | 1.748 | 1.645  | 1.510 | 2.300 | 0.265 | 1.17        | 1.585           |
| 12    | 0.888 | 0.830  | 0.620 | 1.410 | 0.175 | 1.40        | 0.870           |
| 12    | 2.667 | 2.750  | 2.200 | 3.100 | 0.500 | -0.29       | 2.850           |
| 12    | 2.553 | 2.750  | 1.740 | 3.000 | 0.450 | -1.04       | 2.700           |
| 12    | 0.588 | 0.540  | 0.340 | 1.200 | 0.320 | 1.21        | 0.535           |
| 12    | 1.488 | 1.475  | 1.300 | 1.680 | 0.260 | 0.04        | 1.580           |
| 12    | 0.256 | 0.128  | 0.018 | 0.910 | 0.345 | 1.32        | 0.188           |
| 12    | 0.065 | 0.009  | 0.001 | 0.370 | 0.065 | <u>1.88</u> | 0.014           |
| 12    | 1.007 | 0.785  | 0.580 | 3.100 | 0.310 | <u>2.60</u> | 0.810           |
| 12    | 2.152 | 2.300  | 1.240 | 2.600 | 0.470 | -1.04       | 2.200           |
| 12    | 0.788 | 0.835  | 0.125 | 1.710 | 0.480 | 0.64        | 0.745           |
| 12    | 1.453 | 1.510  | 0.880 | 1.890 | 0.315 | -0.56       | 1.520           |
| 12    | 0.744 | 0.760  | 0.360 | 1.020 | 0.175 | -0.65       | 0.800           |
| 12    | 1.891 | 1.915  | 1.680 | 2.200 | 0.295 | 0.20        | 1.765           |
| 12    | 0.930 | 0.960  | 0.320 | 1.410 | 0.435 | -0.48       | 0.860           |
| 12    | 0.846 | 0.855  | 0.360 | 1.270 | 0.155 | -0.37       | 0.890           |
| 12    | 3.467 | 3.450  | 2.400 | 4.300 | 1.200 | -0.27       | 3.750           |
| 12    | 0.312 | 0.255  | 0.197 | 0.580 | 0.155 | 1.10        | 0.200           |
| 12    | 0.240 | 0.108  | 0.001 | 0.890 | 0.352 | 1.23        | 0.052           |
| 12    | 0.755 | 0.715  | 0.083 | 1.880 | 0.530 | 0.97        | 0.705           |
| 12    | 0.191 | 0.004  | 0.001 | 0.840 | 0.379 | 1.20        | 0.009           |

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



| Waipa River and Tributaries                                    |    |      |      |      |      |      |             |      |    |       |       |       |       |       |              |       |
|--|----|------|------|------|------|------|-------------|------|----|-------|-------|-------|-------|-------|--------------|-------|
| Kaniwhaniwha Stm at Wright Rd                                  | 12 | 0.02 | 0.01 | 0.01 | 0.07 | 0.02 | <u>2.25</u> | 0.02 | 12 | 0.451 | 0.405 | 0.122 | 1.120 | 0.502 | 0.72         | 0.400 |
| Mangaohoi Stm at South Branch Maru Rd                          | 12 | 0.01 | 0.01 | 0.01 | 0.02 | 0.00 | 1.40        | 0.01 | 12 | 0.269 | 0.250 | 0.152 | 0.490 | 0.118 | 1.01         | 0.240 |
| Mangaokewa Stm at Lawrence St Bridge                           | 12 | 0.01 | 0.01 | 0.01 | 0.03 | 0.01 | 0.83        | 0.01 | 12 | 0.630 | 0.600 | 0.320 | 1.090 | 0.365 | 0.50         | 0.520 |
| Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd               | 12 | 0.05 | 0.03 | 0.01 | 0.16 | 0.07 | 1.09        | 0.05 | 12 | 1.506 | 1.345 | 0.850 | 2.600 | 0.825 | 0.62         | 1.780 |
| Mangapu River at Otorohanga                                    | 11 | 0.05 | 0.04 | 0.01 | 0.09 | 0.04 | 0.27        | 0.03 | 11 | 0.970 | 0.990 | 0.550 | 1.400 | 0.335 | -0.09        | 0.980 |
| Mangatutu Stm (Waikeria) at Walker Rd Br                       | 12 | 0.01 | 0.01 | 0.01 | 0.02 | 0.01 | 0.49        | 0.01 | 12 | 0.496 | 0.495 | 0.134 | 1.120 | 0.450 | 0.56         | 0.400 |
| Mangauika Stm at Te Awamutu Borough W/S Intake                 | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 1.00        | 0.01 | 12 | 0.215 | 0.235 | 0.111 | 0.260 | 0.059 | -1.14        | 0.210 |
| Ohote Stm at Whatawhata/Horotiu Rd                             | 12 | 0.04 | 0.04 | 0.02 | 0.10 | 0.03 | 0.85        | 0.06 | 12 | 0.610 | 0.565 | 0.196 | 1.290 | 0.380 | 0.84         | 0.555 |
| Puniu River at Bartons Corner Rd Br                            | 12 | 0.02 | 0.02 | 0.01 | 0.13 | 0.01 | <u>2.73</u> | 0.02 | 12 | 0.763 | 0.680 | 0.400 | 1.570 | 0.550 | 0.91         | 0.655 |
| Waipa River at Mangaokewa Rd                                   | 12 | 0.01 | 0.01 | 0.01 | 0.02 | 0.00 | <u>2.51</u> | 0.01 | 12 | 0.404 | 0.400 | 0.126 | 0.580 | 0.125 | -0.54        | 0.400 |
| Waipa River at Pirongia-Ngutu Rd Br                            | 12 | 0.03 | 0.02 | 0.01 | 0.08 | 0.03 | 1.08        | 0.02 | 12 | 0.752 | 0.700 | 0.380 | 1.220 | 0.525 | 0.37         | 0.700 |
| Waipa River at SH3 Otorohanga                                  | 12 | 0.02 | 0.02 | 0.01 | 0.04 | 0.02 | 0.44        | 0.01 | 12 | 0.540 | 0.495 | 0.210 | 1.050 | 0.390 | 0.53         | 0.465 |
| Waitomo Stm at SH31 Otorohanga                                 | 11 | 0.02 | 0.01 | 0.01 | 0.04 | 0.03 | 0.85        | 0.01 | 12 | 0.583 | 0.585 | 0.270 | 1.030 | 0.320 | 0.49         | 0.565 |
| Waitomo Stm at Tumutumu Rd                                     | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | <u>3.02</u> | 0.01 | 12 | 0.678 | 0.660 | 0.520 | 0.880 | 0.125 | 0.54         | 0.650 |
| Tributaries to the upper Waikato River                         |    |      |      |      |      |      |             |      |    |       |       |       |       |       |              |       |
| Kawaunui Stm at SH5 Br   | 12 | 0.05 | 0.01 | 0.01 | 0.45 | 0.01 | <u>2.96</u> | 0.02 | 12 | 2.676 | 2.800 | 1.910 | 2.900 | 0.200 | <u>-1.97</u> | 2.500 |
| Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)             | 12 | 0.01 | 0.01 | 0.01 | 0.02 | 0.00 | 1.51        | 0.01 | 12 | 0.609 | 0.595 | 0.480 | 0.760 | 0.230 | 0.11         | 0.525 |
| Mangakara Stm (Reporoa) at SH5                                 | 12 | 0.02 | 0.02 | 0.01 | 0.05 | 0.01 | <u>1.92</u> | 0.02 | 12 | 1.338 | 1.305 | 1.290 | 1.420 | 0.095 | 0.56         | 1.305 |
| Mangakino Stm (Whakamaru) at Sandel Rd                         | 12 | 0.01 | 0.01 | 0.01 | 0.03 | 0.00 | <u>3.02</u> | 0.01 | 12 | 0.674 | 0.655 | 0.520 | 0.860 | 0.120 | 0.17         | 0.625 |
| Otamakokore Stm at Hossack Rd                                  | 12 | 0.01 | 0.01 | 0.01 | 0.06 | 0.00 | <u>2.01</u> | 0.01 | 12 | 0.880 | 0.845 | 0.720 | 1.190 | 0.220 | 0.74         | 0.770 |
| Pueto Stm at Broadlands Rd Br                                  | 12 | 0.01 | 0.01 | 0.01 | 0.03 | 0.01 | <u>2.00</u> | 0.01 | 12 | 0.492 | 0.495 | 0.430 | 0.540 | 0.070 | -0.37        | 0.440 |
| Tahunaatara Stm at Ohakuri Rd                                  | 12 | 0.01 | 0.01 | 0.01 | 0.06 | 0.00 | <u>2.86</u> | 0.01 | 12 | 0.623 | 0.595 | 0.530 | 0.840 | 0.120 | 1.13         | 0.545 |
| Torepatutahi Stm at Vaile Rd Br                                | 12 | 0.01 | 0.01 | 0.01 | 0.03 | 0.01 | 1.65        | 0.01 | 12 | 0.530 | 0.535 | 0.390 | 0.670 | 0.120 | 0.06         | 0.520 |
| Waiotapu Stm at Campbell Rd Br                                 | 12 | 0.79 | 0.79 | 0.67 | 0.88 | 0.13 | -0.26       | 0.85 | 12 | 0.958 | 0.945 | 0.760 | 1.130 | 0.130 | -0.09        | 0.880 |
| Waiotapu Stm at Homestead Rd Br                                | 12 | 0.26 | 0.24 | 0.13 | 0.44 | 0.16 | 0.16        | 0.31 | 12 | 1.335 | 1.355 | 1.220 | 1.410 | 0.085 | -0.67        | 1.355 |
| Waipapa Stm (Mokai) at Tirohanga Rd Br                         | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | <u>3.02</u> | 0.01 | 12 | 1.177 | 1.175 | 1.020 | 1.380 | 0.170 | 0.38         | 1.205 |
| Whirinaki Stm at Corbett Rd                                    | 12 | 0.01 | 0.01 | 0.01 | 0.03 | 0.00 | <u>2.75</u> | 0.01 | 12 | 0.809 | 0.795 | 0.760 | 0.940 | 0.075 | 1.18         | 0.730 |
| West Coast   |    |      |      |      |      |      |             |      |    |       |       |       |       |       |              |       |
| Awakino River at Gribbon Rd                                    | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 1.00        | 0.01 | 12 | 0.101 | 0.102 | 0.032 | 0.186 | 0.114 | 0.17         | 0.102 |
| Awakino River at SH3 Awakau Rd Junction                        | 12 | 0.01 | 0.01 | 0.01 | 0.04 | 0.01 | 1.50        | 0.01 | 12 | 0.201 | 0.260 | 0.003 | 0.420 | 0.282 | -0.10        | 0.210 |
| Manganui River at Off Manganui Rd                              | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | <u>1.86</u> | 0.01 | 12 | 0.122 | 0.115 | 0.003 | 0.270 | 0.205 | 0.07         | 0.118 |
| Mangaotaki River at SH3 Br                                     | 12 | 0.01 | 0.01 | 0.01 | 0.02 | 0.01 | 0.60        | 0.01 | 12 | 0.683 | 0.650 | 0.370 | 1.070 | 0.380 | 0.29         | 0.650 |
| Marokopa River at Speedies Rd (Off Te Anga Rd)                 | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 1.00        | 0.01 | 12 | 0.270 | 0.250 | 0.119 | 0.460 | 0.148 | 0.45         | 0.260 |
| Mokau River at Awakau Rd                                       | 12 | 0.01 | 0.01 | 0.01 | 0.04 | 0.01 | 1.31        | 0.01 | 12 | 0.468 | 0.430 | 0.129 | 1.000 | 0.400 | 0.47         | 0.430 |
| Mokau River at Mangaokewa Rd (Off SH30)                        | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | <u>3.02</u> | 0.01 | 12 | 0.372 | 0.350 | 0.220 | 0.660 | 0.230 | 0.64         | 0.275 |
| Mokau River at Totoro Rd Recorder                              | 12 | 0.01 | 0.01 | 0.01 | 0.03 | 0.01 | <u>1.75</u> | 0.01 | 12 | 0.612 | 0.555 | 0.290 | 1.140 | 0.410 | 0.56         | 0.540 |
| Mokauiti Stm at Three Way Point - Aria                         | 12 | 0.02 | 0.02 | 0.01 | 0.04 | 0.03 | 0.20        | 0.02 | 12 | 0.387 | 0.330 | 0.085 | 0.930 | 0.447 | 0.62         | 0.310 |
| Ohautira Stm at Waingarō Te Uku Rd                             | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | <u>3.02</u> | 0.01 | 12 | 0.326 | 0.320 | 0.026 | 0.700 | 0.363 | 0.21         | 0.260 |
| Oparau River at Langdon Rd (Off Okupata Rd)                    | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 1.00        | 0.01 | 12 | 0.138 | 0.102 | 0.006 | 0.480 | 0.217 | 1.04         | 0.072 |
| Tawarau River at Off Speedies Rd                               | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | <u>3.02</u> | 0.01 | 12 | 0.318 | 0.320 | 0.167 | 0.500 | 0.160 | 0.31         | 0.290 |
| Waingarō River (Pukemiro) at Ruakiwi Rd Off SH22               | 12 | 0.01 | 0.01 | 0.01 | 0.03 | 0.01 | 1.27        | 0.01 | 12 | 0.471 | 0.365 | 0.004 | 1.150 | 0.625 | 0.46         | 0.390 |
| Waitetuna River at Te Uku-Waingarō Rd                          | 12 | 0.01 | 0.01 | 0.01 | 0.03 | 0.01 | 1.03        | 0.01 | 12 | 0.425 | 0.355 | 0.153 | 0.840 | 0.290 | 0.73         | 0.345 |
| Inflows to Lake Taupo  |    |      |      |      |      |      |             |      |    |       |       |       |       |       |              |       |
| Hinemaiaia River at SH1  | 12 | 0.01 | 0.01 | 0.01 | 0.02 | 0.00 | <u>3.02</u> | 0.01 | 12 | 0.072 | 0.071 | 0.020 | 0.129 | 0.070 | 0.14         | 0.067 |
| Kuratau River at SH41 Moerangi                                 | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 1.00        | 0.01 | 12 | 0.175 | 0.143 | 0.085 | 0.290 | 0.126 | 0.48         | 0.091 |
| Kuratau River at 43 Te Rae Street                              | 12 | 0.01 | 0.01 | 0.01 | 0.02 | 0.00 | 1.45        | 0.01 | 12 | 0.622 | 0.605 | 0.390 | 0.850 | 0.140 | 0.27         | 0.620 |
| Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)        | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.71        | 0.01 | 12 | 0.803 | 0.795 | 0.690 | 0.940 | 0.110 | 0.31         | 0.740 |
| Tauranga-Taupo River at 20 Metres U/S SH1 Bridge               | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 1.00        | 0.01 | 12 | 0.062 | 0.065 | 0.018 | 0.099 | 0.058 | -0.22        | 0.069 |
| Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal | 12 | 0.03 | 0.01 | 0.01 | 0.14 | 0.01 | <u>1.77</u> | 0.01 | 12 | 0.022 | 0.003 | 0.001 | 0.230 | 0.006 | <u>3.01</u>  | 0.002 |
| Tokaanu Stm at Off SH41 Turangi                                | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 1.00        | 0.01 | 12 | 0.479 | 0.475 | 0.450 | 0.510 | 0.020 | 0.47         | 0.450 |
| Waihaha River at SH32  | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 1.00        | 0.01 | 12 | 0.122 | 0.118 | 0.085 | 0.164 | 0.043 | 0.29         | 0.110 |
| Waitahanui River at Blake Rd                                   | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 1.00        | 0.01 | 12 | 0.441 | 0.440 | 0.410 | 0.480 | 0.025 | 0.65         | 0.440 |
| Whangamata Stm (Kinloch) at Whangamata Rd                      | 12 | 0.01 | 0.01 | 0.01 | 0.02 | 0.00 | 1.54        | 0.01 | 12 | 1.675 | 1.670 | 1.580 | 1.790 | 0.055 | 0.38         | 1.545 |
| Whanganui Stm at Lakeside Lake Taupo                           | 12 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | <u>3.02</u> | 0.01 | 12 | 0.341 | 0.335 | 0.260 | 0.440 | 0.065 | 0.33         | 0.320 |
| Whareroa Stm (Taupo District) at Lakeside Lake Taupo           | 12 | 0.01 | 0.01 | 0.01 | 0.02 | 0.00 | <u>3.02</u> | 0.01 | 12 | 0.768 | 0.735 | 0.630 | 0.940 | 0.215 | 0.43         | 0.725 |

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

Total Kjeldahl Nitrogen (g/m<sup>3</sup>)

Total Nitrogen (g/m<sup>3</sup>)

| Location  | Count | Mean | Median | Min  | Max  | IQR  | Skew        | 08-12<br>Median |
|---|-------|------|--------|------|------|------|-------------|-----------------|
| <b>Coromandel</b>                                       |       |      |        |      |      |      |             |                 |
| Hikutaiia River at Old Maratoto Rd                      | 12    | 0.09 | 0.07   | 0.03 | 0.43 | 0.03 | <u>2.70</u> | 0.08            |
| Kauaeranga River at Smiths Cableway/Recorder            | 12    | 0.14 | 0.13   | 0.03 | 0.27 | 0.12 | 0.14        | 0.08            |
| Ohinemuri River at Queens Head                          | 11    | 0.47 | 0.50   | 0.18 | 1.03 | 0.44 | 0.58        | 0.28            |
| Ohinemuri River at SH25 Br                              | 12    | 0.16 | 0.14   | 0.03 | 0.47 | 0.06 | 1.49        | 0.15            |
| Tairua River at Morrisons Br Hikuai                     | 12    | 0.08 | 0.07   | 0.03 | 0.26 | 0.04 | <u>1.73</u> | 0.07            |
| Tapu River at Tapu-Coroglen Rd                          | 12    | 0.08 | 0.07   | 0.03 | 0.33 | 0.06 | <u>2.50</u> | 0.06            |
| Waiau River at E309 Rd Ford                             | 12    | 0.08 | 0.07   | 0.03 | 0.32 | 0.08 | <u>1.98</u> | 0.07            |
| Waitekauri River at U/S Ohinemuri Conflu                | 11    | 0.13 | 0.11   | 0.03 | 0.26 | 0.07 | 0.77        | 0.11            |
| Waiwawa River at SH25 Coroglen                          | 12    | 0.08 | 0.08   | 0.03 | 0.24 | 0.06 | 1.47        | 0.07            |
| Wharekawa River at SH25                                 | 12    | 0.11 | 0.09   | 0.03 | 0.35 | 0.06 | 1.54        | 0.09            |
| <b>Hauraki</b>  |       |      |        |      |      |      |             |                 |
| Mangawhero Stm (Kaihere) at Mangawara Rd                | 12    | 0.23 | 0.13   | 0.06 | 1.29 | 0.11 | <u>2.84</u> | 0.13            |
| Oraka Stm at Lake Rd                                    | 12    | 0.38 | 0.32   | 0.12 | 1.07 | 0.19 | <u>1.81</u> | 0.32            |
| Piako River at Kiwitahi                                 | 12    | 0.41 | 0.37   | 0.18 | 0.80 | 0.18 | 1.08        | 0.41            |
| Piako River at Paeroa-Tahuna Rd Br                      | 12    | 0.64 | 0.50   | 0.38 | 1.45 | 0.46 | 1.26        | 0.70            |
| Piakonui Stm at Piakonui Rd                             | 12    | 0.16 | 0.16   | 0.08 | 0.23 | 0.05 | -0.03       | 0.17            |
| Waihou River at Okauia                                  | 12    | 0.26 | 0.23   | 0.10 | 0.82 | 0.11 | <u>2.29</u> | 0.24            |
| Waihou River at Whites Rd                               | 12    | 0.04 | 0.03   | 0.03 | 0.07 | 0.03 | 0.59        | 0.03            |
| Waiohotu Stm at Waiohotu Rd (Off SH5)                   | 12    | 0.12 | 0.11   | 0.07 | 0.18 | 0.07 | 0.29        | 0.14            |
| Waiomou Stm at Matamata-Tauranga Rd                     | 12    | 0.28 | 0.21   | 0.09 | 0.73 | 0.22 | 1.35        | 0.20            |
| Waitakaruru River (Hauraki Plains) at Coxhead Rd Br     | 12    | 0.46 | 0.42   | 0.22 | 0.89 | 0.31 | 0.82        | 0.41            |
| Waitoa River at Landsdowne Rd Br                        | 12    | 0.44 | 0.36   | 0.20 | 0.85 | 0.27 | 0.89        | 0.45            |
| Waitoa River at Mellon Rd Recorder                      | 12    | 0.67 | 0.52   | 0.28 | 1.39 | 0.46 | 0.98        | 0.51            |
| <b>Tributaries to the lower Waikato River</b>           |       |      |        |      |      |      |             |                 |
| Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd    | 12    | 0.84 | 0.57   | 0.43 | 2.20 | 0.52 | 1.56        | 0.56            |
| Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd | 12    | 0.33 | 0.27   | 0.16 | 0.83 | 0.07 | <u>1.95</u> | 0.33            |
| Karapiro Stm at Hickey Rd Bridge                        | 12    | 0.32 | 0.30   | 0.12 | 0.49 | 0.16 | 0.12        | 0.32            |
| Kirikiriira Stm at Tauhara Dr                           | 12    | 0.72 | 0.62   | 0.34 | 1.17 | 0.37 | 0.32        | 0.70            |
| Komakorau Stm at Henry Rd                               | 12    | 1.67 | 1.64   | 1.14 | 2.20 | 0.44 | -0.10       | 1.78            |
| Little Waipa Stm at Arapuni - Putaruru Rd               | 12    | 0.29 | 0.20   | 0.07 | 1.34 | 0.11 | <u>2.64</u> | 0.19            |
| Mangakotukutuku Stm (Rukuhia) at Peacockes Rd           | 12    | 1.08 | 0.99   | 0.45 | 2.00 | 0.72 | 0.55        | 1.20            |
| Mangamingi Stm (Tokoroa) at Paraonui Rd Br              | 12    | 0.61 | 0.56   | 0.32 | 1.15 | 0.27 | 0.92        | 0.56            |
| Mangaone Stm at Annebrooke Rd Br                        | 12    | 0.45 | 0.38   | 0.28 | 0.92 | 0.18 | 1.39        | 0.48            |
| Mangaonua Stm at Hoeka Rd                               | 12    | 0.23 | 0.21   | 0.12 | 0.32 | 0.09 | 0.09        | 0.22            |
| Mangaonua Stm at Te Miro Rd                             | 12    | 0.43 | 0.36   | 0.23 | 0.83 | 0.17 | 1.27        | 0.45            |
| Mangatangi River at SH2 Maramarua                       | 12    | 0.46 | 0.34   | 0.19 | 1.46 | 0.33 | <u>2.07</u> | 0.35            |
| Mangatawhiri River at Lyons Rd At Buckingham Br         | 12    | 0.19 | 0.15   | 0.08 | 0.41 | 0.09 | 1.28        | 0.14            |
| Mangawara Stm at Rutherford Rd Br                       | 12    | 1.27 | 1.28   | 0.72 | 2.10 | 0.51 | 0.52        | 1.20            |
| Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd       | 12    | 0.99 | 0.78   | 0.54 | 1.78 | 0.65 | 0.76        | 0.84            |
| Matahuru Stm at Waiterimu Road Below Confluence         | 12    | 0.75 | 0.58   | 0.34 | 1.96 | 0.35 | 1.67        | 0.61            |
| Ohaeroa Stm at SH22 Br                                  | 12    | 0.31 | 0.30   | 0.14 | 0.59 | 0.16 | 0.73        | 0.30            |
| Opuatia Stm at Ponganui Rd                              | 12    | 0.49 | 0.32   | 0.17 | 1.85 | 0.33 | <u>2.39</u> | 0.32            |
| Pokaiwhenua Stm at Arapuni - Putaruru Rd                | 12    | 0.32 | 0.29   | 0.16 | 0.90 | 0.13 | <u>2.28</u> | 0.26            |
| Waerenga Stm at Taniwha Rd                              | 12    | 0.35 | 0.26   | 0.17 | 0.96 | 0.11 | <u>1.86</u> | 0.26            |
| Waitawhiriwhiri Stm at Edgcombe Street                  | 12    | 1.22 | 1.28   | 0.93 | 1.42 | 0.27 | -0.40       | 1.28            |
| Whakapipi Stm at SH22 Br                                | 12    | 0.44 | 0.36   | 0.27 | 0.97 | 0.14 | <u>1.73</u> | 0.43            |
| Whakauru Stm at U/S SH1 Br                              | 12    | 0.32 | 0.20   | 0.12 | 1.05 | 0.08 | <u>1.97</u> | 0.19            |
| Whangamarino River at Island Block Rd                   | 12    | 1.92 | 1.85   | 0.92 | 3.30 | 0.61 | 0.77        | 1.71            |
| Whangamarino River at Jefferies Rd Br                   | 12    | 0.57 | 0.42   | 0.26 | 1.46 | 0.27 | 1.53        | 0.47            |
| Whangape Stm at Rangiri-Glen Murray Rd                  | 12    | 1.67 | 1.52   | 0.40 | 3.50 | 1.89 | 0.27        | 1.95            |

| Count   | Mean | Median | Min  | Max  | IQR  | Skew        | 08-12<br>Median |
|---|------|--------|------|------|------|-------------|-----------------|
| 12  | 0.17 | 0.09   | 0.03 | 0.68 | 0.13 | <u>1.93</u> | 0.12            |
| 12  | 0.19 | 0.17   | 0.04 | 0.39 | 0.17 | 0.43        | 0.12            |
| 11  | 1.55 | 1.58   | 0.43 | 2.41 | 0.56 | -0.52       | 1.41            |
| 12  | 0.74 | 0.69   | 0.42 | 1.04 | 0.34 | 0.09        | 0.63            |
| 12  | 0.13 | 0.09   | 0.04 | 0.38 | 0.04 | <u>1.72</u> | 0.09            |
| 12  | 0.09 | 0.07   | 0.03 | 0.39 | 0.07 | <u>2.51</u> | 0.07            |
| 12  | 0.14 | 0.10   | 0.04 | 0.59 | 0.13 | <u>2.26</u> | 0.12            |
| 11  | 0.32 | 0.29   | 0.12 | 0.68 | 0.21 | 0.96        | 0.24            |
| 12  | 0.10 | 0.08   | 0.03 | 0.28 | 0.07 | 1.51        | 0.08            |
| 12  | 0.21 | 0.16   | 0.10 | 0.54 | 0.16 | 1.35        | 0.14            |
| <b>Hauraki</b>                                |      |        |      |      |      |             |                 |
| 12  | 0.62 | 0.50   | 0.38 | 1.62 | 0.25 | <u>2.24</u> | 0.45            |
| 12  | 2.70 | 2.57   | 2.22 | 3.61 | 0.81 | 0.66        | 2.40            |
| 12  | 1.47 | 1.30   | 0.36 | 3.53 | 1.42 | 0.85        | 1.40            |
| 12  | 2.00 | 2.12   | 0.67 | 3.36 | 0.77 | -0.16       | 2.20            |
| 12  | 0.45 | 0.39   | 0.24 | 0.92 | 0.18 | 1.48        | 0.43            |
| 12  | 1.47 | 1.46   | 1.19 | 1.95 | 0.34 | 0.51        | 1.42            |
| 12  | 0.78 | 0.78   | 0.75 | 0.84 | 0.04 | 0.72        | 0.76            |
| 12  | 0.29 | 0.29   | 0.22 | 0.36 | 0.05 | 0.04        | 0.32            |
| 12  | 0.85 | 0.79   | 0.49 | 1.62 | 0.46 | 0.96        | 0.71            |
| 12  | 0.81 | 0.66   | 0.31 | 1.91 | 0.49 | 1.30        | 0.72            |
| 12  | 1.88 | 1.85   | 1.25 | 2.43 | 0.63 | -0.05       | 1.92            |
| 12  | 2.64 | 2.61   | 1.80 | 3.69 | 0.62 | 0.43        | 2.64            |
| <b>Tributaries to the lower Waikato River</b> |      |        |      |      |      |             |                 |
| 12  | 2.17 | 2.02   | 1.50 | 3.45 | 0.72 | 1.04        | 2.14            |
| 12  | 0.98 | 0.98   | 0.42 | 1.52 | 0.70 | -0.16       | 1.00            |
| 12  | 1.00 | 0.81   | 0.49 | 2.23 | 0.64 | 1.20        | 0.90            |
| 12  | 1.62 | 1.54   | 1.11 | 2.43 | 0.61 | 0.65        | 1.61            |
| 12  | 3.39 | 3.01   | 2.46 | 7.00 | 0.67 | <u>2.45</u> | 3.13            |
| 12  | 2.04 | 1.80   | 1.69 | 3.16 | 0.44 | 1.50        | 1.80            |
| 12  | 1.96 | 1.89   | 1.24 | 3.41 | 0.80 | 0.97        | 1.99            |
| 12  | 3.27 | 3.25   | 2.83 | 3.69 | 0.58 | 0.17        | 3.52            |
| 12  | 3.00 | 3.05   | 2.56 | 3.29 | 0.33 | -0.61       | 3.14            |
| 12  | 0.81 | 0.74   | 0.50 | 1.52 | 0.38 | 1.17        | 0.72            |
| 12  | 1.92 | 1.92   | 1.67 | 2.30 | 0.30 | 0.51        | 2.06            |
| 12  | 0.72 | 0.49   | 0.25 | 2.37 | 0.48 | <u>1.99</u> | 0.56            |
| 12  | 0.25 | 0.17   | 0.09 | 0.78 | 0.10 | <u>1.71</u> | 0.18            |
| 12  | 2.28 | 2.02   | 1.40 | 5.20 | 0.67 | <u>2.17</u> | 2.11            |
| 12  | 3.14 | 3.11   | 2.86 | 3.78 | 0.29 | 1.31        | 3.06            |
| 12  | 1.54 | 1.33   | 0.49 | 3.07 | 0.40 | 1.17        | 1.33            |
| 12  | 1.77 | 1.79   | 1.31 | 2.26 | 0.45 | 0.09        | 1.82            |
| 12  | 1.23 | 1.04   | 0.90 | 2.55 | 0.45 | <u>1.96</u> | 1.11            |
| 12  | 2.22 | 2.20   | 1.86 | 2.61 | 0.39 | 0.22        | 2.03            |
| 12  | 1.28 | 1.27   | 0.65 | 2.10 | 0.42 | 0.39        | 1.19            |
| 12  | 2.07 | 2.07   | 1.29 | 2.67 | 0.21 | -0.77       | 2.17            |
| 12  | 3.91 | 3.91   | 2.73 | 5.07 | 1.05 | -0.15       | 4.28            |
| 12  | 0.63 | 0.52   | 0.37 | 1.29 | 0.23 | 1.47        | 0.38            |
| 12  | 2.16 | 2.10   | 1.18 | 3.35 | 0.77 | 0.47        | 1.92            |
| 12  | 1.33 | 1.09   | 0.57 | 3.34 | 0.62 | 1.59        | 1.09            |
| 12  | 1.86 | 1.70   | 0.82 | 3.50 | 1.55 | 0.36        | 2.04            |

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

| Waipa River and Tributaries                                    |    |      |      |      |      |      |             |      |    |      |      |      |      |      |             |      |
|--|----|------|------|------|------|------|-------------|------|----|------|------|------|------|------|-------------|------|
| Kaniwhaniwha Stm at Wright Rd                                  | 12 | 0.22 | 0.17 | 0.09 | 0.46 | 0.16 | 0.78        | 0.24 | 12 | 0.67 | 0.57 | 0.26 | 1.43 | 0.46 | 0.94        | 0.66 |
| Mangaohoi Stm at South Branch Maru Rd                          | 12 | 0.13 | 0.13 | 0.08 | 0.19 | 0.03 | 0.19        | 0.13 | 12 | 0.40 | 0.37 | 0.30 | 0.63 | 0.13 | 1.00        | 0.38 |
| Mangaokewa Stm at Lawrence St Bridge                           | 12 | 0.28 | 0.22 | 0.11 | 0.65 | 0.16 | 1.24        | 0.25 | 12 | 0.91 | 0.96 | 0.51 | 1.39 | 0.51 | 0.01        | 0.81 |
| Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd               | 12 | 0.67 | 0.60 | 0.31 | 1.94 | 0.27 | <u>2.40</u> | 0.65 | 12 | 2.18 | 1.83 | 1.16 | 3.70 | 1.04 | 0.67        | 2.46 |
| Mangapu River at Otorohanga                                    | 11 | 0.42 | 0.36 | 0.13 | 1.22 | 0.28 | <u>1.73</u> | 0.36 | 12 | 1.28 | 1.32 | 0.00 | 2.21 | 0.76 | -0.57       | 1.31 |
| Mangatutu Stm (Waikeria) at Walker Rd Br                       | 12 | 0.15 | 0.14 | 0.06 | 0.32 | 0.12 | 0.78        | 0.19 | 12 | 0.65 | 0.64 | 0.22 | 1.34 | 0.52 | 0.43        | 0.59 |
| Manguaika Stm at Te Awamutu Borough W/S Intake                 | 12 | 0.05 | 0.03 | 0.03 | 0.14 | 0.07 | 0.90        | 0.07 | 12 | 0.27 | 0.27 | 0.20 | 0.38 | 0.06 | 0.72        | 0.27 |
| Ohote Stm at Whatawhata/Horotiu Rd                             | 12 | 0.77 | 0.72 | 0.48 | 1.06 | 0.34 | 0.22        | 0.82 | 12 | 1.38 | 1.35 | 0.73 | 2.33 | 0.64 | 0.59        | 1.36 |
| Puniu River at Bartons Corner Rd Br                            | 12 | 0.33 | 0.22 | 0.09 | 1.35 | 0.17 | <u>2.63</u> | 0.30 | 12 | 1.09 | 0.94 | 0.50 | 2.39 | 0.64 | 1.16        | 0.99 |
| Waipa River at Mangaokewa Rd                                   | 12 | 0.21 | 0.17 | 0.09 | 0.55 | 0.15 | 1.40        | 0.22 | 12 | 0.62 | 0.65 | 0.38 | 0.86 | 0.19 | -0.07       | 0.64 |
| Waipa River at Pirongia-Ngutunui Rd Br                         | 12 | 0.34 | 0.29 | 0.14 | 0.72 | 0.21 | 1.03        | 0.29 | 12 | 1.09 | 0.97 | 0.58 | 1.94 | 0.65 | 0.71        | 0.98 |
| Waipa River at SH3 Otorohanga                                  | 12 | 0.27 | 0.21 | 0.11 | 0.86 | 0.18 | <u>2.09</u> | 0.23 | 12 | 0.81 | 0.78 | 0.34 | 1.34 | 0.51 | 0.17        | 0.73 |
| Waitomo Stm at SH31 Otorohanga                                 | 12 | 0.25 | 0.24 | 0.12 | 0.47 | 0.14 | 0.75        | 0.24 | 12 | 0.84 | 0.86 | 0.44 | 1.43 | 0.31 | 0.65        | 0.83 |
| Waitomo Stm at Tumutumu Rd                                     | 12 | 0.15 | 0.11 | 0.06 | 0.49 | 0.07 | <u>1.94</u> | 0.12 | 12 | 0.83 | 0.83 | 0.62 | 1.37 | 0.16 | <u>1.80</u> | 0.81 |
| Tributaries to the upper Waikato River                         |    |      |      |      |      |      |             |      |    |      |      |      |      |      |             |      |
| Kawaunui Stm at SH5 Br   | 12 | 0.67 | 0.32 | 0.16 | 4.10 | 0.13 | <u>2.79</u> | 0.34 | 12 | 3.35 | 3.07 | 2.87 | 6.01 | 0.25 | <u>2.78</u> | 2.96 |
| Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)             | 12 | 0.19 | 0.16 | 0.10 | 0.42 | 0.08 | 1.56        | 0.17 | 12 | 0.80 | 0.75 | 0.62 | 1.13 | 0.25 | 0.64        | 0.69 |
| Mangakara Stm (Reporoa) at SH5                                 | 12 | 0.31 | 0.25 | 0.17 | 0.88 | 0.06 | <u>2.42</u> | 0.27 | 12 | 1.64 | 1.59 | 1.48 | 2.18 | 0.12 | <u>2.27</u> | 1.65 |
| Mangakino Stm (Whakamaru) at Sandel Rd                         | 12 | 0.13 | 0.08 | 0.06 | 0.35 | 0.08 | 1.60        | 0.10 | 12 | 0.80 | 0.78 | 0.61 | 1.07 | 0.22 | 0.47        | 0.76 |
| Otamakokore Stm at Hossack Rd                                  | 12 | 0.26 | 0.21 | 0.12 | 0.67 | 0.10 | <u>1.91</u> | 0.24 | 12 | 1.14 | 1.05 | 0.85 | 1.60 | 0.39 | 0.69        | 1.09 |
| Pueto Stm at Broadlands Rd Br                                  | 12 | 0.10 | 0.10 | 0.06 | 0.14 | 0.03 | 0.43        | 0.09 | 12 | 0.59 | 0.59 | 0.50 | 0.68 | 0.08 | 0.04        | 0.54 |
| Tahunaatara Stm at Ohakuri Rd                                  | 12 | 0.32 | 0.18 | 0.11 | 1.30 | 0.17 | <u>2.29</u> | 0.19 | 12 | 0.94 | 0.85 | 0.67 | 1.83 | 0.39 | 1.63        | 0.77 |
| Torepatutahi Stm at Vaile Rd Br                                | 12 | 0.11 | 0.11 | 0.07 | 0.21 | 0.06 | 0.93        | 0.12 | 12 | 0.64 | 0.66 | 0.50 | 0.78 | 0.13 | -0.11       | 0.66 |
| Waiotapu Stm at Campbell Rd Br                                 | 12 | 0.95 | 0.91 | 0.81 | 1.39 | 0.12 | <u>2.24</u> | 1.01 | 12 | 1.91 | 1.90 | 1.78 | 2.15 | 0.16 | 0.74        | 1.93 |
| Waiotapu Stm at Homestead Rd Br                                | 12 | 0.58 | 0.50 | 0.35 | 1.25 | 0.22 | <u>1.91</u> | 0.62 | 12 | 1.91 | 1.81 | 1.72 | 2.65 | 0.28 | <u>1.94</u> | 1.93 |
| Waipapa Stm (Mokai) at Tirohanga Rd Br                         | 12 | 0.18 | 0.18 | 0.11 | 0.29 | 0.07 | 0.68        | 0.17 | 12 | 1.35 | 1.34 | 1.16 | 1.67 | 0.20 | 0.73        | 1.37 |
| Whirinaki Stm at Corbett Rd                                    | 12 | 0.06 | 0.06 | 0.03 | 0.10 | 0.06 | 0.14        | 0.06 | 12 | 0.86 | 0.84 | 0.79 | 1.03 | 0.06 | 1.28        | 0.79 |
| West Coast   |    |      |      |      |      |      |             |      |    |      |      |      |      |      |             |      |
| Awakino River at Gribbon Rd                                    | 12 | 0.05 | 0.03 | 0.03 | 0.13 | 0.05 | 1.07        | 0.06 | 12 | 0.15 | 0.15 | 0.08 | 0.24 | 0.12 | 0.07        | 0.15 |
| Awakino River at SH3 Awakau Rd Junction                        | 12 | 0.17 | 0.11 | 0.06 | 0.78 | 0.08 | <u>2.75</u> | 0.13 | 12 | 0.37 | 0.39 | 0.08 | 1.08 | 0.32 | 1.40        | 0.38 |
| Manganui River at Off Manganui Rd                              | 12 | 0.15 | 0.12 | 0.03 | 0.43 | 0.14 | 1.10        | 0.10 | 12 | 0.27 | 0.26 | 0.03 | 0.67 | 0.25 | 0.64        | 0.21 |
| Mangaotaki River at SH3 Br                                     | 12 | 0.29 | 0.18 | 0.11 | 0.88 | 0.23 | 1.58        | 0.19 | 12 | 0.97 | 1.01 | 0.56 | 1.39 | 0.53 | -0.06       | 0.91 |
| Marokopa River at Speedies Rd (Off Te Anga Rd)                 | 12 | 0.13 | 0.13 | 0.03 | 0.28 | 0.07 | 0.68        | 0.13 | 12 | 0.40 | 0.39 | 0.21 | 0.66 | 0.19 | 0.45        | 0.42 |
| Mokau River at Awakau Rd                                       | 12 | 0.43 | 0.31 | 0.17 | 1.52 | 0.23 | <u>2.15</u> | 0.28 | 12 | 0.90 | 0.79 | 0.39 | 2.26 | 0.46 | 1.61        | 0.76 |
| Mokau River at Mangaokewa Rd (Off SH30)                        | 12 | 0.35 | 0.21 | 0.12 | 1.22 | 0.19 | <u>1.83</u> | 0.21 | 12 | 0.72 | 0.65 | 0.40 | 1.58 | 0.46 | 1.25        | 0.52 |
| Mokau River at Totoro Rd Recorder                              | 12 | 0.30 | 0.25 | 0.12 | 0.86 | 0.17 | <u>1.87</u> | 0.24 | 12 | 0.92 | 0.87 | 0.53 | 1.50 | 0.63 | 0.26        | 0.84 |
| Mokauiti Stm at Three Way Point - Aria                         | 12 | 0.35 | 0.27 | 0.17 | 1.16 | 0.14 | <u>2.58</u> | 0.33 | 12 | 0.73 | 0.63 | 0.32 | 1.53 | 0.53 | 0.88        | 0.66 |
| Ohautira Stm at Waingaro Te Uku Rd                             | 12 | 0.19 | 0.13 | 0.06 | 0.71 | 0.12 | <u>2.20</u> | 0.16 | 12 | 0.51 | 0.47 | 0.15 | 1.33 | 0.45 | 1.02        | 0.44 |
| Oparau River at Langdon Rd (Off Okupata Rd)                    | 12 | 0.10 | 0.09 | 0.03 | 0.22 | 0.05 | 0.99        | 0.11 | 12 | 0.24 | 0.15 | 0.10 | 0.60 | 0.20 | 1.16        | 0.22 |
| Tawarau River at Off Speedies Rd                               | 12 | 0.12 | 0.10 | 0.06 | 0.32 | 0.06 | <u>2.16</u> | 0.13 | 12 | 0.44 | 0.40 | 0.29 | 0.67 | 0.18 | 0.61        | 0.46 |
| Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22               | 12 | 0.30 | 0.25 | 0.17 | 0.63 | 0.12 | 1.39        | 0.27 | 12 | 0.77 | 0.70 | 0.23 | 1.55 | 0.64 | 0.53        | 0.69 |
| Waitetuna River at Te Uku-Waingaro Rd                          | 12 | 0.27 | 0.19 | 0.10 | 0.92 | 0.22 | <u>2.16</u> | 0.21 | 12 | 0.69 | 0.58 | 0.25 | 1.76 | 0.25 | 1.64        | 0.56 |
| Inflows to Lake Taupo  |    |      |      |      |      |      |             |      |    |      |      |      |      |      |             |      |
| Hinemaiaia River at SH1  | 12 | 0.07 | 0.07 | 0.03 | 0.17 | 0.05 | 0.74        | 0.07 | 12 | 0.15 | 0.12 | 0.09 | 0.25 | 0.06 | 0.94        | 0.13 |
| Kuratau River at SH41 Moerangi                                 | 12 | 0.11 | 0.08 | 0.03 | 0.40 | 0.05 | <u>2.39</u> | 0.08 | 12 | 0.29 | 0.26 | 0.16 | 0.55 | 0.17 | 0.87        | 0.18 |
| Kuratau River at 43 Te Rae Street                              | 12 | 0.16 | 0.17 | 0.10 | 0.19 | 0.04 | -0.70       | 0.15 | 12 | 0.78 | 0.75 | 0.58 | 0.96 | 0.14 | 0.17        | 0.77 |
| Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)        | 12 | 0.20 | 0.18 | 0.13 | 0.32 | 0.05 | 1.10        | 0.21 | 12 | 1.00 | 0.99 | 0.87 | 1.19 | 0.09 | 0.81        | 0.97 |
| Tauranga-Taupo River at 20 Metres U/S SH1 Bridge               | 12 | 0.05 | 0.03 | 0.03 | 0.11 | 0.04 | 1.02        | 0.03 | 12 | 0.11 | 0.11 | 0.05 | 0.21 | 0.05 | 0.84        | 0.11 |
| Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal | 12 | 0.12 | 0.11 | 0.05 | 0.35 | 0.07 | 1.67        | 0.11 | 12 | 0.15 | 0.11 | 0.05 | 0.46 | 0.07 | <u>1.69</u> | 0.11 |
| Tokaanu Stm at Off SH41 Turangi                                | 12 | 0.03 | 0.03 | 0.03 | 0.07 | 0.00 | <u>1.86</u> | 0.03 | 12 | 0.51 | 0.51 | 0.48 | 0.57 | 0.04 | 0.83        | 0.48 |
| Waihaha River at SH32  | 12 | 0.07 | 0.06 | 0.03 | 0.13 | 0.09 | 0.33        | 0.06 | 12 | 0.19 | 0.20 | 0.13 | 0.29 | 0.07 | 0.39        | 0.17 |
| Waitahanui River at Blake Rd                                   | 12 | 0.07 | 0.07 | 0.03 | 0.18 | 0.08 | 0.88        | 0.06 | 12 | 0.51 | 0.50 | 0.46 | 0.63 | 0.06 | 1.33        | 0.51 |
| Whangamata Stm (Kinloch) at Whangamata Rd                      | 12 | 0.13 | 0.12 | 0.07 | 0.25 | 0.06 | 0.95        | 0.15 | 12 | 1.81 | 1.81 | 1.72 | 1.94 | 0.09 | 0.57        | 1.71 |
| Whanganui Stm at Lakeside Lake Taupo                           | 12 | 0.10 | 0.10 | 0.03 | 0.16 | 0.03 | -0.14       | 0.09 | 12 | 0.44 | 0.43 | 0.36 | 0.54 | 0.09 | 0.52        | 0.43 |
| Whareroa Stm (Taupo District) at Lakeside Lake Taupo           | 12 | 0.17 | 0.15 | 0.09 | 0.44 | 0.05 | <u>2.32</u> | 0.16 | 12 | 0.94 | 0.88 | 0.79 | 1.38 | 0.21 | 1.51        | 0.89 |

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

Turbidity (NTU)

| Location  | Count | Mean | Median | Min  | Max   | IQR  | Skew        | 08-12<br>Median |
|---|-------|------|--------|------|-------|------|-------------|-----------------|
| <b>Coromandel</b>                                       |       |      |        |      |       |      |             |                 |
| Hikutaia River at Old Maratoto Rd                       | 12    | 4.4  | 1.4    | 0.7  | 34.0  | 0.8  | <u>2.93</u> | 1.5             |
| Kauaeranga River at Smiths Cableway/Recorder            | 12    | 4.4  | 2.4    | 0.4  | 22.0  | 5.2  | <u>2.31</u> | 1.2             |
| Ohinemuri River at Queens Head                          | 11    | 5.2  | 1.8    | 1.0  | 31.0  | 2.7  | <u>2.64</u> | 1.2             |
| Ohinemuri River at SH25 Br                              | 12    | 2.0  | 1.1    | 0.6  | 11.3  | 1.0  | <u>2.88</u> | 1.1             |
| Tairua River at Morrisons Br Hikuai                     | 12    | 3.3  | 1.2    | 0.8  | 26.0  | 0.6  | <u>2.98</u> | 1.2             |
| Tapu River at Tapu-Coroglen Rd                          | 12    | 3.9  | 1.4    | 0.4  | 28.0  | 2.7  | <u>2.86</u> | 1.0             |
| Waiau River at E309 Rd Ford                             | 12    | 4.6  | 2.2    | 1.3  | 22.0  | 2.4  | <u>2.29</u> | 2.8             |
| Waitekauri River at U/S Ohinemuri Conflu                | 11    | 2.8  | 0.8    | 0.4  | 18.6  | 1.8  | <u>2.70</u> | 0.9             |
| Waiwawa River at SH25 Coroglen                          | 12    | 2.5  | 1.4    | 0.6  | 15.2  | 0.8  | <u>2.93</u> | 1.3             |
| Wharekawa River at SH25                                 | 12    | 6.3  | 2.3    | 1.3  | 48.0  | 1.1  | <u>2.95</u> | 2.9             |
| <b>Hauraki</b>  |       |      |        |      |       |      |             |                 |
| Mangawhero Stm (Kaihere) at Mangawara Rd                | 12    | 30.8 | 6.0    | 4.4  | 250.0 | 14.2 | <u>2.90</u> | 7.4             |
| Oraka Stm at Lake Rd                                    | 12    | 9.1  | 4.3    | 2.5  | 50.0  | 5.5  | <u>2.75</u> | 5.7             |
| Piako River at Kiwitahi                                 | 12    | 6.4  | 4.7    | 1.9  | 19.8  | 4.6  | 1.60        | 5.3             |
| Piako River at Paeroa-Tahuna Rd Br                      | 12    | 14.8 | 8.7    | 3.7  | 58.0  | 12.7 | <u>1.79</u> | 10.3            |
| Piakonui Stm at Piakonui Rd                             | 12    | 4.8  | 4.0    | 2.7  | 10.4  | 2.2  | 1.58        | 3.8             |
| Waihou River at Okauia                                  | 12    | 10.1 | 4.9    | 2.7  | 58.0  | 5.7  | <u>2.77</u> | 4.9             |
| Waihou River at Whites Rd                               | 12    | 1.1  | 0.7    | 0.3  | 5.6   | 0.5  | <u>2.63</u> | 0.5             |
| Waiohotu Stm at Waiohotu Rd (Off SH5)                   | 12    | 5.2  | 5.0    | 2.6  | 9.2   | 2.7  | 0.69        | 4.6             |
| Waiomou Stm at Matamata-Tauranga Rd                     | 12    | 8.0  | 4.5    | 2.0  | 41.0  | 3.5  | <u>2.74</u> | 4.4             |
| Waitakaruru River (Hauraki Plains) at Coxhead Rd Br     | 12    | 20.6 | 8.1    | 4.4  | 71.0  | 21.6 | 1.37        | 10.1            |
| Waitoa River at Landsdowne Rd Br                        | 12    | 12.3 | 4.8    | 1.6  | 60.0  | 8.8  | <u>2.02</u> | 5.5             |
| Waitoa River at Mellon Rd Recorder                      | 12    | 12.6 | 8.8    | 3.3  | 43.0  | 10.7 | 1.67        | 9.7             |
| <b>Tributaries to the lower Waikato River</b>           |       |      |        |      |       |      |             |                 |
| Awaroa River (Waiuku) at Otua Rd Br opp Moseley Rd      | 12    | 22.2 | 15.6   | 8.3  | 59.0  | 10.0 | 1.56        | 16.0            |
| Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd | 12    | 21.7 | 10.6   | 3.1  | 66.0  | 36.2 | 0.92        | 7.1             |
| Karapiro Stm at Hickey Rd Bridge                        | 12    | 13.2 | 7.9    | 2.8  | 45.0  | 10.7 | 1.51        | 7.2             |
| Kirikiri Stm at Tauhara Dr                              | 12    | 29.4 | 29.5   | 15.8 | 74.0  | 13.4 | <u>2.00</u> | 28.0            |
| Komakorau Stm at Henry Rd                               | 12    | 67.4 | 70.0   | 30.0 | 95.0  | 34.5 | -0.48       | 74.0            |
| Little Waipa Stm at Arapuni - Putaruru Rd               | 12    | 5.2  | 1.7    | 0.5  | 39.0  | 2.0  | <u>2.85</u> | 1.5             |
| Mangakotukutuku Stm (Rukuhia) at Peacocks Rd            | 12    | 22.6 | 20.0   | 15.4 | 39.0  | 7.2  | 1.32        | 22.0            |
| Mangamingi Stm (Tokoroa) at Paraonui Rd Br              | 12    | 6.3  | 4.5    | 2.3  | 19.7  | 3.7  | <u>1.96</u> | 4.1             |
| Mangaone Stm at Annebrooke Rd Br                        | 12    | 9.0  | 7.3    | 5.4  | 21.0  | 4.4  | <u>1.83</u> | 10.1            |
| Mangaonua Stm at Hoeka Rd                               | 12    | 9.3  | 5.6    | 2.3  | 34.0  | 10.5 | 1.66        | 4.8             |
| Mangaonua Stm at Te Miro Rd                             | 12    | 14.5 | 12.7   | 6.3  | 31.0  | 11.4 | 0.85        | 16.2            |
| Mangatangi River at SH2 Maramara                        | 12    | 22.5 | 17.4   | 5.0  | 65.0  | 23.1 | 1.17        | 14.5            |
| Mangatawhiri River at Lyons Rd At Buckingham Br         | 12    | 8.8  | 2.7    | 1.1  | 34.0  | 8.4  | 1.50        | 3.1             |
| Mangawara Stm at Rutherford Rd Br                       | 12    | 57.2 | 44.0   | 30.0 | 158.0 | 29.5 | <u>2.05</u> | 43.5            |
| Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd       | 12    | 47.3 | 45.5   | 30.0 | 68.0  | 12.5 | 0.38        | 50.0            |
| Matahuru Stm at Waiterimu Road Below Confluence         | 12    | 58.3 | 41.0   | 11.4 | 187.0 | 44.4 | 1.47        | 37.5            |
| Ohaeroa Stm at SH22 Br                                  | 12    | 16.6 | 8.3    | 3.7  | 67.0  | 14.3 | <u>1.75</u> | 8.1             |
| Opuatia Stm at Ponganui Rd                              | 12    | 73.0 | 15.3   | 7.3  | 480.0 | 71.7 | <u>2.57</u> | 14.1            |
| Pokaiwhenua Stm at Arapuni - Putaruru Rd                | 12    | 5.9  | 3.3    | 1.6  | 30.0  | 2.9  | <u>2.51</u> | 3.1             |
| Waerenga Stm at Taniwha Rd                              | 12    | 27.2 | 9.5    | 3.5  | 110.0 | 24.7 | 1.57        | 8.4             |
| Waitawhiriwhiri Stm at Edgecumbe Street                 | 12    | 29.3 | 31.0   | 13.3 | 47.0  | 12.0 | -0.18       | 31.0            |
| Whakapipi Stm at SH22 Br                                | 12    | 12.9 | 6.2    | 2.1  | 61.0  | 11.3 | <u>2.03</u> | 6.0             |
| Whakauru Stm at U/S SH1 Br                              | 12    | 16.9 | 6.2    | 2.9  | 116.0 | 4.1  | <u>2.87</u> | 5.9             |
| Whangamarino River at Island Block Rd                   | 12    | 57.0 | 46.0   | 19.6 | 108.0 | 32.5 | 0.54        | 38.5            |
| Whangamarino River at Jefferies Rd Br                   | 12    | 35.2 | 22.5   | 7.0  | 142.0 | 16.4 | <u>1.94</u> | 22.5            |
| Whangape Stm at Rangiri-Glen Murray Rd                  | 12    | 47.0 | 49.0   | 15.4 | 94.0  | 38.0 | 0.45        | 57.5            |

pH (pH units)

| Count   | Mean | Median | Min | Max | IQR | Skew        | 08-12<br>Median |
|---|------|--------|-----|-----|-----|-------------|-----------------|
| <b>Coromandel</b>                             |      |        |     |     |     |             |                 |
| 12  | 7.1  | 7.1    | 6.8 | 7.4 | 0.4 | 0.06        | 7.1             |
| 12  | 7.1  | 7.1    | 6.9 | 7.4 | 0.2 | 0.62        | 7.1             |
| 11  | 7.0  | 7.0    | 6.8 | 7.4 | 0.3 | 0.56        | 7.1             |
| 12  | 7.0  | 7.0    | 6.7 | 7.3 | 0.4 | -0.04       | 7.1             |
| 12  | 7.0  | 7.0    | 6.7 | 7.4 | 0.2 | 0.94        | 7.0             |
| 12  | 7.5  | 7.5    | 6.9 | 7.8 | 0.3 | -0.77       | 7.5             |
| 12  | 7.4  | 7.5    | 6.9 | 7.6 | 0.3 | -0.98       | 7.4             |
| 11  | 7.3  | 7.3    | 6.7 | 8.1 | 0.4 | 0.40        | 7.2             |
| 12  | 7.2  | 7.2    | 6.9 | 7.4 | 0.3 | -0.33       | 7.2             |
| 12  | 6.9  | 6.8    | 6.7 | 7.1 | 0.3 | 0.25        | 7.0             |
| <b>Hauraki</b>                                |      |        |     |     |     |             |                 |
| 12  | 7.3  | 7.4    | 7.0 | 7.6 | 0.4 | -0.42       | 7.4             |
| 12  | 7.3  | 7.4    | 7.0 | 7.5 | 0.2 | -0.98       | 7.2             |
| 12  | 7.2  | 7.2    | 6.8 | 7.7 | 0.5 | 0.28        | 7.1             |
| 12  | 7.3  | 7.3    | 6.8 | 7.7 | 0.6 | -0.04       | 7.3             |
| 12  | 7.3  | 7.4    | 6.9 | 7.6 | 0.4 | -0.34       | 7.3             |
| 12  | 7.3  | 7.3    | 6.9 | 7.5 | 0.2 | -0.39       | 7.3             |
| 12  | 7.0  | 6.9    | 6.8 | 7.3 | 0.1 | <u>1.74</u> | 6.9             |
| 12  | 7.2  | 7.2    | 6.8 | 7.4 | 0.2 | -1.41       | 7.2             |
| 12  | 7.1  | 7.2    | 6.6 | 7.4 | 0.2 | -1.10       | 7.2             |
| 12  | 7.2  | 7.2    | 6.8 | 7.5 | 0.3 | -0.53       | 7.2             |
| 12  | 7.1  | 7.2    | 6.7 | 7.3 | 0.2 | -1.18       | 7.1             |
| 12  | 7.2  | 7.2    | 6.9 | 7.6 | 0.5 | 0.23        | 7.2             |
| <b>Tributaries to the lower Waikato River</b> |      |        |     |     |     |             |                 |
| 12  | 7.2  | 7.1    | 6.8 | 8.0 | 0.7 | 0.64        | 7.1             |
| 12  | 7.8  | 7.8    | 7.3 | 8.2 | 0.4 | 0.00        | 7.7             |
| 12  | 7.3  | 7.3    | 7.0 | 7.4 | 0.1 | -0.72       | 7.2             |
| 12  | 6.9  | 6.9    | 6.7 | 7.1 | 0.3 | -0.01       | 6.8             |
| 12  | 6.5  | 6.5    | 6.1 | 7.0 | 0.3 | 0.22        | 6.6             |
| 12  | 7.0  | 7.1    | 6.9 | 7.2 | 0.1 | -0.13       | 7.0             |
| 12  | 7.0  | 7.1    | 6.4 | 7.4 | 0.5 | -0.70       | 7.0             |
| 12  | 7.5  | 7.6    | 7.1 | 7.8 | 0.3 | -0.53       | 7.5             |
| 12  | 7.3  | 7.3    | 7.0 | 7.5 | 0.2 | -0.76       | 7.3             |
| 12  | 7.4  | 7.4    | 7.0 | 7.8 | 0.5 | 0.07        | 7.4             |
| 12  | 7.0  | 7.0    | 6.8 | 7.2 | 0.2 | -0.34       | 7.0             |
| 12  | 7.2  | 7.2    | 6.8 | 7.4 | 0.4 | -0.45       | 7.1             |
| 12  | 7.5  | 7.5    | 7.0 | 8.0 | 0.4 | 0.02        | 7.4             |
| 12  | 6.8  | 6.9    | 6.3 | 7.2 | 0.4 | -0.57       | 6.8             |
| 12  | 7.0  | 7.1    | 6.6 | 7.3 | 0.3 | -0.57       | 7.0             |
| 12  | 7.1  | 7.1    | 6.6 | 7.5 | 0.4 | -0.14       | 7.1             |
| 12  | 7.5  | 7.6    | 7.1 | 8.0 | 0.4 | 0.19        | 7.4             |
| 12  | 7.5  | 7.6    | 7.0 | 7.9 | 0.5 | -0.36       | 7.6             |
| 12  | 7.2  | 7.2    | 7.0 | 7.4 | 0.1 | -0.34       | 7.2             |
| 12  | 7.4  | 7.5    | 6.9 | 7.6 | 0.4 | -0.85       | 7.3             |
| 12  | 7.0  | 7.0    | 6.7 | 7.3 | 0.4 | -0.29       | 6.9             |
| 12  | 7.4  | 7.4    | 7.1 | 7.7 | 0.4 | 0.34        | 7.3             |
| 12  | 7.4  | 7.5    | 7.0 | 7.6 | 0.2 | -1.41       | 7.5             |
| 12  | 7.0  | 7.0    | 6.7 | 7.4 | 0.5 | 0.36        | 6.9             |
| 12  | 7.1  | 7.2    | 6.7 | 7.4 | 0.4 | -0.50       | 7.1             |
| 12  | 7.8  | 7.8    | 7.0 | 9.2 | 1.3 | 0.43        | 7.4             |

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

| Waipa River and Tributaries                                    |    |      |      |     |       |      |             |      |    |     |     |     |     |     |              |     |
|--|----|------|------|-----|-------|------|-------------|------|----|-----|-----|-----|-----|-----|--------------|-----|
| Kaniwhaniwha Stm at Wright Rd                                  | 12 | 9.4  | 5.3  | 2.2 | 36.0  | 7.3  | <u>2.13</u> | 9.1  | 12 | 7.1 | 7.1 | 6.7 | 7.5 | 0.2 | -0.05        | 7.1 |
| Mangaohoi Stm at South Branch Maru Rd                          | 12 | 2.2  | 1.9  | 1.1 | 3.9   | 1.3  | 0.65        | 1.6  | 12 | 7.4 | 7.4 | 7.2 | 7.6 | 0.1 | -0.34        | 7.4 |
| Mangaokewa Stm at Lawrence St Bridge                           | 12 | 7.1  | 5.9  | 2.2 | 19.8  | 4.8  | 1.37        | 5.5  | 12 | 7.3 | 7.4 | 6.9 | 7.7 | 0.4 | -0.32        | 7.3 |
| Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd               | 12 | 19.0 | 13.3 | 5.6 | 82.0  | 9.6  | <u>2.61</u> | 15.5 | 12 | 7.3 | 7.3 | 6.8 | 7.7 | 0.6 | 0.14         | 7.2 |
| Mangapu River at Otorohanga                                    | 11 | 25.1 | 18.9 | 4.4 | 89.0  | 16.9 | <u>1.79</u> | 15.0 | 11 | 7.5 | 7.5 | 6.9 | 8.0 | 0.6 | -0.07        | 7.4 |
| Mangatutu Stm (Waikeria) at Walker Rd Br                       | 12 | 5.0  | 3.0  | 1.5 | 14.7  | 4.4  | 1.32        | 3.3  | 12 | 7.2 | 7.2 | 7.0 | 7.4 | 0.2 | 0.18         | 7.2 |
| Mangauika Stm at Te Awamutu Borough W/S Intake                 | 12 | 1.6  | 1.3  | 0.8 | 4.1   | 0.7  | <u>2.26</u> | 1.7  | 12 | 7.3 | 7.4 | 7.1 | 7.6 | 0.2 | 0.07         | 7.3 |
| Ohote Stm at Whatawhata/Horotiu Rd                             | 12 | 8.8  | 7.7  | 6.4 | 17.1  | 2.1  | <u>2.16</u> | 12.0 | 12 | 6.7 | 6.9 | 6.4 | 6.9 | 0.3 | -0.76        | 6.8 |
| Puniu River at Bartons Corner Rd Br                            | 12 | 10.4 | 6.9  | 1.7 | 54.0  | 5.1  | <u>2.80</u> | 6.6  | 12 | 7.1 | 7.1 | 6.8 | 7.3 | 0.2 | -0.52        | 7.1 |
| Waipa River at Mangaokewa Rd                                   | 12 | 3.0  | 2.5  | 1.3 | 8.6   | 1.8  | <u>1.74</u> | 2.3  | 12 | 7.3 | 7.3 | 7.1 | 7.5 | 0.2 | 0.00         | 7.3 |
| Waipa River at Pirongia-Ngutunui Rd Br                         | 12 | 24.8 | 14.5 | 5.5 | 107.0 | 14.0 | <u>2.01</u> | 12.1 | 12 | 7.2 | 7.2 | 6.7 | 7.5 | 0.2 | -0.68        | 7.2 |
| Waipa River at SH3 Otorohanga                                  | 12 | 11.9 | 7.4  | 2.1 | 38.0  | 8.8  | 1.47        | 4.7  | 12 | 7.2 | 7.2 | 6.8 | 7.6 | 0.4 | 0.25         | 7.2 |
| Waitomo Stm at SH31 Otorohanga                                 | 11 | 20.4 | 14.8 | 4.2 | 56.0  | 23.0 | 0.89        | 14.8 | 11 | 7.7 | 7.6 | 7.3 | 8.1 | 0.5 | 0.09         | 7.7 |
| Waitomo Stm at Tumutumu Rd                                     | 12 | 13.3 | 7.1  | 2.6 | 62.0  | 7.4  | <u>2.15</u> | 5.8  | 12 | 7.9 | 7.9 | 7.6 | 8.1 | 0.3 | 0.02         | 7.9 |
| Tributaries to the upper Waikato River                         |    |      |      |     |       |      |             |      |    |     |     |     |     |     |              |     |
| Kawaunui Stm at SH5 Br   | 12 | 11.9 | 3.8  | 2.3 | 94.0  | 4.1  | <u>2.97</u> | 3.9  | 12 | 7.0 | 7.0 | 6.7 | 7.3 | 0.2 | -0.43        | 6.9 |
| Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)             | 12 | 5.9  | 4.7  | 2.3 | 17.4  | 2.9  | <u>2.17</u> | 4.6  | 12 | 7.3 | 7.3 | 7.1 | 7.6 | 0.2 | 0.23         | 7.4 |
| Mangakara Stm (Reporoa) at SH5                                 | 12 | 7.7  | 5.4  | 2.6 | 31.0  | 3.3  | <u>2.73</u> | 6.0  | 12 | 7.1 | 7.2 | 7.0 | 7.4 | 0.2 | 0.57         | 7.0 |
| Mangakino Stm (Whakamaru) at Sandel Rd                         | 12 | 2.4  | 1.8  | 1.2 | 7.6   | 1.0  | <u>2.37</u> | 1.8  | 12 | 7.4 | 7.4 | 7.2 | 7.5 | 0.2 | -0.66        | 7.4 |
| Otamakokore Stm at Hossack Rd                                  | 12 | 4.3  | 3.3  | 1.8 | 11.4  | 2.7  | <u>1.81</u> | 3.6  | 12 | 8.0 | 8.0 | 7.3 | 8.2 | 0.2 | -1.61        | 8.0 |
| Pueto Stm at Broadlands Rd Br                                  | 12 | 3.6  | 3.3  | 1.3 | 9.1   | 1.5  | 1.54        | 2.8  | 12 | 7.5 | 7.5 | 7.2 | 7.6 | 0.2 | -1.04        | 7.4 |
| Tahunaatara Stm at Ohakuri Rd                                  | 12 | 5.1  | 3.8  | 2.0 | 22.0  | 1.7  | <u>2.80</u> | 3.0  | 12 | 7.5 | 7.5 | 7.1 | 7.7 | 0.3 | -0.72        | 7.5 |
| Torepatutahi Stm at Vaile Rd Br                                | 12 | 1.7  | 1.6  | 0.9 | 3.0   | 0.3  | 1.05        | 1.2  | 12 | 7.3 | 7.3 | 7.2 | 7.6 | 0.2 | 1.04         | 7.2 |
| Waiotapu Stm at Campbell Rd Br                                 | 12 | 10.1 | 8.1  | 6.7 | 32.0  | 1.7  | <u>2.87</u> | 7.1  | 12 | 5.7 | 5.8 | 4.8 | 6.0 | 0.1 | <u>-2.35</u> | 5.6 |
| Waiotapu Stm at Homestead Rd Br                                | 12 | 14.9 | 11.4 | 4.6 | 42.0  | 7.8  | <u>1.72</u> | 12.1 | 12 | 6.9 | 6.9 | 6.4 | 7.1 | 0.2 | -0.97        | 6.8 |
| Waipapa Stm (Mokai) at Tirohanga Rd Br                         | 12 | 5.1  | 5.2  | 2.0 | 10.2  | 2.7  | 0.83        | 5.6  | 12 | 7.7 | 7.7 | 7.5 | 7.8 | 0.1 | -0.91        | 7.7 |
| Whirinaki Stm at Corbett Rd                                    | 12 | 0.9  | 0.6  | 0.3 | 2.6   | 0.7  | 1.45        | 0.5  | 12 | 7.3 | 7.3 | 7.1 | 7.4 | 0.2 | -0.12        | 7.3 |
| West Coast   |    |      |      |     |       |      |             |      |    |     |     |     |     |     |              |     |
| Awakino River at Gribbon Rd                                    | 12 | 2.5  | 1.4  | 0.7 | 7.0   | 3.1  | 1.11        | 1.5  | 12 | 7.4 | 7.5 | 7.0 | 7.7 | 0.3 | -0.86        | 7.4 |
| Awakino River at SH3 Awakau Rd Junction                        | 12 | 13.8 | 3.7  | 1.2 | 98.0  | 6.9  | <u>2.61</u> | 4.2  | 12 | 7.6 | 7.5 | 6.9 | 8.4 | 0.6 | 0.35         | 7.5 |
| Manganui River at Off Manganui Rd                              | 12 | 17.4 | 4.8  | 1.5 | 99.0  | 5.6  | <u>1.92</u> | 5.7  | 12 | 7.4 | 7.4 | 6.9 | 7.6 | 0.2 | -0.92        | 7.4 |
| Mangaotaki River at SH3 Br                                     | 12 | 13.1 | 7.4  | 1.5 | 53.0  | 15.3 | 1.57        | 6.1  | 12 | 7.7 | 7.8 | 7.2 | 7.9 | 0.4 | -0.78        | 7.8 |
| Marokopa River at Speedies Rd (Off Te Anga Rd)                 | 12 | 7.9  | 3.1  | 1.7 | 41.0  | 3.1  | <u>2.28</u> | 4.2  | 12 | 8.0 | 8.0 | 7.5 | 8.6 | 0.3 | 0.63         | 7.9 |
| Mokau River at Awakau Rd                                       | 12 | 63.8 | 32.5 | 3.0 | 400.0 | 35.0 | <u>2.75</u> | 22.0 | 12 | 7.4 | 7.5 | 6.8 | 7.7 | 0.3 | -1.14        | 7.4 |
| Mokau River at Mangaokewa Rd (Off SH30)                        | 12 | 6.7  | 3.6  | 1.9 | 36.0  | 2.6  | <u>2.75</u> | 3.1  | 12 | 7.2 | 7.2 | 6.7 | 7.4 | 0.4 | -0.67        | 7.2 |
| Mokau River at Totoro Rd Recorder                              | 12 | 18.8 | 12.9 | 2.3 | 72.0  | 18.4 | 1.58        | 8.1  | 12 | 7.6 | 7.5 | 7.2 | 8.0 | 0.5 | 0.17         | 7.6 |
| Mokauiti Stm at Three Way Point - Aria                         | 12 | 36.4 | 22.0 | 7.1 | 183.0 | 25.1 | <u>2.56</u> | 13.9 | 12 | 7.2 | 7.2 | 6.7 | 7.6 | 0.3 | -0.54        | 7.2 |
| Ohautira Stm at Waingaro Te Uku Rd                             | 12 | 21.1 | 7.6  | 3.4 | 108.0 | 19.1 | <u>2.21</u> | 9.3  | 12 | 7.3 | 7.4 | 7.0 | 7.6 | 0.1 | -0.83        | 7.3 |
| Oparau River at Langdon Rd (Off Okupata Rd)                    | 12 | 4.6  | 3.0  | 1.7 | 18.3  | 2.2  | <u>2.14</u> | 3.0  | 12 | 7.5 | 7.6 | 7.0 | 7.9 | 0.5 | -0.42        | 7.5 |
| Tawarau River at Off Speedies Rd                               | 12 | 6.7  | 3.2  | 1.4 | 25.0  | 2.6  | <u>1.72</u> | 3.8  | 12 | 7.9 | 7.9 | 7.6 | 8.5 | 0.4 | 0.71         | 7.9 |
| Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22               | 12 | 22.7 | 9.9  | 5.4 | 68.0  | 25.8 | 1.21        | 9.4  | 12 | 7.5 | 7.5 | 7.0 | 8.1 | 0.4 | 0.37         | 7.5 |
| Waitetuna River at Te Uku-Waingaro Rd                          | 12 | 29.3 | 12.3 | 4.8 | 151.0 | 18.7 | <u>2.08</u> | 12.0 | 12 | 7.3 | 7.3 | 6.8 | 7.5 | 0.2 | -1.07        | 7.3 |
| Inflows to Lake Taupo  |    |      |      |     |       |      |             |      |    |     |     |     |     |     |              |     |
| Hinemaiaia River at SH1  | 12 | 1.6  | 1.4  | 0.8 | 3.7   | 0.6  | 1.68        | 1.2  | 12 | 7.5 | 7.5 | 7.2 | 7.8 | 0.2 | -0.28        | 7.4 |
| Kuratau River at SH41 Moerangi                                 | 12 | 2.4  | 1.6  | 1.1 | 6.1   | 1.7  | 1.32        | 1.6  | 12 | 7.1 | 7.1 | 7.0 | 7.3 | 0.0 | 1.41         | 7.1 |
| Kuratau River at 43 Te Rae Street                              | 12 | 1.5  | 1.2  | 0.8 | 3.5   | 0.5  | <u>1.94</u> | 1.2  | 12 | 7.6 | 7.6 | 7.3 | 8.0 | 0.4 | 0.57         | 7.4 |
| Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)        | 12 | 2.8  | 2.6  | 1.4 | 5.2   | 1.1  | 0.86        | 2.8  | 12 | 7.4 | 7.5 | 7.2 | 7.5 | 0.1 | <u>-1.69</u> | 7.4 |
| Tauranga-Taupo River at 20 Metres U/S SH1 Bridge               | 12 | 1.4  | 0.9  | 0.5 | 4.1   | 0.9  | 1.51        | 0.9  | 12 | 7.4 | 7.4 | 7.1 | 7.7 | 0.3 | 0.34         | 7.3 |
| Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal | 12 | 2.0  | 1.7  | 1.3 | 3.6   | 1.1  | 0.98        | 1.5  | 12 | 7.4 | 7.4 | 6.9 | 7.6 | 0.2 | -1.38        | 7.4 |
| Tokaanu Stm at Off SH41 Turangi                                | 12 | 0.6  | 0.4  | 0.1 | 2.3   | 0.4  | <u>1.99</u> | 0.2  | 12 | 7.2 | 7.2 | 7.1 | 7.4 | 0.0 | 1.00         | 7.2 |
| Waihaha River at SH32  | 12 | 1.7  | 0.6  | 0.4 | 7.2   | 1.1  | 1.67        | 0.6  | 12 | 7.2 | 7.3 | 6.9 | 7.4 | 0.2 | -0.97        | 7.3 |
| Waitahanui River at Blake Rd                                   | 12 | 1.3  | 0.8  | 0.5 | 4.4   | 0.6  | <u>1.85</u> | 0.7  | 12 | 7.5 | 7.5 | 7.2 | 7.6 | 0.2 | -1.04        | 7.5 |
| Whangamata Stm (Kinloch) at Whangamata Rd                      | 12 | 1.8  | 1.6  | 1.1 | 3.3   | 1.0  | 0.87        | 1.9  | 12 | 7.4 | 7.4 | 7.2 | 7.6 | 0.1 | -0.51        | 7.4 |
| Whanganui Stm at Lakeside Lake Taupo                           | 12 | 2.0  | 1.2  | 0.7 | 6.2   | 1.0  | <u>1.69</u> | 1.4  | 12 | 7.4 | 7.4 | 7.2 | 7.5 | 0.2 | -0.49        | 7.4 |
| Whareroa Stm (Taupo District) at Lakeside Lake Taupo           | 12 | 4.6  | 3.6  | 1.9 | 19.6  | 1.6  | <u>2.82</u> | 3.2  | 12 | 7.5 | 7.5 | 7.3 | 7.6 | 0.1 | -0.94        | 7.4 |

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

**E. Coli (n/100mL)**

| Location  | Count | Mean | Median | Min | Max  | IQR  | Skew  | 08-12<br>Median |
|---|-------|------|--------|-----|------|------|-------|-----------------|
| <b>Coromandel</b>                                       |       |      |        |     |      |      |       |                 |
| Hikutaia River at Old Maratoto Rd                       | 4     | 273  | 220    | 80  | 570  | 255  | 0.79  | 220             |
| Kauaeeranga River at Smiths Cableway/Recorder           | 4     | 143  | 115    | 110 | 230  | 65   | 1.13  | 150             |
| Ohinemuri River at Queens Head                          | 4     | 87   | 36     | 28  | 250  | 116  | 1.15  | 63              |
| Ohinemuri River at SH25 Br                              | 4     | 133  | 130    | 80  | 190  | 85   | 0.09  | 170             |
| Tairua River at Morrisons Br Hikuai                     | 4     | 63   | 25     | 23  | 180  | 79   | 1.15  | 85              |
| Tapu River at Tapu-Coroglen Rd                          | 4     | 36   | 35     | 13  | 60   | 39   | 0.06  | 55              |
| Waiau River at E309 Rd Ford                             | 4     | 79   | 68     | 20  | 160  | 92   | 0.49  | 145             |
| Waitekauri River at U/S Ohinemuri Conflu                | 4     | 53   | 40     | 13  | 120  | 64   | 0.82  | 85              |
| Waiwawa River at SH25 Coroglen                          | 4     | 74   | 45     | 15  | 190  | 93   | 1.03  | 100             |
| Wharekawa River at SH25                                 | 4     | 158  | 135    | 90  | 270  | 125  | 0.62  | 205             |
| <b>Hauraki</b>  |       |      |        |     |      |      |       |                 |
| Mangawhero Stm (Kaihere) at Mangawara Rd                | 4     | 119  | 115    | 17  | 230  | 112  | 0.17  | 65              |
| Oraka Stm at Lake Rd                                    | 4     | 193  | 190    | 100 | 290  | 145  | 0.06  | 390             |
| Piako River at Kiwitahi                                 | 4     | 768  | 700    | 70  | 1600 | 865  | 0.35  | 695             |
| Piako River at Paeroa-Tahuna Rd Br                      | 4     | 1433 | 700    | 230 | 4100 | 2235 | 1.04  | 460             |
| Piakonui Stm at Piakonui Rd                             | 4     | 121  | 95     | 4   | 290  | 148  | 0.70  | 95              |
| Waihou River at Okauia                                  | 4     | 235  | 230    | 150 | 330  | 160  | 0.05  | 295             |
| Waihou River at Whites Rd                               | 4     | 38   | 34     | 15  | 70   | 28   | 0.64  | 48              |
| Waihotu Stm at Waihotu Rd (Off SH5)                     | 4     | 80   | 47     | 17  | 210  | 110  | 1.02  | 40              |
| Waiomou Stm at Matamata-Tauranga Rd                     | 4     | 325  | 285    | 220 | 510  | 170  | 0.88  | 285             |
| Waitakaruru River (Hauraki Plains) at Coxhead Rd Br     | 4     | 908  | 325    | 180 | 2800 | 1365 | 1.14  | 380             |
| Waitoa River at Landsdowne Rd Br                        | 4     | 1358 | 1475   | 380 | 2100 | 1385 | -0.22 | 800             |
| Waitoa River at Mellon Rd Recorder                      | 4     | 885  | 800    | 140 | 1800 | 930  | 0.41  | 800             |
| <b>Tributaries to the lower Waikato River</b>           |       |      |        |     |      |      |       |                 |
| Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd    | -     | -    | -      | -   | -    | -    | -     | -               |
| Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd | 4     | 573  | 365    | 60  | 1500 | 955  | 0.76  | 310             |
| Karapiro Stm at Hickey Rd Bridge                        | 4     | 615  | 600    | 260 | 1000 | 370  | 0.17  | 560             |
| Kirikiri Stm at Tauhara Dr                              | 4     | 808  | 895    | 140 | 1300 | 885  | -0.30 | 775             |
| Komakorau Stm at Henry Rd                               | 4     | 1500 | 1350   | 600 | 2700 | 1300 | 0.50  | 1650            |
| Little Waipa Stm at Arapuni - Putaruru Rd               | 4     | 84   | 75     | 47  | 140  | 52   | 0.73  | 115             |
| Mangakotukutuku Stm (Rukuhia) at Peacockes Rd           | 4     | 1333 | 1065   | 500 | 2700 | 1635 | 0.50  | 1200            |
| Mangamingi Stm (Tokoroa) at Paraonui Rd Br              | 4     | 1023 | 1000   | 390 | 1700 | 955  | 0.09  | 700             |
| Mangaone Stm at Annebrooke Rd Br                        | 4     | 650  | 635    | 330 | 1000 | 400  | 0.17  | 850             |
| Mangaonua Stm at Hoeka Rd                               | 4     | 485  | 385    | 170 | 1000 | 570  | 0.63  | 250             |
| Mangaonua Stm at Te Miro Rd                             | 4     | 1575 | 1700   | 500 | 2400 | 950  | -0.53 | 1900            |
| 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       | 4     | 1318 | 700    | 370 | 3500 | 1665 | 1.11  | 1300            |
| Matahuru Stm at Waiterimu Road Below Confluence         | -     | -    | -      | -   | -    | -    | -     | -               |
| Ohaeroa Stm at SH22 Br                                  | -     | -    | -      | -   | -    | -    | -     | -               |
| Opuatia Stm at Ponganui Rd                              | 4     | 3135 | 1750   | 39  | 9000 | 5831 | 0.82  | 400             |
| Pokaiwhenua Stm at Arapuni - Putaruru Rd                | 4     | 160  | 170    | 100 | 200  | 70   | -0.52 | 165             |
| Waerenga Stm at Taniwha Rd                              | 4     | 2310 | 570    | 300 | 7800 | 3800 | 1.15  | 540             |
| Waitahiriwhiri Stm at Edgcombe Street                   | 4     | 1623 | 1155   | 480 | 3700 | 2155 | 0.75  | 1500            |
| Whakapipi Stm at SH22 Br                                | -     | -    | -      | -   | -    | -    | -     | -               |
| Whakauru Stm at U/S SH1 Br                              | 4     | 630  | 600    | 320 | 1000 | 540  | 0.15  | 600             |
| Whangamarino River at Island Block Rd                   | -     | -    | -      | -   | -    | -    | -     | -               |
| Whangamarino River at Jefferies Rd Br                   | -     | -    | -      | -   | -    | -    | -     | -               |
| Whangape Stm at Rangiriri-Glen Murray Rd                | -     | -    | -      | -   | -    | -    | -     | -               |

**Enterococci (n/100ml)**

| Count   | Mean | Median | Min | Max  | IQR  | Skew  | 08-12<br>Median |
|---|------|--------|-----|------|------|-------|-----------------|
| <b>Coromandel</b>                             |      |        |     |      |      |       |                 |
| 4   | 76   | 39     | 26  | 200  | 88   | 1.14  | 67              |
| 4   | 158  | 145    | 110 | 230  | 75   | 0.67  | 120             |
| 4   | 19   | 19     | 1   | 38   | 34   | 0.02  | 24              |
| 4   | 42   | 26     | 4   | 110  | 68   | 0.82  | 61              |
| 4   | 11   | 6      | 1   | 32   | 17   | 1.04  | 32              |
| 4   | 24   | 15     | 5   | 60   | 31   | 1.00  | 50              |
| 4   | 78   | 22     | 9   | 260  | 131  | 1.14  | 115             |
| 4   | 13   | 6      | 5   | 33   | 15   | 1.14  | 19              |
| 4   | 55   | 19     | 11  | 170  | 85   | 1.14  | 105             |
| 4   | 59   | 55     | 44  | 80   | 23   | 0.62  | 100             |
| <b>Hauraki</b>                                |      |        |     |      |      |       |                 |
| 4   | 319  | 35     | 7   | 1200 | 622  | 1.15  | 70              |
| 4   | 187  | 145    | 29  | 430  | 266  | 0.61  | 220             |
| 4   | 365  | 170    | 21  | 1100 | 570  | 1.08  | 300             |
| 4   | 578  | 560    | 190 | 1000 | 745  | 0.02  | 485             |
| 4   | 163  | 68     | 17  | 500  | 284  | 1.04  | 110             |
| 4   | 168  | 180    | 60  | 250  | 155  | -0.20 | 195             |
| 4   | 54   | 33     | 9   | 140  | 83   | 0.88  | 37              |
| 4   | 95   | 29     | 2   | 320  | 181  | 1.09  | 28              |
| 4   | 144  | 105    | 16  | 350  | 172  | 0.85  | 185             |
| 4   | 1132 | 51     | 25  | 4400 | 2207 | 1.15  | 255             |
| 4   | 583  | 640    | 50  | 1000 | 835  | -0.11 | 385             |
| 4   | 205  | 210    | 90  | 310  | 200  | -0.03 | 410             |
| <b>Tributaries to the lower Waikato River</b> |      |        |     |      |      |       |                 |
| -   | -    | -      | -   | -    | -    | -     | -               |
| 4   | 369  | 180    | 15  | 1100 | 663  | 0.96  | 110             |
| 4   | 170  | 125    | 28  | 400  | 211  | 0.83  | 215             |
| 4   | 960  | 695    | 150 | 2300 | 1580 | 0.52  | 800             |
| 4   | 1020 | 285    | 110 | 3400 | 1790 | 1.13  | 520             |
| 4   | 90   | 70     | 19  | 200  | 141  | 0.39  | 73              |
| 4   | 1133 | 1050   | 430 | 2000 | 935  | 0.39  | 1500            |
| 4   | 410  | 410    | 220 | 600  | 190  | 0.00  | 300             |
| 4   | 310  | 220    | 100 | 700  | 320  | 0.98  | 555             |
| 4   | 333  | 165    | 100 | 900  | 425  | 1.12  | 215             |
| 4   | 640  | 530    | 200 | 1300 | 820  | 0.42  | 1400            |
| -   | -    | -      | -   | -    | -    | -     | -               |
| -   | -    | -      | -   | -    | -    | -     | -               |
| -   | -    | -      | -   | -    | -    | -     | -               |
| 4   | 790  | 525    | 110 | 2000 | 1020 | 0.94  | 1000            |
| -   | -    | -      | -   | -    | -    | -     | -               |
| -   | -    | -      | -   | -    | -    | -     | -               |
| 4   | 2998 | 1975   | 40  | 8000 | 5905 | 0.52  | 180             |
| 4   | 68   | 80     | 13  | 100  | 44   | -0.93 | 100             |
| 4   | 1899 | 140    | 14  | 7300 | 3683 | 1.15  | 210             |
| 4   | 1038 | 775    | 200 | 2400 | 1425 | 0.70  | 1100            |
| -   | -    | -      | -   | -    | -    | -     | -               |
| 4   | 1040 | 985    | 90  | 2100 | 1620 | 0.09  | 470             |
| -   | -    | -      | -   | -    | -    | -     | -               |
| -   | -    | -      | -   | -    | -    | -     | -               |
| -   | -    | -      | -   | -    | -    | -     | -               |

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 | 343  | 125  | 21  | 1100  | 585  | 1.11  | 70  | 4 | 131  | 96   | 12  | 320   | 229   | 0.48  | 130 |   |
| Mangaokewa Stm at Lawrence St Bridge                           | - | -    | -    | -   | -     | -    | -     | -   | - | -    | -    | -   | -     | -     | -     | -   |   |
| Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd               | - | -    | -    | -   | -     | -    | -     | -   | - | -    | -    | -   | -     | -     | -     | -   |   |
| Mangapu River at Otorohanga                                    | 3 | 4287 | 700  | 160 | 12000 | 8880 | 0.70  | 570 | 3 | 9049 | 120  | 28  | 27000 | 20229 | 0.71  | 140 |   |
| Mangatutu Stm (Waikeria) at Walker Rd Br                       | 4 | 285  | 190  | 60  | 700   | 350  | 0.97  | 250 | 4 | 53   | 43   | 35  | 90    | 35    | 0.93  | 95  |   |
| Manguaika Stm at Te Awamutu Borough W/S Intake                 | 4 | 109  | 88   | 2   | 260   | 212  | 0.24  | 26  | 4 | 49   | 37   | 1   | 120   | 93    | 0.36  | 35  |   |
| Ohote Stm at Whatawhata/Horotiu Rd                             | 4 | 445  | 395  | 90  | 900   | 420  | 0.50  | 390 | 4 | 86   | 72   | 18  | 180   | 129   | 0.27  | 85  |   |
| Puniu River at Bartons Corner Rd Br                            | - | -    | -    | -   | -     | -    | -     | -   | - | -    | -    | -   | -     | -     | -     | -   |   |
| Waipa River at Mangaokewa Rd                                   | - | -    | -    | -   | -     | -    | -     | -   | - | -    | -    | -   | -     | -     | -     | -   |   |
| Waipa River at Pirongia-Ngutunui Rd Br                         | 4 | 1758 | 1065 | 300 | 4600  | 2885 | 0.79  | 330 | 4 | 1242 | 1118 | 32  | 2700  | 2417  | 0.06  | 110 |   |
| Waipa River at SH3 Otorohanga                                  | 4 | 1113 | 200  | 50  | 4000  | 2015 | 1.15  | 260 | 4 | 622  | 39   | 10  | 2400  | 1195  | 1.15  | 105 |   |
| Waitomo Stm at SH31 Otorohanga                                 | 4 | 875  | 970  | 160 | 1400  | 950  | -0.30 | 365 | 4 | 576  | 495  | 12  | 1300  | 1049  | 0.19  | 145 |   |
| Waitomo Stm at Tumutumu Rd                                     | 4 | 465  | 260  | 40  | 1300  | 780  | 0.91  | 225 | 4 | 179  | 74   | 6   | 560   | 343   | 0.97  | 130 |   |
| Tributaries to the upper Waikato River                         |   |      |      |     |       |      |       |     |   |      |      |     |       |       |       |     |   |
| Kawaunui Stm at SH5 Br   | 4 | 1640 | 495  | 70  | 5500  | 2960 | 1.11  | 300 | 4 | 993  | 280  | 110 | 3300  | 1755  | 1.12  | 225 |   |
| Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)             | 4 | 170  | 170  | 100 | 240   | 90   | 0.00  | 195 | 4 | 106  | 110  | 32  | 170   | 99    | -0.17 | 90  |   |
| Mangakara Stm (Reporoa) at SH5                                 | 4 | 130  | 100  | 60  | 260   | 110  | 0.97  | 230 | 4 | 148  | 150  | 13  | 280   | 234   | -0.01 | 215 |   |
| Mangakino Stm (Whakamaru) at Sandel Rd                         | - | -    | -    | -   | -     | -    | -     | -   | - | -    | -    | -   | -     | -     | -     | -   |   |
| Otamakokore Stm at Hossack Rd                                  | 4 | 245  | 205  | 170 | 400   | 140  | 0.96  | 280 | 4 | 109  | 110  | 15  | 200   | 113   | -0.05 | 100 |   |
| Pueto Stm at Broadlands Rd Br                                  | 4 | 71   | 69   | 16  | 130   | 99   | 0.04  | 28  | 4 | 24   | 25   | 3   | 42    | 35    | -0.05 | 22  |   |
| Tahunaatara Stm at Ohakuri Rd                                  | 4 | 260  | 130  | 100 | 680   | 310  | 1.13  | 150 | 4 | 94   | 95   | 16  | 170   | 122   | -0.02 | 70  |   |
| Torepatutahi Stm at Vaile Rd Br                                | - | -    | -    | -   | -     | -    | -     | -   | - | -    | -    | -   | -     | -     | -     | -   |   |
| Waiotapu Stm at Campbell Rd Br                                 | 4 | 1    | 1    | 1   | 1     | 1    | 0.00  | 2   | 4 | 2    | 1    | 1   | 3     | 2     | 0.31  | 4   |   |
| Waiotapu Stm at Homestead Rd Br                                | - | -    | -    | -   | -     | -    | -     | -   | - | -    | -    | -   | -     | -     | -     | -   |   |
| Waipapa Stm (Mokai) at Tirohanga Rd Br                         | 4 | 123  | 125  | 50  | 190   | 75   | -0.15 | 140 | 4 | 117  | 62   | 23  | 320   | 187   | 0.95  | 110 |   |
| Whirinaki Stm at Corbett Rd                                    | - | -    | -    | -   | -     | -    | -     | -   | - | -    | -    | -   | -     | -     | -     | -   |   |
| West Coast   |   |      |      |     |       |      |       |     |   |      |      |     |       |       |       |     |   |
| Awakino River at Gribbon Rd                                    | 4 | 4035 | 67   | 7   | 16000 | 8040 | 1.15  | 90  | 4 | 3011 | 21   | 1   | 12000 | 6013  | 1.15  | 32  |   |
| Awakino River at SH3 Awakau Rd Junction                        | 4 | 203  | 115  | 80  | 500   | 215  | 1.13  | 260 | 4 | 93   | 16   | 1   | 340   | 171   | 1.15  | 24  |   |
| Manganui River at Off Manganui Rd                              | 4 | 783  | 155  | 21  | 2800  | 1495 | 1.13  | 220 | 4 | 412  | 21   | 4   | 1600  | 799   | 1.15  | 38  |   |
| Mangaotaki River at SH3 Br                                     | - | -    | -    | -   | -     | -    | -     | -   | - | -    | -    | -   | -     | -     | -     | -   |   |
| Marokopa River at Speedies Rd (Off Te Anga Rd)                 | 4 | 238  | 170  | 40  | 570   | 375  | 0.60  | 210 | 4 | 118  | 114  | 6   | 240   | 224   | 0.01  | 48  |   |
| Mokau River at Awakau Rd                                       | 4 | 1154 | 640  | 35  | 3300  | 2093 | 0.85  | 300 | 4 | 582  | 109  | 8   | 2100  | 1147  | 1.13  | 29  |   |
| Mokau River at Mangaokewa Rd (Off SH30)                        | 4 | 4344 | 175  | 26  | 17000 | 8512 | 1.15  | 195 | 4 | 1011 | 21   | 2   | 4000  | 2012  | 1.15  | 52  |   |
| Mokau River at Totoro Rd Recorder                              | 4 | 4358 | 175  | 80  | 17000 | 8535 | 1.15  | 315 | 4 | 865  | 24   | 13  | 3400  | 1703  | 1.15  | 75  |   |
| Mokauiti Stm at Three Way Point - Aria                         | 4 | 5148 | 260  | 70  | 20000 | 9975 | 1.15  | 325 | 4 | 3098 | 191  | 12  | 12000 | 6144  | 1.15  | 145 |   |
| Ohautira Stm at Waingaro Te Uku Rd                             | 4 | 1005 | 605  | 110 | 2700  | 1690 | 0.82  | 455 | 4 | 1064 | 1015 | 26  | 2200  | 2072  | 0.01  | 150 |   |
| 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 | 1100 | 595  | 210 | 3000  | 1750 | 0.94  | 420 | 4 | 619  | 258  | 60  | 1900  | 1112  | 1.01  | 215 |   |
| Inflows to Lake Taupo  |   |      |      |     |       |      |       |     |   |      |      |     |       |       |       |     |   |
| Hinemaiaia River at SH1  | 4 | 14   | 14   | 10  | 17    | 5    | -0.24 | 16  | 4 | 13   | 6    | 1   | 40    | 25    | 0.93  | 7   |   |
| Kuratau River at SH41 Moerangi                                 | - | -    | -    | -   | -     | -    | -     | -   | - | -    | -    | -   | -     | -     | -     | -   |   |
| Kuratau River at 43 Te Rae Street                              | 4 | 74   | 58   | 10  | 170   | 123  | 0     | 39  | 4 | 21   | 24   | 1   | 33    | 22    | -1    | 24  |   |
| Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)        | 4 | 73   | 70   | 22  | 130   | 64   | 0.21  | 53  | 4 | 62   | 54   | 21  | 120   | 66    | 0.51  | 70  |   |
| Tauranga-Taupo River at 20 Metres U/S SH1 Bridge               | - | -    | -    | -   | -     | -    | -     | -   | - | -    | -    | -   | -     | -     | -     | -   |   |
| Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal | - | -    | -    | -   | -     | -    | -     | -   | - | -    | -    | -   | -     | -     | -     | -   |   |
| Tokaanu Stm at Off SH41 Turangi                                | - | -    | -    | -   | -     | -    | -     | -   | - | -    | -    | -   | -     | -     | -     | -   |   |
| Waihaha River at SH32  | 4 | 6    | 6    | 2   | 9     | 4    | -0.30 | 7   | 4 | 16   | 7    | 1   | 50    | 29    | 1.04  | 6   |   |
| Waitahanui River at Blake Rd                                   | 4 | 100  | 14   | 10  | 360   | 178  | 1.15  | 20  | 4 | 16   | 14   | 1   | 35    | 23    | 0.33  | 16  |   |
| Whangamata Stm (Kinloch) at Whangamata Rd                      | - | -    | -    | -   | -     | -    | -     | -   | - | -    | -    | -   | -     | -     | -     | -   |   |
| Whanganui Stm at Lakeside Lake Taupo                           | 4 | 40   | 38   | 22  | 60    | 28   | 0.19  | 40  | 4 | 20   | 19   | 3   | 40    | 31    | 0.10  | 10  |   |
| Wharetoa Stm (Taupo District) at Lakeside Lake Taupo           | 4 | 90   | 80   | 60  | 140   | 40   | 0.89  | 90  | 4 | 80   | 79   | 12  | 150   | 130   | 0.01  | 72  |   |

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

Temperature (°C)

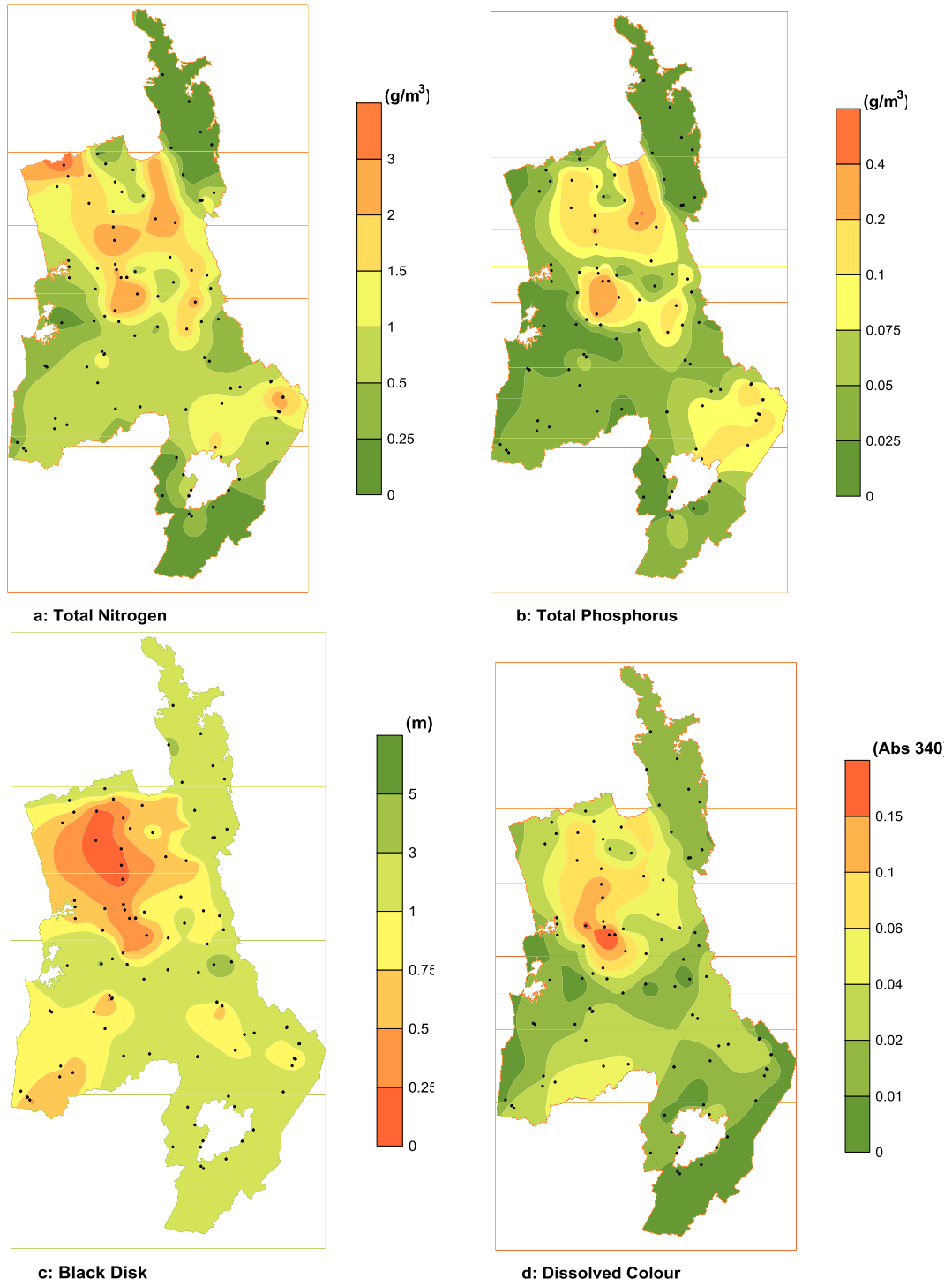
| Location  | Count | Mean | Median | Min  | Max  | IQR | Skew  | 08-12  |
|---|-------|------|--------|------|------|-----|-------|--------|
|   |       |      |        |      |      |     |       | Median |
| <b>Coromandel</b>                                       |       |      |        |      |      |     |       |        |
| Hikutaia River at Old Maratoto Rd                       | 12    | 13.3 | 14.5   | 6.0  | 18.4 | 5.1 | -0.57 | 15.1   |
| Kauaeranga River at Smiths Cableway/Recorder            | 12    | 13.7 | 14.3   | 5.9  | 19.6 | 5.3 | -0.45 | 15.6   |
| Ohinemuri River at Queens Head                          | 11    | 15.4 | 15.2   | 8.2  | 21.2 | 5.3 | -0.22 | 16.3   |
| Ohinemuri River at SH25 Br                              | 12    | 15.4 | 15.6   | 8.1  | 22.3 | 4.6 | -0.09 | 16.3   |
| Tairua River at Morrisons Br Hikuaui                    | 12    | 15.3 | 15.1   | 8.4  | 21.8 | 5.3 | -0.11 | 16.7   |
| Tapu River at Tapu-Coroglen Rd                          | 12    | 13.4 | 13.7   | 5.6  | 18.2 | 4.3 | -0.74 | 15.3   |
| Waiau River at E309 Rd Ford                             | 12    | 13.5 | 13.9   | 6.7  | 17.9 | 4.5 | -0.60 | 14.8   |
| Waitekauri River at U/S Ohinemuri Conflu                | 11    | 14.5 | 14.6   | 8.2  | 20.2 | 5.1 | -0.19 | 15.7   |
| Waiwawa River at SH25 Coroglen                          | 12    | 14.8 | 14.5   | 8.2  | 20.8 | 4.6 | -0.08 | 16.4   |
| Wharekawa River at SH25                                 | 12    | 14.7 | 15.1   | 7.6  | 20.6 | 5.2 | -0.38 | 16.7   |
| <b>Hauraki</b>  |       |      |        |      |      |     |       |        |
| Mangawhero Stm (Kaihere) at Mangawara Rd                | 12    | 13.5 | 13.2   | 9.9  | 18.1 | 3.9 | 0.28  | 13.4   |
| Oraka Stm at Lake Rd                                    | 12    | 14.0 | 13.2   | 11.0 | 17.7 | 3.0 | 0.42  | 14.4   |
| Piako River at Kiwitahi                                 | 12    | 15.3 | 15.8   | 7.1  | 20.1 | 6.7 | -0.47 | 15.9   |
| Piako River at Paeroa-Tahuna Rd Br                      | 12    | 14.6 | 14.8   | 7.2  | 19.8 | 6.2 | -0.39 | 15.1   |
| Piakonui Stm at Piakonui Rd                             | 12    | 12.9 | 12.8   | 7.1  | 16.3 | 4.0 | -0.59 | 13.1   |
| Waihou River at Okauia                                  | 12    | 14.2 | 13.4   | 11.0 | 17.3 | 3.2 | 0.26  | 14.6   |
| Waihou River at Whites Rd                               | 12    | 13.3 | 13.2   | 12.3 | 14.4 | 0.8 | -0.05 | 13.5   |
| Waiohotu Stm at Waiohotu Rd (Off SH5)                   | 12    | 11.2 | 10.8   | 8.1  | 15.1 | 3.4 | 0.32  | 11.3   |
| Waiomou Stm at Matamata-Tauranga Rd                     | 12    | 13.9 | 13.6   | 9.8  | 17.5 | 4.1 | 0.08  | 13.8   |
| Waitakaruru River (Hauraki Plains) at Coxhead Rd Br     | 12    | 15.7 | 15.5   | 10.2 | 21.7 | 6.1 | 0.16  | 16.1   |
| Waitoa River at Landsdowne Rd Br                        | 12    | 15.0 | 15.7   | 6.7  | 20.3 | 5.4 | -0.62 | 15.5   |
| Waitoa River at Mellon Rd Recorder                      | 12    | 14.9 | 15.2   | 7.6  | 19.6 | 5.5 | -0.47 | 15.7   |
| <b>Tributaries to the lower Waikato River</b>           |       |      |        |      |      |     |       |        |
| Awaroa River (Waiuku) at Otawa Rd Br opp Moseley Rd     | 12    | 16.6 | 16.7   | 11.7 | 22.3 | 6.3 | 0.18  | 16.5   |
| Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly Rd | 12    | 14.3 | 14.5   | 9.0  | 18.7 | 6.6 | -0.18 | 14.3   |
| Karapiro Stm at Hickey Rd Bridge                        | 12    | 14.5 | 14.7   | 7.0  | 19.1 | 5.8 | -0.50 | 14.9   |
| Kirikiriira Stm at Tauhara Dr                           | 12    | 15.0 | 15.3   | 9.8  | 19.1 | 3.4 | -0.41 | 15.3   |
| Komakorau Stm at Henry Rd                               | 12    | 15.0 | 14.8   | 10.0 | 20.2 | 6.0 | 0.05  | 14.8   |
| Little Waipa Stm at Arapuni - Putaruru Rd               | 12    | 14.0 | 13.7   | 11.3 | 16.5 | 2.8 | 0.01  | 14.6   |
| Mangakotukutuku Stm (Rukuhia) at Peacockes Rd           | 12    | 14.9 | 15.4   | 8.0  | 19.5 | 4.7 | -0.59 | 15.4   |
| Mangamingi Stm (Tokoroa) at Paraonui Rd Br              | 12    | 13.7 | 13.4   | 9.5  | 17.9 | 4.5 | 0.10  | 14.6   |
| Mangaone Stm at Annebrooke Rd Br                        | 12    | 13.8 | 13.8   | 7.7  | 18.7 | 2.6 | -0.53 | 13.8   |
| Mangaonua Stm at Hoeka Rd                               | 12    | 13.9 | 14.0   | 7.1  | 18.3 | 4.1 | -0.61 | 13.9   |
| Mangaonua Stm at Te Miro Rd                             | 12    | 13.6 | 13.9   | 7.4  | 18.3 | 3.4 | -0.58 | 13.8   |
| Mangatangi River at SH2 Maramarua                       | 12    | 16.1 | 16.1   | 10.4 | 22.0 | 6.0 | 0.13  | 16.0   |
| Mangatawhiri River at Lyons Rd At Buckingham Br         | 12    | 16.7 | 16.7   | 11.0 | 23.9 | 6.7 | 0.26  | 16.5   |
| Mangawara Stm at Rutherford Rd Br                       | 12    | 15.0 | 14.1   | 10.6 | 21.4 | 3.8 | 0.60  | 14.6   |
| Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd       | 12    | 14.2 | 14.4   | 8.5  | 19.4 | 3.6 | -0.20 | 14.3   |
| Matahuru Stm at Waiterimu Road Below Confluence         | 12    | 14.5 | 13.9   | 9.5  | 20.0 | 4.0 | 0.09  | 14.2   |
| Ohaeroa Stm at SH22 Br                                  | 12    | 14.4 | 13.9   | 10.5 | 18.5 | 3.4 | 0.19  | 14.1   |
| Opuatia Stm at Ponganui Rd                              | 12    | 14.7 | 14.4   | 10.6 | 19.9 | 3.8 | 0.42  | 14.6   |
| Pokaiwhenua Stm at Arapuni - Putaruru Rd                | 12    | 13.7 | 13.2   | 10.3 | 17.5 | 3.8 | 0.24  | 14.4   |
| Waerenga Stm at Taniwha Rd                              | 12    | 14.0 | 13.4   | 10.3 | 19.1 | 4.2 | 0.39  | 13.9   |
| Waitawhiriwhiri Stm at Edgecumbe Street                 | 12    | 15.8 | 16.2   | 10.7 | 19.8 | 4.3 | -0.27 | 16.3   |
| Whakapipi Stm at SH22 Br                                | 12    | 15.1 | 15.3   | 11.6 | 19.3 | 4.8 | 0.12  | 15.1   |
| Whakauru Stm at U/S SH1 Br                              | 12    | 11.8 | 11.1   | 9.0  | 15.3 | 3.1 | 0.33  | 12.7   |
| Whangamarino River at Island Block Rd                   | 12    | 16.9 | 18.0   | 9.0  | 24.0 | 6.5 | -0.21 | 17.0   |
| Whangamarino River at Jefferies Rd Br                   | 12    | 14.3 | 13.7   | 9.9  | 19.5 | 4.4 | 0.21  | 14.4   |
| Whangape Stm at Rangiriri-Glen Murray Rd                | 12    | 15.8 | 15.7   | 10.4 | 22.3 | 5.2 | 0.29  | 16.3   |

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



| <b>Waipa River and Tributaries</b>                             |    |      |      |      |      |     |       |      |
|--|----|------|------|------|------|-----|-------|------|
| Kaniwhaniwha Stm at Wright Rd                                  | 12 | 14.1 | 14.1 | 9.6  | 19.1 | 5.7 | 0.03  | 14.4 |
| Mangaohoi Stm at South Branch Maru Rd                          | 12 | 13.6 | 14.0 | 9.0  | 16.8 | 4.2 | -0.30 | 13.9 |
| Mangaokewa Stm at Lawrence St Bridge                           | 12 | 13.0 | 12.1 | 7.7  | 18.9 | 5.8 | 0.18  | 12.7 |
| Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd               | 12 | 16.0 | 16.2 | 9.2  | 22.2 | 6.8 | -0.08 | 16.1 |
| Mangapu River at Otorohanga                                    | 11 | 14.7 | 14.4 | 10.4 | 20.1 | 6.3 | 0.30  | 15.3 |
| Mangatutu Stm (Waikeria) at Walker Rd Br                       | 12 | 13.7 | 13.2 | 8.1  | 18.2 | 5.2 | 0.01  | 13.9 |
| Mangauika Stm at Te Awamutu Borough W/S Intake                 | 12 | 12.5 | 12.2 | 9.5  | 15.6 | 3.7 | 0.21  | 12.4 |
| Ohote Stm at Whatawhata/Horotiu Rd                             | 12 | 15.1 | 15.4 | 8.3  | 20.8 | 5.6 | -0.24 | 15.4 |
| Puniu River at Bartons Corner Rd Br                            | 12 | 14.7 | 14.5 | 8.4  | 19.2 | 5.6 | -0.18 | 14.8 |
| Waipa River at Mangaokewa Rd                                   | 12 | 13.2 | 12.3 | 7.7  | 18.3 | 7.1 | 0.02  | 13.3 |
| Waipa River at Pirongia-Ngutunui Rd Br                         | 12 | 14.9 | 14.6 | 9.8  | 20.3 | 5.1 | 0.18  | 15.2 |
| Waipa River at SH3 Otorohanga                                  | 12 | 14.6 | 13.9 | 9.4  | 20.3 | 7.0 | 0.13  | 14.8 |
| Waitomo Stm at SH31 Otorohanga                                 | 12 | 14.9 | 14.8 | 10.6 | 19.6 | 5.7 | 0.07  | 14.8 |
| Waitomo Stm at Tumutumu Rd                                     | 12 | 13.9 | 14.1 | 11.1 | 17.2 | 4.0 | 0.03  | 13.9 |
| <b>Tributaries to the upper Waikato River</b>                  |    |      |      |      |      |     |       |      |
| Kawaunui Stm at SH5 Br   | 12 | 14.3 | 14.3 | 11.1 | 17.7 | 4.0 | 0.10  | 15.4 |
| Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)             | 12 | 13.0 | 12.3 | 10.0 | 17.3 | 3.2 | 0.55  | 13.2 |
| Mangakara Stm (Reporoa) at SH5                                 | 12 | 13.1 | 12.5 | 10.4 | 16.8 | 3.4 | 0.42  | 14.0 |
| Mangakino Stm (Whakamaru) at Sandel Rd                         | 12 | 11.9 | 12.1 | 8.2  | 16.7 | 4.4 | 0.14  | 12.2 |
| Otamakokore Stm at Hossack Rd                                  | 12 | 20.0 | 20.1 | 15.4 | 24.0 | 3.5 | -0.06 | 20.6 |
| Pueto Stm at Broadlands Rd Br                                  | 12 | 13.7 | 13.4 | 11.4 | 15.8 | 2.6 | -0.01 | 14.3 |
| Tahunaatara Stm at Ohakuri Rd                                  | 12 | 13.2 | 12.4 | 9.5  | 17.3 | 4.3 | 0.23  | 14.0 |
| Torepatutahi Stm at Vaile Rd Br                                | 12 | 14.4 | 13.8 | 10.9 | 17.6 | 3.9 | 0.25  | 14.5 |
| Waiotapu Stm at Campbell Rd Br                                 | 12 | 27.3 | 28.2 | 22.8 | 31.1 | 3.5 | -0.25 | 28.5 |
| Waiotapu Stm at Homestead Rd Br                                | 12 | 18.3 | 18.4 | 14.7 | 22.8 | 4.6 | 0.16  | 18.8 |
| Waipapa Stm (Mokai) at Tirohanga Rd Br                         | 12 | 21.8 | 22.0 | 19.4 | 24.9 | 3.0 | 0.26  | 22.1 |
| Whirinaki Stm at Corbett Rd                                    | 12 | 12.0 | 12.0 | 10.8 | 13.1 | 1.7 | -0.01 | 12.6 |
| <b>West Coast</b>  |    |      |      |      |      |     |       |      |
| Awakino River at Gribbon Rd                                    | 12 | 12.8 | 12.1 | 9.2  | 17.8 | 4.6 | 0.39  | 12.6 |
| Awakino River at SH3 Awakau Rd Junction                        | 12 | 14.6 | 14.3 | 9.8  | 20.2 | 6.6 | 0.23  | 14.7 |
| Manganui River at Off Manganui Rd                              | 12 | 13.5 | 13.0 | 9.4  | 19.0 | 5.1 | 0.32  | 13.6 |
| Mangaotaki River at SH3 Br                                     | 12 | 13.3 | 12.3 | 8.7  | 18.5 | 5.9 | 0.28  | 13.3 |
| Marokopa River at Speedies Rd (Off Te Anka Rd)                 | 12 | 13.5 | 13.7 | 9.6  | 18.0 | 5.5 | 0.04  | 13.8 |
| Mokau River at Awakau Rd                                       | 12 | 14.7 | 13.8 | 9.3  | 21.4 | 7.1 | 0.33  | 14.4 |
| Mokau River at Mangaokewa Rd (Off SH30)                        | 12 | 12.0 | 11.3 | 7.9  | 16.4 | 5.3 | 0.16  | 12.2 |
| Mokau River at Totoro Rd Recorder                              | 12 | 14.4 | 13.7 | 9.1  | 19.8 | 6.5 | 0.12  | 14.1 |
| Mokauiti Stm at Three Way Point - Aria                         | 12 | 14.4 | 13.5 | 9.0  | 20.1 | 7.1 | 0.13  | 14.5 |
| Ohautira Stm at Waingarō Te Uku Rd                             | 12 | 12.6 | 12.7 | 7.1  | 18.2 | 5.2 | 0.14  | 12.7 |
| Oparau River at Langdon Rd (Off Okupata Rd)                    | 12 | 14.7 | 14.8 | 9.7  | 19.8 | 6.7 | 0.05  | 14.2 |
| Tawarau River at Off Speedies Rd                               | 12 | 13.6 | 13.7 | 9.2  | 18.2 | 6.0 | 0.02  | 13.6 |
| Waingarō River (Pukemiro) at Ruakiwi Rd Off SH22               | 12 | 14.7 | 14.7 | 9.3  | 20.6 | 6.2 | 0.11  | 14.4 |
| Waitetuna River at Te Uku-Waingarō Rd                          | 12 | 13.6 | 13.5 | 8.4  | 18.5 | 5.9 | 0.06  | 14.0 |
| <b>Inflows to Lake Taupo</b>                                   |    |      |      |      |      |     |       |      |
| Hinemaiaia River at SH1  | 12 | 11.4 | 11.4 | 7.1  | 15.5 | 5.6 | 0.01  | 11.5 |
| Kuratau River at SH41 Moerangi                                 | 12 | 9.3  | 9.6  | 6.0  | 13.3 | 4.2 | -0.02 | 9.6  |
| Kuratau River at 43 Te Rae Street                              | 12 | 13.1 | 12.8 | 7.0  | 19.4 | 6.8 | 0.04  | 13.3 |
| Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Res)        | 12 | 10.8 | 11.2 | 8.3  | 12.7 | 2.8 | -0.50 | 11.0 |
| Tauranga-Taupo River at 20 Metres U/S SH1 Bridge               | 12 | 10.8 | 11.6 | 5.0  | 15.0 | 6.0 | -0.33 | 11.3 |
| Tokaanu Power Station Tailrace Canal at SH41 Bridge Over Canal | 12 | 12.8 | 13.7 | 6.4  | 17.5 | 7.5 | -0.18 | 13.1 |
| Tokaanu Stm at Off SH41 Turangi                                | 12 | 12.5 | 12.2 | 10.7 | 14.3 | 2.1 | 0.21  | 12.3 |
| Waihaha River at SH32  | 12 | 11.0 | 12.3 | 6.7  | 14.0 | 4.8 | -0.40 | 11.4 |
| Waitahanui River at Blake Rd                                   | 12 | 10.7 | 11.0 | 8.1  | 12.1 | 2.2 | -0.66 | 10.8 |
| Whangamata Stm (Kinloch) at Whangamata Rd                      | 12 | 10.2 | 10.7 | 7.8  | 11.5 | 2.0 | -0.86 | 10.1 |
| Whanganui Stm at Lakeside Lake Taupo                           | 12 | 11.1 | 12.3 | 6.7  | 14.8 | 5.7 | -0.30 | 11.9 |
| Whareroa Stm (Taupo District) at Lakeside Lake Taupo           | 12 | 11.1 | 11.9 | 7.2  | 13.8 | 4.4 | -0.42 | 11.5 |

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, 2008-2012); 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 (2012) that Comply with the Satisfactory Water Quality Standards and with the Excellent Water Quality Standards and Guidelines ("n=8, \*n=9, ~n=10, ^n=11)**

| Location   | SATISFACTORY      |     |      |     |      |     |     |            |        |          |     | EXCELLENT         |      |     |      |    |    |       |            |          |  |  |
|--|-------------------|-----|------|-----|------|-----|-----|------------|--------|----------|-----|-------------------|------|-----|------|----|----|-------|------------|----------|--|--|
|  | ECOLOGICAL HEALTH |     |      |     |      |     |     | RECREATION |        |          |     | ECOLOGICAL HEALTH |      |     |      |    |    |       | RECREATION |          |  |  |
|  | DO                | pH  | Turb | NH4 | Temp | TP  | TN  | Bdisk      | E.coli | E.coli-m | DO  | pH                | Turb | NH4 | Temp | TP | TN | Bdisk | E.coli     | E.coli-m |  |  |
| <b>Coromandel</b>                                      |                   |     |      |     |      |     |     |            |        |          |     |                   |      |     |      |    |    |       |            |          |  |  |
| Hikutaia River at Old Maratoto Rd                      | 12                | 12  | 10   | 12  | 10   | 11  | 11  | 8^         | 3/4    | N        | 11  | 7                 | 9    | 12  | 7    | 8  | 7  | 0^    | 0/4        | N        |  |  |
| Kauaeranga River at Smiths Cableway/Recorder           | 12                | 12  | 8    | 12  | 10   | 12  | 12  | 9^         | 4/4    | Y        | 12  | 11                | 6    | 12  | 4    | 7  | 2  | 3^    | 0/4        | N        |  |  |
| Ohinemuri River at Queens Head                         | 11^               | 11^ | 9^   | 11^ | 7^   | 10^ | 1^  | 7~         | 4/4    | Y        | 11^ | 6^                | 6^   | 6^  | 3^   | 2^ | 0^ | 0~    | 3/4        | N        |  |  |
| Ohinemuri River at SH25 Br                             | 12                | 12  | 11   | 12  | 7    | 11  | 1   | 9^         | 4/4    | N        | 12  | 7                 | 11   | 12  | 2    | 4  | 0  | 0^    | 0/4        | N        |  |  |
| Tairua River at Morrisons Br Hikuai                    | 12                | 12  | 11   | 12  | 7    | 12  | 12  | 9^         | 4/4    | Y        | 9   | 6                 | 10   | 12  | 4    | 10 | 8  | 1^    | 3/4        | N        |  |  |
| Tapu River at Tapu-Coroglen Rd                         | 12                | 12  | 11   | 12  | 10   | 12  | 12  | 9^         | 4/4    | Y        | 12  | 11                | 8    | 12  | 5    | 11 | 9  | 5^    | 3/4        | N        |  |  |
| Waiau River at E309 Rd Ford                            | 12                | 12  | 10   | 12  | 10   | 12  | 11  | 8^         | 4/4    | Y        | 12  | 11                | 4    | 12  | 5    | 8  | 7  | 1^    | 2/4        | N        |  |  |
| Waitekauri River at U/S Ohinemuri Conflu               | 11^               | 11^ | 10^  | 11^ | 7^   | 11^ | 10^ | 8~         | 4/4    | Y        | 11^ | 9^                | 8^   | 11^ | 4^   | 8^ | 0^ | 2~    | 3/4        | N        |  |  |
| Waiwawa River at SH25 Coroglen                         | 12                | 12  | 11   | 12  | 7    | 12  | 12  | 9^         | 4/4    | Y        | 12  | 10                | 9    | 12  | 4    | 11 | 8  | 2^    | 3/4        | N        |  |  |
| Wharekawa River at SH25                                | 12                | 12  | 10   | 12  | 8    | 11  | 11  | 9^         | 4/4    | N        | 12  | 5                 | 3    | 12  | 4    | 10 | 2  | 0^    | 0/4        | N        |  |  |
| <b>Hauraki</b>   |                   |     |      |     |      |     |     |            |        |          |     |                   |      |     |      |    |    |       |            |          |  |  |
| Mangawhero Stm (Kaihere) at Mangawara Rd               | 12                | 12  | 3    | 12  | 11   | 1   | 6   | 1          | 4/4    | Y        | 12  | 12                | 0    | 12  | 6    | 0  | 0  | 0     | 1/4        | N        |  |  |
| Oraka Stm at Lake Rd                                   | 12                | 12  | 7    | 12  | 8    | 0   | 0   | 2          | 4/4    | N        | 9   | 12                | 0    | 9   | 5    | 0  | 0  | 0     | 0/4        | N        |  |  |
| Piako River at KIWITAHU                                | 11                | 12  | 7    | 12  | 8    | 0   | 1   | 4          | 1/4    | N        | 8   | 9                 | 1    | 10  | 2    | 0  | 0  | 0     | 0/4        | N        |  |  |
| Piako River at Paeroa-Tahuna Rd Br                     | 9                 | 12  | 4    | 12  | 10   | 0   | 0   | 0          | 2/4    | N        | 5   | 10                | 0    | 9   | 4    | 0  | 0  | 0     | 0/4        | N        |  |  |
| Piakonui Stm at Piakonui Rd                            | 12                | 12  | 9    | 12  | 11   | 12  | 9   | 3          | 4/4    | N        | 11  | 11                | 0    | 12  | 7    | 0  | 0  | 0     | 1/4        | N        |  |  |
| Waihou River at Okauia                                 | 12                | 12  | 6    | 12  | 8    | 0   | 0   | 0^         | 4/4    | N        | 10  | 11                | 0    | 11  | 4    | 0  | 0  | 0^    | 0/4        | N        |  |  |
| Waihou River at Whites Rd                              | 12                | 12  | 11   | 12  | 7    | 0   | 0   | 11         | 4/4    | Y        | 12  | 5                 | 11   | 12  | 7    | 0  | 0  | 6     | 3/4        | N        |  |  |
| Waihotu Stm at Waihotu Rd (Off SH5)                    | 12                | 12  | 6    | 12  | 12   | 12  | 12  | n/a        | 4/4    | Y        | 9   | 11                | 0    | 12  | 10   | 0  | 0  | n/a   | 2/4        | N        |  |  |
| Waiomou Stm at Matamata-Tauranga Rd                    | 12                | 12  | 7    | 12  | 10   | 4   | 1   | 3          | 4/4    | N        | 11  | 10                | 1    | 12  | 5    | 0  | 0  | 0     | 0/4        | N        |  |  |
| Waitakaruru River (Hauraki Plains) at Coxhead Rd Br    | 11                | 12  | 2    | 12  | 8    | 0   | 2   | 0          | 3/4    | N        | 8   | 10                | 0    | 11  | 1    | 0  | 0  | 0     | 0/4        | N        |  |  |
| Waitoa River at Landsdowne Rd Br                       | 10                | 12  | 6    | 12  | 8    | 5   | 0   | 4          | 1/4    | N        | 8   | 10                | 1    | 11  | 3    | 0  | 0  | 0     | 0/4        | N        |  |  |
| Waitoa River at Mellon Rd Recorder                     | 5                 | 12  | 3    | 12  | 9    | 0   | 0   | 2          | 1/4    | N        | 0   | 10                | 0    | 8   | 3    | 0  | 0  | 0     | 0/4        | N        |  |  |
| <b>Tributaries to the Lower Waikato River</b>          |                   |     |      |     |      |     |     |            |        |          |     |                   |      |     |      |    |    |       |            |          |  |  |
| Awaroa River (Waiuku) at Otatau Rd Br opp Moseley Rd   | 9                 | 12  | 0    | 12  | 5    | 2   | 0   | 0          | n/a    | N        | 6   | 8                 | 0    | 9   | 1    | 0  | 0  | 0     | n/a        | N        |  |  |
| Awaroa Stm (Rotowaro) at Sansons Br, Rotowaro-Huntly F | 10                | 12  | 3    | 12  | 11   | 10  | 3   | 0          | 2/4    | N        | 6   | 11                | 0    | 11  | 4    | 3  | 0  | 0     | 0/4        | N        |  |  |
| Karapiro Stm at Hickey Rd Bridge                       | 11                | 12  | 4    | 12  | 9    | 0   | 1   | 2~         | 1/4    | N        | 7   | 12                | 0    | 12  | 3    | 0  | 0  | 0~    | 0/4        | N        |  |  |
| Kirikirihoa Stm at Tauhara Dr                          | 3                 | 12  | 0    | 12  | 8    | 0   | 0   | 0^         | 1/4    | N        | 1   | 5                 | 0    | 1   | 4    | 0  | 0  | 0^    | 0/4        | N        |  |  |
| Komakorau Stm at Henry Rd                              | 1                 | 8   | 0    | 10  | 9    | 0   | 0   | 0          | 0/4    | N        | 1   | 1                 | 0    | 0   | 3    | 0  | 0  | 0     | 0/4        | N        |  |  |
| Little Waipa Stm at Arapuni - Putaruru Rd              | 12                | 12  | 10   | 12  | 8    | 0   | 0   | 4          | 4/4    | Y        | 12  | 10                | 6    | 11  | 5    | 0  | 0  | 0     | 1/4        | N        |  |  |
| Mangakotukutuku Stm (Rukuhia) at Peacocks Rd           | 12                | 11  | 0    | 12  | 9    | 0   | 0   | 0          | 2/4    | N        | 8   | 8                 | 0    | 0   | 4    | 0  | 0  | 0     | 0/4        | N        |  |  |
| Mangamingi Stm (Tokoroa) at Paraonui Rd Br             | 12                | 12  | 7    | 12  | 12   | 0   | 0   | 0          | 1/4    | N        | 12  | 12                | 0    | 4   | 5    | 0  | 0  | 0     | 0/4        | N        |  |  |
| Mangaone Stm at Annebrooke Rd Br                       | 7                 | 12  | 0    | 12  | 8    | 0   | 0   | 1^         | 1/4    | N        | 0   | 12                | 0    | 12  | 7    | 0  | 0  | 0^    | 0/4        | N        |  |  |
| Mangaonua Stm at Hoeka Rd                              | 9                 | 12  | 0    | 12  | 9    | 4   | 0   | 0          | 1/4    | N        | 1   | 9                 | 0    | 9   | 6    | 0  | 0  | 0     | 0/4        | N        |  |  |
| Mangaonua Stm at Te Miro Rd                            | 12                | 12  | 5    | 12  | 9    | 10  | 0   | 0          | 3/4    | N        | 12  | 12                | 0    | 12  | 4    | 0  | 0  | 0     | 0/4        | N        |  |  |
| Mangatangi River at SH2 Maramara                       | 12                | 12  | 0    | 12  | 5    | 1   | 7   | 0~         | n/a    | N        | 8   | 9                 | 0    | 12  | 1    | 0  | 0  | 0~    | n/a        | N        |  |  |
| Mangatawhiri River at Lyons Rd At Buckingham Br        | 12                | 12  | 7    | 12  | 5    | 10  | 10  | 5          | n/a    | N        | 12  | 12                | 2    | 12  | 0    | 0  | 2  | 0     | n/a        | N        |  |  |
| Mangawara Stm at Rutherford Rd Br                      | 8                 | 11  | 0    | 12  | 8    | 0   | 0   | 0          | n/a    | N        | 1   | 4                 | 0    | 0   | 3    | 0  | 0  | 0     | n/a        | N        |  |  |
| Mangawhero Stm (Cambridge) at Cambridge-Ohaupo Rd      | 11                | 12  | 0    | 12  | 9    | 0   | 0   | 0          | 1/4    | N        | 3   | 9                 | 0    | 3   | 4    | 0  | 0  | 0     | 0/4        | N        |  |  |
| Matahuru Stm at Waiterimu Road Below Confluence        | 11                | 12  | 0    | 12  | 8    | 0   | 1   | 0          | n/a    | N        | 7   | 8                 | 0    | 10  | 4    | 0  | 0  | 0     | n/a        | N        |  |  |
| Ohaeroa Stm at SH22 Br                                 | 12                | 12  | 4    | 12  | 9    | 8   | 0   | 1"         | n/a    | N        | 12  | 12                | 0    | 12  | 3    | 0  | 0  | 0"    | n/a        | N        |  |  |
| Opuatia Stm at Ponganui Rd                             | 12                | 12  | 0    | 12  | 9    | 8   | 0   | 0          | 2/4    | N        | 11  | 12                | 0    | 12  | 4    | 0  | 0  | 0     | 1/4        | N        |  |  |
| Pokaiwhenua Stm at Arapuni - Putaruru Rd               | 12                | 12  | 10   | 12  | 11   | 0   | 0   | 2          | 4/4    | N        | 12  | 12                | 4    | 11  | 4    | 0  | 0  | 0     | 0/4        | N        |  |  |
| Waerenga Stm at Taniwha Rd                             | 12                | 12  | 1    | 12  | 10   | 2   | 0   | 1          | 2/4    | N        | 12  | 10                | 0    | 12  | 4    | 0  | 0  | 0     | 0/4        | N        |  |  |
| Waitawhiriwhiri Stm at Edgecumbe Street                | 9                 | 12  | 0    | 11  | 8    | 0   | 0   | 0          | 1/4    | N        | 1   | 8                 | 0    | 0   | 0    | 0  | 0  | 0     | 0/4        | N        |  |  |
| Whakapipi Stm at SH22 Br                               | 12                | 12  | 5    | 12  | 9    | 2   | 0   | 2~         | n/a    | N        | 10  | 12                | 0    | 11  | 1    | 0  | 0  | 0~    | n/a        | N        |  |  |
| Whakauru Stm at U/S SH1 Br                             | 12                | 12  | 1    | 12  | 12   | 2   | 6   | 0          | 2/4    | N        | 11  | 12                | 0    | 12  | 9    | 0  | 0  | 0     | 0/4        | N        |  |  |
| Whangamarino River at Island Block Rd                  | 5                 | 12  | 0    | 12  | 5    | 0   | 0   | 0          | n/a    | N        | 1   | 6                 | 0    | 7   | 1    | 0  | 0  | 0     | n/a        | N        |  |  |
| Whangamarino River at Jefferies Rd Br                  | 7                 | 12  | 0    | 12  | 9    | 0   | 0   | 0          | n/a    | N        | 4   | 9                 | 0    | 11  | 4    | 0  | 0  | 0     | n/a        | N        |  |  |
| Whangape Stm at Rangiriri-Glen Murray Rd               | 11                | 11  | 0    | 12  | 7    | 0   | 0   | 0          | n/a    | N        | 9   | 7                 | 0    | 11  | 1    | 0  | 0  | 0     | n/a        | N        |  |  |

| Waipa River and Tributaries                              |     |     |    |     |    |    |    |     |     |   |     |    |    |    |    |   |   |     |     |   |  |
|--|-----|-----|----|-----|----|----|----|-----|-----|---|-----|----|----|----|----|---|---|-----|-----|---|--|
| Kaniwhaniwha Stm at Wright Rd                            | 10  | 12  | 4  | 12  | 11 | 8  | 4  | 0~  | n/a | N | 6   | 10 | 0  | 12 | 4  | 0 | 0 | 0~  | n/a | N |  |
| Mangaohoi Stm at South Branch Maru Rd                    | 12  | 12  | 12 | 12  | 11 | 3  | 10 | 5   | 3/4 | Y | 12  | 12 | 6  | 12 | 6  | 0 | 0 | 0   | 1/4 | N |  |
| Mangaokewa Stm at Lawrence Street Br                     | 12  | 12  | 5  | 12  | 12 | 8  | 0  | 3   | n/a | N | 10  | 11 | 0  | 12 | 5  | 0 | 0 | 0   | n/a | N |  |
| Mangapiko Stm (Pirongia/Te Awamutu) at Bowman Rd         | 12  | 12  | 0  | 12  | 6  | 0  | 0  | 0   | n/a | N | 10  | 11 | 0  | 10 | 2  | 0 | 0 | 0   | n/a | N |  |
| Mangapu River at Otorohanga                              | 10^ | 11^ | 1^ | 11^ | 8^ | 0^ | 1  | 0"  | 1/3 | N | 8   | 10 | 0  | 11 | 2  | 0 | 1 | 0"  | 0/3 | N |  |
| Mangatutu Stm (Waikeria) at Walker Rd Br                 | 12  | 12  | 9  | 12  | 11 | 10 | 4  | 4   | 3/4 | N | 12  | 12 | 3  | 12 | 4  | 1 | 0 | 0   | 0/4 | N |  |
| Mangauika Stm at Te Awamutu Borough W/S Intake           | 12  | 12  | 12 | 12  | 12 | 12 | 12 | 11  | 4/4 | Y | 12  | 12 | 11 | 12 | 8  | 8 | 0 | 3   | 2/4 | N |  |
| Ohote Stm at Whatawhata/Horotiu Rd                       | 1   | 10  | 0  | 12  | 9  | 0  | 0  | 0   | 3/4 | N | 0   | 0  | 0  | 12 | 3  | 0 | 0 | 0   | 0/4 | N |  |
| Puniu River at Bartons Corner Rd Br                      | 12  | 12  | 4  | 12  | 10 | 1  | 0  | n/a | n/a | N | 11  | 10 | 1  | 11 | 3  | 0 | 0 | n/a | n/a | N |  |
| Waipa River at Mangaokewa Rd                             | 12  | 12  | 10 | 12  | 11 | 10 | 3  | 4   | n/a | N | 12  | 12 | 5  | 12 | 6  | 1 | 0 | 0   | n/a | N |  |
| Waipa River at Pirongia-Ngutunui Rd Br                   | 11  | 12  | 0  | 12  | 8  | 1  | 0  | n/a | 2/4 | N | 8   | 10 | 0  | 12 | 3  | 0 | 0 | n/a | 0/4 | N |  |
| Waipa River at SH3 Otorohanga                            | 12  | 12  | 4  | 12  | 9  | 8  | 3  | 3   | 3/4 | N | 11  | 9  | 0  | 12 | 4  | 0 | 0 | 0   | 1/4 | N |  |
| Waitomo Stm at SH31 Otorohanga                           | 12  | 11^ | 1^ | 11^ | 10 | 5  | 1  | 0   | 1/4 | N | 11  | 10 | 0  | 11 | 2  | 0 | 0 | 0   | 0/4 | N |  |
| Waitomo Stm at Tumutumu Rd                               | 12  | 12  | 4  | 12  | 10 | 10 | 0  | 0~  | 3/4 | N | 12  | 9  | 0  | 12 | 5  | 0 | 0 | 0~  | 1/4 | N |  |
| Tributaries to the Upper Waikato River                   |     |     |    |     |    |    |    |     |     |   |     |    |    |    |    |   |   |     |     |   |  |
| Kawaunui Stm at SH5 Br                                   | 12  | 12  | 8  | 12  | 9  | 0  | 0  | 2   | 2/4 | N | 7   | 10 | 0  | 11 | 4  | 0 | 0 | 0   | 0/4 | N |  |
| Mangaharakeke Stm (Atiamuri) at SH30 (Off Jct SH1)       | 12  | 12  | 8  | 12  | 12 | 1  | 0  | 0^  | 4/4 | N | 10  | 12 | 0  | 12 | 6  | 0 | 0 | 0^  | 0/4 | N |  |
| Mangakara Stm (Reporoa) at SH5                           | 12  | 12  | 6  | 12  | 12 | 0  | 0  | 0^  | 4/4 | Y | 9   | 12 | 0  | 12 | 6  | 0 | 0 | 0^  | 0/4 | N |  |
| Mangakino Stm (Whakamaru) at Sandel Rd                   | 12  | 12  | 11 | 12  | 12 | 2  | 0  | 4   | n/a | N | 12  | 12 | 7  | 12 | 10 | 0 | 0 | 0   | n/a | N |  |
| Otamakokore Stm at Hossack Rd                            | 11  | 12  | 8  | 12  | 0  | 0  | 0  | 2   | 4/4 | N | 10  | 7  | 1  | 12 | 0  | 0 | 0 | 0   | 0/4 | N |  |
| Pueto Stm at Broadlands Rd Br                            | 12  | 12  | 10 | 12  | 9  | 0  | 0  | 8   | 4/4 | Y | 9   | 12 | 3  | 12 | 7  | 0 | 0 | 0   | 2/4 | N |  |
| Tahunaatara Stm at Ohakuri Rd                            | 12  | 12  | 10 | 12  | 12 | 2  | 0  | 1   | 3/4 | N | 12  | 12 | 2  | 12 | 6  | 0 | 0 | 0   | 0/4 | N |  |
| Torepatutahi Stm at Vaile Rd Br                          | 12  | 12  | 12 | 12  | 8  | 0  | 0  | n/a | n/a | N | 10  | 12 | 10 | 12 | 4  | 0 | 0 | n/a | n/a | N |  |
| Waiotapu Stm at Campbell Rd Br                           | 12  | 0   | 0  | 10  | 0  | 0  | 0  | 0   | 4/4 | Y | 7   | 0  | 0  | 0  | 0  | 0 | 0 | 0   | 4/4 | Y |  |
| Waiotapu Stm at Homestead Rd Br                          | 12  | 11  | 1  | 12  | 4  | 0  | 0  | n/a | n/a | N | 7   | 5  | 0  | 0  | 0  | 0 | 0 | n/a | n/a | N |  |
| Waipapa Stm at Tirohanga Rd Br                           | 12  | 12  | 5  | 12  | 0  | 0  | 0  | 1   | 4/4 | Y | 12  | 12 | 0  | 12 | 0  | 0 | 0 | 0   | 1/4 | N |  |
| Whirinaki Stm at Corbett Rd                              | 12  | 12  | 12 | 12  | 12 | 0  | 0  | n/a | n/a | N | 12  | 12 | 11 | 12 | 7  | 0 | 0 | n/a | n/a | N |  |
| West Coast   |     |     |    |     |    |    |    |     |     |   |     |    |    |    |    |   |   |     |     |   |  |
| Awakino River at Gribbon Rd                              | 11^ | 12  | 9  | 12  | 12 | 11 | 12 | 6   | 3/4 | Y | 11^ | 12 | 9  | 12 | 7  | 1 | 4 | 1   | 2/4 | N |  |
| Awakino River at SH3 Awakau Rd Junction                  | 12  | 12  | 8  | 12  | 10 | 9  | 10 | 4   | 4/4 | Y | 12  | 10 | 4  | 12 | 4  | 2 | 1 | 0   | 0/4 | N |  |
| Manganui River at Off Manganui Rd                        | 12  | 12  | 6  | 12  | 12 | 9  | 11 | 4^  | 3/4 | N | 12  | 11 | 2  | 12 | 6  | 1 | 2 | 0^  | 2/4 | N |  |
| Mangaotaki River at SH3 Br                               | 12  | 12  | 5  | 12  | 12 | 9  | 0  | 2   | n/a | N | 12  | 12 | 2  | 12 | 5  | 0 | 0 | 0   | n/a | N |  |
| Marokopa River at Speedies Rd (Off Te Anga Rd)           | 12  | 12  | 8  | 12  | 12 | 10 | 10 | 2   | 3/4 | N | 12  | 9  | 1  | 12 | 5  | 0 | 0 | 0   | 1/4 | N |  |
| Mokau River at Awakau Rd                                 | 12  | 12  | 2  | 12  | 9  | 4  | 3  | 0   | 2/4 | N | 10  | 11 | 0  | 12 | 3  | 0 | 0 | 0   | 1/4 | N |  |
| Mokau River at Mangaokewa Rd (Off SH30)                  | 12  | 12  | 9  | 12  | 12 | 8  | 4  | n/a | 3/4 | N | 12  | 9  | 1  | 12 | 8  | 0 | 0 | n/a | 1/4 | N |  |
| Mokau River at Totoro Rd Recorder                        | 12  | 12  | 4  | 12  | 11 | 6  | 0  | 2   | 3/4 | N | 11  | 12 | 0  | 12 | 3  | 0 | 0 | 0   | 0/4 | N |  |
| Mokauti Stm at Three Way Point - Aria                    | 11  | 12  | 0  | 12  | 9  | 3  | 4  | 0   | 3/4 | N | 10  | 10 | 0  | 12 | 4  | 0 | 0 | 0   | 0/4 | N |  |
| Ohautira Stm at Waingaro Te Uku Rd                       | 12  | 12  | 4  | 12  | 12 | 9  | 6  | 0   | 2/4 | N | 11  | 12 | 0  | 12 | 6  | 0 | 0 | 0   | 0/4 | N |  |
| Oparau River at Langdon Rd (Off Okupata Rd)              | 12  | 12  | 10 | 12  | 12 | 11 | 11 | 3   | n/a | N | 12  | 12 | 3  | 12 | 3  | 2 | 1 | 0   | n/a | N |  |
| Tawarau River at Off Speedies Rd                         | 12  | 12  | 9  | 12  | 12 | 10 | 9  | 2   | n/a | N | 12  | 8  | 2  | 12 | 5  | 0 | 0 | 0   | n/a | N |  |
| Waingaro River (Pukemiro) at Ruakiwi Rd Off SH22         | 12  | 12  | 0  | 12  | 10 | 7  | 4  | 0^  | n/a | N | 10  | 11 | 0  | 12 | 3  | 0 | 0 | 0^  | n/a | N |  |
| Waitetuna River at Te Uku-Waingaro Rd                    | 12  | 12  | 1  | 12  | 12 | 8  | 3  | 0   | 2/4 | N | 11  | 11 | 0  | 12 | 5  | 0 | 0 | 0   | 0/4 | N |  |
| Inflows to Lake Taupo                                    |     |     |    |     |    |    |    |     |     |   |     |    |    |    |    |   |   |     |     |   |  |
| Hinemaiaia River at SH1                                  | 12  | 12  | 12 | 12  | 12 | 10 | 12 | 10  | 4/4 | Y | 12  | 12 | 10 | 12 | 12 | 0 | 1 | 0   | 4/4 | Y |  |
| Kuratau River at SH41 Moerangi                           | 12  | 12  | 10 | 12  | 12 | 12 | 11 | 10  | n/a | N | 11  | 12 | 8  | 12 | 12 | 9 | 0 | 0   | n/a | N |  |
| Kuratau River at Te Rae Street                           | 12  | 12  | 12 | 12  | 12 | 12 | 0  | n/a | 4/4 | N | 12  | 12 | 10 | 12 | 6  | 0 | 0 | n/a | 2/4 | N |  |
| Mapara Stm (Lake Taupo) at Off Mapara Rd (Whakaipo Re    | 12  | 12  | 11 | 12  | 12 | 0  | 0  | 5   | 4/4 | Y | 9   | 12 | 2  | 12 | 10 | 0 | 0 | 0   | 1/4 | N |  |
| Tauranga-Taupo River at 20 Metres U/S SH1 Bridge         | 12  | 12  | 12 | 12  | 12 | 12 | 12 | 11  | n/a | N | 10  | 12 | 10 | 12 | 12 | 0 | 5 | 1   | n/a | N |  |
| Tokaanu at Off SH41 Turangi                              | 9   | 12  | 12 | 12  | 12 | 0  | 5  | n/a | n/a | N | 3   | 12 | 11 | 12 | 7  | 0 | 0 | n/a | n/a | N |  |
| Tokaanu Power Station Tailrace Canal at SH41 Bridge Over | 12  | 12  | 12 | 12  | 12 | 11 | 12 | n/a | n/a | N | 11  | 11 | 8  | 10 | 9  | 1 | 5 | n/a | n/a | N |  |
| Waihaha River at SH32                                    | 12  | 12  | 10 | 12  | 12 | 11 | 12 | 9^  | 4/4 | Y | 12  | 10 | 9  | 12 | 12 | 0 | 0 | 0^  | 4/4 | Y |  |
| Waitahanui River at Blake Rd                             | 12  | 12  | 12 | 12  | 12 | 0  | 4  | 12  | 4/4 | Y | 12  | 12 | 10 | 12 | 10 | 0 | 0 | 0   | 3/4 | Y |  |
| Whangamata Stm (Kinloch) at Whangamata Rd                | 12  | 12  | 12 | 12  | 12 | 0  | 0  | n/a | n/a | N | 10  | 12 | 9  | 12 | 10 | 0 | 0 | n/a | n/a | N |  |
| Whanganui Stm at Lakeside Lake Taupo                     | 12  | 12  | 11 | 12  | 12 | 12 | 9  | n/a | 4/4 | Y | 12  | 12 | 9  | 12 | 12 | 0 | 0 | n/a | 3/4 | N |  |
| Whareroa Stm (Taupo District) at Lakeside Lake Taupo     | 12  | 12  | 11 | 12  | 12 | 11 | 0  | n/a | 4/4 | Y | 10  | 12 | 1  | 12 | 11 | 0 | 0 | n/a | 0/4 | N |  |

*E.coli-m* refers to whether the 2012 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

# References

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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 <sup>3</sup>               | USEPA (1998) value for 1-hour exposure at pH 9.  |
| Temperature                    | <12°C (May – Sep)<br><20°C (Oct – Apr) | Waikato Regional Council Draft Regional Plan standards for trout fisheries and trout spawning (1997).  |
| Total phosphorus               | <0.04 g/m <sup>3</sup>                 | 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 <sup>3</sup>                  | 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 River monitoring programme - water quality parameters and analytical methods

| Id <sup>1</sup>    | Parameter                             | Method   |
|--------------------|---------------------------------------|--|
| A340F              | Absorbance @ 340 nm filtered          | Spectrophotometer, 1 cm path length, APHA method 5910B   |
| A440F              | Absorbance @ 440 nm filtered          | Spectrophotometer, 1 cm path length, APHA method 5910B   |
| A780               | Absorbance @ 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 @ 25°C. APHA method 2510B  |
| DO                 | Dissolved oxygen                      | Field measurement (Hach DO meter, model HQ 30d)  |
| DO (% Sat)         | Dissolved oxygen (percent saturation) | Field measurement (Hach DO meter, model HQ 30d)  |
| DRP                | Dissolved reactive Phosphorus         | Filtration, Molybdenum Blue Colorimetry. Discrete analyser. APHA 4500 PG (modified)  |
| E. coli            | Escherichia coli                      | Membrane Filtration (mFC Agar) confirmation by MUG Agar. APHA method 9222 G  |
| ENT                | Enterococci bacteria                  | Membrane Filtration (mE Agar) confirmation by EIA Agar. APHA method 9230 C   |
| FC                 | Faecal coliforms                      | Membrane Filtration (mFC Agar). APHA method 9222 D   |
| NH <sub>4</sub> -N | Ammoniacal Nitrogen (Total)           | Phenol/Hypochlorite Colorimetry. Discrete analyser. APHA method 4500-NH <sub>3</sub> F (modified).   |
| NNN                | Nitrite/Nitrate Nitrogen              | Automated Cadmium reduction. Flow injection analyser. APHA method 4500 – NO <sub>3</sub> -I (modified).  |
| pH                 | pH                                    | Lab Meter @ 25°C. APHA method 4500-H <sup>+</sup> B  |
| TEMP               | Temperature                           | Field measurement (Hach DO meter, model HQ 30d)  |
| TKN                | Total Kjeldahl-Nitrogen               | Acid digestion. Phenol/Hypochlorite colorimetry. Discrete analyser. APHA method 4500-N <sub>org</sub> B (modified)   |
| TN                 | Total Nitrogen                        | Calculated from NNN + TKN (Nitrite/Nitrate Nitrogen + Total Kjeldahl-Nitrogen)   |
| TP                 | Total Phosphorus                      | Acid persulphate digestion, Colorimetry. Discrete Analyser. APHA method 4500-P E (modified)  |
| TP                 | Total Phosphorus As Reductant         | Acid persulphate digestion, Colorimetry. Discrete Analyser. APHA method 4500-P E (modified). Also modified to include the use of reductant to eliminate interference from arsenic present in the sample.NAWASCA Pub 38, 1982 |
| TURB               | Turbidity                             | Turbidity Meter Hach 2100N. APHA method 2130 B   |

<sup>1</sup> Water quality parameter identification code refers to Waikato Regional Council's water quality database (Timestudio) parameter short name.

APHA = Standards Methods for the Examination of Water and Wastewater, 21<sup>st</sup> Edition, 2005, APHA, AWWA, WEF