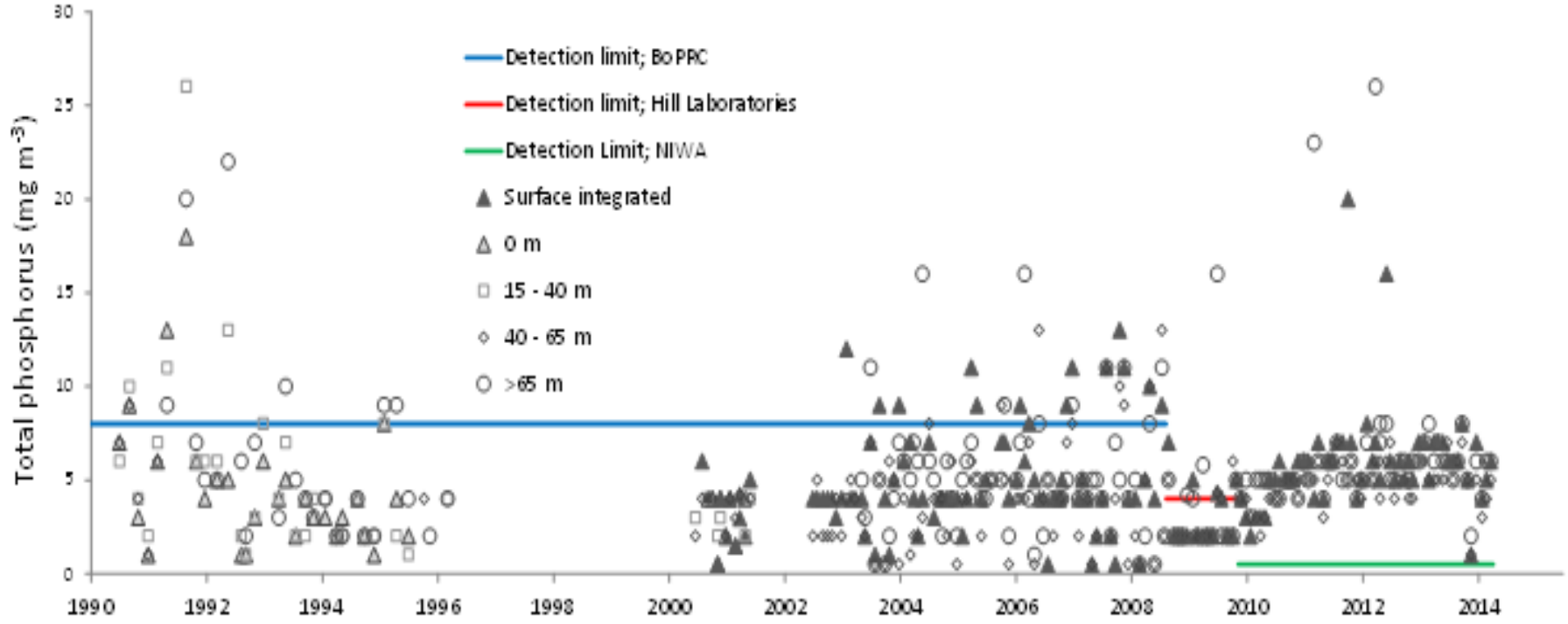
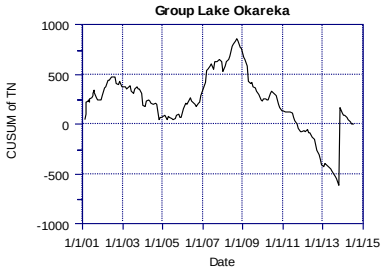
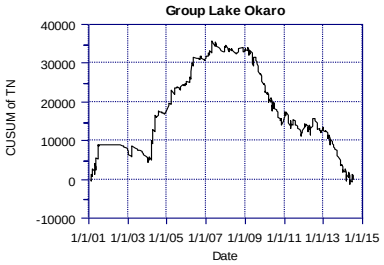
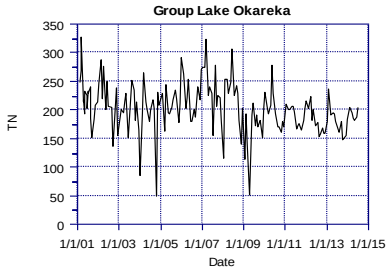
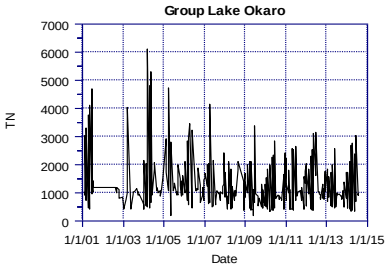
Laboratory Methods Changes

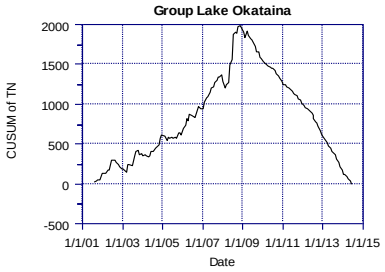

Total phosphorus (mg m-3)
Detection limit; BoPRC
Detection limit; Hill Laboratories
Detection Limit; NIWA
Surface integrated
0 m
15 - 40 m
40 - 65 m
>65 m
0
5
10
15
20
25
30
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014

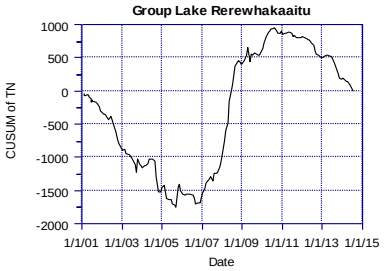

Group Lake Okareka
CUSUM of TN
1000
500
0
-500
-1000
1/1/01 1/1/03 1/1/05 1/1/07 1/1/09 1/1/11 1/1/13 1/1/15
Date

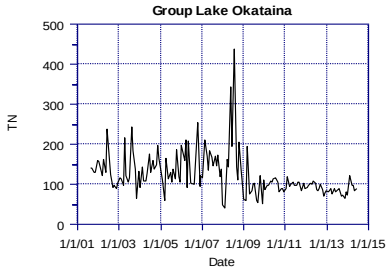

Group Lake Okaro
CUSUM of TN
40000
30000
20000
10000
0
-10000
1/1/01 1/1/03 1/1/05 1/1/07 1/1/09 1/1/11 1/1/13 1/1/15
Date

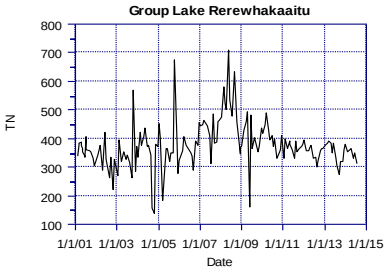

Group Lake Okareka
TN
350
300
250
200
150
100
50
0
1/1/01 1/1/03 1/1/05 1/1/07 1/1/09 1/1/11 1/1/13 1/1/15
Date

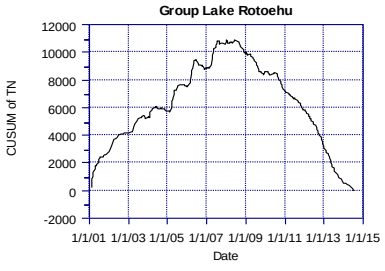

Group Lake Okaro
TN
7000
6000
5000
4000
3000
2000
1000
0
1/1/01 1/1/03 1/1/05 1/1/07 1/1/09 1/1/11 1/1/13 1/1/15
Date

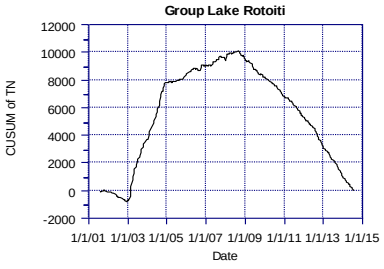

Group Lake Okataina
CUSUM of TN
2000
1500
1000
500
0
-500
1/1/01 1/1/03 1/1/05 1/1/07 1/1/09 1/1/11 1/1/13 1/1/15
Date

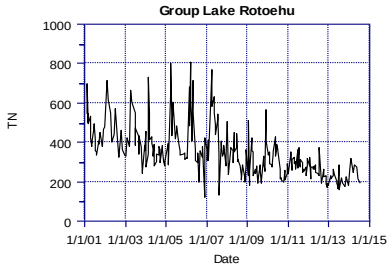

Group Lake Rerewhakaaitu
CUSUM of TN
1000
500
0
-500
-1000
-1500
-2000
1/1/01 1/1/03 1/1/05 1/1/07 1/1/09 1/1/11 1/1/13 1/1/15
Date

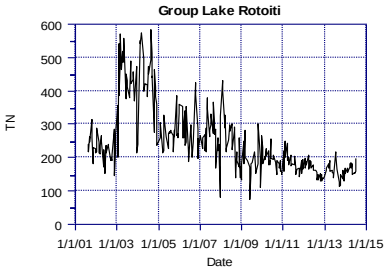

Group Lake Okataina
TN
500
400
300
200
100
0
1/1/01 1/1/03 1/1/05 1/1/07 1/1/09 1/1/11 1/1/13 1/1/15
Date

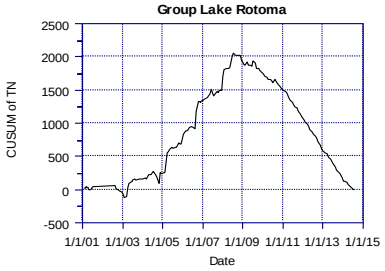

Group Lake Rerewhakaaitu
TN
800
700
600
500
400
300
200
100
1/1/01 1/1/03 1/1/05 1/1/07 1/1/09 1/1/11 1/1/13 1/1/15
Date

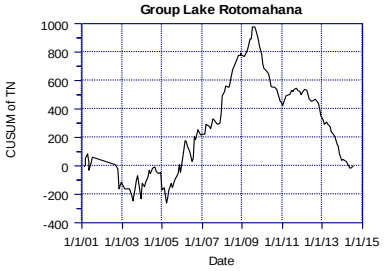

Group Lake Rotoehu
CUSUM of TN
12000
10000
8000
6000
4000
2000
0
-2000
1/1/01 1/1/03 1/1/05 1/1/07 1/1/09 1/1/11 1/1/13 1/1/15
Date

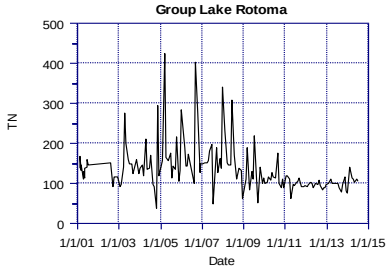

Group Lake Rotoiti
CUSUM of TN
12000
10000
8000
6000
4000
2000
0
-2000
1/1/01 1/1/03 1/1/05 1/1/07 1/1/09 1/1/11 1/1/13 1/1/15
Date

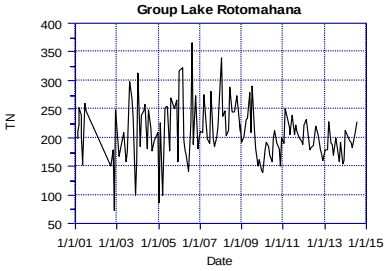

Group Lake Rotoehu
TN
1000
800
600
400
200
0
1/1/01 1/1/03 1/1/05 1/1/07 1/1/09 1/1/11 1/1/13 1/1/15
Date

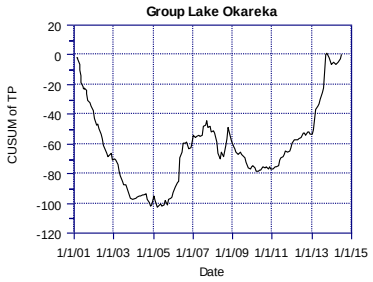

Group Lake Rotoiti
TN
600
500
400
300
200
100
0
1/1/01 1/1/03 1/1/05 1/1/07 1/1/09 1/1/11 1/1/13 1/1/15
Date

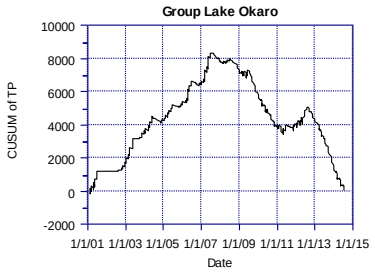

Group Lake Rotoma
CUSUM of TN
2500
2000
1500
1000
500
0
-500
1/1/01 1/1/03 1/1/05 1/1/07 1/1/09 1/1/11 1/1/13 1/1/15
Date


Group Lake Rotomahana
CUSUM of TN
1000
800
600
400
200
0
-200
-400
1/1/01 1/1/03 1/1/05 1/1/07 1/1/09 1/1/11 1/1/13 1/1/15
Date


Group Lake Rotoma
TN
500
400
300
200
100
0
1/1/01 1/1/03 1/1/05 1/1/07 1/1/09 1/1/11 1/1/13 1/1/15
Date


Group Lake Rotomahana
TN
400
350
300
250
200
150
100
50
1/1/01 1/1/03 1/1/05 1/1/07 1/1/09 1/1/11 1/1/13 1/1/15
Date


Group Lake Okareka
CUSUM of TP
Date


Group Lake Okaro
CUSUM of TP
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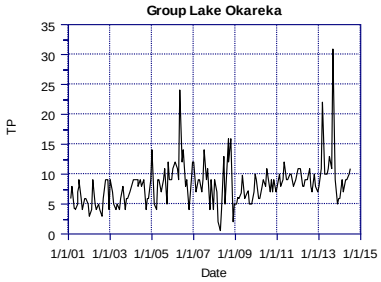
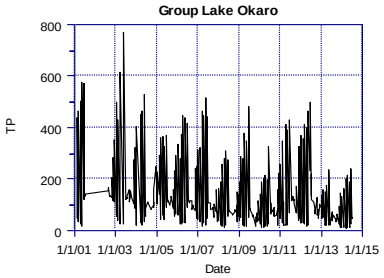

Group Lake Okareka
TP
Date


Group Lake Okaro
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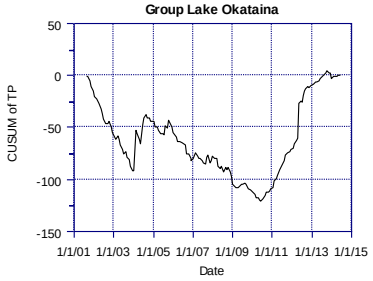
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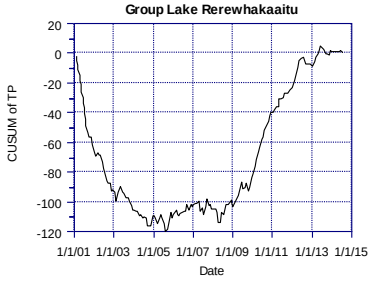
Group Lake Rerewhakaaitu
CUSUM of TP
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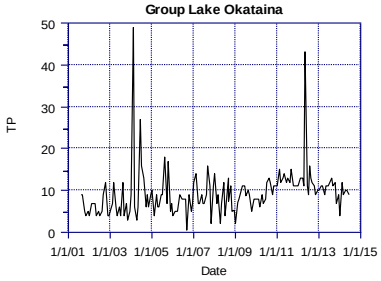
Group Lake Okataina
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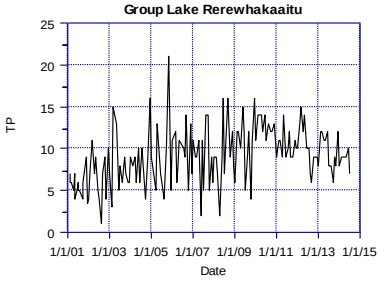
Date


Group Lake Rerewhakaaitu
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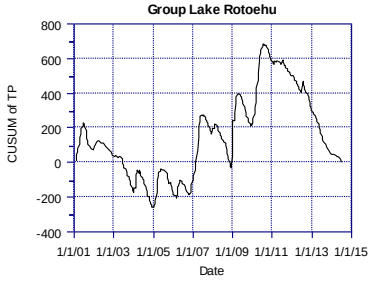
Group Lake Rotoehu
CUSUM of TP
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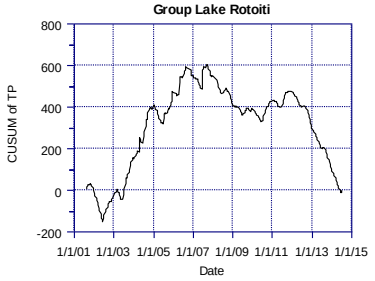
Group Lake Rotoiti
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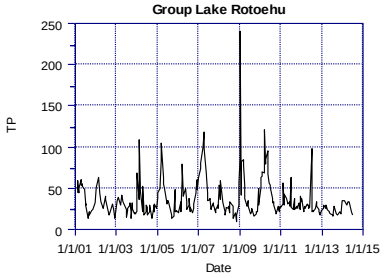
Group Lake Rotoehu
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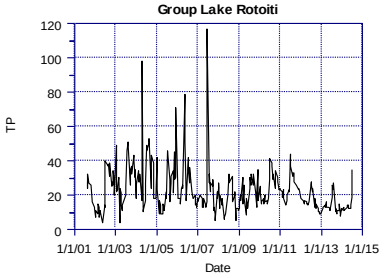
Group Lake Rotoiti
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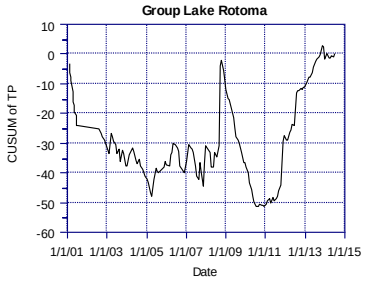
Group Lake Rotoma
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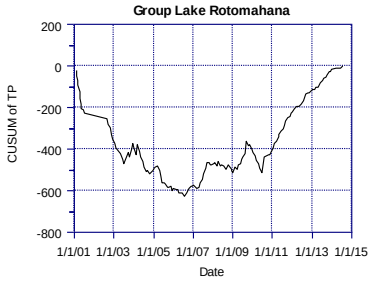
Group Lake Rotomahana
CUSUM of TP
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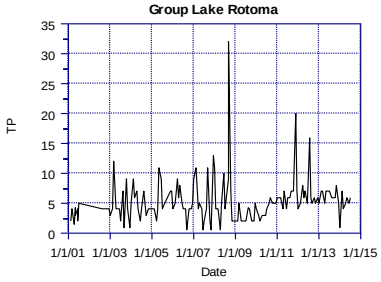
Group Lake Rotoma
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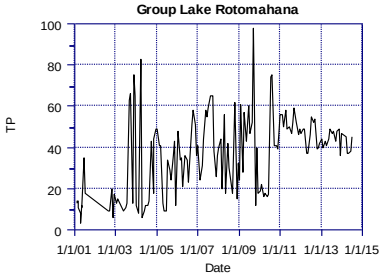
Group Lake Rotomahana
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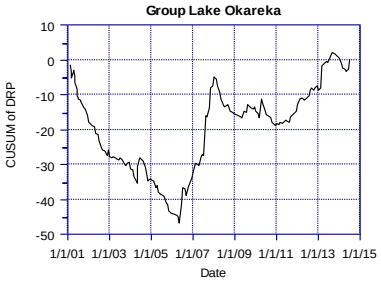
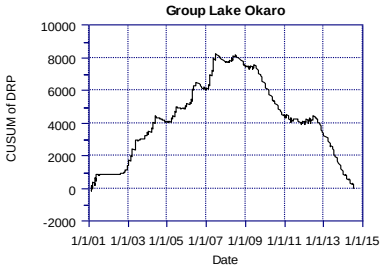
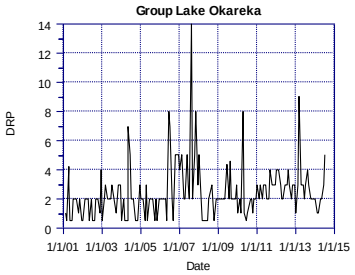
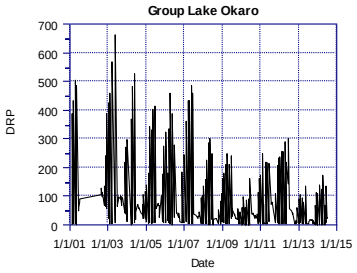
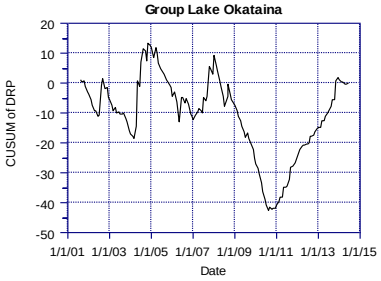
Date

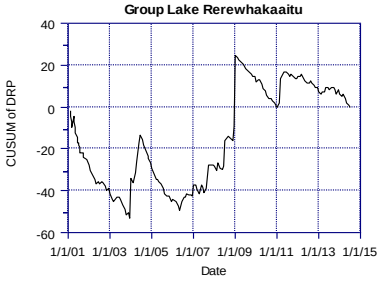


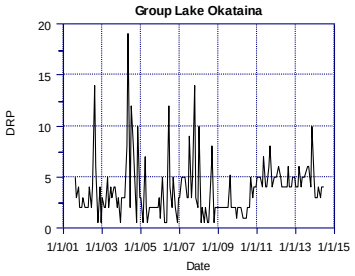


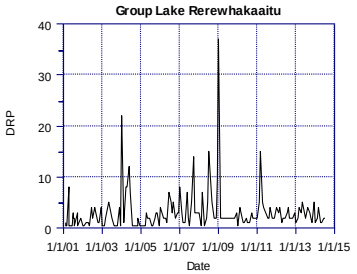


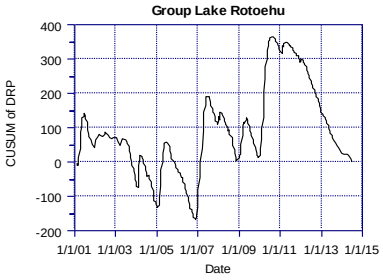


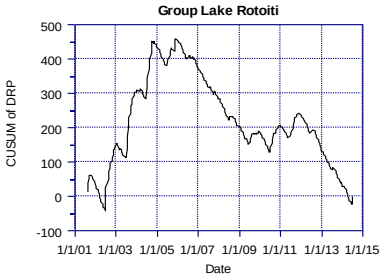


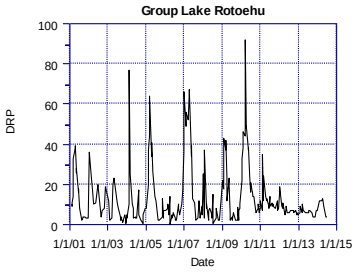


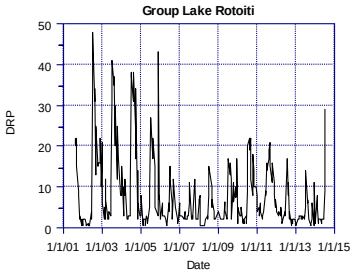


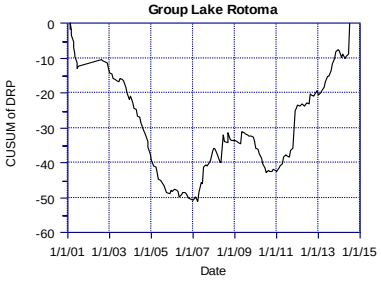


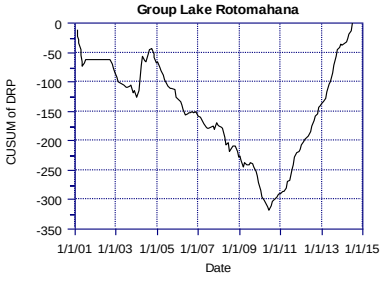


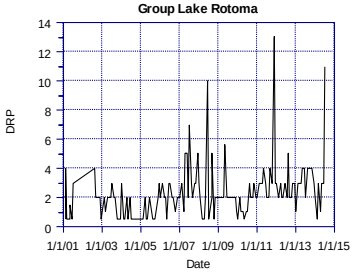


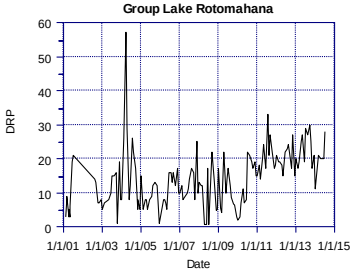






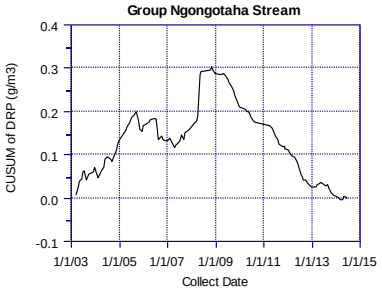


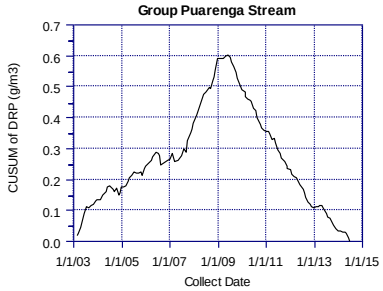


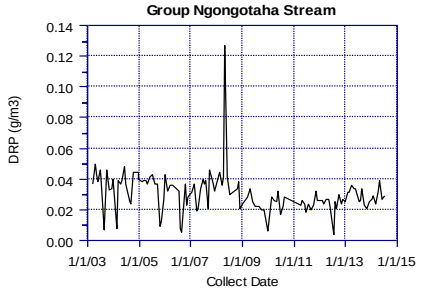


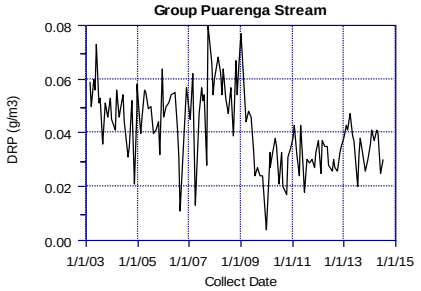
Lakes DRP

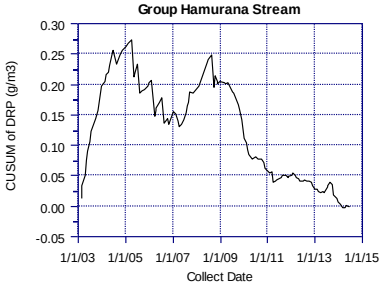
BAY OF PLENTY REGIONAL COUNCIL

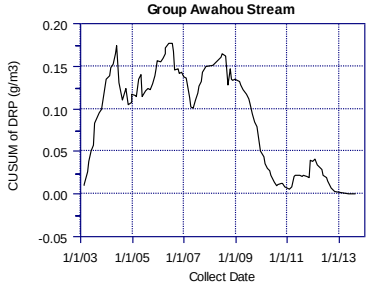


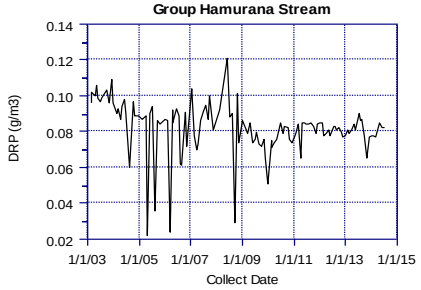


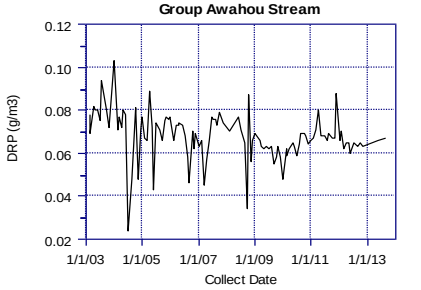


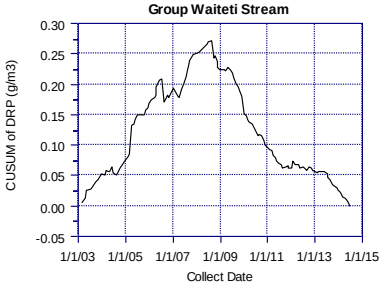


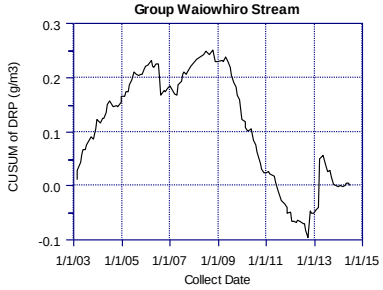


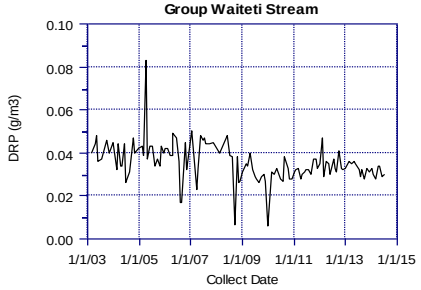


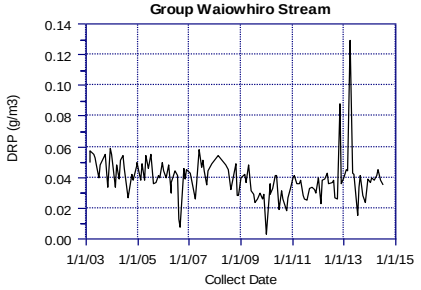


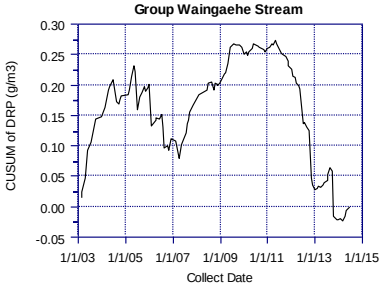


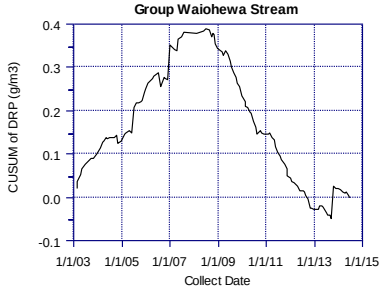


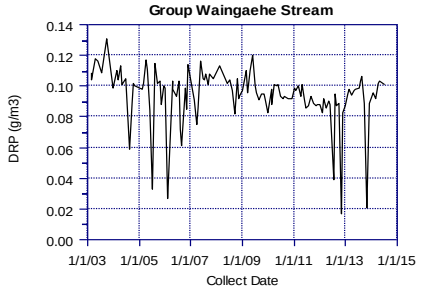


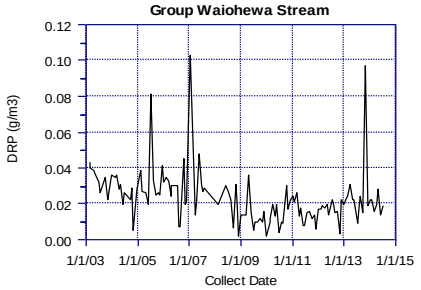




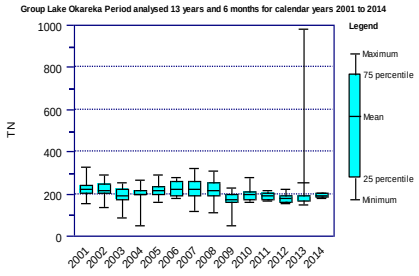


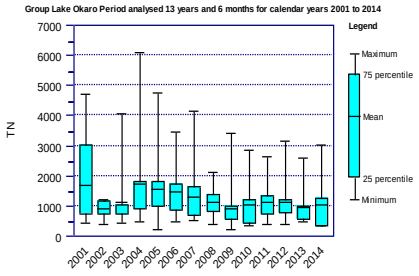


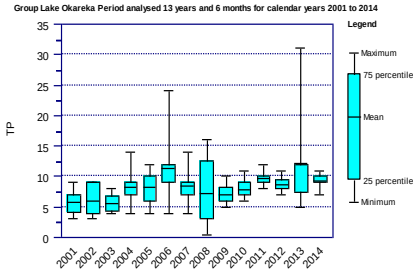


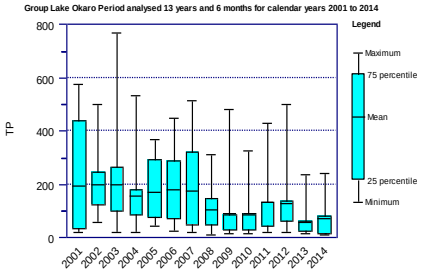


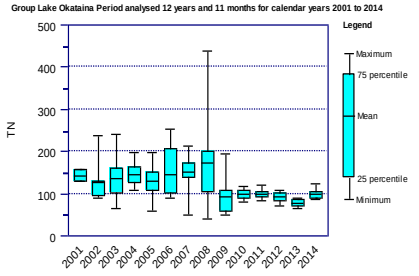
Rotorua Streams DRP

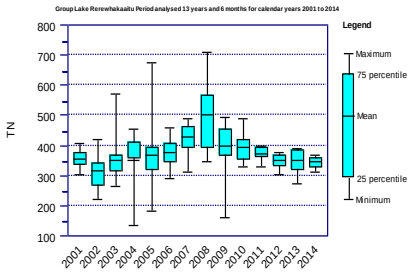

Group Lake Okareka Period analysed 13 years and 6 months for calendar years 2001 to 2014
TN
Legend
Maximum
75 percentile
Mean
25 percentile
Minimum

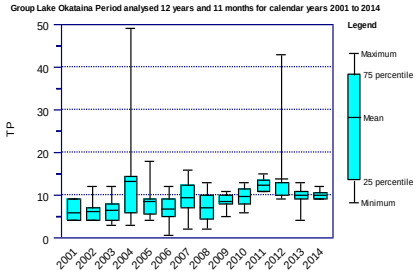

Group Lake Okaro Period analysed 13 years and 6 months for calendar years 2001 to 2014
TN
Legend
Maximum
75 percentile
Mean
25 percentile
Minimum

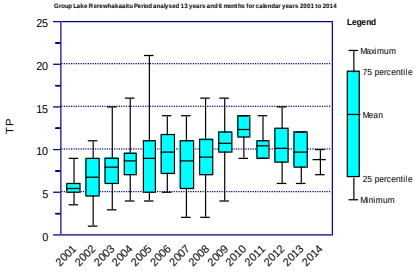

Group Lake Okareka Period analysed 13 years and 6 months for calendar years 2001 to 2014
TP
Legend
Maximum
75 percentile
Mean
25 percentile
Minimum

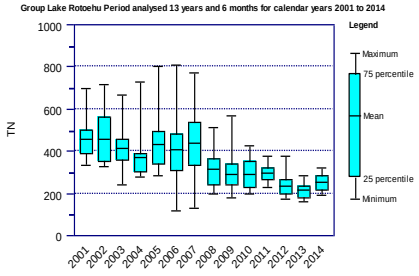

Group Lake Okaro Period analysed 13 years and 6 months for calendar years 2001 to 2014
TP
Legend
Maximum
75 percentile
Mean
25 percentile
Minimum

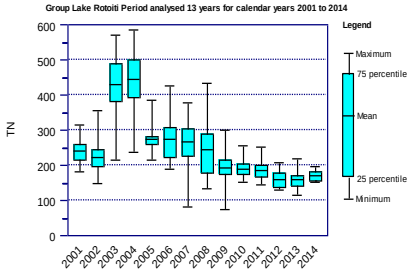

Group Lake Okataina Period analysed 12 years and 11 months for calendar years 2001 to 2014
TN
Legend
Maximum
75 percentile
Mean
25 percentile
Minimum

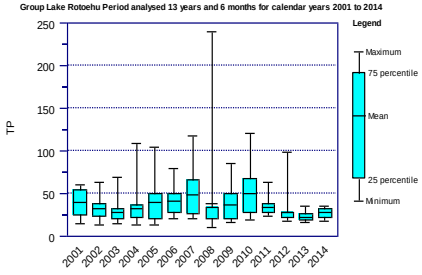

Group Lake Rerewhakaaitu Period analysed 13 years and 6 months for calendar years 2001 to 2014
TN
Legend
Maximum
75 percentile
Mean
25 percentile
Minimum

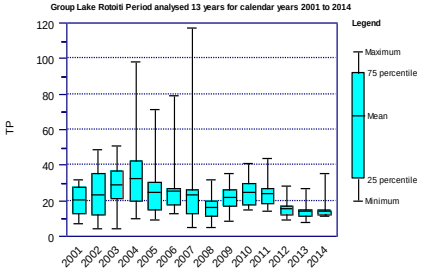

Group Lake Okataina Period analysed 12 years and 11 months for calendar years 2001 to 2014
TP
Legend
Maximum
75 percentile
Mean
25 percentile
Minimum

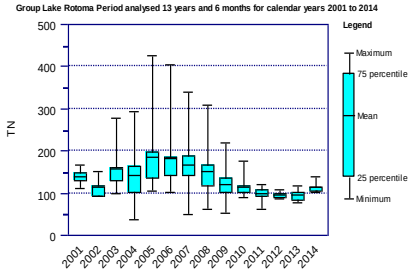

Group Lake Rerewhakaaitu Period analysed 13 years and 6 months for calendar years 2001 to 2014
TP
Legend
Maximum
75 percentile
Mean
25 percentile
Minimum

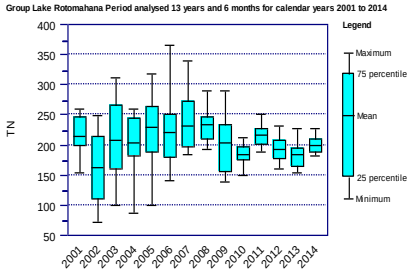

Group Lake Rotoehu Period analysed 13 years and 6 months for calendar years 2001 to 2014
TN
Legend
Maximum
75 percentile
Mean
25 percentile
Minimum

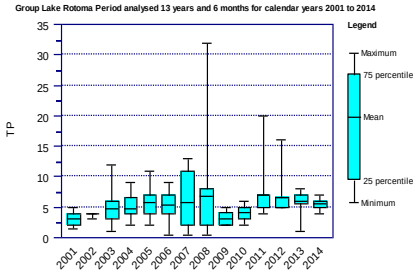

Group Lake Rotoiti Period analysed 13 years for calendar years 2001 to 2014
TN
Legend
Maximum
75 percentile
Mean
25 percentile
Minimum

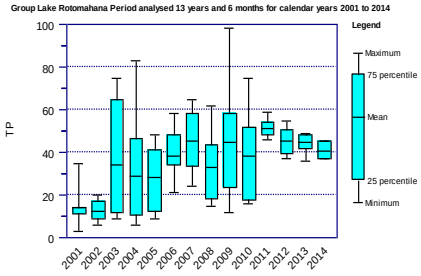

Group Lake Rotoehu Period analysed 13 years and 6 months for calendar years 2001 to 2014
TP
Legend
Maximum
75 percentile
Mean
25 percentile
Minimum


Group Lake Rotoiti Period analysed 13 years for calendar years 2001 to 2014
TP
Legend
Maximum
75 percentile
Mean
25 percentile
Minimum


Group Lake Rotoma Period analysed 13 years and 6 months for calendar years 2001 to 2014
TN
Legend
Maximum
75 percentile
Mean
25 percentile
Minimum


Group Lake Rotomahana Period analysed 13 years and 6 months for calendar years 2001 to 2014
TN
Legend
Maximum
75 percentile
Mean
25 percentile
Minimum


Group Lake Rotoma Period analysed 13 years and 6 months for calendar years 2001 to 2014
TP
Legend
Maximum
75 percentile
Mean
25 percentile
Minimum


Group Lake Rotomahana Period analysed 13 years and 6 months for calendar years 2001 to 2014
TP
Legend
Maximum
75 percentile
Mean
25 percentile
Minimum

Lakes TP & TN

Potential actions

- Laboratory to correct data at detection limits to actual data where possible.
- Run duplicate analyses of older methods with current FIA
    - Problems sourcing someone to run old method and equipment.
    - Won't solve the variation in the data but might give more continuity with average annual data.
- Leave as is and explain changes as required.
- Numerical solution??